

PUBLIC SERVICE COMMISSION
OF MARYLAND

The EmPOWER Maryland Energy Efficiency Act
Report of 2021

With Data for Compliance Year 2020

In compliance with Section 7-211 of
the Public Utilities Article,
Annotated Code of Maryland

6 St. Paul Street
Baltimore, MD 21202
Tel: (410) 767-8000
www.psc.state.md.us

April 2021

TABLE OF CONTENTS

Report Contents	1
Executive Summary	1
Initiative Highlights	2
EmPOWER Maryland Portfolios.....	4
Energy Efficiency & Conservation Programs	4
Baltimore Gas and Electric Company (“BGE”).....	5
Potomac Electric Power Company (“Pepco”).....	6
The Potomac Edison Company (“PE”)	7
Delmarva Power & Light Company (“DPL”).....	8
Southern Maryland Electric Cooperative, Inc. (“SMECO”).....	9
Washington Gas and Light Company (“WGL”).....	10
Limited-Income Programs	11
Demand Response	12
PJM RPM Capacity Market	14
EmPOWER Maryland Funding Levels	16
EE&C Program Funding	16
Demand Response Program Funding	17
Evaluation, Measurement & Verification	18
Overall EM&V Findings of the 2019 EmPOWER EE&C Program	19
Energy and Peak Demand Savings.....	19
Cost Effectiveness	19
2020 Per Capita Electricity Consumption and Peak Demand	21
Upcoming Milestones	22

Report Contents

This document constitutes the 2021 annual report of the Public Service Commission of Maryland regarding the EmPOWER Maryland Energy Efficiency Act (“EmPOWER Maryland”). This report is submitted in compliance with §7-211 of the Public Utilities Article (“PUA”), *Annotated Code of Maryland*. PUA §7-211 requires that, on or before March 1 of each year, the Commission, in consultation with the Maryland Energy Administration (“MEA”), shall report to the General Assembly on the following:

1. the status of programs and services to encourage and promote the efficient use and conservation of energy, including an evaluation of the impacts of the programs and services that are directed to low-income communities, low- to moderate-income communities to the extent possible, and other particular classes of ratepayers;
2. a recommendation for the appropriate funding level to adequately fund these programs and services; and
3. in accordance with subsection (c) of this section, the per capita electricity consumption and the peak demand for the previous calendar year.

In compliance with PUA §7-211, topics addressed in this report include a summary of: the Energy Efficiency & Conservation (“EE&C”) and Demand Response (“DR”) program achievements; and information regarding forthcoming milestones.

Executive Summary

The Commission reviews the progress of EmPOWER programs on a semi-annual basis, typically in May to review the results of the third and fourth quarters of the previous year, and again in October to review the results of the first and second quarters of the current year. As part of these semi-annual hearings, parties may also request program modifications and budget adjustments. As needed, the Commission also holds *ad hoc* proceedings to address specific EmPOWER elements.

The Commission held a legislative-style hearing on May 7, 2020 to review the semi-annual EmPOWER reports filed by the EmPOWER Maryland Utilities¹ (hereinafter “Utilities”), Washington Gas (“WGL”), and the Maryland Department of Housing and Community Development (“DHCD”), with data from the third and fourth quarters of 2019. Following these hearings, on June 3, 2020, the Commission issued Order No. 89563 which addressed program design, evaluation issues, and the impact of COVID-19. Specifically, the Commission directed the Evaluation, Measurement and Verification (“EM&V”) Work Group to report on the appropriate Estimated Useful Life (“EUL”) for the evaluation of the Conservation Voltage

¹ The “EmPOWER Maryland Utilities” (electric) are: The Potomac Edison Company (“PE”); Baltimore Gas and Electric Company (“BGE”); Delmarva Power & Light Company (“Delmarva” or “DPL”); Potomac Electric Power Company (“Pepco”); and Southern Maryland Electric Cooperative, Inc. (“SMECO”).

Reduction (“CVR”) program. The Utilities and DHCD were directed to include proposals on how to utilize the funds unspent due to COVID-19.

The Commission held its second legislative-style hearing on October 26, 2020, to consider the semi-annual EmPOWER reports filed by the Utilities, WGL, and DHCD for the first and second quarters of 2020. On November 25, 2020, the Commission issued Order No. 89669 which provided direction on lighting evaluation methods and consistency with EmPOWER semi-annual filings. Specifically the Order approved Itron’s (the Commission’s independent evaluator) recommendation to cap the assumed lives for all LED upstream lamps at no more than four years. The Commission also directed the EM&V Work Group to determine caps for individual lighting product types and to provide the Commission with a status report by April 15, 2021. The Order also directed the Utilities to consistently report on smart thermostat and behavior programs beginning with the 2021-2023 program cycle. The Commission directed the EmPOWER Reporting and Process Improvement (“ERPI”) Work Group to work with the Utilities and DHCD to address reporting modifications and provide a status report on its progress by April 15, 2021.

The Commission held its third legislative-style hearing on October 27-29, 2020 to review the 2021-2023 EmPOWER Maryland program cycle proposals filed by the Utilities and DHCD. On December 18, 2020, the Commission issued Order No. 89679 which authorized the transition to the next three-year program cycle with the continuation of the core energy efficiency programs in 2021-2023. The Commission also approved new programs, pilots, and enhancements to the suite of energy efficiency portfolios.

Initiative Highlights

- Program-to-date, the Utilities’ EmPOWER Maryland programs have saved a total of 11,971,724 MWh and 2,363 MW. The expected savings associated with EmPOWER Maryland programs is almost \$12 billion over the life of the installed measures for the EE&C programs.
- Across all Utilities, the lifecycle cost per kWh for the EE&C programs, in 2020, is \$0.029 per kWh²—significantly lower than the current cost of Standard Offer Service (“SOS”), which ranges from \$0.063 to \$0.078 per kWh.
- Program-to-date, the Utilities have spent over \$3.2 billion on the EmPOWER Maryland programs, including approximately \$2.2 billion on EE&C programs, and \$884 million on DR programs.
- EmPOWER EE&C programs continue to be cost effective on a statewide basis in 2019, with a statewide Total Resource Cost (“TRC”) score of 1.40 verified for program year 2019. For every dollar of reported utility or participant cost, the EmPOWER EE&C programs generate approximately \$1.40 in benefits.

² The lifecycle cost per kWh is calculated by dividing the total EE&C expenditures by the total lifecycle energy savings of the Utilities.

- Program-to-date, 42,881 limited-income customers participated in EmPOWER Maryland through the Residential Limited-Income Programs. Of the program-to-date participants, 3,685 limited-income households participated in 2020. The average savings per participant in 2020 was 1,636 kWh. Program-to-date spending on limited-income energy efficiency programs is approximately \$217.8 million.
- The average monthly residential surcharge bill impacts³ for 2020 were as follows:

Table 1: Average Monthly Residential Bill Impacts from EmPOWER Maryland Surcharge in 2020

	EE&C	DR	Dynamic Pricing ⁴	Total
BGE	\$4.66	\$3.45	\$0.19	\$8.30
DPL	\$4.84	\$1.08	(\$0.09)	\$5.83
PE	\$5.63	N/A	N/A	\$5.63
Pepco	\$4.37	\$2.47	\$0.09	\$6.93
SMECO	\$5.77	\$2.47	N/A	\$8.24

- The reported energy savings for 2020 and program-to-date are as follows:

Table 2 EE&C Reported Achievements^{5,6}

	2020 Reported Energy Savings (MWh) ⁷	2020 Energy Savings as a % of 2016 Retail Sales Baseline	2020 Target Energy Savings %	Program-to-Date Reduction (MWh) ⁸
BGE	856,154	2.68%	2.00%	6,561,085
DPL	102,653	2.44%	2.00%	727,663
PE	139,791	1.89%	1.60%	2,440,999
Pepco	381,768	2.62%	2.00%	1,129,074
SMECO	73,166	2.16%	1.99%	449,319

³ Bill impacts are calculated assuming an average residential monthly usage of 1,000 kilowatt-hours (“kWh”). The calculated bill impact does not reflect savings produced by EmPOWER Maryland programs through reduced customer usage or energy rate reductions due to reduced system demand.

⁴ The difference between rebates paid to participants and revenues received from PJM markets are trued-up in the subsequent calendar year review of the EmPOWER Maryland surcharge. Therefore, the 2020 dynamic pricing bill impacts include trued-up costs associated with the Peak Time Rebate program offered by BGE, DPL, and Pepco in the summer of 2019. The dynamic pricing surcharges for BGE, DPL, and Pepco were negative in 2020 (*i.e.* resulted in a credit) because the PJM Capacity payments received by the utilities exceeded the rebate credits paid to customers.

⁵ “Reported” savings constitute unverified energy savings and demand reductions based on the Utilities’ quarterly programmatic reports. An independent, third-party verification of reported savings is conducted annually.

⁶ EmPOWER Maryland 2020 Annual Target was defined in the *2018-2020 Program Cycle EmPOWER Maryland Annual Electric Energy Efficiency Targets* in Order No. 87402 (Sept. 26, 2017) at 11.

⁷ Based on preliminary energy savings from semi-annual programmatic reports. These savings will be verified through an EM&V process.

⁸ Program-to-date reported reductions include savings contributions from Fast Track Programs, which were Lighting and Appliance Rebate programs that began before the EmPOWER Maryland Law was enacted.

EmPOWER Maryland Portfolios

For the 2018-2020 program cycle, the Commission directed the Utilities to meet the EmPOWER Maryland goals through a diverse array of cost-effective solutions for Maryland ratepayers, which can include EE&C, DR, and Advanced Metering Infrastructure (“AMI”) or Smart Grid-enabled opportunities.⁹ While the EmPOWER Maryland Act mandates that the Commission require each gas and electric utility to establish energy efficiency programs, the directive is limited to those programs that the Commission deems appropriate and cost effective. Furthermore, the Commission must consider the impact on rates of each ratepayer class in determining whether to approve an energy efficiency program. Other statutory factors that the Commission must consider in determining whether an energy efficiency program is appropriate include the impact on jobs and on the environment.¹⁰

In order to verify the Utilities’ energy and peak demand savings resulting from individual EE&C and DR programs, the Commission has developed an independent, third-party Evaluation, Measurement & Verification (“EM&V”) process for the EmPOWER programs, consistent with national best practices. See the “Evaluation, Measurement & Verification” section herein for further information. Beginning with the 2016 program year, the Utilities were evaluated against the post-2015 electric energy efficiency goals established by Order No. 87082,¹¹ which are designed to achieve an annual incremental gross energy savings equivalent to 2.0 percent of the individual utility’s weather normalized gross retail sales baseline, with a ramp-up rate of 0.20 percent per year.

Energy Efficiency & Conservation Programs

In Order No. 88514, issued on December 22, 2017, the Commission approved plans for the 2018-2020 program cycle. The Utilities’ EmPOWER Maryland core EE&C program offerings are similarly designed with standardized customer incentives across the State, albeit with some variation in program implementation based on service territory demographics. Residential EE&C programs include discounted light-emitting diodes (“LEDs”) and appliances; heating, ventilation, and air conditioning (“HVAC”) rebates; home energy audits; weatherization; and limited-income programs.¹² Commercial and Industrial EE&C programs are designed to encourage businesses to upgrade to more efficient equipment, such as lighting or HVAC retrofits, or to improve overall building performance through weatherization or building shell upgrades. For larger commercial buildings or industrial facilities, a utility can customize its program offerings for cost-effective improvements.

⁹ Beginning in 2015, the Commission also directed WGL to implement natural gas energy efficiency and conservation programs. See Case No. 9362, *In the Matter of Washington Gas Light Company’s Energy Efficiency, Conservation and Demand Response Programs Pursuant to the EmPOWER Maryland Energy Efficiency Act of 2008*.

¹⁰ PUA §7-211(i)(1). In its evaluation of a program or service, the Commission must consider the following four factors: cost effectiveness; impact on rates of each ratepayer class; impact on jobs; and impact on the environment.

¹¹ The electric energy efficiency goals are codified in statute for the duration of the 2018-2020 and 2021-2023 program cycles as a result of legislation enacted during the 2017 legislative session. See Md. Laws Ch. 014 (2017); PUA § 7-211(g).

¹² Other than the volumetric surcharge collected from all ratepayers, limited-income programs are offered at no additional cost for those who qualify.

Baltimore Gas and Electric Company (“BGE”)

BGE EmPOWER Programs	
Residential Program	Commercial Programs
Appliance Rebates	Combined Heat and Power
Appliance Recycling	Custom
Behavior Based	Midstream Products
Dynamic Pricing	Prescriptive
Home Performance with Energy Star	Retrocommissioning
HVAC	Small Business
Lighting	
Quick Home Energy Checkup	
Residential New Construction	
Smart Thermostats	

BGE realized 121 percent of its 2020 annual energy savings target (or 856,154 MWh) and 63 percent of its forecasted 2020 annual demand reduction target (or 875 MW). BGE’s programs reached over 1.6 million participants and installed nearly 7.3 million measures in homes and businesses in the BGE service territory for just over \$140.7 million.

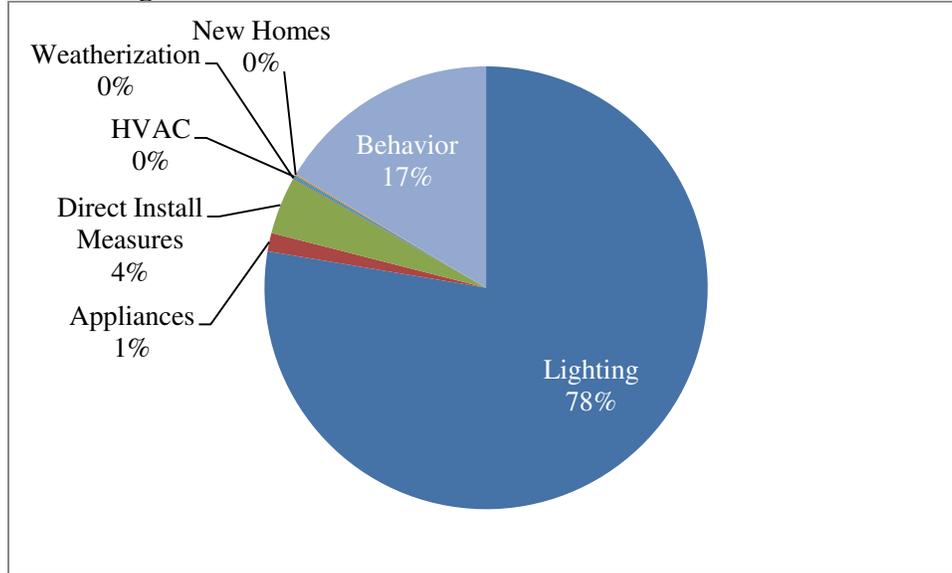
Table 3 BGE Reported Savings vs Targets for 2020

	2020 Reported Savings	2020 Target Savings ^{13,14}	% of Target Achieved
MWh	856,154	709,213	121%
MW	549	875	63%

¹³ EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each utility.

¹⁴ The demand reduction targets and reported achievements include peak demand reductions generated by both EE&C and DR programs, as both components are part of the total portfolio.

Figure 1 Residential Measures Installed in BGE in 2020



Potomac Electric Power Company (“Pepco”)

Pepco EmPOWER Programs	
Residential Program	Commercial Programs
Appliance Rebates	Combined Heat and Power
Appliance Recycling	Custom
Behavior Based	Energy Efficient Communities
Home Performance with Energy Star	Midstream Products
HVAC	Prescriptive
Lighting	Retrocommissioning
Quick Home Energy Checkup	Small Business
Residential New Construction	
Smart Thermostats	

Pepco realized 93 percent of its 2020 annual energy savings target (or 381,768 MWh) and 113 percent of its forecasted 2020 annual demand reduction target (or 319 MW). Pepco’s programs reached over 466,000 participants and installed over 4.6 million measures in homes and businesses in the Pepco service territory for approximately \$84.7 million.

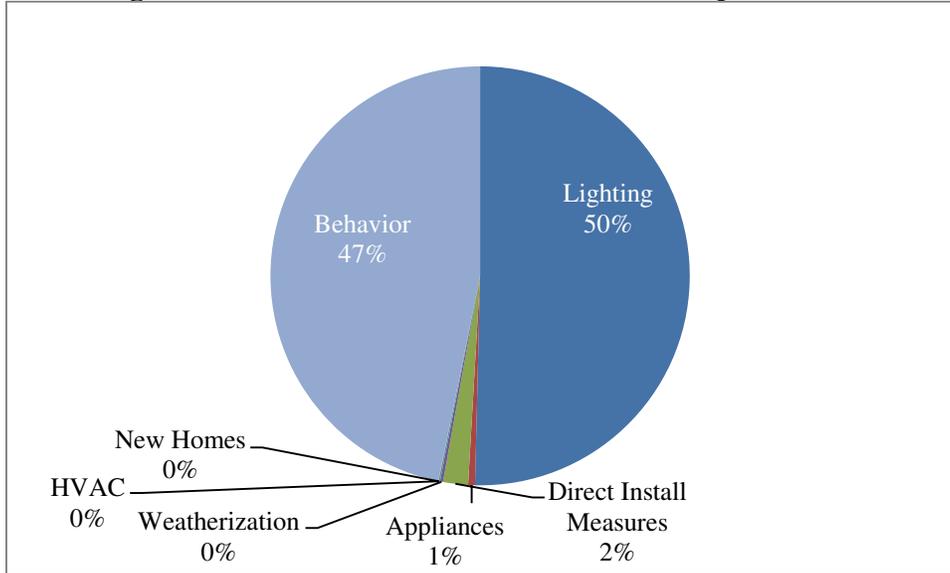
Table 4 Pepco Reported Savings vs Targets for 2020

	2020 Reported Savings	2020 Target Savings ^{15,16}	% of Target Achieved
MWh	381,768	408,673	93%
MW	361	319	113%

¹⁵ EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each utility.

¹⁶ The demand reduction targets and reported achievements include peak demand reductions generated by both EE&C and DR programs, as both components are part of the total portfolio.

Figure 2 Residential Measures Installed in Pepco in 2020



The Potomac Edison Company (“PE”)

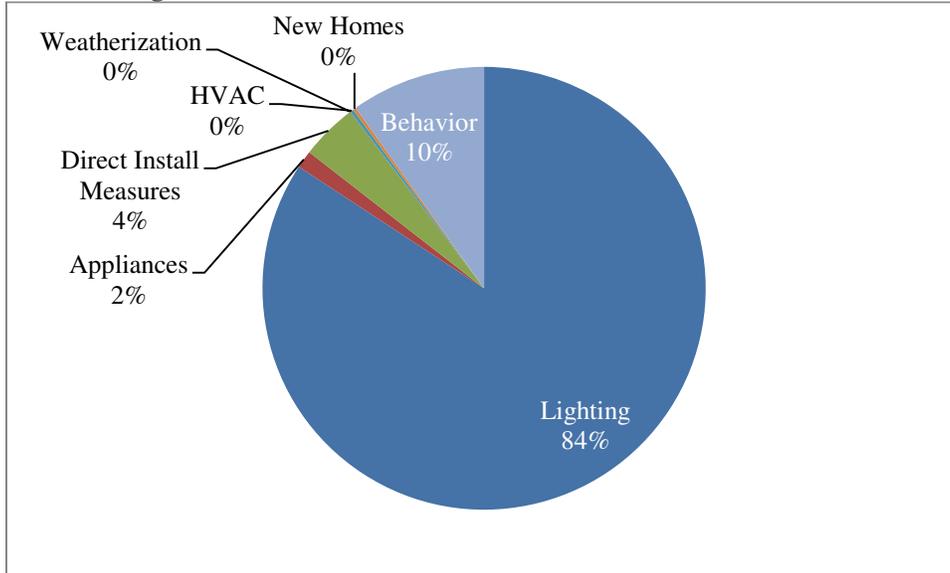
PE EmPOWER Programs	
Residential Program	Commercial Programs
Appliance Rebates	Custom
Appliance Recycling	Prescriptive
Behavior Based	Small Business
Consumer Electronics	
Energy Efficiency Kits	
Home Performance with Energy Star	
HVAC	
Lighting	
Quick Home Energy Checkup	
Residential New Construction	
Schools	

PE realized 104 percent of its 2020 annual energy savings target (or 139,791 MWh) and 125 percent of its forecasted 2020 annual demand reduction target (or 26 MW). PE’s programs reached nearly 376,000 participants and installed almost 1.3 million measures in homes and businesses in the PE service territory for approximately \$28.5 million.

Table 5 PE Reported Savings vs Targets for 2020

	2020 Reported Savings	2020 Target Savings ¹⁷	% of Target Achieved
MWh	139,791	134,752	104%
MW	26	21	125%

Figure 3 Residential Measures Installed in PE in 2020



Delmarva Power & Light Company (“DPL”)

DPL EmPOWER Programs	
Residential Program	Commercial Programs
Appliance Rebates	Combined Heat and Power
Appliance Recycling	Custom
Behavior Based	Energy Efficient Communities
Family Farms	Midstream Products
Home Performance with Energy Star	Prescriptive
HVAC	Retrocommissioning
Lighting	Small Business
Quick Home Energy Checkup	
Residential New Construction	
Schools	
Smart Thermostats	

DPL realized 104 percent of its 2020 annual energy savings target (or 102,653 MWh) and 51 percent of its forecasted 2020 annual demand reduction target (or 62 MW). DPL’s programs

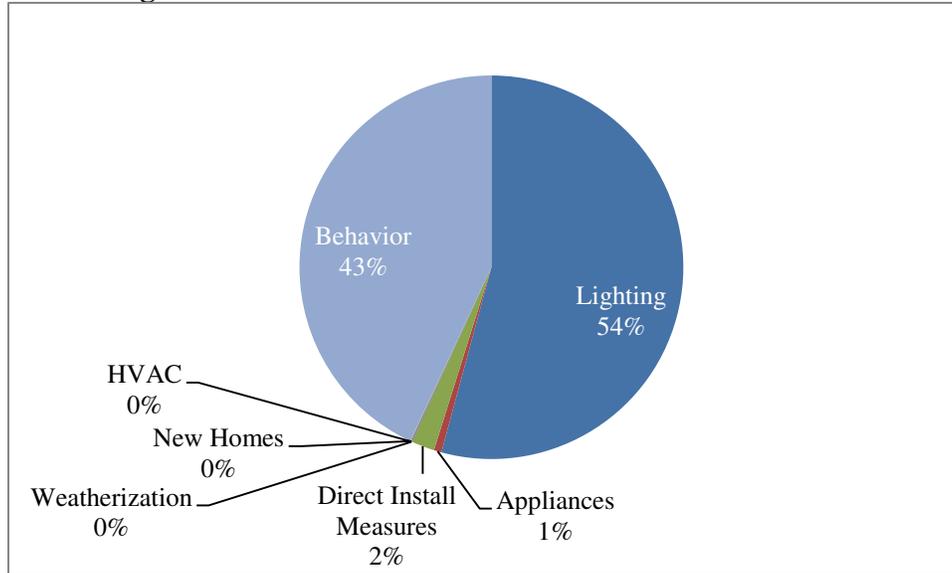
¹⁷ EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each utility.

reached over 132,000 participants and installed nearly 1.1 million measures in homes and businesses in the DPL service territory for approximately \$32.2 million.

Table 6 DPL Reported Savings vs Targets for 2020

	2020 Reported Savings	2020 Target Savings ^{18,19}	% of Target Achieved
MWh	102,653	98,624	104%
MW	62	123	51%

Figure 4 Residential Measures Installed in DPL in 2020



Southern Maryland Electric Cooperative, Inc. (“SMECO”)

SMECO EmPOWER Programs	
Residential Program	Commercial Programs
Appliance Rebates	Combined Heat and Power
Appliance Recycling	Custom
Behavior Based	Midstream Products
Energy Efficiency Kits	Prescriptive
Home Energy Improvement	Retrocommissioning
HVAC	Small Business
Lighting	
Residential New Construction	
Smart Thermostats	

SMECO realized 103 percent of its 2020 annual energy savings target (or 73,166 MWh) and 82 percent of its forecasted 2020 annual demand reduction target (or 59 MW). SMECO’s

¹⁸ EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each utility.

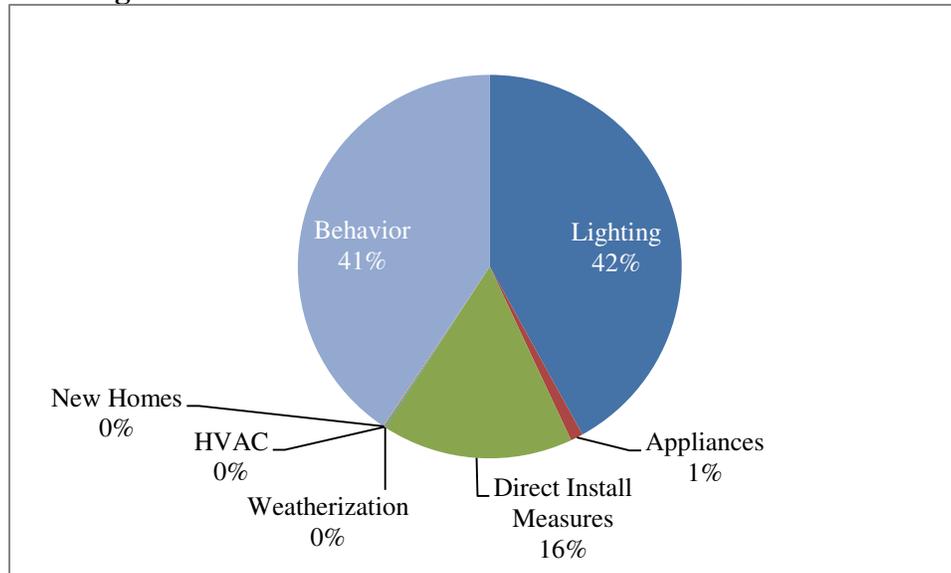
¹⁹ The demand reduction targets and reported achievements include peak demand reductions generated by both EE&C and DR programs, as both components are part of the total portfolio.

programs reached nearly 302,000 participants and installed over 1.1 million measures in homes and businesses in the SMECO service territory for approximately \$20.9 million.

Table 7 SMECO Reported Savings vs Targets for 2020

	2020 Reported Savings	2020 Target Savings ^{20,21}	% of Target Achieved
MWh	73,166	70,705	103%
MW	59	72	82%

Figure 5 Residential Measures Installed in SMECO in 2020



Washington Gas Light Company (“WGL”)

WGL EmPOWER Programs	
Residential Program	Commercial Programs
Residential Prescriptive	C&I Prescriptive
Residential New Construction	C&I New Construction
Behavior Based	Custom
Residential Coordinated	

WGL realized 73 percent of its 2020 annual energy savings target (or 1,643,059 therms). WGL completely redesigned its programs for the 2018-2020 program cycle. This program overhaul has taken longer to roll out than anticipated, resulting in WGL missing its energy savings target for 2020. WGL’s programs reached over 55,000 participants and installed nearly 81,000 measures in homes and businesses in the WGL service territory for approximately \$10.6 million.

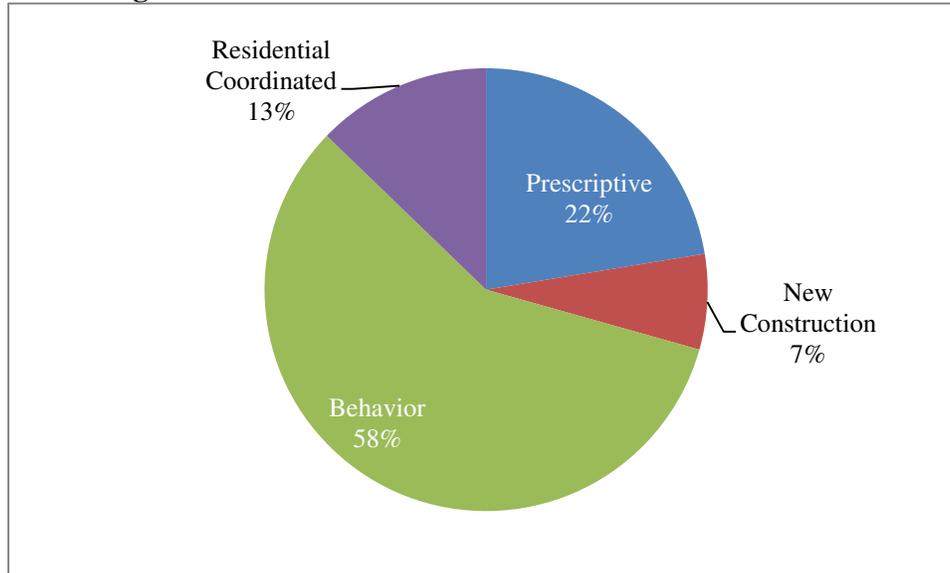
²⁰ EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each utility.

²¹ The demand reduction targets and reported achievements include peak demand reductions generated by both EE&C and DR programs, as both components are part of the total portfolio.

Table 8 WGL Reported Savings vs Targets for 2020

	2020 Reported Savings	2020 Target Savings ²²	% of Target Achieved
Therms	1,643,059	2,249,904	73%

Figure 6 Residential Measures Installed in WGL in 2020



Limited-Income Programs

On December 22, 2011, the Commission in Order No. 84569 designated DHCD as the sole implementer of limited-income programs for the EmPOWER Maryland Utilities. In April 2012, DHCD accepted control of the residential limited-income programs of BGE, PE, and SMECO. In July 2012, the transition was completed with DHCD accepting control of the Pepco and DPL limited-income programs.

In Order No. 86785, issued on December 23, 2014, the Commission authorized DHCD to continue its implementation of the limited-income programs in Maryland during calendar year 2015, subject to certain specified structural enhancements such as spending guidelines per household. DHCD was approved as the implementer of the limited-income programs for the remainder of the 2015-2017 program cycle in Order No. 86995. In Order No. 88514, DHCD's 2018-2020 program cycle plan was approved.²³

DHCD offers two programs, one for single family homes and another for multifamily properties. In 2020, DHCD weatherized approximately 3,600 limited-income homes and 58 multifamily properties at a total cost of \$21.7 million. The average savings per participant in 2020 was 1,636 kWh.

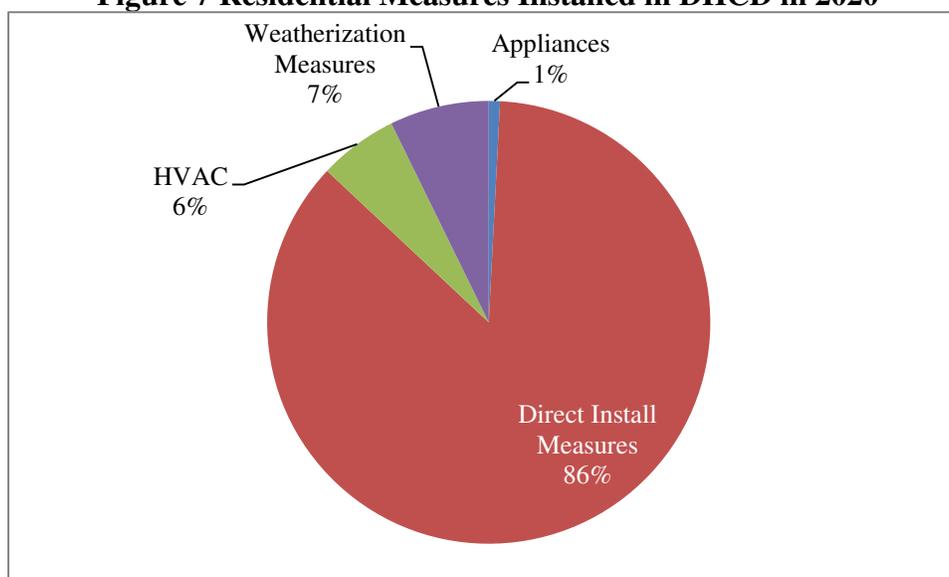
²² EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each utility.

²³ DHCD also partners with WGL to implement limited-income programs in WGL's service territory.

Table 9 DHCD Reported Savings vs Targets for 2020

Program	Energy/Demand Savings	2020 Reported Savings	2020 Target Savings ²⁴	% of Target Achieved
Single Family	MWh	3,509	10,403	34%
	MW	1.93	3.01	64%
Multifamily	MWh	2507	1,984	126%
	MW	0.723	0.572	126%

Figure 7 Residential Measures Installed in DHCD in 2020



Demand Response

The EmPOWER Maryland Act requires the Utilities to implement cost-effective demand response programs; although, there are not currently goals established for the magnitude of demand reduction that each Utility must target (following the realization of the legislatively-mandated 15 percent by 2015 targets). The Commission approved four residential demand response programs in late 2007 and early 2008,²⁵ all of which were operational by the end of 2009.²⁶

Customers who have chosen to participate in the direct load control programs included in the Utilities' demand response portfolios have a switch or thermostat installed at their properties to briefly curtail usage of central air conditioning or an electric heat pump in instances of system reliability issues or high electricity prices during critical peak hours. Each direct load control DR program includes the following common components: (1) customer participation in DR programs is voluntary; (2) upon receiving a customer request, the utility installs either a

²⁴ EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of DHCD.

²⁵ See Commission Letter Order (Nov. 30, 2007).

²⁶ The Commission did not approve a DR program for PE similar to those implemented for BGE, Pepco, DPL, and SMECO because PE's proposed program was not cost effective due to lower zonal capacity prices.

programmable thermostat or a direct load control switch for a central air conditioning system or for an electric heat pump on a customer’s premise; (3) the Utilities provide a one-time installation incentive and annual bill credits to the participants during the specified summer peak months; and (4) with the exception of the SMECO DR program, customers can select one of three cycling choices (50 percent, 75 percent, or 100 percent).²⁷ Utilities will invoke the cycling process when PJM calls for an emergency event or if the Utilities individually determine that an event is necessary during summer peak season. Table 10 summarizes the incentives offered by the Utilities to the residential program participants.

Table 10 Utilities’ Incentive Levels for Residential Demand Response Program Participants

Utility	50% Cycling		75% Cycling		100% Cycling		Bill Credit Months
	Installation Incentive	Annual Bill Credit	Installation Incentive	Annual Bill Credit	Installation Incentive	Annual Bill Credit	
BGE	\$50	\$50	\$75	\$75	\$100	\$100	Jun.–Sept.
Pepco	\$40	\$40	\$60	\$60	\$80	\$80	Jun.– Oct.
DPL	\$40	\$40	\$60	\$60	\$80	\$80	Jun.– Oct.
SMECO	***	\$50	***	\$75	N/A	N/A	Jun.– Oct.

*** A participant in the SMECO CoolSentry program can keep the installed thermostat at no additional cost following 12 months of program participation; otherwise, the thermostat will be removed if the participant terminates participation less than 12 months after installation.

Table 11 summarizes the number of active devices installed for each of the Utilities’ direct load control program on a program-to-date basis through December 31, 2020.

Table 11 Utilities’ Residential Direct Load Program Device Installation

Utility	Residential	Commercial	Total
BGE	391,399	N/A	391,399
DPL	38,450	2,856	41,306
Pepco	223,512	5,946	229,458
SMECO	43,368	48	43,416
Total	696,729	8,850	705,579

²⁷ The three cycling choices represent the air conditioner compressor working cycled reduced by 50 percent, 75 percent, and 100 percent under PJM- or utility-invoked emergency events during summer peak season. SMECO only offers 50 percent and 75 percent cycling levels with corresponding bill credits of \$50 and \$75 during the summer months.

Table 12 summarizes the demand reduction capability for the Utilities' DLC programs as of December 31, 2020.

Table 12 DLC Program Coincident Peak Demand Reduction (MW)

Utility	Program-to-Date Reported
BGE	252.799
DPL	40.847
Pepco	233.461
SMECO	50.037
Total	577.144

Additional demand reductions are expected to stem from smart grid-enabled dynamic pricing programs, as well as from other non-EmPOWER funded programs such as conservation voltage reduction ("CVR"). Table 13 summarizes the reported demand reductions from the dynamic pricing programs for 2013-2020. BGE, Pepco, and DPL are currently the only Utilities that operate dynamic pricing programs. Demand reductions from dynamic pricing programs represent a snapshot for a particular time period and are dependent upon customer engagement and participation; therefore, demand reductions attributable to dynamic pricing programs could change year-to-year.

Table 13 Dynamic Pricing Demand Reduction (MW)

Utility	2013	2014	2015	2016	2017	2018	2019	2020
BGE	0	209	309	336	330	140	111	110
DPL	0	0	143	39	31	47	0	0
Pepco	309	125	47	126	135	124	91	55
Total	309	334	499	501	496	311	202	165

PJM Reliability Pricing Model Capacity Market

PJM has not conducted the Base Residual Auction ("BRA") for Delivery Years ("DY") 2022/2023 and 2023/2024 due to the complexities arisen from the Federal Energy Regulatory Commission's ("FERC") orders stating the PJM auction was non-competitive and adding a Minimum Offer Price Rule ("MOPR") that was applicable to any capacity resource that was deemed to receive a state subsidy. After receiving FERC orders on October 15 and November 12, 2021, approving PJM's proposal for fixing the capacity market rules by imposing a MOPR, PJM released a schedule for the capacity auctions. The BRA for the 2022/2023 DY will be held in May of 2021 and the BRA for the 2023/2024 DY will be held in December of 2021.

EmPOWER Maryland programs are eligible to participate in the capacity auctions and can receive payments from PJM that are used to offset the costs in the EmPOWER programs and lower the surcharge.

The following tables illustrate the cleared capacity and PJM capacity payments for the DLC, EE&C and DP programs.

Table 14 Demand Response Program BRA Results

	Cleared Capacity (MW)	PJM Capacity Payment (Million \$)
DY 2009/2010	217	\$18.8
DY 2010/2011	415	\$26.4
DY 2011/2012	662	\$26.6
DY 2012/2013	953	\$46.5
DY 2013/2014	803	\$67.7
DY 2014/2015	772	\$33.9
DY 2015/2016	625	\$36.0
DY 2016/2017	554	\$24.1
DY 2017/2018	536	\$23.5
DY 2018/2019	522	\$11.5
DY 2019/2020	230	\$1.6
DY 2020/2021	265	\$9.2
DY 2021/2022²⁸	N/A	N/A
Total	6,554	\$325.8

The Utilities also bid capacity reductions from their EE&C programs and AMI-enabled dynamic pricing programs. Similar to the DLC programs, the Utilities earn capacity payments from PJM for these commitments; the payments are used to offset EE&C program costs and to fund the rebates earned by customers in the dynamic pricing program. Table 15 and Table 16 summarize the capacity bid into the PJM capacity market from the EE&C and dynamic pricing programs by delivery year, and the payments the Utilities receive from PJM.

Table 15 EE&C Program BRA Results

	Cleared Capacity (MW)	PJM Capacity Payment (Million \$)
DY 2012/2013	168	\$8.2
DY 2013/2014	107	\$8.7
DY 2014/2015	179	\$8.3
DY 2015/2016	175	\$10.2
DY 2016/2017	226	\$9.5
DY 2017/2018	243	\$10.8
DY 2018/2019	172	\$10.1
DY 2019/2020	184	\$6.8
DY 2020/2021	199	\$5.8
DY 2021/2022	180	\$11.4
Total	1,833	\$89.8

²⁸ The DLC program committed 589 MW of capacity as a Price Responsive Demand resource. Under the prior RPM construct, 589 MW would have earned approximately \$32.8 million in capacity payments from PJM.

Table 16 Dynamic Pricing Program BRA Results

	Cleared Capacity (MW)	PJM Capacity Payment (Million \$)
DY 2014/2015	267	\$12.2
DY 2015/2016	426	\$23.3
DY 2016/2017	461	\$20.0
DY 2017/2018	387	\$17.0
DY 2018/2019	378	\$10.0
DY 2019/2020	225	\$2.2
DY 2020/2021	425	\$13.1
DY 2021/2022	177	\$4.8
Total	2,746	\$102.6

Table 17 illustrates the amount of capacity cleared in the BRA by the EmPOWER Utilities for the delivery years of 2020/2021 and 2021/2022. The table also shows the amount of capacity revenue that the Utilities can expect to receive from PJM in the two delivery years, which will be used to offset the costs of the DR, EE&C, and dynamic pricing programs borne by ratepayers.

The amount of capacity cleared in the 2021/2022 DY auctions is 531 MW less than the amount of capacity cleared in the 2020/2021 DY. There are two reasons for this decline. First, the utilities did not bid any capacity from the demand response programs in this auction as these resources do not meet the Capacity Performance requirements. These resources were offered as PRD resources and do not receive capacity payments. Second, capacity cleared for Dynamic Pricing resources are required to aggregate with winter resources in order to clear the capacity auction. There were fewer winter resources to aggregate within the 2021/2022 auction compared to the 2020/2021 auction.

Table 17 Maryland Utilities' PJM BRA Results and Expected Revenue for Delivery Years 2020/2021 and 2021/2022

DY 2020/2021					DY 2021/2022				
Cleared Bids (MW)				Value	Cleared Bids (MW)				Value
DR	DP	EE&C	Total	(\$Million)	DR	DP	EE&C	Total	(\$Million)
265	425	199	889	\$28.0	N/A	177	180	357	\$15.1

EmPOWER Maryland Funding Levels

EE&C Program Funding

On December 22, 2017, in Order No. 88514, the Commission approved the 2018-2020 program cycle budgets based on the EmPOWER Maryland Utilities' proposals. Table 18 breaks down the 2020 Commission-approved budgets for each of the Utilities, while Table 19 illustrates the actual 2020 expenditures by the Utilities with respect to their EmPOWER Maryland EE&C programs.

Table 18 Forecasted 2020 EE&C Budgets

Utility	Residential	C&I	DHCD Limited- Income Program	Total
BGE	\$71,996,225	\$55,720,010	\$15,967,824	\$143,684,059
DPL	\$8,608,200	\$22,447,251	\$0	\$31,055,451
PE	\$16,221,721	\$19,800,699	\$4,231,223	\$40,253,644
Pepco	\$22,158,040	\$67,939,894	\$0	\$90,097,934
SMECO	\$11,091,204	\$10,419,821	\$0	\$21,511,025
Total	\$130,075,390	\$176,327,676	\$20,199,047	\$326,602,113

Table 19 Reported 2020 EE&C Spending

Utility	Residential	C&I	DHCD Limited- Income Program	Total
BGE	\$42,459,727	\$57,665,578	\$8,649,526	\$108,774,831
DPL	\$6,090,134	\$18,376,468	\$3,726,181	\$28,192,783
PE	\$9,917,856	\$15,867,043	\$2,683,983	\$28,468,881
Pepco	\$17,714,838	\$46,711,423	\$2,912,267	\$67,338,528
SMECO	\$10,171,728	\$4,635,515	\$10,906	\$14,818,149
Total	\$86,354,283	\$153,173,883	\$17,982,862	\$257,511,029

Table 20 details the EmPOWER Maryland EE&C program surcharges and revenue requirements for each of the Utilities. The EmPOWER Maryland surcharges are a volumetric-based charge, subject to the individual ratepayer's monthly energy usage. The revenue requirements do not correspond to the filed budgets because program costs are amortized and collected over a five-year period as directed by the Commission in Order No. 81637.²⁹

Table 20 2020 EE&C Monthly Surcharges (per kWh) and Revenue Requirements

Utility	Residential	Small C&I	Large C&I	Revenue Requirement
BGE	\$0.00466	\$0.00804	\$0.00315	\$116,359,803
DPL	\$0.00484	\$0.00461	\$0.00461	\$18,882,907
PE	\$0.00563	\$0.00505	\$0.00498	\$27,811,601
Pepco	\$0.00437	\$0.00435	\$0.00435	\$61,234,357
SMECO	\$0.00577	\$0.00472	\$0.00472	\$18,991,532

Demand Response Program Funding

The December 22, 2017 Commission Order similarly approved three-year budgets for the demand response programs operated by BGE, DPL, Pepco, and SMECO. Table 21 details the

²⁹ *In the Matter of the Commission's Investigation of Advanced Metering Technical Standards, Demand Side Management (DSM) Cost Effectiveness Tests, DSM Competitive Neutrality, and Recovery of Costs Advanced Meters and DSM Programs*, Case No. 9111.

EmPOWER Maryland demand response surcharges and revenue requirements for each of the Utilities operating an approved DR program.³⁰

Table 21 2020 Demand Response Monthly Surcharges (per kWh) and Revenue Requirements

Utility	Residential	C&I	Revenue Requirement
BGE	\$0.00345	N/A	\$42,238,961
DPL	\$0.00108	\$0.00029	\$2,812,503
Pepco	\$0.00247	\$0.00013	\$14,763,014
SMECO	\$0.00247	\$0.00235	\$8,561,150

Table 22 details the respective forecasted and reported budgets for each of the EmPOWER Utilities operating an approved DR program during 2020. All of the Utilities’ programs were under budget for the 2020 program year.

Table 22 2019 Demand Response Forecasted and Reported Budgets

Utility	Forecasted Budget	Reported Costs	Variance
BGE	\$47,463,661	\$31,650,745	(\$15,812,916)
DPL	\$4,219,778	\$3,576,055	(\$643,723)
Pepco	\$17,510,848	\$16,607,414	(\$903,434)
SMECO	\$7,704,472	\$5,660,079	(\$2,044,393)
Total	\$76,898,759	\$57,494,293	(\$19,404,467)

Evaluation, Measurement & Verification

Determining and validating electricity savings and related impacts is a critical component of EE&C and DR programs. The process of evaluation, measurement, and verification (“EM&V”) of resulting program savings is particularly important in determining: the effectiveness of program delivery; the factors driving or impeding customer participation in programs; characteristics of participants and non-participant customers; determinants of equipment decisions; and customer satisfaction with program delivery. Moreover, the design and depth of program data collection, monitoring, and analyses can impact the accuracy and prudence of compliance results. Given the scale of the EmPOWER Maryland initiative and the potential bill impacts, the Commission is sensitive to the issue of program credibility and transparency. This process also evaluates free-ridership, spillover, cost-effectiveness, deemed savings calculations, etc., pertinent to a thorough and ongoing review of viable and cost-effective energy efficiency and demand response programs.

Based on EM&V best practices, the Commission adopted an independent, third-party evaluator model to review the EmPOWER portfolio results.³¹ In this model, the Utilities direct primary evaluation and verification activities through an EM&V contractor; subsequently, the

³⁰ PE did not operate a separate DR program during 2020 and therefore did not file for a surcharge recovery of DR program costs.

³¹ Order No. 82869 (Aug. 31, 2009).

Commission’s third-party, independent evaluator provides independent analysis and due diligence of the EM&V process. Because this thorough evaluation process requires up to six months following the receipt of program data from the prior calendar year to complete, this report illuminates the results of the Utilities’ 2019 program year reported savings.

Overall EM&V Findings of the 2019 EmPOWER EE&C Program

Energy and Peak Demand Savings

In 2019, Guidehouse’s evaluation of the first-year savings³² was 1,122,634 MWh and 206.091 MW, which was 101 percent and 100 percent of the Utilities’ reported energy and demand savings for that year. For the 2019 program year, Navigant estimated an effective net-to-gross (“NTG”) ratio of 0.72 for annual energy savings and 0.76 for peak demand savings. The NTG ratio is used to derive savings specifically attributable to the EmPOWER programs by calculating free-ridership levels and reducing reported gross savings by that amount.³³ Following the application of the calculated NTG ratios, the net savings for program year 2019 were 810,404 MWh and 155.950 MW.

As the EmPOWER Maryland Independent Evaluator, Itron, Inc. supports the Commission’s oversight of the statewide evaluation of the EmPOWER EE&C programs conducted by Navigant. Itron’s verification analysis confirmed Navigant’s results and accepted all of the evaluated energy and demand savings estimates for program year 2019. This important result should increase ratepayer and other stakeholders’ confidence that the evaluated savings from the EmPOWER Maryland programs are real and credible.

Given that the key energy assumption values and NTG ratios have been updated and other anomalies in the program tracking databases have been rectified to improve the quality of reporting, it is expected that the Utilities’ reported savings estimates for 2020 should continue to be very similar to the evaluation results. Changes to evaluation parameters and codes and standards will have the effect of raising the baseline level of energy savings, therefore reducing the incremental energy savings achieved by installing efficient equipment. The EM&V contractors will monitor and reflect these changes in future evaluation cycles.

Cost Effectiveness

Table 23 presents the 2019 total resource cost (“TRC”) test cost-effectiveness results by sector for each of the Utilities.³⁴ The sector-level benefit-to-cost ratios reflect the present value of the benefits compared to the present value of the costs, aggregated from each program in the sector-level sub-portfolio. As noted, TRC ratios greater than 1.0 indicate that the financial benefits that accrue over the life of the measures exceed the financial costs of the program, specifically the costs associated with: utility program administration; the provision of incentives to free riders; and customer outlays for the efficiency measures. Statewide, both the Residential

³² “First-year savings” is the amount of energy a measure will save in the first year in which the measure is installed.

³³ A “free rider” is a customer who would have installed an energy efficiency measure absent the utility-provided EmPOWER incentive.

³⁴ The 2020 program year cost-effectiveness results are expected in the second half of 2021.

and C&I sub-portfolios were cost effective in 2019, with overall TRC scores of 1.47 and 1.36, respectively.

Table 23 2019 Portfolio TRC Results

	Residential	Commercial	Portfolio
BGE	1.53	1.64	1.60
Pepco	1.30	1.09	1.13
PE	1.65	1.95	1.80
DPL	1.23	1.36	1.32
SMECO	1.41	1.31	1.38
Statewide	1.47	1.36	1.40

At the statewide level, the 2019 EmPOWER portfolio is expected to generate approximately \$1.40 in utility and participant benefits for each dollar of utility and participant cost. For a total investment of \$310 million,³⁵ the State’s Utilities, participants, and ratepayers will realize approximately \$434 million³⁶ in financial benefits via electricity, fuel, and water savings generated over the lifetime of the measures installed through the EmPOWER program. These results correspond to a net benefit of approximately \$124 million.

When assessing whether to approve the Utilities’ plans, the Commission evaluates cost effectiveness at the sub-portfolio level, i.e., the C&I and Residential sub-portfolios should both generate TRC ratios greater than 1.0. Thus, individual programs do not necessarily need to be cost effective as long as other programs are sufficiently cost-effective to generate sector-level TRC ratios that are greater than 1.0. The Commission may approve individual programs that are not individually cost effective to ensure a broader array of energy-saving opportunities amongst rate classes, income levels, etc., or because the program may promote innovative technologies and market-transformative practices leading to broader energy savings. All EmPOWER Utilities have developed cost-effective portfolios that pass the TRC test—most by a comfortable margin.

³⁵ The \$309 million total investment is the present value of both utility and participant costs.

³⁶ The \$401 million in financial benefits is the present value of both utility and participant benefits.

2020 Per Capita Electricity Consumption and Peak Demand

Table 24 and Table 255 compare the per capita energy use and peak demand from 2010 to 2020 for all Maryland utilities. In 2020, a majority of the State’s electric utilities experienced a decrease in per capita energy use and per capita peak demand as compared to 2020 levels.

Table 24 2010 - 2020 Per Capita Energy Consumption

	Per Capita Energy Use MWh										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
BGE	13.17	12.65	12.26	12.06	11.86	11.82	11.57	11.31	11.44	11.25	11.17
Pepco	8.97	8.91	8.18	8.10	7.81	7.94	7.73	7.56	7.60	7.45	7.21
PE	19.39	17.17	16.93	17.53	17.64	17.39	17.57	17.60	18.10	17.47	17.04
Delmarva	13.14	13.02	12.61	12.60	12.55	13.00	12.73	12.65	12.89	12.52	12.10
SMECO	10.83	10.85	10.61	10.49	10.21	10.25	10.03	9.72	9.75	9.96	9.45
Choptank	13.06	12.58	12.31	12.92	12.55	13.04	12.73	13.24	13.42	12.52	12.10
Hagerstown	8.95	8.37	7.93	7.71	7.60	7.62	7.58	7.49	8.27	8.05	7.71
Easton	18.48	16.59	16.65	16.52	16.41	16.55	16.33	16.03	17.12	17.36	15.01
Thurmont	14.37	13.73	13.02	13.27	13.02	13.68	13.06	12.61	13.41	11.94	11.77
Berlin	10.84	9.31	9.40	9.37	9.90	10.61	10.15	9.86	11.06	10.13	10.05
Williamsport	8.56	9.20	9.44	9.87	10.06	10.04	9.64	9.39	9.85	9.65	9.34
Somerset	4.48	4.49	N/A								
A&N Coop.	8.87	8.05	10.83	10.81	11.06	N/A	N/A	N/A	N/A	N/A	N/A

Table 25 2010 - 2020 Per Capita Peak Demand

	Per Capita Energy Use kW										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
BGE	2.55	2.70	2.38	2.38	2.27	2.36	2.40	2.34	2.36	2.22	2.30
Pepco	1.99	1.98	1.79	1.55	1.57	1.88	2.03	1.62	1.62	2.73	2.60
PE	2.93	3.24	3.27	3.10	2.62	3.68	3.49	3.42	3.34	3.19	3.39
Delmarva	2.77	2.76	2.80	2.72	2.62	2.76	2.83	2.67	2.64	2.67	2.61
SMECO	2.40	2.42	2.22	2.15	1.93	2.76	2.36	2.41	2.42	2.27	2.00
Choptank	2.44	2.77	3.17	3.33	2.59	3.33	2.83	2.99	2.98	3.31	3.08
Hagerstown	1.76	1.71	1.65	1.54	1.28	1.66	1.50	1.52	1.55	1.49	1.56
Easton	4.13	4.04	4.09	3.81	3.24	4.27	3.73	3.63	3.63	3.60	3.42
Thurmont	2.21	2.58	2.41	2.39	2.03	4.33	3.26	2.94	3.11	3.44	2.63
Berlin	2.58	1.99	2.44	2.09	2.19	2.30	1.17	2.21	2.27	2.10	2.31
Williamsport	1.17	1.64	1.85	1.87	1.39	2.48	2.15	2.18	2.21	2.52	2.09
Somerset	0.36	1.00	N/A								
A&N Coop.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 26 illustrates the per capita electricity usage and peak demand statewide. Generally, statewide per capita energy usage has been lower in 2012-2018 than 2007-2011.

Table 26 Statewide Per Capita Electricity Usage and Peak Demand 2007-2020

Year	Per Capita Energy Use MWh	Per Capita Energy Use kW
2007	12.38	2.56
2008	11.74	2.49
2009	11.73	2.53
2010	12.02	2.40
2011	11.70	2.50
2012	11.21	2.28
2013	11.13	2.18
2014	10.91	2.07
2015	10.96	2.37
2016	10.74	2.39
2017	10.53	2.21
2018	10.68	2.22
2019	10.49	2.50
2020	10.27	2.98

Upcoming Milestones

The Commission will review several Work Group reports as a result of Commission Order Nos. 89669 and 89679.

- EM&V Work Group
 - A status report, filed by April 15, 2021, on the Work Group’s progress for determining Estimated Useful Lives for individual lighting program types.
 - A report, filed by October 15, 2021, on how the results of the Behavioral Disaggregation Pilot will be incorporated in the EM&V and cost effectiveness analysis.
 - A report, filed by October 15, 2021, on modifications to account for savings from all fuel sources.
- ERPI Work Group – A status report filed by April 15, 2021 outlining its reporting modifications for the 2021 – 2023 program cycle.
- Finance Work Group – The Commission directed the Work Group to work toward further development of the Maryland Clean Energy Center Pilot Program and file a report on its findings and recommendations by April 15, 2021.
- Cost Recovery Work Group
 - To discuss Performance Incentive Mechanism and utility return proposals by the Maryland Energy Administration and file a status report by October 15, 2021, with a final report due April 15, 2022.

- Investigate how distribution rates and innovative rate designs may encourage or discourage participation in EmPOWER programs and file a report by October 15, 2021.

Finally, the current goal structure for EmPOWER Maryland is mandated by legislation through the end of the 2021-2023 program cycle. The Commission is required to provide the General Assembly with recommendations on future goals and cost effectiveness by July 1, 2022. The Commission established a Future of EmPOWER Work Group and directed the Work Group to convene at the start of the 2021-2023 program cycle and develop a plan and timeline to be filed with the Commission by April 15, 2021. The Work Group was directed to file final recommendations by April 15, 2022, to allow time for the Commission and stakeholders to review the Work Group's findings prior to the Commission reporting any recommendations to the General Assembly.