

**Public Service Commission**

**of the**

**District of Columbia**

**Report on the  
Renewable Energy Portfolio Standard for  
Compliance Year 2016**

**May 1, 2017**

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## EXECUTIVE SUMMARY

The *Renewable Energy Portfolio Standard Act* (“REPS Act”) requires the Public Service Commission of the District of Columbia (“Commission”) to annually report to the Council of the District of Columbia on the status of implementation of the Renewable Portfolio Standards (“RPS”), including the number of renewable generators approved by the Commission and eligible to participate in the District’s RPS program; the availability of renewable resources; and the certification of the number of credits generated by the utilities meeting the requirements of D.C. Official Code § 34-1432, which outlines the minimum percentages to be derived from certain renewable resources—and any other such information as the Council shall consider necessary. This annual report fulfills the reporting requirement outlined in the REPS Act for the most recent compliance year of 2016.

Pursuant to the Commission’s RPS rules, 35 active electricity suppliers and Pepco—the default electricity supplier—with retail electricity sales in the District submitted compliance reports due by April 1, 2017 reporting on their RPS compliance in 2016.<sup>1</sup> These reports show that electricity suppliers generally met the RPS requirements through purchasing renewable energy credits (“RECs”) and making compliance payments. Thirteen electricity suppliers submitted a compliance payment representing in most cases a portion of their compliance obligation. The compliance fees are deposited into the Renewable Energy Development Fund which is administered by the District’s Department of Energy and Environment (“DOEE”). The total amount of compliance payments for 2016 was \$15,230,000, compared to \$19,910,000 in fees generated in 2015. The decrease in the compliance fees, compared to 2015, generally reflects the increase in use of solar RECs to meet the RPS requirements. Suppliers retired 38,167 solar RECs in 2015, but the amount increased by roughly 63 percent in 2016, with 62,173 solar RECs retired.

Although the reported retail sales did not increase significantly—up about 0.6 percent, from 11.214 million megawatt-hours (“MWH”) in 2015 to 11.286 million MWH in 2016—the available capacity from solar energy systems certified for the District’s RPS program is still well below the required capacity, resulting in a shortage of qualifying solar RECS. This shortage of solar capacity will only increase as the solar requirement continues to rise over time. In addition, the shortage of solar capacity has also contributed to high solar REC prices in the District of Columbia, currently trading around \$470 per REC and by far the highest among the Mid-Atlantic states.

As of April 7, 2017, there are 5,342 renewable generators approved by the Commission and eligible to participate in the District’s RPS program. Of the facilities approved, 5,294 (99.1 percent) use Tier I resources (including biomass, methane from landfill gas, solar, and wind) and 48 (0.9 percent) use Tier II resources (i.e., biomass and hydroelectric). Since these renewable generators may be certified in other states that have a RPS requirement as well, the renewable energy credits associated with the generating capacity are not necessarily fully available to meet the District’s RPS.

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<sup>1</sup> Pepco submits a compliance report on behalf of the Standard Offer Service (“SOS”) program, in its capacity as SOS Administrator.

There are currently 5,164 solar energy systems (including both solar photovoltaic and solar thermal) eligible to meet the District’s solar RPS requirement, of which 2,879 are located within the District. The 2,879 District RPS-eligible solar energy systems are located in all 8 wards in the following numbers: Ward 1 - 322; Ward 2 - 131; Ward 3 – 400; Ward 4 – 463; Ward 5 – 406, Ward 6 – 471; Ward 7 – 440; and Ward 8 – 246.<sup>2</sup> Outside of the District, there are six states with more than 100 RPS-eligible solar energy systems including Pennsylvania (928), Virginia (493), Maryland (237), North Carolina (156), Delaware (150), and Ohio (132). These six (6) states account for roughly 92 percent of the non-DC solar energy systems approved for the District’s RPS program. There are also RPS-eligible solar energy systems in eight additional states.

As a result of the adoption of the *Distributed Generation Amendment Act of 2011* (“DGAA”),<sup>3</sup> which required all solar photovoltaic and solar thermal facilities certified by the Commission after January 31, 2011 to be located in the District or on a distribution feeder serving the District, the District had seen a significant decrease in the number of solar generator applications—on a calendar year basis—for the RPS program. In particular, the number of applications, primarily solar, increased from 461 in 2009 to 2,034 in 2010, before falling to 1,846 in 2011, and 257 in 2012. However, since 2013, the declining trend has been reversed. The RPS applications increased to 391 in 2013, 473 in 2014, 717 in 2015, and 818 in 2016. This reversal in applications reflects the growth of solar resources in the District and may be attributed to a number of factors, which could include the increase in use of leasing programs which eliminate or reduce the upfront costs for homeowners and businesses, the continued high solar REC prices in the District, and expenditures by the District’s Sustainable Energy Utility and the District Department of Energy and Environment. As of April 7, 2017, the Commission has received 174 applications in 2017.

The total reported capacity associated with the approved 5,164 solar energy systems as of April 7, 2017 is about 54.7 megawatts (“MW”). About 33.8 MW of this capacity is located in the District. The current certified solar capacity is up from 19.2 MW of solar capacity as of April 19, 2016. Currently, the capacity indicated in the District now exceeds the out-of-state solar capacity (about 20.9 MW<sup>4</sup>) that was grandfathered into the RPS program by roughly 62 percent. However, the retirement of out-of-state solar RECs for the 2016 compliance year is nearly the same as the retirement of District solar RECs.<sup>5</sup>

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<sup>2</sup> See Attachment 3.

<sup>3</sup> D.C. Act 19-126 (August 1, 2011). The permanent version of this legislation, the Distributed Generation Amendment Act of 2011, became law on October 20, 2011. See D.C. Law 19-0036.

<sup>4</sup> This includes solar energy systems, in a small portion of Maryland, which are in a location served by feeders serving the District of Columbia

<sup>5</sup> A REC represents one megawatt-hour of electricity generation, attributable to a particular renewable energy source.

While the amount of DC-based capacity is still increasing, it is still well below the solar capacity that is necessary to meet the solar RPS requirement of the DGAA. That need is an estimated 70.0 MW for 2016 to meet the required 0.825 percent of all District of Columbia retail electricity sales and 83.2 MW in 2017 to meet the required 0.980 percent of all District of Columbia retail electricity sales. The enactment of the *Renewable Portfolio Standard Expansion Amendment Act of 2016* enables 15 MW solar energy systems in the District or in a location served by a distribution feeder serving the District, and no cap on the size of solar installations owned by District agencies, to be eligible for certification. This has the potential to accelerate the number of DC-based solar RECs that may be available to suppliers for compliance purposes in the upcoming years. However, compliance costs will most likely continue to rise over time to the extent that the solar energy requirements outstrip the availability of systems certified to meet the requirement.

The Commission tracks the number of renewable energy credits submitted for compliance. A breakdown of the number of RECs for 2016, submitted by fuel type, is provided in the table below:

**Renewable Energy Credits Submitted for 2016 Compliance**

	<b>No. of RECs</b>	<b>Share of Tier</b>
<b>Tier I Resource</b>		
Black Liquor	183,749	13.6%
Methane from Landfill Gas	189,345	14.0%
Wind	451,607	33.5%
Wood Waste	414,275	30.7%
Non-Solar Tier I (out-of-state solar)	47,400	3.5%
Solar Carve-Out	62,173	4.6%
Total Tier I and Solar Carve-Out	1,348,549	100.0%
<b>Tier II Resource</b>		
Hydroelectric	205,670	92.0%
Black Liquor	4,867	2.2%
Wood Waste	12,935	5.8%
Municipal Solid Waste	-	0.0%
Total Tier II	223,472	100.0%
Total Tier I, Solar Carve-Out, and Tier II	1,572,021	

In 2016, suppliers provided the REC prices for all of their resources. In general, non-solar REC prices have been relatively stable in recent years, despite the rise in RPS requirements. However, solar REC prices for the District have trended upward since 2011 as the impact of the DGAA has made the District's solar REC prices the highest in the region. Suppliers spent \$31.93 million on the acquisition of RECs, driven largely by the cost of solar RECs. Taken together, the estimated total cost of compliance—including the cost of RECs and compliance fees—amounted to \$47.16 million for the 2016 RPS compliance, up from \$38.54 million for the 2015 RPS compliance.

The Commission addressed various changes to the RPS Rules included in the *Renewable Portfolio Standard Expansion Amendment Act of 2016* (D.C. Law 21-154,

effective October 8, 2016) in Order No. 18749 (released April 13, 2017). The rules will become effective upon publication of the NOFR in the *D.C. Register*. In addition, the Commission is addressing changes to its interconnection rules in a Notice of Proposed Rulemaking (“NOPR”) published on February 17, 2017 in the *D.C. Register*, as the RPS Expansion Amendment Act of 2016 increased the capacity of solar facilities qualified for SRECs in the District from 5 MW to 15 MW.

Finally, pursuant to the requirements of the RPS Expansion Amendment Act of 2016, the Commission submitted its report to the D.C. Council in fulfillment of Section 2b of the Act (D.C. Code § 34-1432(f)) which provides that:

No later than March 1, 2017, the Commission shall provide a report to the Council that includes:

- (1) An estimate of the amount of solar energy generated annually by solar energy systems in the District that could qualify to be used to meet the annual solar energy requirement, but for which renewable energy credits cannot be purchased by electricity suppliers to meet the solar energy requirement; and
- (2) A recommendation for how the Commission could adjust the annual solar requirement to account for the amount of solar generation identified in paragraph (1) of this subsection.

The Commission made use of its database of certified renewable facilities and Pepco’s database of facilities that have been approved for interconnection with the distribution system. By comparing the solar photovoltaic (“PV”) systems that have been interconnected to Pepco’s distribution system with the solar PV application that have been submitted to the Commission for certification and approved for the District’s RPS program, any difference in capacity can be identified. In addition, the Commission considered information obtained from the Renewable Electric Plan Information System (“REPIS”) database developed by the National Renewable Energy Laboratory (“NREL”). Based on this available information, the report indicated that an estimated 5,046 MWH (or 5,046 solar RECs) would not be available to suppliers to meet the District’s solar energy RPS requirement at this time. Accounting for these unavailable solar RECs would lower the 2016 RPS requirement, for example, from 0.825% to 0.779% (an adjustment of 0.046%).

## I. Introduction and Background

The Council of the District of Columbia (“Council”) enacted the *Renewable Energy Portfolio Standard Act* (“REPS Act”) on January 19, 2005 and established a renewable energy portfolio standard (“RPS”), through which a minimum percentage of District electric providers’ supply must be derived from renewable energy resources beginning January 1, 2007. The RPS minimum requirements, among other things, were amended by the *Clean and Affordable Energy Act of 2008* (“CAEA”).<sup>6</sup> Further changes to the RPS program occurred on August 1, 2011, when the *Distributed Generation Emergency Amendment Act of 2011* (“DGAA”) became law.<sup>7</sup> Additional amendments to the RPS program became effective on April 30, 2015, as a result of the *Renewable Energy Portfolio Standard Amendment Act of 2014* (“RPS Amendment Act of 2014”), and October 8, 2016, as a result of the *Renewable Portfolio Standard Expansion Amendment Act of 2016* (“RPS Expansion Amendment Act of 2016”).

Renewable energy resources are divided into two categories, Tier I and Tier II, with Tier I resources including solar energy, wind, biomass, methane, geothermal, ocean, and fuel cells, and Tier II resources including hydroelectric power other than pumped storage generation and waste-to-energy.<sup>8</sup> Although minimum percentage requirements are specified for Tier I and Tier II resources, Tier I resources can be used to comply with the Tier II standard. In addition, a minimum requirement is carved out specifically for solar energy. The REPS Act allows an electricity supplier to begin receiving and accumulating renewable energy credits as of January 1, 2006.

The REPS Act required that the Public Service Commission of the District of Columbia (“Commission”) adopt regulations, or orders, governing the application and transfer of renewable energy credits and implementation of the REPS Act. The RPS rules became effective upon the publication of the Notice of Final Rulemaking in the *D.C. Register* on January 18, 2008. The Commission’s Rules can be found in Chapter 29 of 15 DCMR. As part of its RPS rules, the Commission established a process for certifying eligible generators. The certification process includes a streamlined application that the Commission developed. Renewable generators do not need to submit as much documentation for the streamlined application and the Commission is required to take action in a shorter period of time.

On October 22, 2008, the permanent version of the CAEA became law. The law, among other things, amended the REPS Act and changed the definition of solar energy to

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<sup>6</sup> D.C. Official Code § 34-1432(c) (2012 Supp.).

<sup>7</sup> D.C. Act 19-126 (August 1, 2011). The permanent version of this legislation, the Distributed Generation Amendment Act of 2011, became law on October 20, 2011. See D.C. Law 19-0036. Since emergency and permanent versions of the legislation are identical, both are referred to as the DGAA.

<sup>8</sup> As of January 1, 2013, the incineration of solid waste is no longer eligible to generate renewable energy credits for the District’s RPS program. In addition, the RPS Amendment Act of 2014 resulted in the transfer of certain biomass resources to Tier II.

provide eligibility for solar thermal applications that do not generate electricity, raised the RPS requirements to 20 percent by 2020, and increased certain alternative compliance fees.

The DGAA disallowed most new solar energy systems located outside of the District from being certified by the Commission for the RPS program, after January 31, 2011—although solar energy systems located outside of the District that were certified prior to February 1, 2011 were “grandfathered” and remain eligible under the RPS program. In addition, among other things, the legislation increased the solar RPS requirement from 2011 through 2023 (up to 2.5 percent by 2023 as opposed to 0.4 percent by 2020), disallowed the certification of solar energy systems larger than 5 megawatts (“MW”) in capacity, amended the solar compliance fees for 2011 through 2023, and changed the eligibility requirements for solar thermal systems.

Pursuant to the DGAA, in Order No. 16528 (September 9, 2011), the Commission denied all applications of solar energy facilities seeking certification as eligible District of Columbia renewable energy standards generating facilities, which were not located within the District, nor in locations served by a distribution feeder serving the District, and pending before the Commission on August 1, 2011. Moreover, in Order No. 16529 (September 9, 2011), the Commission decertified 1,426 solar energy facilities not located within the District, or in locations served by a distribution feeder serving the District, and certified by the Commission between February 1, 2011, and the effective date of the Act, August 1, 2011, as well as any solar facilities with a capacity larger than 5 MW, regardless of the date certified.

As a result of the RPS Amendment Act of 2014, the eligibility of “qualifying biomass” resources was changed. The legislation requires that, to qualify as a Tier 1 resource, a generation unit using biomass must achieve a total system efficiency of at least sixty-five (65) percent on an annual basis, demonstrate that it achieved a total system efficiency of at least 65 percent on an annual basis through actual operational data after one year, and demonstrate that it started commercial operation after January 1, 2007 and refrain from using black liquor. Under this law, those biomass generation units that cannot achieve a total system efficiency of at least 65 percent, or that started commercial operations on or before December 31, 2006, or that use black liquor, can no longer qualify as Tier I resources. Rather, they now qualify as Tier II resources. Finally, any extension or renewal of energy supply contracts executed on or after August 1, 2011 shall be subject to the higher solar energy requirement.

Subsequently, the RPS Expansion Amendment Act of 2016 raised the RPS requirement to 50.0 percent from Tier I resources by 2032, with not less than 5.0 percent from solar energy. In addition, among other things, the 2016 Act amended the solar compliance fee and kept it at 50 cents per kilowatt-hour (“kWh”) shortfall through 2023, before decreasing to 5 cents per kWh by 2033. Previously, the solar compliance fee was set to begin decreasing in 2017.<sup>9</sup>

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<sup>9</sup> Under the DGAA, the solar energy compliance payment was set to decrease from 50 cents per kWh in 2016 to 35 cents in 2017; then 30 cents in 2018; then 20 cents in 2019 through 2020; then 15 cents in 2021 through 2022; until reaching 5 cents in 2023 and thereafter.



In calendar year 2016 there were 35 electricity suppliers plus the default Standard Offer Service (“SOS”) Provider who reported electricity sales to retail customers in the District. Pursuant to the Commission’s RPS rules, each of these active suppliers submitted the required compliance report that was due by the then applicable deadline of April 1, 2017. These reports show that electricity suppliers and Pepco, the SOS administrator, generally met the RPS requirements through purchasing renewable energy credits (“RECs”) and making compliance payments. Thirteen suppliers submitted a compliance payment in addition to acquiring RECs.<sup>10</sup> Based on the available information, the total amount of money generated from compliance payments in 2016 was \$15,230,000—compared to \$19,910,000 in 2015. The decrease in the amount of 2016 compliance fees reflects the greater use of solar RECs to meet the RPS compliance obligation. In 2016, electricity suppliers retired 62,173 solar RECs, about 63 percent more than the 38,167 solar RECs retired in 2015.

In Section II, we provide a summary of the steps that the Commission has taken to implement the RPS in the District. Section III reviews the RPS compliance reports submitted for the 2016 compliance year. In Section IV, we present some information on the current availability of renewable resources. Finally, Section V summarizes other ongoing actions to implement the RPS in the District and next steps. In addition, we include Attachment 1, which provides a national perspective on what other states are doing with respect to the implementation of their renewable portfolio standards.<sup>11</sup> Attachment 2 contains a list of selected orders that the Commission has issued to implement the RPS. Lastly, Attachment 3 includes a map of the certified solar energy systems in the District of Columbia.<sup>12</sup>

## **II. Summary of the Implementation of the Renewable Energy Portfolio Standard**

This section provides a brief description of the history of actions that the Commission has undertaken to implement the RPS.<sup>13</sup> In order to establish a record and to begin implementation of the REPS Act, the Commission issued Order No. 13566 on April 29, 2005, inviting interested parties to submit their views on twelve (12) RPS-related issues. The twelve issues addressed:

- the process and timeline that the Commission should adopt to implement the Act;
- the procedure to apply for, verify, and transfer renewable energy credits;

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<sup>10</sup> The compliance fee payments are deposited into the Renewable Energy Development Fund administered by the District’s Department of Energy and Environment (“DOEE”).

<sup>11</sup> States such as Connecticut, Hawaii, Michigan, Nevada, North Carolina, Ohio, and Pennsylvania include energy efficiency in their RPS.

<sup>12</sup> The map was produced by Commission staff using the data maintained for the RPS generator certification.

<sup>13</sup> Attachment 2 of this Report contains a list of selected Commission Orders and Notices addressing the implementation of the RPS program.

- the type(s) of renewable energy projects that are feasible within the District;
- the process for certifying the eligibility of generating facilities;
- the standards that should apply to customer generators;
- the information that should be submitted in an electricity supplier's annual compliance report;
- the appropriate procedures for cost recovery by Pepco;
- the standards that the Commission should employ for determining whether the compliance costs claimed by Pepco were prudently incurred;
- the verification of an electricity supplier's compliance with the RPS;
- the imposition of an administrative fee;
- the data and confidentiality concerns of stakeholders; and
- the states that qualify as being within or adjacent to the PJM Interconnection Region.

In Order No. 13766, released on September 23, 2005, the Commission addressed the various issues based on the record developed in response to Order No. 13566. Among other things, the Commission directed interested parties to form a RPS Working Group to examine in more detail certain issues related to the implementation of the REPS Act, and to propose a timeline and recommendations for a two-phased approach to resolving those issues.<sup>14</sup> The Commission also indicated that the PJM Environmental Information Services ("PJM-EIS") Generation Attribute Tracking System ("GATS") would be used in the implementation of the Act. In addition, the Commission indicated its intent to establish regulations to govern the application and transfer of RECs, on an interim basis, prior to January 1, 2006.

### **RPS Rules**

Based on input from the RPS Working Group, the Commission established interim RPS rules in Order No. 13840 (December 28, 2005). These rules were subsequently amended in Order No. 13899 (March 27, 2006) and Order No. 14225 (March 2, 2007). The Commission eventually established a formal rulemaking process and on November 2, 2007, a Notice of Proposed Rulemaking ("NOPR") appeared in the *D.C. Register* requesting comments on revised RPS rules that were based, in part, on the interim RPS rules. After receiving and reviewing comments on the NOPR, the Commission issued Order No. 14697 (January 10, 2008) and adopted Chapter 29 of Title 15 District of Columbia Municipal Regulations ("Final Rules"). The Final Rules became effective upon the publication of the Notice of Final Rulemaking ("NOFR") in the *D.C. Register* on January 18, 2008.

The rules establish definitions for various terms consistent with the REPS Act, compliance requirements for electricity suppliers, certification of renewable generators, policies regarding the creation and tracking of RECs, and directives concerning the recovery of fees and costs.

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In Attachment A of Order No. 13766, the RPS Working Group was asked to address 23 issues.

### ***Compliance Requirements for Electricity Suppliers***

The RPS rules include compliance requirements for electricity suppliers beginning in 2007. Under the current requirements, suppliers are to file annual reports that include the following components: (1) the quantity of annual District retail electricity sales; (2) a calculation of the annual quantity of required Tier I, Tier II, and Solar Energy Credits; (3) the quantity of Tier I, Tier II, and Solar Energy Credits purchased and evidence of those purchases; (4) the quantity of Tier I, Tier II, and Solar Energy Credits transferred to the electricity supplier by a Renewable On-Site Generator; (5) a calculation of any compliance fees owed by the energy supplier; (6) certification of the accuracy and veracity of the report; (7) all documentation supporting the data in the annual compliance report; (8) a list of all RECS used to comply with the RPS; (9) a summary report of RECs retired during the reporting period; and (10) the total price paid for Tier I, Tier II, and Solar Energy Credits. Suppliers that purchase RECs solely via bundled products are exempt from including the total price paid for Tier I, Tier II, and Solar Energy Credits in their annual compliance report. The Commission allows the information in item (10) to be filed confidentially. An electricity supplier that fails to meet its RPS requirements must submit an annual Compliance Fee to the District of Columbia Renewable Energy Development Fund administered by the District Department of the Environment's Energy Office ("DDOE") by April 1 of the calendar year following the year of compliance.

To facilitate the compliance reporting, the Commission issued Order No. 14782 on April 10, 2008 and adopted a 2007 Compliance Report form for the District's RPS Program, along with the associated filing instructions. This material was made available on the Commission's website. Electricity suppliers used the form to submit the 2007 compliance reports due May 1, 2008. A revised compliance reporting form was included in a January 2, 2009 NOPR, to reflect changes mandated by the CAEA. The revised compliance reporting form was adopted in Order No. 15233 (April 7, 2009) and became effective upon publication of the NOFR in the *D.C. Register* on April 10, 2009. The compliance reporting form was revised again in order to address the DGAA legislation, with a NOPR appearing in the *D.C. Register* on January 13, 2012. The revised compliance reporting form was adopted in Order No. 16738 (March 15, 2012) and became effective upon publication of the NOFR in the *D.C. Register* on March 23, 2012.

### ***Certification of Renewable Generators***

The RPS rules outline the process for certifying renewable generating facilities within a certain period of time. Renewable generators, including behind-the-meter ("BTM") generators, must be certified as a qualified Tier I (including solar energy systems) or Tier II resource through the completion of an application form approved by the Commission.<sup>15</sup> In situations where the applicant has obtained certification as a renewable energy resource by

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<sup>15</sup> A behind-the-meter generator is defined as a renewable on-site generator that is located behind a retail customer meter such that no utility-owned transmission or distribution facilities are used to deliver the energy from the generating unit to the on-site generator's load.

another PJM state where the Commission determines certification to be comparable to the RPS requirements in the District, the applicant may submit a “streamlined” application that requires less documentation to be filed. The Commission assigns a unique certification number to each eligible renewable generator that is approved. Renewable generators may be decertified by the Commission if they are determined to no longer be an eligible renewable resource due to a material change in the nature of the resource, or fraud. Before being decertified, a renewable generator will be given thirty (30) days’ written notice and an opportunity to show cause why it should not be decertified.

In Order No. 14809, issued May 12, 2008, the Commission directed the Renewable Energy Portfolio Standard Working Group (“Working Group”) to submit an update for the Tier I and Tier II eligibility matrices, in order to comply with the RPS rules. The matrices allow an applicant that has already been certified by another PJM state to use the streamlined process for certification, provided that the Commission determines that the certification by the other PJM state is comparable to the RPS requirements in the District. The RPS Working Group responded on October 31, 2008 that no update was required. Subsequently, the Commission issued Order No. 15192 on February 18, 2009, directing the RPS Working Group to again comply with the rules and submit an update for the Tier I and Tier II eligibility matrices within 60 days of the date of the Order. The Commission noted in that Order that since 2007, four (4) additional states that are part of the PJM Interconnection region—Illinois, Michigan, North Carolina, and Ohio—have adopted renewable energy portfolio standards and/or begun certifying renewable energy generators. In Order No. 15707 (February 25, 2010), the Commission granted the Potomac Electric Power Company (“Pepco”), filing on behalf of the RPS Working Group, a Motion for Enlargement of Time to file the annual update of the eligibility matrices by March 1, 2010. Subsequently, in Order No. 17062 (February 1, 2013), the Commission adopted the 2011 filing of the Renewable Energy Portfolio Standard Working Group’s proposed Tier I and Tier II Eligibility Matrices with certain modifications.<sup>16</sup> On January 13, 2014, in Order No. 17349, the Commission adopted the RPS Working Group’s proposed Tier I and Tier II Eligibility Matrices submitted for 2013. On January 30, 2014, the RPS Working Group’s filing indicated that there were no modifications needed to the eligibility matrices presented in the 2013 Working Group report. Thus, no Commission action was necessary as the Working Group’s 2013 eligibility matrices were adopted in Order No. 17349. Subsequently, on January 29, 2015, the RPS Working Group filed its 2015 Update to the Renewable Generator Eligibility Matrix and determined that the information submitted in the 2014 Report remains unchanged, so no Commission action was necessary.<sup>17</sup>

On October 3, 2008, the Commission published a NOPR in the *D.C. Register* that contained revisions to the RPS rules that would, among other things, allow an applicant

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<sup>16</sup> The RPS Working Group did not file a report in 2012. On January 30, 2013, the RPS Working Group submitted a request for an extension of time to file its annual report for 2013. The RPS Working Group filed its 2013 report on February 28, 2013.

<sup>17</sup> The RPS Working Group filed its report for 2016 on January 28, 2016 and the 2017 report on January 30, 2017.

seeking to certify a renewable generator for the District's RPS program to provide a self-certified Affidavit of Environmental Compliance. This Affidavit helps provide documentation that the renewable generating facility complies with all applicable state and federal environmental requirements. On January 2, 2009, the Commission issued an amended NOPR that superseded the October 3 NOPR. OPC filed comments on February 11, 2009. Subsequently, in Order No. 15233 (April 7, 2009), the Commission adopted the amendments to Chapter 29. The amendments to the RPS rules became effective upon publication of a NOFR in the *D.C. Register* on April 10, 2009. Subsequently, at the discretion of the Commission, a NOFR appeared in the *D.C. Register* on January 16, 2015 to remove the application requirement for an Affidavit of Environmental Compliance from solar energy systems that exceed 10 kW.

### ***Creation and Tracking of Renewable Energy Credits ("RECs")***

The RPS rules specify that RECs shall be created and tracked through PJM-EIS's Generation Attribute Tracking System ("GATS") beginning January 1, 2006. Through the GATS process, PJM-EIS collects generation data from facilities certified for RPS programs in various states. Upon issuance of a District-specific RPS certification number, a facility may open a GATS account for use with the District's RPS program. Facilities often are eligible for participation in several state RPS programs and, thus, will be certified with multiple states and receive multiple state certification numbers. GATS creates RECs at the end of each month. One REC represents one megawatt-hour of electricity from a renewable resource. The number of RECs created reflects the amount of electricity generation associated with renewable resources. Each REC tracked has a unique serial number that aids in ensuring against the double counting of RECs and helps distinguish between RECs that are created by a certain facility and by fuel type, in a given month.

According to the RPS rules, RECs are valid for a three-year period from the date of generation beginning January 1, 2006. A REC shall be retired after it is used to comply with any state's RPS requirement. The accumulation of retroactive RECs created before January 1, 2006 is not allowed. In Order No. 13804, the Commission noted that the intent of the REPS Act is to encourage the production and siting of renewable resources prospectively, so as to reduce the need for the use of retroactive RECs.

With respect to behind the meter ("BTM") generators, the RPS rules require an authorized representative of the renewable on-site generator to file a BTM generator report with the Commission. RECs created by BTM generators must be recorded in GATS at least once each calendar year, in order to be eligible for compliance. The BTM generator report contains, at a minimum, the following information: (a) a certification that the RECs attributable to the on-site generation have not expired, been retired, been transferred, or been redeemed; and (b) a report or statement indicating the quantity of electricity generated as determined by an engineering estimate (if appropriate) or revenue-quality meter.

To ensure that all BTM generators were in compliance with the Commission's rules, Order No. 14798 (issued April 29, 2008) directed BTM generators certified for the District's RPS program to submit a BTM generation report by May 20, 2008. In addition, as part of the

approval of 20 solar generators in Order No. 15185 (issued February 9, 2009), the Commission initially required that these generators provide BTM generation reports consistent with the RPS rules. However, upon learning that PJM-EIS makes available BTM generation information through its website, the Commission subsequently removed the reporting requirement for BTM generators when the RPS rules were amended by the NOFR that went into effect on March 23, 2012.

### ***Recovery of Fees and Costs***

The RPS rules state that the local electric distribution company may recover prudently incurred RPS compliance costs, including REC purchases and any compliance fees, through a non-bypassable surcharge on customers' bills pursuant to Commission rule 2904 and D.C. Code § 34-1435 (2014 Supp.) Pepco, as the Standard Offer Service ("SOS") Administrator, has never sought to recover RPS compliance costs for SOS through a non-bypassable surcharge on customers' bills. Instead, winning SOS suppliers bid a full requirements product that includes all costs (including RPS costs) – other than transmission and distribution costs which are tariffed costs.

Like SOS suppliers, competitive electricity suppliers simply provide generation rather than breaking out the cost of generation into line items such as RPS compliance costs. RPS compliance costs are generally imbedded in the cost of generation charged by competitive electricity suppliers. Consistent with Commission Rule 2904 and D.C. Code § 34-1435, competitive electricity providers can also seek to recover prudently incurred compliance fees through a Commission-approved non-bypassable surcharge on customers' bills. To date, no electricity supplier has ever sought or received the Commission's approval to recover the cost of compliance fees.

### **Clean and Affordable Energy Act of 2008**

On October 22, 2008, the permanent version of the CAEA became law. This legislation amended the REPS Act and the amendments are discussed briefly below. The Commission addressed these amendments, as appropriate, in a NOPR issued on April 3, 2009. After reviewing the comments to the NOPR, the Commission adopted the NOFR in Order No. 15561 (September 28, 2009). The amendments to the RPS rules became effective upon publication of the NOFR in the *D.C. Register* on October 2, 2009.

### ***Solar Energy Definition***

The RPS Rules originally defined "solar energy" to mean "radiant energy, direct, diffuse, or reflected, received from the sun at wavelengths suitable for conversion into thermal, chemical, or electrical energy". The CAEA changed the definition of "solar energy" to add the new language in bold:

"...radiant energy, direct, diffuse, or reflected, received from the sun at wavelengths suitable for conversion into thermal, chemical, or electrical energy, **that is collected, generated, or stored for use at a later time.**"

### ***Solar System Ratings***

The CAEA allowed the certification of solar thermal energy systems as follows:

“For nonresidential solar heating, cooling, or process heat property systems producing or displacing greater than 10,000 kilowatt hours per year, the solar systems shall be rated and certified by the SRCC [Solar Rating and Certification Corporation] and the energy output shall be determined by an onsite energy meter that meets performance standards established by OIML [International Organization of Legal Metrology].”

“For nonresidential solar heating, cooling, or process heat property systems producing or displacing 10,000 or less than 10,000 kilowatt hours per year, the solar systems shall be rated and certified by the SRCC and the energy output shall be determined by the SRCC OG-300 annual system performance rating protocol applicable to the property, by the SRCC OG-100 solar collector rating protocol, or by an onsite energy meter that meets performance standards established by OIML;” and

“For residential solar thermal systems, the system shall be certified by the SRCC and the energy output shall be determined by the SRCC OG-300 annual rating protocol or by an onsite energy meter that meets performance standards established by OIML.”

### ***RPS Requirements***

The CAEA amended the requirements for the RPS. In particular, beginning in 2011, the RPS requirements increased. By 2020, the CAEA requires that 20 percent of electricity supplied comes from Tier I renewable resources only and not less than 0.4 percent comes from solar energy. Previously, the RPS requirement called for 8.5 percent of electricity supplied coming from Tier I resources only by 2020 and 0.329 percent from solar energy.<sup>18</sup>

### ***Solar Requirement***

The CAEA required that:

“...an electricity supplier shall meet the solar requirement by obtaining the equivalent amount of renewable energy credits from solar energy systems interconnected to the distribution grid serving the District of Columbia. Only after an electricity supplier exhausts all opportunity to meet this requirement that the solar energy systems be connected to the grid within the District of Columbia, can that supplier obtain renewable energy credits from jurisdictions outside the District of Columbia.”

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<sup>18</sup> Previously, the RPS stated that in 2022 and later, the RPS requirement would be 11 percent from Tier I resources, 0 percent from Tier II resources, and not less than 0.386 percent from solar energy. The CAEA did not explicitly state that the RPS obligation is to continue after 2020.

### ***Compliance Fees***

The CAEA increased the compliance fees for Tier I and solar energy requirements. In particular, the Tier I fee is raised from 2.5 cents per kilowatt-hour to 5 cents per kilowatt-hour of shortfall. For solar energy resources, the compliance fee is raised from 30 cents to 50 cents in 2009 until 2018 for each kilowatt-hour of shortfall.<sup>19</sup>

### **Distributed Generation Amendment Act of 2011**

On October 20, 2011, the permanent version of the DGAA became law. The legislation amended Sections 34-1431-1439 of the Renewable Energy Portfolio Standard.<sup>20</sup> These amendments to the statute are discussed briefly below. The Commission addressed these statutory revisions, as appropriate, in a NOPR amending the RPS rules issued on January 13, 2012. No comments were received on the NOPR and the Commission adopted the proposed amendments to the RPS rules in Order No. 16738 (March 15, 2012). The amendments to the RPS rules became effective upon publication of a NOFR in the *D.C. Register* on March 23, 2012.

### ***Solar Thermal Systems***

The DGAA amended the requirements for eligible solar thermal energy systems to remove the requirement that all such systems have a certification from the Solar Rating and Certification Corporation (“SRCC”). The new language is as follows:

“For nonresidential solar heating, cooling, or process heat property systems producing or displacing greater than 10,000 kilowatt hours per year, the solar collectors used shall be SRCC OG-100 certified and the energy output shall be determined by an onsite energy meter that meets performance standards established by OIIML.”

“For nonresidential solar heating, cooling, or process heat property systems producing or displacing 10,000 or less than 10,000 kilowatt hours per year, the solar collectors used shall be SRCC OG-100 certified and the energy output shall be determined by the SRCC OG-300 annual system performance rating protocol or the solar collectors used shall be SRCC OG-100 certified and the energy output shall be determined by an onsite energy meter that meets performance standards established by OIIML.”

“For residential solar thermal systems, the systems shall be SRCC OG-300 system certified and the energy output shall be determined by the SRCC OG-300 annual rating protocol or the solar collectors used shall be SRCC OG-100 certified and the

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<sup>19</sup> In the January 2, 2009 NOPR, the solar energy compliance fee was indicated to be \$300 for the 2008 compliance year.

<sup>20</sup> D.C. Official Code §§ 34-1431 - 1439 (2010 Repl. & 2012 Supp.).



energy output shall be determined by an onsite energy meter that meets performance standards established by OIML.”

These changes also made it easier for large nonresidential solar thermal systems to participate in the RPS program as these larger systems are able to meet the requirements for the certification of solar collectors under SRCC OG-100, but not the system certification under SRCC OG-300.

### ***RPS Solar Requirements***

The DGAA amended the requirements for the RPS. In particular, beginning in 2011, the RPS solar requirements increase through 2023. By 2023, the DGAA requires 2.5 percent from solar energy resources. Previously, the RPS requirement called for 0.4 percent from solar energy resources by 2020.<sup>21</sup> In addition, the DGAA legislation restricted the location of eligible solar energy resources:

“...an electricity supplier shall meet the solar requirement by obtaining the equivalent amount of renewable energy credits from solar energy systems no larger than 5 MW [megawatts] in capacity located within the District or in locations served by a distribution feeder serving the District.”

Moreover, the DGAA included a “grandfathering” provision that exempted electricity supply contracts, signed prior to the effective date of the legislation, from the increased solar RPS requirements.

### ***Generation Certification***

The DGAA also amended the requirements for certification:

“After January 31, 2011, the Commission shall not certify any tier one renewable source solar energy system larger than 5 MW in capacity or any tier one renewable source solar energy system not located within the District or in locations served by a distribution feeder serving the District.”

“Any tier one renewable source solar energy system larger than 5 MW in capacity shall be decertified by the Commission. Any tier one renewable source solar energy system not located within the District or in locations served by a distribution feeder serving the District, first certified by the Commission between February 1, 2011, and the applicability date of the Distributed Generation Amendment Act of 2011, passed

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<sup>21</sup> The DGAA also clarifies that the RPS obligation is to continue after 2023.

on 2nd reading on July 12, 2011 (Enrolled version of Bill 19-10), shall be decertified by the Commission.”<sup>22</sup>

### ***Compliance Fees***

The DGAA altered the compliance fees for solar energy. In particular, for each kilowatt-hour (“kWh”) of shortfall from required solar energy sources, the compliance payment is 50 cents in 2011 through 2016; 35 cents in 2017; 30 cents in 2018; 20 cents in 2019 through 2020; 15 cents in 2021 through 2022; and 5 cents in 2023 and thereafter.

### **Renewable Energy Portfolio Standard Amendment Act of 2014**

On April 30, 2015, the RPS Amendment Act of 2014 became effective. The legislation primarily affected the eligibility of qualifying biomass resources. The amendments to the statute are discussed briefly below. The Commission addressed these statutory revisions, as appropriate, in an amendment to the RPS rules that became effective upon publication of a NOFR in the *D.C. Register* on April 1, 2016.

### ***RPS Compliance Requirements***

Under the DGAA, energy supply contracts entered into prior to August 1, 2011, shall not be subject to the increased solar energy requirement as required by law. However, as a result of the RPS Amendment Act, any extension or renewal of such contracts, executed on or after August 1, 2011, shall be subject to the higher solar energy requirement as required by law. This affects the ability of electricity suppliers to take advantage of the grandfather provision that was included in the DGAA.

### ***Generator Certification and Eligibility***

The RPS Amendment Act, in part, requires qualifying biomass facilities to meet a certain efficiency standard in order to be eligible as a Tier I resource. Thus, the Commission now requires every facility using qualifying biomass to generate electricity and certified as a qualifying resource by the Commission to submit annually by June 1, starting in 2016, information demonstrating each facility’s total system efficiency for the current calendar year.

### ***Definitions and Applicability***

The relevant changes (in bold) to the definitions and applicability of the RPS statutes as implemented in the RPS rules are indicated below:

**Black liquor - the spent cooking liquor from the Kraft process of paper making.**

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<sup>22</sup>

As a result of the DGAA, in Order No. 16529, issued on September 9, 2011, the Commission decertified 1,426 solar energy facilities. Thus, for the 2011 compliance year and beyond, any RECs submitted from decertified solar energy facilities will not be accepted.

**Fuel input** - the higher heating value of the input fuel type, measured in BTU/LB, based on the standardized heating type of fuel type, multiplied by the annual fuel used in as delivered tons, multiplied by 2000.

**Qualifying biomass** - a solid, non-hazardous, cellulosic waste material that is segregated from other waste materials, and is derived from any of the following forest-related resources, with the exception of old growth timber, **construction and demolition-derived wood and whole trees that are not part of a closed-loop biomass system, cleared solely for the purpose of energy production**, unsegregated solid waste, or post-consumer wastepaper

**Construction and demolition-derived wood and whole trees that are not part of a closed-loop biomass system, cleared solely for the purpose of energy production, shall be considered qualifying biomass, if a) this material was used to generate RECs and those RECs are retired for compliance purposes with respect to electricity consumed by SOS customers on or before May 31, 2015; or b) this material was used by a facility certified before April 30, 2015, the effective date of the Renewable Energy Portfolio Standard Amendment Act of 2014, to generate RECs, which were purchased by an electricity supplier pursuant to a contract executed before April 30, 2015, and those RECs are retired for compliance purposes with respect to electricity consumed by non-SOS customers on or before December 31, 2017.**

**In all other instances, the construction and demolition-derived wood and whole trees that are not part of a closed-loop biomass system, cleared solely for the purpose of energy production, shall not be considered qualifying biomass, as of April 30, 2015.**

Tier one renewable source -- one (1) or more of the following types of energy sources:

**(c) Qualifying biomass used at a generation unit that achieves a total system efficiency of at least sixty-five percent (65%) on an annual basis, can demonstrate that it achieved a total system efficiency of at least 65% on an annual basis through actual operational data after one year, and that started commercial operation after January 1, 2007;**

**The qualifications to qualifying biomass in subsection (c) shall not apply to RECs retired for compliance purposes with respect to electricity consumed by SOS customers on or before May 31, 2015; or with respect to electricity consumed by non-SOS customers on or before December 31, 2017, provided that these RECs were produced by a facility certified as a Tier I energy source before April 30, 2015 and were purchased by an electricity supplier pursuant to a contract executed before April 30, 2015. In all other instances, subsection (c) shall apply as of April 30, 2015.**

Tier two renewable source -- one (1) or more of the following types of energy sources:

**(c) Qualifying biomass used at a generation unit that started commercial operation on or before December 31, 2006; or achieves a total system efficiency of less than 65%; or uses black liquor.**

**Subsection (c) shall not apply to RECs retired for compliance purposes with respect to electricity consumed by SOS customers on or before May 31, 2015; or with respect to electricity consumed by non-SOS customers on or before December 31, 2017, provided that these RECs were produced by a facility certified as a Tier I energy source before April 30, 2015 and were purchased by an electricity supplier pursuant to a contract executed before April 30, 2015. In all other instances, subsection (c) shall apply as of April 30, 2015.**

**Total system efficiency - the sum of the net useful thermal energy output measured in BTUs divided by the total fuel input.**

**Useful thermal energy output - energy in the form of direct heat, steam, hot water, or other thermal form that is used in production and beneficial measures for heating, cooling, humidity control, process use, or other valid thermal end use energy requirements and for which fuel or electricity would otherwise be consumed. Useful thermal energy output does not include thermal energy used for the purpose of drying or refining biomass fuel.**

### **Renewable Portfolio Standard Expansion Amendment Act of 2016**

The RPS Expansion Amendment Act of 2016 became effective on October 8, 2016. The legislation, among other things, increased and extended the RPS requirement to 50.0 percent by 2032—with the solar energy requirement rising to 5.0 percent by 2032. The amendments to the statute are discussed briefly below. The Commission addressed these statutory revisions, as appropriate, in Order No. 18749 (issued April 13, 2017) and the amendment to the RPS rules will become effective upon publication of a NOFR in the *D.C. Register*.

#### ***RPS Requirements***

The RPS Expansion Amendment Act of 2016 amended the RPS and raised the requirement from 2024 through 2032. By 2023, 20.0 percent of the electricity supplied must be associated with Tier I renewable resources only and not less than 2.5 percent comes from solar energy. As a result of the 2016 Act, the RPS requirement continues to rise from 2024 till it reaches 50.0 percent by 2032, with 5.0 percent from solar energy.

Under the DGAA, and as part of meeting the solar requirement, a supplier was obligated to obtain SRECs from solar energy system no larger than 5 MW in capacity located within the District or in locations served by a distribution feeder serving the District. However, SRECs from solar energy systems larger than 5 MW in capacity located on property owned by the District, or by an agency or independent authority of the District, may

be used to meet the solar requirement as well. The RPS Expansion Amendment Act of 2016 increased the 5 MW amount referenced earlier to 15 MW.

### ***Compliance Fees***

The RPS Expansion Amendment Act of 2016 altered the compliance fees for solar energy. Under the DGAA, the solar energy compliance payment was set to decrease from 50 cents per kWh in 2016 to 35 cents in 2017; then 30 cents in 2018; then 20 cents in 2019 through 2020; then 15 cents in 2021 through 2022; until reaching 5 cents in 2023 and thereafter. As a result of extending the RPS requirement to 2032 and increasing the solar energy requirement to 5.0 percent by 2032, the solar energy compliance payment is now set at 50 cents from 2016 through 2023; 40 cents from 2024 through 2028; 30 cents from 2029 through 2032; and 5 cents in 2033 and thereafter.

### ***Definitions and Applicability***

The Act also added “raw or treated waste water used as a heat source or sink for a heating or cooling system” to the definition of a Tier I renewable resource.

## **III. RPS Compliance Reports for 2016**

Pursuant to the Commission’s RPS rules, active electricity suppliers and the default supplier with retail sales in 2016 are required to submit a compliance report by April 1, 2017 for that calendar year.<sup>23</sup> A total of thirty-six (36) suppliers, including Agera Energy; Ambit Energy; AEP Energy; Champion Energy Services; Calpine Energy Solutions; CleanChoice Energy; Clearview Energy; Consolidated Edison Solutions; Constellation NewEnergy; Constellation Energy Services; Devonshire Energy; DC Gas and Electric; Direct Energy Business; Direct Energy Business Marketing; Direct Energy Services; Eligo Energy; Energy.me; ENGIE Resources; Horizon Power and Light; IDT Energy; Liberty Power; Major Energy Electric Services; MidAmerican Energy; NextEra Energy Services; Potomac Electric Power Company (“Pepco”); Public Power; Reliant Energy Northeast; Renaissance Power and Gas; Source Power and Gas; Starion Energy; Stream Energy; Talen Energy Marketing; UGI Energy Services; Viridian Energy; WGL Energy Services; and XOOM Energy.<sup>24</sup> Suppliers met the RPS requirements through acquiring RECs or making a compliance payment.

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<sup>23</sup> Since April 1 fell on a Saturday, the reports were due Monday, April 3, 2017.

<sup>24</sup> As the provider of Standard Offer Service, Pepco compiles a report based on the compliance of its wholesale electricity suppliers.

### *Renewable Energy Credits (“RECs”) and Compliance Payments*

All of the electricity suppliers did not have to pay a compliance fee in order to meet the Tier I or Tier II requirements in 2016.<sup>25</sup> In general, in order to meet the solar requirement, the statute provides that RECs must be generated by solar energy facilities that are located within the District of Columbia or in locations served by a distribution feeder serving the District. However, solar energy systems that were certified by the Commission prior to February 1, 2011, may also be used to meet the solar requirement. These latter solar energy systems are referred to as “grandfathered” facilities.

The compliance payments have increased substantially in recent years. Based on the available information, the total amount of money raised from compliance payments was \$15,230,000 in 2016, down from the \$19,910,000 in 2015.<sup>26</sup> The decrease in the compliance fees, compared to 2015, generally reflects the increase in use of solar RECs to meet the RPS requirements.<sup>27</sup> Electricity suppliers retired 38,167 solar RECs in 2015, but the amount increased by roughly 63 percent in 2016, with 62,173 solar RECs retired.<sup>28</sup> The total compliance payments submitted in various reporting years are provided in the table below:<sup>29</sup>

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<sup>25</sup> For 2016, the Tier I requirement was 11.5 percent, the Tier II requirement was 2.0 percent, and the solar requirement was 0.825 percent. For 2017, the Tier I requirement rises to 13.5 percent, the Tier II requirement declines to 1.5 percent, and the solar requirement increases to 0.980 percent.

<sup>26</sup> The compliance payments are sent directly to DOEE and the funds are deposited into the Renewable Energy Development Fund.

<sup>27</sup> While the solar carve out percentage requirement increases over time, the price of the Alternative Compliance Payment (“ACP”) for the solar requirement—currently \$500 per solar REC shortfall—will not decline till after 2023. In 2024 through 2028 the ACP is set at \$400 per solar REC shortfall and in 2029 through 2032 the ACP will drop to \$300 per solar REC shortfall. After 2032 the ACP will go to \$50 per solar REC shortfall. Since the price of the ACP acts as a cap on the solar REC price, the revenue stream from this source will decrease over time.

<sup>28</sup> The solar requirement increased from 0.700 percent in 2015 to 0.825 percent in 2016. Reported retail electricity sales in the District only increased by 0.64 percent from 2015—up to nearly 11.3 million megawatt-hours in 2016.

<sup>29</sup> In 2007 and 2008, the compliance payments generally resulted from electricity suppliers paying the solar compliance fee to meet the solar requirement. In 2009, the increase in the compliance payment from the previous year was due, in part, to the increase in the solar compliance fee from \$300 to \$500 per REC—as a result of the CAEA. In 2010, as a result of the substantial increase in approved solar energy systems, electricity suppliers were generally able to acquire a substantial number of solar RECs instead of paying the compliance fee. In 2011, the jump in the compliance payment was due to one electricity supplier failing to obtain solar RECs and, thus, having to pay the compliance fee. This particular supplier accounted for the majority of the compliance fees—\$225,500 out of a total of \$229,500. In 2012, suppliers were largely able to meet the RPS through REC purchases and were subject to only \$4,900 in compliance fees.

### Compliance Payments

	Total
2007	\$199,490
2008	\$399,320
2009	\$429,320
2010	\$55,850
2011	\$229,500
2012	\$4,900
2013	\$699,140
2014	\$6,308,710
2015	\$19,910,000
2016	\$15,230,000

Some suppliers used Tier I RECs to meet their Tier II requirement based on § 34-1433(a)(2) of the D.C. Official Code, which indicates that energy from a Tier I resource may be applied to the percentage RPS requirements for either Tier I or Tier II renewable sources.<sup>30</sup> Wind resources accounted for the largest share—nearly 34 percent—of Tier I and solar RECs retired for compliance purposes. The next highest share of Tier I and solar RECs was attributed to wood waste resources—about 31 percent.<sup>31</sup> Methane from landfill gas and black liquor each accounted for roughly 14 percent of the Tier I and solar RECs. In addition, as a result of the *Fiscal Year 2015 Budget Support Act of 2014*, solar facilities located in PJM or in a state adjoining PJM may be certified by the Commission and their RECS may be used by electricity suppliers to meet the Tier I renewable resource requirement that falls outside of the DC-based solar requirement. The non-solar Tier I resources accounted for about 4 percent of the Tier I resources. Solar energy resources able to meet the solar carve-out amounted to nearly 5 percent of Tier I and solar RECs. Tier II RECs were from hydroelectric facilities, black liquor, and wood waste facilities, as municipal solid waste (“MSW”) is no longer eligible for compliance purposes.<sup>32</sup> A breakdown of the number of RECs submitted in 2016 by fuel type is provided in the table below:

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<sup>30</sup> In particular, only four (4) of the suppliers used Tier I RECs to meet the Tier II requirement, with two (2) out of the 4 suppliers using only Tier I RECs.

<sup>31</sup> The RPS Amendment Act of 2014 changed the definition of qualifying biomass that resulted in moving black liquor and wood waste to Tier II. However, the legislation grandfathered RECs purchased by an electricity supplier pursuant to a contract executed prior to April 30, 2015, the effective date of the Act.

<sup>32</sup> Order No. 17350 (issued January 13, 2014) decertified the two municipal solid waste facilities previously approved for the RPS and noted that the MSW RECs from these facilities were no longer eligible for RPS compliance purposes in 2013 and going forward.

### Renewable Energy Credits Submitted for 2016 Compliance

	No. of RECs	Share of Tier
<b>Tier I Resource</b>		
Black Liquor	183,749	13.6%
Methane from Landfill Gas	189,345	14.0%
Wind	451,607	33.5%
Wood Waste	414,275	30.7%
Non-Solar Tier I (out-of-state solar)	47,400	3.5%
Solar Carve-Out	62,173	4.6%
<b>Total Tier I and Solar Carve-Out</b>	<b>1,348,549</b>	<b>100.0%</b>
<b>Tier II Resource</b>		
Hydroelectric	205,670	92.0%
Black Liquor	4,867	2.2%
Wood Waste	12,935	5.8%
Municipal Solid Waste	-	0.0%
<b>Total Tier II</b>	<b>223,472</b>	<b>100.0%</b>
<b>Total Tier I, Solar Carve-Out, and Tier II</b>	<b>1,572,021</b>	

Suppliers submitted RECs generated from 2013 through 2016. About 1.4 percent of the RECs used for compliance were generated in 2013, while roughly 31.0 percent of the RECs were generated in 2014, with 28.6 percent generated in 2015, and nearly 39.0 percent generated in 2016. Section 2903.2 of the RPS Rules indicates that RECs shall be valid for a three-year period from the date of generation, beginning January 1, 2006, except where precluded by statute.

In 2016, electricity suppliers provided the REC prices for all of their resources. The range and weighted average of the reported REC prices for 2008 through 2016, by fuel type, is provided in the table below.<sup>33</sup>

**Average Price of Reported Compliance RECs**

	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Tier I Resource</b>									
Black Liquor	\$0.64	\$1.30	\$0.90	\$1.94	\$2.74	\$2.78	\$1.81	\$1.20	\$1.09
Methane from Landfill Gas	\$0.84	\$0.82	\$1.51	\$1.42	\$2.22	\$2.51	\$2.46	\$2.84	\$2.44
Wind	\$1.24	\$0.47	NA	\$2.67	\$2.37	\$2.38	\$2.55	\$2.15	\$1.87
Wood Waste	\$0.74	\$0.60	\$0.67	\$1.58	\$2.77	\$2.40	\$2.07	\$1.62	\$1.26
Non-solar Tier I (out-of-state solar)	NA	NA	NA	NA	NA	NA	NA	\$1.00	\$2.18
Solar Carve-Out	NA	\$425.90	\$351.80	\$300.16	\$327.59	\$364.75	\$416.50	\$435.12	\$477.18
<b>Tier II Resource</b>									
Hydroelectric	\$0.55	\$0.59	\$0.41	\$0.50	\$0.60	\$1.12	\$1.13	\$0.52	\$0.49
Black Liquor	NA	NA	NA	NA	NA	NA	NA	NA	\$2.20
Wood Waste	NA	NA	NA	NA	NA	NA	NA	NA	\$1.75
Municipal Solid Waste	\$0.71	\$0.66	\$0.78	\$0.43	\$0.60	NA	NA	NA	NA

<sup>33</sup> A REC represents one megawatt-hour of electricity attributable to a particular renewable resource. Prior to 2014, not all of the electricity suppliers fully reported their REC prices. Recent solar REC ("SREC") prices from the Flett Exchange are trading around \$470 per REC.



As seen in the above table, non-solar REC prices have been relatively stable in recent years, despite the rise in RPS requirements over time. However, solar REC prices for the District have trended upward since 2011 as the impact of the DGAA has made the District's solar REC prices the highest in the region.

Taken together, the estimated total cost of compliance—including the cost of RECs and compliance fees—amounted to \$47.2 million for the 2016 RPS compliance, up from \$38.5 million for the 2015 RPS compliance. The increase in the solar RPS requirement over time will continue to place upward pressure on the cost of compliance.

#### **IV. The Availability of Renewable Resources**

This section discusses the availability of Tier I renewable sources, as required in the REPS Act. The issue of available resources is affected by geographic restrictions in the RPS. The REPS Act indicated that a:

“Renewable energy credit” or “credit” means a credit representing one megawatt-hour of electricity consumed within the PJM Interconnection Region that is derived from a Tier I renewable source or a Tier II renewable source that is located:

1. In the PJM Interconnection region or in a state that is adjacent to the PJM Interconnection Region; or
2. Outside the area described in subparagraph (1) of this paragraph but in a control area that is adjacent to the PJM Interconnection region, if the electricity is delivered into the PJM Interconnection Region.

The REPS Act did not provide a definition for adjacent states or an adjacent control area. In its third report in 2005, the RPS Working Group was not able to reach a consensus on the definition of “adjacent” states and, thus, presented two different interpretations. Ultimately, the Commission adopted the broader definition of “adjacent” and determined that states “adjacent” to the PJM Interconnection Region should help lessen the cost that ratepayers will have to pay for the renewable portion of their fuel mix.<sup>34</sup> In particular, the following states are currently deemed adjacent to PJM: Alabama, Arkansas, Georgia, Iowa, Mississippi, Missouri, New York, South Carolina, and Wisconsin. Thus, from the outset, the District's RPS program allowed a relatively broad geographic participation.

Subsequently, the *Fiscal Year 2011 Budget Support Act of 2010* amended the definition of a REC to read as follows:

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<sup>34</sup> The RPS rules indicate that states within the PJM Interconnection Region are currently defined to include: Delaware, the District of Columbia, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia.

“Renewable energy credit” or “REC” means a credit representing one megawatt-hour of energy produced by a tier one or tier two renewable source located within the PJM Interconnection region or within a state that is adjacent to the PJM Interconnection region.<sup>35</sup>

The change in the definition of a REC actually made it easier for the Commission to approve renewable energy systems located in states adjacent to the PJM Interconnection Region. That is, the previous definition’s reference to “electricity consumed within the PJM Interconnection Region” suggested that at least the potential to deliver electricity was required in order for a renewable energy system to be approved for the District’s RPS program. As a result, prior to the change in the REC definition, the Commission denied several applications from solar generator systems located in New York. In its decisions, the Commission generally indicated that the applicant did not provide sufficient information to demonstrate or document the amount of energy that can be delivered into the PJM Interconnection Region for consumption.<sup>36</sup> However, the new definition refers only to where the energy is produced, not consumed. As a result of the revised statutory REC definition, the Commission began approving solar generator applications from states such as New York and Wisconsin in 2010; however, with the passage of the DGAA, out-of-state solar energy systems are now generally not eligible to be certified by the Commission for generation of SRECs for compliance with the solar portion of the RPS. However, pursuant to the clarification language included by the Council in the *Fiscal Year 2015 Budget Support Act of 2014*, out-of-state solar facilities may be certified for use in complying with the non-solar portion of the Tier I RPS requirement.

The table below provides a measure of some of the renewable resources available in the PJM region for 2016. The following information provides a perspective on the renewable resources in the PJM region associated with the generation of electricity. Based on the table below, the overall renewable resources in the PJM Interconnection Region represents less than five percent of the available fuels. Wind power accounts for the largest share among renewable resources, about two percent. Among other renewable sources, hydroelectric power represents the second largest resource—around one percent—followed by municipal solid waste—less than one percent. Methane gas, biomass-related fuels, and solar photovoltaics are approximately 0.3, 0.2, and 0.1 percent, respectively.<sup>37</sup>

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<sup>35</sup> D.C. Official Code § 34-1431 (10) (2012 Supp.).

<sup>36</sup> See Order No. 15699 (February 23, 2010), Order No. 15775 (April 20, 2010), and Order No. 15812 (May 18, 2010).

<sup>37</sup> Coal mine methane gas is not generally eligible under most RPS policies.

**PJM System Fuel Mix  
2016**

<b>Fuel</b>	<b>Share</b>
Coal	34.26%
Nuclear	34.70%
Natural Gas	26.34%
Oil	0.20%
Hydroelectric	1.04%
Other Renewable	3.42%
Captured Methane Gas (Landfill or Coal Mine)	0.32%
Geothermal	0.00%
Solar PV	0.13%
Municipal Solid Waste	0.52%
Wind	2.23%
Wood, other biomass	0.23%
<b>Total Renewable Resources</b>	4.46%
<b>Total</b>	100.00%

Source: PJM-EIS GATS

Through the Reliable Energy Trust Fund, DOEE previously administered the Renewable Energy Demonstration Project (“REDP”), approved by the Commission in Order No. 12778 (July 9, 2003). The objective of the REDP was to increase the awareness and use of renewable energy grid-connected technologies by District ratepayers. Through the REDP, DOEE awarded grants to help finance renewable energy projects in the District. The CAEA replaced the REDP with the Renewable Energy Incentive Program (“REIP”).

As of April 7, 2017, there are 5,342 renewable generators eligible for the District’s RPS program. Of these facilities, 5,294 (roughly 99 percent) use Tier I resources (including biomass, methane from landfill gas or waste water treatment, solar, and wind) and 48 (roughly one percent) use Tier II resources (including hydroelectric and biomass).<sup>38</sup> Since these renewable generators may be certified in other states that have a RPS as well, the REC’s associated with the generating capacity are not necessarily fully available to meet the District’s RPS requirement. The table below provides a breakdown of the renewable generators by fuel type and location:<sup>39</sup>

<sup>38</sup> Nearly all—except one facility in Alabama—of the qualifying biomass resources are now Tier II resources.

<sup>39</sup> The Commission has approved DC Water’s 10 MW generating facility for the RPS program. This facility uses methane from wastewater treatment.

Number of Renewable Generators Certified for the District's RPS Program by Fuel Type and Location  
(as of April 7, 2017)

	Biomass	Hydroelectric	Methane from landfill or waste water treatment	Solar PV	Solar PV (NSTI)	Solar Thermal	Wind	Total
District of Columbia			1	2,769		110		2,880
Alabama	2							2
Delaware			2	149		1		152
Georgia	3				1			4
Iowa					1		2	3
Illinois		2	22	7			14	45
Indiana			15	42			10	67
Kentucky	2		6	55	1	1		65
Maryland	1	2		227	2	10		242
Michigan	1		3	6				10
Missouri			1		6		5	12
North Carolina		4	1	78		78		161
New Jersey				8				8
New York		1		28		1		30
Ohio	2	1	2	128	1	4	3	141
Pennsylvania		4	8	912		16	6	946
Tennessee	1							1
Virginia	6	9	13	373		120		521
Wisconsin	1	1		11				13
West Virginia		6		24		6	3	39
Total	19	30	74	4,817	12	347	43	5,342

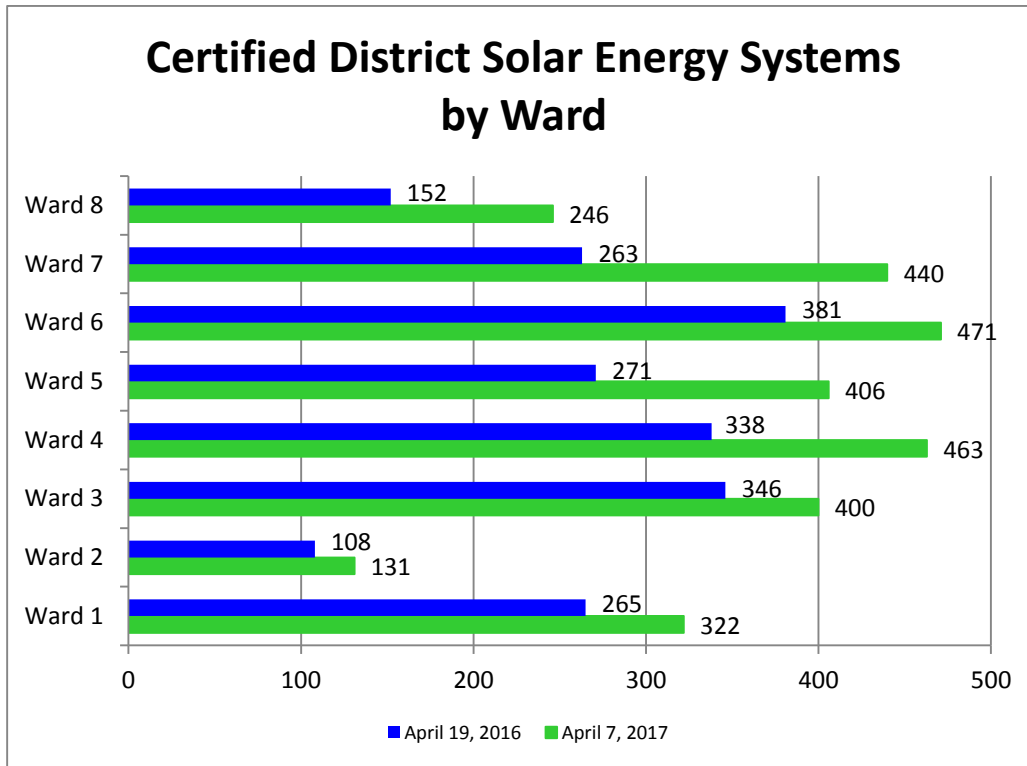
Note: Biomass includes black liquor and wood/wood waste.

The District has also made significant progress in certifying solar energy facilities for the RPS program. Currently, as of April 7, 2017, 5,164 solar energy systems—including solar photovoltaic and solar thermal—are eligible to participate in the District's RPS program. Within the District, there are currently 2,769 approved solar photovoltaic ("PV") systems and 110 solar thermal systems.<sup>40</sup> Outside of the District, there are six states with more than 100 eligible solar energy systems including Pennsylvania (928), Virginia (493), Maryland (237), North Carolina (156), Delaware (150), and Ohio (132). These six (6) states account for roughly 92 percent of the non-DC solar energy systems approved for the District's RPS program.

Solar energy systems can be found in all eight wards of the District. To date in 2017, the number of RPS-eligible solar energy systems has increased in all wards. The figure below shows where the systems certified for the District's RPS program are located.<sup>41</sup>

<sup>40</sup> The Commission provides monthly updates on solar energy system certifications and solar REC pricing, available at the following link: <http://www.dcpsc.org/Electric/Renewable.asp>

<sup>41</sup> This includes 6 federal facilities with a solar PV capacity of about 1.2 MW and 28 D.C. government facilities with a solar PV capacity of about 5.9 MW.



The total capacity associated for all solar energy systems is about 54.6 megawatts (“MW”), with about 33.8 MW located in the District as of April 7, 2017, compared to 19.2 MW located in the District as of April 19, 2016.<sup>42</sup> However, the current solar capacity is less than the 70.0 MW of estimated solar capacity necessary to meet the solar RPS requirement of 0.825 percent in 2016 and less than the 83.2 MW of estimated solar capacity necessary to meet the 0.980 percent in 2017. As noted above, many of these solar energy systems are certified in more than one jurisdiction, so it is difficult to determine with precision the resources that are fully available to meet the District’s RPS requirement. However, the District’s solar REC prices are the highest in the region, so holders of solar RECs have a significant financial incentive to sell them to suppliers who need to satisfy the solar requirement in the District. Specifically, the price of the District’s solar RECs is very close to the \$500 compliance fee. The table below shows the capacity of all of the District’s certified renewable generators, by fuel type and location, as of April 7, 2017:

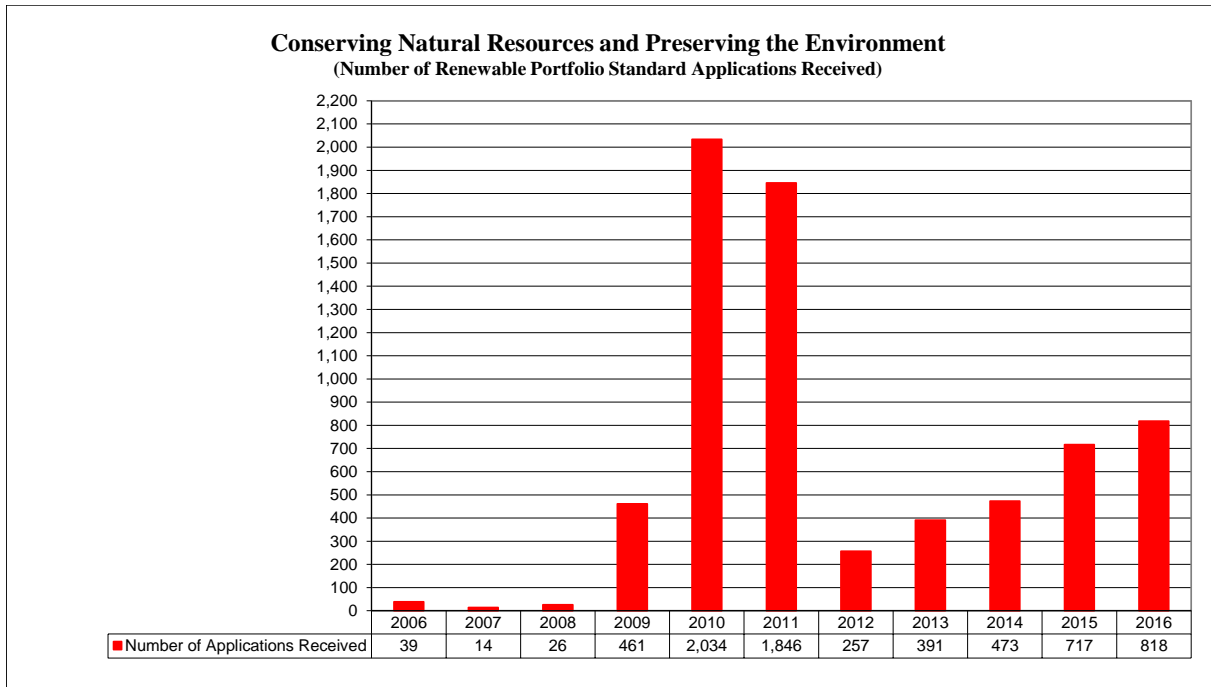
<sup>42</sup> Within the District, there are 59 certified solar photovoltaic systems with a reported capacity of at least 100 kW. The largest system is at a federal facility that has a reported capacity of 611 kW.

Capacity (MW) of Renewable Generators Certified for the District's RPS Program by Fuel Type and Location  
(as of April 7, 2017)

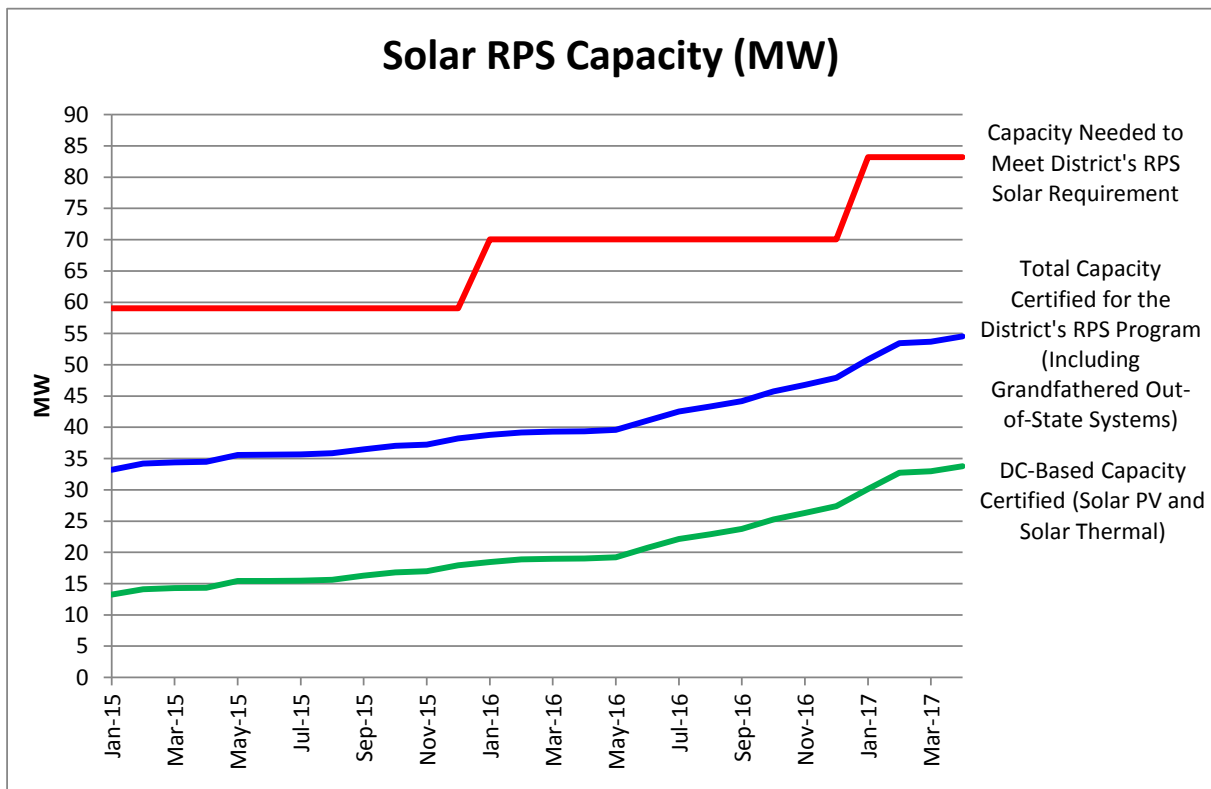
	Biomass	Hydroelectric	Methane from landfill or waste water treatment	Solar PV	Solar PV (NSTI)	Solar Thermal	Wind	Total
District of Columbia			10.0	28.6		5.2		43.8
Alabama	137.3							137.3
Delaware			7.4	1.2		0.0		8.6
Georgia	284.4				38.7			323.1
Iowa					2.0		201.7	203.6
Illinois		17.8	114.4	0.5			1,614.2	1,746.8
Indiana			47.2	0.2			1,482.4	1,529.8
Kentucky	148.0		18.4	0.2	14.1	0.0		180.6
Maryland	65.0	494.0		1.7	0.0	0.0		560.7
Michigan	103.0		33.0	0.0				136.0
Missouri			5.6		19.3		305.0	329.9
North Carolina		215.2	5.0	1.7		0.2		222.2
New Jersey				0.2				0.2
New York		34.8		0.4		0.0		35.2
Ohio	109.3	47.4	8.0	1.2	0.0	0.0	412.0	577.9
Pennsylvania		467.5	72.2	10.3		0.0	371.0	921.0
Tennessee	50.0							50.0
Virginia	398.7	147.2	94.1	2.2		0.4		642.6
Wisconsin	44.6	9.1		0.1				53.8
West Virginia		194.6		0.1		0.0	462.1	656.9
Total	1,340.3	1,627.6	415.3	48.7	74.1	5.9	4,848.3	8,360.2

Note: Biomass includes black liquor and wood/wood waste.

In 2016, the Commission received 818 renewable generator applications—primarily involving the certification of solar generators for the RPS program. As of April 7, 2017, the Commission has received 174 applications. The Commission continues to approve solar energy applications based on the existing laws and regulations. The chart below shows how the number of applications has changed over the years:



The chart below provides a comparison of the estimated MW of solar capacity needed to meet the increased solar requirement under the DGAA. As of April 7, 2017, the total capacity associated with the solar energy systems certified for the District's RPS program is about 54.7 MW, of which about 33.8 MW is located in the District.



In terms of the availability of other resources, as part of its merger commitments, Exelon shall, by December 31, 2018, develop or assist in the development of 7 MW of solar generation in the District outside of Blue Plains. In addition, Pepco shall support and expedite the interconnection for 5 MW of ground-mounted solar generation at Blue Plains that is developed, constructed and installed by a vendor selected by DC Water. Exelon also shall provide \$5 million of capital to creditworthy governmental entities at market rates for the development of renewable energy projects in the District of Columbia. Moreover, Exelon or its non-utility subsidiaries will, within five (5) years after the Merger close, conduct one or more requests for proposals (“RFP”) or other competitive process to solicit offers to purchase a total of 100 MW of renewable energy from one or more new or existing wind-generation facilities located within the PJM territory with an anticipated product delivery date beginning approximately three years following the applicable RFP date. There were also commitments relating to the enhancement of the interconnection process and support for customer-owned behind-the-meter distributed generation.

Lastly, the recent Value of Solar Study for the District of Columbia, released in April 2017 by the Office of the People’s Counsel, mentions five primary barriers to the development of distributed solar in the District. These barriers include:

1. Access to suitable space, including real estate constraints such as the high proportion of renters; historic preservation guidelines that may restrict roof space; and the lack of open space for ground-mounted arrays.
2. Upfront costs and customer financing.
3. Interconnection processing time.
4. Program funding uncertainty, including variation in solar REC prices and funding for program incentives.
5. Ineffective price signals to compensate owners of solar generating systems.

The OPC Study provides recommendations to help address the challenges for stimulating distributed solar growth in the District.

## **V. Recent Activity and Next Steps**

The Commission addressed various changes to the RPS Rules included in the RPS Expansion Amendment Act of 2016 in Order No. 18749 (released April 13, 2017). The rules will become effective upon publication of the NOFR that in the *D.C. Register*. In addition, the Commission is also addressing changes to its interconnection rules in a NOPR published on February 17, 2017 in the *D.C. Register*, as the RPS Expansion Amendment Act of 2016 increased the capacity of solar facilities qualified for SRECs in the District to 15 MW.

The Commission also continued to implement community net metering in the District. On December 13, 2013, the *Community Renewable Energy Amendment Act of 2013* (D.C. Law 20-0047 or “CREA”), which was enacted by the Council of the District of Columbia, became law. Among other things, CREA allows for the creation of community renewable energy facilities (“CREFs”) of up to 5 MW wherein two or more “subscribers” can share the electricity produced by a single CREF. On April 23, 2015, the Commission voted to adopt



the final rules implementing CREA in Order Nos. 17862 and 17863. The rules became final upon publication of the NOFR in the *D.C. Register* on May 8, 2015. On December 11, 2015, the Commission issued Order No. 18050, approving the CREF Documents submitted by Pepco and directing Pepco to make certain amendments to the CREF Documents, including the CREF Contract. On January 11, 2016, Pepco filed its Application for Reconsideration of Order No. 18050, and OPC filed its response on January 19, 2016. In Order No. 18135 (issued March 3, 2016), the Commission granted the motion of Pepco to reconsider the Commission's decision in Order No. 18050 and Pepco was directed to modify the CREF Contract consistent with this Order. With that Order, the Commission completed its legislatively assigned tasks for the implementation of CREA.

Subsequently, on August 18, 2016, the Council enacted the Community Renewable Energy Credit Rate Clarification Expansion Amendment Act of 2016. On October 8, 2016, the Act became effective. The Act amended Section 118 of the CREA and the definition for the term "CREF Credit Rate."<sup>43</sup> On October 28, 2016, the Commission published a NOPR amending Chapter 9 and updating the definition for CREF Credit Rate to comport with the Act. The change to the CREF Credit Rate was finalized on December 30, 2016, when a NOFR appeared in the *D.C. Register*.

In addition, pursuant to the requirements of the RPS Expansion Amendment Act of 2016, the Commission submitted its report to the D.C. Council in fulfillment of Section 2b of the Act (D.C. Code § 34-1432(f)) which provides that:

No later than March 1, 2017, the Commission shall provide a report to the Council that includes:

1. An estimate of the amount of solar energy generated annually by solar energy systems in the District that could qualify to be used to meet the annual solar energy requirement, but for which renewable energy credits cannot be purchased by electricity suppliers to meet the solar energy requirement; and
2. A recommendation for how the Commission could adjust the annual solar requirement to account for the amount of solar generation identified in paragraph (1) of this subsection.

The Commission made use of its database of certified renewable facilities and Pepco's database of facilities that have been approved for interconnection with the distribution system. By comparing the solar photovoltaic ("PV") systems that have been interconnected to Pepco's distribution system with the solar PV application that have been submitted to the Commission

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<sup>43</sup> As amended, the "CREF Credit Rate" means a credit rate applied to subscribers of community renewable energy facilities, which shall be equal to: (a) For residential subscribers, the full retail rate, which includes generation, transmission, and distribution charges for the standard offer service General Service Low Voltage Non-Demand Customer class or its successor, as determined by the Commission, based upon Section 118 of the CREA; and (b) For commercial subscribers, the standard offer service rate - including generation and transmission charges for the General Service Low Voltage Non-Demand Customer class or its successor, as determined by the Commission, based upon Section 118 of the CREA.

for certification and approved for the District's RPS program, any difference in capacity can be identified. In addition, the Commission considered information obtained from the Renewable Electric Plan Information System ("REPIs") database developed by the National Renewable Energy Laboratory ("NREL"). Based on this available information, the report indicated that an estimated 5,046 MWH (or 5,046 solar RECs) would not be available to suppliers to meet the District's solar energy RPS requirement at this time. Accounting for these unavailable solar RECs would lower the 2016 RPS requirement, for example, from 0.825% to 0.779% (an adjustment of 0.046%).

Going forward, the Commission will continue to certify generating facilities and update information on approved generators on the Commission's website. Through its website, the Commission is making forms and the rules available, to help facilitate the certification and compliance process. In addition, the Commission will continue to maintain a list of approved renewable generating facilities on the Commission's website. Moreover, the Commission has made available on its website fact sheets that explain net energy metering, which allows customer-owned generators (including renewable energy systems) to generate and sell excess electricity back to the grid, and the process for certifying a renewable energy system for the District's RPS program. The Commission's website also provides monthly updates on solar energy system certifications and solar REC pricing. Additional program information will also be made available as deemed appropriate. The Commission monitors the interconnections process to ensure that applications for the interconnection of renewable generating facilities in the District are made on a timely basis. Finally, we will continue to monitor the development of relevant Council legislation regarding RPS and goals for renewables in the District. As needed, the Commission will continue to adopt regulations or orders governing the implementation of the RPS.

## **Attachment 1**

### **Renewable Portfolio Standards in Other States**

## *Renewable Portfolio Standards in Other States<sup>1</sup>*

According to the Database of State Incentives for Renewable Energy (“DSIRE”) and National Conference of State Legislatures (“NCSL”), 29 states and the District of Columbia have adopted RPS policies or mandates. In addition, nine states have renewable energy goals (see Figure 1). The 29 states include Arizona, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Vermont, Washington, and Wisconsin. In 2015, Hawaii substantially increased its renewable energy requirements, while Vermont switched from a non-binding goal to an RPS mandate. On March 11, 2016, Oregon’s Governor signed legislation that will effectively eliminate coal from the electricity supply of the state’s major utilities by 2030. The law also increases the Oregon RPS from a pre-existing 25 percent by 2025 to 50 percent by 2040, with interim goals along the way, starting in 2025 with 27 percent. On October 8, 2016, the Renewable Portfolio Standard Expansion Amendment Act of 2016 became effective and increased the District of Columbia’s RPS requirement to 50 percent by 2032. The District of Columbia joins California, Hawaii, New York, Oregon, and Vermont as states with RPS requirements of 50 percent or more.

In February 2015, West Virginia repealed its RPS standard, which was enacted in 2009. West Virginia had adopted an alternative and renewable energy portfolio standard that was unique to the state. Specifically, West Virginia’s standard did not appear to require a minimum contribution from renewable energy resources, and it is feasible that the standard could have been met using only alternative resources and no renewable resources (as defined in the law). Thus, the renewable portion of the standard functioned more like a non-binding goal. Another distinguishing characteristic of West Virginia’s standard was the use of the term “alternative energy resources,” which was defined more broadly than definitions of alternative energy in other states. In particular, West Virginia’s “alternative energy resources” included advanced coal technology, coal bed methane, natural gas, fuel produced by a coal gasification or liquefaction facility, synthetic gas, integrated gasification combined cycle technologies, waste coal, tire-derived fuel, pumped storage hydroelectric projects, and recycled energy.<sup>2</sup>

In May 2015, Kansas also took a major step when it switched from an RPS mandate to a non-binding goal. In June 2015, the Hawaii legislature updated legislation increasing the state’s mandate to 100 percent in 2045—with interim requirements of 30 percent by 2020, 40

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<sup>1</sup> This section draws from material available at [www.dsireusa.org](http://www.dsireusa.org) (Database of State Incentives for Renewable Energy), Clean Energy States Alliance, Lawrence Berkeley National Laboratory, and the National Conference of State Legislatures.

<sup>2</sup> Recycled energy means useful thermal, mechanical or electrical energy produced from: (i) exhaust heat from any commercial or industrial process; (ii) waste gas, waste fuel or other forms of energy that would otherwise be flared, incinerated, disposed of or vented; and (iii) electricity or equivalent mechanical energy extracted from a pressure drop in any gas, excluding any pressure drop to a condenser that subsequently vents the resulting heat.

percent by 2030, and 70 percent by 2040. This makes Hawaii the first state with a 100 percent RPS requirement and is now considered a test bed for understanding how to safely and reliably integrate very high proportions of intermittent and distributed generation resources, such as solar, into the distribution grid. Vermont also passed a bill in June 2015, establishing an RPS requirement of 75 percent by 2032—with an interim requirement of 55 percent by 2017 and then increasing by an additional four (4) percent every three years until reaching the final requirement by 2032.

The 29 states include Pennsylvania’s Alternative Energy Portfolio Standard, which allows non-renewable resources that the state considers to be “environmentally beneficial,” such as waste coal.<sup>3</sup> Ohio also adopted an alternative energy—renewable and advanced—resource standard with an overall target of 25 percent by 2025.<sup>4</sup> However, the state has renewable resource benchmarks that begin in 2009 and increase annually towards an eventual target of 12.5% of retail electricity sales by 2024 and thereafter.<sup>5</sup>

In addition, nine states—Alaska, Indiana, Kansas, North Dakota, Oklahoma, South Carolina, South Dakota, Utah, and Virginia—have non-binding renewable energy goals. South Carolina was the latest state to establish a goal in 2014.<sup>6</sup> Utah also enacted legislation in March 2008 that contains some provisions similar to those found in renewable portfolio standards adopted by other states. However, certain provisions in the legislation may be more accurately described as a renewable portfolio goal.<sup>7</sup> Specifically, the legislation requires that utilities only need to pursue renewable energy to the extent that it is “cost-effective.” The guidelines for determining the cost-effectiveness of acquiring an energy source include an assessment of whether acquisition of the resource will result in the delivery of electricity at

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<sup>3</sup> The 8% in Figure 1 applies only to the Tier I resources under Pennsylvania’s Alternative Energy Portfolio Standard. However, eligible Tier I resources also includes coal mine methane gas, which is not eligible under most RPS policies. Pennsylvania also has a Tier II that includes some nonrenewable resources such as waste coal and also takes into account integrated combined coal gasification technology. The Tier II requirement is 10%, yielding an 18% total from alternative sources.

<sup>4</sup> Eligible renewable resources are defined to include the following technologies: solar photovoltaics (PV), solar thermal technologies used to produce electricity, wind, geothermal, biomass, biologically derived methane gas, landfill gas, certain non-treated waste biomass products, solid waste (as long as the process to convert it to electricity does not include combustion), fuel cells that generate electricity, certain storage facilities, and qualified hydroelectric facilities. Generally, advanced energy resources are defined as any process or technology that increases the generation output of an electric generating facility without additional carbon dioxide emissions. The definition of advanced energy resources explicitly includes clean coal, generation III advanced nuclear power, distributed combined heat and power (CHP), fuel cells that generate electricity, certain solid waste conversion technologies, and demand side management or energy efficiency improvements.

<sup>5</sup> Only the renewable resource portion of Ohio’s requirement is reflected in Figure 1 below.

<sup>6</sup> In the 2009-2010 legislative session, the Alaska legislature enacted House Bill 306 with the goal that “the state receive 50 percent of its electrical generation from renewable energy sources by 2025.” However, this language does not appear in codified statutes.

<sup>7</sup> For purposes of preparing Figure 1 below, Utah’s RPS program is considered to be a voluntary goal.

the lowest reasonable cost, as well as an assessment of long-term and short-term impacts, risks, reliability, financial impacts on the affected utility, and other factors determined by the Utah Public Service Commission. To the extent that it is cost-effective to do so, investor-owned utilities, municipal utilities and cooperative utilities must use eligible renewable resources to account for 20% of their 2025 adjusted retail electric sales. In addition, the first year of compliance is 2025 with no interim targets, but utilities must file progress reports during the interim period at specified times. The progress reports are supposed to indicate the actual and projected amount of qualifying electricity the utility has acquired, the source of the electricity, an estimate of the cost for the utility to achieve their target, and recommendations for a legislative or program change.

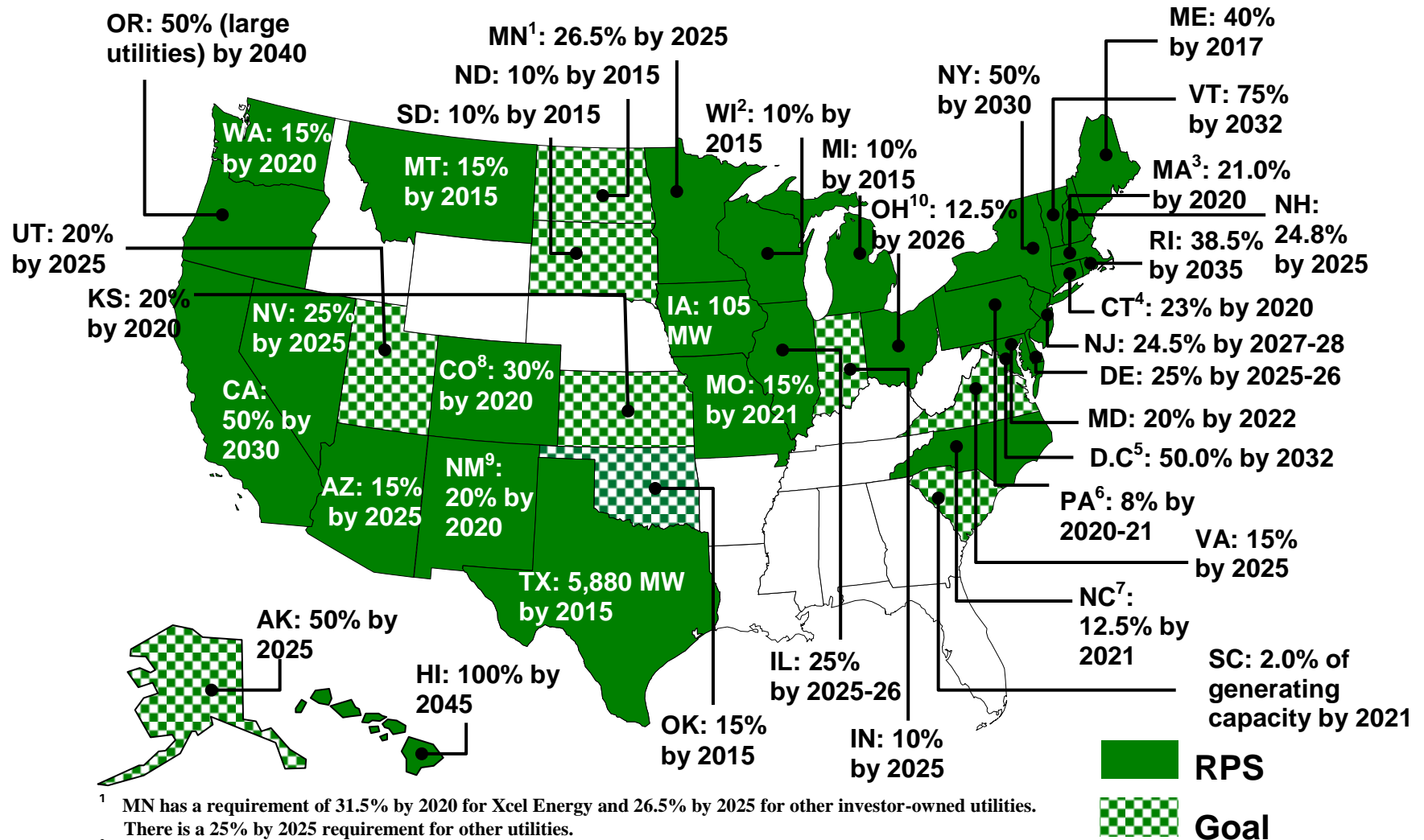
The following compares the District's RPS requirement to nearby states:<sup>8</sup>

- District – 50% by 2032 (the solar requirement increases to 5.0% by 2032)
- Delaware – 25% by 2025-26
- Maryland – 20% by 2022
- New Jersey – 24.5% by 2027-28
- North Carolina – 12.5% by 2021
- Pennsylvania – 8% by 2020-21
- Virginia – 15% by 2025

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<sup>8</sup> This does not account for differences in eligible resources, specific resource requirements, and other factors.

**Figure 1: Renewable Portfolio Standards**  
(Percentage of Sales, except for Iowa and Texas)



<sup>1</sup> MN has a requirement of 31.5% by 2020 for Xcel Energy and 26.5% by 2025 for other investor-owned utilities. There is a 25% by 2025 requirement for other utilities.

<sup>2</sup> Statewide target is 10%, but requirements can vary by utility.

<sup>3</sup> 15% Class I (New Resources) plus additional 1% each year after 2020, 6.0% Class II (Existing Resources) by 2016.

<sup>4</sup> The 23% refers to Class I and II resources.

<sup>5</sup> Solar requirement increases to 5.0% by 2032.

<sup>6</sup> The 8% is for Tier I resources (including solar PV). PA also has a 10% requirement for Tier II resources that includes some nonrenewable resources.

<sup>7</sup> The 12.5% is for investor-owned utilities. Co-ops and municipals must meet 10% by 2018.

<sup>8</sup> The 30% is for investor-owned utilities. Co-ops serving 100,000 or more meters must meet 20% by 2020. Co-ops serving less than 100,000 meters and municipals must meet 10% by 2020.

<sup>9</sup> The 20% is for investor-owned utilities. Co-ops must meet 10% by 2020.

<sup>10</sup> OH also has a 12.5% Advanced Energy Resources requirement that includes advanced nuclear power, co-generation, and clean coal).

Sources: Database of State Incentives for Renewable Energy. Lawrence Berkeley National Laboratory. and National Conference of State Legislatures.

## **Attachment 2**

### **List of Selected Commission Orders and Notices on the Implementation of the Renewable Energy Portfolio Standard**



## **List of Selected Commission Orders and Notices on the Implementation of the Renewable Energy Portfolio Standard**

Order No. 13566 (April 29, 2005): Invited interested parties to submit their views on twelve (12) RPS-related issues.

Order No. 13766 (September 23, 2005): Addressed various issues based on the comments filed in response to Order No. 13566. With respect to the process for implementing the Act, the Commission directed interested parties to form a RPS Working Group to examine in more detail certain issues related to the implementation of the REPS Act, and to develop a timeline and recommendations with respect to a two-phased approach to resolving those issues. The Commission also indicated that the PJM Environmental Information Service (“PJM-EIS”) Generation Attribute Tracking System (“GATS”) would be used in the implementation of the Act.

Order No. 13795 (October 24, 2005): Adopted the RPS Working Group’s proposed procedural schedule recommended in the RPS Working Group Report (submitted October 11, 2005), including a timeline and designation of items, for addressing Phase I and Phase II issues—raised in Order No. 13766.

Order No. 13804 (November 10, 2005): Accepted in part and rejected in part comments filed by the parties in the RPS Working Group Report submitted on October 25, 2005. The Commission generally approved the method for certifying individual generators. The Commission directed the RPS Working Group to develop a list of comparable state certificates that would meet the District’s RPS. The resulting list would help identify which facilities are in compliance with the District’s RPS requirements. However, the Commission rejected the accrual of retroactive RECs created before January 1, 2006. The Commission noted that the intent of the REPS Act is to encourage the production and siting of renewable resources going forward, rather than looking back, which reduces the need for the use of retroactive RECs.

Order No. 13840 (December 28, 2005): Approved, in part, various rules addressing Phase I issues recommended in the RPS Working Group’s third report (submitted November 23, 2005). Attachment A of the Order contains the interim rules that the Commission adopted. The interim rules, in part, established definitions for various terms consistent with the REPS Act, compliance requirements for electricity suppliers, generator eligibility, rules regarding the creation and tracking of RECs, and rules concerning the recovery of fees and costs.

Order No. 13860 (January 26, 2006): Generally accepted the recommendations presented in the RPS Working Group’s report (submitted December 22, 2005) on comparable state certificates and related issues. The Commission pointed out that the use of the Tier I and Tier II eligibility matrices promotes a streamlined and simple process for the certification of renewable resources located outside of the District, consistent with Order No. 13766.

Order No. 13899 (March 27, 2006): Responded to Applications and/or Motions for Reconsideration and Clarification of Order No. 13840 filed by the Meadwestvaco Corporation, the Potomac Electric Power Company on behalf of the RPS Working Group, and jointly by Pepco Energy Services, Mirant Corporation, Washington Gas Energy Services, Inc., District of Columbia Energy Office, and Constellation. This Order, in part, amended the interim rules to indicate that retroactively created RECs must be tracked through GATS. In addition, with respect to the information to be included in the annual compliance report, the Commission amended the interim rules to indicate that suppliers purchasing RECs solely via bundled products are exempt from including the total price paid for Tier I, Tier II, and Solar Energy Credits in their report.

Order No. 14005 (July 24, 2006): Accepted in part and rejected in part, recommendations contained in the RPS Working Group report addressing Phase II issues, submitted on March 24, 2006. This Order further accepted in part and rejected in part recommendations contained in supplemental comments filed by the Office of the People's Counsel and in reply comments filed jointly by the Potomac Electric Power Company, Pepco Energy Services, Inc., and the District of Columbia Energy Office.

Order No. 14085 (October 13, 2006): Denied the Application for Reconsideration of Order No. 14005 filed by the MD-DC-VA Solar Energy Industries Association.

Order No. 14114 (November 13, 2006): Accepted in part and rejected in part, recommendations contained in the RPS Working Group report (September 15, 2006) regarding: (1) the use of engineering estimates to measure the output of small solar installations; (2) the District of Columbia's adoption of Behind-the-Meter rules and regulations used in other Mid-Atlantic States; and (3) the RPS Working Group's response to a hypothetical question involving renewable energy credit creation that was set forth in Order No. 13766.

Order No. 14225 (March 2, 2007): Accepted in part and rejected in part recommendations contained in the RPS Working Group report, addressing issues identified in Order No. 14114, submitted on December 13, 2006. In particular, the Commission amended the interim rules to address certain issues regarding behind-the-meter generation.

Order No. 14697 (January 10, 2008): Adopted Chapter 29 of Title 15 District of Columbia Municipal Regulations ("Final Rules"). The Final Rules became effective upon the publication of the Notice of Final Rulemaking in the *D.C. Register* on January 18, 2008.

Order No. 14782 (April 10, 2008): Adopted the Electricity Supplier 2007 Compliance Report Form and associated filing instructions for the District's RPS Program. Electricity suppliers were directed to use the form for the 2007 Compliance Reports due May 1, 2008.

Order No. 14798 (April 29, 2008): Directed on-site or behind-the-meter ("BTM") generators, certified by the Commission as eligible renewable generating facilities and required to file on-site or BTM generation reports under the Commission's rules, to file their reports with the Commission.

Order No. 14809 (May 12, 2008): Directed the RPS Working Group to file, consistent with the Commission's rules, an annual update to the Tier I and Tier II eligibility matrices.

Order No. 14885 (August 11, 2008): Directed certain electricity suppliers to file evidence with the Commission that each established Generation Attribute Tracking System accounts and that the renewable energy credits reported in their compliance reports have been properly retired.

Order No. 15077 (October 1, 2008): Denied Washington Gas Energy Services, Inc.'s request for a waiver of the 2007 compliance fee for solar renewable energy credits and directed the Company to file proof of payment of the 2007 compliance fee for solar renewable energy credits.

Order No. 15192 (February 18, 2009): Directed the RPS Working Group to review the available information regarding certain states and, if the RPS Working Group identifies any Tier I or Tier II renewable energy resources whose certification requirements may be comparable to the District's RPS program, to file an annual update. In identifying new resources, the Order noted that the RPS Working Group should be mindful of the fact that the Clean and Affordable Energy Act of 2008 has added additional certification requirements for certain solar energy facilities.

Order No. 15233 (April 7, 2009): Adopted amendments to the RPS rules, an Affidavit of Environmental Compliance, and a revised Electricity Supplier Annual Compliance Report Form.

Order No. 15561 (September 28, 2009): Adopted amendments to RPS rules consistent with the applicable sections of the Clean and Affordable Energy Act of 2008. In particular, the Commission added a new subsection detailing the requirements for meeting the solar portion of the RPS requirement. In addition, the amendments raised the compliance fees for tier one and solar energy Renewable Energy Credit ("SREC") shortfalls as well as change the definition of solar energy. The amendments also required additional documentation for applications for certification of solar thermal systems as District of Columbia renewable energy facilities.

Order No. 15581 (October 21, 2009): Denied Sol System's request to increase the derate factor used in estimating the output of a solar photovoltaic ("PV") system. The derate factor accounts for the inefficiencies inherent in converting direct current ("DC") produced by a solar PV system to alternating current ("AC") used in homes or businesses. Specifically, the derate factor accounts for the inefficiency of the solar panels and inverter, as well as losses due to connections and wiring, among other factors. Pursuant to the Commission's rules, solar RECs are created and tracked through the PJM Environmental Information Services, Inc.'s Generation Attribute Tracking System ("PJM-EIS GATS"). PJM-EIS GATS applies a certain default derate factor utilizing PVWATTS, a performance calculator for PV systems developed by the National Renewable Energy Laboratory, which estimates the AC electricity produced by these PV systems. These estimates in turn are used to determine how many solar

RECs individual photovoltaic systems generate. Sol Systems offered no technical information of merit in support of its request.

Notice Regarding the Submission of Electricity Supplier Annual Compliance Report for the District of Columbia's Renewable Energy Portfolio Standard (March 23, 2010): Reminded electricity suppliers that they may not use the incineration of solid waste to meet more than 20 percent of the standard for tier two renewable sources. In addition, starting January 1, 2013, suppliers are prohibited from using RECs derived from solid waste incineration to meet any part of the Tier II standard.

Notice Regarding the Submission of Electricity Supplier Annual Compliance Report for the District of Columbia's Renewable Energy Portfolio Standard (March 18, 2011): Reminded electricity suppliers that they are obligated to submit their annual renewable energy portfolio standard compliance reports for calendar year 2010 by May 2, 2011<sup>52</sup> and that electricity suppliers shall meet the solar requirement by first exhausting all opportunity to purchase D.C. SRECs before purchasing non-D.C. SRECs.

Order No. 16528 (September 9, 2011): Denied all applications for certification of solar energy facilities that were not located within the District, nor in locations served by a distribution feeder serving the District, pending before the Commission on August 1, 2011.

Order No. 16529 (September 9, 2011): Decertified all solar energy facilities not located within the District or in locations served by a distribution feeder serving the District, and certified by the Commission between February 1 and August 1, 2011, as well as any solar facilities with a capacity larger than 5 MW regardless of the date certified. In addition, the clarified that any solar renewable energy credits generated by solar energy facilities decertified pursuant to this Order cannot be used to satisfy the solar portion of the District's RPS program for the 2011 compliance year nor any future compliance year.

Order No. 16680 (January 12, 2012): Denied SolTherm Energy, LLC's applications for recertification of 15 facilities, arguing that the applicability section of the permanent version of the legislation, the Distributed Generation Amendment Act of 2011 ("DGAA" or the "Act"), exempts contracts for the purchase and sale of solar renewable energy credits ("SRECs") from the decertification provision of the Act. In its Order, the Commission indicated that rather than grandfathering-in SRECs and/or SREC contracts, the DGAA effectively voided them after January 31, 2011. The Order mentions that the Council clarified the Act in both its emergency and permanent versions and expressly required the Commission to decertify any non-compliant facility certified between February 1, 2011 and the effective date of the Emergency Act, August 1, 2011. The Commission determined that SolTherm's interpretation of the Act would frustrate the Council's intent to render SRECs from non-D.C. facilities unmarketable—as SolTherm's facilities are located outside the District and are not in locations served by a distribution feeder serving the District. Therefore, the Commission concluded that it is statutorily precluded from recertifying them. In addition, SRECs

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<sup>52</sup> As May 1 fell on a Sunday, annual compliance reports were due the next business day, Monday, May 2, 2011.

extinguished by operation of law when the Commission decertified the SolTherm facilities cannot be rekindled under a provision clearly intended to apply only to energy supply contracts.

Order No. 16738 (March 15, 2012): Adopted the amended rules and revised annual compliance report form published in the January 13, 2012 Notice of Proposed Rulemaking. The proposed amendments to the RPS rules include, among other things, changes pursuant to the Distributed Generation Amendment Act of 2011.

Order No. 16787 (May 25, 2012): Directed three alternative electricity suppliers—Consolidated Edison Solutions, Liberty Power, and Noble Americas Energy Solutions—to comply with statutory limit on the use of municipal solid waste to meet the RPS requirement for Tier II resources, based on their 2010 compliance reports. The three suppliers were directed to either show cause why this notification of non-compliance is unwarranted or submit their respective payments for non-compliance payable to the Renewable Energy Development Fund.

Order No. 17062 (February 1, 2013): Adopted the RPS Working Group’s proposed Tier I and Tier II eligibility matrices for 2011 as modified.

Order No. 17239 (September 6, 2013): Denied the Virginia Living Museum’s revised application to expand its existing solar generating system as the second array is functionally separate from the existing array—being separately metered and located on two separate buildings, sharing no parts or components, and do not interact in any way. Given the information and argument before the Commission, there was no basis upon which to conclude that the second array is anything other than a new facility that is disallowed under the Distributed Generation Amendment Act of 2011, as it is not in a location served by a distribution feeder serving the District of Columbia.

Order No. 17349 (January 13, 2014): Adopted the RPS Working Group’s proposed Tier I and Tier II eligibility matrices submitted for 2013. The proposed eligibility matrices do not include solar energy or solid waste among the eligible resources for the streamlined certification process. In addition, the RPS Working Group accounted for all nine (9) of the adjacent PJM states.

Order No. 17350 (January 13, 2014): Decertified two municipal solid waste facilities that were previously approved. After December 31, 2012, the incineration of solid waste is no longer eligible to generate RECs to be used to satisfy the Tier II portion of the District’s renewable energy portfolio standard. The Commission indicated that RECs from these two facilities cannot be used to satisfy the Tier II portion of the RPS requirement for the 2013 compliance year, nor any future compliance year.

Order No. 17351 (January 10, 2014): Denied the Silicon Ranch Corporation’s application for certification of a solar energy facility, with a capacity of least 30 MW, located in Georgia. In its Application, the Silicon Ranch Corporation indicated that it was seeking certification of the solar energy facility as a Tier I out-of-state resource, and it is not seeking certification to

obtain SRECs. Based on its review of the Commission's RPS rules, the Applicant asserted that the District's solar carve out does not prevent outside of the District solar facilities like its own from being certified as a "generic" Tier I resource. By statute, Tier I renewable sources are clearly defined to mean one or more of the following types of energy sources: solar, wind, qualifying biomass, methane from the decomposition of organic materials, geothermal, ocean, and fuel cells producing electricity from qualifying biomass or methane. The Commission determined that since the statutory definition of a Tier I renewable source is based on the source used to produce energy, a Tier I renewable source cannot, therefore, be "generic." In addition, the applicant did not provide any supporting legal authority for the creation of a "generic" Tier I source. Nor does the statute authorize the Commission to certify a solar facility outside of the District which is not in a location served by a distribution feeder serving the District of Columbia and which is larger than 5 MW in capacity.

Order No. 17379 (February 12, 2014): Directed the Potomac Electric Power Company ("Pepco") to incorporate the changes set out in this Order in its future Annual Interconnection Reports.

Order No. 17393 (February 20, 2014): Denied the application for certification of the Welch/Molloy Residence's Solar Energy Facility as a Renewable Energy Standards Generating Facility because the solar energy facility is not located within the District or in a location served by a distribution feeder serving the District, pursuant to the DGAA.

Order No. 17673 (October 24, 2014): Adopted a modified version of the NOPR published in the D.C. Register on June 27, 2014. The filing deadline for RPS compliance reports and fees in Sections 2901.7 and 2901.9 of the RPS Rules was moved from May 1 to April 1.

Order No. 17794 (February 4, 2015): Addressed comments from interested persons and described changes to the NOPR published on September 12, 2014 amending Chapter 9, Rules and Regulations Governing Net Energy Metering ("NEM"), to implement those provisions of the Community Renewable Energy Amendment Act of 2013 ("CREA") regarding the community net metering program. A revised NOPR with the incorporated changes was published in the *D.C. Register* on January 30, 2015 for comment by interested persons.

Order No. 17862 (April 24, 2015): Adopted revised rules and regulations governing Net Energy Metering ("NEM") to implement those provisions of the Community Renewable Energy Amendment Act of 2013 ("CREA") which establish the community net metering program.

Order No. 17863 (April 24, 2015): Adopted amendments to Chapter 41, "District of Columbia Standard Offer Service ['SOS'] Rules," which were made to implement those provisions of the Community Renewable Energy Amendment Act of 2013 ("CREA") that affect SOS.

Order No. 18050 (December 11, 2015): Approved the Potomac Electric Power Company's ("Pepco") Community Renewable Energy Facilities Documents ("CREF Documents") filed, pursuant to Chapter 9 of Title 15 of the District of Columbia Municipal Regulations

(“DCMR”) as well as the “Procedural Manual for Implementation and Administration of Community Renewable Energy Facilities” (“CREF Procedural Manual”). The Commission directed Pepco to amend the CREF Documents and the proposed CREF Procedural Manual in accordance with the directives of this Order.

Order No. 18135 (March 3, 2016): Granted the motion of Potomac Electric Power Company (“Pepco”) to reconsider the Commission’s decision in Order No. 18050. Pepco was directed to modify the CREF Contract consistent with this Order.

Order No. 18705 (February 24, 2017): Approved the Potomac Electric Power Company’s (“Pepco”) Community Net Metering Rider (“Rider CNM”), Pepco’s Community Renewable Energy Facility (“CREF”) Contract and conditionally approved Pepco’s proposed revised CREF Procedural Manual. The Commission directed Pepco to amend its proposed revised CREF Procedural Manual in accordance with the directives of this Order.

Order No. 18749 (April 13, 2017): Adopted amendments to Chapter 29, “Renewable Energy Portfolio Standard” (“REPS”), of Title 15 of the District of Columbia Municipal Regulations (“DCMR”), pursuant to D.C. Code § 34-802 and in accordance with D.C. Code § 2-505, that were made to implement those provisions of the Renewable Portfolio Standard Expansion Amendment Act of 2016 that affect the District of Columbia’s REPS.

## **Attachment 3**

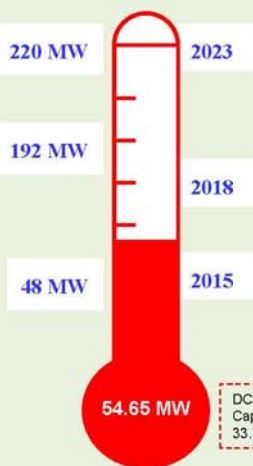
### **Map of the Certified Solar Energy Systems in the District of Columbia**



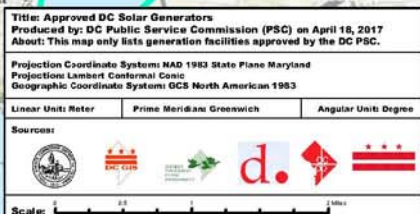
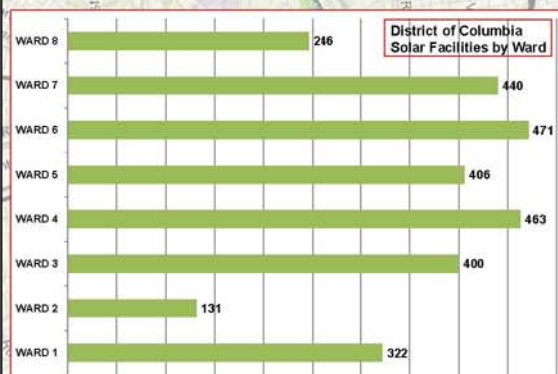


The Renewable Energy Portfolio Standard ("RPS") Act, established a minimum percentage of District electricity providers' supply that must be derived from renewable energy sources.

## DC SOLAR CAPACITY PROGRESS & GOALS



[These figures are current as of April 18, 2017 and does include out-of-state facilities]



## District of Columbia Solar Facilities by Year

