

**Department of Legislative Services**  
 Maryland General Assembly  
 2010 Session

**FISCAL AND POLICY NOTE**

House Bill 471 (The Speaker, *et al.*) (By Request - Administration)  
 Economic Matters

**Renewable Energy Portfolio Standard - Solar Energy**

This Administration bill increases the percentage requirements of the Renewable Energy Portfolio Standards (RPS) that must be purchased from Tier 1 solar energy sources each year between 2011 and 2020. The bill also increases the alternative compliance payment (ACP) for a shortfall in solar RPS requirements by \$0.05 per kilowatt-hour (kWh) over the current amount in 2011 and 2012, by \$0.10 per kWh between 2013 and 2024, and by \$0.05 per kWh in 2025 and 2026.

The bill takes effect January 1, 2011.

**Fiscal Summary**

**State Effect:** Special fund revenues to the Maryland Strategic Energy Investment Fund increase by \$1.9 million in FY 2012 and by \$33.2 million in FY 2015 from increased ACP to meet the accelerated solar RPS, depending on the availability of solar generation. Public Service Commission (PSC) expenditures from the Public Utility Regulation Fund increase by \$36,500 in FY 2011 to hire two additional employees to certify additional solar facilities. Future year expenditures reflect inflation and annualization. Potential increase in State expenditures (all funds) due to higher electricity prices.

(in dollars)	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
SF Revenue	\$0	\$1,944,200	\$8,877,600	\$19,257,700	\$33,155,600
SF Expenditure	\$36,500	\$111,500	\$117,100	\$122,900	\$129,100
GF/SF/FF Exp.	-	-	-	-	-
Net Effect	(\$36,500)	\$1,832,700	\$8,760,500	\$19,134,800	\$33,026,500

*Note:() = decrease; GF = general funds; FF = federal funds; SF = special funds; - = indeterminate effect*

**Local Effect:** Potential increase in local government expenditures due to higher electricity prices. Revenues are not affected.

**Small Business Effect:** The Administration has determined that this bill has a meaningful impact on small business (attached). Legislative Services concurs with this assessment as discussed below.

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### Analysis

**Bill Summary:** The amount of electricity in the State that must be supplied from Tier 1 solar sources is increased between 2011 and 2020 as shown in **Exhibit 1**. Also shown in the exhibit are the bill’s changes to the ACP. For Tier 1 solar sources, the bill increases the amount charged for solar RPS shortfalls from \$0.35 to \$0.40 per kWh in 2011 and 2012. ACP increases by \$0.10 per kWh over current levels each year between 2013 and 2024. The ACP then increases by \$0.05 per kWh over current levels in 2025 and 2026. The ACP reflects current law beginning in 2027.

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#### Exhibit 1 Renewable Energy Portfolio Standards and Alternative Compliance Payments Under Current Law and Under the Bill

<u>Year</u>	<u>Tier 1 Solar (current)</u>	<u>Tier 1 Solar (proposed)</u>	<u>Solar ACP (current)</u>	<u>Solar ACP (proposed)</u>
2011	0.040%	0.050%	\$0.35	\$ 0.40
2012	0.060%	0.120%	0.35	0.40
2013	0.100%	0.220%	0.30	0.40
2014	0.150%	0.360%	0.30	0.40
2015	0.250%	0.500%	0.25	0.35
2016	0.350%	0.700%	0.25	0.35
2017	0.550%	0.900%	0.20	0.30
2018	0.900%	1.150%	0.20	0.30
2019	1.200%	1.400%	0.15	0.25
2020	1.500%	1.650%	0.15	0.25
2021	1.850%	1.850%	0.10	0.20
2022	2.000%	2.000%	0.10	0.20
2023	2.000%	2.000%	0.05	0.15
2024	2.000%	2.000%	0.05	0.15
2025	2.000%	2.000%	0.05	0.10
2026	2.000%	2.000%	0.05	0.10
2027	2.000%	2.000%	0.05	0.05

Source: Department of Legislative Services

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**Current Law:** RPS is a policy that requires suppliers of electricity to meet a portion of their energy supply needs with eligible forms of renewable energy. An electricity supplier must meet RPS by accumulating “renewable energy credits” (RECs) created from various renewable energy sources classified as Tier 1 and Tier 2 renewable sources, with a specified portion coming from solar sources.

Examples of Tier 1 sources include solar; wind; qualifying biomass; methane from anaerobic decomposition of organic materials in a landfill or wastewater treatment plant; geothermal; ocean, including energy from waves, tides, currents, and thermal differences; a fuel cell that produces electricity from a Tier 1 renewable source; and a small hydroelectric plant of less than 30 megawatts and poultry litter-to-energy. Examples of Tier 2 sources include hydroelectric and waste-to-energy.

Currently, energy from a Tier 1 renewable source must be connected with the electric distribution grid serving Maryland unless there are not enough eligible generating facilities connected to the Maryland grid to meet RPS. After December 31, 2011, all Tier 1 solar generating sources must be connected with the distribution grid serving Maryland to be eligible to meet solar RPS.

A REC is a tradable commodity representing the renewable energy generation attributes of one megawatt-hour (MWh) of electricity. An electricity supplier for standard offer service may recover actual dollar-for-dollar costs incurred, including ACP, in meeting a State-mandated RPS. Except for industrial process load, for a shortfall from RPS requirements, the ACP is \$0.02 for per kWh for Tier 1 renewable sources and \$0.015 per kWh for Tier 2 renewable sources. The ACP for Tier 1 solar starts at \$0.45 per kWh in 2008 and decreases by \$0.05 every other year to equal \$0.05 per kWh in 2023 and thereafter. ACPs are paid into the Maryland Strategic Energy Investment Fund within the Maryland Energy Administration (MEA).

## **Background:**

### *RPS Overview*

Maryland’s RPS was established in 2004 in order to recognize the economic, environmental, fuel diversity, and security benefits of renewable energy resources; establish a market for electricity from those resources in Maryland; and lower consumers’ cost for electricity generated from renewable sources.

Chapter 120 of 2007 revised Maryland’s RPS to include a solar carve-out, requiring that at least 0.005% of electricity in 2008 be from solar generation increasing to at least 2.0% in 2022. The Act also increased total Tier 1 requirements as a result of the added solar component. Chapters 125 and 126 of 2008 amended Maryland’s RPS by increasing the percentage requirements of the Tier 1 RPS to equal 20% in 2022 and beyond.

The Administration advises that compared to some other states such as New Jersey and Delaware, Maryland’s solar requirement increases very slowly in the early years and then increases more rapidly in the last few years. The Administration further advises that the bill is intended to provide long-term support for Maryland’s growing solar industry, displace fossil fuel powered generation, and create new green jobs.

Solar RPS works to encourage the development of solar electric generation in two ways – through the use of ACP and through solar RECs (SRECs). Owners of solar generating facilities sell SRECs associated with their facilities and the payment received for those SRECs helps to offset a portion of the installation costs. SRECs can be purchased and traded on an open exchange, allowing electricity suppliers to either purchase SRECs directly from solar generators or through a third-party re-seller. The price of an SREC is effectively capped by the applicable ACP – what a supplier pays for a solar RPS shortfall. In the 2008 compliance year, SREC prices ranged from 75-85% of the ACP. Accordingly, the ACP was \$450 per MWh, and Maryland SREC prices traded between \$340 and \$380. In 2009, the weighted average Maryland SREC price was 80% of the \$400 ACP.

*RPS Compliance*

Electricity suppliers are not required to file a 2009 RPS compliance report with PSC until April 1, 2010. As a result, the most recent data available is from compliance year 2008. **Exhibit 2** provides a summary of electric supplier RPS filings in 2006, 2007, and 2008. Calendar 2008 marked the third compliance year for Maryland’s RPS Program and the first compliance year of solar RPS. Based on the Supplier Annual Reports filed with PSC, electricity suppliers have generally been able to fulfill required RPS requirements by purchasing RECs. However, electricity suppliers were not able to comply with solar RPS. In 2008 less than 8.0% of solar RPS was met through the purchase of SRECs; the rest was met through ACP.

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<b>Exhibit 2</b>						
<b>RPS Supplier Annual Report Results</b>						
<b>(MWh)</b>						
<b>Compliance</b>	<b><u>RPS Obligation</u></b>			<b><u>RECs Retired</u></b>		
	<b>Tier 1</b>	<b>Tier 1</b>		<b>Tier 1</b>	<b>Tier 1</b>	
<b><u>Year</u></b>	<b><u>Nonsolar</u></b>	<b><u>Solar</u></b>	<b><u>Tier 2</u></b>	<b><u>Nonsolar</u></b>	<b><u>Solar</u></b>	<b><u>Tier 2</u></b>
2006	520,073		1,300,201	552,874		1,322,069
2007	553,612		1,384,029	553,374		1,382,874
2008	1,183,439	2,934	1,479,305	1,184,174	227	1,500,414

Source: Public Service Commission

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**Exhibit 3** provides additional detail for the 2008 compliance year. Because enough SRECs were not available to meet solar RPS, electricity suppliers paid \$1.2 million in compliance fees to the Maryland Strategic Energy Investment Fund.

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**Exhibit 3**  
**RPS 2008 Compliance Year – Obligations, Retired RECs, and ACP**

	<b>Tier 1 (Nonsolar)</b>	<b>Tier 1 Solar</b>	<b>Tier 2</b>	<b>Total</b>
RPS Obligation (MWh)	1,183,439	2,934	1,479,305	2,665,678
Retired RECs (MWh)	1,184,174	227	1,500,414	2,684,815
Alternative Compliance Payments	\$9,020	\$1,218,739	\$8,175	\$1,235,934

Source: Public Service Commission

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Future compliance with the solar RPS requirement depends greatly on the amount of SRECs that become available. The Department of Natural Resources' Power Plant Research Program (PPRP) indicates that compliance payments to meet the solar RPS in 2008 were partly due to the lack of SRECs that had made it through PSCs approval process. PPRP notes that several new solar facilities have been approved by PSC recently and the pace of solar development has been increasing in the area, which may increase the availability of SRECs for the 2009 compliance year.

As of January 2010, PSC has approved 2.96 MW of eligible Tier 1 solar generating capacity. This is a significant increase over the 0.03 MW capacity approved at the start of the 2009 RPS compliance year. In fiscal 2009 MEA provided nearly \$1.7 million in grants to over 250 small solar installations, further demonstrating the growth in solar generation. In MEA's recent report, the *Maryland Energy Outlook*, MEA indicates that although the growth in solar energy has been robust, capacity is well short of meeting the 2009 solar RPS goal. MEA also notes that several commercial solar projects are in the early development stages, which may significantly increase the amount of solar generation in the State. **Exhibit 4** shows the amount of required generation from solar sources necessary to meet the existing and proposed solar RPS requirements through 2021 and the applicable ACP. Under current capacity, assuming a 38% efficiency rate, estimated in-state solar generation with approved SRECs is equal to 9,853 MWh, significantly less than the amount required under solar RPS.

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**Exhibit 4**  
**Solar RPS Needs and ACP Under Current Law and Under the Bill**

<b>Compliance Year</b>	<b>Maryland Electricity Sales Forecast in MWh</b>	<b>Solar RPS in MWh (Current Law)</b>	<b>Solar RPS in MWh (Proposed)</b>	<b>ACP \$ per MWh (Current Law)</b>	<b>ACP \$ per MWh (Proposed)</b>
2011	64,808,000	25,923	32,404	\$350	\$400
2012	65,760,000	39,456	78,912	350	400
2013	66,406,000	66,406	146,093	300	400
2014	66,981,000	100,472	241,132	300	400
2015	67,457,000	168,643	337,285	250	350
2016	68,352,000	239,232	478,464	250	350
2017	69,272,000	380,996	623,448	200	300
2018	70,203,000	631,827	807,335	200	300
2019	71,174,000	854,088	996,436	150	250
2020	72,178,000	1,082,670	1,190,937	150	250
2021	73,157,000	1,353,405	1,353,405	100	200

Source: Public Service Commission, Department of Legislative Services

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*Impact of Increasing Solar RPS and ACP*

Increasing solar RPS and ACP will increase the price of electricity in the near-term due to the added cost of solar RPS compliance. The magnitude of this increase depends greatly on the price of SRECs and how electricity suppliers meet solar RPS in future years. Prices of SRECs will first receive upward pressure from the increase of the ACP in part because the ACP functions as a cap for SREC prices. The price of SRECs will also face upward pressure from an increase in solar RPS which will increase the demand for SRECs. As the price of SRECs increase, so does the amount of payments made to owners of solar generating equipment and the SRECs associated with that generation. In the long-run, payments from SRECs are intended to encourage the additional construction of solar generating facilities. To the extent this occurs, additional SRECs become available placing downward pressure on the price. Additionally, electricity suppliers that are unable to meet solar RPS by purchasing SRECs will instead comply through ACP, which will be used to provide grants for additional solar installations, further increasing the availability of solar generation in the State and eventually reducing the price of SRECs and the cost of solar RPS compliance.

**State Revenues:** To the extent that increasing solar RPS and ACP result in additional compliance fees being paid by electricity suppliers, revenues to the Maryland Strategic Energy Investment Fund increase. Based on the assumption that 50% of RPS compliance would be met through ACP and 50% would be met through procurement of SRECs, PSC

estimates that special fund revenues increase by \$3.4 million in fiscal 2011, \$15.5 million in fiscal 2012, \$33.7 million in fiscal 2013, \$58.0 million in fiscal 2014, and \$66.4 million in fiscal 2015. These estimates assume that the price of SRECs will be 75% of the ACP in future years.

Legislative Services notes that PSC’s estimates incorrectly assume that *all* additional solar RPS compliance costs would be paid into the Maryland Strategic Energy Investment Fund. Practically speaking, only ACP are paid into the fund, as the increased cost of SRECs are paid to the owners of those SRECs. In addition, PSC’s estimates are not adjusted for the actual fiscal year payments that would be received. Correcting for those issues, but based on the same assumptions outlined above, special fund revenues increase by \$1.9 million in fiscal 2012, \$8.9 million in fiscal 2013, \$19.3 million in fiscal 2014, and \$33.2 million in fiscal 2015. **Exhibit 5** provides the estimated total cost of solar RPS compliance as a result of increasing the solar RPS and the ACP, through 2026, the last year that ACP increases under the bill.

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**Exhibit 5**  
**Solar RPS Cost Increase**  
**(\$ in Millions)**

<u>Compliance Year</u>	<u>Increase in ACP</u>	<u>Increase in SREC Cost</u>	<u>Total Increase in Compliance Costs</u>
2011	\$1.9	\$1.5	\$3.4
2012	8.9	6.7	15.5
2013	19.3	14.4	33.7
2014	33.2	24.9	58.0
2015	37.9	28.5	66.4
2016	53.8	40.4	94.2
2017	55.4	41.6	97.0
2018	57.9	43.4	101.4
2019	60.5	45.4	105.9
2020	67.7	50.8	118.4
2021	67.7	50.8	118.4
2022	74.2	55.6	129.8
2023	75.2	56.4	131.6
2024	76.3	57.2	133.5
2025	38.7	29.0	67.7
2026	9.3	29.4	68.7
<b>Total</b>	<b>\$767.9</b>	<b>\$575.9</b>	<b>\$1,343.7</b>

Note: ACP from a given compliance year assumed to be paid in the following fiscal year.  
Source: Public Service Commission, Department of Legislative Services

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Legislative Services advises that without a longer history of RPS compliance data, estimating the many variables affecting the price of SRECs and thus the cost of increasing solar RPS, cannot be predicted with certainty. Regardless of the assumptions made, what can be predicted is that increasing RPS and ACP will have a near-term cost that must be absorbed by all electric customers in the State. Even if 100% of solar RPS is met by electricity suppliers through purchasing SRECs, there will be an additional cost incurred. In the long-run, if the cost of solar RPS compliance is effectively invested in the development of new solar generation, compliance costs decrease and the State benefits from the renewable energy source.

**State Expenditures:**

*State Electricity Costs*

As described above, increasing the amount of electricity in the State that must be purchased from Tier 1 solar sources increases the cost for electricity suppliers to comply with solar RPS. To the extent compliance increases the cost of electricity in the State, State expenditures increase. In fiscal 2009 State agencies and the University System of Maryland spent approximately \$223.0 million on electricity. For each 1% increase in electricity prices, State expenditures increase by \$2.2 million.

*PSC Administrative Costs*

PSC reviews applications from solar generators that apply for SRECs. Under the bill, PSC anticipates an increase in the number of SREC applications to be reviewed and approved and anticipates the need for two additional positions to process those applications. Accordingly, special fund expenditures from the Public Utility Regulation Fund increase by \$36,511 in fiscal 2011, which accounts for a 90-day start-up delay. This estimate reflects the cost of hiring an administrative specialist and a public service engineer to certify additional applications for SRECs. It includes salaries, fringe benefits, one-time start-up costs, and ongoing operating expenses.

Positions	2
Salaries and Fringe Benefits	\$27,114
Operating Expenses	9,397
<b>Total FY 2011 PSC Expenditures</b>	<b>\$36,511</b>

Future year expenditures reflect full salaries with 4.4% annual increases and 3% employee turnover; and 1% annual increases in ongoing operating expenses.

MEA can handle any increase in workload with existing resources.



**Small Business Effect:** The small business impact statement provided by the Administration indicates that solar energy installers in the State will benefit from an increase in the solar RPS. Legislative Services concurs with the assessment; however, the small business impact statement does not account for the additional cost to comply with accelerated solar RPS and increased ACP. The additional cost of compliance will be absorbed by all electric customers in the State, including small businesses.

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### **Additional Information**

**Prior Introductions:** None.

**Cross File:** SB 277 (The President, *et al.*) (By Request - Administration) - Finance.

**Information Source(s):** Department of General Services, Maryland Energy Administration, Department of Natural Resources, Public Service Commission, Department of Legislative Services

**Fiscal Note History:** First Reader - February 15, 2010  
mpc/lgc

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ANALYSIS OF ECONOMIC IMPACT ON SMALL BUSINESSES

**TITLE OF BILL: Renewable Energy Portfolio Standard - Solar Energy**

BILL NUMBER: HB 471

PREPARED BY:

PART A. ECONOMIC IMPACT RATING

This agency estimates that the proposed bill:

WILL HAVE MINIMAL OR NO ECONOMIC IMPACT ON MARYLAND SMALL BUSINESS

OR

WILL HAVE MEANINGFUL ECONOMIC IMPACT ON MARYLAND SMALL BUSINESSES

PART B. ECONOMIC IMPACT ANALYSIS

The proposed legislation will have minimal impact on small business in Maryland. Solar energy installers that are small businesses will directly benefit from the increase in the solar renewable portfolio standards requirements in the bill.