Department of Legislative Services

Maryland General Assembly
2023 Session

FISCAL AND POLICY NOTE
Third Reader - Revised

House Bill 793 (Delegate Charkoudian, *et al.*)

Economic Matters Education, Energy, and the Environment

Offshore Wind Energy – State Goals and Procurement (Promoting Offshore Wind Energy Resources Act)

This bill requires the Public Service Commission (PSC) to request that PJM Interconnection conduct an analysis of specified offshore wind transmission system expansion options. PSC must issue, or request that PJM issue, competitive solicitations for proposals for related projects. PSC must evaluate the proposals and must ask PJM to assist with the evaluation. PSC may then accept one or more proposals, subject to specified criteria. The Department of General Services (DGS) must issue a procurement and may enter into at least one long-term power purchase agreement (PPA) for up to 5.0 million megawatt-hours annually of offshore wind energy and associated renewable energy credits (RECs) from one or more qualified offshore wind projects. Round 1 and Round 2 offshore wind developers may apply to PSC for a full or partial exemption from the requirement to pass along certain federal benefits to ratepayers. Related findings, declarations, and intent of the General Assembly are specified. **The bill takes effect June 1, 2023.**

Fiscal Summary

State Effect: No effect in FY 2023. Special fund expenditures for PSC increase by $0.6 million in FY 2024, by $1.4 million to $1.5 million in FY 2025 through 2027, and by $0.5 million in FY 2028. Special fund revenues increase correspondingly from assessments imposed on public service companies. Transportation Trust Fund (TTF) expenditures may increase by $0.1 million annually in FY 2024 and 2025. General fund expenditures for DGS increase by $0.2 million in FY 2024; future years reflect annualization and the elimination of one-time costs. The effect on State expenditures for electricity is unknown but could be significant. The effects on other State agencies are discussed below.

($ in millions)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
SF Revenue	$0.6	$1.4	$1.4	$1.5	$0.5
GF Expenditure	$0.2	$0.3	$0.3	$0.3	$0.3
SF Expenditure	$0.7	$1.5	$1.4	$1.5	$0.5
Net Effect	($0.3)	($0.4)	($0.3)	($0.3)	($0.3)

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

Local Effect: The effect on local government expenditures for electricity is unknown but could be significant. Revenues are not affected.

Small Business Effect: Potential meaningful.

Analysis

Bill Summary:

General Assembly Findings

The General Assembly finds and declares that:

- the State has a goal of reaching 8,500 megawatts of offshore wind energy capacity by 2031 and anticipates the issuance of sufficient wind energy leases in the central Atlantic region to satisfy that goal;
- offshore wind can provide clean energy at the scale needed to help achieve the State's economywide net-zero greenhouse gas (GHG) emissions reduction targets established in Chapter 38 of 2022 (the Climate Solutions Now Act);
- it is in the public interest to upgrade and expand the transmission system to accommodate the buildout of at least 8,500 megawatts of offshore wind energy from qualified offshore wind projects serving the State by 2031; and
- it is in the public interest of the State to maximize opportunities for obtaining and using federal funds for offshore wind and related transmission projects through the inclusion of specified labor standards and goals, domestic content requirements, and other provisions to align State law with provisions of the federal Infrastructure Investment and Jobs Act of 2021 and the federal Inflation Reduction Act of 2022.

Transmission System Expansion Study and Solicitations for Related Proposals

Expansion Study

To meet the goals of the State Renewable Energy Portfolio Standard (RPS) and the goal established under the bill of upgrading and expanding the transmission system to accommodate the buildout of at least 8,500 megawatts of offshore wind capacity, PSC, in consultation with the Maryland Energy Administration (MEA), must request that PJM Interconnection conduct an analysis of transmission system upgrade and expansion options that take into consideration both onshore and offshore infrastructure.

PSC must consult with other states served by PJM to evaluate regional transmission cooperation that could help achieve the State's renewable energy and offshore wind energy goals with greater efficiency. PSC must also work with PJM to ensure that the requested analysis includes an analysis of certain solutions, including one that uses an open-access collector transmission system to allow for the interconnection of multiple qualified offshore wind projects at a single substation. PSC may also consult with owners of transmission facilities in the State to gather relevant technical information.

PSC may enter into any necessary agreements with PJM for transmission planning to initiate the PJM analysis or assist with the solicitation of proposals for offshore wind transmission projects (as discussed further below).

PSC must submit a status update on the analysis to the General Assembly by July 1, 2024, but is not required to submit a final update or analysis.

Transmission Project Solicitations

By July 1, 2025, PSC must issue, or request that PJM issue, one or more competitive solicitations for proposals for open access offshore wind transmission facilities and complementary onshore transmission upgrades and expansions, subject to specified requirements. PSC may issue, or request that PJM issue, further solicitations after that date if PSC determines that it is necessary.

In developing criteria for selecting a proposal, PSC:

- *must* consider the transmission system expansion analysis described above, including a consideration of potential interconnection points;
- *must* evaluate the potential for cooperating with other states in the PJM region to maximize consumer benefits that will best achieve the State's renewable energy and offshore wind energy goals; and
- *may* consult with MEA, electric companies, transmission facility owners, and other states or entities designated by those states in developing or coordinating equivalent standards for the approval of transmission projects under the bill that will facilitate the integration of multiple offshore wind energy projects and potential multistate offshore wind transmission projects.

PSC must include, or work with PJM to include, specifications in the solicitation that require proposals to (1) allow future transmission lines to connect in a meshed manner and share landing points; (2) consider other onshore and offshore clean energy generation and storage facilities; (3) incorporate community benefit agreements (which are altered by the bill for new offshore wind projects, as specified); (4) address the siting, environmental, and socioeconomic information required to be considered by an applicant for a Certificate of

Public Convenience and Necessity (CPCN), including opportunities for public engagement and comment with units of State and local government and the general public; (5) demonstrate net benefits to ratepayers in the State when compared to an alternative baseline scenario under which 8,500 megawatts of offshore wind capacity is connected to the grid without the proposed transmission project; and (6) ensure a competitive bidding process by redacting proprietary information provided to PSC or PJM.

The solicitation process must include a prequalification process, separate the review, analysis, and selection of the proposals, and promote competition among prequalified entities.

Each proposal should maximize access to and be consistent with the terms of specified federal funding programs, and PSC may modify, or request that PJM modify, a solicitation for proposals at any time in order to satisfy eligibility criteria for those programs. PSC may evaluate, or request that PJM evaluate, proposals that include (1) upgrading the existing transmission grid; (2) extending the existing transmission grid onshore and offshore to be closer to offshore wind energy locations; (3) interconnecting between offshore substations; (4) adding energy storage; and (5) the use of high voltage direct current converter technology to support potential weaknesses in the transmission grid.

In selecting a proposal, PSC must take into consideration the total amount of new transmission infrastructure needed to (1) maintain electric system reliability; (2) achieve the State's offshore wind, renewable energy, and decarbonization goals; (3) obtain demonstrable benefits to the consumer and environment; and (4) foster economic development and job creation in the State. PSC may select one or more proposals that include various funding mechanisms, including federal funding, cost sharing among states, or a combination thereof.

PSC must request that PJM assist with the evaluation of each proposal. Generally, by December 1, 2027, after notice, one or more hearings to receive public comment, and an evidentiary hearing, PSC must, by order, select one or more proposals. The project must demonstrate net benefits to ratepayers in the State when compared to a baseline scenario under which 8,500 megawatts of offshore wind capacity is connected to the grid without the proposed transmission project. PSC may adopt conditions for the construction and operation of the facilities and consider any conditions proposed by the Power Plant Research Program in the Department of Natural Resources (DNR). The requirement to obtain a CPCN does not apply to a selected proposal, although the project is still subject to all other relevant requirements for the siting and construction of transmission lines. Instead, an order selecting a proposal constitutes authorization by PSC to construct and operate the facilities.

After PSC selects one or more proposals, PSC must work with MEA, one or more transmission developers, transmission facility owners, PJM, the Federal Energy Regulatory Commission, and any other states that voluntarily participate to facilitate the development of the proposal or proposals and the construction of the proposed offshore wind project or projects.

PSC must carry out the above requirements by obtaining information through request, cooperation, subpoena, or any other legal method from transmission owners, PJM, or any other entity. PSC is also explicitly authorized to retain consultants.

If PSC finds that none of the proposals under the bill adequately support the bill's goals or demonstrate net benefits to ratepayers in the State when compared to the alternative baseline scenario described above, then PSC may end the solicitation process without selecting a proposal. If no proposal has been selected by December 1, 2027, PSC must submit a statement of determination to the Governor and the General Assembly explaining PSC's determination and recommending a path forward to achieve the transmission expansion goal.

Procurement and Potential Power Purchase Agreement for Offshore Wind Energy

DGS, in consultation with PSC, *must* issue a competitive sealed procurement solicitation and *may* enter into at least one contract for a PPA to procure up to 5.0 million megawatt-hours annually of offshore wind energy and associated RECs from one or more qualified offshore wind projects, as those terms are defined. Each PPA must have a minimum term of 20 years. The bill includes additional detail as to the administrative timing. Specifically, the State must:

- issue a procurement for offshore wind energy by July 31, 2024;
- provide a minimum procurement submission process window of 180 days; and
- award contracts in a timely manner.

The State may enter into a contract or contracts for the procurement by September 1, 2025, although the State may modify that date if an unforeseen circumstance adversely affects the procurement process.

When issuing the procurement, DGS must take into consideration (1) the social cost of GHG emissions, as defined; (2) the State's climate commitments; and (3) the State's commitments related to qualified offshore wind projects.

The evaluation criteria for bids must include (1) comparing the social cost of GHG emissions for offshore wind with the social cost of GHG emissions for nonrenewable power purchased from wholesale electric markets administered by PJM and (2) the extent to which an applicant's proposal provides for financial and technical assistance to support monitoring and mitigation of wildlife and habitat impacts associated with the proposed project.

Each agreement entered into under the bill must include a community benefit agreement, as defined for qualified offshore wind projects, domestic content preferences, and a description of initial plans and commitments to environmental and natural resources mitigation, as specified. Any contractor providing operations and maintenance services for the related offshore wind project under an agreement with DGS must submit an attestation to DGS that the contractor has entered into a labor peace agreement, as specified.

DGS must identify the amount of energy necessary to meet the State's energy needs. The State must use the energy procured under the bill to meet the State's energy needs and retire the associated RECs to meet its obligations under the State's RPS and the Climate Solutions Now Act; however, the bill specifies that the State is exempt from annual RPS requirements if DGS procures 100% of the State's energy needs from the PPA. After those requirements have been met, the State must offer for sale any energy or RECs remaining on the competitive wholesale power market operated by PJM, through bilateral sales to creditworthy counterparties, or into REC markets.

Nothing in the bill related to this procurement may be construed to prevent the procurement of new offshore wind energy generation in accordance with the current or any future solicitation schedule.

Reporting Requirement on Offshore Wind Projects

By December 31, 2024, and annually thereafter, PSC must submit a report to the General Assembly on the information collected under PSC's supplier diversity program regarding offshore wind developers, as specified.

Funding Intent Language

It is the intent of the General Assembly that (1) four full-time positions be created in PSC that will focus only on implementing the transmission planning provisions in the bill and (2) notwithstanding any other provision of law, for fiscal 2025, the Governor may include in the annual budget bill an appropriation of at least $3.5 million of additional funding to the PSC budget for the transmission studies and analyses required under the bill.

Disparity Study

The certification agency designated by the Board of Public Works under the State's minority business enterprise (MBE) law (*i.e.*, the Maryland Department of Transportation

(MDOT) and the Governor's Office of Small, Minority, and Women Business Affairs (GOSBA), in consultation with the Maryland Department of Labor, the Office of the Attorney General, and the General Assembly, must initiate a study regarding the participation of small, minority, women-owned, and veteran-owned businesses and businesses certified under the federal Disadvantaged Business Enterprise Program that receive contracts or subcontracts for offshore wind projects under the bill to evaluate whether the enactment of remedial measures to assist minority and women-owned businesses in the clean energy and offshore wind industries would comply with the U.S. Supreme Court decision in *City of Richmond v. J. A. Croson Co., 488 U.S. 469,* and any subsequent federal or constitutional requirements.

By December 31, 2025, MDOT and GOSBA must submit the findings of the study to the Legislative Policy Committee so that the General Assembly may review the findings before the 2026 session.

Federal Tax Credit Remittance Exemption

A developer of a Round 1 or Round 2 offshore wind project (those approved under current law) may apply to PSC for a full or partial exemption from the statutory requirement to pass along to ratepayers 80% of the value of any State or federal grants, rebates, tax credits, loan guarantees, or other similar benefits received by the project and not included in the application for any federal Inflation Reduction Act of 2022 grants, rebates, tax credits, or loan guarantees received by the project if certain labor conditions are met.

A developer seeking an exemption must certify that the exemption is required to fulfill the developer's obligations under an approved offshore wind renewable energy credit (OREC) order. PSC must establish an application process and approve, deny, or request additional information within 60 days of receipt of the application. PSC must consider various factors when evaluating the applications. If PSC approves a partial exemption, the nonexempt value of any federal Inflation Reduction Act of 2022 grants, rebates, tax credits, or loan guarantees received by the project must be passed along to ratepayers.

Current Law:

Maryland Greenhouse Gas Emissions Reduction Targets and the Climate Solutions Now Act

The Climate Solutions Now Act made broad changes to the State's approach to reducing statewide GHG emissions and addressing climate change. Among other things, the Act accelerated previous statewide GHG emissions reductions targets originally established under the Greenhouse Gas Emissions Reduction Act by requiring the State to develop plans, adopt regulations, and implement programs to (1) reduce GHG emissions by

60% from 2006 levels by 2031 and (2) achieve net-zero statewide GHG emissions by 2045. The Act also established new and altered existing energy conservation requirements for buildings and increased and extended the EmPOWER Maryland Program.

Offshore Wind

Pursuant to Chapter 3 of 2013, under Maryland's RPS, State electricity sales must include an amount derived from offshore wind energy beginning in 2017. The amount is set by PSC each year, based on the projected annual creation of ORECs by qualified offshore wind projects, and may not exceed 2.5% of total retail sales. Chapter 757 of 2019 bifurcated the application and approval process for offshore wind into "Round 1" (the process established by Chapter 3) and a new "Round 2" process to allow for new applications with different specifications. A PSC fact sheet contains relevant information on project approvals, costs, and timelines under the implementation of the two Acts. Combined capacity across all approved projects is approximately 2,000 megawatts. Based on the approvals, the offshore wind carve-out is approximately 13% in 2027 and later – about 7.2 million ORECs annually.

Statute requires a commitment that the applicant will pass along to ratepayers, without the need for any subsequent PSC approval, 80% of the value of any State or federal grants, rebates, tax credits, loan guarantees, or other similar benefits received by the project and not included in the application. The approved applications included the value of investment tax credits (ITCs), but they were approved prior to the ITC being extended under the federal Inflation Reduction Act of 2022.

For additional general information on Maryland's RPS, see the **Appendix – Renewable Energy Portfolio Standard**.

Minority Business Enterprises

MDOT is designated in State regulations as the State's MBE certification agency. In 1989, the U.S. Supreme Court held in *City of Richmond v. J.A. Croson Co.* that state or local MBE programs using race-based classifications are subject to strict scrutiny under the equal protection clause of the Fourteenth Amendment to the U.S. Constitution. In addition, the ruling held that an MBE program must demonstrate clear evidence that the program is narrowly tailored to address actual disparities in the marketplace for the jurisdiction that operates the program.

State Fiscal Effect:

Transmission System Expansion Study and Solicitations for Related Proposals

PSC advises that consultant costs associated with the transmission expansion study, even with PJM conducting the analysis, are $500,000 in fiscal 2024. Consultant costs associated with the solicitation and evaluation of project proposals are $1.0 million annually in fiscal 2025, 2026, and 2027. PSC also requires four additional staff on an ongoing basis to assist with the implementation of both requirements.

Accordingly, special fund expenditures for PSC increase by $635,256 in fiscal 2024, which accounts for a 30-day start-up delay. This estimate reflects the cost of hiring one attorney, one regulatory economist, one engineer, and one program manager. It includes salaries, fringe benefits, one-time start-up costs, ongoing operating expenses, and $500,000 in consultant costs.

Positions	4.0
Salaries and Fringe Benefits	$115,582
Contractual Services	500,000
Other Operating Expenses	19,674
Total FY 2024 PSC Expenditures	**$635,256**

Future year expenditures reflect salaries with annual increases and employee turnover as well as annual increases in ongoing operating expenses and $1.0 million annually in consultant costs from fiscal 2025 through 2027.

The Department of Legislative Services notes that the above estimate of four required positions and total study and evaluation costs of $3.5 million are generally consistent with the intent language specified in the bill, although study and evaluation costs begin in fiscal 2024 and extend through fiscal 2027, as opposed to occurring in just fiscal 2025.

Special fund revenues increase correspondingly from assessments imposed on public service companies.

Costs associated with potentially contracting for any related proposals are unknown at this time, but potentially significant, as discussed below. There are also operational and legal considerations.

Project Evaluation and Selection Costs and Other Considerations

The bill contemplates a wide range of potential transmission projects that have significant but unknown costs and benefits, making an assessment of the cost to the State unknowable.

As allowed in the bill, one possibility is that PSC accepts no proposals. The bill appears to establish a framework for using the PJM State Agreement Approach. The terms of the approach can be found in the PJM operating agreement. Under the approach, State governmental entities authorized by their respective states, individually or jointly, may agree voluntarily to be responsible for the allocation of all costs of a proposed transmission expansion or enhancement that addresses state public policy requirements identified or accepted by the state(s) in the PJM region. All costs related to a state public policy project included in the Regional Transmission Expansion Plan to address state public policy requirements must be recovered from customers in a state(s) in the PJM region that agrees to be responsible for the projects. No such costs can be recovered from customers in a state that did not agree to be responsible for such cost allocation.

New Jersey is currently the only state that uses the PJM State Agreement Approach, and they use it for planning offshore wind interconnection. Based on lessons learned discussions with the New Jersey Board of Public Utilities staff, implementing a State Agreement Approach to deliver a similar amount of offshore wind would require several full-time staff and additional engineering and legal consulting expenses of approximately $3.0 million over a three-year period. Based on the timing of the proposal solicitations, special fund expenditures for PSC would increase from fiscal 2025 through 2027 by about $4.4 million in total for the related costs (these costs are included in the estimate above).

Other Agency Effects

DNR special fund expenditures associated with project siting evaluation increase by an unknown amount beginning as early as fiscal 2028 if transmission projects are accepted by PSC, due to evaluation costs for those projects and also additional CPCNs associated with utility scale solar facilitated by the transmission capacity.

Potential Power Purchase Agreement for Offshore Wind Energy

DGS advises that additional procurement staff are needed for DGS to manage and conduct the offshore wind energy procurement and the ongoing requirements post-procurement, if one or more proposals are selected. Accordingly, general fund expenditures increase by $213,905 in fiscal 2024, which accounts for a 120-day start-up delay. This estimate reflects the cost of hiring one procurement officer and one procurement manager to oversee the complex procurement on an ongoing basis. It includes salaries, fringe benefits, one-time start-up costs, and ongoing operating expenses.

Positions	2.0
Salaries and Fringe Benefits	$199,087
Operating Expenses	14,818
Total FY 2024 DGS Expenditures	**$213,905**

Future year expenditures reflect full salaries with annual increases and employee turnover as well as annual increases in ongoing operating expenses. If DGS does not enter into a PPA, DGS administrative costs decrease beginning in fiscal 2026.

The difference in State expenditures for electricity under the PPA(s) is unknown; the range in potential energy procurements is quite large – the State government uses roughly 1.5 million megawatt-hours of electricity per year, although that appears to be trending down – and the per-unit price over the duration of the PPA is likewise unknown. One only needs to look at the price difference between Round 1 and Round 2 ORECs to note the potential for significant variation. Additionally, the net cost to the State is based on future non-offshore wind energy prices, which can vary above or below the PPA price, along with future REC prices. There is also the possibility that DGS does not enter into a PPA under the bill. Nevertheless, the size of the potential PPAs and their minimum 20-year duration means that State expenditures for electricity may be significantly affected.

To be clear, net costs could be higher or lower under a PPA; the risk comes from the State being locked into the price in the PPA for at least two decades.

Federal Tax Credit Remittance Exemption

The bill allows Round 1 and Round 2 project developers to apply for a full or partial exemption from the statutory requirement to remit 80% of federal grants, rebates, tax credits, loan guarantees, or other similar benefits received under the Inflation Reduction Act of 2022 and not included in the project applications. Among other changes, the Inflation Reduction Act extended the federal ITC, which is generally a 30% credit if certain labor requirements are met, and created an additional 10% domestic content bonus. Round 1 and Round 2 projects included the federal ITC in their initial project proposals to PSC, but those were approved prior to the extension of the ITC, so it is unclear whether the value of the ITC is eligible for an exemption in this case. The additional 10% domestic content bonus is more obviously eligible for an exemption under the bill, along with any other grants, rebates, or loan guarantees that may be received by the project developers under the Act and not included in the project applications.

The effect of this provision on electricity rates is unknown, but potentially significant based on the size of Round 1 and Round 2 projects. A developer must apply to PSC for the exemption and must certify that the exemption is required to fulfill the developer's obligation under an approved OREC order. Therefore, the bill appears to contemplate a scenario where the application for a full or partial exemption is only approved by PSC if the project would not otherwise move forward (and other requirements are met).

The assumption of whether or not the projects would proceed without the bill's full or partial exemption determines the perceived effect of the provision, although in either case, there is no change if the exemption is denied, and electricity rates increase if the exemption is approved:

- There is no change from current law if PSC denies the application, because the projects will proceed, or not, based on existing requirements to pass along federal tax benefits to ratepayers.
- Under the assumption that the projects would not proceed without the exemption, the provision increases electricity costs paid by all customers, including the State, local governments, and small businesses, by facilitating the construction of the projects, thus ensuring the State's obligation to pay for ORECs at a net cost to ratepayers under current law.
- Under the assumption that the projects would proceed whether or not the exemption is granted (notwithstanding a developer's certification to the contrary in an application for an exemption), the provision increases electricity costs by allowing federal benefits to be retained by the developer and not remitted to ratepayers under existing statutory obligations.

Disparity Study

MDOT advises that the required disparity study in the bill is incongruent with the typical disparity studies it conducts and that the department's existing contract for such analyses may not be the appropriate vehicle to complete the study. Therefore, TTF expenditures for MDOT may increase by $100,000 to $300,000 in total for a consultant to separately conduct the analysis in fiscal 2024 or 2025. For purposes of this estimate, the midpoint of the cost range is allocated evenly over both fiscal years ($100,000 in each year). Other agencies that must consult with MDOT on the study can likely do so with existing resources.

Small Business Effect: Small businesses involved in the offshore wind supply chain benefit significantly to the extent that the bill facilitates additional offshore wind projects being built. The effects on small business expenditures for electricity is unknown but could be significant.

Additional Comments: The bill does not address the disposition of RECs procured by DGS through one or more PPAs under the bill. Under current law, ORECs used by Round 1 and Round 2 projects are distinct from generic Tier 1 RECs and are not used for RPS compliance in the same way. ORECs are essentially financing mechanisms that effectuate contracts for differences under the RPS statutory framework. Conversely, generic Tier 1 RECs are created by eligible projects when they generate electricity, independent of a contractual commitment by the State to purchase those particular RECs. They are generally unbundled from the electricity and bought and sold separately in their own markets. Therefore, it is unclear how the RECs generated by a project facilitated through a DGS procurement would be treated by PSC for RPS compliance in absence of further statutory guidance.

Additional Information

Prior Introductions: Similar legislation has not been introduced within the last three years.

Designated Cross File: SB 781 (Senator Hester, *et al.*) - Education, Energy, and the Environment.

Information Source(s): Public Service Commission; Department of General Services; Department of Natural Resources; Maryland Department of Labor; Maryland Energy Administration; Office of People's Counsel; Maryland Department of Transportation; Congressional Research Service; PJM Interconnection, LLC; Department of Legislative Services

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Appendix – Renewable Energy Portfolio Standard

General Overview

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, offshore wind, and, beginning in 2023, new geothermal systems. Electric companies (utilities) and other electricity suppliers must submit renewable energy credits (RECs) equal to a percentage of their retail electricity sales specified in statute each year or else pay an alternative compliance payment (ACP) equivalent to their shortfall. Historically, RPS requirements have been met almost entirely through RECs, with negligible reliance on ACPs; however, as discussed further below, that was not the case in 2021. The Maryland Energy Administration must use ACPs for purposes related to renewable energy, as specified.

In 2023, the requirements are 31.9% from Tier 1 sources, including at least 6.0% from solar and 0.05% from post-2022 geothermal systems, plus 2.5% from Tier 2 sources.

Recent Significant Changes to Overall Percentage Requirements

- Chapter 757 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.

- Chapter 673 of 2021 reduced the amount of solar energy required under the RPS each year from 2022 through 2029, while leaving the nonsolar requirement generally unchanged, before realigning with the previous requirements beginning in 2030. The Act also extended Tier 2 in perpetuity at 2.5%.

- Chapter 164 of 2021 created a carve-out for post-2022 geothermal systems in Tier 1 beginning in 2023.

Limited Applicability to Municipal Electric Utilities and Electric Cooperatives

As RPS percentage requirements have grown over time, legislation has been enacted to limit the effect on municipal electric utilities and electric cooperatives. Tier 1 percentage requirements for municipal electric utilities are limited to 20.4% in total beginning in 2021, including at least 1.95% from solar energy and up to 2.5% from offshore wind. Municipal electric utilities are also exempt from Tier 2 after 2021. Electric cooperatives are exempt from future increases to the solar carve-out beyond 2.5%, and the RPS does not apply to Choptank Electric Cooperative.

Renewable Energy Credits

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.

Eligible Sources

Tier 1 sources include wind (onshore and offshore); solar (photovoltaic and certain water-heating systems); 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; thermal energy from a thermal biomass system; and raw or treated wastewater used as a heat source or sink for heating or cooling. Tier 2 includes only large hydroelectric power plants.

Chapter 673 of 2021 excluded black liquor, or any product derived from black liquor, from Tier 1 beginning in 2022.

Trends in Compliance Costs, Renewable Energy Credit Prices, and Resources Used

Compliance costs for electricity suppliers totaled $409.8 million in 2021: $332.7 million for 15.2 million RECs; and $77.1 million in ACPs. Costs and RECs are shown in **Exhibit 1**. This continues a multi-year trend of increasing compliance costs and, generally, average REC prices.

In 2021, wind (50.8%), solar (13.2%), black liquor (12.5%), small hydroelectric (8.0%), and municipal solid waste (6.4%) were the primary energy sources used for Tier 1 RPS compliance. This continues a multi-year trend of increasing reliance on wind and solar energy. Maryland facilities generated 5.0 million RECs in 2021: approximately 2.9 million Tier 1 RECs; and 2.1 million Tier 2 RECs. Many RECs can be used for compliance in both Maryland and other surrounding states, although there are geographic and energy source restrictions.

Exhibit 1
RPS Compliance Costs and REC Prices
2017-2021

	2017	2018	2019	2020	2021
Compliance Costs ($ Millions)					
Tier 1 Nonsolar RECs	$50.0	$56.4	$79.3	$99.8	187.3
Tier 1 Solar RECs	21.3	27.4	55.2	122.9	144.4
Tier 2 RECs	0.7	1.0	0.06	0.4	1.0
ACPs	$0.1	$0.1	$7.7	$0.1	$77.1
Total	**$72.1**	**$84.9**	**$142.3**	**$223.2**	**409.8**
Average REC Price ($)					
Tier 1 Nonsolar	$7.14	$6.54	$7.77	$8.24	$14.36
Tier 1 Solar	38.18	31.91	47.26	66.10	72.59
Tier 2	0.48	0.66	1.05	1.06	6.45

ACP: alternative compliance payment
REC: renewable energy credit
RPS: Renewable Energy Portfolio Standard

Note: Numbers may not sum to total due to rounding. The vast majority of ACPs in 2021 ($76.9 million out of $77.1 million in total) were due to a shortfall of solar RECs.

Source: Public Service Commission

Related Studies Reports

PSC must submit an RPS compliance report to the General Assembly each year. The most recent report, which contains historical data through 2021, can be found here.

The Power Plant Research Program (PPRP) in the Department of Natural Resources has frequently been required to conduct RPS studies. PPRP submitted a final report on a comprehensive RPS study in December 2019, which can be found here. PPRP also submitted a related required study on nuclear energy at that time, which can be found here. A supplemental study on the overall costs and benefits of increasing the RPS to a goal of 100% by 2040 is due by January 1, 2024.