

Department of Legislative Services
 Maryland General Assembly
 2010 Session

FISCAL AND POLICY NOTE
Revised

Senate Bill 1107

(Senator Garagiola)

Finance

Economic Matters

Renewable Energy Portfolio Standard - Renewable Energy Credits - Solar Water Heating Systems

This bill enables a person who owns and operates a “solar water heating system” to receive renewable energy credits (RECs) equal to the amount of electricity saved by using a solar water heating system. RECs from a solar water heating system may be transferred and applied to the Tier 1 renewable portfolio standard (RPS) requirements. To calculate the RECs from a solar water heating system, the amount of electricity saved must be converted from BTUs to kilowatt-hours. For a commercial system, the amount of electricity saved must be measured by a meter that meets specified standards and is capable of providing data to the Public Service Commission (PSC) online. Residential solar water heating systems may use a meter or the savings may be estimated using the Solar Ratings and Certification Corporation’s OG-300 Annual Production Estimate for the system. Residential systems may not generate more than five solar RECs per year. A “solar water heating system” is a system that generates energy using solar radiation for the purpose of heating water. A solar water heating system does not include a system for the sole purpose of heating a hot tub or swimming pool and must be installed in accordance with State and local plumbing codes.

Fiscal Summary

State Effect: Special fund expenditures from the Public Utility Regulation Fund may increase by \$38,900 in FY 2011 if applications for RECs increase significantly as a result of the bill’s changes. Future years reflect inflation and annualization. Revenues are not directly affected.

(in dollars)	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Revenues	\$0	\$0	\$0	\$0	\$0
SF Expenditure	38,900	49,600	52,100	54,700	57,500
Net Effect	(\$38,900)	(\$49,600)	(\$52,100)	(\$54,700)	(\$57,500)

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

Local Effect: None.

Small Business Effect: Potential meaningful.

Analysis

Current Law: REC is a tradable commodity representing the renewable energy generation attributes of one megawatt hour of electricity. RECs are awarded to operators who generate electricity using specified renewable energy sources. A renewable on-site generator of electricity owns and may sell or transfer RECs to another party. RECs are not awarded for electricity conservation measures.

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 RECs created from various renewable energy sources classified as Tier 1 and Tier 2 renewable sources, with a specified portion coming from solar sources. The solar carve-out must be met with solar RECs (SRECs). 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.

Background: The U.S. Department of Energy (DOE) indicates that solar hot water is one of the most cost-effective ways to include renewable technologies into a building and that a typical residential solar hot water system reduces the need for conventional water heating by about two-thirds. Typical residential systems cost between \$2,000 and \$4,500 while commercial size installations can cost up to \$50,000. Although this is usually more than the cost of a conventional electric, gas, or fuel oil system, solar heating systems are cost competitive when considering total energy costs over the entire life of the system.

Generally, RPS works to encourage the development of solar electric generation by allowing owners of qualifying generating facilities sell RECs associated with their facilities to offset a portion of the installation costs. RECs can be purchased and traded on an open exchange, allowing electricity suppliers to either purchase RECs directly from generators or through a third-party re-seller. The price of REC is effectively capped by the applicable alternative compliance payment (ACP) – what a supplier pays for an RPS shortfall.

Under the bill, RECs awarded to owners of solar hot water systems are eligible to meet the solar RPS requirements and would be certified by PSC as SRECs. **Exhibit 1** provides two examples of solar hot water systems and estimates the value of the SRECs that would be awarded to the owner of a solar hot water system. The exhibit assumes that the price of SRECS will equal 75% of the ACP. *For illustrative purposes*, 10 years of SRECs for a typical residential one-panel system would be worth \$2,521. For installation of a larger commercial size system, 10 years of SRECs would be worth \$30,250. The actual amount that an individual would receive from installing such a system will vary, as SRECs purchased through a long-term agreement by an aggregator or re-marketer of will likely be purchased from an individual at a discounted price.

Exhibit 1
Value of SRECS for Solar Hot Water Systems

<u>Type of Installation</u>	<u>Annual Electricity Savings (KWh)</u>	<u>2012 Value of SRECS</u>	<u>10-year Value of SRECS*</u>
Residential	2,000	\$525	\$2,521
Commercial	24,000	6,300	30,250

* 10-year value represents the net present value using a 7% discount rate.
Source: Department of Legislative Services

The Solar Ratings and Certification Corporation is an independent entity that administers a certification, rating, and labeling program for solar collectors and a similar program for complete solar hot water systems. The OG-300 rating system provides an estimate, based on the location of the system, for energy savings for nearly 1,000 solar hot water systems.

The U.S. Energy Information Administration (EIA) estimates that total U.S. shipments of solar thermal collectors equaled 17.0 million square feet in 2008. This total primarily includes low-temperature and medium-temperature solar collectors used in solar hot water applications. **Exhibit 2** shows the square feet of thermal collectors shipped to leading states. In 2008, 65% of thermal collectors shipped went to the top five destination states (Arizona, California, Florida, Hawaii, and Oregon). Additionally, 13% were exported outside of the United States.

Exhibit 2
2008 Shipments of Thermal Collectors

Destination	<u>Square Feet Shipped</u>	<u>Percent of U.S. Total</u>
Top Five States	11,093,000	65%
Florida	5,175,000	31%
California	3,746,000	22%
Arizona	939,000	6%
Hawaii	780,000	5%
Oregon	452,000	3%
Other Domestic	3,623,000	21%
Exported	2,247,000	13%
U.S. Total	16,963,000	100%

Source: U.S. Energy Information Administration

EIA estimates that Maryland received 27,773 square feet of thermal collectors in 2008. This represents less than 1% of the national total. Assuming that each solar hot water panel is 6x8 feet (48 square feet total), this equates to 579 panels.

State Fiscal Effect: Under current law, PSC is required to review and verify applications for RECs. PSC indicates that allowing solar hot water systems to be eligible for RECs would result in an additional 3,500 applications annually. PSC advises that this estimate is based on a 2007 National Renewable Energy Laboratory report estimating that there are currently 10 times as many solar hot water systems as photovoltaic solar systems. Since solar hot water systems are not connected to the electricity grid, PSC advises that verification of each system would need to be performed through visual inspection of each facility that applies for certification of RECs. As a result, PSC advises that two administrative specialists, one engineer, and two inspectors are required to certify solar hot water facilities for RECs at an annual cost of approximately \$270,000. Legislative Services does not concur with this assessment, as discussed below.

Solar hot water systems that are installed in commercial facilities are required to have a meter capable of measuring the BTUs generated by the system and providing energy production data online to PSC. As a result, verification of electricity saved by commercial facilities will not necessarily require a visual inspection. Verifying the attributes of a residential solar hot water system will not necessarily require PSC to

visually inspect each system. Other states that allow tax credits for solar hot water installations use a variety of methods for verifying the amount of energy savings for a solar hot water system, including using a certification process for installers.

Legislative Services agrees that allowing owners of solar hot water facilities to receive RECs will result in an increase in applications for SRECs; however, the extent of any such increase is difficult to predict. Assuming each PSC administrative staff can process three applications per day, one additional staff can process 780 applications annually. If applications submitted to PSC increase significantly as a result of the bill, special fund expenditures from the Public Utility Regulation Fund may increase by \$38,858 in fiscal 2011, which accounts for a 90-day start-up delay. This estimate reflects the cost of hiring one administrative specialist to certify additional applications for SRECs. It includes a salary, fringe benefits, one-time start-up costs, and ongoing operating expenses.

Position	1
Salary and Fringe Benefits	\$36,085
Equipment and Operating Expenses	2,773
Total Fiscal 2011 PSC Expenditures	\$38,858

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

Small Business Effect: Granting ownership of RECs to an owner of a solar hot water system significantly reduces installation costs and provides a meaningful benefit to small businesses that install these systems. Such small businesses may include car washes, laundromats, apartment buildings, as well some industrial processes and other facilities. Small businesses that perform installation services for solar hot water systems also benefit from a reduction in the cost of installing hot water systems.

Additional Comments: Authorizing owners of solar hot water systems to be awarded SRECs associated with those systems may significantly increase the amount of the SRECs available to meet solar RPS requirements. The increase in supply of SRECs may decrease the overall value of SRECs, thereby reducing the cost incurred by electricity suppliers to meet solar RPS requirements. To the extent the availability of SRECs increases and the cost of RPS compliance decreases, all electricity customers in the State benefit from the reduced cost of compliance; however, increasing the supply (thereby decreasing the value) of SRECs will also reduce the income stream available to owners of renewable generating facilities and solar hot water systems.

Also, to the extent that the availability of SRECs increases, electricity suppliers may be more likely to meet solar RPS through the purchase of SRECs in lieu of paying ACP. To the extent this occurs, special fund revenues from ACP to the Maryland Strategic Energy Investment Fund within the Maryland Energy Administration will decrease.

Additional Information

Prior Introductions: HB 700 of 2009, a similar bill, receives an unfavorable report from the House Economic Matters Committee.

Cross File: Although HB 1537 (Delegate Hecht - Economic Matters) is designated as a cross file, it is different.

Information Source(s): U.S. Department of Energy, U.S. Energy Information Administration, National Renewable Energy Laboratory, Office of People's Counsel, Public Service Commission, Department of Legislative Services

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Analysis by: Erik P. Timme

Direct Inquiries to:
(410) 946-5510
(301) 970-5510