PUBLIC SERVICE COMMISSION OF MARYLAND

Report on the Status of Net Energy Metering In the State of Maryland

Prepared for the General Assembly of Maryland Under Public Utilities Article §7-306(h)

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I. Executive Summary

This report is prepared by the Public Service Commission of Maryland ("Commission") in compliance with Public Utilities Article ("PUA") § 7-306(h), *Annotated Code of Maryland*. PUA § 7-306(h) requires the Commission to report on the status of Maryland's net metering program, including the amount of capacity by type of energy resource from net-metered facilities in the State and to recommend whether the cap on eligible capacity should be altered. This is the twelfth report prepared by the Commission. The initial report was produced in 2008.

Although there has been an increase in the number of recent installations of netmetered facilities, the current level of installed capacity, approximately 846 megawatts ("MW"),¹ is just over half of the eligible State cap of 1,500 MW. At this time, the Commission is not recommending changes to the eligibility cap for net metering. If current rates of installation continue, the current statewide cap may be reached in 2024 or 2025.²

The Commission recommends the General Assembly begin to explore expanding the current net metering cap or alternative replacement policies. With three to four years remaining before the State reaches its current net metering cap, it may be prudent to examine best practices from the State's program along with those offered across the country while there is sufficient time to carry out a thorough review. As of June 2020, 40 states and the District of Columbia had mandatory net metering rules.³

In 2015, the Commission held a technical conference, docketed as Public Conference 40 ("PC40")⁴ to address distributed generation issues, including community solar adaptation, which had recently been adopted by legislation in Maryland. In 2016, the Commission initiated Public Conference 44 ("PC44") to explore issues related to grid modernization and distributed

¹ Installed capacity as of June 30, 2020. This includes 823 MW installed Net Metering Capacity and 23 MW Installed Community Solar Capacity.

² See page 8 for details on this estimate.

³ North Carolina Clean Energy Technology Center, https://s3.amazonaws.com/ncsolarcen-prod/wp-content/uploads/2020/06/DSIRE_Net_Metering_June2020.pdf, Accessed 11/10/2020.

⁴ In the Matter of the Investigation into the Technical and Financial Barriers to the Deployment of Small Distributed Energy Resources. Public Conference 40.

resources.⁵ During 2016, the Commission reconvened the Maryland Net Metering Working Group ("MNMWG") to implement a Community Solar Program ("Program") in response to the legislative requirements of House Bill 1087 ("HB1087") of the 2015 Session.⁶ After a Commission Rulemaking, Subtitle 62 of Title 20 of the Code of Maryland Regulations ("COMAR"), which governs the Community Solar Energy Generating Systems ("CSEGS") Pilot Program ("Pilot") and provides a framework for the Pilot, was adopted in July 2016. The Commission directed the MNMWG to work collaboratively to develop utility tariffs to implement the regulations. In its February 15, 2017 Letter Order, the Commission directed Maryland's investor-owned utilities to file compliance tariffs to implement the Pilot and directed its Technical Staff to prepare forms to authorize Subscriber Organizations that would build and operate the CSEGS. This was accomplished in April through June of 2017. Approximately 25 megawatts of CSEGS are operating in Maryland as of June 2020. In 2019, the Maryland General Assembly amended PUA § 7-306.2 to extend and expand the Pilot. In 2020, through Rulemaking 56, the Commission approved revisions to COMAR 20.62.02 to implement the extension and expansion of the Pilot.

II. Net Metering in Maryland

By using a single meter to capture both usage and generation, net metering is a method of simplifying the measurement of energy produced by a renewable energy generator when it is connected to an electric utility distribution system. Net energy metering generally utilizes the existing meter for all calculations, thereby avoiding the expense of a second meter to measure incoming and outgoing energy separately. Net metering is permitted by law for solar, wind, biomass, micro combined heat and power, fuel cell, and closed conduit hydroelectric generators that are intended primarily to supply a customer's annual energy usage. The term "net metering" refers to the measurement of electricity on the basis that is the net of energy

⁵ In The Matter of Transforming Maryland's Electric Distribution Systems to Ensure that Electric Service Is Customer-Centered, Affordable, Reliable and Environmentally Sustainable in Maryland. Public Conference 44. ⁶ See PUA §7-306.2.

used and produced by an eligible customer-generator during a single billing period, *e.g.*, one month.

As discussed further below, the terms of utility tariffs require a customer to pay the monthly customer charge, regardless of the amount of energy produced. However, for energy billed, the customer pays only for energy that is used, netted against any generation produced by the customer. The practical effect of this policy is to allow customers to use the utility grid as if it were battery storage, so that excess energy produced at any given instant could be stored for later use. The law also provides for monetary payment for net excess generation when the customer terminates service or at the end of the net metering year.⁷ The dollar value of net excess generation is equal to the generation or commodity portion of the rate that the eligible customer-generator would have been charged by the electric company averaged over the previous 12-month period multiplied by the number of kilowatt hours of net excess generation credit payouts by rate class for each of the utilities operating in Maryland. As Table 1 indicates, approximately \$3,367,088 of excess generation credits was paid to customers in the 12-month period ending April 30, 2020.

⁷ PUA § 7-306(f)(6) states:

⁽i) On or before 30 days after the billing cycle that is complete immediately prior to the end of April of each year, the electric company shall pay each eligible customer-generator for the dollar value of any accrued net excess generation remaining at the end of the previous 12-month period ending with the billing cycle that is complete immediately prior to the end of April[;]

⁽ii) Within 15 days after the date the eligible customer-generator closes the eligible customer-generator's account, the electric company shall pay the eligible customer-generator for the dollar value of any accrued net excess generation remaining at the time the eligible customer-generator closes the account.

See also PUA § 7-306(f)(7) for certain provisions applicable to electric cooperatives of a certain size.

Electric Utility	Residential	Commercial			
Baltimore Gas and Electric Company ("BGE")	\$ 831,649	\$ 710,412			
Choptank Electric Cooperative	\$ 99,155	\$ 72 <i>,</i> 654			
Delmarva Power and Light Company ("Delmarva")	\$ 142,240	\$ 407,244			
Easton Utilities Commission	\$ 620	\$ 8 <i>,</i> 857			
Hagerstown Municipal Electric Light Plant	\$ 0.24	\$ -			
Thurmont Municipal Light Company	\$ -	\$ -			
Mayor and Council of Berlin	\$ 756	\$ 931			
The Potomac Electric Power Company ("Pepco")	\$ 635 <i>,</i> 766	\$ 62,481			
Potomac Edison Company ("PE")	\$ 139,857	\$ 159,984			
Williamsport Municipal Light Plant	\$ -	\$ -			
Southern Maryland Electric Cooperative, Inc.	\$ 83 <i>,</i> 036	\$ 11,445			
State Total ⁸	\$ 1,933,079	\$ 1,434,009			

Table 1 Excess Generation Credit Payouts to Residential and Commercial Customers for the12-Month Period Ending April 30, 2020

Eligible customer-generators⁹ also may benefit from less costly interconnection with the utility, *e.g.*, only a single standard meter and without additional switches. The ease of interconnection allows the customer to use the renewable generator in a grid-connected manner without significant additional installation or operating expense. For larger commercial customers, interconnection sometimes requires a more expensive installation, because tariffs typically recover distribution improvement costs from the customer.

Utilities implement the net energy metering operations authorized in PUA § 7-306 through tariffs that are filed with the Commission. These tariffs place terms and conditions on net energy metering operations. These tariffs also include eligibility requirements that cap the maximum installed size, as well as the statewide limit. Any statutory change requires each utility to revise its tariff and file the revision with the Commission.

⁸ Values may not sum to total due to rounding.

⁹ "Eligible customer-generator" means a customer that owns and operates, leases and operates, or contracts with a third party that owns and operates a biomass, micro combined heat and power, solar, fuel cell, wind, or closed conduit hydroelectric generating facility that: (i) is located on the customer's premises or contiguous property; (ii) is interconnected and operated in parallel with an electric company's transmission and distribution facilities; and (iii) is intended primarily to offset all or part of the customer's own electricity requirements. *See* PUA §7-306(a)(4).

III. Eligibility Cap

Electric companies are required to permit net metering for eligible customers. The current aggregate limit on eligible renewable generation capacity in the State is 1,500 MW. This limit represents approximately 10 percent of the peak demand, which in 2014 was on the order of 15,000 MW in the State.¹⁰ The capacity is set at 1,500 MW based on PUA § 7-306(d). The generating capacity of an electric generating system used by an eligible customer-generator for net metering may not exceed 2 MW.¹¹

IV. Current Level of Renewable Deployment

The Commission Staff surveyed Maryland electric companies for the number of netmetered facilities currently operating in each electric company's distribution service territory. The total amount of generation has increased from approximately 364 kW in 2007 to 822,792 kW through the end of June 2020. Table 2 below shows the results of the Commission Staff's survey of net-metered installations through June 30, 2020, as compared with net-metered installations from the previously reported 12-month period ending June 30, 2019, shown in Table 3. In the 12 months since June 30, 2019, net metering capacity has increased by 68,566 kW, representing a 9 percent increase from the previously reported capacity.¹²

¹⁰ Ten-Year Plan (2019-2028) of Electric Companies in Maryland, issued January 2020, Appendix Table 3(a)(i), page 33.

¹¹ PUA §7-306(g)(1).

¹² In the process of reviewing data provided by the utilities, Commission Staff discovered data issues that affected reported 2020 data. One utility included a biomass entry in previous years that has been re-evaluated and determined to be natural gas and, therefore, ineligible for net metering; this system has been removed from the 2020 data.

Electric Utility	Solar	Wind	Biomass	Utility Total	YOY % Change	kW Change		
Kilowatts of Installed Capacity								
Baltimore Gas and Electric Company	309,180	84	0	309,264	7%	20,247		
Choptank Electric Cooperative	26,058	373	30	26,461	7%	1,649		
Delmarva Power and Light Company	98,815	889	0	99,704	10%	8,708		
Easton Utilities Commission	2,648	0	0	2,648	1.5%	39		
Hagerstown Municipal Electric Light Plant	194	0	0	194	0%	0		
Thurmont Municipal Light Company	155	0	0	155	24%	30		
Mayor and Council of Berlin	395	0	0	395	-1%	-2		
Potomac Electric Power Company	239,637	78	0	239,715	13%	27,206		
The Potomac Edison Company	83,416	7	256	83,679	8%	5,946		
Williamsport Municipal Light Plant	28	0	0	28	0%	0		
Southern Maryland Electric Cooperative, Inc.	60,193	36	320	60,549	8%	4,743		
State Total	820,719	1,467	606	822,792	9%	68,565		

Table 2 Net Metering Capacity as of June 30, 2020

Electric Utility	Solar	Wind	Biomass	Utility Total	YOY % Change	YOY kW Change		
	Kilowatts of Installed Capacity							
Baltimore Gas and Electric Company	288,953	64	0	289,017	10%	25,308		
Choptank Electric Cooperative	24,414	368	30	24,812	21%	4,300		
Delmarva Power and Light Company	90,107	889	0	90,996	18%	13,652		
Easton Utilities Commission	2,609	0	0	2,609	0.02%	6		
Hagerstown Municipal Electric Light Plant	194	0	0	194	6%	11		
Thurmont Municipal Light Company	125	0	0	125	20%	21		
Mayor and Council of Berlin	397	0	0	397	11%	38		
Potomac Electric Power Company	209,903	71	2,535	212,509	18%	32,117		
Potomac Edison Company	77,470	7	256	77,733	5%	3,970		
Williamsport Municipal Light Plant	28	0	0	28	0	0		
Southern Maryland Electric Cooperative, Inc.	55,450	36	320	55,806	10%	4,967		
State Total	749,650	1,435	3,141	754,226	13%	84,390		

Table 3 Net Metering Capacity as of June 30, 2019

The amount of installed capacity has increased each year since the inception of Maryland's net metering program. The table below shows the installed capacity and the growth rates for the four periods from 2017 through 2020. Capacity grew steadily through 2017, when net capacity installed grew 48 percent; for 2018, the capacity growth fell to 17 percent; and for 2019, growth slowed further at 13 percent. In 2020, growth was 9 percent relative to 2019 reported capacity.

Year end	kW	kW Change	Percent Change
June 30, 2020	822,792	68,566	9%
June 30, 2019	754,226	84,390	13%
June 30, 2018	669,836	94,990	17%
June 30, 2017	574,846	187,335	48%

Table 4 Net Metering Capacity Growth for the Previous Three Years

V. Recommendation on Eligibility Cap

As of June 30, 2020, the level of installed capacity is 56 percent of the current limit. Commission Staff projected future installed net metering capacity based on the average net metering capacity growth for the past two years and assumed that all potential Community Solar capacity (see Table 6) is installed with a 1-year lag after acceptance.¹³ Based on this projection methodology, the 1,500 MW limit would not be approached until 2024 or 2025. This projection does not include any additional capacity that may be added to the Community Solar Program due to changes in legislation or regulations. While the Commission does not view the 1,500 MW limit as a barrier to installation of new renewable generation, the Commission believes it may be prudent to begin exploring the next phase for net metering in Maryland.

Many states implement a similar net metering structure to Maryland. There are also other options available for the General Assembly's consideration. Some of these options include value of solar tariffs, feed-in tariffs, and net billing. Different rate designs can also be used to potentially replace net-metering or used to complement net metering policies. If properly designed, time-of-use rates can be used to replace net metering. Certain aspects of a customer's utility bill such as fixed and demand charges can be set differently to better recover the costs for net metering customers. While the Commission does not recommend a specific policy at this time, the Commission recommends the General Assembly examine alternative

¹³ In its analysis, Commission Staff assumed a 1-year lag for installation of Community Solar projects after acceptance into the program. However, preliminary results indicate that the lag time is longer than one year. Utilizing a 2-year lag leads to similar results.

options in comparison with traditional net metering policies to determine the best solutions available for the State as the installed capacity approaches the net metering cap.

VI. Net Metering Regulations COMAR 20.50.10

COMAR 20.50.10 promotes the deployment of net-metered facilities and simplifies the requirements for customer interconnection. The regulations address the allowed size for net metering eligibility as a multiple of customer load and establish aggregate net metering for agricultural, municipal, and non-profit customers.

Eligible Customer Size. Under the regulations, a customer may participate in net metering using facilities that are sized to produce up to 200 percent of a customer's annual baseline kWh use.

Aggregate Net Metering. Aggregation of net-metered loads is the practice of combining meter readings from more than one utility service point. Utilities can provide this service by using physical interconnection of service points or by summing the total usage from two or more meters (virtual aggregation). Only certain types of customers are permitted to use this service. Agricultural, municipal (including county governments), and nonprofit entities (*e.g.* churches or schools) are permitted to aggregate net-metered loads under the regulations. The practice of aggregation may provide increased incentives for system deployment by providing greater economies of scale for installations and allowing a customer to make the most efficient use of existing solar or wind resources. An example of an agricultural application of aggregate net metering would consist of combining the load on a farm's barn, outbuildings, and residence. A solar array may be installed on a barn which would normally have excellent sun exposure, although it would use little electric power. Joining the load of the residence (which may have less roof area or be in a shady location) and outbuildings to the load of the barn would make the installation more practical and cost-effective for the customer.

By acceptance of utility tariffs, the Commission has implemented a Net Metering Aggregation Program. Current net metering tariffs implement COMAR 20.50.10.07 and .08 by requiring utilities to provide aggregate net metering to more than one meter for certain types of customers. The Net Metering Aggregation Program began with a pilot whose temporary restrictions ended in 2012. Thereafter, the Net Metering Aggregation Program was implemented without the pilot restrictions and made open to all eligible customers. Table 5 below shows the number of pending projects including projects under construction¹⁴ and projects completed for the Net Metering Aggregation Program reported by utilities as of June 30, 2020. The number of projects has increased from 21 in 2013 to 207¹⁵ in 2020 while the number of applications has fluctuated from year to year.

Table 5 Projects Completed and Pending Applications (Including Projects Under Construction)for Net Metering Aggregation Program as of June 30, 2020

Electric Utility	Pending Applications and Projects under Construction	Projects Completed
Baltimore Gas and Electric Company	14	65
Choptank Electric Cooperative, Inc.	10	7
Delmarva Power & Light Company	11	56
Easton Utilities Commission	0	0
Hagerstown Municipal Electric Light Plant	0	0
Thurmont Municipal Light Company	0	0
Mayor and Council of Berlin	0	0
The Potomac Electric Power Company	4	12
The Potomac Edison Company	4	51
Williamsport Municipal Light Plant	0	0
Southern Maryland Electric Cooperative,	0	16
Inc.	0	10
State Total	43	207

By Letter Order, dated August 13, 2014, the Commission clarified its interpretation of COMAR 20.50.10 regarding the applicability of aggregate net metering within PE service

¹⁴ Projects under construction have started but not completed installation and are not providing kWh credits to the aggregated accounts.

¹⁵ Operating Projects.

territory. The Commission ruled that county governments in PE's service territory were eligible customers for aggregate net metering.

VII. Community Solar Energy Generating Systems

During the 2015 Legislative Session, the General Assembly passed House Bill 1087 and its Senate Bill counterpart, SB398, requiring the Commission to develop a Pilot Program ("Pilot") and report on a new type of net-metering, Community Solar Energy Generating Systems ("CSEGS"). HB1087/SB398 was signed into law in May 2015 and is codified at PUA §7-306.2. The law directed the Commission to establish a three-year pilot program and to report to the legislature on the results by 2019. During the 2019 Legislative Session, PUA § 7-306.2 was amended to extend the Pilot through July 1, 2022, with capacity increasing annually.¹⁶ The limit on subscribers allowed for a given CSEGS was deleted and the date for the Commission to file a Report on the Pilot was extended to July 1, 2022. Revised Regulations are currently being developed; one set of regulations has already been adopted to address the revised legislation. Previous regulatory developments are described below.

The Maryland Net Metering Working Group, a Staff-facilitated stakeholder group, was reconvened in July 2015 to develop a program design to implement the CSEGS legislation. Following development of the program parameters, the Commission established a rulemaking process to codify the program.¹⁷ Community Solar regulations were adopted as final in July 2016, and participating utilities filed implementation tariffs in September of 2016. Throughout the second half of 2016, the MNMWG worked to revise the utility-proposed CSEGS tariffs to implement the new regulations. On February 15, 2017, the Commission issued a Letter Order to each of the investor-owned utilities directing the Companies to file revised tariffs and finalize program details. In addition, the Staff and the MNMWG were directed to finalize application materials and report on program details applicable to the Pilot Program Study Plan. Through the second year of the Pilot, 154.2 MWs of capacity was offered under the 1,500 MW net

¹⁶ HB683/SB520.

¹⁷ RM56, Revisions to COMAR 20.62 - Community Solar Energy Generation Systems.

metering cap. The Pilot's capacity may be installed over a seven-year period with annual capacity allotments increasing over time. The program capacity includes categories for low-and moderate-income customers; as well as small systems, rooftop systems, and installations on buildings and parking facilities. Implementation of the Pilot began in the second quarter of 2017 following approval of Pilot participants.

In 2020, the RM56 rulemaking accepted changes to COMAR 20.62.02, which increased the statewide capacity to 3.25 percent of the 2015 Maryland peak demand in the fourth year (2021), and outlined further increases for years 5, 6, and 7 to implement the extension and expansion of the Pilot. The revised regulations also removed the 350 account limit on the number of accounts that a subscriber organization may subscribe to for a given CSEGS. Eligible participants may continue to operate CSEGS facilities under the program rules for 25 years. Table 6 shows the incremental authorized CSEGS capacity. As of the writing of this report in 2020, there have been 140 MW of accepted Community Solar projects (Table 7). Most projects are currently being constructed. As stated, the Community Solar program is being rolled out over a seven-year period with annual capacity allotments. Currently, as seen in Table 7, no utility has accepted projects for all offered capacity, but most of the offered capacity has been reserved.

Year 1	Year 2	Year 3	Year 4*	Year 5*	Year 6*	Year 7*	Total*	
77.1	77.1	38.5	49.8	53.0	59.4	65.8	420.6	
* Estimated capacities for BGE, PE, and Pepco are based off of proposed changes to Community								
Solar Tariffs. Final capacity will be known when utilities file tariffs								

Table 6 Incremental Authorized Community Solar Capacity Per Year (MW)

Electric Utility	Offered MW ¹⁸	Accepted MW	Operating MW			
Baltimore Gas and Electric Company	100.70	72.64	8.68			
Delmarva Power and Light Company	16.50	13.68	3.98			
Potomac Electric Power Company	50.00	30.52	7.83			
The Potomac Edison Company	25.44	23.08	2.08			
State Total	192.64	139.92	22.57			

Table 7 Community Solar Capacity Years 1-3

As shown in Table 8, the electric companies credited a total of 25,320,111 kWh to CSEGS subscribers (customers) over the 12-month period and 25,750,482 kWh over the life of the program.

	12-Month Period	Lifetime Amount						
Baltimore Gas and Electric Company								
kWh Credited	6,795,850	6,812,568						
Dollars Credited	\$ 799,708	\$ 801,751						
Delr	narva Power and Li	ght						
kWh Credited	4,842,534	4,842,534						
Dollars Credited	\$ 632,983	\$ 632,983						
Potomac Electric Power Company								
kWh Credited	10,969,660	11,057,649						
Dollars Credited	\$ 1,601,646	\$ 1,611,111						
	Potomac Edison							
kWh Credited	1,767,009	1,849,076						
Dollars Credited ¹⁹	N/A	N/A						
Total								
kWh Credited	24,375,053	24,561,827						
Dollars Credited	\$ 3,034,337	\$ 3,045,845						

Table 8 CSEGS kWh and Dollar Credits

¹⁸ Combined Capacity for years 1, 2, and 3.

¹⁹ Unlike BGE, Pepco, and Delmarva, who convert credits to dollar values and then provide credits to customers as a dollar amount, Potomac Edison provides credits to customers as kWhs and therefore does not calculate a dollar value for the kWh credited to customers.

The electric companies have various methods for recovering the revenues associated with applying subscription credits to customer accounts. BGE recovers customer distribution credits through its decoupling mechanism. Transmission and energy costs, which are largely offset through reduced sales, are recovered through the Company's transmission rates and the Standard Offer Service ("SOS") energy cost adjustment mechanism.²⁰ Commission Staff estimates that the distribution bill impact of community solar for the 12 months ending June 2020, to an average BGE residential customer is about 2 cents a month. Distribution bill impact is estimated to be \$1 a month at full deployment using BGE's allocation of the currently approved program capacity shown in Table 6.²¹ Pepco and Delmarva use similar recovery mechanisms. Commission Staff estimates that the current distribution bill impact of community solar for average Pepco and Delmarva residential customers are 1 cent and 10 cents a month, respectively, and \$1 a month and \$1.50, respectively, at full deployment. Unlike the three other investor owned utilities, PE applies a kWh reduction to subscribers' metered kWh use, rather than bill credits. This results in a reduction in volumetric-based revenue, which has the potential to be eventually recovered through other customers.²²

VIII. Other Issues

At this time, the Commission has not identified other matters relating to the netmetering eligibility limit that require the action of the General Assembly. However, the Commission will continue to monitor local and national renewable energy issues and determine if any tariff changes or new regulations are warranted.

²⁰ CSEGS reduce energy demand and payments to Standard Offer Service suppliers and retail suppliers. The remaining energy cost true up is performed through the energy cost adjustment mechanism.

²¹ Please note that future bill impacts are highly dependent on future participation levels and potential changes in distribution rates.

²² Distribution costs related to subscriber distribution credits may eventually be recovered through distribution rates, depending on when distribution rates are changed through a rate case. PE does not have distribution revenue decoupling. Subscriber energy credits reduce sales by Standard Offer Service suppliers, largely offsetting costs with any remaining true up performed through an energy cost adjustment mechanism.