Introduction to the Renewable Energy Portfolio Standard

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Introduction to the Renewable Energy Portfolio Standard

Overview

In General

The renewable energy portfolio standard (RPS) requires that a specified portion of retail electricity sold by electricity suppliers in the State come from "renewable" sources, as statutorily defined.[1] Consequently, the RPS incentivizes renewable energy growth and market stability as well as greenhouse gas (GHG) emissions reductions. The RPS has been subject to significant legislative changes since its implementation in 2006. Generally, the current standard requires 52.5% of the State's energy be derived from renewable sources by 2030. The RPS is administered by the Public Service Commission (PSC). Subject to specified exemptions, the electricity suppliers required to comply with the RPS include electric companies (investor-owned utilities, electric cooperatives, and municipal electric utilities[2]), aggregators, brokers, and marketers of electricity.[3]

The eligible renewable energy sources, percentage requirements, and statutory changes are discussed in more detail below.

Eligible Sources

The energy sources that are eligible for compliance with the RPS are bifurcated into Tier 1 and Tier 2 renewable sources. Tier 1 sources include (1) solar energy; (2) wind energy; (3) qualifying biomass; (4) methane from anaerobic digestion in a landfill or wastewater treatment plant; (5) geothermal energy; (6) ocean energy; (7) a fuel cell that produces electricity from qualifying biomass or methane from anaerobic digestion; (8) small hydroelectric power plants; (9) poultry litter-to-energy; (10) thermal energy from a thermal biomass system; and (11) raw or

[1] The RPS is established under Title 7, Subtitle 7 of the Public Utilities Article.

[2] Electric cooperatives and municipal electric utilities are subject to slightly different RPS requirements from other electric companies. For electric cooperatives, the percentage of Tier 1 electricity in the RPS that must be derived from solar is 2.5% in 2020 and later. The RPS requirement that applies to municipal electric utilities for 2022 and later is 20.4% from Tier 1 sources, including 1.95% from solar and 2.5% from offshore wind energy.

[3] Under § 7-703 of the Public Utilities Article, the RPS does not apply to electricity sales at retail by any electricity supplier (1) in excess of 300,000,000 kilowatt-hours (or 300,000 megawatt-hours) of industrial process load to a single customer in a year; (2) to residential customers in regions of the State where the residential customer rates are subject to a freeze or cap contained in a specified settlement agreement; or (3) to a customer served by an electric cooperative under an electricity supplier purchase agreement that existed before October 1, 2004 (*i.e.*, Choptank Electric Cooperative). Furthermore, the portion of the RPS that represents offshore wind energy applies only to the distribution sales of electric companies and does not apply to distribution sales by an electric company in excess of 75,000,000 kilowatt-hours of industrial process load to a single customer in a year or 3,000 kilowatt-hours of electricity in a month for certain agricultural customers.

treated wastewater used as a heat source or sink for heating or cooling systems.[4] Hydroelectric power, other than pump storage, is the only Tier 2 source in Maryland. Under statute, Tier 1 sources are eligible for meeting Tier 2 requirements.

Generally, a Tier 1 or Tier 2 source must be located (1) in the PJM region;[5] (2) outside of but adjacent to the PJM region if the electricity is delivered into the PJM region; or (3) on specified offshore wind lease sites. However, some sources have additional requirements. For example:

- solar, geothermal, and poultry litter-to-energy are eligible only if they are connected with the electric distribution system that serves Maryland;
- energy from a thermal biomass system must be used in Maryland to qualify for the RPS;
- energy from wastewater used as a heat source or sink is eligible only if it is connected to the electric distribution system that serves Maryland or processes wastewater from Maryland residents;
- small hydroelectric is only eligible if it is generated at a dam that existed as of January 1, 2004; and
- large hydroelectric is only eligible (for Tier 2) if it is generated at a system or facility that existed or was operational as of January 1, 2004.

Renewable Energy Portfolio Standard and Tier 1 Carve-outs

Under the RPS, the percentage of electricity required to be supplied from Tier 1 sources increases incrementally each year, while Tier 2 remains steady at 2.5%. In addition to the requirement to supply specific amounts of energy annually through Tier 1 and Tier 2 sources, the RPS contains specific Tier 1 carve-outs for solar, offshore wind, and geothermal energy. While the solar and geothermal carve-outs have specific percentage requirements set in statute each year, the offshore wind energy carve-out is dependent on the annual creation of offshore wind renewable energy credits (ORECs), as determined by PSC.[6] Specific annual percentages for each of the tiers and carve-outs are shown in **Exhibit 1.**

[4] *See* the definition of "Tier 1 renewable source" in § 7-701 of the Public Utilities Article, as amended by Chapters 625 and 626 of 2025, for additional details on Tier 1 renewable sources. Per Chapters 625 and 626, the removal of waste-to-energy from eligibility for inclusion in the RPS does not apply to a facility owned by a public instrumentality of the State (in this case, Montgomery County) until July 1, 2026.

[5] "PJM region" is the wholesale bulk power region administered by PJM Interconnection, LLC, and includes 13 states, including Maryland, and the District of Columbia.

[6] *See* §§ 7-703(b)(12) – (25) and 7-704.2 of the Public Utilities Article.

Exhibit 1
Annual Renewable Energy Requirements

Year	Solar	Post-2022 Geothermal	Offshore Wind*	Other Tier 1	Tier 1 Total	Tier 2	Combined Total
2025	7.00%	0.25%	1.66%	26.59%	35.50%	2.50%	38.00%
2026	8.00%	0.50%	2.61%	26.89%	38.00%	2.50%	40.50%
2027	9.50%	0.75%	13.02%	18.23%	41.50%	2.50%	44.00%
2028	11.00%	1.00%	13.02%	17.98%	43.00%	2.50%	45.50%
2029	12.50%	1.00%	13.02%	22.98%	49.50%	2.50%	52.00%
2030+	14.50%	1.00%	13.02%	21.48%	50.00%	2.50%	52.50%

*This percentage includes only the commission-approved offshore wind energy carve-out from Order Nos. 88192 and 90011. It does not reflect changes in Order No. 91496. Regardless, an electricity supplier does not need to comply with the offshore wind energy carve-out unless and until an approved offshore wind project is operational and generating offshore wind renewable energy credits, although overall Tier 1 percentage requirements continue to apply.

Source: Public Service Commission; Department of Legislative Services

Renewable Energy Credits

In General

To demonstrate compliance with RPS requirements, an electricity supplier must acquire renewable energy credits (RECs) equal to the RPS percentage specified in statute each year or pay an alternative compliance payment (ACP) equivalent to the supplier's shortfall. RECs identify the attributes associated with the production of one megawatt-hour (MWh) of electricity generated using eligible Tier 1 and Tier 2 sources.

Each REC has a unique identifier that prevents duplicative sales, ensures proper tracking, and assigns ownership rights. Thus, an REC proves that a supplier has rights to Tier 1 or Tier 2 renewable sources, either from producing the REC or purchasing the REC. Generally, the price of a REC fluctuates based on basic market principles of supply and demand. In 2023, the average cost of a REC was $24.61 for Tier 1 non-solar, $56.67 for Tier 1 solar (referred to as solar renewable energy credits, or SRECs), $94.47 for post-2022 geothermal, and $10.50 for Tier 2.

Under § 7-709 of the Public Utilities Article, an REC has a five-year life during which it can be transferred, sold, or used for RPS compliance. The purchase, sale, and retirement of RECs is facilitated through the PSC-approved Generation Attributes Tracking System (GATS) operated by PJM. Using system data, GATS creates an REC for every MWh of electricity generated and assigns the REC a unique serial number.

Certified Solar Renewable Energy Credits

Solar energy generating systems that meet specified requirements and are certified by PSC may generate certified SRECs.[7] Certified SRECs have a compliance value of 150% of noncertified SRECs and may be used by electricity suppliers to meet the solar carve-out for the RPS beginning with the 2025 compliance year. Certified systems are eligible to generate certified SRECs for 15 years after receiving certification from PSC or through January 1, 2040, whichever is later.

Offshore Renewable Energy Credits

Unlike RECs, § 7-704.1 of the Public Utilities Article requires that the price for ORECs be bundled to include the price of the offshore wind energy, capacity, ancillary services, and environmental attributes. Furthermore, ORECs are procured by a developer at a fixed price according to a pricing schedule, as opposed to RECs which fluctuate in price based on market demand.[8]

Alternative Compliance Payments

If an electricity supplier does not meet its RPS obligations in a compliance year, the supplier must make an ACP for the shortfall.[9] The ACP serves as both a penalty for noncompliance with REC requirements and as an alternative to purchasing RECs when specific renewable sources are scarce. The ACP varies for shortfalls from Tier 1 sources (excluding solar and geothermal), solar energy, geothermal systems, and Tier 2 sources.[10] ACPs are paid into the Strategic Energy Investment Fund (SEIF), administered by the Maryland Energy Administration, and generally must be used to provide grants and loans to support the creation of new Tier 1 sources in specified communities.[11]

Under § 7-712 of the Public Utilities Article, PSC must submit a report on the RPS for each compliance year. The report must cover the implementation of the RPS, the availability of Tier 1 resources, projects supported by the SEIF, and additional pertinent information. **Exhibit 2** provides a summary of annual RPS compliance costs and average REC prices in recent years.

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[7] *See* § 7-709.1 of the Public Utilities Article.

[8] RECs may also be purchased at fixed or pre-established prices as determined in a contract between private parties; the general distinction is that OREC prices are established by PSC order. Under Chapter 431 of 2024, Round 1 offshore wind projects may seek approval from PSC to amend previously approved projects to increase the maximum amount of ORECs sold. Chapter 431 also authorized, for a limited time, Round 2 offshore wind projects to seek approval to revise a previously approved project to adjust, among other things, OREC pricing. In July 2024 U.S. Wind submitted a rebid application to amend its previously approved project and in January 2025 PSC approved the application in Order No. 91496.

[9] *See* § 7-705 of the Public Utilities Article.

[10] There is also a separate ACP for industrial process load shortfalls from Tier 1 sources. *See* § 7-705 of the Public Utilities Article.

[11] *See* § 9-20B-05 of the State Government Article. Chapters 625 and 626 of 2025 authorize the use of ACP revenues to provide residential ratepayer credits or refunds and required a portion of ACP revenues to be used for those purposes in fiscal 2026.

Exhibit 2
RPS Compliance Costs and REC Prices
Calendar 2019-2023

	2019	2020	2021	2022	2023
Compliance Costs ($ Millions)					
RECs					
Tier 1	$79.3	$99.8	$187.3	$246.5	$124.9
Tier 1 Solar	55.2	122.9	144.4	101.4	109.6
Tier 1 Geothermal	n/a	n/a	n/a	n/a	0.1
Tier 2	0.1	0.4	1.0	4.4	9.3
RECs Subtotal	***$134.6***	***$223.1***	***$332.7***	***$352.3***	***$243.8***
ACPs					
Tier 1	$5.0	$0.0	$0.2	$0.7	$262.4
Tier 1 Solar	2.7	0.0	76.9	85.9	56.0
Tier 1 Geothermal	n/a	n/a	n/a	n/a	1.6
Tier 2	0.1	0.0	0.0	0.0	0.4
ACPs Subtotal	***$7.7***	***$0.1***	***$77.1***	***$86.6***	***$320.4***
Total	**$142.3**	**$223.2**	**$409.8**	**$438.9**	**$564.2**
Average REC Price ($)					
Tier 1	$7.77	$8.24	$14.36	$17.80	$24.61
Tier 1 Solar	$47.26	$66.10	$72.59	$57.80	$56.67
Tier 1 Geothermal	n/a	n/a	n/a	n/a	$94.47
Tier 2	$1.05	$1.06	$6.45	$7.42	$10.50

ACP: alternative compliance payment
REC: renewable energy credit
RPS: renewable energy portfolio standard

Note: Numbers may not sum to total due to rounding. The post-2022 geothermal system carve-out became effective in 2023 per Chapter 164 of 2021.

Source: Public Service Commission

Major Legislative Changes

The RPS has undergone several rounds of significant changes since its creation in 2004 – notably to alter source eligibility, establish carve-outs, increase overall percentage requirements, and adjust ACPs. **Exhibit 3** summarizes the most significant changes by chapter law and year. Additional visualizations of the RPS and changes to its components over time are included in **Appendix 1.**

Exhibit 3
History of Major Legislative Changes to the RPS and ACP
Current Through 2025 Legislative Session

Year	Chapter(s)	Summary
2004	Chapters 487 and 488	RPS established. Percentage requirement set at 3.5% in 2006 (1.0% from Tier 1 and 2.5% from Tier 2), increasing to 7.5% from Tier 1 in 2019 and later (Tier 2 originally terminated after 2018). ACP established and set at $20 for each Tier 1 MWh of shortfall and $15 for each Tier 2 MWh of shortfall. Separate ACP established for industrial process load shortfalls from Tier 1, set at $8/MWh in 2006, decreasing to $2/MWh in 2017 and later.
2007	Chapters 119 and 120	Established requirement that a percentage of Tier 1 electricity under the RPS be derived from solar energy (solar carve-out); carve-out set at 0.005% in 2008, increasing to 2.0% in 2022 and later. Increased percentage of electricity required to be derived from Tier 1 renewable sources under the RPS to 9.5% in 2022 and later. ACP established for solar carve-out and set at $450/MWh of shortfall in 2008, decreasing to $50/MWh of shortfall in 2023 and later.

Year	Chapter(s)	Summary
2008	Chapters 125 and 126	Increased the Tier 1 RPS, beginning with 5% in 2011, increasing to 20% in 2022. These percentages include the 2% solar carve-out. Revised geographic eligibility of facilities eligible to generate RECs. Increased Tier 1 ACP to $40/MWh.
	Chapters 135 and 136	Defined poultry litter-to-energy as a Tier 1, rather than a Tier 2, renewable source. The poultry litter-to-energy source must be connected with the electric distribution grid serving Maryland to be eligible for meeting the RPS.
2010	Chapter 494	Increased solar carve-out for years 2011-16, beginning with 0.05% in 2011, increasing to 0.5% in 2016. Increased Solar ACP for years 2011-16, beginning with $400/MWh of shortfall in 2011, decreasing to $350/MWh of shortfall in 2016.
2011	Chapters 407 and 408	Defined solar water heating systems as Tier 1 sources under the RPS; energy from these systems qualifies for the solar carve-out.
	Chapter 519	Defined waste-to-energy as a Tier 1, rather than Tier 2, renewable source. Also defined refuse-derived fuel as a Tier 1 source. Both sources must be connected with the electric distribution grid serving Maryland to be eligible to meet the RPS.
2012	Chapters 556 and 557	Added geothermal heating and cooling systems as a Tier 1 source. Modified eligibility of geothermal energy to meet the RPS to require that the source be connected with the electric distribution grid serving Maryland.
	Chapters 583 and 584	Accelerated the RPS solar carve-out, beginning with 0.25% in 2013 and increasing to 2% in 2020.
	Chapter 635	Added thermal energy from biomass systems that use animal waste, food waste, or qualifying biomass as a Tier 1 source.

Year	Chapter(s)	Summary
2013	Chapter 3	Established requirement that, beginning in 2017, 2.5% of Tier 1 electricity in the RPS be derived from offshore wind energy (offshore wind carve-out). Established ORECs and an ACP for shortfalls from the offshore wind carve-out.
2017	Chapters 1 and 2	Increased percentage of electricity required to be derived from Tier 1 renewable sources and the solar carve-out to 25% and 2.5%, respectively, by 2020. Decreased Tier 1 ACP to $37.50/MWh of shortfall in 2017. Decreased solar ACP for 2017, 2018, 2020, and 2022 but increased to $60/MWh of shortfall for 2023.
2019	Chapter 757	Increased the distance off the coast of the State that a Tier 1 or Tier 2 renewable source may be located to qualify for a REC. Established a "Round 2" process requiring ORECs from additional offshore wind capacity, beginning with 400 MW in 2026, 800 MW in 2028, and 1,200 MW in 2030 and later. Increased percentage of electricity required to be derived from Tier 1 renewable sources to 50% by 2030, including increasing the solar carve-out to 14.5% and requiring at least 1,200 MW from Round 2 offshore wind projects. Extended Tier 2 RPS requirement of 2.5% to apply in 2019 and 2020. Set solar carve-out of 2.5% in 2020 and later for electric cooperatives' RPS. Decreased Tier 1 ACP to $22.35/MWh in 2030 and beyond. Decreased solar ACP to $22.35/MWh in 2030 and later.

Year	Chapter(s)	Summary
2021	Chapter 164	Established requirement that percentage of Tier 1 electricity under the RPS be derived from post-2022 geothermal systems (geothermal carve-out); carve-out set at 0.05% in 2023, increasing to 1% in 2028 and later. Certain portion of geothermal carve-out must be derived from systems installed at low- and moderate-income housing or institutions that serve low- and moderate-income individuals and families. ACP established for geothermal carve-out set at $100/MWh in 2023, decreasing to $65/MWh in 2028 and later.
	Chapters 174 and 175	Limited Tier 1 RPS percentage requirements for municipal electric utilities to 20.4% in 2021 and later, with carve-outs for solar and offshore wind.
	Chapter 673	Decreased percentage of electricity required to be derived from Tier 1 renewable sources and the solar carve-out beginning in 2022 through 2029 but maintained same Tier 1 and solar carve-outs for 2030 and later. Permanently extended Tier 2 beginning in 2021. Increased solar ACP to $60/MWh in 2023, decreasing to $22.50/MWh in 2030 and later. Removed black liquor, or any product derived from black liquor, from Tier 1 beginning with the 2022 compliance year.
	Chapter 691	Added raw or treated wastewater used as a heat source or sink for a heating or cooling system as a Tier 1 source. To be eligible for inclusion in the RPS, the system must be connected with the electric distribution system serving Maryland or process wastewater from Maryland residents.
2022	Chapter 578	Altered OREC collection mechanism under the RPS so that electric companies, instead of electricity suppliers, must purchase ORECs to meet the requirements of the RPS.

Year	Chapter(s)	Summary
2024	Chapter 431	Required PSC to open a revised Round 2 offshore wind project proceeding that is limited to evaluating revised project schedules, sizes, or pricing, including OREC pricing, for a previously approved Round 2 project. Allowed any Round 1 offshore wind project to seek PSC approval to amend its previously approved Round 1 project order to increase the maximum amount of ORECs and modify its project schedule.
	Chapter 537	Established that electricity may not be marketed as "green power" in the State unless the electricity exceeds certain RPS requirements and PSC approves the price of the electricity being marketed as green power, subject to specified requirements.
	Chapter 595	Established "certified SRECs" that have a compliance value of 150% of noncertified SRECs. Extended the duration of all RECs from 3 years to 5 years. Authorized MEA to use up to 10% of solar ACP revenues for the administration of the SEIF. Required, through June 30, 2027, at least 20% of solar ACP revenues received by the SEIF to be used to provide grants to support the installation of new solar energy generating systems under the Customer-Sited Solar Program established under Chapter 595.
2025	Chapter 458	Expands eligibility for certified SRECs to include specified solar energy generating systems located on or over a water retention pond or quarry currently or previously designated for industrial use.
	Chapters 625 and 626	Removes waste-to-energy and refuse-derived fuel from Tier 1 beginning with the 2025 compliance year for privately owned systems and beginning July 1, 2026, for publicly owned systems.

Year	Chapter(s)	Summary
		Authorizes ACP revenues to be used to provide residential ratepayer credits or refunds and require a portion of ACP revenues to be used for those purposes in fiscal 2026.

ACP: alternative compliance payment
MEA: Maryland Energy Administration
MW: megawatt
MWh: megawatt–hour
OREC: offshore wind renewable energy credit
PSC: Public Service Commission
REC: renewable energy credit
RPS: renewable energy portfolio standard
SEIF: Strategic Energy Investment Fund
SREC: solar renewable energy credit

Source: Department of Legislative Services

Pathway to 100% Clean Energy Study

Chapter 757 of 2019, the most recent significant increase in overall RPS requirements, directed the Power Plant Research Program (PPRP) within the Department of Natural Resources to conduct a study on, among other things, the feasibility, costs, and benefits of increasing the RPS to a goal of 100% renewable energy by 2040. The Act also directed PPRP to identify industries and communities that could be negatively impacted by a 100% RPS and to evaluate transition arrangements for affected workers and communities. In addition, PPRP studied what a 100% clean energy requirement would look like based on the Clean and Renewable Energy Standard legislation that was introduced, but not enacted, in the 2020 and 2021 legislative sessions.[12] Key findings in the report include:

- modeling confirmations that Maryland can technically meet the requirements of a 100% RPS or clean energy standard (CES) in a variety of circumstances, including scenarios with high electrification expectations, but further consideration is required to understand the implications on actual electric system operations;

- implementation of a 100% RPS or CES does not substantially alter aggregate costs or benefits as compared to business as usual within the cost-benefit categories assessed;

[12] *See* Senate Bill 265/House Bill 363 of 2020 and House Bill 1362 of 2021.

- short-term deficits in the availability of RECs may result in ACPs for scenarios that assume a 100% RPS by 2035 or 2040, likely from SREC deficiencies; in the modeling, these payments persist until 2026;

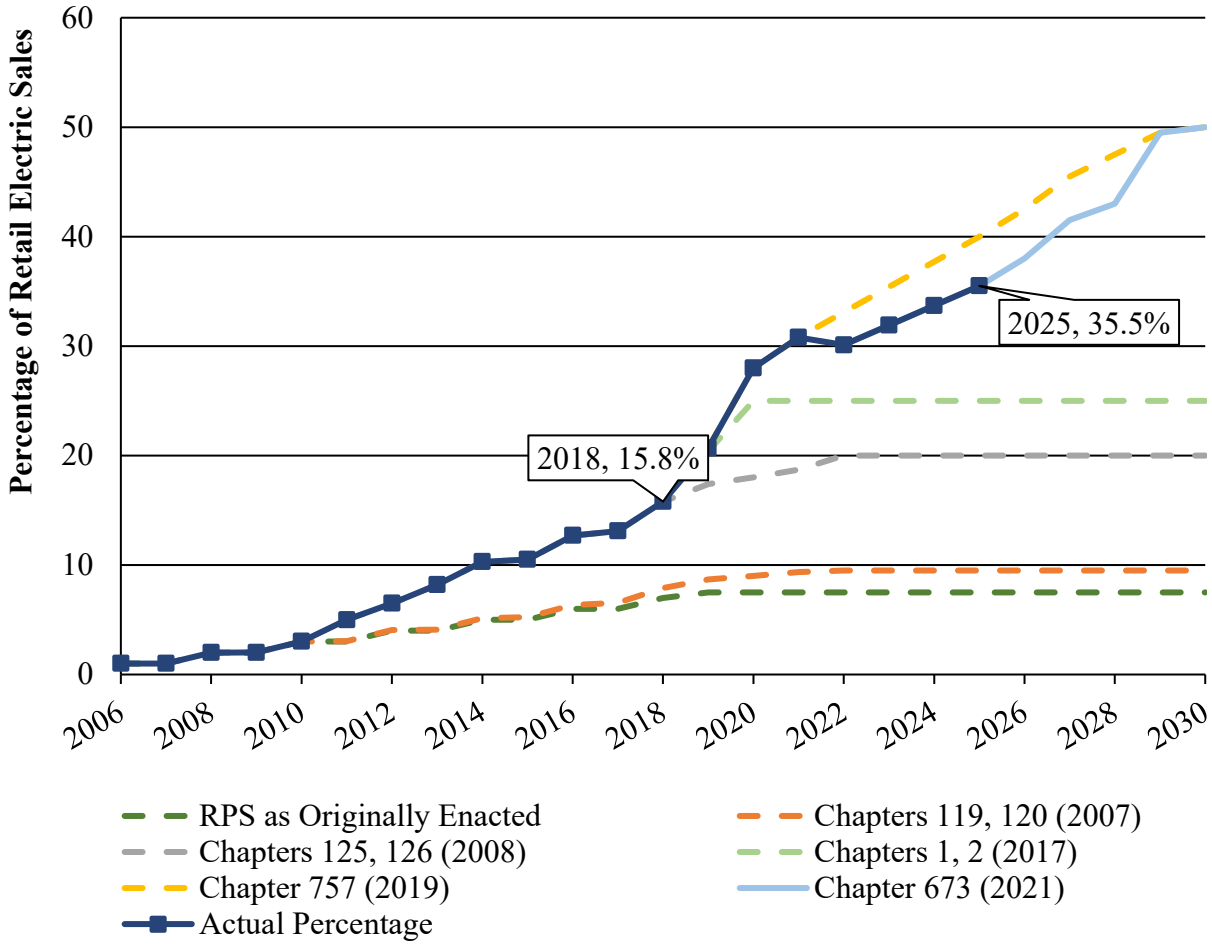
- for most scenarios modeled, estimates of total resource costs for Maryland fall initially and then begin to increase by 2026, with costs increasing more sharply toward the end of the forecast period (*i.e.*, approaching 2040);

- air emissions in Maryland fall to near zero with either a 100% RPS or CES if the targets in the Climate Solutions Now Act are met and Calvert Cliffs is relicensed; and

- for all modeled scenarios, the aggregate job losses associated with coal and natural gas plant retirements are offset by substantial additions in other energy sector jobs.

Appendix 1

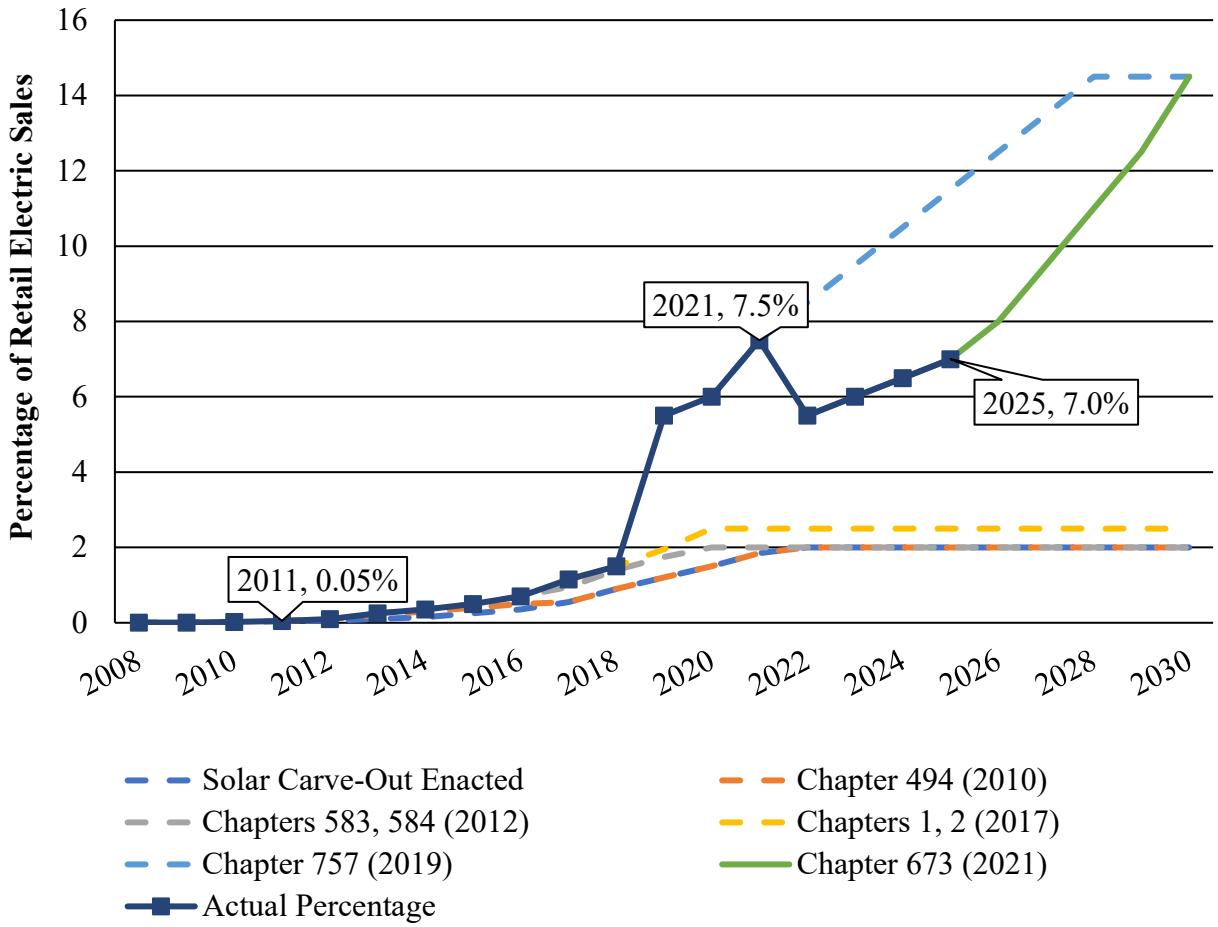
Exhibit 1.1
Statutory Changes in Tier 1 Source Requirement Under the RPS Compared to Actual Tier 1 Source Requirement by Year
Calendar 2006-2030



RPS: renewable energy portfolio standard

Source: Department of Legislative Services

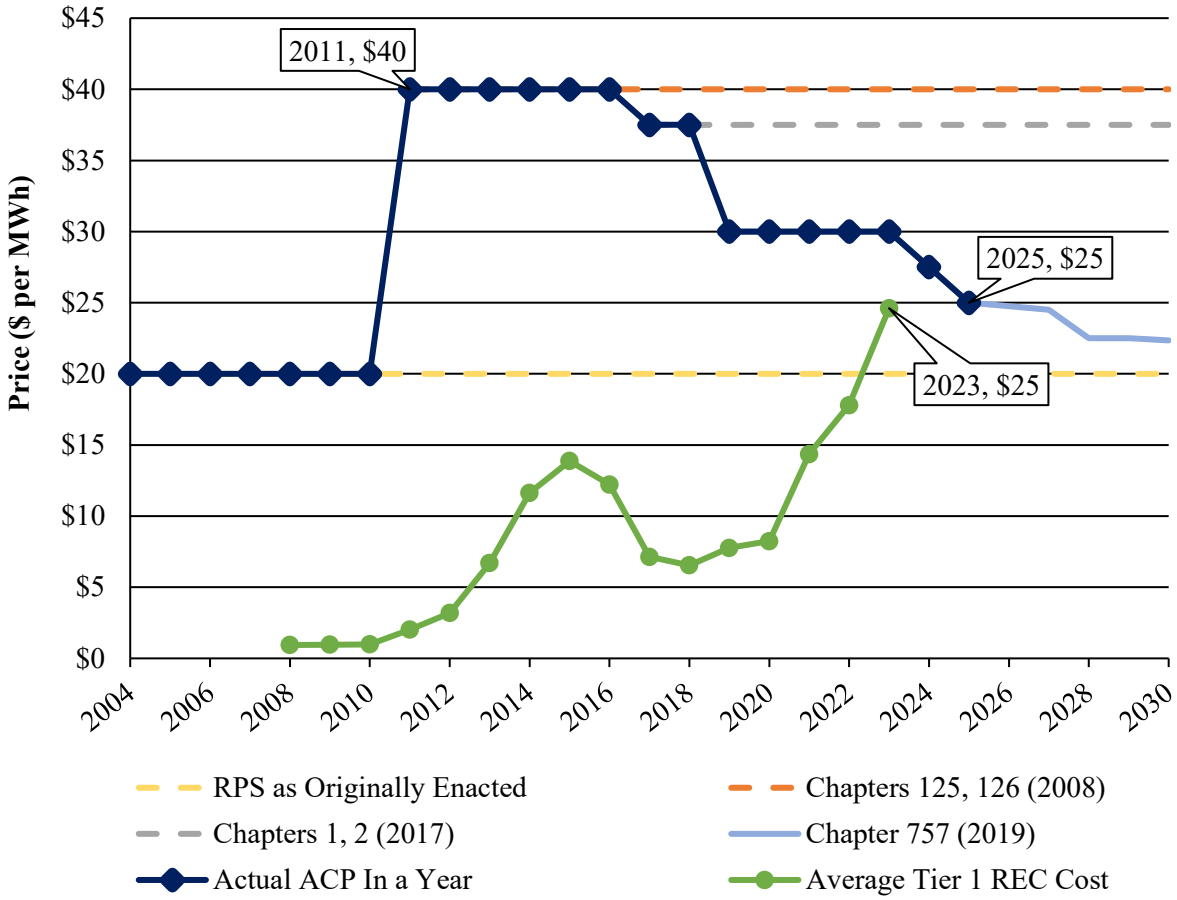
Exhibit 1.2
Statutory Changes in Solar Carve-Out Requirement Under the RPS Compared to Actual Solar Energy Requirement by Year
Calendar 2008-2030



RPS: renewable energy portfolio standard

Source: Department of Legislative Services

Exhibit 1.3
Statutory Changes in Tier 1 ACP Price Under the RPS Compared to Actual ACP Price by Year and Average Tier 1 REC Cost by Year
Calendar 2004-2030

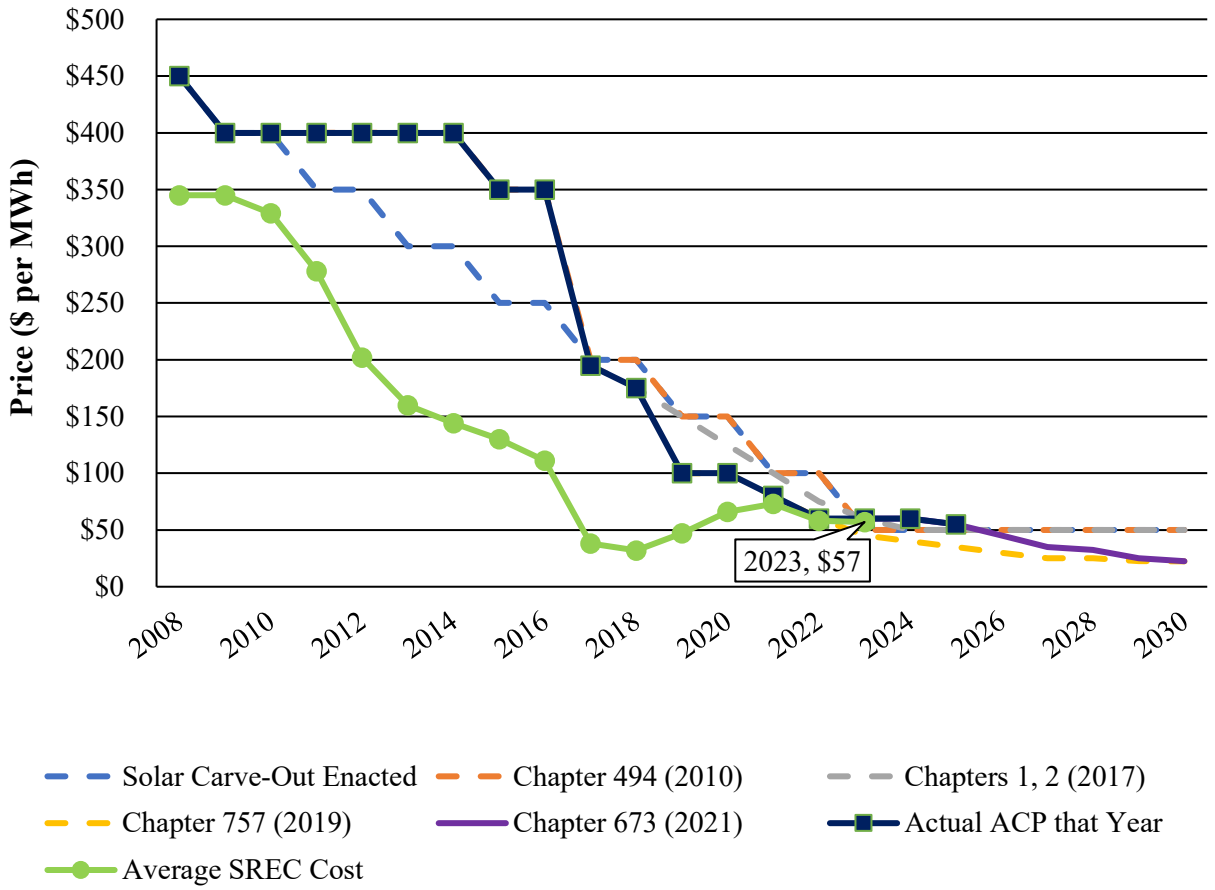


ACP: alternative compliance payment
MWh: megawatt-hour
RPS: renewable energy portfolio standard
REC: renewable energy credit

Note: Costs reflect the most recent publicly available data from the Public Service Commission.

Source: Public Service Commission; Department of Legislative Services

Exhibit 1.4
Statutory Changes in Solar Energy ACP Price Under the RPS Compared to Actual ACP Price by Year and Average SREC Cost by Year
Calendar 2008-2030



ACP: alternative compliance payment
MWh: megawatt-hour
RPS: renewable energy portfolio standard
SREC: solar renewable energy credit

Note: Costs reflect the most recent publicly available data from the Public Service Commission.

Source: Public Service Commission; Department of Legislative Services