SB 717

Department of Legislative Services

Maryland General Assembly
2011 Session

FISCAL AND POLICY NOTE
Revised

Senate Bill 717 (Senator Garagiola and the President, *et al.*) (By Request - Administration)

Finance Economic Matters

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

This bill establishes solar water heating systems as a Tier 1 renewable source eligible to meet the Tier 1 solar portion of Maryland's renewable energy performance standards (RPS). An owner of a solar water heating system installed on or after June 1, 2011, may receive solar renewable energy credits (SRECs) equal to the amount of electricity saved by using a solar water heating system. The bill defines "solar water heating system," specifies how SRECs from a solar water heating system are calculated, establishes metering requirements for commercial customers, and establishes a maximum limit on the number of SRECs that a residential solar water heating system may generate in any one year.

The bill takes effect January 1, 2012.

Fiscal Summary

State Effect: Special fund expenditures from the Public Utility Regulation Fund may increase by at least $39,200 in FY 2012 for the Public Service Commission (PSC) to certify additional SRECs. Future years reflect inflation and annualization. Expenditures may increase further in future years if the number of applications for SRECs increases significantly as a result of the bill. Revenues are not directly affected.

(in dollars)	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Revenues	$0	$0	$0	$0	$0
SF Expenditure	39,200	71,700	75,300	79,100	83,100
Net Effect	($39,200)	($71,700)	($75,300)	($79,100)	($83,100)

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

Local Effect: None.

Small Business Effect: Potential meaningful.

Analysis

Bill Summary: A person who owns and operates a "solar water heating system" commissioned on or after June 1, 2011, shall receive SRECs equal to the amount of electricity saved by using a solar water heating system. SRECs from a solar water heating system may be transferred and applied to the Tier 1 solar RPS. To calculate the SRECs from a solar water heating system, the amount of electricity saved must be converted from BTUs to kilowatt-hours.

For a nonresidential or commercial system, the amount of electricity generated and consumed by a solar water heating system must be measured by an on-site meter that meets specified standards. Energy savings by a residential solar water heating system must be measured by a meter that meets specified criteria or measured by the Solar Ratings and Certification Corporation's OG-300 thermal performance rating for the system and certified by the corporation. Residential systems may not generate more than five SRECs per year, and must be installed in accordance with State and local plumbing codes.

A "solar water heating system" is a system that generates energy using solar radiation for the purpose of heating water and does not feed electricity back to the electric grid. A solar water heating system must be comprised of glazed liquid-type flat-plate or tubular solar collectors as defined and certified to the OG-100 standard of the Solar Ratings and Certification Corporation. A solar water heating system does not include a system for the sole purpose of heating a hot tub or swimming pool.

Current Law: A 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 requires that renewable sources generate specified percentages of Maryland's electricity supply each year, increasing to 20%, including 2% from solar power, by 2022. Electricity suppliers must submit RECs equal to the percentage mandated by statute each year, or pay an alternative compliance payment (ACP) equivalent to the supplier's shortfall. RECs are classified as Tier 1, Tier 2, or solar RECs. 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; a small hydroelectric plant of less than 30 megawatts; and poultry litter-to-energy. 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 $2,500 and $7,500 while commercial size installations can cost up to $50,000, depending on the size of the system. 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 to sell SRECs associated with their facilities to offset a portion of the installation costs. SRECs 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 an SREC is effectively capped by the applicable ACP – what a supplier pays for an RPS shortfall.

Under the bill, SRECs awarded to owners of solar hot water systems are eligible to meet the solar RPS requirements and would be certified by PSC and entered into the PJM Interconnection generation attribute tracking system. **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 $3,066. For installation of a larger commercial size system, 10 years of SRECs would be worth $36,789. 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 will likely be purchased from an individual at a discounted price.

Exhibit 1
Value of SRECs for Solar Hot Water Systems

Type of Installation	Annual Electricity Savings (kWh)	2012 Value of SRECs	10-year Value of SRECs*
Residential	2,000	$600	$3,066
Commercial	24,000	7,200	36,789

*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 1,600 solar hot water systems.

The U.S. Energy Information Administration (EIA) estimates that total U.S. shipments of solar thermal collectors equaled 13.8 million square feet in 2009. 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 and 2009. In 2009, 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
Shipments of Thermal Collectors
(square feet)

	2008	**2009**
Destination		
Top Five States	11,093,000	8,961,000
Florida	5,175,000	3,771,000
California	3,746,000	3,537,000
Arizona	939,000	745,000
Hawaii	780,000	520,000
Oregon	452,000	387,000
Other Domestic	3,623,000	3,260,000
Exported	2,247,000	1,577,000
U.S. Total	**16,963,000**	**13,798,000**

Source: U.S. Energy Information Administration

EIA estimates that Maryland received 27,773 square feet of thermal collectors in 2008. In 2009, the square feet of thermal collectors shipped to Maryland increased to 67,250.

According to DOE, contractors usually follow a guideline of around 20 square feet of collector area for each of the first two family members. For each additional person, contractors add 8 square feet if the house is in the sunbelt or 12 to 14 square feet if the house is in the northern United States.

Assuming that each solar hot water panel is 4x10 feet (40 square feet total), this equates to an increase from 694 panels shipped to Maryland in 2008 to 1,681 panels in 2009. Although approximately 1,681 panels were shipped to Maryland in 2009, the actual number of solar water heating systems installed is not known, since some residential solar hot water systems may use more than one panel, and commercial-sized systems may use dozens of panels.

Within the PJM area, the District of Columbia and the State of Pennsylvania allow solar water heating systems to be eligible for inclusion into their state RPS.

State Fiscal Effect: Under current law, PSC is required to review and verify applications for SRECs. Under current staffing levels, a significant increase in SREC applications may not be absorbable within existing budgeted resources. PSC advises that one additional public service engineer and one administrative staff are required to process applications, calculate the energy savings and the amount of SRECs to be awarded, and monitor SRECs over time to ensure the proper recipient receives SRECs as the property changes owners.

Legislative Services agrees that allowing owners of solar hot water facilities to receive SRECs will result in an increase in applications; however, the extent of any such increase is difficult to predict. Special fund expenditures from the Public Utility Regulation Fund increase by at least $39,205 in fiscal 2012, which accounts for the bill's January 1, 2012 effective date. This estimate reflects the cost of hiring one public service engineer 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	$33,835
Equipment and Operating Expenses	5,370
Total Fiscal 2012 PSC Expenditures	**$39,205**

Additional staff may be required in future years, depending on the number of additional applications for SRECs; however, to the extent PSC is able to realize efficiencies in approving SRECs, additional staff may not be required.

Small Business Effect: Granting ownership of SRECs to an owner of a solar hot water system significantly reduces installation costs and provides a meaningful benefit to both households and small businesses that purchase these systems. Such small businesses may include car washes, laundromats, apartment buildings, as well some industrial processes and other facilities. Increasing monetary incentives for individuals to install solar hot water heating systems reduces the lifecycle cost of the project. As a result, small

businesses involved with the installation of solar hot water heating systems stand to benefit. There are currently several small businesses that provide such services in the State.

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: SB 1107 of 2010 passed in the Senate and received a hearing in the House Economic Matters Committee, but no further action was taken. Its cross file, HB 1537, received an unfavorable report from the House Economic Matters Committee.

Cross File: HB 933 (Delegate Jameson and the Speaker, *et al.*) (By Request - Administration) - Economic Matters.

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

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