Department of Legislative Services

Maryland General Assembly
2014 Session

FISCAL AND POLICY NOTE

Senate Bill 156 (Senators Manno and Mathias)
Finance

Public Utilities - Renewable Energy Portfolio Standard - Hydrokinetic Turbines

This bill creates a "carve-out" for energy derived from "hydrokinetic turbines" in the State Renewable Energy Portfolio Standard (RPS) beginning in 2022. Specifically, beginning in 2022, at least 0.0005% of the State's electricity supply must come from hydrokinetic turbines. "Hydrokinetic turbine" means a turbine that harnesses energy from ocean currents, ocean tides, or ocean waves.

Fiscal Summary

State Effect: The Public Service Commission can handle the bill's requirements with existing budgeted resources. The bill is not anticipated to materially affect electricity prices or Strategic Energy Investment Fund revenue from alternative compliance payments (ACPs) made under the State's RPS.

Local Effect: None.

Small Business Effect: Minimal.

Analysis

Current Law: Maryland's RPS requires that renewable sources generate specified percentages of the State's electricity supply each year, gradually increasing to a minimum of 20%, including 2% from solar sources, by 2022. Electric companies and other electricity suppliers must submit renewable energy credits (RECs) equal to the required percentage each year or pay an ACP equivalent to their shortfall. For more information on Maryland's RPS, see the **Appendix – Maryland's Renewable Energy Portfolio Standard**.

Energy generated from hydrokinetic turbines is already eligible as a Tier 1 resource under RPS, which includes ocean sources, including energy from waves, tides, currents, and thermal differences. There are two current carve-outs in RPS: solar and offshore wind. Both are considered Tier 1 resources but have separate percentage requirements and ACPs.

Background: The quantity of energy required to be supplied by hydrokinetic turbines under the bill depends on total energy consumption in the State in 2022. Forecasts for total energy consumption vary by source, and energy forecasting may not take into account unforeseen changes in the business climate, consumer behavior, and technology. However, most projections are consistent with there being approximately 70,000 gigawatt-hours of energy consumption in the State by 2022, with a range of a few thousand gigawatt-hours.

As the bill does not increase the total number of Tier 1 RECs, but rather specifies that a percentage must be from hydrokinetic turbines, the incremental cost of the bill in any year depends on (1) total State energy demand and (2) the difference in price between hydrokinetic turbine RECs and all other Tier 1 nonsolar RECs. ACP in 2022 for a Tier 1 nonsolar REC is $40, which effectively caps the price of all Tier 1 nonsolar RECs, including those produced from hydrokinetic turbines. In effect, ACP is the maximum compliance cost per REC. In practice, RECs are typically traded at a price below ACP unless there is a shortage.

For illustrative purposes only, the Department of Legislative Services (DLS) has calculated a range of compliance costs associated with a hydrokinetic turbine carve-out in the Tier 1 RPS in 2022, as shown below in **Exhibit 1**. As an example, if the cost of a hydrokinetic turbine REC is the theoretical maximum of $40, and other Tier 1 nonsolar RECs are $30, the incremental cost of a hydrokinetic turbine REC is $10. DLS notes that if hydrokinetic turbine RECs and other Tier 1 nonsolar RECs are the same price in any year, there is no incremental cost of compliance with the bill.

Exhibit 1
Potential Compliance Cost
2022

Retail Electric Sales (Gigawatt-hours)	Hydrokentic Turbine REC Requirement	Compliance Cost Incremental Cost of Hydrokinetic Turbine REC ($) $10	$20	$30
68,000	340	$3,400	$6,800	$10,200
70,000	350	3,500	7,000	10,500
72,000	360	3,600	7,200	10,800

Source: Power Plant Research Program; Department of Legislative Services

The Maryland Energy Administration advises that the technology as specified in the bill is currently best described as still in the research and development or prototype phase, with no commercial ocean-powered systems installed in the United States. Although there is some intermittency and seasonality in these sources, they can produce a relatively high capacity factor when well-sited. Using the above REC requirements, and assuming a 50% capacity factor, the entire proposed carve-out could be met by approximately an 80-kilowatt system.

Additional Information

Prior Introductions: None.

Cross File: None.

Information Source(s): Maryland Energy Administration, Public Service Commission, Power Plant Research Program, Department of Legislative Services

Fiscal Note History: First Reader - January 20, 2014
ns/lgc

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Appendix – Maryland's Renewable Energy Portfolio Standard

Maryland's Renewable Energy Portfolio Standard (RPS) was enacted in 2004 to facilitate a gradual transition to renewable sources of energy. Maryland's RPS operates on a two-tiered system with carve-outs for solar energy and offshore wind energy and corresponding renewable energy credits (RECs) for each tier. It requires that Tier 1 renewable sources generate specified percentages of the State's electricity supply each year, gradually increasing to a minimum of 20%, including 2% from solar sources, by 2022. The Tier 2 requirement remains constant at 2.5% each year until ending after 2018.

In 2014, RPS requirements are 10.3% for Tier 1 renewable sources, including at least 0.35% from solar energy, and 2.5% from Tier 2 renewable sources. Electric companies (utilities) and other electricity suppliers must submit RECs equal to the percentage specified in statute each year or pay an alternative compliance payment (ACP) equivalent to their shortfall. The Maryland Energy Administration must use ACPs to support new renewable energy sources.

Generally, a REC is a tradable commodity equal to one megawatt-hour of electricity generated or obtained from a renewable energy generation resource. In other words, a REC represents the "generation attributes" of renewable energy – the lack of carbon emissions, its renewable nature, etc. A REC has a three-year life during which it may be transferred, sold, or redeemed. RECs are classified as Tier 1 or Tier 2, depending on the energy source. Solar and offshore wind are accounted for separately but are considered part of Tier 1. REC generators and electricity suppliers are allowed to trade RECs using a Public Service Commission-approved system known as the Generation Attributes Tracking System, a trading platform designed and operated by PJM Environmental Information Services, Inc. that tracks the ownership and trading of RECs.

Tier 1 sources include wind (onshore and offshore); 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; poultry litter-to-energy; waste-to-energy; refuse-derived fuel; and thermal energy from a thermal biomass system. Tier 1 Solar sources include photovoltaic cells and residential solar water heating systems commissioned in fiscal 2012 or later. Tier 2 now includes only large hydroelectric power plants.

RPS Compliance

For the 2012 compliance year, electricity suppliers retired approximately 5.5 million RECs at a cost of $24.4 million, with ACPs accounting for only $5,450 of the total. In general, electricity suppliers have been able to meet all of their Tier 1 nonsolar and Tier 2 REC requirements. The predominant source of ACPs (when required) has been from the Tier 1 Solar requirement.