Maryland Renewable Energy Portfolio Standard

Table 1 shows the aggregate supplier obligation, the Renewable Energy Credits (RECs) retired and the Alternative Compliance Payments (ACPs) submitted from 2006-2024.[1] Each retired REC represents 1 MWh of renewable energy generated from a Tier 1 or Tier 2 facility.

In 2024, Maryland generated about 3.86 million MWh of renewable electricity from in-state Tier 1 resources and about 1.8 million MWh of renewable electricity from in-state Tier 2 resources, with a total of 5.69 million RECs produced. Of the total Maryland-generated RECs retired for compliance purposes in 2024, about 52.4 percent were retired in Maryland.[2] Overall, the cost of compliance with the RPS requirement in 2024 was about $616.9 million.[3]

Table 1 Maryland RPS Compliance, 2006-2024

RPS Compliance Year		Tier 1 Solar	Tier 1 (Non-Solar)	Tier 2	Total
2006	RPS Obligation (MWh)	--	520,073	1,300,201	1,820,274
	Retired RECs (MWh)	--	552,874	1,322,069	1,874,943
	ACP Required	--	$13,293	$24,917	$38,209
2007	RPS Obligation (MWh)	--	553,612	1,384,029	1,937,641
	Retired RECs (MWh)	--	553,374	1,382,874	1,936,248
	ACP Required	--	$12,623	$23,751	$36,374
2008	RPS Obligation (MWh)	2,934	1,183,439	1,479,305	2,665,678
	Retired RECs (MWh)	227	1,184,174	1,500,414	2,684,815
	ACP Required	$1,218,739	$9,020	$8,175	$1,235,934
2009	RPS Obligation (MWh)	6,125	1,228,521	1,535,655	2,770,301
	Retired RECs (MWh)	3,260	1,280,946	1,509,270	2,793,475
	ACP Required	$1,147,600	$395	$270	$1,148,265
2010	RPS Obligation (MWh)	15,985	1,922,070	1,601,723	3,539,778
	Retired RECs (MWh)	15,451	1,931,367	1,622,751	3,569,569
	ACP Required	$217,600	$20	$0	$217,620
2011	RPS Obligation (MWh)	28,037	3,079,851	1,553,942	4,661,830
	Retired RECs (MWh)	27,972	3,083,141	1,565,945	4,677,058
	ACP Required	$41,200	$48,200	$9,120	$98,520
2012	RPS Obligation (MWh)	56,130	3,901,558	1,522,179	5,479,867
	Retired RECs (MWh)	56,194	3,902,221	1,522,297	5,480,712
	ACP Required	$4,400	$0	$1,050	$5,450
2013	RPS Obligation (MWh)	133,713	4,858,404	1,521,981	6,514,098
	Retired RECs (MWh)	134,124	4,871,586	1,526,789	6,532,499
	ACP Required	$2,440	$40	$0	$2,480
	RPS Obligation (MWh)	203,827	6,062,635	1,520,966	7,787,428

[1] Retirement of a REC means that it has been used by the owner; it can no longer be sold.
[2] *RPS Report of 2025*, p. 20, Tables 9 and 10, *op. cit.*
[3] Ibid., p. 9, Table 5.

RPS Compliance Year		Tier 1 Solar	Tier 1 (Non-Solar)	Tier 2	Total
2014	Retired RECs (MWh)	203,884	6,062,135	1,521,022	7,787,041
	ACP Required	$15,600	$46,600	$3,765	$65,965
2015	RPS Obligation (MWh)	299,456	6,131,624	1,531,193	7,962,273
	Retired RECs (MWh)	299,525	6,134,653	1,531,279	7,965,457
	ACP Required	$7,000	$16,000	$1,515	$24,515
2016	RPS Obligation (MWh)	411,466	7,224,223*	1,500,440	9,136,129
	Retired RECs (MWh)	411,787	7,216,439	1,501,587	9,129,813
	ACP Required	$0	$520	$30	$33,933
2017	RPS Obligation (MWh)	556,929	7,004,181	1,442,923	9,029,149
	Retired RECs (MWh)	557,224	7,006,113	1,448,567	9,011,904
	ACP Required	$1,170	$53,607**	$255	$55,032
2018	RPS Obligation (MWh)	857,023	8,660,012*	1,500,715	11,017,750
	Retired RECs (MWh)	857,232	8,627,737	1,599,819	11,084,788
	ACP Required	$795	$66,866**	$135	$67,796
2019	RPS Obligation (MWh)	1,141,734	10,091,893*	205,611	11,439,238
	Retired RECs (MWh)	1,167,329	10,210,275	55,879	11,433,483
	ACP Required	$2,658,500	$5,012,592**	$59,132	$7,730,223
2020	RPS Obligation (MWh)	1,854,176	12,007,171	367,082	14,228,429
	Retired RECs (MWh)	1,859,976	12,117,585	366,260	14,343,821
	ACP Required	$29,800	$270	$22,170	$52,240
2021	RPS Obligation (MWh)	2,912,479	12,975,526	147,946	16,035,951
	Retired RECs (MWh)	1,989,505	13,045,432	148,702	15,183,639
	ACP Required	$76,884,624	$232,930	$11,459	$77,129,013
2022	RPS Obligation (MWh)	3,181,323	13,796,451	592,758	17,570,532
	Retired RECs (MWh)	1,753,987	13,849,611	590,330	16,193,928
	ACP Required	$85,859,393	$677,490	$48,000	$86,584,883
2023	RPS Obligation (MWh)	3,017,380	13,835,511	905,725	17,758,616
	Retired RECs (MWh)	1,933,280	5,076,904	878,304	7,888,488
	ACP Required	$55,966,945	$263,984,378	$412,215	$320,363,538
2024	RPS Obligation (MWh)	3,221,782	14,985,079	1,159,107	19,365,914
	Retired RECs (MWh)	2,568,159	3,347,756	1,073,328	6,989,243
	ACP Required	$37,181,380	$323,820,655	$1,289,745	$362,291,780

* Includes Tier 1 RECs retired for industrial process load customers.

** Includes ACPs for Tier 1 for industrial process load customers.

Source: Maryland Public Service Commission, Renewable Energy Portfolio Standard Report With Data for Calendar Year 2024, November 2025, Table 6, p. 9, https://psc.maryland.gov/wp-content/uploads/2026/01/2025-RPS-Report.pdf

In 2017, the Maryland General Assembly enacted legislation requiring PPRP to conduct a comprehensive review of the costs and benefits of the state's RPS and the likely impacts of increasing the RPS in the future. The legislation directed PPRP to consider a wide range of topics including the standard's effectiveness in reducing the carbon content of imported electricity; the impact of long-term clean energy contracts; whether RPS benefits are equitably distributed

among communities; whether adequate supply exists to meet a more ambitious RPS; specific opportunities for job creation; the types of system flexibility needed to meet future goals; how best to address flexible resources such as advanced energy storage systems; and the role of instate clean energy in reaching GHG reduction goals and promoting economic development. The final report was submitted to the General Assembly in December 2019.[4]

The Maryland Clean Energy Jobs Act of 2019 requires PPRP to conduct a supplemental study on the cost and benefits of increasing the RPS to 100 percent by 2040 and to study nuclear energy's role as a renewable or clean energy resource for addressing climate change in the state. The final report on Maryland nuclear energy was submitted to the General Assembly in January 2020 and is available on PPRP's website.[5] The supplemental RPS study was completed and published in July 2024. This study included an assessment of the cost, benefits and feasibility of increasing the RPS to 100 percent by 2040 and was expanded to also assess a 100 percent Clean Energy Standard.[6]

Net Metering in Maryland

Ratepayers with distributed generation (e.g., rooftop solar) may receive compensation for generation beyond their consumption through a billing mechanism known as net metering. Net metering is the method of compensating consumers with distributed generation capacity in periods when a customer produces more energy than they consume. Essentially, when a consumer is producing more electricity than they are consuming, the meter "runs backwards" in order to track the net amount of energy the customer consumes in a billing period. Net metering allows the consumer to sell electricity back to the utility in the form of a per-kWh credit and the excess energy is exported to the distribution grid for the utility to sell to other customers. Net metering is like a ratepayer utilizing the local electric grid as battery storage.

Maryland's net metering regulations, originally enacted in 1997, have been amended multiple times. The current law, set forth in Public Utilities Article (PUA) §7-306 and Code of Maryland Regulations (COMAR) 20.50.10, as amended in 2021 by House Bill (HB) 569 and HB908 in 2023, sets a statewide aggregate cap of 3,000 MW for net metered systems. All investor-owned utilities (IOUs), cooperatives and municipal utilities comply with the regulations by installing a meter capable of accurately measuring the bi-directional flow of electricity. Additionally, each electric provider in the state must offer a tariff rate or contract rate at nondiscriminatory prices to customers with qualified onsite generation who wish to receive net metered service.

Net metering is commonly associated with solar photovoltaic (PV) panels, but can also be used for numerous other onsite distributed generation such as small-scale wind, biomass and fuel

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[4] Maryland Department of Natural Resources, Power Plant Research Program. *Final Report Concerning the Maryland Renewable Portfolio Standard as Required by Chapter 393 of the Acts of the Maryland General Assembly of 2017*. December 2019.
[5] Maryland Department of Natural Resources, Power Plant Research Program. *Nuclear Power in Maryland: Status and Prospects*. January 2020. dnr.maryland.gov/pprp/Documents/NuclearPowerinMaryland_Status-and-Prospects.pdf.
[6] Maryland Department of Natural Resources, Power Plant Research Program. *100% Renewable Portfolio Standard (RPS) and 100% Clean Energy Standard (CES) by 2040 Study*. July 2024. dnr.maryland.gov/pprp/Documents/Final-PPRP-100-RPS-CES-Report.pdf.

cells. Specifically, the State of Maryland designates solar, wind, biomass, fuel cell, closed-conduit hydroelectric and micro-combined heat and power (CHP) as resources eligible for net metering. Ownership of the net metered system can be direct or through a third-party contract such as through a lease or power purchase agreement (PPA). The maximum capacity for individual net metered systems is limited to 200 percent of the customer's total annual baseline energy consumption, capped at 2 MW. All types of facilities (e.g., homes, schools, businesses and government properties) may participate in net metering as long as the net metered system is installed with the principal intention of offsetting the customer's onsite energy consumption (e.g., a rooftop solar array on a residential building used to deliver a portion of the resident's electricity). The net metered system must be interconnected with the local utility's transmission and distribution facilities. Furthermore, agricultural, municipal and county governments, and nonprofit organizations can combine meter readings from more than one utility service point, referred to as aggregate net metering. Utilities provide this service by using physical interconnection of service points or by summing the total usage from two or more meters (virtual aggregation). Aggregating multiple individual loads allows customers to take advantage of economies of scale and build a large system.

The PSC must submit an annual report on the status of the net metering program to the General Assembly by September 1 each year. A summary of the net metering capacity through June 30, 2025 is provided in Table 2. As of June 30, 2025, there was a total of 1,321 MW of installed net metering capacity as well as 216 MW of installed community solar capacity, totaling to 1,537 MW. While installed net metering and community solar capacity has grown every year, the annual growth rate has slowed from a peak of 93 percent year over year in 2016 to 9.10 percent in 2025. Despite the decrease in growth, installed capacity, including community solar, has more than tripled in that same period, from 387 MW in 2016 to 1,537 MW in 2025.

Table 2 provides utility-level data for net metered installed capacity only (not including community solar), through June 2025.

Table 2 Net Metering Capacity as of June 30, 2025 (kW)

Utility	Solar	Wind	Biomass	Total	Year Over Year Percent Change
Baltimore Gas and Electric Company	563,753	101	0	563,855	7.54%
Choptank Electric Cooperative	33,703	353	30	34,057	3.63%
Delmarva Power and Light Company	127,290	889	240	128,179	6.28%
Easton Utilities Commission	3,490	0	15	3,490	-2.54%
Town of Hagerstown Light Department	368	0	0	368	13.93%
Thurmont Municipal Light Company	290	0	0	290	13.73%
Mayor and Council of Berlin	598	0	0	598	1.18%

Utility	Solar	Wind	Biomass	Total	Year Over Year Percent Change
Potomac Electric Power Company	359,965	78	0	360,042	14.01%
Potomac Edison Company	139,872	7	256	139,880	9.83%
Williamsport Municipal Light Plant	28	0	0	28	0.00%
Southern Maryland Electric Cooperative	90,274	36	320	90,310	5.98%
Maryland Total	**1,319,631**	**1,464**	**861**	**1,321,097**	**9.10%**

Source: Maryland Public Service Commission, Report on the Status of Net Energy Metering in the State of Maryland, November 2025, p. 9, psc.state.md.us/wp-content/uploads/2025-Net-Metering-Report-4.pdf

In Maryland, if a customer's generation is greater than its demand (a concept known as net excess generation), then the billed kWh credit is carried over to the next month. Once per year (ending in April of each year), if the customer still has net excess generation remaining, the utility compensates the customer for the net excess generation balance at the prevailing electricity commodity rate. Pursuant to SB143, as of October 1, 2023, customers may elect to accrue net excess generation kWh credits indefinitely instead of receiving a monetary payment once per year. Customers have the added benefit of owning all RECs accumulated by their net metered system, allowing the customer to sell its credits in the REC market.

Table 3 shows the net excess generation credits paid to customers for the 12-month period ended April 30, 2025. In total, Maryland utilities paid $8,888,859, with Pepco and BGE paying 33 percent and 39 percent, respectively, of the total net excess generation. In addition to excess generation payments, net energy customers can also receive payment for all of the energy that their solar unit generates. Particularly, for each MWh that a solar generator produces, a Solar Renewable Energy Certificate (SREC) is created. Net metering customers may sell these SRECs, typically through a broker or aggregator, to utilities who will use them in order to demonstrate compliance with Maryland's RPS. Data on how much net energy customers were paid for their SRECs is not available.

Table 3 Excess Generation Credit Payments to Residential and Commercial Customers, May 2024 – April 2025

Utility	Residential	Commercial	Total	Percentage of Total
Baltimore Gas and Electric Company	$1,932,728	$1,538,674	$3,471,402	39.05%
Choptank Electric Cooperative	$105,565	$150,616	$256,180	2.88%
Delmarva Power and Light Company	$380,404	$1,083,492	$1,463,896	16.47%
Easton Utilities Commission	$1,221	$12,313	$13,535	0.15%

Utility	Residential	Commercial	Total	Percentage of Total
City of Hagerstown Light Department	$1,593	$0	$1,593	0.02%
Thurmont Municipal Light Company	$63	$0	$63	0.00%
Mayor and Council of Berlin	$1,256	$1,057	$2,313	0.03%
Potomac Electric Power Company	$2,242,246	$728,742	$2,970,988	33.42%
Potomac Edison Company	$270,334	$218,284	$488,618	5.50%
Williamsport Municipal Light Plant	$0	$0	$0	0.00%
Southern Maryland Electric Cooperative	$213,578	$6,693	$220,272	2.48%
Total	**$5,148,989**	**$3,739,871**	**$8,888,859**	**100%**

Source: Maryland Public Service Commission, Report on the Status of Net Energy Metering in the State of Maryland, November 2025, p. 7 psc.state.md.us/wp-content/uploads/2025-Net-Metering-Report-4.pdf.

EmPOWER Maryland

The EmPOWER Maryland energy initiative was codified by the EmPOWER Maryland Energy Efficiency Act of 2008 (EPM Act), with a goal of reducing Maryland's per capita energy consumption and peak demand by 15 percent by 2015. The EPM Act sought to achieve electric consumption and peak demand reductions as follows:[7]

- Per capita electricity consumption: 5 percent reduction by the end of 2011 and 15 percent by the end of 2015, from 2007 levels; and

- Per capita peak demand: 5 percent reduction by the end of 2011, 10 percent by the end of 2013, and 15 percent by the end of 2015, from 2007 levels.

Under the EPM Act, utilities with more than 200,000 customers are responsible for the full 15 percent demand reduction and two-thirds of the consumption goal (i.e., a 10 percent reduction in consumption), with the remaining 5 percentage point reduction in per capita electricity consumption to be achieved through state-administered programs and changes to efficiency codes and standards. The utilities required to participate in EmPOWER Maryland included BGE, DPL, PE, Pepco, and SMECO.

As written, the EPM Act is inclusive of both electric and gas companies; however, the PSC has not established goals for gas energy efficiency programs. In 2014, Washington Gas Light (WGL) submitted a voluntary gas reduction program for the 2015-2017 program cycle.[8] On December

[7] Maryland Public Utilities Article § 7-211.
[8] Maryland PSC, Case No. 9362, Mail Log No. 158098.

23, 2014, the PSC approved WGL's residential and demand response programs,[9] which are designed to reduce gas consumption for heating and water heating in existing and new construction. In 2016, the Commission began considering the development of natural gas efficiency goals.[10] In June 2025, Energy Efficiency and Conservation Plans of 2024 (HB864) required the Commission to determine GHG reduction goals for gas utilities in EmPOWER (WGL and BGE). The GHG reduction target is under development for the 2027-2029 program cycle and is to be subsequently updated every three years. Gas utilities in EmPOWER will be required to incorporate a Commission-determined level of metric tons of carbon dioxide equivalent (CO2e) at least equivalent to the GHG emissions reduction equivalent of therms saved by the gas company during the 2021-2023 program cycle, measured on a lifecycle basis into their program plans.[11]

On July 16, 2015, the Commission issued Order No. 87082, which established energy efficiency goals for the EmPOWER Maryland electric utilities beyond 2015. The PSC adopted an annual incremental gross energy savings reduction of 2 percent from a utility's weather-normalized gross retail sales baseline, which was implemented for the 2018-2020 program cycle. The 2016 weather-normalized gross retail sales served as the baseline for the 2018-2020 program cycle. The PSC did not set demand reduction goals but stated that utilities should continue to use the demand reduction targets established through the approved 2015-2017 plans for program years 2016 and 2017. In spring 2017, the General Assembly enacted legislation to codify the 2 percent goal, thus continuing the EmPOWER Maryland efforts for the 2018-2020 and 2021-2023 program cycles.

The Climate Solutions Now Act of 2022 (CSNA) modified the annual savings percentage to increase incrementally through 2027 and thereafter. It maintained the 2016 weather-normalized baseline but modified the established 2 percent goal to be an increasing target, moving to 2.25 percent for 2025-2026 and 2.5 percent for 2027 and beyond. It also specified that the objective of the reductions includes the development of a portfolio of mutually reinforcing goals, including GHG emissions reduction, energy savings, net customer benefits, and reaching underserved communities.[12] In June 2025, HB864 shifted the goals of EmPOWER from the above energy reduction levels to GHG reduction goals. For 2025 and 2026, and each subsequent three-year program cycle, the Commission will determine GHG reduction targets for each utility that achieves at least the GHG reduction equivalent of the energy savings reduction amounts established by the CSNA in 2022.

The PSC reviews utility EmPOWER Maryland programs semi-annually: usually in May, to assess the results from the third and fourth quarters of the previous year, and in October to evaluate the results of the first and second quarters of the current year. During these PSC reviews, stakeholders may request changes to EmPOWER Maryland programs and budgets. The Commission may hold additional proceedings on EmPOWER Maryland as needed. In 2023, in response to the objectives outlined in the CSNA, the PSC ordered utilities to submit three different EmPOWER Maryland plans, covering 2024 through 2026, that met three different

[9] Maryland PSC, Order No. 86785.
[10] Maryland PSC, Order No. 87082.
[11] Energy Efficiency and Conservation Plans, Chapter 539, 2024, PUA §7–223 (B)(2).
[12] CSNA of 2022, Chapter 38, 2022, PUA §7–211(g)(2).

levels of GHG reductions while still meeting the requirements of the EPM Act.[13] These plans were intended to be used to inform future Commission decisions about future implementable GHG reduction goals for the EmPOWER program. In December 2023, the Commission approved the 2024-2026 program cycle plans which addressed the updated energy savings guidelines established by the CSNA in 2022.[14] In 2024, when GHG reduction became the primary goal of the EmPOWER program via HB864, utilities were required to file revised versions of their 2025 and 2026 program plans that complied with the updates to the program required by HB864.[15] The GHG reduction goals were determined in accordance with the methodology ordered by the Commission in June 2024.[16]

EmPOWER Maryland Energy Efficiency and Conservation Programs

The EPM Act directed Maryland utilities to develop EmPOWER Maryland plans for all customer sectors—residential, commercial and industrial. The Commission is directed to consider whether each program is cost-effective and adequate to achieve the EmPOWER Maryland goals, and to assess the program's potential impacts on electricity rates, jobs and the environment. The programs offered by the utilities include rebates for ENERGY STAR® products, home energy audits, weatherization and retrofit assistance, CHP and incentives for energy-efficient new construction. In addition, all of the utilities have been directed by the PSC to include conservation programs targeting limited-income consumers.[17] These programs aid limited-income households with the installation of energy-saving measures in their homes with no out-of-pocket costs.[18] As of December 2024, 85,251 limited-income customers have participated in EmPOWER Maryland programs.[19] HB864 required that Department of Housing and Community Development (DHCD)[20] program goals be on a trajectory to reduce GHG emissions by 0.9 percent after 2027 relative to the 2016 baseline, for the period from 2025 to 2033.[21] The bill also required the establishment of a Moderate-Income Work Group to study and make recommendations on ways that EmPOWER can benefit moderate-income households, through coordination with the utilities and DHCD. As of June 2025, the Work Group concluded that additional data collection through upcoming program cycles will be needed to determine available opportunities for savings for moderate-income households through EmPOWER.[22]

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[13] Maryland PSC. *Order on Goal-Setting for Future EmPOWER Maryland Program Cycles*. March 20, 2023, psc.state.md.us/wp-content/uploads/Order-No.-90546-EmPOWER-Maryland-Goal-Setting-Order.pdf.
[14] Maryland PSC, Order No. 90957.
[15] Maryland PSC, Order No. 91175.
[16] Maryland PSC, Case No. 9705, Mail Log No. 310529.
[17] Eligible customers have a household income of less than the higher of 250% of the Federal Poverty Level or 80% of Area Median Income.
[18] Maryland Energy Administration. EmPOWER Maryland. energy.maryland.gov/pages/facts/empower.aspx.
[19] Maryland PSC. *The EmPOWER Maryland Energy Efficiency Act Standard Report of 2025 with Data for Compliance Year 2024*, p. 3, pscmaryland.com/wp-content/uploads/2025-EmPOWER-Maryland-Energy-Efficiency-Act-Standard-Report-Final.pdf.
[20] The Maryland Department of Housing and Community Development is the sole implementer of the residential limited-income programs of BGE, Potomac Edison, Pepco, Delmarva, SMECO and WGL.
[21] Energy Efficiency and Conservation Plans, Chapter 539, 2024, PUA §7–224 (A) and (B).
[22] Moderate Income Work Group Supplemental Report. Maryland PSC Case No. 9705. June 16, 2025.

EmPOWER Maryland Peak Demand Reduction Programs

The EmPOWER Maryland Act also required the utilities to implement demand response programs that promoted a decrease in electricity prices and/or electricity consumption at times of high wholesale market prices over time. The EmPOWER Maryland electric utilities, with the exception of PE, have implemented these types of programs to meet these goals in the form of direct load control and dynamic pricing programs. PE has not implemented a program due to lower zonal capacity prices that limit the cost-effectiveness of dynamic pricing or demand response initiatives.[23]

Concerning demand response programs, BGE implemented its Peak Rewards program, which is a voluntary program that cycles air conditioners for residential customers. Pepco and DPL are operating an Energy Wise Rewards program and SMECO is running SmartTemp.[24] Each offers residential and small commercial direct load control programs for air conditioner cycling. Each program offers various cycling levels, including 50 percent, 75 percent and 100 percent. At the end of 2024, the four demand response programs were capable of providing a demand reduction of 569 MW.[25] Annual bill credits ranged from $40 to $100 in 2024.[26]

The installation of Advanced Metering Infrastructure (AMI) meters allows utilities to implement a dynamic pricing program, which is used to lower summer peak demand. Dynamic pricing is a voluntary program for all customers with an AMI meter, regardless of whether they have central air conditioning. The day before an event, the utility will notify customers that the following day will be a dynamic pricing day. On the day of a dynamic pricing event, for each kWh that a customer reduces their usage from its baseline between the hours of 12:00 p.m. and 8:00 p.m., the customer will receive a bill credit of $1.25. BGE, Pepco and DPL are the only utilities that operate dynamic pricing programs. The annual dynamic pricing demand reductions, which fluctuate annually based on customer engagement, are summarized in Table 4.[27]

Table 4 Utility Dynamic Pricing Demand Reduction (MW)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
BGE	0	209	309	336	330	140	111	110	125	125	125	125
DPL	0	0	143	39	31	47	0	54	64	31	0	0
Pepco	309	125	47	126	135	124	91	55	140	140	0	0
Total	**309**	**334**	**499**	**501**	**496**	**311**	**202**	**219**	**329**	**296**	**125**	**125**

Source: Maryland Public Service Commission, The EmPOWER Maryland Energy Efficiency Act Standard Report of 2025 with Data for Compliance Year 2024, Table 13, https://psc.maryland.gov/wp-content/uploads/2025/12/2025-Net-Metering-Report-4.pdf EmPOWER Maryland Reductions

Through 2024, EmPOWER Maryland programs have reduced electricity consumption by 17,582,578 MWh and offset 3,589 MW in demand from the purchase and/or installation of 147.1

[23] Maryland PSC, *The EmPOWER Maryland Energy Efficiency Act Standard Report of 2025*, p. 13, *op. cit.*
[24] The SMECO CoolSentry demand response program was renamed "SmartTemp" effective January 1, 2024.
[25] Maryland PSC, *The EmPOWER Maryland Energy Efficiency Act Standard Report of 2025*, Table 12, *op. cit.*
[26] Ibid., Table 10.
[27] Ibid.

million energy-efficient measures.[28] Energy and demand reductions of the electric EmPOWER Maryland utilities to date are summarized in Table 5,[29] and the natural gas reductions from WGL's efficiency program to date are summarized in Table 6.

Table 5 EmPOWER Maryland Electric Program Results to Date

		Energy Reduction (MWh)			Demand Reduction (MW)		
		Goal/Forecast	Gross Reductions	Variance	Goal/Forecast	Gross Reductions	Variance
BGE	2009 - 2015	3,593,750	2,638,975	73%	1,267	1,156	91%
	2016 - 2017	1,149,791	1,335,350	116%	541	559	103%
	2018 - 2020*	1,430,944	2,448,950	171%	996	708	71%
	2021- 2022	1,464,201	1,574,068	108%	992	1,100	111%
	2023- 2024	1,410,963	1,481,224	105%	1,041	1,140	110%
	Total**	9,049,649	9,478,567	105%			
DPL	2009 - 2015	143,453	382,605	267%	18	147	815%
	2016 - 2017	213,471	202,421	95%	42	144	346%
	2018 - 2020*	289,222	309,014	107%	159	86	54%
	2021- 2022	202,726	210,679	104%	178	208	117%
	2023- 2024	187,643	180,412	96%	141	123	87%
	Total**	1,036,515	1,285,131	124%			
	2009 - 2015	415,228	529,519	128%	21	82	392%
	2016 - 2017	162,274	174,922	108%	24	35	147%

[28] Maryland PSC. 2024 Annual Report, pscmaryland.com/wp-content/uploads/2025/11/MD-PSC-2024-Annual-Report.pdf, p. 17.

[29] Note that 2009-2024 Gross Reductions in Table 3-17 of 15,255,549 MWh exclude savings from the Maryland Department of Housing and Community Development Limited Income Programs. Consequently, this value does not equal 17,582,578 MWh in the PSC 2024 Annual Report.

		Energy Reduction (MWh)			Demand Reduction (MW)		
		Goal/Forecast	Gross Reductions	Variance	Goal/Forecast	Gross Reductions	Variance
PE	2018 - 2020*	356,168	386,804	109%	48	55	115%
	2021-2022	306,878	277,918	91%	44	44	100%
	2023-2024	317,631	312,844	98%	55	54	98%
	Total**	1,558,179	1,682,007	108%			
Pepco	2009 - 2015	1,239,108	1,600,813	129%	672	640	95%
	2016 - 2017	686,546	786,428	115%	580	638	110%
	2018 - 2020*	1,168,129	1,296,587	111%	558	447	80%
	2021-2022	807,101	851,596	106%	796	919	115%
	2023-2024	721,013	634,163	88%	806	629	78%
	Total**	4,621,897	5,169,587	112%			
SMECO	2009 - 2015	83,870	242,347	289%	139	92	67%
	2016 - 2017	116,181	102,736	88%	28	17	62%
	2018 - 2020*	161,201	167,155	104%	87	73	84%
	2021-2022	122,410	143,660	117%	143	147	103%
	2023-2024	155,212	156,086	101%	247	103	42%
	Total**	638,874	811,984	127%			
Total	**2009 - 2015**	**5,475,409**	**5,394,259**	**99%**	**2,117**	**2,117**	**100%**
	2016 - 2017	**2,328,263**	**2,601,857**	**112%**	**1,215**	**1,393**	**115%**
	2018 - 2020*	**3,037,609**	**1,436,783**	**47%**	**1,848**	**1,369**	**74%**
	2021 - 2022	**2,903,316**	**3,057,921**	**105%**	**2,153**	**2,418**	**112%**

		Energy Reduction (MWh)			Demand Reduction (MW)		
		Goal/Forecast	Gross Reductions	Variance	Goal/Forecast	Gross Reductions	Variance
	2023-2024	2,792,462	2,764,729	99%	2,290	2,049	89%
	Total**	16,537,059	15,255,549	92%			

Source: Maryland Public Service Commission, The EmPOWER Maryland Energy Efficiency Act Standard Reports of 2024 and 2025, Tables 3-7

* Gross reductions exclude savings from MD Department of Housing and Community Development Limited Income Programs.

** Demand response savings are not additive.

Table 6 WGL Natural Gas Program Results to Date, Reduction in Therms

	Goal/Forecast	Gross Reductions	Variance
2022	2,692,852	2,069,732	77%
2023	2,445,402	2,424,699	99%
2024	1,640,019	2,415,947	147%
Total	6,778,273	6,910,378	102%

Source: Maryland Public Service Commission, The EmPOWER Maryland Energy Efficiency Act Standard Report of 2025, Table 8.

The EmPOWER Maryland utilities have collectively spent over $4.6 billion, including $3.2 billion on energy efficiency and conservation (EE&C) and $1.2 billion on demand response programs, since the beginning of the EmPOWER program. Projected savings from EmPOWER Maryland are $15.8 billion over the life of the installed measures for the EE&C programs. For all utilities, the lifecycle cost for EmPOWER Maryland programs in 2024 was $0.043 per kWh. By comparison, the cost of Standard Offer Service in 2024 ranged from $0.082 to $0.125 per kWh.[30] The average monthly residential bill impact for 2024, by utility, is provided in Table 7.

Table 7 Average Monthly Residential Bill Impact by Utility, 2024

	EE&C	Demand Response	Dynamic Pricing	Total
BGE	$5.69	$2.75	$0.55	**$8.99**
DPL	$6.31	$2.07	($0.16)	**$8.22**
PE	$6.82	N/A*	N/A*	**$6.82**
Pepco	$7.42	$4.09	($0.17)	**$11.34**
SMECO	$9.11	$2.34	N/A	**$11.45**

Source: Maryland Public Service Commission 2025 Annual Report for the Calendar Year Ending December 31, 2024, Table 1.

[30] Maryland PSC. The EmPOWER Maryland Energy Efficiency Act Standard Report of 2025, *op. cit.*

* Bill impact assumes average monthly usage of 1,000 kWh. "N/A" indicates that the utility does not offer that program.

Smart Grid and Cybersecurity

Smart grid proponents believe that electric infrastructure will evolve over the next few decades into a highly automated and interconnected network similar to the internet. The smart grid involves a network of two-way communications connecting electric meters and "smart" devices containing microprocessor or computer technology to transformers and centralized electric grid operations centers. This two-way communication enables grid operators to better respond to moment-to-moment variations in the electric system through real-time balancing of generation and electric delivery. The desire to make the grid smarter, safer, more reliable and more cost-effective is driving the growth of smart grid technologies in the U.S. The smart grid of the future will be largely automated and self-correcting, efficiently balancing the needs of energy suppliers and users, and largely self-balancing to ensure reliability in real-time.

Advanced Metering Infrastructure Initiatives

At the heart of a "smarter" electric grid lies the deployment of advanced technology at end-user locations. On the metering and communications front, these technologies are referred to as Advanced Metering Infrastructure (AMI). AMI has multiple benefits: utilities can "see" electrical outages based on clusters of unresponsive meters, costs for all parties are lowered as meters indicate (either directly or implicitly) the need for maintenance, and the meters themselves can be read remotely via wireless communications. However, the greatest potential benefit from AMI deployment comes from the new rate structures they enable. AMI provides the necessary technology for the dissemination of high-resolution (≤ 1 hour) prices to customers, who can then make decisions to curtail or defer electricity usage based on the prices and their personal preferences. These dynamic rates are expected to lower energy and capacity prices as customers shift energy use away from typical peaks to save money.

Of Maryland's five largest electric utilities, four (BGE, DPL, Pepco and SMECO) have completed the installation of AMI meters in their respective service territories. Each utility must defer incremental costs related to AMI in a regulatory asset until the AMI project is proven cost-effective. The PSC approved the recovery of AMI-related costs through base rates for each utility with the exception of SMECO.[31,32,33] In February 2017, the PSC denied SMECO's request to recover AMI costs, stating that SMECO can seek recovery once it has delivered a cost-effective AMI system.[34] As of the date of this report, PE has not filed plans to install AMI meters. For customers who wish to opt out of receiving the AMI meter, the PSC has established opt-out fees that vary by service territory. Refer to Table 8 for the number of meters installed and opt-out percentage data.[35]

[31] Maryland PSC, Case No. 9406, Order No. 87591. (November 6, 2015.)
[32] Maryland PSC, Case No. 9418, Order No. 87884. (November 15, 2016.)
[33] Maryland PSC, Case No. 9424, Order No. 88033. (February 15, 2017.)
[34] Maryland PSC, Order No. 88018, Case No. 9294, In the Matter of Southern Maryland Electric Cooperative, Inc.'s Advanced Metering Infrastructure Deployment (issued February 8, 2017).
[35] Maryland PSC, 2021 Annual Report, pscmaryland.com/wp-content/uploads/2021-MD-PSC-Annual-Report.pdf.

Table 8 Number of Meters Installed and Opt-out Percentage

Company	Number of Meters (Electric and Gas) Installed	Opt-Out Percentage
BGE	2.1 million	2.5%
Pepco	560,851	0.22%
DPL	211,115	0.4%
SMECO	178,285*	0.2%

Source: Maryland PSC, 2021 Annual Report, https://psc.maryland.gov/wp-content/uploads/2025/11/2021-MD-PSC-Annual-Report.pdf

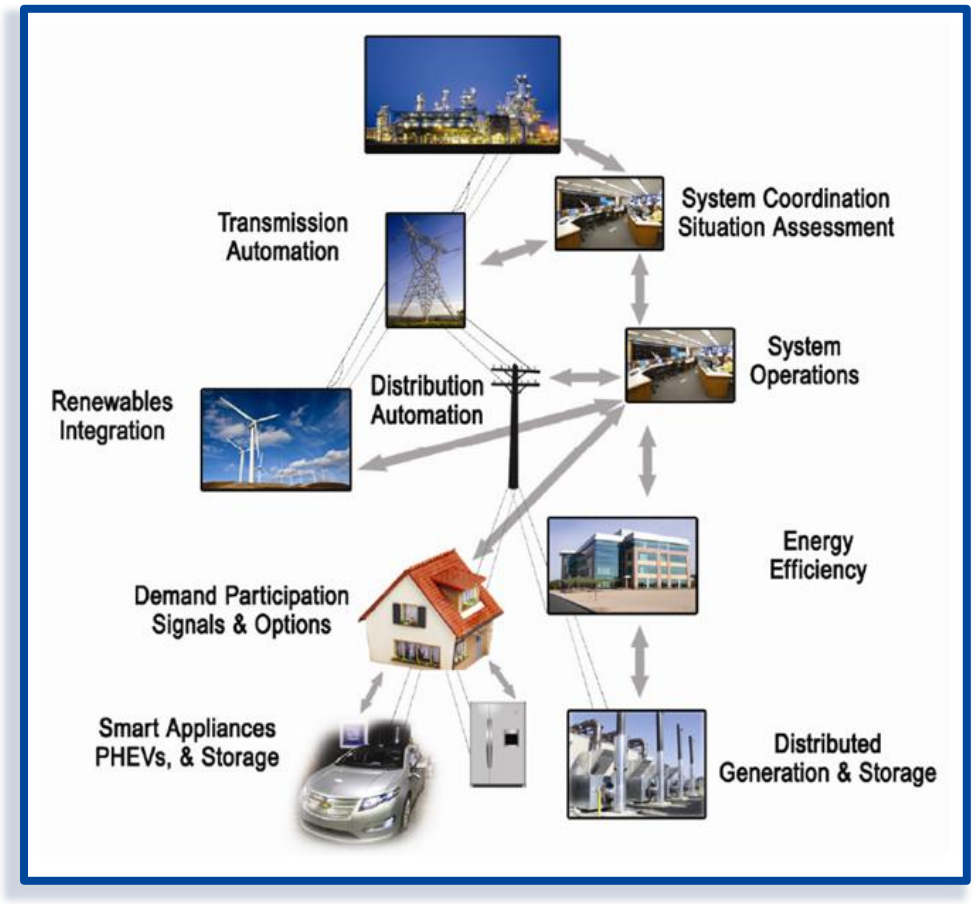
*Source: SMECO Annual Report 2024: https://www.smeco.coop/about/annual-reports/

Smart Grid Integration

"AMI" and "smart grid" are terms often used synonymously. However, while AMI is a necessary precondition for the realization of full smart grid benefits, the concept of a smart grid extends far beyond remote and dynamic meter communications. A smart grid integrates advanced technologies and communication with consumer-based resources, distribution companies and transmission systems (see Figure 1). Improved integration of these traditional elements of the electrical system may one day serve to reduce utility and power plant operations and maintenance and capital costs by improving load factors, lowering system losses and improving outage management performance.

On the consumer side, the smart grid will provide information, control and options that enable consumers to engage in new energy markets and allow for better home energy management. For example, intelligent control systems reading temperatures, weather forecasts and real-time power system statistics, coupled with a high degree of automation for end-user electrical control (e.g., price-responsive thermostats, water heaters and lighting) can dynamically match customer price points with electrical system needs.

Figure 1 Smart Grid Integration



Source: DOE 2010 Smart Grid System Report, February 2021

Cybersecurity

The increasingly digital and interconnected nature of the nation's electrical grid exposes these crucial systems to the threat of infiltration and attack. Addressing cybersecurity is critical to enhancing the security and reliability of the nation's electric grid. A resilient electric grid is a complex and critical component of the nation's infrastructure that is required in order to deliver essential services.

For the past several decades, a significant portion of generation dispatch has become automated or been outfitted for remote control using Supervisory Control and Data Acquisition (SCADA) systems. Through the SCADA infrastructure, system operators communicate instructions from a central control facility to the generating units via automated generator control (AGC). Owing to this level of automation, the grid has always faced some threats from cyberattacks. In particular, the protection of nuclear plants and large hydroelectric dams, and the potential large-scale consequences of their sabotage, has always been one of the cornerstones of generating system infrastructure protection. However, the extension of grid intelligence beyond SCADA and AGC to the more robust network and ultimately more distributed smart grid increases these risks.

In recent years, several presidential administrations have taken steps to strengthen federal cybersecurity policy for critical infrastructure, including the electric grid. Key actions include:

- *2013 – Executive Order 13636, Improving Critical Infrastructure Cybersecurity*. Issued in response to failed attempts at passing federal cybersecurity legislation in Congress, the order encouraged information sharing between the federal government and private industry and established voluntary cybersecurity standards for critical infrastructure.

- *2015 – Executive Order 13691, Promoting Private Sector Cybersecurity Information Sharing*. This order sought to improve coordination between private companies and the federal government when responding to cybersecurity threats.

- *2016 – Cybersecurity National Action Plan (CNAP)*. President Obama directed the implementation of CNAP to enhance cybersecurity awareness and protection through a combination of near-term actions and long-term strategic initiatives.

- *2018 – Cybersecurity and Infrastructure Security Agency (CISA) Act*. The CISA was established upon the signing of this Act by President Trump.[36] A component of the U.S. Department of Homeland Security, the agency utilizes resources in the public and private sectors to assist in defending against cyberattacks and provide the federal government with the tools necessary to ensure "secure and resilient infrastructure for the American people."[37] CISA includes the National Cybersecurity and Communications Integration Center (NCCIC), which shares cyber and communications information with the cybersecurity community to assist in building awareness and understanding on how to mitigate cyber threats and vulnerabilities.

- *2021 – Executive Order 14028, Improving the Nation's Cybersecurity*. Issued on May 12, 2021, the order directed multiple federal agencies, including the National Institute of Standards and Technology (NIST), to enhance cybersecurity through initiatives related to software supply chain security. The order directed NIST to solicit input from stakeholders and to identify or develop standards, tools, best practices and guidelines to evaluate software security, assess developer and supplier security practices, and support secure software procurement, as well as to develop cybersecurity labeling criteria for consumer Internet of Things devices and consumer software.

Over the last several years, the Federal Energy Regulatory Commission (FERC) has adopted cybersecurity standards under Critical Infrastructure Protection (CIP) standards. In early 2016, FERC Order No. 822 revised seven of the North American Electric Reliability Corporation's (NERC's) CIP standards. In addition, the order requires NERC to develop modifications to (1) protect transient electronic devices used at low-impact Bulk Electric System (BES) cyber systems; (2) protect communication network components between control centers; and (3) refine the definition of low-impact external routable connectivity. In July 2016, FERC issued Order No. 829, which directed NERC to develop a new or modified reliability standard that addressed supply chain risk management for BES operations. FERC Order No. 843, released in April 2018,

[36] U.S. House of Representatives, H.R. 3359.
[37] Cybersecurity & Infrastructure Agency. dhs.gov/cisa/about-cisa.

adopted NERC's proposed reliability standard related to these matters, with one exception—a directive regarding controls for low-impact BES cyber systems. In its denial of this directive, FERC directed NERC to complete a study within 18 months to assess whether the proposed directive provides adequate security.

On July 21, 2016, FERC issued a Notice of Inquiry (Notice) to address potential modifications to the CIP reliability standards as a result of lessons learned from the 2015 cyberattack on an electric grid in Ukraine. The Notice (1) sought comments on whether there should be a separation between the internet and the BES control systems in control centers that perform transmission operator functions; and (2) required computer administration practices that prevent unauthorized programs from running. In response to its Notice, FERC received 18 comments opposing modifications to CIP reliability standards. As a result, FERC terminated the proceeding, citing that the CIP reliability standards allow flexibility with implementing security controls.

In June 2019, FERC expanded the reporting requirements for cybersecurity incidents under the CIP reliability standards. Under the adopted standard, cybersecurity incidents and attempts to disrupt or the disruption of BES cyber systems require initiation of a response plan and a subsequent report on the incident. Incident reports will be sent to the NCCIC and the Electricity Information Sharing and Analysis Center at NERC.

In 2020, FERC approved changes to three CIP NERC reliability standards in order to broaden the scope of assets subject to supply chain cybersecurity requirements and obligations. These changes included electronic access control and monitoring systems that are connected with, and provide access to, BES assets. The revisions affect CIP-013-2, Cyber Security – Supply Chain Risk Management; CIP-005-7, Cyber Security – Electronic Security Perimeter(s); and CIP-010-4, Cyber Security – Configuration Change Management and Vulnerability. Entities registered with NERC and subject to the reliability standards will need to change their planning procedures to comply with the updated reliability standards, notably in regard to engineering design and procurement of BES Cyber Systems, Electronic Access Control or Monitoring Systems (EACMS), Physical Access Control Systems (PACS) and Protected Cyber Assets (PCA). It is expected that, since vendors and suppliers of these devices are not focused on the energy industry, this will be the first time they address NERC standards, and as a result, the new requirements may pose a significant challenge.

In December 2020, FERC issued a draft notice of a proposed rulemaking that would allow utilities to request incentive rates for cybersecurity investments that exceed those required under the CIP reliability standards. Two different approaches are under consideration:

- The NERC CIP Incentives Approach would allow a 200-basis points adder to a utility's return on equity for eligible cybersecurity capital investments if a utility voluntarily applies higher-level CIP requirements than required for their BES size (i.e., a medium- or high-impact BES cyber system to a low-impact BES).

- Utilities could request deferred cost recovery for incurred costs to implement security controls in the National Institute of Technology's Cybersecurity Framework.

In addition to these legislative and regulatory activities, most observers recognize that grid operators and equipment manufacturers play a pivotal role in making systems less vulnerable by adopting good security practices and building security into their products and systems. This topic will continue to be relevant to electricity reliability in Maryland and nationwide as smart grid technology is adopted throughout the nation.

Federal cybersecurity policy has continued to evolve as grid intelligence has expanded beyond centralized control systems to include electric distribution networks and distributed energy resources (DERs). In 2024-2025, the U.S. Department of Energy, in coordination with state regulators, issued Cybersecurity Baselines for Electric Distribution Systems and DERs standards, providing voluntary baseline cybersecurity guidance intended to support risk mitigation for distribution systems and DERs, which fall outside the scope of mandatory NERC CIP reliability standards.[38,39,40] In September 2025, FERC issued a final rule pursuant to Section 215(d)(5) of the Federal Power Act, directing NERC to develop new or modified CIP Reliability Standards addressing cybersecurity supply chain risk management gaps. The final rule requires NERC to (1) submit revised standards within 18 months that address the sufficiency of responsible entities' supply chain risk management plans for identifying and responding to cybersecurity risks; and (2) extend the applicability of such standards to protected cyber assets. While largely adopting the September 2024 Notice of Proposed Rulemaking,[41] FERC declined to require mandatory validation of vendor-provided data, instead encouraging entities to adopt this practice voluntarily, and emphasized that the revisions are intended to address increasing cybersecurity threats to the BES posed by global supply chains.[42]

The PSC recognized the risks associated with AMI meters, stating that "as our distribution systems become more automated, and private customer data is increasingly being used in electronic format, we are keenly aware of the risks and rewards related to smart meter infrastructure build-out in Maryland."[43] The PSC approved the Cybersecurity Plans of BGE, DPL and Pepco filed in October 2012. SMECO filed a proposed Smart Grid Cyber Security Plan on January 23, 2017, which the PSC approved on February 24, 2017.[44] In addition, the PSC approved a Cybersecurity Reporting Plan,[45] which establishes the protocols for reporting

[38] U.S. Department of Energy, Office of Cybersecurity, Energy Security, and Emergency Response (CESER) and the National Association of Regulatory Utility Commissioners (NARUC). "Cybersecurity Baselines for Electric Distribution Systems and Distributed Energy Resources and Guidance. 2024. energy.gov/ceser/cybersecurity-baselines-electric-distribution-systems-and-der-and-guidance.

[39] U.S. Department of Energy, Office of Cybersecurity, Energy Security, and Emergency Response, *Cybersecurity Baselines for Electric Distribution Systems and DER: Interim Implementation Guidance: Scope and Prioritization of the Baselines*. January 2025. energy.gov/sites/default/files/2025-01/Cybersecurity%20Baselines%20for%20Electric%20Distribution%20System%20Interim%20Implementation%20Guidance.pdf.

[40] National Association of Regulatory Utility Commissioners (NARUC), Cybersecurity Baselines for Utilities and DERs. naruc.org/core-sectors/critical-infrastructure-and-cybersecurity/cybersecurity-for-utility-regulators/cybersecurity-baselines/.

[41] Supply Chain Risk Mgmt. Reliability Standards, Notice of Proposed Rulemaking, 89 FR 79794 (Oct. 1, 2024), 188 FERC ¶ 61,174, at PP 12-19 (2024) (NOPR).

[42] Federal Energy Regulatory Commission, Order No. 912 (September 23, 2025)

[43] Maryland PSC, Order No. 89015.

[44] Maryland PSC, Order No. 88827, psc.state.md.us/wp-content/uploads/Order-No.-88827-Case-No.-9492-Cybersecurity-Reporting.pdf.

[45] Maryland PSC, Order No. 85680.

incidents and providing annual updates to the PSC and other parties, such as the governor's office and the Maryland Energy Administration (MEA).

In 2018, the PSC issued a Notice of Initiating a Proceeding and Request for Comments on the Final Report of the Cyber-Security Reporting Workgroup, a document that provided recommendations regarding "(i) cyber-security definitions, (ii) Maryland utilities periodic cyber-security reporting applicability, (iii) cyber-security reporting agenda, (iv) cyber-security reporting certification, (v) cyber-security briefing parties, (vi) cyber-security report briefing frequency, (vii) cyber-security breach reporting, and (viii) cyber-security briefing information handling protocols."[46] In Order No. 89015 issued in February 2019, the PSC adopted the final report's recommendations, including:

- Expanding the definition of information technology systems to include "hardware and software related to electronic processing, and storage, retrieval, transmission; and manipulation of data";
- Establishing triennial reporting requirements beginning in 2019 for utilities with more than 300,000 customers; and
- Requiring all utilities to report cybersecurity breaches.

In 2023, the Maryland General Assembly enacted HB 969, the Critical Infrastructure Cybersecurity Act of 2023, requiring the PSC to hire dedicated cybersecurity staff, establish and oversee cybersecurity standards for regulated utilities, and mandate biennial third-party cybersecurity assessments and incident reporting. The bill also requires the PSC to report compliance findings and recommendations to the State Chief Information Security Officer beginning January 1, 2025, and authorizes the use of Dedicated Purpose Account funds to strengthen statewide cybersecurity capacity. The law took effect July 1, 2023.[47,48] The Commission established an Office of Cybersecurity to oversee the cybersecurity practices of public service companies, implement the Act's requirements, and advise the Commission on cybersecurity matters, among other responsibilities.[49]

In December 2024, the PSC adopted amendments to COMAR 20.06.01 and 20.06.02 that codified cybersecurity reporting requirements previously established by Commission order, and added new compliance and enforcement provisions applicable to regulated utilities.[50]

[46] Maryland PSC, Order No. 89015.
[47] Maryland PSC, "Cybersecurity Incident Reporting for Maryland Public Service Companies." (Revision 10, July 11, 2025), pscmaryland.com/wp-content/uploads/Cybersecurity-Incident-Reporting_July-2025.pdf
[48] Department of Legislative Services, Maryland General Assembly, Fiscal and Policy Note for House Bill 969 (2023 Session): Public Service Commission – Cybersecurity Staffing and Assessments (Critical Infrastructure Cybersecurity Act of 2023), mgaleg.maryland.gov/2023RS/fnotes/bil_0009/hb0969.pdf.
[49] Maryland PSC. *Report on Cybersecurity Protections for Utilities* (submitted to the Maryland General Assembly, July 1, 2024). pscmaryland.com/wp-content/uploads/2025/11/Maryland-PSC-Cybersecurity-MGA-Report.pdf.
[50] Maryland PSC, Cybersecurity Regulations, COMAR 20.06.01 and COMAR 20.06.02.