HB 363

Department of Legislative Services

Maryland General Assembly
2020 Session

FISCAL AND POLICY NOTE
First Reader

House Bill 363 (The Speaker, *et al.*) (By Request - Administration)
Economic Matters

Clean and Renewable Energy Standard (CARES)

This Administration bill adds "clean energy" to the Renewable Energy Portfolio Standard (RPS), removes some currently eligible combustion sources, and replaces them with large hydroelectric. The modified program is renamed the Clean and Renewable Energy Standard ("CARES"). Beginning in 2021, the nominal overall amount of energy that must be from clean and renewable sources is increased by 25 percentage points; however, there is an annual reduction of about that amount each year due to existing in-state nuclear generation, so the net total does not increase beyond existing levels until 2031. Clean energy sources must be used for a minimum amount of the total each year, similar to the existing solar and offshore wind carve-outs, but may *also* be used to meet any remaining general requirement. Finally, the solar carve-out is fixed to 2.5% for municipal electric utilities. **The bill takes effect January 1, 2021, and applies to all compliance years beginning in that year.**

Fiscal Summary

State Effect: The Public Service Commission (PSC) can implement the bill with existing budgeted resources. Program compliance costs and, therefore, State expenditures on electricity likely decrease beginning in FY 2021, as discussed below; however, the amount cannot be reliably estimated at this time. Special fund revenues from alternative compliance payments (ACPs) increase beginning as early as FY 2022 to the extent that electricity suppliers are unable to meet the new clean energy carve-out. The bill does not otherwise materially affect State finances or operations.

Local Effect: The effects on local revenues and expenditures are discussed below.

Small Business Effect: The Administration has determined that this bill has minimal or no impact on small business (attached). The Department of Legislative Services disagrees with this assessment as discussed below.

Analysis

Bill Summary:

Clean Energy Resources

An eligible "clean energy" source, which must be connected to the electric distribution grid serving the State to otherwise qualify, means:

- a combined heat and power system that commences operation after December 31, 2020, with specified requirements for the generation of clean energy resource credits;
- a natural gas or qualifying biomass generating station with a concomitant carbon capture system, to the extent the captured carbon dioxide offsets the carbon output of the generating station and is (1) permanently sequestered in geological reserves or (2) utilized in a manner that results in indefinite sequestration, as established by regulations adopted by PSC;
- a nuclear generation asset, including a small modular reactor, that commences operation after December 31, 2020; or
- other emerging net-zero carbon technologies, as established by regulations adopted by PSC.

Similar to the existing process for the creation of renewable energy credits (REC) a clean energy resource credit is generally equal to one megawatt-hour of electricity derived from a clean energy source. Proportional credits are created for specified combined heat and power systems that meet minimum efficiency requirements.

These clean energy resources are incorporated into a nominally expanded RPS beginning in 2021, although the existing credit for in-state nuclear delays an overall increase until 2031. Clean energy sources must be used for a minimum amount of the total each year, similar to the existing solar and offshore wind carve-outs, but may *also* be used to meet any remaining general requirement. Changes to the overall percentage requirements are shown in **Exhibit 1**.

Exhibit 1
Annual RPS/CARES Specifications
2021 – 2040+

Current Law		The Bill			
Year	Total[1]	Nominal Total[2]	Nuclear Credit (Est.)	Net Total[3]	Clean Energy Minimum
2021	30.8%	55.8%	25.0%	30.8%	2.5%
2022	33.1%	58.1%	25.0%	33.1%	3.3%
2023	35.4%	60.4%	25.0%	35.4%	4.2%
2024	37.7%	62.7%	25.0%	37.7%	5.0%
2025	40.0%	65.0%	25.0%	40.0%	5.8%
2026	42.5%	67.5%	25.0%	42.5%	6.7%
2027	45.5%	70.5%	25.0%	45.5%	7.5%
2028	47.5%	72.5%	25.0%	47.5%	8.3%
2029	49.5%	74.5%	25.0%	49.5%	9.2%
2030	50.0%	75.0%	25.0%	50.0%	10.0%
2031-34	***50.0%***	***----------(Upward Trend Continues)----------***			
2035	50.0%	87.5%	25.0%	62.5%	20.0%
2036-39	***50.0%***	***----------(Upward Trend Continues)----------***			
2040+	50.0%	100.0%	25.0%	75.0%	30.0%

CARES: Clean and Renewable Energy Standard
RPS: Renewable Energy Portfolio Standard

[1]Includes solar and offshore wind carve-outs.

[2]The Public Service Commission must reduce the overall percentage requirement in each year by an amount equal to the generation output of nuclear facilities that exist before January 1, 2021. For purposes of this fiscal and policy note, 25% is used, which is approximately the proportional generation of the Calvert Cliffs nuclear facilities, relative to State electricity sales, in a given year.

[3]Includes solar, offshore wind, and clean energy carve-outs. Existing solar and offshore wind requirements are unchanged. Shown net of estimated 25% credit for existing nuclear. Any otherwise-qualifying renewable or clean energy source may be used to meet the remaining requirements.

Source: Department of Legislative Services

Percentage Reduction for Existing Nuclear Generation

In recognition of the baseload, greenhouse gas-free, and carbon-free production of electricity provided by nuclear generation assets connected to the distribution system in the State that commenced operation before January 1, 2021, PSC must reduce the nominal overall requirement each year by a percentage equal to the average generation output of those generation assets in the previous three calendar years divided by the average electricity retail sales in those same calendar years.

Eligibility Changes for Renewable Sources

There are three changes to RPS eligibility:

- Hydroelectric sources of any size, that otherwise meet standard eligibility requirements, qualify as a Tier 1 resource; they do not have to be connected to the electric distribution grid serving the State.
- Black liquor is removed from eligibility as a Tier 1 resource. Other eligible sources of qualifying biomass are unchanged.
- Waste-to-energy and refuse-derived fuel are removed from eligibility as a Tier 1 resource.

Municipal Electric Utilities Limited to 2.5% Solar

The bill limits the annual RPS percentage that must be derived from solar energy for a municipal electric utility to 2.5%, the same amount as that for electric cooperatives.

Other Conforming Changes

The bill also makes various stylistic and conforming changes to incorporate clean energy sources and their associated clean energy resource credits into the remaining administrative provisions of the RPS, covering such topics as how long credits last, how they are traded, and how they are used for compliance.

Current Law/Background: Maryland's RPS was enacted in 2004 to facilitate a gradual transition to renewable sources of energy. There are specified eligible ("Tier 1" or "Tier 2") sources as well as carve-outs for solar and offshore wind. Electric companies (utilities) and other electricity suppliers must submit RECs equal to a percentage specified in statute each year or else pay an ACP equivalent to their shortfall. Chapter 757 of 2019 significantly increased the percentage requirements, which now escalate over time to a minimum of 50% from Tier 1 sources, including 14.5% from solar, by 2030. In 2020, the requirements are 28% for Tier 1 sources, including at least 6.0% from solar, plus 2.5% from Tier 2 sources. Tier 2 terminates after 2020. Specific sections of the RPS affected by the bill are

discussed separately below; for more general information, see the **Appendix – Renewable Energy Portfolio Standard.**

Hydroelectric

Hydroelectric sources must be less than 30 megawatts to be a Tier 1 resource. Larger hydroelectric sources other than pumped storage is eligible for Tier 2 through 2020, after which Tier 2 terminates. It is the only eligible Tier 2 source.

According to the recent comprehensive report prepared by the Power Plant Research Program (PPRP) in the Department of Natural Resources, large hydroelectric (30 megawatts or more) is an eligible Tier 1 resource in Illinois and Michigan, and is an eligible Tier 2 source in the District of Columbia.

Black Liquor

"Qualifying biomass" for Tier 1 RPS compliance means a nonhazardous, organic material that is available on a renewable or recurring basis, and is waste material that is segregated from inorganic waste material and is derived from various specified sources. Qualifying biomass does not include old growth timber, unsegregated solid waste or postconsumer wastepaper, or invasive exotic plant species. An electricity supplier receives credit toward meeting RPS for electricity derived from the biomass fraction of biomass co-fired with other fuels.

Much of Maryland's Tier 1 RPS obligation has historically been met with qualifying biomass – primarily in the form of black liquor and wood waste. However, the proportion has decreased over the past half-decade, with the most recent compliance year data (2018) showing that 15% of Tier 1 RECs were sourced from black liquor.

According to the PPRP report, Maryland is the only state in the region that includes black liquor as an eligible Tier 1 resource besides Pennsylvania, where black liquor facilities must be located in that state to be eligible. Black liquor has a relatively small (1.5% of all qualified RECs) and declining market share in the region and, therefore, it exerts minimal influence over REC prices or the ability to meet RPS requirements.

The sole in-state facility that had produced black liquor RECs used for compliance with Maryland's RPS, Luke Mill in Allegany County, closed in 2019. Other black liquor RECs have predominantly been sourced from North Carolina, Tennessee, and Virginia – although other states have also contributed.

Waste-to-energy and Refuse-derived Fuel

Much of Maryland's Tier 1 RPS obligation has historically been met with municipal solid waste – the "waste-to-energy" source removed by the bill. However, the proportion has decreased over time as wind and solar sources have been built, with the most recent compliance year data (2018) showing that 12% of Tier 1 RECs were sourced from municipal solid waste. For context, in 2012, municipal solid waste was the source of 32% of Tier 1 RECs. There are two such facilities in the State – the private company Wheelabrator in Baltimore City and a county-owned facility in Montgomery County. There are no "refuse-derived fuel" facilities.

According to the PPRP report, the effect on REC prices of removing municipal solid waste from Maryland's RPS is likely to be small. Municipal solid waste is also accepted as a Tier 1 resource in Ohio and Michigan and accepted as a Tier 2 resource in several other states. Additionally, municipal solid waste has a relatively small (1.2% of all qualified RECs in 2018) market share in the region.

Municipal Electric Utilities

Municipal electric utilities are not exempt from Maryland's RPS – the solar carve-out or otherwise. Electric cooperatives are exempt from future increases to the solar portion beyond 2.5%. The RPS also does not apply to a customer served by an electric cooperative under an electricity supplier purchase agreement that existed on October 1, 2004, until the expiration of the agreement, as the agreement may be renewed or amended (*i.e.*, a customer of Choptank Electric Cooperative). For other electricity suppliers, the solar requirement is 6.0% in 2020. That amount increases over time, eventually reaching 14.5% in 2030 and later.

There are five municipal electric utilities in the State: Berlin (Worcester County), Easton (Talbot County), Hagerstown (Washington County), Thurmont (Frederick County), and Williamsport (Washington County). Combined, these five utilities are forecast to supply about 735,000 to 750,000 megawatt-hours of electricity annually over the coming decade. For context, that is about 1.2% to 1.3% of the State's estimated energy sales in those years.

State Revenues: Special fund revenues for the Strategic Energy Investment Fund from ACPs may increase beginning as early as fiscal 2022 to the extent that electricity suppliers are unable to meet the new clean energy carve-out. The amount, if any, depends on the timely availability of eligible clean energy resources.

State Expenditures: PSC can implement the bill with existing budgeted resources. The magnitude of the effect on energy credit prices and, therefore, State expenditures on electricity, is unknown; however, the overall effect of the changes in the bill place

downward pressure on general prices beginning in fiscal 2021, except for potentially the clean energy carve-out, depending on initial eligibility. Individual effects are discussed below.

Credit Supply: Eligibility Changes for Renewable Sources

The addition of large hydroelectric as a Tier 1 resource likely reduces REC prices and, therefore, State expenditures on electricity, beginning in fiscal 2021; however, the amount cannot be reliably estimated at this time. PSC advises that more than 3,200 megawatts of large hydroelectric resources are potentially made eligible under the bill, which represents a significant increase in the quantity of available Tier 1 RECs. Such an increase in supply puts downward pressure on general REC prices. As discussed in more detail above, removing black liquor, waste-to-energy, and refuse-derived fuel has a negligible effect on REC prices, since the sources have decreased in market share over time and do not represent a significant market share going forward.

Credit Supply: Inclusion of Clean Energy Sources in General Program

Independent of the clean energy carve-out, the remaining nonresource-specific clean/renewable energy requirement can be met with either RECs *or* clean energy resource credits each year. This has the potential, depending on the supply of eligible clean energy resources, to substantially increase the supply of available credits eligible for compliance. Such an increase in supply would put downward pressure on credit prices (renewable and clean). Conversely, absent a sufficient supply of clean energy resources, clean energy credit prices may approach ACPs – or electricity suppliers may be forced to pay ACPs directly.

Credit Demand: Clean Energy Sources Carve-out and the In-state Nuclear Credit

The clean energy carve-out combined with the in-state nuclear credit reduces the overall amount of nonresource-specific credits required for compliance through 2030. A reduction in demand puts downward pressure on general REC prices. The effect works in tandem with the changes to supply discussed above.

Local Revenues:

Removing Waste-to-energy and Refuse-derived Fuel from Tier 1

Beginning in fiscal 2021, local governments that own and operate waste-to-energy or refuse-derived fuel facilities (or that will own/operate such facilities in the future) must sell the associated RECs to other states for compliance in those states, rather than Maryland, if they wish to continue receiving revenue. To the extent there are no other buyers for these RECs, or other state REC prices are lower than Maryland's, local government revenues

decrease. However, the net effect on a particular local government cannot be reliably estimated at this time, as prices are unknown. For context, about 300,000 to 350,000 RECs from Montgomery County's municipal solid waste facility have been used annually for compliance with Maryland's RPS in recent years.

This analysis does not include any effects associated with private waste-to-energy companies, such as the Wheelabrator facility in Baltimore City. While not a direct effect of the bill, if that facility were to close, Baltimore City finances and operations as they relate to waste management would be significantly affected.

Local Expenditures: The magnitude of the effect on energy credit prices and, therefore, local government expenditures on electricity, is unknown; however, the overall effect of the changes in the bill place downward pressure on general prices, except for potentially the clean energy carve-out, depending on initial eligibility, beginning in fiscal 2021.

Limiting Municipal Electric Utilities' Solar Requirement

Limiting the solar requirement to 2.5% reduces the number of solar RECs (SRECs) that municipal electric utilities must purchase for RPS compliance each year, as shown in **Exhibit 2**. Using forecast SREC prices from the PPRP report for each calendar year, and accounting for the calendar-fiscal year difference, combined local expenditures decrease by $1.0 million in fiscal 2021, by $1.8 million annually in fiscal 2022 and 2023, by $2.2 million in fiscal 2024, and by $2.5 million in fiscal 2025. Expenditures also continue to be less than they otherwise would have been thereafter.

Exhibit 2
Combined SREC Expenditures by Municipal Electric Utilities
Fiscal 2021-2025

Calendar Year	Solar % Difference	Energy Sales (Mwh)	SRECs Required	SREC Price ($)	Calendar Year ($)	Fiscal Year	Fiscal Year ($)
2021	-5.0%	738,000	-36,900	$55.00	-$2,029,500	2021	-$1,014,750
2022	-6.0%	740,000	-44,400	37.50	-1,665,000	2022	-1,847,250
2023	-7.0%	743,000	-52,010	38.33	-1,993,543	2023	-1,829,271
2024	-8.0%	745,000	-59,600	39.17	-2,334,532	2024	-2,164,037
2025	-9.0%	748,000	-67,320	40.03	-2,694,820	2025	-2,514,676

Mwh: Megawatt-hour
SREC: solar renewable energy credit

Notes: There are five municipal electric utilities in the State: Berlin (Worcester County), Easton (Talbot County), Hagerstown (Washington County), Thurmont (Frederick County), and Williamsport (Washington County). Calendar-to-fiscal year conversion splits annual compliance costs evenly between fiscal years.

Source: Public Service Commission; Department of Natural Resources; Department of Legislative Services

Small Business Effect: The bill makes several substantive changes to the existing RPS. The program affects not only small businesses as electric customers, which pay for their share of the program indirectly through their energy bills, but also small businesses in the related industries that receive, or will receive, revenues from the associated energy credits. While the effect on overall compliance costs of the program, energy credit prices, and individual renewable energy industries cannot be reliably estimated at this time, the size and scope of the program and its changes are potentially meaningful to small businesses.

Additional Information

Prior Introductions: None.

Designated Cross File: SB 265 (The President, *et al.*) (By Request - Administration) - Finance.

Information Source(s): Public Service Commission; Maryland Energy Administration; Office of People's Counsel; Maryland Department of the Environment; Department of Natural Resources; Department of Legislative Services

Fiscal Note History: First Reader - February 6, 2020
rh/lgc

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Appendix – 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. There are specified eligible ("Tier 1" or "Tier 2") sources as well as carve-outs for solar and offshore wind. Electric companies (utilities) and other electricity suppliers must submit renewable energy credits (RECs) equal to a percentage specified in statute each year or else pay an alternative compliance payment (ACP) equivalent to their shortfall. Historically, the requirements have been met almost entirely through RECs, with negligible reliance on ACPs. The Maryland Energy Administration must use ACPs to support new renewable energy sources.

Chapter 757 of 2019 significantly increased the percentage requirements, which now escalate over time to a minimum of 50% from Tier 1 sources, including 14.5% from solar, by 2030. In 2020, the requirements are 28% for Tier 1 sources, including at least 6.0% from solar, plus 2.5% from Tier 2 sources. Tier 2 terminates after 2020.

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. REC generators and electricity suppliers are allowed to trade RECs using a Public Service Commission (PSC) 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 specified sources; 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. Eligible solar sources include photovoltaic cells and residential solar water-heating systems commissioned in fiscal 2012 or later. Tier 2 includes only large hydroelectric power plants.

RPS Compliance

According to the most recent RPS compliance report on PSC's website, electricity suppliers retired 11.1 million RECs at a cost of $84.8 million in 2018. This is a

continuation of the significant REC price reduction first observed in the 2017 compliance data, relative to the previous trend, as shown in **Exhibit 1**.

In 2018, wind (50%), black liquor (15%), small hydroelectric (12%), municipal solid waste (12%), and wood and waste solids (6%) were the primary energy sources used for Tier 1 RPS compliance. Maryland facilities generated 5.4 million RECs in 2018, which were used for compliance in Maryland and also in several other states; likewise, Maryland electricity suppliers used RECs from other states for compliance with Maryland's RPS.

Exhibit 1
RPS Compliance Costs and REC Prices
2014-2018

	2014	2015	2016	2017	2018
Compliance Costs ($ Millions)					
Tier 1 Nonsolar	$70.6	$85.1	$88.2	$50.0	$56.4
Tier 1 Solar	29.4	39.1	45.6	21.3	27.4
Tier 2	4.0	2.6	1.4	0.7	1.0
Total	**$104.0**	**$126.7**	**$135.2**	**$72.0**	**$84.8**
Average REC Price ($)					
Tier 1 Nonsolar	$11.64	$13.87	$12.22	$7.14	$6.54
Tier 1 Solar	$144.06	$130.39	$110.63	$38.18	$31.91
Tier 2	$1.81	$1.71	$0.96	$0.47	$0.66

Note: Numbers may not sum to total due to rounding.

REC: renewable energy credit
RPS: Renewable Energy Portfolio Standard

Source: Public Service Commission

Pursuant to Chapter 393 of 2017, the Power Plant Research Program in the Department of Natural Resources has released its final report on a comprehensive study of the RPS. The report contains historical data but also looks at future scenarios. The report can be found here or on the department's website.

ANALYSIS OF ECONOMIC IMPACT ON SMALL BUSINESSES

TITLE OF BILL: Clean and Renewable Energy Standard (CARES)

BILL NUMBER: HB363/SB265

PREPARED BY: Governor's Legislative Office

PART A. ECONOMIC IMPACT RATING

This agency estimates that the proposed bill:

__X__ 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