PUBLIC SERVICE COMMISSION OF MARYLAND

RENEWABLE ENERGY PORTFOLIO STANDARD REPORT OF 2012

With Data for Compliance Year 2010

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

6 St. Paul Street
Baltimore, MD 21202
Tel: (410) 767-8000
www.psc.state.md.us

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I. INTRODUCTION

A. Report Contents

This document constitutes the 2012 annual report of the Public Service Commission of Maryland (Commission) regarding the Maryland Renewable Energy Portfolio Standard (RPS Program). This report is submitted pursuant to § 7-712 of the Public Utilities Article, *Annotated Code of Maryland* (Article). Section 7-712 of the Article requires that, on or before February 1 of each year, the Commission shall report to the General Assembly on the status of the implementation of the RPS program. The electricity suppliers are not required to file an RPS compliance report with the Commission for the prior calendar year until April 1 of the next year. Consequently, this 2012 report highlights data from electricity suppliers' 2010 compliance reports and relevant 2010 data such as the renewable facilities certified by the State of Maryland.

In compliance with § 7-712 of the Article, topics addressed in this report include the availability of Tier 1, Tier 1 Solar, and Tier 2 renewable energy sources, renewable compliance fees collected to support in-State renewable projects, and other pertinent information. The report also provides historical information and accomplishments over the past year.

B. Objectives of the Program

The objective of § 7-701 *et seq.* of the Article (RPS Statute) is to recognize and develop the benefits associated with a diverse collection of renewable energy supplies 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 meet a prescribed minimum portion of their retail electricity sales with various renewable energy sources, 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 Renewable Energy Credits (RECs). The development of renewable energy sources is further promoted by requiring electricity suppliers to pay a financial penalty for failing to acquire sufficient RECs to satisfy the RPS as set forth in § 7-703 of the Article. The penalty is used to support the creation of new Tier 1 renewable sources in the State.

C. Overview of the Maryland RPS Program

Under the RPS Program, electricity suppliers are required to meet a renewable energy portfolio standard. This is an annual requirement placed upon Maryland electricity suppliers, which includes competitive suppliers and the electric companies that provide Standard Offer Service.[1] Electricity suppliers file compliance reports with the Commission verifying that the renewable requirement for each entity is satisfied.

[1] Standard Offer Service ("SOS") is electricity supply purchased from an electric company by the company's retail customers that cannot or choose not to transact with a competitive supplier operating in the retail market. *See* Article §§ 7-501(n), 7-510(c).

Each electricity supplier must present, on an annual basis, RECs equal to the percentage specified by the RPS Statute,[2] or pay compliance fees equal to shortfalls. A REC is equal to one megawatt-hour (MWh) of electricity generated using specified renewable sources. As such, a REC is a tradable commodity equal to one MWh of electricity generated or obtained from a renewable energy generation resource. Generators and electricity suppliers are allowed to trade RECs using a Commission-approved system known as the Generation Attributes Tracking System (GATS). GATS is a system designed and operated by PJM Environmental Information Services, Inc. (PJM-EIS) that tracks the ownership and trading of the generation attributes.[3] A REC has a three-year life during which it may be transferred, sold or redeemed. Electricity suppliers that do not meet the annual RPS requirement are required to pay compliance fees.

Compliance fees are deposited into the Maryland Strategic Energy Investment Fund (SEIF) as dedicated funds to provide for loans and grants that can indirectly spur the creation of new renewable energy sources in the State.[4] As a special, non-lapsing fund, the SEIF is also the depository of revenues generated through the sale of carbon allowances under the Regional Greenhouse Gas Initiative (RGGI). Indeed, the majority of the SEIF funds result from the RGGI carbon dioxide allowance auctions. Auctions are held quarterly; the initial fourteen auctions held between September 2008 and December 2011 yielded proceeds for Maryland totaling $180,315,816.60.[5] At least 6.5 percent of the funds from the RGGI allowances sold between March 1, 2009 and June 30, 2012 are to be allocated to renewable and clean energy, climate change programs, and energy related public education and outreach programs.[6] An allocation of up to 10.5 percent of the RGGI funds for these programs is provided in all subsequent auctions post June 2012.

Responsibility for developing renewable energy sources has been vested with the Maryland Energy Administration (MEA). MEA advises that a number of residential and small commercial renewable projects were supported by the SEIF either through dedicated funds (i.e., RPS compliance fees) or RGGI auction revenues in fiscal year 2011. In that fiscal year, approximately $3.3 million was used from RGGI auction revenues and RPS compliance fees to fund new Tier 1 renewable energy resources in Maryland. The grants from SEIF and ACP supported the installation of 930 tons of geothermal capacity; 3,148 kilowatts of solar photovoltaic (PV) capacity; 9,477 tons of solar hot water heating capacity; and 21 kilowatts of wind energy capacity.[7]

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2 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 2010. In 2010 the Tier 2 requirement was 2.5 percent. Thus, the electricity supplier would have to verify the purchase of 2,500 Tier 2 RECs in satisfaction of the Tier 2 RPS obligation, or pay compliance fees for deficits. Similar requirements apply to Tier 1 and Tier 1 Solar; the additional RPS tiers provided for in Maryland's RPS Statute.

3 An attribute is "a characteristic of a generator, such as location, vintage, emissions output, fuel, state RPS program eligibility, etc." PJM Environmental Information Services, Generation Attribute Tracking System (GATS) Operating Rules, at 3 (September 30, 2010).

4 Chapters 127 and 128 of the Laws of 2008 repealed the Maryland Renewable Energy Fund and redirected compliance fees paid into that fund into the Maryland Strategic Energy Investment Fund.

5 Regional Greenhouse Gas Initiative, CO2 Auctions, Auction Results, Available: http://www.rggi.org/market/co2_auctions/results (March 9, 2012).

6 Maryland General Assembly, The Budget Reconciliation and Financing Act of 2009, Chapter 487 of 2009, Available: http://mlis.state.md.us/2009rs/billfile/hb0101.htm (March 9, 2012).

7 Source: MEA email, September 6, 2011.

1. Registration of Renewable Energy Facilities

Facilities eligible for the Maryland RPS Program must be located in PJM (*i.e.*, the wholesale bulk power control area in which Maryland resides);[8] or in a control area that is adjacent to the PJM region,[9] so long as the electricity is delivered into the PJM region.[10] To certify a Renewable Energy Facility (REF), Commission Staff must determine whether the facility meets the standards set forth by the Maryland RPS Program. Applicants potentially qualifying under Maryland's RPS Program initially work with Commission Staff and complete the appropriate application for REF certification posted on the Commission's RPS website.[11] In addition to the geographic requirement, applicants must also meet the fuel source requirements associated with Tier 1 and Tier 2 REC creation. Verification of the fuel source is usually completed with the aid of Energy Information Administration Form 860 (EIA-860) to validate each facility's rated nameplate capacity, fuel source(s), location and commercial operation start date.[12]

Facilities must register with GATS to transact business and to have RECs recognized and created. The GATS account must be established with the State facility certification number issued by the Commission upon approval of the REF application. Facilities that co-fire a REC-eligible renewable fuel source with non-eligible fuel sources must submit a formula or method to account for the proportion of total electricity generation that will be credited with RECs. Eligible fuel sources for Tier 1 RECs and Tier 2 RECs are listed in Table 1. Solar has its own standard within Tier 1.

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8 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.

9 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 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 Environmental Information Services, Generation Attribute Tracking System (GATS) Operating Rules, at 5 (September 30, 2010). 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.

10 Chapters 125 and 126 of the 2008 Session Laws modify the geographic region of eligible renewable resources provided for within Article § 7-701(i). Effective January 1, 2011, the geographic scope in which renewable resources can be located will be restricted within the PJM region or in a control area adjacent to the PJM region, if the electricity is delivered into the PJM region. That is, REFs located in states adjacent to the PJM control area will not have RECs that qualify for Maryland's RPS unless the underlying electricity is delivered into the PJM region.

11 Solar and standard REF applications are maintained by the Commission and are available online. Maryland Public Service Commission, Renewable Portfolio Standard Documents, Available at: http://webapp.psc.state.md.us/intranet/ElectricInfo/home_new.cfm.

12 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.

Table 1: Eligible Tier 1 and Tier 2 Resources

Tier 1 Renewable Sources	Tier 2 Renewable Sources
• Solar (Tier 1 Solar) • Wind • Qualifying Biomass • Methane from a landfill or wastewater treatment plant • Geothermal • Ocean • Fuel Cell that produces electricity from a Tier 1 source • Hydroelectric power plant less than 30 MW capacity • Poultry litter-to-energy	• Hydroelectric power other than pump storage generation • Waste-to-energy[13] *Note: Tier 1 RECs may be used to satisfy Tier 2 obligations.*

2. Maryland RPS Annual Percentage Requirements

Electricity suppliers are required to purchase specified minimum percentages of their electricity resources via RECs from Maryland-certified Tier 1 and Tier 2 renewable resources. Tier 1 and the Tier 1 Solar set-aside requirements gradually increase until they peak in 2022 at 18 percent and 2 percent, respectively, and are subsequently maintained at those levels.[14] Maryland's Tier 2 requirement remains constant at 2.5 percent through 2018, after which it sunsets.

Table 2: Annual RPS Requirements by Tier[15]

Compliance Year	Tier 1	Tier 1 Solar	Tier 2
2010	3.00%	0.025%	2.50%
2011	4.95%	0.050%	2.50%
2012	6.40%	0.100%	2.50%
2013	8.00%	0.200%	2.50%
2014	10.00%	0.300%	2.50%
2015	10.10%	0.400%	2.50%
2016	12.20%	0.500%	2.50%
2017	12.55%	0.550%	2.50%
2018	14.90%	0.900%	2.50%
2019	16.20%	1.200%	
2020	16.50%	1.500%	
2021	16.85%	1.850%	
2022	18.00%	2.000%	

[13] New legislation (Chapter 590 of 2011) effective October 1, 2011 reclassifies "waste-to-energy" as a Tier 1 renewable source. The same legislation also adds "refuse-derived fuel" to the list of Tier 1 resources.

[14] "Tier 1 Solar set-aside" refers to the set-aside (or carve-out) of Tier 1 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.

[15] Schedule reflects increased percentage requirements for the Tier 1 solar set-aside from new legislation (Chapter 494 of 2010) which took effect January 1, 2011.

An electricity supplier can request the Commission consider a delay in scheduled Tier 1 and Tier 1 Solar RPS requirements, provided certain renewable procurement cost thresholds are met.[16] To date, no request to delay scheduled RPS compliance requirements has been made by electricity suppliers operating in the Maryland marketplace.

3. Maryland RPS Alternative Compliance Penalty Requirements

Electricity suppliers not meeting the RPS standard pay a compliance fee known as the Alternative Compliance Penalty (ACP) for shortfalls, as seen in Table 3. Table 3 presents the ACP schedule separated by tiers for each year of the RPS from 2010 to 2023 and beyond. ACPs, as previously mentioned, are submitted to the SEIF and dedicated to supporting the development of new Tier 1 renewable resources in Maryland. The Tier 1 ACP is $20 per MWh through the 2010 compliance year, and then doubles to $40 per MWh for all subsequent years. The Tier 1 Solar ACP is $400 per MWh shortfall for 2010 to 2014 compliance years; $350 for 2015 and 2016 compliance years; $200 for 2017 and 2018 compliance years; and then decreases by $50 per MWh every other subsequent year until reaching a $50 per MWh base for the 2023 compliance year and all subsequent years. The Tier 2 ACP is $15 per MWh from 2010 until the sunset of the standard in 2018. There is a separate ACP for Industrial Process Load (IPL) Tier 1 shortfalls only.

Table 3: ACP Schedule ($/MWh)[17]

Compliance Year	Tier 1 (non-solar)	Tier 1 Solar	Tier 2	IPL* Tier 1
2010	$20	$400	$15	$5
2011	$40	$400	$15	$4
2012	$40	$400	$15	$4
2013	$40	$400	$15	$3
2014	$40	$400	$15	$3
2015	$40	$350	$15	$2.50
2016	$40	$350	$15	$2.50
2017	$40	$200	$15	$2
2018	$40	$200	$15	$2
2019	$40	$150		$2
2020	$40	$150		$2
2021	$40	$100		$2
2022	$40	$100		$2
2023 +	$40	$50		$2

* Under Article § 7-705(b)(2) and COMAR 20.61.01.06.E(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.

[16] Article § 7-705.

[17] Schedule reflects increased alternative compliance payments for the Tier 1 solar set-aside from new legislation (Chapter 494 of 2010) which took effect January 1, 2011.

II. ELECTRICITY SUPPLIER COMPLIANCE REPORTS

Calendar year 2010 marked the fifth compliance year for the Maryland RPS, and the third 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 RECs retired and the underlying REFs (*e.g.*, type and location) utilized by electricity suppliers to comport with Maryland RPS obligations.[18] RPS compliance reports were filed by 58 electricity suppliers, including 33 competitive suppliers, 14 brokers or wholesale electricity suppliers with zero retail electricity sales, and 11 electric companies, of which four are investor-owned utilities. RPS compliance reports are due by April 1st every year. There were approximately 65.6 million MWh of total retail electricity sales in Maryland for 2010: 64.1 million MWh were subject to RPS compliance, and 1.5 million MWh were exempt.[19]

For the 2010 compliance year, electricity suppliers retired 3,569,569 RECs, which was greater than the obligation for the year by almost 30,000 RECs. According to the compliance reports filed with the Commission, the cost of RECs retired totaled $7,630,526 for the 2010 compliance year. For the five compliance years, Table 4 displays the breakdown of RECs submitted for each tier (MWh), the number of RECs retired in the year by tier (MWh), and the payments for the shortfalls in terms of the ACP amount required ($ per MWh).[20] The total costs of compliance with the 2010 RPS requirements was just under $8 million, with the ACPs accounting for $217,620 of this total.[21]

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[18] According to Article § 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 Article § 7-704(f). In the PJM region, the regional term of art is "retirement," and describes the process of removing a REC from circulation by the REC owner, *i.e.,* the owner "diminishes or extinguishes the REC." PJM Environmental Information Services, Generation Attribute Tracking System (GATS) Operating Rules, at 54-56 (September 30, 2010).

[19] According to Article § 7-703(a)(2), exceptions for the RPS requirement may include: industrial process load which exceeds 300,000,000 kWh to a single customer in a year; regions where residential customer rates are subject to a freeze or cap (under Article § 7-505); or electric cooperatives under a purchase agreement that existed prior to October 1, 2004, until the expiration of the agreement.

[20] In Table 4, 'RPS Obligation' is the total obligation for electricity sales in MWh, which is equal to the number of RECs required for compliance. 'Retired RECs' is the actual number of RECs retired for RPS compliance in each corresponding compliance year. 'ACP Required' is the compliance payments owed, and is calculated by multiplying the difference between the RPS obligation and the actual retired RECs (*i.e.*, the shortfalls) by the applicable ACP.

[21] Electricity suppliers can meet RPS obligations through the retirement of RECs or by paying ACPs. Electricity suppliers are required to report the total cost of purchasing RECs for compliance.

Table 4: Results of the RPS Compliance Reports

RPS Compliance Year		Tier 1 (non-solar)	Tier 1 Solar	Tier 2	Total
2006	RPS Obligation	520,073	-	1,300,201	1,820,274
	Retired RECs	552,874	-	1,322,069	1,874,943
	ACP Required	**$13,293**	**-**	**$24,917**	**$38,209**
2007	RPS Obligation	553,612	-	1,384,029	1,937,641
	Retired RECs	553,374	-	1,382,874	1,936,248
	ACP Required	**$12,623**	**-**	**$23,751**	**$36,374**
2008	RPS Obligation	1,183,439	2,934	1,479,305	2,665,678
	Retired RECs	1,184,174	227	1,500,414	2,684,815
	ACP Required*)*	**$9,020**	**$1,218,739**	**$8,175**	**$1,235,934**
2009	RPS Obligation	1,228,521	6,125	1,535,655	2,770,301
	Retired RECs	1,280,946	3,260	1,509,270	2,793,475
	ACP Required	**$395**	**$1,147,600**	**$270**	**$1,148,265**
2010	RPS Obligation	1,922,070	15,985	1,601,723	3,539,778
	Retired RECs	1,931,367	15,451	1,622,751	3,569,569*
	ACP Required*)*	**$20**	**$217,600**	**$0**	**$217,620**

* Some electricity suppliers retired more RECs than required.

In 2010 there was a shortfall of 544 MWh in RECs for the Tier 1 Solar requirement of 15,985 MWh. Over 99 percent of the total ACPs for the 2010 compliance year are from Tier 1 Solar shortfalls.

RECs are valid for compliance for the calendar year of generation and the following two calendar years.[22] Figure 1 aggregates the Maryland RPS tiers on the basis of generation year. A small proportion (4.7 percent) of RECs retired for 2010 compliance was comprised of 2007 vintage RECs. Over half (51.3 percent) of the RECs retired for 2010 compliance were generated in 2008, 28.4 percent of the retired RECs were generated in 2009; the balance of the RECs (15.6 percent) were generated in 2010. With the exception of the small percentage of 2007 vintage RECs, the number of RECs retired decreases for each subsequent generation year; as a result, a relatively small portion of the RECs retired were generated during the 2010 compliance year. Since the bulk of the RECs retired in 2010 were not generated in 2010, this indicates generators and/or electricity suppliers are utilizing Maryland's three year banking provision.[23]

[22] COMAR 20.61.03.01.C (unless the REC is diminished or extinguished before expiration).

[23] Once a REC has been created, the generator can sell or transfer the REC to another GATS account, keep the REC active, or retire (extinguish) the REC. A REC which continues to be active beyond the GATS trading period can be accumulated and "banked" for use in subsequent compliance years.

Figure 1: 2010 Compliance Year RECs by Generation Year

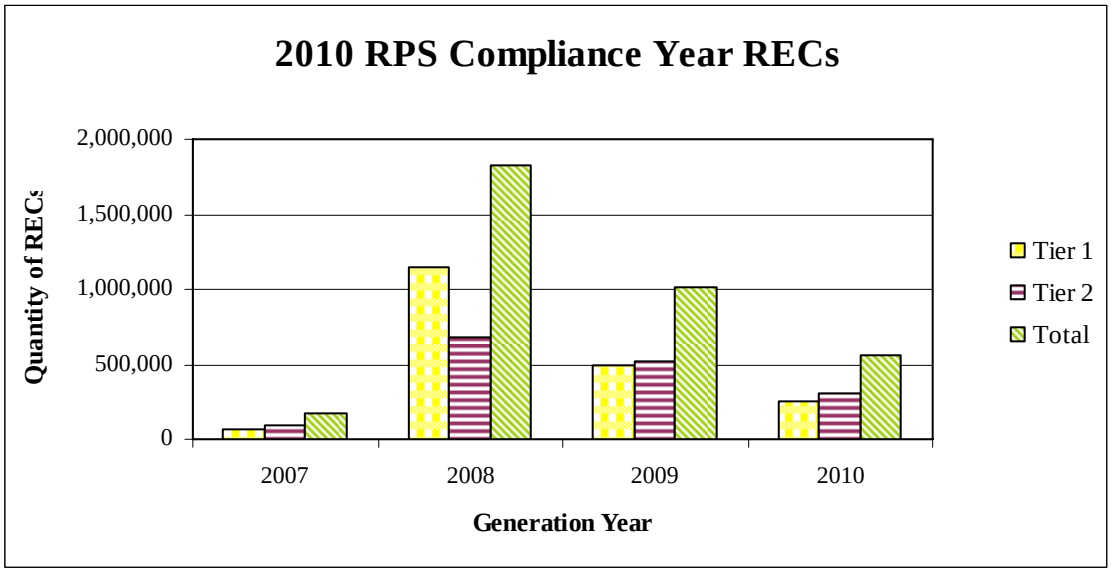
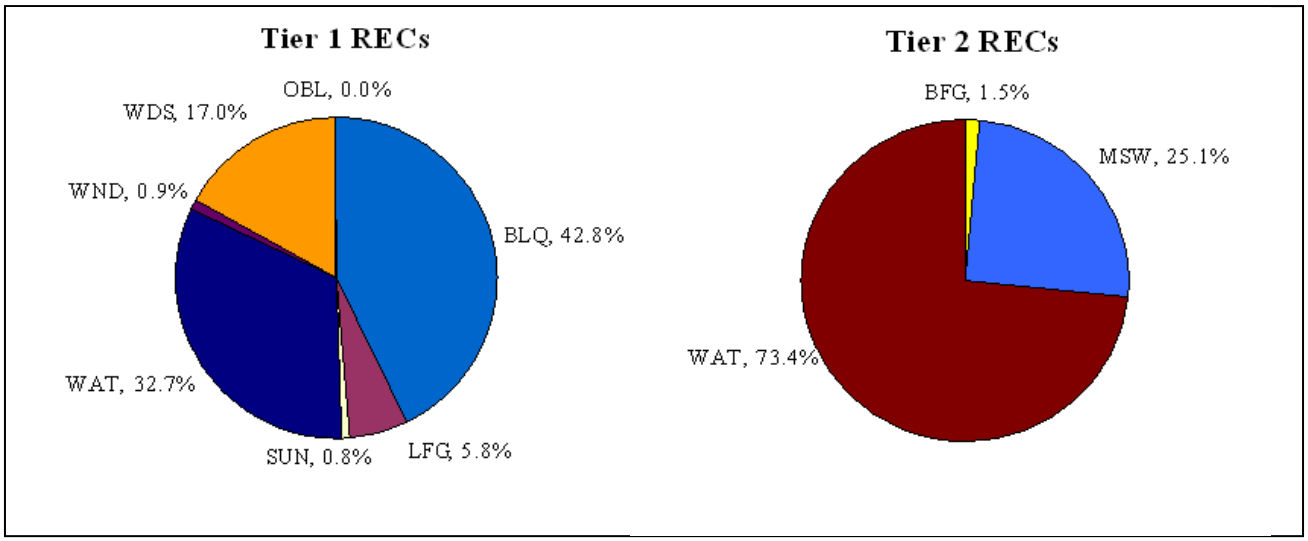


Figure 2 illustrates the fuel sources used to satisfy Tier 1 and Tier 2 RPS requirements for the 2010 RPS compliance year. Of the Tier 1 RECs retired for 2010, the principal resources used were black liquor fueled resources that provided approximately 42.8 percent of the RECs;[24] small hydro, 32.7 percent; waste wood, 17.0 percent; and landfill gas, 5.8 percent. Wind, other biomass liquids, and solar resources account for less than two percent of the RECs retired in 2010 for Maryland RPS compliance requirements.[25] Of the Tier 2 RECs retired for 2010, Figure 2 also reveals that hydroelectric facilities provided a huge percentage of the RECs, 73.4 percent; while municipal solid waste provided 25.1 percent of the RECs retired. Blast furnace gas resources account for 1.5 percent of the Tier 2 RECs retired for 2010.

[24] Black liquor is a waste byproduct from paper production.

[25] The prices associated with RECs vary depending upon the renewable resource, because the various renewable technologies have different costs associated with electricity production. To minimize costs, electricity suppliers tend to purchase lower priced RECs from lower cost renewable technologies first. The renewable fuel sources retired in Maryland for 2010 compliance (Figure 2) suggest such a strategy by market participants. Over time, as the RPS percentage standard increases and the opportunity to utilize low-cost technologies may become exhausted, the use of RECs from more expensive renewable resources is likely to occur (*e.g.*, wind, solar). Moreover, development of these more expensive renewable technologies may be incentivized. In addition to RECs used for RPS compliance, RECs are also sold to support green retail products that have large renewable energy amounts (*e.g.*, 100 percent wind). Customers may have a preference for energy from a specific technology and are willing to pay the price premium for these RECs over electricity from fossil fuel resources. Therefore, green power products currently available in the market and to retail customers also support higher cost renewable technologies.

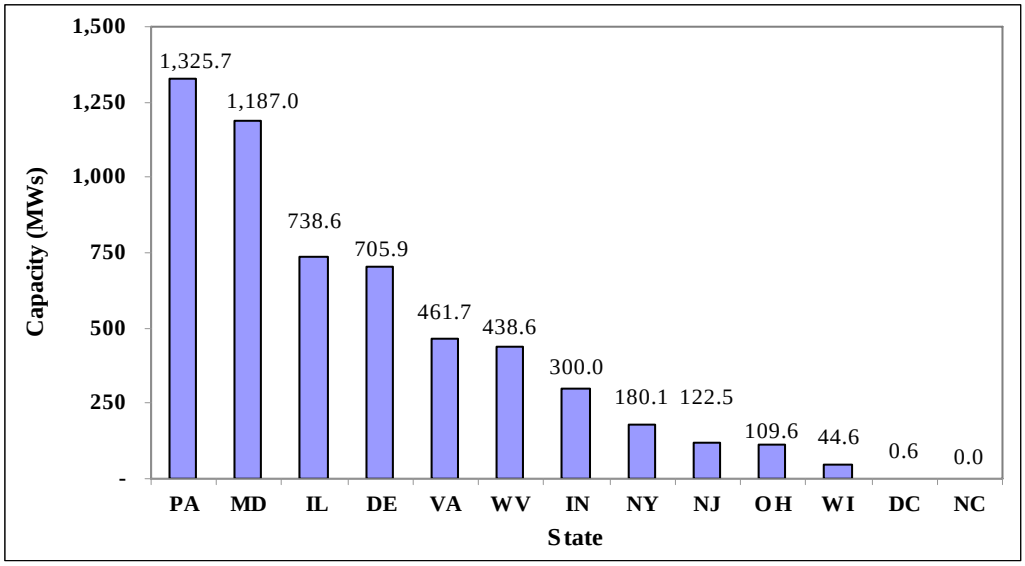
Figure 2: 2010 Tier 1 and Tier 2 Retired RECs by Fuel Source



Fuel Source Abbreviations: BFG, Blast Furnace Gas; BLQ, Black Liquor; LFG, Landfill Gas; MSW, Municipal Solid Waste; OBL, Other Biomass Liquids; SUN, Solar; WAT, Hydroelectric; WDS, Wood and Waste Solids; and WND, Wind.

Figure 3 presents the geographical location and the total generating capacity (5,615 MW) for all Maryland RPS-certified facilities regardless of Tier.[26] RPS requirements also exist in the surrounding states, which generally support out-of-state and regional market participation (see Appendix A). Sixty-six percent of the capacity of renewable facilities that are eligible to participate in Maryland reside in Pennsylvania, Maryland, Delaware and Virginia. The locations of the remaining eligible resources span six states and in total contribute 34 percent of the State's eligible capacity.

Figure 3: Total Rated Capacity by State

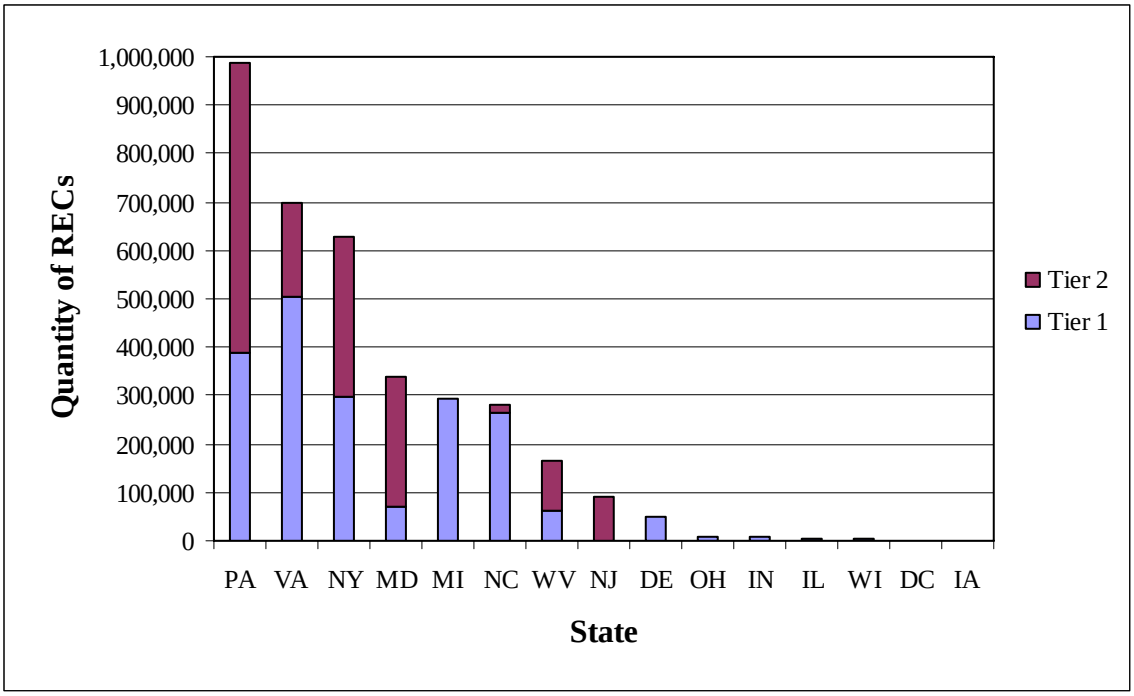


The information in this figure comes from PJM GATS, and does not include Commission authorized REFs that have not established a REC account with PJM GATS.

[26] PJM-EIS, Generation Attribute Tracking System, Database query, August 2011.

For the 2010 compliance year, Figure 4 provides a visual display of aggregate REC data to convey general relationships among the States that contributed RECs in 2010. Pennsylvania supplied the largest number of RECs purchased by retail electricity suppliers. The majority of the Pennsylvania RECs were from Tier 2 facilities. Virginia was the second most plentiful source of RECs procured by Maryland electric suppliers; additionally, Virginia was the largest source of Tier 1 RECs retired for 2010 compliance purposes. New York was ranked third in terms of state location for retired RECs. Notably, subsequent RPS reports will reflect the statutory changes effective in 2011, stating that facilities in New York will only qualify to participate in the Maryland RPS if the electricity is delivered into the PJM region, and the limitation effective in 2012 of SRECs to Maryland only.

Figure 4: Number of RECs Retired to Meet Maryland RPS by Facility Location (2010)



Tables 5 and 6 provide the quantitative data that supports Figure 4 above. Table 5 provides the reported levels of RECs retired by Maryland electricity suppliers in 2010 on a Tier and aggregate basis. As noted above, Pennsylvania-generated RECs, followed by Virginia and New York, were used in the largest aggregate amounts by Maryland electricity suppliers for 2010 RPS compliance.[27] Tier 1 Maryland RECs retired include 9,730 Solar RECs (SRECs).

[27] Table 5 provides the number of RECs retired by state of origin.

Table 5: 2010 Compliance Reports' REC Retirement by State

State	Tier 1	Tier 1 Solar	Tier 2	Total
PA	388,894	117	600,251	989,262
VA	503,732	169	196,444	700,345
NY	297,202	4	332,633	629,839
MD	61,088	9,730	269,547	340,365
MI	293,131	0	0	293,131
NC	263,259	833	17,522	281,614
WV	60,523	6	103,930	164,459
NJ	0	0	90,103	90,103
DE	48,639	61	0	48,700
OH	9,305	8	0	9,313
IN	8,343	1	0	8,344
IL	1,156	4,151	0	5,307
WI	2,131	0	0	2,131
DC	0	372	0	372
IA	23	0	0	23
Total	**1,937,426**	**15,452**	**1,610,430**	**3,563,308**

Table 6 presents the same data as Table 5, but on a percentage basis. Data is presented on a percentage basis to facilitate comparisons among the individual state contributions by Tier and on an aggregate basis. Among the Tier 1 resources, Virginia provided 26.0 percent of the RECs retired in 2010; Pennsylvania, 20.1 percent; New York, 15.3 percent; Michigan, 15.1 percent; and North Carolina, 13.6 percent. Maryland and West Virginia each provided just over 3 percent of the Tier 1 RECs retired in 2010, while few Tier 1 RECs were provided by the remaining states. Maryland provided 63.0 percent of the SRECs retired in 2010; Illinois, 26.9 percent; and North Carolina, 5.4 percent. Few SRECs were provided by the remaining states. For the Tier 2 resources, Pennsylvania provided 37.3 percent of the RECs, followed by New York, 20.7 percent; Maryland, 16.7 percent; Virginia, 12.2 percent; West Virginia, 6.5 percent; New Jersey, 5.6 percent; and North Carolina, 1.1 percent.

Table 6: 2010 Compliance Reports' REC Retirement by State (%)

State	Tier 1	Tier 1 Solar	Tier 2	Total
PA	20.1%	0.8%	37.3%	27.8%
VA	26.0%	1.1%	12.2%	19.7%
NY	15.3%	0.0%	20.7%	17.7%
MD	3.2%	63.0%	16.7%	9.6%
MI	15.1%	0.0%	0.0%	8.2%
NC	13.6%	5.4%	1.1%	7.9%
WV	3.1%	0.0%	6.5%	4.6%
NJ	0.0%	0.0%	5.6%	2.5%
DE	2.5%	0.4%	0.0%	1.4%
OH	0.5%	0.1%	0.0%	0.3%
IN	0.4%	0.0%	0.0%	0.2%
IL	0.1%	26.9%	0.0%	0.1%
WI	0.1%	0.0%	0.0%	0.1%
DC	0.0%	2.4%	0.0%	0.0%
IA	0.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Additional information pertaining to the source of renewable energy used to meet Maryland's 2010 RPS compliance requirements is in Appendices A and B. Appendix A provides the renewable resources used by electricity suppliers on a Tier and state basis. Appendix B provides a summary of the REFs in and outside of the State that generated RECs which were retired in 2010 for the Maryland RPS. Appendix B also presents the number of facilities by state, tier, and type of renewable facility.

III. MARYLAND RENEWABLE ENERGY FACILITIES

Maryland's RPS requires electricity suppliers to obtain a minimum percentage of their power from renewable energy resources. 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, power plant developers may locate projects within the State. Moreover, Maryland's RPS requires electricity suppliers that do not meet the annual obligations to pay penalties, which in turn are used to support the creation of new Tier 1 renewable sources in the State. Additionally, on or before December 31, 2011, Tier 1 Solar resources that are not located in the State are eligible to participate in Maryland's RPS only to the extent sufficient offers from in-State resources are not made. [28] This

[28] Article § 7-704(a)(2)(i)(2).

section of the report provides information on the REFs located in Maryland in 2010.[29] Renewable energy generated in Maryland can be used 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).[30] Green power products are offered to the public with higher concentrations of renewable energy than required via State RPS requirements. Additional analysis pertaining to the Maryland-based renewable generators is presented below and in Appendix C.

In 2010, 235,951 Tier 1 RECs and 2,763,346 Tier 2 RECs were generated in Maryland, totaling 2,763,346 RECs (see Table 7). Black liquor comprised a 58.2 percent share of the Tier 1 RECs generated in Maryland; landfill gas, 20.6 percent; small hydro, 9.6 percent; wind, 6.3 percent; and solar, 5.2 percent. Other biomass liquids comprised a negligible percentage of the Tier 1 RECs generated in Maryland. Tier 2 in-State RECs were hydro facilities with a 65.1 percent share; municipal solid waste, 26.7 percent; and blast furnace gas[31], 8.2 percent.

Table 7: 2010 Maryland Generated RECs by Fuel Source

	Tier I							Tier II				Grand Total
Fuel Type	**SUN**	**BLQ**	**LFG**	**OBL**	**WND**	**WAT**	**Total**	**BFG**	**MSW**	**WAT**	**Total**	
Quantity of RECs	12,337	137,402	48,618	75	14,927	22,592	235,951	207,615	674,401	1,645,379	2,527,395	2,763,346
Percentage	5.2%	58.2%	20.6%	0.0%	6.3%	9.6%	100.0%	8.2%	26.7%	65.1%	100.0%	

Fuel Source Abbreviations: BFG, Blast Furnace Gas; BLQ, Black Liquor; LFG, Landfill Gas; MSW, Municipal Solid Waste; OBL, Other Biomass Liquids; SUN, Solar; WAT, Hydroelectric; WDS, Wood and Waste Solids; and WND, Wind.

Source: PJM-EIS.

Table 8 presents additional detail regarding the disposition of 2010 Maryland-generated RECs in calendar year 2010. Approximately 65 percent of the RECs generated within the State of Maryland by independent electric generators were unsold and consequently banked for potential sale in Maryland or other states in subsequent compliance years.[32] Over 31 percent of the RECs

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29 Specific information pertaining to the State's REFs and described herein was made available by PJM-EIS in the GATS State Agency Report.

30 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-of-state 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. PJM-EIS reports that as of August 2011, there are 1,609 registered renewable generators located in Maryland. Of the 1,609 generators, 1,559 are approved by the Commission for Maryland RPS compliance. The 50 facilities registered for use in other states include 44 solar PV or solar thermal facilities registered in the District of Columbia, Illinois, and/or Pennsylvania. The remaining six are landfill gas generators registered in Delaware, Illinois, and New Jersey.

31 Blast furnace gas was approved as a "waste-to-energy" fuel source for the Pennwood Power Station facility.

32 In part, banking provides an opportunity for generators and electric suppliers to locate one another and establish relationships in the newly established renewable marketplace. The renewable marketplace is a regional marketplace. With the trend of individual states first enacting legislation to support renewables (*e.g.*, RPS requirements), and then increasing the percentage requirements and raising penalties for shortfalls, banking provides market participants with the opportunity to employ regional strategies (*i.e.*, maximize revenues, minimize compliance costs). Banking also provides an opportunity to support new product offerings outside of

generated in Maryland were retired to meet the RPS requirements in various other states. Labeled as "Other" in Table 8, a small minority of RECs were posted for sales or awaiting confirmation by counterparties to complete year-end transactions (3.7 percent).

Table 8: Disposition of 2010 Maryland Generated RECs

	Banked	RPS Compliance	Other	Total
Tier 1	168,343	38,174	17,097	223,614
Tier 1 Solar	2,764	9,526	47	12,337
Tier 2	1,626,472	815,827	85,096	2,527,395
Total	1,797,579	863,527	102,240	2,763,346
(%)	65.1%	31.2%	3.7%	100.0%

Source: PJM-EIS.

Table 9 presents, on a state-by-state basis, the distribution of the RECs generated in the State of Maryland that were then extinguished (*i.e.*, retired) for compliance purposes. In 2010, Maryland-generated RECs were used in six jurisdictions: the District of Columbia, Delaware, Maryland, New Jersey, Pennsylvania, and Virginia. For 2010 Maryland Tier 1 RECs, the District of Columbia used 41.1 percent of the generated RECs used for RPS compliance; Maryland, 29.8; New Jersey, 27.7 percent; Pennsylvania, 1.3 percent; and Delaware, 0.1 percent. No Tier 1 Maryland RECs generated in 2010 supported the Virginia RPS program. For 2010 Maryland Tier 2 RECs, Virginia used 68.0 percent of the generated RECs used for RPS compliance; New Jersey, 25.5 percent; Pennsylvania, 5.7 percent. Negligible procurement of Tier 2 Maryland RECs generated in 2010 supported the District of Columbia, Delaware, and Maryland RPS programs.

the RPS requirements, that is, green energy retail products that retail customers purchase, typically at a price premium, with significant concentrations of renewable energy (*e.g.*, 100 percent wind).

Table 9: 2010 Maryland Generated RECs Retired for RPS Compliance by State

Tier 1 Fuel	DC	DE	MD	NJ	PA	VA	TOTAL
BLQ	18,922	0	606	0	3	0	19,531
LFG	667	0	4,063	8,202	636	0	13,568
WAT	0	0	0	5,000	0	0	5,000
SUN	0	36	9,489	0	1	0	9,526
OBL	0	0	75	0	0	0	75
Tier 1 Total	**19,589**	**36**	**14,233**	**13,202**	**640**	**0**	**47,700**
Percentage	**41.1%**	**0.1%**	**29.8%**	**27.7%**	**1.3%**	**0.0%**	**100.0%**
Tier 2 Fuel	**DC**	**DE**	**MD**	**NJ**	**PA**	**VA**	**TOTAL**
BFG	0	0	75	0	0	0	75
MSW	1,503	0	5,138	207,789	46,322	0	260,752
WAT	0	0	0	0	0	555,000	555,000
Tier 2 Total	**1,503**	**0**	**5,213**	**207,789**	**46,322**	**555,000**	**815,827**
Percentage	**0.2%**	**0.0%**	**0.6%**	**25.5%**	**5.7%**	**68.0%**	**100.0%**
Grand Total	**21,092**	**36**	**19,446**	**220,991**	**46,962**	**555,000**	**863,527**
Percentage	**2.4%**	**0.0%**	**2.3%**	**25.6%**	**5.4%**	**64.3%**	**100.0%**

Fuel Source Abbreviations: BFG, Blast Furnace Gas; BLQ, Black Liquor; LFG, Landfill Gas; MSW, Municipal Solid Waste; OBL, Other Biomass Liquids; SUN, Solar; WAT, Hydroelectric; WDS, Wood and Waste Solids; and WND, Wind.

Source: PJM-EIS.

IV. CONCLUSION

The Maryland RPS Program is designed to create a stable and predictable market for energy generated from renewables, and to foster additional development and growth in the renewable industry. Implementation of the RPS Program assists in overcoming market barriers seen as impediments for the development of the industry; moreover, increasing reliance upon renewable energy technologies to satisfy electric power requirements can provide benefits including reductions in emissions of pollutants, increases in fuel diversity, and economic and employment benefits to the State.

The electricity supplier compliance reports of 2010, verified by Commission Staff, indicate that the State of Maryland RPS obligations were satisfied through submission of the appropriate level of Tier 1 and Tier 2 RECs or via alternative compliance payments. Market participants use a strategy that identifies and incorporates the use of the least-cost, predominant renewable technologies to meet the State's tiered requirements. For the 2010 RPS requirements, electricity suppliers used substantial amounts of hydroelectric and qualifying biomass (*e.g.*, waste wood and the mill residue known as black liquor), as well as municipal solid waste. Methane from the anaerobic decomposition of organic materials in landfills was also procured in significant amounts by electricity suppliers. A limited amount of wind energy was procured.

Three States provided just under two-thirds (65.1 percent) of the Tier 1 and Tier 2 RECs retired by Maryland electricity suppliers in 2010: Pennsylvania was the largest provider of Tier 2 RECs, Virginia the largest provider of Tier 1 RECs. As well, Maryland resources in the aggregate provided 9.6 percent of the RECs within Maryland for potential use by electricity suppliers for RPS compliance. For the first time, electricity suppliers did not rely heavily on ACPs to meet the State's Tier 1 Solar requirements. Instead, Maryland electricity suppliers retired approximately 97 percent of the Tier 1 Solar RECs required to meet the 2010 RPS obligation.

REFs located in Maryland can register in multiple states to meet and comply with various policy objectives – and sell additional RECs that support clean, green, or renewable products offered by electricity suppliers. In Maryland, over 31 percent of the renewable output and associated RECs generated during calendar year 2010 were retired for compliance with various states' RPS; while just over 65 percent of the RECs were banked for sale in future years.

In 2010, the General Assembly enacted changes to the Maryland RPS Program to increase the contribution of solar renewable energy to electricity supply: the RPS percentage requirements for the solar set-aside were accelerated between years 2011 and 2016 and the alternative compliance payment for a shortfall in solar RPS requirements was increased between years 2011 and 2016. The effect of these changes is already apparent even though only one compliance year has passed since the changes were enacted. The effect will initially cause upward pressure on the price of solar RECs, which may lead to a continued increase in the number of solar facilities participating in the RPS program in the long-run. To the extent additional growth of solar facilities occurs, the additional solar RECs can cause downward pressure on the price. Additionally, increased ACPs can be used to provide grants for additional solar installations, which can also cause downward pressure on the price of solar RECs.

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 the State of Maryland procure adequate renewable resources. As RPS program results are received and reviewed, further refinements to the program may be made to ensure that the objectives of the Maryland RPS Program are met.

APPENDICES

Appendix A: 2010 Retired RECs by Tier and Resource

Tier 1*

Facility Name	Resource	State	Quantity	WAT-1 %	Tier 1
Blewett	WAT - 1	NC	192,754	30.19%	9.87%
Trenton	WAT - 1	NY	122,311	19.16%	6.26%
AP Misc Hydro	WAT - 1	WV	60,523	9.48%	3.10%
Prospect	WAT - 1	NY	54,703	8.57%	2.80%
E.J. West	WAT - 1	NY	53,708	8.41%	2.75%
Beardslee	WAT - 1	NY	33,335	5.22%	1.71%
Conemaugh	WAT - 1	PA	26,701	4.18%	1.37%
Allegheny 5-1	WAT - 1	PA	25,679	4.02%	1.31%
Inghams	WAT - 1	NY	24,578	3.85%	1.26%
Marshall	WAT - 1	NC	15,505	2.43%	0.79%
Piney	WAT - 1	PA	10,366	1.62%	0.53%
Granby	WAT - 1	NY	8,567	1.34%	0.44%
Snowden Hydro Site	WAT - 1	VA	3,288	0.51%	0.17%
Little Quinnesec Falls	WAT - 1	WI	2,131	0.33%	0.11%
Coleman Falls Hydro	WAT - 1	VA	1,719	0.27%	0.09%
Holcomb Rock Hydro	WAT - 1	VA	1,575	0.25%	0.08%
Big Shoals Hydro	WAT - 1	VA	548	0.09%	0.03%
Deep Creek	WAT - 1	MD	530	0.08%	0.03%
Schoolfield Dam	WAT - 1	VA	10	0.00%	0.00%
		Total	**638,531**	**100.00%**	**32.70%**

Facility Name	Resource	State	Quantity	BLQ %	Tier 1
P.H. Glatfelter Spring Grove	BLQ	PA	308,507	36.90%	15.80%
Hopewell	BLQ	VA	198,430	23.73%	10.16%
Franklin Mill	BLQ	VA	103,403	12.37%	5.29%
Covington MeadWestvaco	BLQ	VA	86,808	10.38%	4.45%
Escanaba Paper Co.	BLQ	MI	83,754	10.02%	4.29%
Luke Mill	BLQ	MD	55,205	6.60%	2.83%
		Total	**836,107**	**100.00%**	**42.81%**

Facility Name	Resource	State	Quantity	WDS %	Tier 1
Hillman Power	WDS	MI	81,138	24.43%	4.15%
Multitrade of Pittsylvania	WDS	VA	72,883	21.94%	3.73%
Cadillac RE	WDS	MI	69,942	21.05%	3.58%
VP Cravenwood	WDS	NC	55,000	16.56%	2.82%
Hopewell Mill	WDS	VA	22,715	6.84%	1.16%
Covington MeadWestvaco	WDS	VA	12,263	3.69%	0.63%
Coshocton Mill	WDS	OH	9,305	2.80%	0.48%
Viking Energy-Northumberla	WDS	PA	8,944	2.69%	0.46%
		Total	**332,190**	**100.00%**	**17.01%**

Facility Name	Resource	State	Quantity	LFG %	Tier 1
Edge Moor	LFG	DE	48,639	43.31%	2.49%
Arbor Hills	LFG	MI	39,456	35.13%	2.02%
Lyon Development	LFG	MI	10,726	9.55%	0.55%
C&C Electric	LFG	MI	8,115	7.23%	0.42%
PEP Ritchie	LFG	MD	5,181	4.61%	0.27%
BWWTP Co-Gen Plant	LFG	MD	97	0.09%	0.00%
Richmond Electric	LFG	VA	90	0.08%	0.00%
		Total	**112,304**	**100.00%**	**5.75%**

Facility Name	Resource	State	Quantity	WND %	Tier 1
AEP Fowler Ridge	WND	IN	8,343	45.79%	0.43%
Meyersdale Windpower	WND	PA	8,314	45.63%	0.43%
COM Old Trail	WND	IL	1,152	6.32%	0.06%
PN Stony Creek	WND	PA	383	2.10%	0.02%
Century 1	WND	IA	23	0.13%	0.00%
Mendota Hills LLC	WND	IL	4	0.02%	0.00%
		Total	**18,219**	**100.00%**	**0.93%**

Facility Name	Resource	State	Quantity	OBL %	Tier 1
Easton	OBL	MD	75	100.00%	0.00%
		Total	**75**	**100.00%**	**0.00%**

Tier 2

Facility Name	Resource	State	Quantity	WAT-2 %	Tier 2
Safe Harbor	WAT - 2	PA	592,716	50.16%	36.80%
Sherman Island	WAT - 2	NY	180,060	15.24%	11.18%
School Street	WAT - 2	NY	152,573	12.91%	9.47%
Conowingo	WAT - 2	MD	128,429	10.87%	7.97%
Lake Lynn	WAT - 2	WV	103,930	8.80%	6.45%
Tillery	WAT - 2	NC	17,522	1.48%	1.09%
Piney	WAT - 2	PA	6,454	0.55%	0.40%
		Total	**1,181,684**	**100.00%**	**73.38%**

Facility Name	Resource	State	Quantity	MSW %	Tier 2
VP Gosport	MSW	VA	165,338	40.88%	10.27%
Union County	MSW	NJ	90,103	22.28%	5.59%
Wheelabrator	MSW	MD	78,101	19.31%	4.85%
Montgomery Co. Res. Ctr	MSW	MD	38,761	9.58%	2.41%
SPSA WTE	MSW	VA	31,106	7.69%	1.93%
Montenay Montgomery	MSW	PA	1,081	0.27%	0.07%
		Total	**404,490**	**100.00%**	**25.12%**

Facility Name	Resource	State	Quantity	BFG %	Tier 2
Sparrows Point	BFG	MD	24,256	6.00%	1.51%
		Total	**24,256**	**100.00%**	**1.51%**

Tier 1 REC Total	1,937,426
SREC Total	15,452
Tier 2 REC Total	1,610,430
Grand Total**	3,563,308

Resource Definitions	
Blast Furnace Gas	BFG
Black Liquor	BLQ
Landfill Gas	LFG
Municipal Solid Waste	MSW
Other Biomass Liquids	OBL
Solar	SUN
Hydroelectric	WAT
Wood/Waste Solids	WDS
Wind	WND

*Solar facilities are not represented in this table. In 2010, 3,091 facilities located in Maryland produced a total of 9,730 SRECs; 40 Illinois facilities, 4,151 SRECs; 132 North Carolina facilities, 833 SRECs; 66 D.C. facilities, 372 SRECs; 111 Virginia facilities, 169 SRECs; 107 Pennsylvania facilities, 117 SRECs; 21 Delaware facilities, 61 SRECs; 8 Ohio facilities, 8 SRECs; 6 West Virginia facilities, 6 SRECs; 4 New York facilities, 4 SRECs; and 1 Indiana facility, 1 SREC.

**REC totals reflect RECs retired in GATS in 2010, but differ slightly from what LSEs reported for RPS compliance. More RECs were retired in GATS than were used for compliance.

Appendix B: Location of Facilities which Provided RECs for 2010 RPS Compliance

	DC	DE	IA	IL	IN	MD	MI	NC	NJ	NY	OH	PA	VA	WI	WV	Total
Tier 1																-
Black Liquor						1	1					1	3			6
Land Fill Gas		1				2	3						1			7
Other Biomass Liquid						1										1
Small Hydro						1		2		6		3	5	1	1	19
Solar	66	21		40	1	3,091		132		4	8	107	111		6	3,587
Waste Wood							2	1			1	1	3			8
Wind			1	2	1							2				6
Tier 2																
Blast Furnace Gas						1										1
Large Hydro						1		1		2		2			1	7
Municipal Solid Waste						2			1			1	2			6
Total	**66**		**1**	**42**	**2**	**3,100**	**6**	**136**	**1**	**12**		**117**	**125**		**8**	**3,648**

Appendix C: Distribution of 2010 Vintage RECs Generated in Maryland

	RECs Retired for RPS Compliance by State						Banked	Retired - Sold	Active	Bulletin Board	Pending Transfer	Total RECs
Fuel Type and Tier	**DC**	**DE**	**MD**	**NJ**	**PA**	**VA**						
Black Liquor	18,922		606		3		117,871					137,402
Land Fill Gas	667		4,063	8,202	636		35,050					48,618
Small Hydro				5,000			495	17,097				22,592
Wind							14,927					14,927
Solar		36	9,489		1		2,764			47		12,337
Biomass Liquids			75									75
Tier 1 Total	19,589	36	14,233	13,202	640	0	171,107	17,097	0	47	0	235,951
Blast Furnace Gas			75				207,540					207,615
Large Hydro						555,000	1,080,283	7,541	2,555			1,645,379
Municipal Solid Waste	1,503		5,138	207,789	46,322		338,649				75,000	674,401
Tier 2 Total	1,503	0	5,213	207,789	46,322	555,000	1,626,472	7,541	2,555	0	75,000	2,527,395
Grand Total	21,092	36	19,446	220,991	46,962	555,000	1,797,579	24,638	2,555	47	75,000	2,763,346

Appendix D: Number of Renewable Energy Facilities Located in Maryland

Maryland County	Tier 1	Tier 1 Solar	Tier 2	Total
Allegany	1	2		3
Anne Arundel		155		155
Baltimore	1	181	3	185
Baltimore City	1	21		22
Calvert		22		22
Caroline		6		6
Carroll		65		65
Cecil		37		37
Charles		19		19
Dorchester		13		13
Frederick	2	61		63
Garrett	2	3	1	6
Harford		77	1	78
Howard		209		209
Kent		11		11
Montgomery	2	466	2	470
Prince George's	4	95		99
Queen Anne's		19		19
Somerset		3		3
St. Mary's		27		27
Talbot	1	16		17
Washington		49		49
Wicomico	1	13		14
Worcester	2	15		17
Grand Total	**17**	**1,585**	**7**	**1,609**

Note: This list includes all renewable generators that are both: 1) located within the state of Maryland, and 2) registered to participate in any one of the PJM States' renewable energy programs as of August 17, 2011.

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

Maryland County	Tier 1	Tier 1 Solar	Tier 2	Total
Allegany	65.0	0.09		65.09
Anne Arundel		3.12		3.12
Baltimore	3.0	3.32	318.2	324.54
Baltimore City	3.0	0.23		3.23
Calvert		0.17		0.17
Caroline		0.06		0.06
Carroll		0.91		0.91
Cecil		0.33		0.33
Charles		0.26		0.26
Dorchester		0.12		0.12
Frederick	4.0	0.94		4.94
Garrett	120.0	0.01	20.0	140.01
Harford		3.54	474.0	477.54
Howard		1.35		1.35
Kent		0.08		0.08
Montgomery	3.2	4.99	78.0	86.23
Prince George's	13.4	0.68		14.08
Queen Anne's		0.13		0.13
Somerset		2.24		2.24
St. Mary's		0.17		0.17
Talbot	69.0	0.65		69.65
Washington		2.19		2.19
Wicomico	6.0	0.07		6.07
Worcester	2.0	0.20		2.20
Grand Total	**288.6**	**25.83**	**890.2**	**1204.69**

Note: This list includes all renewable generators that are both: 1) located within the state of Maryland, and 2) registered to participate in any one of the PJM States' renewable energy programs as of August 17, 2011.