# PUBLIC SERVICE COMMISSION OF MARYLAND

# RENEWABLE ENERGY PORTFOLIO STANDARD REPORT

With Data for Calendar Year 2019

In compliance with Section 7-712 of the Public Utilities Article, *Annotated Code of Maryland* 

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#### I. INTRODUCTION

This document constitutes the annual report of the Public Service Commission of Maryland ("Commission") regarding the implementation of the Maryland Renewable Energy Portfolio Standard ("RPS") Program, with data for calendar year 2019. This report is submitted pursuant to § 7-712 of the Public Utilities Article, *Annotated Code of Maryland* ("PUA"), which requires the Commission to report to the General Assembly on the status of the implementation of the RPS Program on or before December 1 of each year.<sup>1</sup> The Maryland RPS Program is designed to support a stable and predictable market for energy generated from renewables, and to lower the cost to consumers of electricity produced from these resources. Implementation of the RPS Program assists in overcoming market barriers seen as impediments to the development of the industry. Moreover, increasing reliance upon renewable energy technologies to satisfy electric power requirements can result in long-term emission reductions, increased fuel diversity, and economic benefits to the State.<sup>2</sup>

The calendar year 2019 electricity supplier compliance reports, as verified by the Commission, indicate that the State of Maryland RPS obligations were almost entirely fulfilled through the submission of the appropriate level of Tier 1 and Tier 2 Renewable Energy Credits ("RECs").<sup>3</sup> Remaining calendar year 2019 RPS obligations were satisfied by compliance fees, also known as alternative compliance payments ("ACPs"). One supplier went out of business without satisfying its 2019 RPS obligations,<sup>4</sup> and two suppliers filed for bankruptcy without satisfying their 2019 RPS obligations.<sup>5</sup>

#### A. Objectives of the Program

The objective of PUA § 7-701 *et seq.* (hereinafter, "RPS Statute") is to recognize and to develop the benefits associated with a diverse portfolio of renewable energy resources to serve Maryland. The State's RPS Program does this by recognizing the environmental and consumer benefits associated with renewable energy. The RPS Program requires electricity suppliers to supply a prescribed minimum portion of their retail electricity sales with various renewable energy resources, which have been classified within the RPS Statute as Tier 1 and Tier 2 renewable sources. The program is implemented through the creation, sale, and transfer of RECs.

The development of renewable energy resources is further promoted by requiring electricity suppliers to pay an ACP for failing to acquire sufficient RECs to satisfy the RPS as set forth in PUA § 7-703. Compliance fees are deposited into the Maryland Strategic Energy

<sup>&</sup>lt;sup>1</sup> Electricity suppliers must file an RPS compliance report with the Commission for the prior calendar year by April 1st of the subsequent year. Consequently, this report, which is due to the General Assembly in December 2020, highlights data from electricity suppliers' 2019 compliance reports and other relevant 2019 data. In compliance with PUA § 7-712, topics addressed in this report include the availability of Tier 1, Tier 1 Solar, and Tier 2 renewable energy sources, compliance fees collected to support in-State renewable projects, and other pertinent information.

<sup>&</sup>lt;sup>2</sup> See PUA § 7-702, which describes the legislative intent and legislative findings in support of the enactment of the Maryland Renewable Energy Portfolio Standard.

<sup>&</sup>lt;sup>3</sup> See Section I.B.2 for a description of eligible Tier 1 and Tier 2 resources and requirements.

<sup>&</sup>lt;sup>4</sup> The supplier failed to retire the required RECs or pay ACPs. Retail electric sales by this supplier represented less than 0.04% of total 2019 sales subject to compliance.

<sup>&</sup>lt;sup>5</sup> The suppliers failed to retire the required RECs or ACPs. Retail electric sales by these suppliers represented 1.3% of total 2019 sales subject to compliance.

Investment Fund ("SEIF") as dedicated funds to provide for loans and grants that spur the creation of new Tier 1 renewable energy resources in the State. Responsibility for developing renewable energy resources is vested with the Maryland Energy Administration ("MEA").

#### B. Overview of the Maryland RPS Program

Under the RPS Program, Maryland electricity suppliers are required to demonstrate compliance on an annual basis with an escalating renewable energy portfolio standard. This requirement applies to both competitive retail suppliers and electric companies in the State, including those that provide Standard Offer Service.<sup>6</sup> Electricity suppliers must file annual compliance reports with the Commission verifying that the renewable requirement for each entity has been satisfied.

A REC constitutes the renewable attributes associated with the production of one megawatt-hour ("MWh") of electricity generated using eligible renewable resources. As such, a REC is a uniquely-identified tradable commodity equal to one MWh of electricity generated or obtained from an eligible renewable energy resource. Generators and electricity suppliers may trade RECs using a Commission-approved system known as the Generation Attributes Tracking System ("GATS"). The GATS system is operated by PJM Environmental Information Services, Inc. ("PJM-EIS") and is designed to track the ownership and trading of generation attributes.<sup>7</sup> A REC has a three-year life span during which it may be transferred, sold, or redeemed. However, each electricity supplier must document annually the retirement of RECs equal to the percentage specified by the RPS Statute<sup>8</sup> or pay an ACP commensurate with any shortfalls.

### 1. <u>Registration of Renewable Energy Facilities</u>

Facilities eligible for the Maryland RPS Program must be located in PJM (the wholesale bulk power control area in which Maryland resides)<sup>9</sup> or in a control area that is adjacent to the PJM region,<sup>10</sup> so long as the electricity produced is delivered into the PJM region. However,

<sup>&</sup>lt;sup>6</sup> Standard Offer Service ("SOS") is electricity supply purchased from an electric company by the company's retail customers who cannot or choose not to transact with a competitive supplier operating in the retail market. *See* PUA §§ 7-501(n), 7-510(c).

<sup>&</sup>lt;sup>7</sup> An attribute is "a characteristic of a generator, such as location, vintage, emissions output, fuel, state RPS Program eligibility, etc." PJM-EIS, *GATS Operating Rules* (May 2014) at 3.

<sup>&</sup>lt;sup>8</sup> Using the Tier 2 RPS requirement as an example, assume a hypothetical electricity supplier operating in the State had 100,000 MWh in retail electricity sales for 2019. In 2019, the Tier 2 requirement was 2.5%; therefore, the electricity supplier would have to either verify the purchase of 2,500 Tier 2 RECs or pay an ACP for deficits. Similar requirements apply to Tier 1 and Tier 1 Solar, although the percentage obligation and ACP denomination differs depending on the tier and calendar year, as outlined by the RPS Statute.

<sup>&</sup>lt;sup>9</sup> The PJM wholesale market includes all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia.

<sup>&</sup>lt;sup>10</sup> A control area is an "electric system or systems, bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other Control Areas and contributing to frequency regulation. For the purposes of this document, a Control Area is defined in broad terms to include transmission system operations, market, and load-serving functions within a single organization. A Control Area operator may be a system operator, a transmission grid operator, or a utility." PJM-EIS, Generation Attribute Tracking System (*GATS*) *Operating Rules* (April 2018) at 5. For example, the multi-state area controlled by the PJM Regional Transmission Operator is one control area, as is the adjacent Midwest Independent System Operator ("ISO") multi-state area, and the adjacent New York ISO.

facilities generating electricity from solar energy, geothermal, poultry litter-to-energy, waste-to-energy, or refuse-derived fuel are eligible only if the facility is connected with the electric distribution grid serving Maryland. Finally, energy from a thermal biomass system must be used in Maryland to qualify for the RPS program.<sup>11</sup>

Before recommending certification of a Renewable Energy Facility ("REF"), Commission Staff must determine whether the facility meets the standards set forth by the RPS Statute and Commission Regulations (COMAR 20.61). REF applicants who qualify under Maryland's RPS Program must complete the appropriate application for REF certification posted on the Commission's RPS website.<sup>12</sup> In addition to the geographic requirements, applicants must also meet the fuel source requirements associated with Tier 1 or Tier 2 (*see* Table 1, below). Verification of the fuel source is completed with the aid of the Energy Information Administration Form 860 ("EIA-860") to validate each facility's rated nameplate capacity, fuel source(s), location, and commercial operation in-service date.<sup>13</sup> Facilities that co-fire a RECeligible renewable fuel source with non-eligible fuel sources must also submit a formula or methodology to account for the proportion of total electricity generated by the eligible fuel sources, which then may be credited with RECs. In addition to obtaining Commission certification, all REFs must register with GATS to track and transact business related to RECs. The GATS account must be established with the certification number issued by the Commission upon approval of the REF application.

#### 2. Maryland RPS Annual Percentage Requirements

To comply with the Maryland RPS Program, electricity suppliers must acquire RECs derived from Maryland-certified Tier 1 and Tier 2 renewable sources, as defined in PUA § 7-701. Eligible fuel sources for Tier 1 RECs and Tier 2 RECs are listed in Table 1; solar has its own standard within Tier 1.

Tier 1 Renewable Sources	Tier 2 Renewable Sources
• Solar, including energy from photovoltaic technologies and solar water heating systems	• Hydroelectric power other than pump storage generation
<ul> <li>Wind</li> <li>Qualifying Biomass</li> <li>Methane from a landfill or wastewater treatment plant</li> <li>Geothermal</li> <li>Ocean</li> </ul>	(Note: Tier 1 RECs may be used to satisfy Tier 2 obligations)

Table 1	Eligible	Tier	1 and	Tier	2 Sources
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<sup>11</sup> There are currently no thermal biomass facilities in Maryland.

<sup>&</sup>lt;sup>12</sup> REF applications are maintained by the Commission and are accessible online, available at: http://www.psc.state.md.us/electricity/wp-content/uploads/sites/2/Application-for-Certification-as-a-Renewable-Energy-Facility.pdf.

<sup>&</sup>lt;sup>13</sup> Submitting Form EIA-860 is a requirement under Section 13(b) of the Federal Energy Administration Act of 1974 ("FEAA") (Public Law 93-275) for generating plants, regulated and unregulated, which have a nameplate rating of 1 MW or more, are operating or plan to operate within 5 years, and are connected to the transmission grid.

• Fuel Cell that produces electricity from a Tier 1 source	
• Hydroelectric power plant less than 30 MW	
capacity	
Poultry litter-to-energy	
• Waste-to-energy	
Refuse-derived fuel	
• Thermal energy from a thermal biomass	
system	

As shown in the table below, there is a different percentage schedule corresponding to each tier and set-aside requirement comprising the Maryland RPS Program.

- The Tier 1 requirements gradually increase until peaking in 2030, after which they are maintained at those levels.
- The Tier 1 Solar set-aside requirement increases from 5.5 percent in 2019 to 14.5 percent by 2028.<sup>14</sup> This ramp-up period for the solar carve-out corresponds in part with the implementation of the pilot program on community solar energy generating facilities, which was established by the passage of Senate Bill 398 and House Bill 1087 and signed into law in May, 2015. The three-year pilot program was extended through 2024 by House Bill 683, enacted in May, 2019. There is a potential that Solar Renewable Energy Credits ("SRECs") generated by eligible community solar facilities could serve to help meet the increasing Tier 1 Solar set-aside in the coming years.
- Beginning in 2017, a constant Tier 1 Offshore Wind set-aside of up to 2.5 percent commenced as part of the Tier 1 portfolio.<sup>15</sup> In Order No. 88192, the Commission established specific offshore wind carve-outs from 2021 through 2042 ranging from 0.60 percent to 2.03 percent. Senate Bill 516, enacted in May, 2019, increased the RPS requirements to 50% by 2030, and established additional offshore wind carve-outs beginning in 2027. The Commission will incorporate these increased carve-outs into the offshore wind RPS obligations as part of its review of Round 2 offshore wind project applications.
- Maryland's Tier 2 requirement was eliminated at the end of compliance year 2018. Senate Bill 516 re-established a 2.5 percent requirement beginning October 1, 2019 and extending through compliance year 2020, after which the Tier 2 obligation again sunsets.

<sup>&</sup>lt;sup>14</sup> "Tier 1 Solar set-aside" refers to the requirement to obtain RECs for energy derived from qualified solar energy facilities. The Tier 1 Solar set-aside requirement applies to retail electricity sales in the State by electricity suppliers and is a sub-set of the Tier 1 standard.

<sup>&</sup>lt;sup>15</sup> The Maryland Offshore Wind Energy Act of 2013 (2013 Md. Laws, Ch. 003) established an offshore wind setaside within the Tier 1 requirement. Beginning in 2017, Tier 1 may include a Commission-determined amount of offshore wind RECs ("ORECs"), not to exceed 2.5%. The project must be generating RECs in order for the obligation to begin. In the absence of a Commission-determined OREC obligation, electricity suppliers must satisfy the carve-out using RECs derived from other Tier 1 renewable sources.

Compliance Year	Tier 1 Non-Solar	Tier 1 Solar	Offshore Wind <sup>16</sup>	Tier 2	Total
Pre-SB516 2019 <sup>17</sup>	18.45%	1.95%	0.0%	N/A	20.4%
Post-SB516 2019 <sup>18</sup>	15.2%	5.5%	0.0%	2.5%	23.2%
2020	22.0%	6.0%	0.0%	2.5%	30.5%
2021	21.93%	7.5%	1.37%	N/A	30.8%
2022	23.24%	8.5%	1.36%	N/A	33.1%
2023	23.87%	9.5%	2.03%	N/A	35.4%
2024	25.19%	10.5%	2.01%	N/A	37.7%
2025	26.49%	11.5%	2.01%	N/A	40.0%
2026	28.01%	12.5%	1.99%	N/A	42.5%
2027	30.02%	13.5%	1.98%	N/A	45.5%
2028	31.04%	14.5%	1.96%	N/A	47.5%
2029	33.06%	14.5%	1.94%	N/A	49.5%
2030+	33.56% - 34.9%	14.5%	0.60% - 1.94%	N/A	50.0%

Table 2 Annual RPS Requirements by Tier

At certain renewable procurement cost thresholds, an electricity supplier can request that the Commission consider a delay in scheduled Tier 1 and Tier 1 Solar RPS percentages.<sup>19</sup> To date, no such request has been made by electricity suppliers operating in the Maryland marketplace.

#### 3. Maryland RPS Alternative Compliance Payment Requirements

Electricity suppliers who do not meet their RPS obligation through the retirement of eligible RECs must submit an ACP for every unit of shortfall. Table 3 presents the ACP schedule separated by tiers for each compliance year of the RPS Program moving forward.

#### Table 3 ACP Schedule (\$/MWh)

#### IPL<sup>20</sup>

<sup>&</sup>lt;sup>16</sup> As defined by PUA § 7-703(b), beginning in 2017 the RPS requirements include "an amount set by the Commission...not to exceed 2.5%, derived from offshore wind energy." The Commission set the offshore wind energy carve-out in Order No. 88192. As "a payment may not be made for an OREC [Offshore Renewable Energy Credit] until electric **Complianc** generated by the offshore wind project," and as the RPS obligation must be established at least three years in advance of the calendar year in whith the purchase obligation takes effect, the carve-out may begin no sooner than January 1, 2019. Solar

 $<sup>^{18}</sup>$  *Id*.

<sup>&</sup>lt;sup>19</sup> PUA § 7-705(e)-(f).

ACPs are remitted to the Maryland SEIF. With the passage of Chapter 757 of 2019, Alternative Compliance Payment revenues under the RPS are now required to be used to benefit low-income renewable energy projects.<sup>23</sup>

#### II. ELECTRICITY SUPPLIER COMPLIANCE REPORTS

Calendar year 2019 marked the fourteenth compliance year for the Maryland RPS, and the twelfth year for electricity suppliers to comply with the Tier 1 Solar set-aside. The RPS compliance reports submitted to the Commission by electricity suppliers, along with information obtained from GATS, provide information regarding the retired RECs and the underlying REFs

<sup>21</sup> Senate Bill 516, enacted into law in May, 2019, modified the ACP schedule beginning October 1, 2019.

<sup>&</sup>lt;sup>23</sup> State Government Article, § 9–20B–05(F-3)(i)(2).

t Atticle, § 9–20D	$-05(1^{-5})(1)(2).$			
		9		
Pre-SB516 2019 <sup>21</sup>	\$37.50	\$150	\$15	\$2
Doct SD516				

<sup>&</sup>lt;sup>20</sup> Industrial Process Load ("IPL") means the consumption of electricity by a manufacturing process at an establishment classified in the manufacturing sector under the North American Industry Classification System. Under PUA § 7-705(b)(2) and COMAR 20.61.01.06E(5), a supplier sale for IPL is required to meet the entire Tier 1 obligation for electricity sales, including solar. However, the ACP for an IPL Tier 1 non-solar shortfall and a Tier 1 Solar shortfall is the same. For IPL, there is no ACP for Tier 2 shortfalls.

<sup>&</sup>lt;sup>22</sup> Id.

(*e.g.*, type and location of generators) utilized by electricity suppliers to comply with Maryland RPS obligations.<sup>24</sup> RPS compliance reports were filed by 109 electricity suppliers, including: 81 competitive retail suppliers; 17 brokers or competitive electricity suppliers with zero retail electricity sales; and 11 electric companies, of which four are investor-owned utilities.

According to the filed compliance reports, there were approximately 60.5 million MWh of total retail electricity sales in Maryland for 2019 (down from 61.5 million MWh in 2018); 59.4 million MWh of retail electricity sales were subject to RPS compliance, and 1.1 million MWh were exempt.<sup>25</sup> Maryland electricity suppliers retired about 11.4 million RECs in 2019, more than the 11.1 million RECs retired for compliance in 2018. The total cost of RECs retired in 2019 totaled \$134.5 million, up from \$84.8 million in 2018.

Table 4 displays the average cost per REC retired in each tier since 2008. The increase in Tier 1 and Tier 2 REC prices likely reflects a combination of an increase in the number of renewable energy facilities capable of providing RECs and upward price pressure coming from more expensive SRECs. The rise in SREC prices may be attributable to an increase in demand for SRECs due to the effects of the Clean Energy Jobs Act.

Year	Tier 1 Non-Solar	Tier 1 Solar	Tier 2
2008	\$0.94	\$345.45	\$0.56
2009	\$0.96	\$345.28	\$0.43
2010	\$0.99	\$328.57	\$0.38
2011	\$2.02	\$278.26	\$0.45
2012	\$3.19	\$201.92	\$0.44
2013	\$6.70	\$159.71	\$1.81
2014	\$11.64	\$144.06	\$1.81
2015	\$13.87	\$130.39	\$1.71
2016	\$12.22	\$110.63	\$0.96
2017	\$7.14	\$38.18	\$0.48
2018	\$6.54	\$31.91	\$0.66
2019	\$7.77	\$47.26	\$1.05

Table 4 Average Cost of RECs per Tier (2008 – 2019)

<sup>&</sup>lt;sup>24</sup> According to PUA § 7-709, a REC can be diminished or extinguished before the expiration of three years by: the electricity supplier that received the credit; a nonaffiliated entity of the electricity supplier that purchased or otherwise received the transferred credit; or demonstrated noncompliance by the generating facility with the requirements of PUA § 7-704(f). In the PJM region, the regional term of art is "retirement," which describes the process of removing a REC from circulation by the REC owner, *i.e.*, the owner "diminishes or extinguishes the REC." PJM-EIS, *GATS Operating Rules* (May 2014) at 54-56.

<sup>&</sup>lt;sup>25</sup> According to PUA § 7-703(a)(2), exceptions for the RPS requirement may include: IPL which exceeds 300,000,000 kWh by a single customer in a year; regions where residential customer rates are subject to a freeze or cap (*see* PUA § 7-505); or electric cooperatives under a purchase agreement that existed prior to October 1, 2004, until the expiration of the agreement. COMAR 20.61.01.06(D) exempts any sale of electricity that is marketed or otherwise represented to customers as renewable or having characteristics of a Tier 1 renewable source or Tier 2 renewable source.

As demonstrated by the table below, the aggregated cost of compliance with the Maryland RPS Program displayed a declining growth rate from 2014 through 2016, peaking at \$136.2 million in 2016. In spite of increasing RPS percentage requirements in-State and greater demand for RECs within the surrounding region,<sup>26</sup> total REC costs in 2017 fell approximately 47 percent between 2017 and 2016. Despite the downward trends in 2017 continuing into 2018, in 2019 Tier 1 and Solar REC prices increased almost 19 percent and 48 percent in 2019, respectively, while Tier 2 REC prices increased by approximately 60 percent.

	Tier	2014	2015	2016	2017	2018	2019
Costs	Tier 1	\$70,630,620	\$85,054,001	\$88,200,121	\$50,045,621	\$56,406,24 7	\$79,320,505
REC C	Solar	\$29,372,737	\$39,055,714	\$45,556,987	\$21,275,664	\$27,351,38 8	\$55,166,116
	Tier 2	\$3,987,557	\$2,617,917	\$1,441,416	\$687,785	\$1,049,293	\$58,899
Total		\$103,990,91	\$126,727,63	\$135,198,52	\$72,009,071	\$84,806,92	\$134,545,52
H	Total	4	2	3	\$72,009,071	8	0
CS	Tier 1	6,062,135	6,134,653	7,216,439	7,006,113	8,627,737	10,210,275
RE	Solar	203,884	299,525	411,787	557,224	857,232	1,167,329
otal	Tier 2	1,521,022	1,531,279	1,501,587	1,448,567	1,599,819	55,879
Tot	Total	7,787,041	7,965,457	9,129,813	9,011,904	11,084,788	11,433,483
	Tier 1	9.95%	10.00%	12.00%	11.95%	14.30%	15.20%
s %	Solar	0.35%	0.50%	0.70%	1.15%	1.50%	5.50%
RPS % auired	Tier 2	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Fed	Total	12.80%	13.00%	15.20%	15.60%	18.30%	23.20%

Table 5 Total Cost of RECs per Year (2014 – 2019)

ACPs accounted for only a small fraction (\$7,730,223) of the total \$134.5 million RPS compliance costs in 2019. Reliance on ACPs largely increased in 2019 (compared to \$67,796 in 2018). This is due to two Companies filing for bankruptcy before being able to retire RECs. Many ACPs paid in 2019 were made in lieu of purchasing Tier 1 RECs to satisfy Industrial Process Load ("IPL") obligations.<sup>27</sup>

RPS C	Compliance Year	Tier 1 Non-Solar	Tier 1 Solar	Tier 1 IPL	Tier 2	Total
	RPS Obligation	10,076,186	1,141,734	15,707	205,611	11,439,238
2019	Retired RECs	10,210,275	1,167,329	-	55,879	11,433,483
	ACP Required	\$4,981,178	\$2,658,500	\$31,414	\$59,132	\$7,730,223

Table o Results of the 2019 RPS Compliance Repor	esults of the 2019 RPS Compliance F	Reports
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<sup>&</sup>lt;sup>26</sup> In addition to Maryland, seven other PJM states (DE, IL, MI, NJ, NC, OH, and PA) plus the District of Columbia have a RPS mandate outlined in statute, while an additional two PJM states (IN, VA) have a voluntary RPS goal. <sup>27</sup> The ACP for Tier 1 IPL obligations is \$2 per MWh, significantly lower than the average non-solar Tier 1 REC (\$6.54) and solar Tier 1 REC (\$31.91).

#### Note: Some electricity suppliers retired more RECs than required.

RECs are valid to demonstrate RPS compliance for the calendar year in which they were generated and in the following two calendar years.<sup>28</sup> Figure 1 aggregates the Maryland RPS tiers on the basis of generation year. For the 2019 compliance year, 49.8 percent of RECs retired were generated in 2019; 39.5 percent were generated in 2018; and the remaining 10.7 percent were generated in 2017.

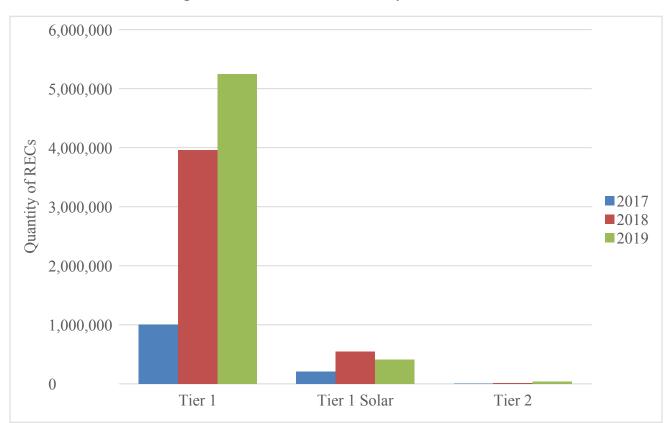


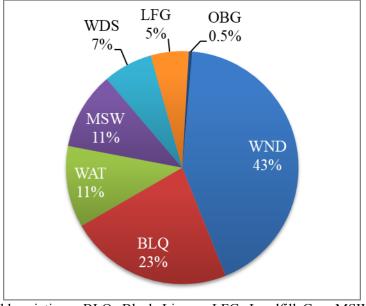


Figure 2 illustrates the fuel sources used to satisfy Tier 1 RPS requirements for the 2019 RPS compliance year. Of the Tier 1 RECs retired for 2019, the resources from which the RECs were sourced consisted primarily of wind, black liquor, and small hydroelectric plants. Although not pictured, Tier 2 RPS requirements for the 2019 RPS compliance year were satisfied exclusively by RECs derived from hydroelectric power.

#### Figure 2 2019 Tier 1 Retired RECs by Fuel Source<sup>29</sup>

<sup>&</sup>lt;sup>28</sup> COMAR 20.61.03.01 C (unless the REC is diminished or extinguished before expiration).

<sup>&</sup>lt;sup>29</sup> WAT includes Tier 1 only. Qualifying biomass sourced from agricultural crops, geothermal, and solar thermal contributed too few RECs to be seen on the chart.



Abbreviations: BLQ, Black Liquor; LFG, Landfill Gas; MSW, Municipal Solid Waste; OBG, Other Biomass Gas; WAT, Small Hydroelectric; WDS, Wood and Waste Solids; WND, Wind.

Figure 3 presents the geographical location and the total generating capacity (14,270 MW, a decrease from 14,288 MW in 2018) for all Maryland RPS-certified facilities regardless of Tier. RPS requirements also exist in the surrounding states, which generally support out-of-state and regional market participation. Of the renewable facilities that are eligible to participate in the Maryland RPS Program, 44 percent of the corresponding capacity is located in the Mid-Atlantic States. The remaining eligible resource capacity is distributed across nine other states.

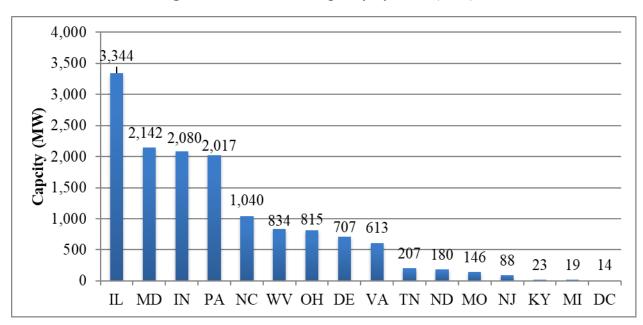


Figure 3 Total Rated Capacity by State (MW)<sup>30</sup>

For the 2019 compliance year, Figure 4 displays aggregated REC data to convey general relationships among the States that contributed RECs. Virginia supplied the largest number of RECs purchased by retail electricity suppliers (24.3 percent), followed by Illinois (22.9 percent), Maryland (18.3 percent), and Pennsylvania (9.8 percent). The remaining 13 states contributed a total of 24.7 percent of all RECs retired in 2018. The majority of RECs from in-State generators were sourced from Tier 1 non-solar (44.2 percent) and solar photovoltaic (55.8 percent).

Figure 4 Number of RECs Retired by Facility Location (2019)

<sup>&</sup>lt;sup>30</sup> PJM-EIS, Generation Attribute Tracking System, Database query, (June 1, 2020). The information in this figure does not include Commission-authorized REFs that have not established a REC account with PJM GATS.

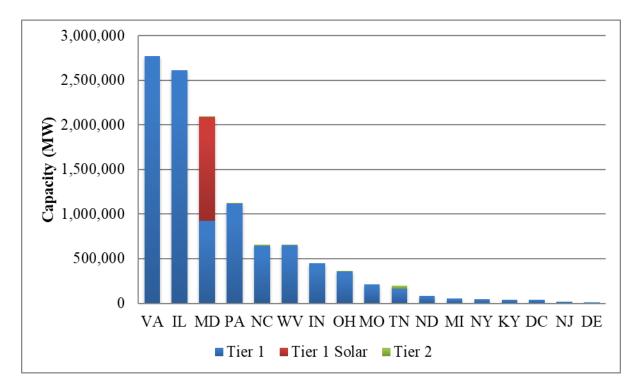


Table 7 and Table 8 provide the quantitative data in support of the previous figure. Table 7 provides the reported levels of RECs retired by Maryland electricity suppliers in 2019 on a Tier and aggregate basis, whereas Table 8 provides the information on a percentage basis. As noted above, Virginia-generated RECs, followed by Illinois, Maryland, and Pennsylvania were used in the largest aggregate amounts by Maryland electricity suppliers for 2019 RPS compliance.

State	Tier 1 Non-Solar	Tier 1 Solar	Tier 2	All Tiers
VA	2,774,548	-	-	2,774,548
IL	2,616,811	-	-	2,616,811
MD	924,880	1,167,329	1,558	2,093,767
PA	1,119,319	-	5,281	1,124,600
NC	644,179	-	17,052	661,231
WV	653,597	-	1,645	655,242
IN	449,513	-	-	449,513
OH	353,388	-	19	353,407
МО	211,063	-	-	211,063
TN	165,191	-	30,324	195,515
ND	86,142	-	-	86,142
MI	50,635	-	-	50,635
NY	49,901	-	-	49,901
KY	40,538	-	-	40,538
DC	38,141	-	-	38,141

Table 7 2019 REC Retirement by State

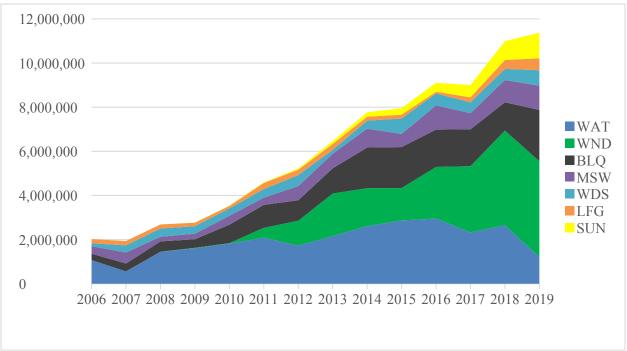
NJ	18,173	-	-	18,173
DE	14,256	-	-	14,256
Total	10,210,275	1,167,329	55,879	11,433,483

State	Tier 1 Non-Solar	Tier 1 Solar	Tier 2	All Tiers
VA	27.2%	0.0%	0.0%	24.3%
IL	25.6%	0.0%	0.0%	22.9%
MD	9.1%	100.0%	2.8%	18.3%
PA	11.0%	0.0%	9.5%	9.8%
NC	6.3%	0.0%	30.5%	5.8%
WV	6.4%	0.0%	2.9%	5.7%
IN	4.4%	0.0%	0.0%	3.9%
OH	3.5%	0.0%	0.0%	3.1%
MO	2.1%	0.0%	0.0%	1.8%
TN	1.6%	0.0%	54.3%	1.7%
ND	0.8%	0.0%	0.0%	0.8%
MI	0.5%	0.0%	0.0%	0.4%
NY	0.5%	0.0%	0.0%	0.4%
KY	0.4%	0.0%	0.0%	0.4%
DC	0.4%	0.0%	0.0%	0.3%
NJ	0.2%	0.0%	0.0%	0.2%
DE	0.1%	0.0%	0.0%	0.1%
Total	100.0%	100.0 %	100.0%	100.0%

Table 8 2019 REC Retirement by State (%)

Figure 5 illustrates the growth in RECs retired in total and by fuel type from the beginning of the RPS requirement in 2006. For the third year in a row, wind ("WND") was the largest contributor of the total number of RECs. Total wind RECs retired for compliance have nearly tripled since 2015. In 2019, black liquor (BLQ) REC retirements grew to be the second largest contributor of RECs, with a year-over-year increase of about 81 percent. Note that the contributions from qualifying biomass sourced from agricultural crops, geothermal, other biomass liquid and gas, and solar thermal are too small to be seen on this chart.

#### Figure 5 RECs Retired by Fuel Type (2006 – 2019)

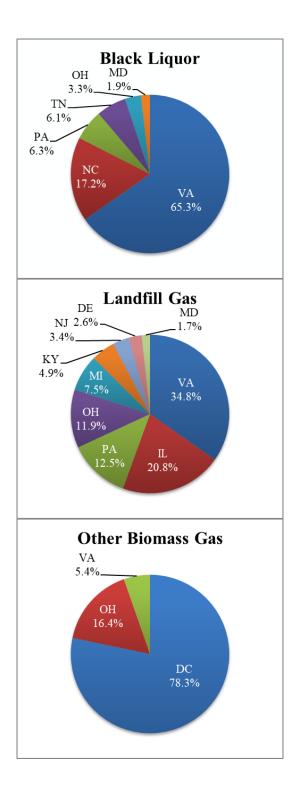


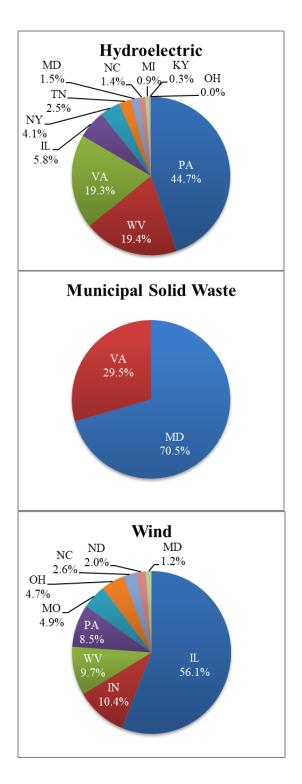
Abbreviations: BLQ, Black Liquor; LFG, Landfill Gas; MSW, Municipal Solid Waste; SUN, Solar Photovoltaic; WAT, Hydroelectric; WDS, Wood and Waste Solids; WND, Wind.

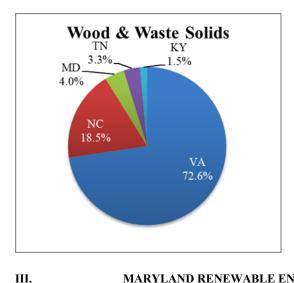
In 2019, all of the RECs retired from geothermal and solar sources originated in Maryland, while all of the qualifying biomass sourced from agricultural crops was located in North Carolina. The seven remaining fuels used to comply with Maryland's 2019 RPS requirements corresponded to RECs generated in multiple other states, and Figure 6 shows the percentage contribution from each state for each of these seven fuels. Facilities located in Maryland provided the majority of municipal solid waste RECs retired for compliance in 2019. Conversely, Maryland resources provided only 1.9 percent of black liquor RECs, 1.5 percent of hydroelectric RECs, 1.7 percent of landfill gas RECs, 1.2 percent of wind RECs, and 4.0 percent of wood and waste solids RECs. No other biomass gas RECs derived from in-state facilities were retired for RPS compliance.

#### Figure 6 Percentage of RECs Generated in Each State, by Fuel (2019)<sup>31</sup>

<sup>&</sup>lt;sup>31</sup> Additional information pertaining to the source of renewable energy used to meet Maryland's 2019 RPS compliance requirements is presented in Appendices A and B. Appendix A provides a breakdown of the *number of RECs* used by electricity suppliers according to tier, fuel type, and facility location, while Appendix B presents the *number of facilities* by tier, fuel type, and facility location that provided RECs for compliance.







#### MARYLAND RENEWABLE ENERGY FACILITIES

Implementation of the Maryland RPS Program can provide an incentive for renewable generators to locate in Maryland and generate electricity. The renewable requirement establishes a market for renewable energy, and to the extent Maryland's geography and natural resources can be utilized to generate renewable electricity, developers may locate projects within the State. This section of the report provides information about the REFs located in Maryland in 2019.<sup>32</sup> Renewable energy generated in Maryland can be used both in Maryland and in other states for RPS compliance purposes, and also can be sold in support of competitive retail electricity supplier product offerings (*i.e.*, green power products).<sup>33</sup> Green power products are generally offered to the public with higher concentrations electricity generated by renewable energy resources (e.g., 50 or 100%) than required by State RPS requirements.

As shown in Table 9, in 2019 eligible sources located within Maryland generated approximately 1.3 million Tier 1 non-solar RECs, 1.3 million Tier 1 SRECs, and 2.2 million Tier 2 RECs. Additional analysis pertaining to the Maryland-based renewable generators is presented in Appendices C through E. Appendix C shows the disposition of RECs generated in Maryland in 2019. Appendix D provides the number of renewable energy facilities by county that are both located in Maryland and registered with GATS to participate in any one of the PJM States' RPS programs. Appendix E provides the total capacity of these facilities, broken out by county and tier.

 Table 9 2019 Maryland Generated RECs by Fuel Source

Fuel Type	RECs (Quantity	RECs (Percent)
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<sup>&</sup>lt;sup>32</sup> Specific information pertaining to the State's REFs as described herein was made available by PJM-EIS in the GATS State Agency Report.

<sup>&</sup>lt;sup>33</sup> Facilities located in Maryland are not necessarily registered by the Commission for the Maryland RPS; rather, certain facilities may seek certification out-of-state in support of a long-term contract for the RECs from an out-ofstate counterparty. Counterparties can include an electricity supplier operating in a different state and purchasing the RECs to satisfy the RPS requirement for another state or other entities, such as brokers that purchase the REC output for resale.

		)	
	Black Liquor	41,746	0.9%
	Geothermal	2,042	0.0%
	Land Fill Gas	72,341	1.5%
Tier 1	Municipal Solid Waste	647,809	13.7%
	Solar Thermal <sup>34</sup>	16	0.0%
	Small Hydro	16,818	0.4%
	Wood Waste	16,814	0.4%
	Wind	520,224	11.0%
Tier 1	Solar PV	1,251,466	26.4%
Solar	Solar Thermal	3,488	0.1%
Tier 2	Large Hydro	2,161,849	45.7%
	Total	4,734,613	100.0%

Table 10 presents additional detail regarding the disposition of Maryland-generated RECs in calendar year 2019. Approximately 78 percent of the RECs generated by renewable facilities located within Maryland during 2019 are available for potential future sale in Maryland or in other states in subsequent compliance years. Just under 21 percent of all RECs generated in Maryland were retired in 2019 to meet the RPS requirements in Maryland and various other PJM states. Labeled as "Other" in Table 10, less than one percent of RECs were used for other purposes, which may include pending transfers between parties.

REC Tier	Available	RPS Compliance	Other	Total
Tier 1 Non-Solar	739,959	577,805	46	1,317,810
Tier 1 Solar	840,967	413,815	172	1,254,954
Tier 2	2,135,392	0	26,457	2,161,849
Total	3,716,318	991,620	26,675	4,734,613
(%)	78.5%	20.9%	0.6%	100.0%
Source: PJM-EIS				

#### **Table 10 Disposition of 2019 Maryland Generated RECs**

Table 11 presents, on a state-by-state basis, the distribution of the RECs both generated in-State and retired for RPS compliance purposes. In 2019, Maryland-generated RECs were retired for compliance purposes in six jurisdictions: the District of Columbia, Delaware, Illinois, Maryland, New Jersey, and Pennsylvania. Approximately 37 percent of the RECs generated by in-State facilities in 2019 were retired for compliance purposes in Maryland, a 4 percent increase from 2018 levels.

Table 11 2019 Maryland Generated RECs Retired for RPS Compliance by State

TierFuel TypeDCDEMDNJPATotal
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<sup>&</sup>lt;sup>34</sup> Tier 1 Solar RECs may be used to satisfy Tier 1 obligations.

	D1 1 1			20.000			20.000
	Black Liquor	-	-	30,000	-	-	30,000
	Geothermal	-	-	1,734	-	-	1,734
	Land Fill Gas	-	-	3,854	-	1,437	5,291
	Municipal Solid	-	-	438,293	-	-	438,293
Tier 1	Waste						
Non-	Small Hydro	-	-	16,818	-	-	16,818
solar	Solar Thermal	-	-	3	-	-	3
	Wood Waste	-	-	11,877	-	-	11,877
	Wind	-	49,427	13,123	11,242	-	73,792
	Subtotal	-	49,427	515,699	11,242	1,437	577,805
	Percentage	0.0%	8.6%	89.3%	1.9%	0.2%	100.0%
	Solar PV	2,014	-	410,715	-	-	412,729
Tier 1	Solar Thermal	-	-	1,086	-	-	1,086
Solar	Subtotal	2,014	-	411,801	-	-	413,815
	Percentage	0.5%	0.0%	99.5%	0.0%	0.0%	100.0%
	Large Hydro	-	-	-	-	-	-
Tier 2	Subtotal	-	-	-	-	-	-
	Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
All	Grand Total	2,014	49,427	927,500	11,242	1,437	991,620
Tiers	Percentage	0.2%	5.0%	93.5%	1.1%	0.1%	100.0%

Source: PJM-EIS.

#### IV. CONCLUSION

The electricity supplier compliance reports for 2019, verified by the Commission, indicate that nearly all the Maryland RPS obligations were met via the purchase and retirement of RECs, with only \$7,730,223 in ACPs owed for compliance purposes. Approximately 18 percent of RECs used for compliance in 2019 came from in-State resources, down from 19 percent in 2018. RECs derived from two fuel types—wind (42.5 percent) and black liquor (22.8 percent)—were the predominant sources of non-solar Tier 1 compliance in 2019, with those RECs sourced primarily from Illinois and Virginia, respectively. The Tier 1 Solar carve-out was met by the retirement of RECs generated exclusively in Maryland. Companies demonstrated Tier 2 compliance by purchasing RECs derived from large hydroelectric sources, with 2.8 percent of the Tier 2 RECs sourced from Maryland REFs.

Throughout this next year the Commission will continue to: review applications from facilities requesting certification as a Maryland REF; oversee the RPS Program; and verify that the electricity suppliers in Maryland procure a sufficient amount of electricity generated by renewable resources.

APPENDICES

# Appendix A 2019 Retired RECs by Facility

		Tier						Tieı			
Facility Name	Fuel	State	Quantity	GEO %	Tier 1	Facility Name	Fuel	State	Quantity	LFG %	Tier 1
Baratta	GEO	MD	21	1.10%	0.00%	ACE Cumberland	LFG	NJ	283	0.05%	0.00
Benigni, C.	GEO	MD	19	0.99%	0.00%	AEP Cloyds	LFG	VA	1,665	0.31%	0.029
Bird, J.	GEO	MD	80	4.18%	0.00%	AP Arden	LFG	PA	1,382	0.26%	0.019
Bird, W.	GEO	MD	18	0.94%	0.00%	AP Reichs Ford	LFG	MD	569	0.11%	0.01
Brackett	GEO	MD	127	6.64%	0.00%	AP Upton DG	LFG	PA	6,234	1.16%	0.06
Brenny, M.	GEO	MD	16	0.84%	0.00%	Bavarian	LFG	KY	10,515	1.95%	0.10
Cipriani, A. 1	GEO	MD	17	0.89%	0.00%	Beecher	LFG	IL	13,833	2.57%	0.14
Cipriani, A. 2	GEO	MD	13	0.68%	0.00%	Blue Ridge	LFG	PA	12,820	2.38%	0.13
Custer, C.	GEO	MD	23	1.20%	0.00%	Broad Mountain	LFG	PA	7,555	1.40%	0.07
Daly, M.	GEO	MD	26	1.36%	0.00%	Central	LFG	DE	4,394	0.82%	0.04
Dickerson, L.	GEO	MD	27	1.41%	0.00%	CID LFG	LFG	IL	8,319	1.54%	0.08
Dixon, T.	GEO	MD	45	2.35%	0.00%	Countryside	LFG	IL	9,359	1.74%	0.09
Dorman, K.	GEO	MD	59	3.08%	0.00%	Easton LFG	LFG	MD	3,960	0.74%	0.04
Field, J.	GEO	MD	76	3.97%	0.00%	Fairless Hills	LFG	PA	10,939	2.03%	0.11
Gilotra, R.	GEO	MD	49	2.56%	0.00%	FE Carbon Alum	LFG	OH	10,657	1.98%	0.10
Graziani	GEO	MD	36	1.88%	0.00%	FE Erie County	LFG	OH	5,447	1.01%	0.05
Gugerty, B.	GEO	MD	50 60	3.14%	0.00%	FE Geneva	LFG	OH	43	0.01%	0.00
Harding, A.	GEO GEO	MD	26	1.36%	0.00%	FE Geneva FE Lorain	LFG	OH	26,326	4.89%	0.00
Harrison, H.	GEO GEO	MD	20 14	0.73%	0.00%		LFG	PA	26,326	4.89%	0.20
Harrison, H. Hendrickson	GEO GEO	MD MD			0.00%	Frey Farm					
			31	1.62%		Green Valley	LFG	KY	3,883	0.72%	0.04
Hucht	GEO	MD MD	16	0.84%	0.00%	Greene Valley	LFG	IL KV	8,529	1.58%	0.08
Jack	GEO	MD	24	1.25%	0.00%	Hardin County	LFG	KY	945	0.18%	0.01
Jackson, C.	GEO	MD	41	2.14%	0.00%	Lake Gas	LFG	IL	4,657	0.86%	0.05
Jarboe	GEO	MD	37	1.93%	0.00%	Lakeview Gas	LFG	PA	1,537	0.29%	0.02
Jocic, B.	GEO	MD	13	0.68%	0.00%	Laurel Ridge	LFG	KY	5,557	1.03%	0.05
Kawalek, J.	GEO	MD	31	1.62%	0.00%	Lorain County	LFG	OH	21,537	4.00%	0.21
Keeney, A.	GEO	MD	49	2.56%	0.00%	Lycoming	LFG	PA	8,204	1.52%	0.08
Lee, A.	GEO	MD	36	1.88%	0.00%	Martinsville	LFG	VA	2,473	0.46%	0.02
Lehr, M.	GEO	MD	43	2.25%	0.00%	ME Lebanon	LFG	PA	969	0.18%	0.01
Leung	GEO	MD	53	2.77%	0.00%	Middlesex	LFG	NJ	243	0.05%	0.00
Loudermilk, G.	GEO	MD	98	5.12%	0.00%	Monmouth	LFG	NJ	8,324	1.54%	0.08
MacInnes	GEO	MD	15	0.78%	0.00%	Newland Park	LFG	MD	4,586	0.85%	0.04
Martin, D.	GEO	MD	20	1.05%	0.00%	O'Brien Edgeboro	LFG	NJ	8,427	1.56%	0.08
McPartland, K.	GEO	MD	54	2.82%	0.00%	Orchard Hills	LFG	MI	40,253	7.47%	0.39
McWilliams	GEO	MD	40	2.09%	0.00%	Pendleton County	LFG	KY	5,262	0.98%	0.05
Menning, J.	GEO	MD	38	1.99%	0.00%	Pennsauken	LFG	NJ	872	0.16%	0.01
Mignini, A.	GEO	MD	30	1.57%	0.00%	PEP Ritchie Bwn	LFG	MD	9	0.00%	0.00
Overstreet	GEO	MD	71	3.71%	0.00%	PL Pine Grove	LFG	PA	204	0.04%	0.00
Parker	GEO	MD	20	1.05%	0.00%	PN Northern Tier	LFG	PA	2,580	0.48%	0.03
Parlegreco, D.	GEO	MD	45	2.35%	0.00%	PN Shippensburg	LFG	PA	212	0.04%	0.00
Patel, K.	GEO	MD	36	1.88%	0.00%	Prairie View	LFG	IL	25,803	4.79%	0.25
Richardson, J.	GEO	MD	17	0.89%	0.00%	Rochelle Energy	LFG	IL	9,896	1.84%	0.10
Ryan, J.	GEO	MD	13	0.68%	0.00%	Settlers Hill	LFG	IL IL	19,321	3.59%	0.10
Santin, D.	GEO	MD	15	0.84%	0.00%	Southern	LFG	DE	9,862	1.83%	0.19
Shriner	GEO GEO	MD		0.84%	0.00%	Southern Suffolk Energy		DE VA	9,862 8,665		0.10
Smith, H.	GEO GEO	MD	15 52	0.78% 2.72%	0.00%	Tullytown	LFG LFG	VA PA		1.61% 2.30%	0.08
· · · · · · · · · · · · · · · · · · ·						2			12,398		
Smith, J.	GEO	MD MD	18	0.94%	0.00%	VP Amelia	LFG	VA	9,325	1.73%	0.09
Snyderman, C.	GEO	MD	23	1.20%	0.00%	VP Bethel	LFG	VA	26,898	4.99%	0.26
Sotzen	GEO	MD	41	2.14%	0.00%	VP Brunswick	LFG	VA	4,724	0.88%	0.05
Spies, J.	GEO	MD	26	1.36%	0.00%	VP Charles City	LFG	VA	24,101	4.47%	0.24
Fraber, T.	GEO	MD	13	0.68%	0.00%	VP Chesterfield	LFG	VA	18,149	3.37%	0.18
Verde, J.	GEO	MD	18	0.94%	0.00%	VP Henrico	LFG	VA	2,773	0.51%	0.03
Vorhauer	GEO	MD	19	0.99%	0.00%	VP King Queen	LFG	VA	13,961	2.59%	0.14
Wissel, J.	GEO	MD	47	2.46%	0.00%	VP King George	LFG	VA	42,504	7.89%	0.42
Yarrington, M.	GEO	MD	2	0.10%	0.00%	VP Peninusla	LFG	VA	32,023	5.94%	0.31
		Total	1,913	100.00%	0.02%	VP VA Beach	LFG	VA	122	0.02%	0.00
						Westchester	LFG	IL	4,909	0.91%	0.05
						Woodland	LFG	IL	7,413	1.38%	0.07
							~	Total	538,775	100.00%	5.28
						1		1 Juan	550,115	100.00/0	5.40

Appendix A 2	019 Retired R	ECs by Faci	lity (Cont'd)
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Facility Name         Fuel         State         Onantity         WND         I.         21.73         O.05%         O.06%         Top Crop 1         WND         II.         104.18         2.40%         0.02%         VP INcerd W.ND         NN         N.         2.41%         0.02%         VP Incerd W.ND         NN         N.         2.43%         1.10%         0.11% <th colspan="6">Tier 1 (Cont'd)*</th> <th colspan="5">Tier 1 (Cont'd)*</th>	Tier 1 (Cont'd)*						Tier 1 (Cont'd)*					
Adam         WND         L         2.175         0.05%         0.02%           AE Ontario         WND         YL         0.00%         0.00%         0.07%           AEP Bittr Forier         WND         VI         45.65         1.03%         0.44%           AEP Bittr Forier         WND         NN         1.65%         0.44%         0.5%           AEP Forder RJ         WND         NN         5.397         0.25%         1.07%         0.46%           AEP Forder RJ         WND         NN         5.397         0.25%         1.07%         0.46%         0.05%         1.01%         0.46%         0.24%         0.24%         0.24%         0.24%         0.24%         0.24%         0.24%         0.24%         0.24%         0.24%         0.24%         0.24%         VPD sert         0.11         3.947         0.05%         0.07%         0.24%         VPD sert         VPD NCV         1.392         0.05%         0.07%         0.24%         VPD sert         VPD NCV         1.392         0.05%         0.07%         0.24%         VPD sert         VAI	Facility Name		· · · ·	/	WND %	Tier 1	Facility Name	Fuel		/	WND %	Tier 1
AF Ontarion       WND       NI       24       0.00%       Radfords Run <sup>-</sup> WND       II.       82,753       1.91%       0.818         AEP Bluc Creck       WND       IN       46,600       1.03%       0.446%       Tatumka       WND       ND       82,753       1.91%       0.818         AEP Fowler R3       WND       IN       15,307       0.14%       0.06%       Tulytown       WND       II.       104,187       2.40%       0.02%         AEP Fowler R4       WND       IN       4.3941       0.11%       0.04%       VP New Creek       WND       II.       3.047       0.09%       0.04%         AEP Madow I.       WND       IN       2.2316       0.74%       0.63%       VP New Creek       WND       II.       3.047       0.09%       0.02%         AEP Madow I.       WND       IN       1.102       2.66%       0.03%       0.03%       0.01%       Pactity Name       Fut       4.44.057       100.09%       4.221         AEP Madow I.       WND       IN       1.102       2.66%       0.03%       0.01%       ALP Madow I.       State       Quants       U.91%       0.2186       0.01%       ALP Madow I.       VA       1.22.500	V	WND				0.02%		WND				0.71%
AEP Bindler Point         WND         IN         46,600         1.07%         0.46%         Top Crop 1         WND         IL         1.22,806         2.33%         1.20%           AEP Fowler R3         WND         IN         5.337         0.14%         0.06%         Tullytown         WND         NH         3.947         0.09%         0.04%           AEP Fowler R4         WND         IN         4.3941         0.113,668         2.62%         1.119           AEP Indec Ceek         WND         NH         4.3941         0.74%         0.32316         0.74%         0.3234           AEP Madow L2         WND         NN         84.486         0.07%         0.24%         Wbrook         WND         IL         1.392,03%         0.01%           AEP Madow L5         WND         N         1.429         0.03%         0.01%         AEP Madow L4         VND         N         2.428         0.04%         0.01%         AEP Madow L5         WND         N         1.429         0.03%         0.01%         AEP Madow L4         VA         8.9251         7.73%         0.83%         0.43%           AEP Madow L5         WND         ND         2.537         0.23%         0.04%         0.24%         0.24	AE Ontario	WND	NJ	24				WND	IL		1.91%	0.81%
AEP Fowler RIA         WND         IN         15.307         0.35%         0.15%         Top Crop 2         WND         IL         104,187         2.40%         10.25%           AEP Fowler R4         WND         IN         43.941         1.01%         0.43%         VP Desert         WND         NC         13.686         2.62%         1.11%           AEP Hog Crock         WND         NN         32.316         0.73%         0.23%         WP Nork         WND         WND         38.0376         8.77%         3.73%           AEP Madow L3         WND         NN         32.416         0.75%         0.23%         WP Nork         WND         NL         39.03%         2.25%         0.04%           AEP Madow L4         WND         NN         1.1402         2.66%         1.04%         WD NO         H         39.251         7.73%         0.73%         0.25%         1.04%         AEP Fines rmix A1         VA         VA         8.251         7.73%         0.73%         0.25%         1.04%         AEP Fines rmix A1         VA         8.251         7.73%         0.75%         AEP Fines rmix A1         VA         8.251         7.73%         0.75%         AEP Fines rmix A1         VA         8.251         7.75%	AEP Blue Creek	WND	OH	44,568			Tatanka	WND			1.98%	0.84%
AEP Fowler R3         WND         IN         5.937         0.14%         0.06%         Tullytown         WND         OH         3.947         0.09%         0.01%         1.3686         2.6%         0.10%         VP New Creek         WND         NL         3.047         0.03%         0.01%         Zph Wadow L4         WND         NL         2.1866         0.09%         0.01%         Zph Wadow L5         WND         NL         1.12,02         0.03%         0.01%         ALP Madow L4         WND         NL         1.2,23         0.01%         ALP Madow L4         WND         NL         3.5211         0.81%         0.3436         ALP Fines         WAT         VA         8.021         7.73%         0.85%         0.05%         ALP Madow L6         WND         MD         2.52%         0.05%         ALP Madow L6         WND         MD         2.52%         0.05%         ALP Madow L6	AEP Bluff Point	WND	IN	46,600	1.07%	0.46%	Top Crop 1	WND	IL	122,806	2.83%	1.20%
AEP Fowler R3         WND         IN         5.937         0.14%         0.06%         Tullytown         WND         NH         3.947         0.09%         0.04%           AEP Fowler R4         WND         OH         97,287         2.24%         0.95%         VP New Creek         WND         NK         13.866         2.62%         1.119           AEP Madow L         WND         IN         2.4660         0.75%         0.24%         Wabrok Tridge         WND         IL         3.907         0.03%         0.019           AEP Madow L4         WND         N         2.4660         0.57%         0.24%         Vebrook         WND         IL         1.92         0.03%         0.019           AEP Madow L6         WND         N         1.12         0.13%         0.24%         AEP Madow L7         VA         8.92         7.73%         0.87%           AEP Midaut         WND         N         3.521         0.81%         0.34%         AEP Fine K         WAT         VA         8.92         1.73%         0.87%           AEP Midaut         WND         MD         2.53         0.26%         0.07%         Allegheny Rr 4         WT         VA         4.39,37         0.23%         0.45%<	AEP Fowler R1A	WND	IN	15,307		0.15%	Top Crop 2	WND	IL	104,187	2.40%	1.02%
AEP Hog Creek         WND         WND         WND         RV         82,845         1.91%         0.81%           AEP Meadow L2         WND         IN         32,660         0.57%         0.24%         Whrook         WND         IL         38,876         8.77%         3.738           AEP Meadow L4         WND         IN         84,866         0.57%         0.24%         Whrook         WND         IL         97,855         2.25%         0.069           AEP Meadow L4         WND         IN         12,886         0.50%         0.21%         ND         IN         14,29         0.01%         4.341,057         100,00%         4.25           AEP Meadow L6         WND         IN         14,29         0.03%         0.01%         AEP Fines         WAT         VA         12,543         1.09%         0.02%           AEP Traise         WND         IN         35,211         0.81%         0.04%         AEP Fines         WAT         VA         12,433         1.09%         0.02%           AP Criterion         WND         MD         7,064         0.07%         AIEgheny RY 6         WAT         PA         43,628         0.28%         0.16%         0.02%         0.16%         0.18% <td>AEP Fowler R3</td> <td>WND</td> <td>IN</td> <td></td> <td>0.14%</td> <td>0.06%</td> <td>Tullytown</td> <td>WND</td> <td>OH</td> <td>3,947</td> <td>0.09%</td> <td>0.04%</td>	AEP Fowler R3	WND	IN		0.14%	0.06%	Tullytown	WND	OH	3,947	0.09%	0.04%
AIP Madow L         WND         IN         32,316         0.74%         0.32%         Wahur Ridge         WND         IL         380,876         8.77%         3.73%           AIP Madow L3         WND         IN         84,486         1.95%         0.83%         2phyr         WND         IL         380,876         8.77%         0.03%         0.01%           AIP Madow L3         WND         IN         2.186         0.01%         Facility Name         Fuel J         4.341,077         10.00%         4.252           AIP Madow L5         WND         IN         1.190         2.56%         1.09%         AIP         Facility Name         Fuel J         5.00         0.01%         6.25%         0.01%         AIP         7.35%         0.87%         0.12%           AIP Trishe         WND         IN         3.23         0.00%         0.01%         AIP Fris         XAT         VA         89,251         7.35%         0.43%         0.04%         0.01%         AIP Fris         XAT         WA         PA 4.03,71         A 2.75%         0.43%         0.42%         0.44%         0.44%         0.44%         0.44%         0.44%         0.44%         0.44%         0.44%         0.44%         0.44%         0.44% <td>AEP Fowler R4</td> <td>WND</td> <td>IN</td> <td>43,941</td> <td>1.01%</td> <td>0.43%</td> <td>VP Desert</td> <td>WND</td> <td>NC</td> <td>113,686</td> <td>2.62%</td> <td>1.11%</td>	AEP Fowler R4	WND	IN	43,941	1.01%	0.43%	VP Desert	WND	NC	113,686	2.62%	1.11%
AEP Machov L1         WND         IN         32,316         0.74%         0.32%         Wahnut Ridge         WND         IL         380,876         8.77%         3.73%           AEP Macdov L3         WND         IN         84,486         1.95%         0.83%         6.24%         WND         IL         380,876         8.77%         0.03%         0.01%           AEP Macdov L3         WND         IN         111,002         2.56%         1.09%         4.234         0.01%         4.234         0.01%         4.234         0.01%         4.234         0.01%         4.25         1.01%         4.244,01         3.83,676         4.25%         1.01%         4.25%         1.01%         4.25%         1.01%         4.25%         1.01%         4.25%         1.01%         4.25%         1.01%         4.25%         1.01%         4.25%         1.01%         4.25%         1.01%         4.25%         1.01%         4.25%         0.01%         4.25%         1.01%         4.25%         0.01%         4.25%         0.01%         4.25%         0.01%         4.25%         0.01%         4.25%         0.01%         4.25%         0.01%         4.25%         0.02%         0.02%         0.11%         0.28%         0.02%         0.14%	AEP Hog Creek	WND	OH	97,287	2.24%	0.95%	VP New Creek	WND	WV	82,845	1.91%	0.81%
AFP         Mendow 1.3         WND         IN         84.486         1.95%         0.83%         7         WND         OH         1.292         0.03%         0.01%           AEP Mendow L5         WND         IN         111,002         2.56%         1.00%         Image: Constraint of the second		WND	IN		0.74%	0.32%	Walnut Ridge	WND	IL	380,876	8.77%	3.73%
AFP Meadow L4         WND         IN         21,886         0.05%         0.21%         Total         4,341,087         100.00%         42.525           AFP Meadow L5         WND         IN         11,429         0.03%         0.01%         Facility Name         Fuel         WAT         VA         7.3%         0.87%         AFP         AFP         AFP         WAT         VA         12.53         1.06%         0.04%         AFP         AFP         AFP         WAT         VA         12.53         1.07%         0.02%         AFP         AFP         WAT         VA         12.53         1.07%         0.02%         AFP         AFP         AFP         VA         12.53         1.07%         0.43%         0.44%         0.43%         0.44%         0.43%         0.44%         0.43%         0.44	AEP Meadow L2	WND	IN	24,660	0.57%	0.24%	Wbrook	WND	IL	97,855	2.25%	0.96%
AFP Meadow L5         WND         IN         11,1002         2,56%         1,00%           AFP Meadow L5         WND         IN         1,429         0,01%         Facility Name         Fuel         State         Quantity         WAT %         Tier           AFP Mickow L4         WND         0H         35,231         0.81%         0.43%         AEP Fires         WAT         VA         89,251         7,73%         0.87%         0.87%           APP Mickow L5         WND         0H         312         0.81%         0.03%         AEP Fires         WAT         VA         89,251         7,73%         0.87%         0.05%           AP Prior Side         WND         0H         32,00%         0.03%         AEP Gine Ferris         WAT         VA         42,011         33,85         0.43%           AP Fair Wind         WND         MD         2,06%         0.01%         Allegheny Rvr 6         WAT         PA         48,638         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%         1,62,8%	AEP Meadow L3	WND	IN	84,486	1.95%	0.83%	Zephyr	WND	OH	1,392	0.03%	0.01%
AEP Meadow L5         WND         IN         11.1002         2.56%         1.09%         Pacility Name         Fuel         State         Quantity         WAT %         Ter           AEP Meadow L5         WND         OH         50.324         1.16%         0.49%         AEP Fines         WAT         VA         89.251         7.73%         0.87%         0.87%           AEP Mick WND         WND         0.11         0.81%         0.34%         AEP Fines         WAT         VA         89.251         7.73%         0.87%         0.42%           APP Micked WND         WND         0.11         0.34%         AEP Fines         WAT         VA         49.21         3.35%         0.43%           AP Fair Wind         WND         MD         2.652         0.00%         Allegheny Rvr 6         WAT         PA         49.37%         0.44%           AP Fair Wind         WND         MD         2.667         0.01%         Allegheny Rvr 9         WAT         PA         48.58         1.28%         1.668           AP Finarel Mine         WND         WND         WND         2.03%         Big Sky         WAT         VA         5.220         1.32%         0.468         0.28%         0.068%         0.0	AEP Meadow L4	WND	IN	21,886	0.50%	0.21%			Total	4,341,057	100.00%	42.52%
AEP Action       AEP Trisk       Num       I.4.29       0.03%       0.01%       Facility Name       Fuel       State       Quantity       WAT       VA       89,251       0.87%       0.87%         AEP Trisk       WND       NN       35,211       0.81%       0.34%       AEP Green Freis       WAT       VA       89,251       0.07%       0.87%         AP Criterion       WND       WND       9,537       0.22%       0.09%       Allegheny       WAT       VA       44,201       38,3%       0.43%         AP Criterion       WND       MD       2,532       0.06%       0.02%       Allegheny Kr 6       WAT       PA       44,201       38,3%       0.43%         AP Arilite Ridge       WND       MD       7,064       0.16%       0.07%       Allegheny Kr 7       WAT       PA       49,371       42,7%       0.48%         AP Arilite Ridge       WND       WD       7,19       0.02%       0.01%       AP Misc       WAT       VA       83,7%       0.44%         AP Iaurel Min.       WND       WD       23,189       0.76%       0.28%       Coleman Falls       WAT       VA       83,57%       0.44%       0.19%       0.12%       0.11%       0	AEP Meadow L5	WND	IN	111,002	2.56%	1.09%						
AEP Trishe         WND         OH         50.324         1.16%         0.49%         AEP Buck         WAT         VA         89.251         7.73%         0.87%           APP Widex         WND         OH         18         0.00%         0.03%         AEP Fries         WAT         VA         12.543         1.09%         0.012           AP Pacie Ridge         WND         MD         2.532         0.06%         0.02%         AIEgheny Rvr 6         WAT         PA         44.201         3.83%         0.438           AP Fair Wind         WND         MD         7.064         0.16%         0.03%         Allegheny Rvr 6         WAT         PA         44.201         3.83%         0.43%         0.45%           AP Carenalad         WND         WD         1.90         0.02%         0.01%         Beardslee         WAT         WA         45.65         0.57%         0.06%           AP Roth Rock         WND         WD         23.57%         0.44%         0.05%         0.25%         0.06%         0.01%         Beardslee         WAT         VA         15.20         0.37%         0.01%         Beardslee         WAT         VA         15.20         0.37%         0.01%         D.013%         D.01	AEP Meadow L6	WND	IN		0.03%	0.01%	Facility Name	Fuel	State	Quantity	WAT %	Tier 1
AEP Wildcat         WND         IN         35,211         0.81%         0.34%         AEP Fries         WAT         VA         12,543         1.00%         0.12%           AP Beck Ridge         WND         WVD         9,537         0.22%         0.00%         ALEP Gine Treis         WAT         WAT         WAT         PA         44,201         3.83%         0.43%           AP Criterion         WND         MD         7,537         0.22%         0.00%         Allegheny Wr 6         WAT         PA         49,371         42.27%         0.48%           AP Greenland         WND         MD         8,000         0.18%         0.00%         Allegheny Kr 9         WAT         PA         18,688         10.28%         0.14%           AP Iaurel Mtn         WND         WVD         719         0.02%         0.01%         Beardslee         WAT         VA         83.7         0.07%         0.048           AP Imacle         WND         MD         33,189         0.76%         0.28%         Coleman Palls         WAT         VA         15,220         1.32%         0.15%           Bishop Hill         WND         L         37,525         1.89%         0.39%         Coleman Palls         WAT	AEP Trishe						AEP Buck	WAT	VA	89,251	7.73%	0.87%
AMP         WND         OH         18         0.00%         IAE Glen Ferris         WAT         WAT         VV         5.000         0.43%         0.043%           AP Beoch Ridge         WND         MD         2.532         0.06%         0.02%         Allegheny         WAT         PA         44.9371         4.27%         0.43%         0.43%           AP Fair Wind         WND         MD         7.064         0.16%         0.07%         Allegheny Rvr 8         WAT         PA         48.9880         75.2%         0.85%           AP Fair Wind         WND         MD         7.064         0.16%         0.08%         Allegheny Rvr 9         WAT         PA         48.9880         75.2%         0.85%           AP Laurel Min.         WND         WV         719         0.02%         0.01%         Beardslee         WAT         VA         15.20         1.32%         0.15%           AP Roth Rock         WND         MD         3.159         0.76%         0.33%         Coleman Falls         WAT         VA         15.20         1.32%         0.15%           AP Koth Rock         WND         HL         8.23%         3.50%         Coleman Falls         WAT         VA         15.015%	AEP Wildcat	WND	IN				AEP Fries					0.12%
AP Beech Ridge       WND       WND       9,537       0.22%       0.09%       Allegheny       WAT       PA       44.201       3.83%       0.43%         AP Criterion       WND       MD       7.054       0.16%       0.07%       Allegheny Wr 6       WAT       PA       49.31%       0.48%         AP Fair Wind       WND       MD       7.064       0.16%       0.07%       Allegheny Rv 76       WAT       PA       48.688       10.25%       0.48%         AP Greenland       WND       WND       WV       119.226       2.75%       1.17%       AP Misce       WAT       PA       118.688       10.25%       0.44%         AP Laurel Mrn.       WND       WV       0.7676       4.78%       2.03%       Big Shals       WAT       VA       8.37%       0.44%         AP Minkidges       WND       MD       33.189       0.76%       0.33%       Coleman Falls       WAT       VA       15.220       1.32%       0.13%         Big Shy       WND       IL       35.758       1.98%       0.84%       Conemaugh       WAT       PA       6.666       0.58%       0.02%         Cauyaga Ridge       WND       IL       1.076       0.02% <td< td=""><td>AMP</td><td>WND</td><td>OH</td><td></td><td></td><td>0.00%</td><td>AEP Glen Ferris</td><td>WAT</td><td>WV</td><td></td><td>0.43%</td><td>0.05%</td></td<>	AMP	WND	OH			0.00%	AEP Glen Ferris	WAT	WV		0.43%	0.05%
AP Criterion       WND       MD       2,532       0.06%       0.02%       Allegheny Rvr 5       WAT       PA       49,371       4.27%       0.48%         AP Fair Wind       WND       MD       8,000       0.18%       0.08%       Allegheny Rvr 8       WAT       PA       86,868       75.27%       0.85%         AP Amlie Ridge       WND       MV       119,226       2.75%       1.17%       AP Misc       WAT       PA       86,868       75.27%       0.64%         AP Laurel Mm.       WND       WV       2719       0.02%       0.01%       Beardslee       WAT       VA       44,651       3.87%       0.44%         AP Roth Rock       WND       WND       WND       207,676       4.78%       2.03%       Big Shols       WAT       VA       15.220       1.32%       0.15%         AP Koth Rock       WND       IL       357,58       1.98%       0.84%       Coleman Falls       WAT       VA       15.20       1.32%       0.07%       0.16%       Coshaw       WAT       VA       11.044       0.96%       0.17%       1.7%       1.7%       0.76%       0.28%       Coleman Falls       WAT       NA       1.64%       0.17%       0.66% <td< td=""><td>AP Beech Ridge</td><td>WND</td><td>WV</td><td>9,537</td><td></td><td>0.09%</td><td></td><td>WAT</td><td></td><td></td><td>3.83%</td><td>0.43%</td></td<>	AP Beech Ridge	WND	WV	9,537		0.09%		WAT			3.83%	0.43%
AP Fair Wind       WND       MD       7,064       0.16%       0.07%       Allegheny Rvr 9       WAT       PA       86,880       7.52%       0.859         AP A-Mile Ridge       WND       WND       WV       119,226       2.75%       1.17%       AP Misc       WAT       PA       416,868       10.23%       1.04         AP Imacle       WND       WV       719       0.02%       0.01%       Beardslee       WAT       NY       6,558       0.75%       0.03%         AP Twin Ridges       WND       MD       33,189       0.76%       0.33%       Brasfield       WAT       VA       15,220       1.32%       0.039         Bishop Hill       WND       IL       85,758       1.98%       0.84%       Colemangeln       WAT       VA       6.668       0.88%       0.079         Casiga Ridge       WND       IL       35,740       8.23%       3.50%       Cosiman Falls       WAT       NA       4.6686       0.88%       0.079         Casiga Ridge       WND       IL       10,76       0.27%       0.07%       Dison       WAT       IL       1.04       0.96%       0.119       5         Farmer City       WND       IL       <		WND	MD									0.48%
AP 4-Mile Ridge       WND       MVD       ND       8,000       0.18%       0.08%       Allegheny Rvr 9       PA       118,688       10.28%       1.169         AP Greenland       WND       WV       719       0.02%       0.01%       Beardslee       WAT       NV       44,651       3.8%       0.4%         AP Innacle       WND       WV       207,676       4.78%       2.03%       Big Shoals       WAT       VA       837       0.07%       0.03%         AP Roth Rock       WND       MD       33,189       0.76%       0.33%       Coleman Falls       WAT       VA       3.217       0.28%       0.03%         Bishop Hill       WND       IL       357,450       8.23%       3.50%       Coleman Falls       WAT       VA       11.04       0.66%       0.03%         Camp Grove       WND       IL       1.076       0.02%       0.01%       Deferiet       WAT       ND       16.978       1.47%       0.17%         Camp Grove       WND       IL       1.076       0.32%       0.01%       Dixon       WAT       NL       18.947       1.64%       0.19%         Carpage Ridge       WND       IL       1.076       0.32%												0.85%
AP Greenland       WND       WVD       119,226       2,75%       1,17%       AP Årisc       WAT       WV       44,651       3,87%       0.449         AP Laurel MM,       WND       WVD       207,676       4,78%       2,03%       Big Shals       WAT       VX       837       0.07%       0.019         AP Twin Ridges       WND       MP       33,189       0.76%       0.23%       Coleman Falls       WAT       VA       15,220       1.32%       0.07%       0.019         Bishop Hill       WND       RL       85,758       1.98%       0.84%       Coleman Falls       WAT       VA       3,217       0.28%       0.03%         Cayaga Ridge       WND       IL       37,7450       8.23%       3.50%       Cushaw       WAT       VA       4,881       0.42%       0.07%         Cayaga Ridge       WND       IL       1,076       0.02%       0.01%       Dison       WAT       NZ       4,881       0.42%       0.05%         Crescent Ridge       WND       IL       1,076       0.30%       0.13%       French Paper       WAT       NZ       4,841       0.42%       0.05%         Farmer City       WND       IL       2,976 <td></td> <td>1.16%</td>												1.16%
AP Laurel Mm.       WND       WV       719       0.02%       0.01%       Beardslee       WAT       NY       6.558       0.57%       0.069         AP Roth Rock       WND       MD       33,189       0.76%       0.33%       Brasfield       WAT       VA       837       0.07%       0.019         AP Twin Ridges       WND       PA       28,214       0.65%       0.28%       Coleman Falls       WAT       VA       3.217       0.28%       0.019         Bishop Hill       WND       IL       357,450       8.23%       3.50%       Cushaw       WAT       VA       1.044       0.06%       0.17         Camp Grove       WND       IL       305,598       7.04%       2.99%       Deferiet       WAT       NY       4.881       0.42%       0.05%         Crescent Ridge       WND       IL       1.076       0.02%       0.01%       Dixon       WAT       NY       6.315       0.55%       0.069         French Paper       WAT       IL       1.897       0.42%       0.01%       Granb       WAT       NY       6.315       0.55%       0.069         French Paper       WAT       IL       1.804       0.42%       0.05% <td>U</td> <td></td> <td>0.44%</td>	U											0.44%
AP Pinnacle       WND       WV       207,676       4.78%       2.03%       Big Shoals       WAT       VA       837       0.07%       0.019         AP Roth Rock       WND       PA       32.189       0.76%       0.33%       Brasfield       WAT       VA       837       0.07%       0.019         AP Twin Ridges       WND       PA       28.214       0.65%       0.28%       Coleman Falls       WAT       VA       3.217       0.28%       0.159         Bishop Hill       WND       IL       85.758       1.98%       0.84%       Conemaugh       WAT       VA       3.217       0.28%       0.039         Cayuga Ridge       WND       IL       7.7325       1.78%       0.76%       Deep Creek 22       WAT       ND       16.978       1.47%       0.17         Cayuga Ridge       WND       IL       1.076       0.02%       0.01%       Dixon       WAT       NI       10.382       0.99%       0.16         Farmer City       WND       MO       21.1063       4.86%       2.07%       Granby       WAT       NA       3.662       0.27%       0.039         Grand Ridge 2       WND       IL       25,063       0.58%       <										· · · · ·	0.57%	0.06%
AP Roth Rock       WND       MD       33,189       0.76%       0.33%       Brasfield       WAT       VA       15,220       1.32%       0.132%         AP Twin Ridges       WND       PA       28,214       0.65%       0.28%       Coleman Falls       WAT       VA       3,217       0.28%       0.039         Bishop Hill       WND       IL       35,758       1.98%       0.84%       Conemaugh       WAT       VA       11,044       0.96%       0.17         Camp Grove 1       WND       IL       35,758       7.04%       2.99%       Cushaw       WAT       VA       11,044       0.96%       0.17         Cayaga Ridge       WND       IL       105,598       7.04%       2.99%       Deferict       WAT       NY       4,881       0.42%       0.05%         Caroca WND       IL       1,076       0.02%       0.01%       Granby       WAT       NY       6,315       0.55%       0.06%         Findlay       WND       MO       211,063       4.86%       2.07%       Granby       WAT       NY       4,316       0.25%       0.04%         Fordar Ridge 2       WND       IL       23,062       0.26%       Lockport <t< td=""><td>AP Pinnacle</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.01%</td></t<>	AP Pinnacle											0.01%
AP Twin Ridges       WND       PA       28,214       0.65%       0.28%       Coleman Falls       WAT       VA       3,217       0.28%       0.03         Big Sky       WND       IL       85,758       1.98%       0.84%       Conemaugh       WAT       VA       6.686       0.58%       0.07         Camp Grove 1       WND       IL       77,252       1.78%       0.76%       Deep Creek 32       WAT       MA       11,044       0.96%       0.119         Canga Grove 1       WND       IL       10,76       0.02%       0.01%       Deep Creek 32       WAT       NA       N1,44       0.96%       0.19         Carseant Ridge       WND       IL       12,976       0.30%       0.13%       French Paper       WAT       NX       N3,162       0.27%       0.09         Findlay       WND       OH       943       0.02%       0.01%       Halifax       WAT       VA       3,697       0.32%       0.049         Grand Ridge 1       WND       IL       20,063       0.58%       0.25%       Lakeview Hydro       WAT       VA       3,697       0.32%       0.049         Grand Ridge 2       WND       IL       20,001%       0.00% </td <td></td> <td>0.15%</td>												0.15%
Big Sky       WND       IL       85,758       1.98%       0.84%       Conemaugh       WAT       PA       6.686       0.58%       0.079         Bishop Hill       WND       IL       357,450       8.23%       3.50%       Cushaw       WAT       VA       11,044       0.96%       0.119         Camp Grove 1       WND       IL       305,598       7.04%       2.99%       Deep Creek 2       WAT       NY       4.881       0.42%       0.05%         Corecauge WND       IL       10,76       0.02%       0.01%       Deforter       WAT       NY       4.881       0.42%       0.05%         Foreore       WND       IL       12,976       0.30%       0.01%       French Paper       WAT       MI       10.382       0.90%       0.19         Farmer City       WND       MO       21,063       0.88%       0.26%       Ickeiver Hydro       WAT       VA       3,697       0.32%       0.04%         Grand Ridge 2       WND       IL       20,040       0.76%       0.23%       Icakoriew Hydro       WAT       VA       6.683       5.79%       0.666         Grand Ridge 2       WND       IL       20,01%       0.02%       Mooraws D												0.03%
Bishop/Hill       WND       IL       357,450       8.23%       3.00%       Cushaw       WAT       VA       11,044       0.96%       0.119         Camp Grove I       WND       IL       77,325       1.78%       0.76%       DepCreek 32       WAT       MD       16.978       1.47%       0.17         Cayuga Ridge       WND       IL       10,76       0.02%       0.01%       DepCreek 32       WAT       MD       16.978       1.47%       0.17         Cayuga Ridge       WND       IL       10,76       0.02%       0.01%       Dixon       WAT       VA       8.81       0.42%       0.05%       0.19         Forder Ridge       WND       MD       2.976       0.30%       0.13%       French Paper       WAT       NY       6.315       0.55%       0.069         Findlay       WND       DI       2.673       0.88%       0.25%       Holcomb Rock       WAT       VA       3.67       0.32%       0.44%       0.09%       6.01%       0.00%       Grand Ridge 3       WND       IL       22.09       0.33%       0.23%       London       WAT       VA       6.688       5.79%       0.66%         Grand Ridge 3       WND       IL	0											0.07%
Camp Grove 1       WND       IL       77,325       1.78%       0.76%       Deep Creek 32       WAT       MD       16,978       1.47%       0.17%         Cayug Ridge       WND       IL       305,598       7.04%       2.99%       Deep Creek 32       WAT       NY       4,881       0.42%       0.01%         Crescent Ridge       WND       IL       1.276       0.30%       0.13%       Ditxon       WAT       NY       4,881       0.42%       0.01%         French Paper       WAT       NY       4,881       0.42%       0.00%       0.16       0.16       0.16%       0.17%       0.63%       0.02%       0.01%       0.16       0.35%       0.02%       0.01%       0.16       0.43%       0.02%       0.01%       0.01%       0.03%       0.16       0.27%       0.03%       0.03%       0.25%       0.01%       0.00%       Marina Ridge 3       WND       0.1       25,063       0.58%       0.25%       London       WAT       WAT       WA       3,65       0.03%       0.03%       Lockport       WAT       IL       35,674       3.08%       0.35%       0.04%       Moomaws Dam       WAT       VA       2,622       0.23%       0.03%       0.04%							U U					0.11%
Cay-ga Ridge         WND         IL         305,598         7.04%         2.99%         Deferiet         WAT         NY         4.881         0.42%         0.05%           Crescent Ridge         WND         IL         1.076         0.02%         0.01%         Dixon         WAT         IL         18,947         1.64%         0.19%           Farmer City         WND         MO         211,063         4.86%         2.07%         Granby         WAT         NY         6.315         0.55%         0.06%           Findlay         WND         OH         943         0.02%         0.01%         Halifax         WAT         NA         3,162         0.27%         0.03%           Grand Ridge 1         WND         IL         25,063         0.58%         0.25%         Lockport         WAT         VA         68         0.01%         0.00%           Grand Ridge 3         WND         IL         23,099         0.53%         0.23%         London         WAT         WV         49,223         4.26%         0.48%           Grand Ridge 3         WND         IL         20,21         0.05%         0.02%         Mormaet         WAT         WAT         4,262         0.23%         0.44%<	1									· · · · ·		0.17%
Crescent Ridge         WND         IL         1,076         0.02%         0.01%           Farmer City         WND         MD         12,976         0.30%         0.13%         French Paper         WAT         MI         10,382         0.90%         0.19%           Farmer City         WND         OH         943         0.02%         0.01%         Granby         WAT         NY         6,315         0.55%         0.06%           Findlay         WND         OH         943         0.02%         0.01%         Halifax         WAT         NY         6,316         0.55%         0.06%           Grand Ridge 1         WND         IL         23,040         0.70%         0.30%         Lakeview Hydro         WAT         VA         68         0.01%         0.00%           Grand Ridge 2         WND         IL         23,099         0.53%         0.23%         London         WAT         WAT         VA         66.83         5.79%         0.66%           Grand Ridge 4         WND         IL         23,099         0.65%         0.02%         Momaw Dam         WAT         VA         2,622         0.23%         0.04%           Marptstr         WND         OH         40,6	1											0.05%
Eco Grove         WND         IL         12,976         0.30%         0.13%         French Paper         WAT         MI         10,382         0.90%         0.10%           Farmer City         WND         MO         211,063         4.86%         2.07%         Granby         WAT         NY         6,315         0.55%         0.06%           Findlay         WND         IN         26,738         0.62%         0.26%         Halifax         WAT         VA         3,697         0.32%         0.04%           Grand Ridge 2         WND         IL         25,063         0.58%         0.25%         Lakeview Hydro         WAT         VA         3,697         0.32%         0.04%           Grand Ridge 2         WND         IL         23,099         0.53%         0.23%         Lockport         WAT         WAT         VA         3,697         0.32%         0.06%           Grand Ridge 4         WND         IL         280         0.01%         0.00%         Marmet         WAT         WAT         VA         2,622         0.23%         0.03%           High Trail         WND         IL         64,671         1.49%         0.63%         Moomawas Dam         WAT         VA         <												0.19%
Farmer CityWNDMO211,0634.86%2.07%GranbyWATNY6,3150.55%0.06%FindlayWNDOH9430.02%0.01%HalfaxWATVA3,1620.27%0.039Fowler RidgeWNDIL25,0630.58%0.25%Lakeview HydroWATVA3,6970.32%0.04%Grand Ridge 2WNDIL23,0990.53%0.23%Cather WATIL35,5743.08%0.35%Grand Ridge 4WNDIL230,0990.53%0.23%CockportWATWATVA66,8835.79%0.66%Grand Ridge 4WNDIL20,210.05%0.02%MarmetWATVA4,6260.48%0.46%Grand Ridge 4WNDOH2,0210.05%0.02%MormaretWATVA2,6220.23%0.04%HarpsterWNDOH4,060.01%0.00%Mother Ann LeeWATVA8,4910.74%0.08%HilltopperWNDIL122,1200.51%0.22%PinnaclesWATVA15,0421.30%0.15%MarionWNDIL237,7665,48%2.33%SchoolfieldWATVA5,4850.47%0.05%MinonkWNDIL23,7665,48%2.33%Soft MapleWATVA5,4850.47%0.02%Pilot HillWNDIL9,1390.21%0.09% </td <td>U</td> <td></td> <td>0.10%</td>	U											0.10%
Findlay       WND       OH       943       0.02%       0.01%       Halifax       WAT       VA       3,162       0.27%       0.03%         Fowler Ridge       WND       IN       26,738       0.62%       0.26%       Halifax       WAT       VA       3,697       0.32%       0.03%         Grand Ridge 1       WND       IL       25,033       0.62%       0.26%       Halifax       WAT       VA       3,697       0.32%       0.04%         Grand Ridge 2       WND       IL       23,099       0.33%       0.23%       Lakeview Hydro       WAT       VA       3,697       0.32%       0.04%         Grand Ridge 3       WND       IL       23,099       0.33%       0.23%       Lockport       WAT       VA       49,223       4.26%       0.48%         Greenville       WND       OH       2,021       0.05%       0.02%       Marmet       WAT       VA       2,622       0.23%       0.039         Hiltopper       WND       IL       22,120       0.51%       0.22%       Pinnacles       WAT       VA       35,152       3.04%       0.36%         Mendota Hills       WND       IL       47,005       1.08%       0.46% <td></td> <td>0.06%</td>												0.06%
Fowler Ridge       WND       IN       26,738       0.62%       0.26%       Holcomb Rock       WAT       VA       3,697       0.32%       0.04%         Grand Ridge 1       WND       IL       23,063       0.58%       0.25%       Lakeview Hydro       WAT       VA       68       0.01%       0.00%         Grand Ridge 2       WND       IL       23,099       0.53%       0.23%       Lakeview Hydro       WAT       VA       68       0.01%       0.03%         Grand Ridge 4       WND       IL       23,099       0.53%       0.23%       Lockport       WAT       WAT       WV       49,223       4.26%       0.48%         Greenville       WND       OH       2,021       0.05%       0.02%       Moomaws Dam       WAT       VA       2,622       0.23%       0.039         Harpster       WND       OH       406       0.01%       0.00%       Mother Ann Lee       WAT       VA       8,491       0.74%       0.08%         Hilltopper       WND       IL       172,554       3.97%       1.69%       Prospect       WAT       VA       5,485       0.47%       0.05%         Menotat Hills       WND       IL       237,766	2											0.03%
Grand Ridge 1       WND       IL       25,063       0.58%       0.25%       Lakeview Hydro       WAT       VA       68       0.01%       0.009         Grand Ridge 2       WND       IL       30,400       0.70%       0.30%       Lockport       WAT       IL       35,574       3.08%       0.35%         Grand Ridge 3       WND       IL       23,099       0.53%       0.23%       Lockport       WAT       IL       35,574       3.08%       0.35%         Grand Ridge 4       WND       IL       23,099       0.53%       0.02%       Marnet       WAT       WV       49,223       4.26%       0.488         Greenville       WND       OH       2,021       0.05%       0.02%       Momaws Dam       WAT       VA       2,622       0.23%       0.03%         Harpster       WND       OH       406       0.01%       0.00%       Mother Ann Lee       WAT       VA       8,491       0.74%       0.08%         Kelly Creek       WND       IL       47,513       3.97%       1.69%       Prospect       WAT       VA       15,042       1.30%       0.15%         Marion       WND       IL       47,051       1.08%       0.4		WND		26,738			Holcomb Rock					0.04%
Grand Ridge 2       WND       IL       30,400       0.70%       0.30%       Lockport       WAT       IL       35,574       3.08%       0.35%         Grand Ridge 3       WND       IL       23,099       0.53%       0.23%       Lockport       WAT       WV       66,883       5.79%       0.66%         Greenville       WND       OH       2,021       0.05%       0.02%       Moomaws Dam       WAT       VA       2,622       0.23%       0.66%         High Trail       WND       OH       406       0.01%       0.00%       Mormaws Dam       WAT       VA       2,622       0.23%       0.039         High Trail       WND       IL       24,201       0.51%       0.02%       Mother Ann Lee       WAT       VA       8,491       0.74%       0.08%         Mendota Hills       WND       IL       172,554       3.97%       1.69%       Prospect       WAT       VA       35,170       0.45%       0.05%         Mendota Hills       WND       IL       237,766       5.48%       2.33%       Schoolfield       WAT       VA       5,485       0.47%       0.05%         Minonk       WND       IL       9,139       0.21%		WND						WAT				0.00%
Grand Ridge 3       WND       IL       23,099       0.53%       0.23%       London       WAT       WV       66,883       5.79%       0.66%         Grand Ridge 4       WND       IL       280       0.01%       0.00%       Marmet       WAT       WV       49,223       4.26%       0.48%         Greenville       WND       OH       2,021       0.05%       0.02%       Momaws Dam       WAT       WV       49,223       4.26%       0.48%         Harpster       WND       OH       406       0.01%       0.00%       Mother Ann Lee       WAT       VA       2,622       0.23%       0.03%         Hilltopper       WND       IL       64,671       1.49%       0.63%       Mother Ann Lee       WAT       VA       8,491       0.74%       0.08%         Kelly Creek       WND       IL       172,554       3.97%       1.69%       Prospect       WAT       VA       15,042       1.30%       0.15%         Menota Hills       WND       IL       47,051       1.09%       0.47%       Schoolfield       WAT       VA       15,042       1.30%       0.20%         Minonk       WND       IL       9,139       0.21%       0.97%	0	WND	IL			0.30%		WAT	IL	35,574	3.08%	0.35%
Grand Ridge 4       WND       IL       280       0.01%       0.00%       Marmet       WAT       WV       49,223       4.26%       0.48%         Greenville       WND       OH       2,021       0.05%       0.02%       Moomaws Dam       WAT       VA       2,622       0.23%       0.03%         Harpster       WND       OH       406       0.01%       0.00%       Mother Ann Lee       WAT       VA       2,622       0.23%       0.03%         Hiltopper       WND       IL       64,671       1.49%       0.63%       Noter Ann Lee       WAT       VA       8,491       0.74%       0.08%         Kelly Creek       WND       IL       22,120       0.51%       0.22%       Pinacles       WAT       VA       35,152       3.04%       0.34%         Marion       WND       OH       2,161       0.05%       0.02%       Reusens       WAT       VA       15,042       1.30%       0.15%         Minonk       WND       IL       237,766       5.48%       2.33%       Soft Maple       WAT       VA       5,485       0.47%       0.02%         Vlawa       WND       PA       2,320       0.05%       0.25%       So	0											0.66%
Greenville         WND         OH         2,021         0.05%         0.02%         Moomaws Dam         WAT         VA         2,622         0.23%         0.03%           Harpster         WND         OH         406         0.01%         0.00%         Mother Ann Lee         WAT         KY         4,028         0.35%         0.049           High Trail         WND         IL         64,671         1.49%         0.63%         Niagara         WAT         VA         8,491         0.74%         0.08%           Hilltopper         WND         IL         22,120         0.51%         0.22%         Pinnacles         WAT         VA         8,491         0.74%         0.08%           Marion         WND         OH         2,161         0.05%         0.02%         Reusens         WAT         VA         15,042         1.30%         0.15%           Mendota Hills         WND         IL         47,513         1.09%         0.47%         Schoolfield         WAT         VA         5,485         0.47%         0.02%           Minonk         WND         IL         9,219         2.29%         0.97%         Soft Maple         WAT         NY         1,971         0.17%         0.24%<	Grand Ridge 4	WND					Marmet	WAT	WV		4.26%	0.48%
HarpsterWNDOH4060.01%0.00%Mother Ann LeeWATKY4,0280.35%0.049High TrailWNDIL22,1200.51%0.63%NiagaraWATVA8,4910.74%0.089HilltopperWNDIL172,5543.97%1.69%ProspectWATVA35,1523.04%0.34%Kelly CreekWNDIL172,5543.97%1.69%ProspectWATVA15,0421.30%0.45%Mendota HillsWNDIL47,0051.08%0.46%SchoolfieldWATVA20,2361.75%0.20%MeyersdaleWNDPA47,5131.09%0.47%SnowdenWATVA5,4850.47%0.05%MinonkWNDIL92,2192.29%0.97%Soft MapleWATNY1,9710.17%0.029Old TrailWNDIL9,3200.05%0.02%PreprotaWATNY25,0062.17%0.24%Plot HillWNDPA25,3600.58%0.25%WinfieldWATVA7,3980.64%0.05%PN AlleghenyWNDPA45,0301.04%0.41%YoughWATPA46,9347.53%0.85%PN CasselmanWNDPA45,0301.04%0.45%PNNaleghenyWATPA86,9347.53%0.85%PN N. AlleghenyWNDPA46,2671.07%	Greenville	WND	OH	2,021	0.05%	0.02%	Moomaws Dam	WAT	VA		0.23%	0.03%
HilltopperWNDIL22,1200.51%0.22%PinnaclesWATVA35,1523.04%0.34%Kelly CreekWNDIL172,5543.97%1.69%ProspectWATNY5,1700.45%0.05%MarionWNDOH2,1610.05%0.02%ReusensWATVA15,0421.30%0.15%MeyersdaleWNDPA47,5131.09%0.47%SchoolfieldWATVA20,2361.75%0.20%MinonkWNDIL237,7665.48%2.33%Soft MapleWATNY1,9710.17%0.029Old TrailWNDIL9,2192.29%0.97%OregoTrentonWATNY25,0062.17%0.22%Pilot HillWNDIL9,1390.21%0.09%Upper SterlingWATIL15,5621.35%0.15%PN Armenia MtnWNDPA31,0320.71%0.30%York HavenWATVA7,3980.64%0.07%PN LookoutWNDPA45,0301.04%0.44%York HavenWATPA143,70812.44%1.41%PN Mehoopany 1WNDPA45,0301.04%0.45%York HavenWATPA86,9347.53%0.85%PN N. AlleghenyWNDPA38,1130.88%0.37%York HavenWATPA86,9347.53%0.85%PN Mehoopany 1WNDPA32	Harpster	WND	OH		0.01%	0.00%	Mother Ann Lee	WAT	KY		0.35%	0.04%
HiltopperWNDIL22,1200.51%0.22%PinnaclesWATVA35,1523.04%0.34%Kelly CreekWNDIL172,5543.97%1.69%ProspectWATNY5,1700.45%0.05%MarionWNDOH2,1610.05%0.02%ReusensWATVA15,0421.30%0.15%MeyersdaleWNDPA47,5131.09%0.47%SchoolfieldWATVA20,2361.75%0.20%MinonkWNDIL237,7665.48%2.33%Soft MapleWATNY1,9710.17%0.029Old TrailWNDIL9,2192.29%0.97%TrentonWATNY25,0062.17%0.22%Pilot HillWNDIL9,1390.21%0.09%VP EmporiaWATVA7,3980.64%0.07%PN Armenia MtnWNDPA31,0320.71%0.30%York HavenWATPA143,70812.44%1.41%PN LookoutWNDPA45,0301.04%0.44%York HavenWATPA86,9347.53%0.85%PN N. AlleghenyWNDPA38,1130.88%0.37%York HavenWATPA86,9347.53%0.85%PN Mehoopany IWNDPA38,1130.88%0.37%PA1.154,899100.00%11.31%PN Sandy RidgeWNDPA24,2630.56%0.24%V </td <td>High Trail</td> <td>WND</td> <td>IL</td> <td>64,671</td> <td>1.49%</td> <td>0.63%</td> <td>Niagara</td> <td>WAT</td> <td>VA</td> <td>8,491</td> <td>0.74%</td> <td>0.08%</td>	High Trail	WND	IL	64,671	1.49%	0.63%	Niagara	WAT	VA	8,491	0.74%	0.08%
Kelly Creek       WND       IL       172,554       3.97%       1.69%         Marion       WND       OH       2,161       0.05%       0.02%         Mendota Hills       WND       IL       47,005       1.08%       0.46%         Meyersdale       WND       PA       47,513       1.09%       0.47%         Minonk       WND       IL       237,766       5.48%       2.33%         Old Trail       WND       IL       99,219       2.29%       0.97%         Old Trail       WND       IL       91,39       0.21%       0.09%         Pi Locust Ridge       WND       PA       25,360       0.58%       0.25%         PN Allegheny       WND       PA       45,030       0.10%       0.41%         PN Casselman       WND       PA       45,030       1.04%       0.44%         PN Mehoopany 1       WND       PA       46,267       1.07%       0.45%         PN N. Allegheny       WND       PA       38,113       0.88%       0.37%         PN N. Allegheny       WND       PA       45,030       1.04%       0.44%         PN N. Allegheny       WND       PA       38,113       0.88%	Hilltopper	WND				0.22%		WAT			3.04%	0.34%
Marion       WND       OH       2,161       0.05%       0.02%       Reusens       WAT       VA       15,042       1.30%       0.15%         Mendota Hills       WND       IL       47,005       1.08%       0.46%       Schoolfield       WAT       VA       20,236       1.75%       0.20%         Meyersdale       WND       PA       47,513       1.09%       0.47%       Schoolfield       WAT       VA       5,485       0.47%       0.05%         Minonk       WND       IL       237,766       5.48%       2.33%       Schoolfield       WAT       VA       5,485       0.47%       0.05%         Old Trail       WND       IL       99,219       2.29%       0.97%       Soft Maple       WAT       NY       1,971       0.17%       0.02%         Pilot Hill       WND       IL       9,139       0.21%       0.09%       VP Emporia       WAT       VA       7,398       0.64%       0.07%         VP Locust Ridge       WND       PA       31,032       0.71%       0.30%       York Haven       WAT       VA       7,398       0.64%       0.07%         Yough       WAT       PA       143,708       12.44%       1.41% <td>Kelly Creek</td> <td></td> <td>IL</td> <td>172,554</td> <td></td> <td></td> <td>Prospect</td> <td></td> <td>NY</td> <td></td> <td></td> <td>0.05%</td>	Kelly Creek		IL	172,554			Prospect		NY			0.05%
Mendota Hills       WND       IL       47,005       1.08%       0.46%       Schoolfield       WAT       VA       20,236       1.75%       0.20%         Meyersdale       WND       PA       47,513       1.09%       0.47%       Snowden       WAT       VA       5,485       0.47%       0.05%         Minonk       WND       IL       237,766       5.48%       2.33%       Soft Maple       WAT       NY       1,971       0.17%       0.02%         Old Trail       WND       IL       99,219       2.29%       0.97%       Soft Maple       WAT       NY       1,971       0.17%       0.02%         Ottawa       WND       OH       2,320       0.05%       0.02%       Upper Sterling       WAT       NY       1,971       0.17%       0.24%         Pilot Hill       WND       IL       9,139       0.21%       0.09%       VP Emporia       WAT       VA       7,398       0.64%       0.07%         PN Allegheny       WND       PA       31,032       0.71%       0.30%       York Haven       WAT       PA       143,708       12.44%       1.41%         PN Lookout       WND       PA       45,030       1.04%       0.44												0.15%
Meyersdale       WND       PA       47,513       1.09%       0.47%       Snowden       WAT       VA       5,485       0.47%       0.05%         Minonk       WND       IL       237,766       5.48%       2.33%       Soft Maple       WAT       NY       1,971       0.17%       0.02%         Old Trail       WND       IL       99,219       2.29%       0.97%       Trenton       WAT       NY       25,006       2.17%       0.24%         Ottawa       WND       OH       2,320       0.05%       0.02%       Upper Sterling       WAT       NY       25,006       2.17%       0.24%         Pilot Hill       WND       IL       9,139       0.21%       0.09%       VP Emporia       WAT       VA       7,398       0.64%       0.07%         PL Locust Ridge       WND       PA       31,032       0.71%       0.30%       York Haven       WAT       WA       7,398       0.64%       0.07%         PN Armenia Mtn       WND       PA       42,280       0.97%       0.41%       Yough       WAT       PA       143,708       12.44%       1.41%         PN Lookout       WND       PA       45,030       1.04%       0.44% <td>Mendota Hills</td> <td></td> <td>0.20%</td>	Mendota Hills											0.20%
MinonkWNDIL237,7665.48%2.33%Soft MapleWATNY1,9710.17%0.02%Old TrailWNDIL99,2192.29%0.97%0.17%0.02%TrentonWATNY25,0062.17%0.24%OttawaWNDOH2,3200.05%0.02%Upper SterlingWATIL15,5621.35%0.15%Pilot HillWNDPA25,3600.58%0.25%VP EmporiaWATVA7,3980.64%0.07%PL Locust RidgeWNDPA31,0320.71%0.30%VP EmporiaWATWV67,8375.87%0.66%PN AlleghenyWNDPA11,5590.27%0.11%YoughWATPA143,70812.44%1.41%PN LookoutWNDPA45,0301.04%0.44%YoughWATPA86,9347.53%0.85%PN N. AlleghenyWNDPA38,1130.88%0.37%VPVPVPVPVPVPVPVPPN Sandy RidgeWNDPA24,2630.56%0.24%VATVATVATVAVPVPVolumeVP <td>Meyersdale</td> <td></td> <td>0.05%</td>	Meyersdale											0.05%
Old Trail         WND         IL         99,219         2.29%         0.97%         Trenton         WAT         NY         25,006         2.17%         0.24%           Ottawa         WND         OH         2,320         0.05%         0.02%         Upper Sterling         WAT         IL         15,562         1.35%         0.15%           Pilot Hill         WND         IL         9,139         0.21%         0.09%         VP Emporia         WAT         VA         7,398         0.64%         0.07%           PL Locust Ridge         WND         PA         25,360         0.58%         0.25%         Winfield         WAT         WV         67,837         5.87%         0.66%           PN Allegheny         WND         PA         11,559         0.27%         0.11%         Yough         WAT         PA         143,708         12.44%         1.41%           Yough         WAT         PA         86,934         7.53%         0.85%         0.85%           PN Casselman         WND         PA         46,267         1.07%         0.45%         PN         N. Allegheny         WND         PA         38,113         0.88%         0.37%           PN Sandy Ridge         WND	2											0.02%
Ottawa         WND         OH         2,320         0.05%         0.02%         Upper Sterling         WAT         IL         15,562         1.35%         0.15%           Pilot Hill         WND         IL         9,139         0.21%         0.09%         VP Emporia         WAT         VA         7,398         0.64%         0.07%           PL Locust Ridge         WND         PA         25,360         0.58%         0.25%         Winfield         WAT         VA         7,398         0.64%         0.07%           PN Allegheny         WND         PA         31,032         0.71%         0.30%         York Haven         WAT         PA         143,708         12.44%         1.41%           PN Armenia Mtn         WND         PA         42,280         0.97%         0.41%         Yough         WAT         PA         86,934         7.53%         0.85%           PN Lookout         WND         PA         45,030         1.04%         0.44%         PA         143,708         12.44%         1.131%           PN Sandy Ridge         WND         PA         38,113         0.88%         0.37%         PA         1.154,899         100.00%         11.31%												0.24%
Pilot Hill       WND       IL       9,139       0.21%       0.09%       VP Emporia       WAT       VA       7,398       0.64%       0.07%         PL Locust Ridge       WND       PA       25,360       0.58%       0.25%       Winfield       WAT       WV       67,837       5.87%       0.66%       0.06%         PN Allegheny       WND       PA       31,032       0.71%       0.30%       York Haven       WAT       PA       143,708       12.44%       1.41%         PN Armenia Mtn       WND       PA       42,280       0.97%       0.41%       Yough       WAT       PA       86,934       7.53%       0.85%         PN Lookout       WND       PA       45,030       1.04%       0.44%       PN       Nehoopany 1       WND       PA       38,113       0.88%       0.37%       PN Sandy Ridge       WND       PA       24,263       0.56%       0.24%       Image: State S	Ottawa						Upper Sterling				1.35%	0.15%
PL Locust Ridge       WND       PA       25,360       0.58%       0.25%         PN Allegheny       WND       PA       31,032       0.71%       0.30%       York Haven       WAT       WV       67,837       5.87%       0.66%         PN Allegheny       WND       PA       31,032       0.71%       0.30%       York Haven       WAT       PA       143,708       12.44%       1.41%         PN Armenia Mtn       WND       PA       42,280       0.97%       0.41%       Yough       WAT       PA       86,934       7.53%       0.85%         PN Lookout       WND       PA       45,030       1.04%       0.44%       PN       Fotal       1,154,899       100.00%       11.31%         PN Mehoopany 1       WND       PA       38,113       0.88%       0.37%       PN       PN       PA       24,263       0.56%       0.24%       PN       PN       PN       PA       24,263       0.56%       0.24%       PN       PN       PN       PN       PA       24,263       0.56%       0.24%       PN	Pilot Hill											0.07%
PN Allegheny         WND         PA         31,032         0.71%         0.30%         York Haven         WAT         PA         143,708         12.44%         1.41%           PN Armenia Mtn         WND         PA         11,559         0.27%         0.11%         York Haven         WAT         PA         143,708         12.44%         1.41%           PN Armenia Mtn         WND         PA         42,280         0.97%         0.41%         Yough         WAT         PA         86,934         7.53%         0.85%           PN Lookout         WND         PA         45,030         1.04%         0.44%         PA         1.1,154,899         100.00%         11.31%           PN Mehoopany 1         WND         PA         46,267         1.07%         0.45%         PN         N. Allegheny         WND         PA         38,113         0.88%         0.37%         PN         Value	PL Locust Ridge				0.58%		Winfield				5.87%	0.66%
PN Armenia Mtn         WND         PA         11,559         0.27%         0.11%         Yough         WAT         PA         86,934         7.53%         0.85%         0.85%         0.97%         0.41%         Number of the state of the	PN Allegheny						York Haven			143,708	12.44%	1.41%
PN Casselman         WND         PA         42,280         0.97%         0.41%           PN Lookout         WND         PA         45,030         1.04%         0.44%           PN Mehoopany 1         WND         PA         46,267         1.07%         0.45%           PN N. Allegheny         WND         PA         38,113         0.88%         0.37%           PN Sandy Ridge         WND         PA         24,263         0.56%         0.24%	PN Armenia Mtn	WND								<u>8</u> 6,934		0.85%
PN Lookout         WND         PA         45,030         1.04%         0.44%           PN Mehoopany 1         WND         PA         46,267         1.07%         0.45%           PN N. Allegheny         WND         PA         38,113         0.88%         0.37%           PN Sandy Ridge         WND         PA         24,263         0.56%         0.24%	PN Casselman						-					11.31%
PN Mehoopany 1         WND         PA         46,267         1.07%         0.45%           PN N. Allegheny         WND         PA         38,113         0.88%         0.37%           PN Sandy Ridge         WND         PA         24,263         0.56%         0.24%	PN Lookout											
PN N. Allegheny         WND         PA         38,113         0.88%         0.37%           PN Sandy Ridge         WND         PA         24,263         0.56%         0.24%												
PN Sandy Ridge WND PA 24,263 0.56% 0.24%	PN N. Allegheny											
	0 5											
	-			-								

Faaility Nama		Tier 1 (C		MGW/ 0/	Tior 1
Facility Name Covanta Fairfax	Fuel MSW	State VA	Quantity 323,901	MSW % 29.48%	Tier 1 3.17%
			· · · ·		
Montgomery Wheelabrator	MSW MSW	MD MD	416,880	37.95% 32.57%	4.08% 3.50%
wheelabrator	MSW		357,764		
		Total	1,098,545	100.00%	10.76%
Facility Name	Fuel	State	Quantity	AB %	Tier 1
Kapstone Kraft	AB	NC	946	100.00%	0.01%
		Total	946	100.00%	0.01%
Facility Name	Fuel	State	Quantity	BLQ %	Tier 1
AEP W				<b>L</b>	-
Kingsport	BLQ	TN	141,858	6.11%	1.39%
Chillicothe	BLQ	OH	76,015	3.27%	0.74%
Covington	BLQ	VA	484,966	20.88%	4.75%
Domtar Paper	BLQ	NC	246,109	10.59%	2.41%
· ····· - ··· ···			,		
Franklin Mill	BLQ	VA	392,536	16.90%	3.84%
Hopewell	BLQ	VA	217,935	9.38%	2.13%
Johnsonburg Mill	BLQ	PA	56,289	2.42%	0.55%
Kapstone Kraft	BLQ	NC	153,392	6.60%	1.50%
Rupstone Riun	BLY	110	100,002	0.0070	1.0070
Luke Mill	BLQ	MD	43,055	1.85%	0.42%
Spring Grove	BLQ	PA	89,398	3.85%	0.88%
West Point	BLQ	VA	421,567	18.15%	4.13%
west i oliti	DLQ	• 11	421,507	10.1370	4.1570
		Total	2,323,120	100.00%	22.75%
Facility Name	Fuel	State	Quantity	OBG %	Tier 1
Atlantic Trtmnt	OBG	VA	2,613	5.36%	0.03%
Buckeye BioGas	OBG	OH	2,278	4.67%	0.02%
DC Water Bailey	OBG	DC	38,141	78.27%	0.37%
French Creek	OBG	OH	276	0.57%	0.00%
Haviland	OBG	OH	4,631	9.50%	0.05%
Zanesville	OBG	OH	791	1.62%	0.01%
		Total	48,730	100.00%	0.48%
Facility Name	Fuel	State	Quantity	WDS %	Tier 1
AEP W		~~~~~	Zumnig		- 101 1
Kingsport	WDS	TN	23,333	3.32%	0.23%
Covington	WDS	VA	175,528	24.99%	1.72%
Cox Waste	WDS	KY	10,348	1.47%	0.10%
Domtar Paper	WDS	NC	100,007	14.24%	0.10%
ECI	WDS	MD	28,381	4.04%	0.28%
Hopewell	WDS	VA	35,822	5.10%	0.28%
Kapstone Kraft	WDS	NC	30,039	4.28%	0.33%
Pittyslvania	WDS	VA	30,039 16,391	2.33%	0.29%
VP South Boston	WDS	VA VA	254,267	2.55% 36.21%	2.49%
	wbs	٧A	234,207	30.2170	2.49%
West Point	WDS	VA	28,174	4.01%	0.28%

Appendix A 2019 Retired RECs by Facility	y (Cont'd)
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Tier 2								
Facility Name	Fuel	State	Quantity	WAT %	Tier 2			
Belleville	WAT	WV	650	1.16%	1.16%			
Conowingo	WAT	MD	1,558	2.79%	2.79%			
Covanta	WAT	WV	766	1.37%	1.37%			
Falls	WAT	NC	2,126	3.80%	3.80%			
High Rock	WAT	NC	666	1.19%	1.19%			
Lake Lynn	WAT	PA	2,990	5.35%	5.35%			
Narrows	WAT	NC	5,007	8.96%	8.96%			
Piney	WAT	PA	311	0.56%	0.56%			
Racine	WAT	OH	19	0.03%	0.03%			
Safe Harbor 1	WAT	PA	1,980	3.54%	3.54%			
Summersville	WAT	WV	229	0.41%	0.41%			
Tuckertown	WAT	NC	52	0.09%	0.09%			
XIC Calderwood	WAT	TN	30,324	54.27%	54.27%			
XIC Cheoah	WAT	NC	9,201	16.47%	16.47%			
		Total	55,879	100.00%	100.00 %			
		Summ	ary					
		<u>^ 210 27</u>						
		0,210,27						
Tier 1 REC Total	5							
SREC Total		1,167,329						
Tier 2 REC Total		55,879						
		11,433,48						
Grand Total		3						
*Solar facilities are not represented in this table. In 2019, SRECs were retired from 61,085 facilities.								
Resource Definitions								
A suiveltana Weste AD Manisipal Galid Weste MOW								

Resource Definitions								
Agriculture Waste	AB	Municipal Solid Waste	MSW					
Black Liquor	BLQ	Other Biomass Gas	OBG					
Geothermal	GEO	Wood/Waste Solids	WDS					
Hydroelectric	WAT	Wind	WND					
Landfill Gas LFG								

	D				K		Μ		Ν	Ν		Ν				V		
	С	IA	IL	IN	Y	MD	Ι	MO	С	D	NJ	Y	OH	PA	TN	Α	WV	Total
Tier 1 Non-solar																		
Agricultural Byproduct	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Black Liquor	-	-	-	-	-	1	-	-	2	-	-	-	1	2	1	4	-	11
Geothermal	-	-	-	-	-	55	-	-	-	-	-	-	-	-	-	-	-	55
Landfill Gas	-	2	10	-	5	4	1	-	-	-	5	-	5	13	-	13	-	58
Municipal Solid Waste	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	-	3
Other Biomass Gas	1	-	-	-	-	-	-	-	-	-	-	-	4	-	-	1	-	6
Solar Thermal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small Hydro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wood Waste	-	-	3	-	1	1	1	-	-	-	-	6	-	7	-	16	5	40
Wind	-	-	-	-	1	1	-	-	2	-	-	-	-	-	1	5	-	10
Tier 1 Solar																		
Solar PV	-	-	-	-	-	60,358	-	-	-	-	-	-	-	-	-	-	-	60,358
Solar Thermal	-	-	-	-	-	727	-	-	-	-	-	-	-	-	-	-	-	727
Tier 2		2	1		1		1	1				1	1	1			1	
Large Hydro	-	-	-	-	-	1	-	-	5	-	-	-	1	3	1	-	3	14
Total	1	2	37	12	7	61,154	2	1	10	1	6	6	22	36	3	40	13	61,353

Appendix B Location of Facilities that Provided RECs for 2019 RPS Compliance

Note: In order to prevent double counting, facilities using multiple fuels are only listed under their primary fuel.

Fuel Type and       RECs Retired for RPS Compliance by State         Tier								Other	Total RECs Generated
	DC	DE	MD	NJ	PA	Total			
Black Liquor	-	-	30,000	-	-	30,000	11,746	-	41,746
Geothermal	-	-	1,734	-	-	1,734	308	-	2,042
Landfill Gas	-	-	3,854	-	1,437	5,291	67,004	46	73,774
Municipal Solid Waste	-	-	438,293	-	-	438,293	209,516	-	647,809
Small Hydro	-	-	16,818	-	-	16,818	-	-	16,818
Solar Thermal	-	-	-	-	-	-	16	-	16
Wind	-	49,427	13,123	11,242	-	73,792	446,432	-	520,240
Wood Waste	-	-	11,877	-	-	11,877	4,937	-	16,814
Tier 1 Non-solar Total	-	49,427	515,699	11,242	1,437	577,805	739,959	46	1,319,259
Solar PV	2,014	-	410,715	-	-	412,729	838,565	172	1,251,466
Solar Thermal	-	-	1,086	-	-	1,086	2,402	-	3,488
Tier 1 Solar Total	2,014	-	411,801	-	-	413,815	840,967	172	1,254,954
Large Hydro	-	-	-	-	-	413,815	2,135,392	26,457	2,161,849
Tier 2 Total	-	-	-	-	-	-	2,135,392	26,457	2,161,849
Grand Total	2,014	49,427	927,500	11,242	1,437	991,620	3,716,318	26,675	4,734,613

# Appendix C Disposition of 2019 Vintage RECs Generated in Maryland

Maryland County	Tier 1 Non- Solar	Tier 1 Solar	Tier 2	Total
Allegany	1	54	-	55
Anne Arundel	31	8,729	-	8,760
Baltimore	9	7,589	-	7,598
Baltimore City	1	1,151	-	1,152
Calvert	-	846	-	846
Caroline	-	339	-	339
Carroll	-	2,272	-	2,272
Cecil	-	1,547	-	1,547
Charles	-	2,894	-	2,894
Dorchester	1	340	-	341
Frederick	6	2,774	-	2,780
Garrett	6	57	-	63
Harford	3	3,975	1	3,979
Howard	11	3,784	-	3,795
Kent	-	348	-	348
Montgomery	12	11,097	-	11,109
Prince Georges	6	18,433	-	18,439
Queen Annes	4	677	-	681
Somerset	1	289	-	290
St Marys	-	1,451	-	1,451
Talbot	4	241	-	245
Washington	2	1,100	-	1,102
Wicomico	1	1,082	-	1,083
Worcester	-	516	-	516
Total	99	71,585	1	71,685

Appendix D Number of Renewable Energy Facilities Located in Maryland

Note: This list includes all renewable generators that are both: 1) located within Maryland, and 2) registered to participate in any one of the PJM states' renewable energy programs as of August 1, 2020.

Maryland County	Tier 1 Non- Solar	Tier 1 Solar	Tier 2	Total
Allegany	65.0	2.7	-	67.7
Anne Arundel	3.9	103.9	-	107.9
Baltimore	66.5	100.1	-	166.5
Baltimore City	0.1	15.7	-	15.7
Calvert	-	9.7	-	9.7
Caroline	-	10.4	-	10.4
Carroll	-	36.3	-	36.3
Cecil	-	36.6	-	36.6
Charles	-	47.8	-	47.8
Dorchester	0.0	13.5	-	13.5
Frederick	2.1	87.3	-	89.4
Garrett	210.0	3.6	-	213.6
Harford	0.1	71.6	474.0	545.7
Howard	1.3	51.2	-	52.4
Kent	-	16.1	-	16.1
Montgomery	81.0	129.7	-	210.7
Prince George's	13.5	221.5	-	234.9
Queen Anne's	0.1	42.4	-	42.5
Somerset	3.8	110.0	-	113.8
St. Mary's	-	16.1	-	16.1
Talbot	70.3	13.0	-	83.4
Washington	0.1	69.6	-	69.7
Wicomico	6.0	42.6	-	48.6
Worcester	-	22.5	-	22.5
Total	523.7	1,273.9	474.0	2,271.6

Appendix E Capacity of Renewable Energy Facilities Located in Maryland (MW)

Note: This list includes all renewable generators that are both: 1) located within Maryland, and 2) registered to participate in any one of the PJM states' renewable energy programs as of August 1, 2020.