PUBLIC SERVICE COMMISSION OF MARYLAND

TEN-YEAR PLAN (2016 – 2025) OF ELECTRIC COMPANIES IN MARYLAND

Prepared for the
Maryland Department of Natural Resources
In compliance with Section 7-201
of the Public Utilities Article, *Annotated Code of Maryland*
November 2016

State of Maryland
Public Service Commission

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This report was drafted by the Commission's Energy Analysis and Planning Division.

Table of Contents

List of Figures

List of Tables

List of Appendix Tables

I. Introduction

This report constitutes the Maryland Public Service Commission's *Ten-Year Plan (2016-2025) of Electric Companies in Maryland*. The Ten-Year Plan is submitted annually by the Commission to the Secretary of the Department of Natural Resources in compliance with § 7-201 of the Public Utilities Article, *Annotated Code of Maryland*. It is a compilation of information pertaining to the long-range plans of Maryland's electric companies. The report also includes discussion of selected developments that may affect these long-range plans. The analysis contained in the Ten-Year Plan uses forecasts provided by Maryland utilities, PJM Interconnection, LLC ("PJM"), and other state and federal agencies.

The 2016 – 2025 Ten-Year Plan provides a forward-looking analysis of the composition of Maryland's electricity and generation profile, as well as pertinent resources for more detailed information and Commission reports. This Plan will cover the following topics as relevant to Maryland:

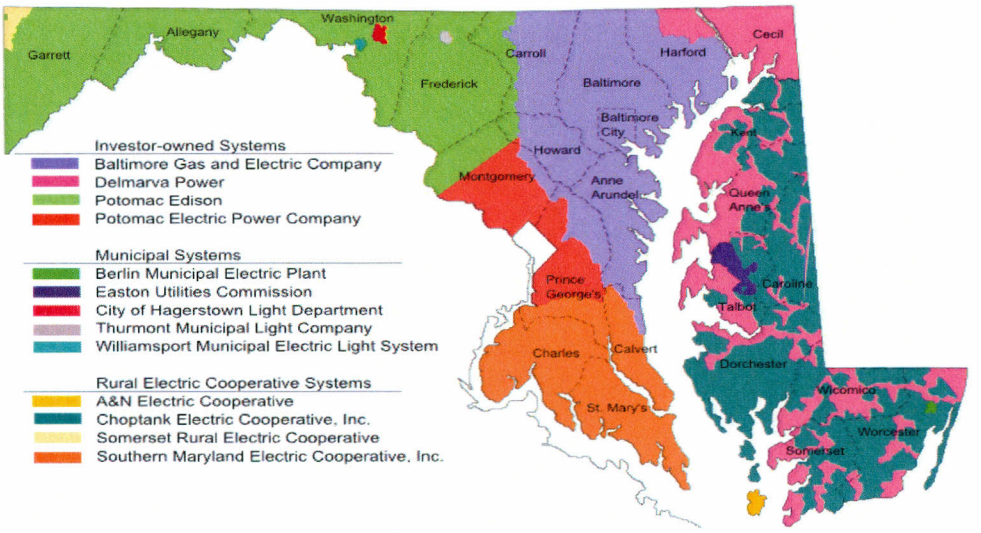
1. Maryland Load Growth Forecasts; and
2. Transmission, Supply, and Generation.

Changes to Maryland's capacity and generation profile anticipated by this report may necessitate additional infrastructure investment in the State's distribution network to ensure the safe, reliable, and economic supply of electricity. The Commission exercises its statutory and regulatory power to promote adequate, economical, and efficient delivery of utility services in the State through docketed proceedings. An account of these proceedings, including those dealing with distribution infrastructure investments, is published by the Commission in an annual report every March.

II. Background

Maryland is geographically divided into thirteen electric utility service territories. The four largest, by number of Maryland customers, are served by investor-owned utilities ("IOUs"); four represent electric cooperatives (two of which serve mainly rural areas of Maryland); and five are served by electric municipal operations.[1] PJM sub-regions, known as zones, generally correspond with the IOU service territories. PJM zones for three of the four IOUs traverse state boundaries and extend into other jurisdictions.[2] Figure 1 below provides a geographic picture of the Maryland utilities' service territories. Figure 2 depicts the PJM forecast zones of which Maryland is comprised.

Figure 1: Maryland Utilities and their Service Territories in Maryland[3,4]



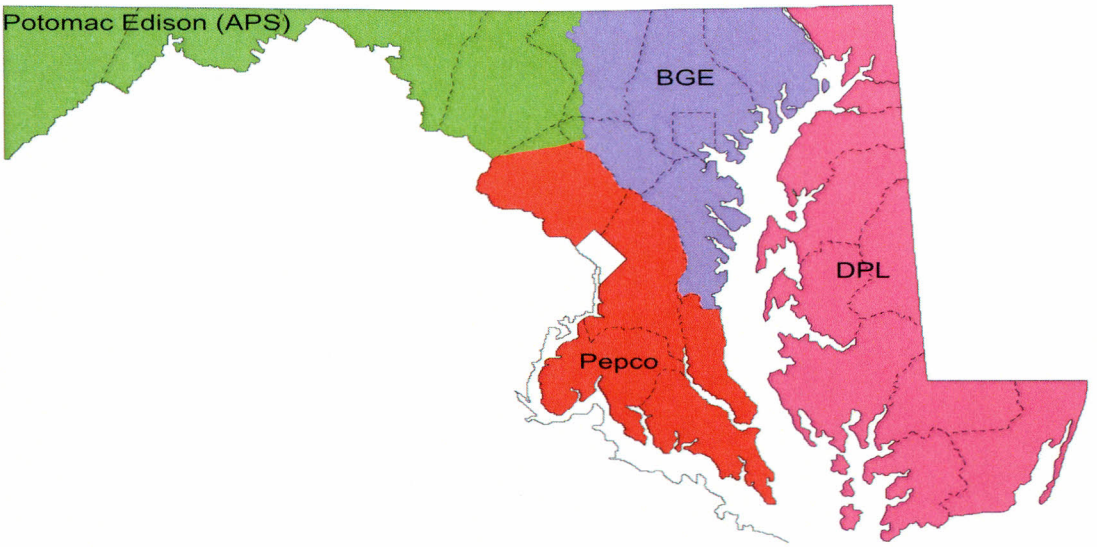
[1] The Commission regulates all Maryland public service companies, as defined by §1-101(x) of the Public Utilities Article, *Annotated Code of Maryland.*

[2] Potomac Electric Power Company ("Pepco"), Delmarva Power & Light Company ("DPL"), and The Potomac Edison Company ("PE") are the three IOUs that extend into other jurisdictions. Pepco, DPL, and PE data are a subset of the PJM zonal data, since PJM's zonal forecasts are not limited to Maryland. The Baltimore Gas and Electric ("BGE") zone, alone, resides solely within the State of Maryland.

[3] *Cumulative Environmental Impact Report 16*, Maryland Department of Natural Resources, Figure 2-12, http://esm.versar.com/pprp/ceir16/Report_2_2_0.htm (last updated Feb. 20, 2012).

[4] The Maryland utilities are as follows: Baltimore Gas and Electric Company ("BGE"), Delmarva Power & Light Company ("DPL"), Potomac Edison Company ("PE"), Potomac Electric Power Company ("Pepco"), Berlin Municipal Electric Plant ("Berlin"), Easton Utilities Commission ("Easton"), City of Hagerstown Light Department ("Hagerstown"), Thurmont Municipal Light Company ("Thurmont"), Williamsport Municipal Electric Light System ("Williamsport"), A&N Electric Cooperative ("A&N"), Choptank Electric Cooperative, Inc. ("Choptank"), Somerset Rural Electric Cooperative ("Somerset"), and Southern Maryland Electric Cooperative, Inc. ("SMECO").

Figure 2: PJM Maryland Forecast Zones[5]



III. Maryland Load Growth Forecasts

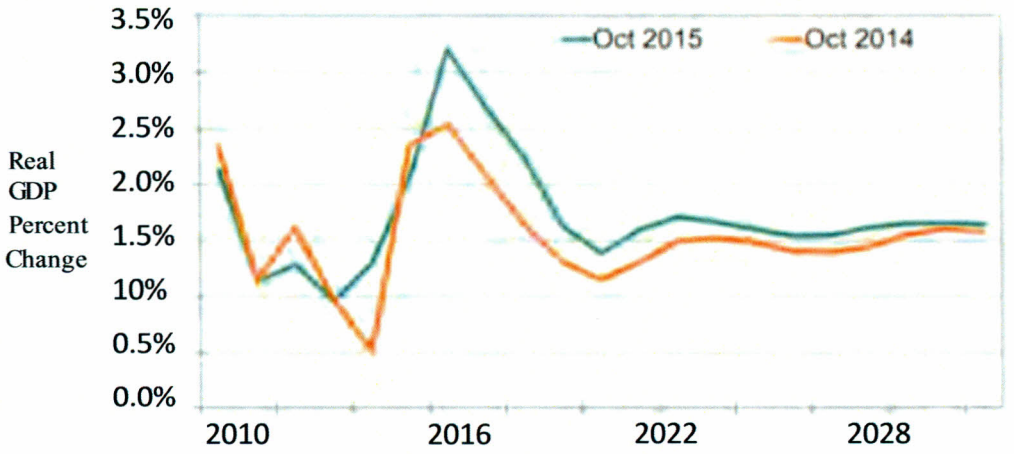
Each year, PJM presents a Load Forecast Report for its service territory that is derived in part from an independent economic forecast prepared by Moody's Analytics. The economic analysis includes projections related to the expected annual growth of the gross domestic product ("GDP") and can provide insight into possible trends for regional population growth and household disposable income, which in turn can impact energy sector planning.

The PJM forecast typically contrasts GDP growth projections included in the current (*i.e.* October 2015) load forecast with that of the previous year (*i.e.* October 2014), as depicted below in Figure 3. At the outset of the 2016 – 2025 planning period discussed in this Ten-Year Plan, the projected average GDP growth reflected in the current PJM load forecast is slightly higher than that projected by the previous year's forecast for the same time period, for which PJM cites a near-term increase in household formation as stimulating growth in consumer-based services like education, healthcare, and hospitality.[6] As a result of this near-term rebound in housing formation, the PJM regional average GDP growth rate has been revised to reflect a projected peak of 3.2% in 2017, as compared to the previous year's forecasted peak of 2.5% expected to occur in

[5] *PJM Load Forecast Report,* PJM, (Jan. 2016), http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.
[6] *Id.* at 15-16.

2017 as well.[7] Because the housing formation rate is projected to stabilize over time, however, the PJM region-wide long-term GDP growth projections remain largely comparable to those included in the previous year's forecast, hovering around 1.6% for the duration of the 2016 – 2025 planning horizon covered by this Ten-Year Plan.[8]

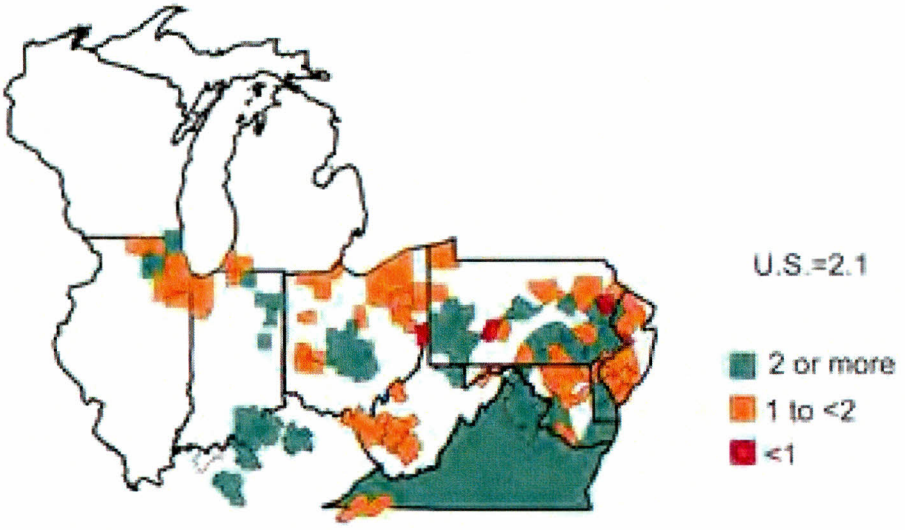
Figure 3: Comparison of Real GDP Growth Projections in PJM Metro Areas, October 2014 Load Forecast versus October 2015 Load Forecast[9]



The GDP growth projections discussed above in reference to the larger PJM region translate into varying impacts within the individual states that comprise PJM. As evidenced by Figure 4 below,[10] the southern states in the PJM region, including Maryland, are projected to experience GDP growth rates more on par with the forecasted national average; although, the majority of the PJM region is projected to underperform the U.S.[11] Forecasts specific to Maryland are projected to be more stable than other PJM states due to favorable demographic trends and the types of industries expected to dominate the marketplace, such as education, healthcare, and hospitality.[12]

[7] *Id.* at 16.
[8] *Id.*
[9] *Id.*
[10] *Id.* at 17.
[11] *Id.*
[12] *Id.* at 16.

Figure 4: Average Real GDP Growth from 2015 to 2030 (%)



Consistent with the stability projected for the State by the PJM 2016 Load Forecast Report, load forecasts submitted by the Maryland utilities for the 2016 – 2025 planning period discussed in this Ten-Year Plan are comparable to the forecasts provided to the Commission over the last several years. The Maryland utilities' load forecasts indicate a modest amount of projected annual growth in the number of customers, energy sales, and peak demand throughout the State. The current forecasts, however, do anticipate slightly lower energy sales and summer and winter peak demand forecasts compared to the forecasts from previous Ten-Year Plans. Although a departure from prior forecasts, this trend is in line with the increased efficiency measures deployed throughout Maryland and the subsequent reduced demand, as discussed further in Section III.D. of this Plan.

Table 1: Comparison of Compound Annual Growth Rate Projections – 2013, 2014, 2015, and 2016[13]

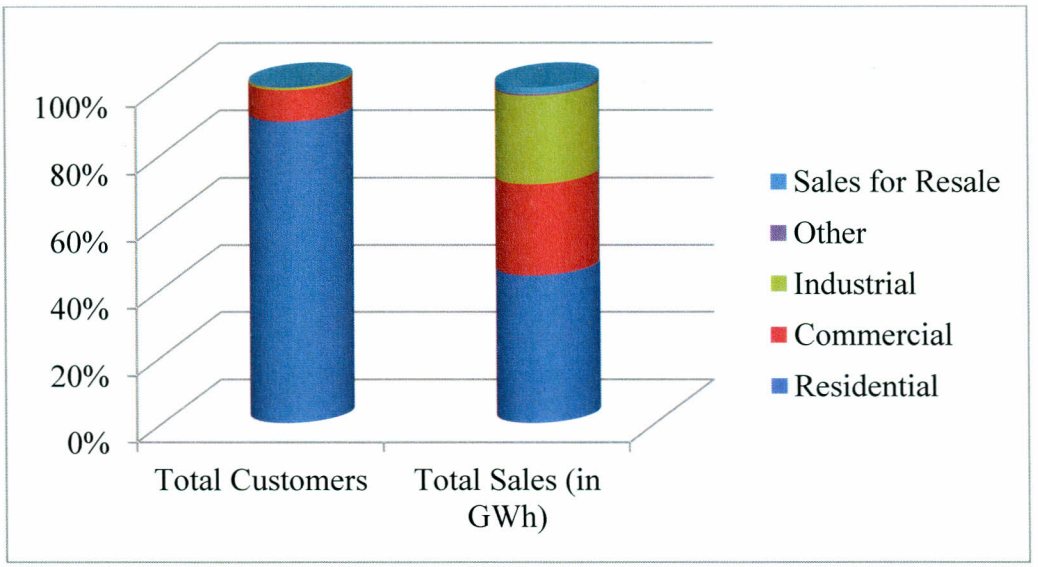
Compound Annual Growth Rate Projections 2013, 2014, 2015, and 2016				
Forecasts	**Ten-Year Plan 2013-2022**	**Ten-Year Plan 2014-2023**	**Ten-Year Plan 2015-2024**	**Ten-Year Plan 2016-2025**
Customer Forecasts	0.6%	0.7%	0.5%	0.7%
Energy Sales	0.9%	1.3%	1.2%	0.8%
Summer Peak Demand Forecasts	1.1%	0.9%	0.9%	0.5%
Winter Peak Demand Forecasts	1.0%	0.8%	0.8%	0.6%

[13] *See* Appendix Tables 1(a)(i), 2(a)(i), 3(a)(i), 3(a)(iii).

A. Customer Growth Forecasts[14]

At the close of 2015, approximately 90% of utility customers in Maryland were categorized as residential ratepayers; however, residential sales represented only 44% of the year's total retail energy sales, as illustrated in Figure 5 below.[15] Conversely, commercial and industrial ("C&I") customers represented just over 10% of Maryland utility customers, but corresponded to over half of the total retail energy sales for the State. Therefore, while growth and usage trends in the residential sector should be closely monitored, the overall projected stability of residential sector growth renders a change in either the commercial or industrial sector as potentially more impactful to statewide energy sales projections.

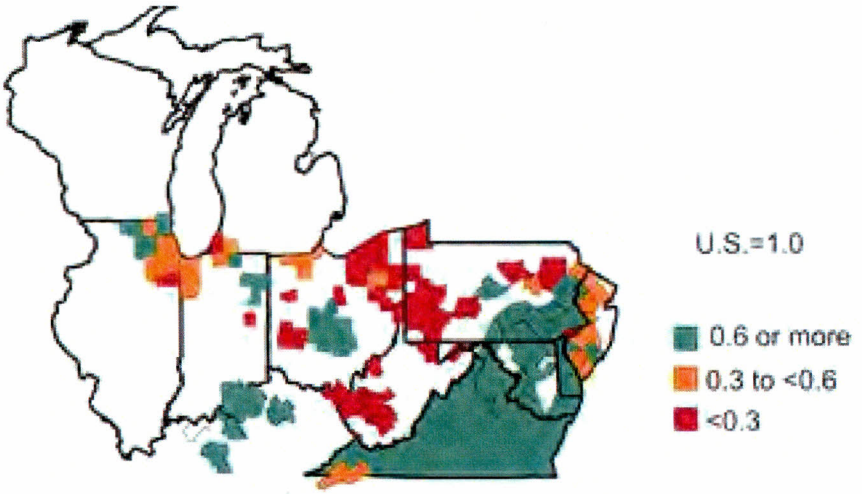
Figure 5: Total Customers and Energy Sales (in GWh) by Customer Class for 2015



Utility customer growth, particularly in the residential sector, is closely linked to household formation projections. The current PJM load forecast incorporates projections of a near-term rebound in housing formation rates, followed by a period of relative stability.[16] Over the planning horizon, however, the projected housing formation rates differ widely across the PJM service territory, as evidenced by Figure 6 below.

[14] *See* Appendix Table 1(a) for a complete list of utility-by-utility customer growth forecasts.
[15] *See* Appendix Tables 1(b)(i) and 1(b)(ii).
[16] *PJM Load Forecast Report,* PJM, (Jan. 2016) at 16, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.

Figure 6: Average Annual Household Growth from 2015 to 2030 (%)



As illustrated by Figure 6 above, Maryland – along with other southern PJM states – retain an advantage compared to the rest of the service territory with respect to forecasted household formation rates, and thus utility customer growth projections. The PJM load forecast attributes this to expected growth in consumer-based services in the applicable states, including Maryland.[17] Further, the PJM forecast regarding expected rates of household formation in Maryland is bolstered by the State's strong population growth in recent years, which translates to a greater number of households in the long run.

The population in Maryland continued to grow in 2015 – albeit at a slower rate than in prior years – which contributed to a net increase in electricity customers. While this was the smallest percentage increase in population realized by Maryland since the 2006 – 2007 timeframe, the State has been growing at a faster rate than most of the nation. Among the 50 states and the District of Columbia, Maryland experienced the fourteenth largest numeric gain in population in 2015; the ninth largest numeric gain over the last five years; and more growth than all of the Northeastern States, with the exception of Delaware and the District of Columbia.[18] This trend is expected to continue as more international migrants come to the State.[19]

This trend regarding population growth, near-term increases in housing formation and long-term stability, is mirrored by the Maryland utilities' forecasts regarding customer growth; for the majority of this ten-year planning period, their forecasts depict modest annual growth rates. As reflected in Table 2 below, the statewide forecasted compound annual growth rate during the planning period is 0.7% for all customer classes,

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[17] *Id.*
[18] *Population Growth for Maryland in 2015*, Maryland Department of Planning, http://www.mdp.state.md.us/msdc/Pop_estimate/Estimate_15/Population%20Growth%20Slows%20for%20Maryland%20in%202015.pdf.
[19] *Id.* at 2.

which translates into a 6.8% increase in the total number of Maryland customers by the end of the ten-year planning period. During this timeframe, Berlin, PE, Pepco, and SMECO are projecting their overall customer bases to increase by 7.6% or more.

Table 2: Maryland Customer Forecast (All Customer Classes)[20]

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William-sport	Total
2016	2,490	1,266,847	53,214	203,860	10,582	17,243	261,906	564,619	164,029	2,827	988	**2,548,605**
2017	2,515	1,275,756	53,648	204,847	10,601	17,329	263,663	570,196	165,586	2,827	988	**2,567,957**
2018	2,528	1,284,686	53,795	205,791	10,620	17,416	265,696	575,726	167,284	2,827	988	**2,587,357**
2019	2,541	1,293,575	54,285	206,705	10,639	17,503	267,849	581,149	169,102	2,827	988	**2,607,162**
2020	2,553	1,302,313	54,547	207,591	10,658	17,591	270,077	586,676	170,980	2,827	988	**2,626,801**
2021	2,579	1,310,566	54,800	208,481	10,677	17,679	272,345	592,258	172,897	2,827	988	**2,646,097**
2022	2,605	1,318,371	55,059	209,375	10,696	17,767	274,645	597,893	174,878	2,827	988	**2,665,104**
2023	2,631	1,325,948	55,317	210,273	10,715	17,856	276,967	603,584	176,912	2,827	988	**2,684,018**
2024	2,657	1,333,578	55,558	211,175	10,734	17,945	279,313	609,330	178,982	2,827	988	**2,703,087**
2025	2,684	1,341,302	55,799	212,080	10,753	18,034	281,671	615,132	181,115	2,827	988	**2,722,384**
Change (2016-2025)	**193**	**74,455**	**2,585**	**8,220**	**171**	**791**	**19,765**	**50,513**	**17,086**	-	-	**173,779**
Percent Change (2016-2025)	**7.8%**	**5.9%**	**4.9%**	**4.0%**	**1.6%**	**4.6%**	**7.6%**	**9.0%**	**10.4%**	**0.0%**	**0.0%**	**6.8%**
Compound Annual Growth Rate	**0.8%**	**0.6%**	**0.5%**	**0.4%**	**0.2%**	**0.5%**	**0.8%**	**1.0%**	**1.1%**	**0.0%**	**0.0%**	**0.7%**

The customer forecasts provided by the utilities are comparable to the forecasts they provided for the 2015 – 2024 Ten-Year Plan. Overall, the increase in the number of customers across Maryland is primarily driven by growth in the residential class. Growth in the residential sector is projected to account for an additional 160,096 customers by 2025, or 92% of total new customers projected. The largest absolute increase in the number of customers is projected to come from BGE's residential customer base, with the addition of 68,846 residential customers forecasted during this planning period.[21] BGE's projected increase in its residential customer base accounts for 43% of the total number of new residential customers across all service territories during the ten-year planning period.[22] The increase in residential customers for BGE translates into a compound annual growth rate of 0.7%,[23] which is comparable to the "0.6% or more" average household formation rate projected by PJM for this zone.

Although several Maryland utilities are projecting a sizeable increase in their customer bases during this planning period, Table 3 below shows that the aggregated utilities' customer forecasts are only 1.9% higher than the projections provided during the previous planning period. The most significant change observable in the aggregated

[20] *See* Appendix Table 1(a)(i). Note that A&N and Somerset did not provide the requested applicable information in response to the Commission's 2016 data request for the Ten-Year Plan.
[21] *See* Appendix Table 1(a)(ii).
[22] *Id.*
[23] *Id.*

statewide data between the previous and current Ten-Year Plan forecasts is within the "Other" customer class,[24] largely attributable to projections provided by PE. In the previous planning period, the Company updated its model to reflect the decline in this category of customers, which it has been experiencing in its territory since 2009. The percentage decrease of the "Other" customer class anticipated in the 2016-2025 Ten-Year Plan, however, is less than that projected by the 2015-2024 Plan.

Table 3: Projected Percentage Increase in the Number of Customers by Class, 2016 – 2025 [25]

Class	2015 to 2024	2016 to 2025	Difference
Residential	5.0%	7.0%	1.9%
Commercial	3.3%	4.7%	1.4%
Industrial	12.5%	13.8%	1.4%
Other	-3.3%	-0.8%	2.5%
Resale	0.0%	0.0%	0.0%
Total Customers	**4.9%**	**6.8%**	**1.9%**

Aside from noteworthy observations visible in the aggregated utility forecasts, there are other trends of note in the customer forecasts provided by individual utilities for the 2016 – 2025 planning period. For example, SMECO forecasted the largest percentage differences of all utilities with respect to the residential and commercial classes, with an increase of 10.1% and 13.7%, respectively.[26] The Cooperative's projected increases in both the residential and commercial customer classes can be attributed to its reliance on the Maryland Office of Planning forecasts, which project an average annual growth rate of 1.6% for the region. Additionally, BGE is projecting the largest percentage difference (17.5%) of all utilities with respect to the industrial customer class, which the Company attributes to the general improvement of the economy.[27]

[24] The "Other" rate class refers to customers that do not fall into one of the listed classes; street lighting is an example of a rate class included under "Other." The Resale class refers to Sales for Resale which is energy supplied to other electric utilities, cooperatives, municipalities, and Federal and State electric agencies for resale to end use consumers. PE is the only utility with any resale customers; these wholesale customers are PJM, Monongahela Power Company, West Penn Power Company, and Old Dominion Electric Cooperative.

[25] *See* Appendix Table 1(a)(i)-(vi) for more information.

[26] *See* Appendix Table 1(a)(ii) and 1(a)(iii) for more information.

[27] *See* Appendix Table 1(a)(iv) for more information.

B. Energy Sales Forecast

The Maryland utilities provide forecasts for energy sales and peak load in terms of "Gross of Demand Side Management ("DSM")" and "Net of DSM."[28] In order to provide a more complete look at Maryland energy sales and peak demand forecasts, Sections III.B and III.C discuss the forecasts in "Gross of DSM" terms, which reflect the forecasts *before* the impact of DSM programs. Table 4 shows the energy sales forecast within Maryland (Gross of DSM) for the ten-year planning period, as provided by the utilities. The aggregated forecasts show a compound annual growth rate of 0.8% across all the Maryland service territories for 2016 – 2025, a decrease from the 1.2% annual growth rate reported in the 2015 – 2024 Ten-Year Plan.

Table 4: Maryland Energy Sales Forecast (GWh) (Gross of DSM) [29]

	Berlin	BGE	Choptank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Total
Change (2016-2025)	4	3,299	277	(363)	12	18	570	456	377	4,600
Percent Change (2016-2025)	10.2%	10.5%	20.3%	-8.0%	4.5%	5.8%	7.1%	3.0%	10.2%	7.1%
Compound Annual Growth Rate	1.1%	1.1%	2.1%	-0.9%	0.5%	0.6%	0.7%	0.3%	1.1%	0.8%

The statewide energy sales growth rate derived from the utilities' 2016 – 2025 forecasts is 0.4% lower than the rate projected in last year's report, primarily due to BGE's revised projections of a lower energy sales growth rate than included in the 2015 – 2024 Ten-Year Plan.[30] Despite this downward revision, the overall growth projected by BGE for this ten-year planning period remains the largest of any Maryland utility in absolute terms, with the Company projecting an additional 3,299 GWh in energy sales by 2025. In fact, absent BGE's inclusion in the statewide projections, the statewide compound annual growth rate for this planning period drops from 0.8% to 0.3%.

While BGE is forecasting the largest absolute increase in total energy sales during this planning horizon, Choptank is anticipating the largest percentage change. The link between economic and energy sales projections is highlighted by the reasoning offered in support of BGE's and Choptank's forecasts. BGE's forecast takes into consideration the stability of the economic outlook, coupled with the large forecasted growth in industrial

[28] *See* Appendix Table 2(a)(ii) for the Maryland Energy Sales forecast, Net of DSM programs; Appendix Table 3(a)(ii) for the Maryland Summer Peak Demand Forecast, Net of DSM programs; and Appendix Table 3(a)(iv) for the Maryland Winter Peak Demand Forecast, Net of DSM programs.
[29] *See* Appendix Table 2(a) for utility-by-utility energy sales forecasts for the Maryland service territory, available by Gross and Net of DSM. *See* Appendix Table 2(b) for the same information on a system wide basis.
[30] Only two of the utilities projected larger growth rates for the 2016 - 2025 planning horizon than for the previous year's Plan (Berlin and Pepco).

customers as discussed earlier, as reasons for continued and steady energy sales growth over the next ten years. Choptank's forecast takes into consideration steady growth in the residential and small commercial customer classes as the economy and incomes remain stable throughout its territory.

C. Peak Load Forecasts

PJM's 2016 Load Forecast Report includes long-term projections of peak loads for the entire wholesale market region and each PJM zone.[31,32] Due to the fact that the PJM zones can extend outside of Maryland, the utilities submit peak demand forecasts restricted to their Maryland service territories as part of the Ten-Year Plan.[33] According to PJM's 2016 Load Forecast Report, the PJM Regional Transmission Organization ("RTO") will continue to be summer peaking during the next 15 years.[34] In 2016, the four PJM zones of which Maryland is comprised are projected to experience their peak demands during the month of July,[35] the same month as the broader PJM Mid-Atlantic Region.[36]

In contrast to PJM's forecasts, Berlin, DPL, Hagerstown, and PE are forecasting their peak demands to occur in the winter in most or all of the forecasted years. With the exception of DPL, these utilities have peaked in the winter consistently over the past few planning periods for reasons such as: higher concentrations of electric heating; geographical features; and colder temperatures.

Figure 7 compares the average of the Maryland utilities' forecasted summer peak demands for their Maryland service territories with summer forecasts for the PJM Mid-Atlantic Region and for the PJM RTO as a whole. As illustrated below, the utilities' average summer peak demand growth rate follows a similar path to the PJM RTO and the PJM Mid-Atlantic Region. In the near-term, the PJM RTO is showing stronger peak demand growth rate than the Maryland utilities and the PJM Mid-Atlantic Region due to the Dominion Virginia Power zone, which is projected to add 1,579 MW of summer peak load and to grow at an average of 2.7% over the next three years.[37]

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[31] *PJM Load Forecast Report,* PJM, (Jan. 2016) at 52, Table B-1, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.

[32] The four PJM zones spanning the Maryland service territory include APS, BGE, DPL, and PEPCO. *See supra* Figure 2 for a map of the Maryland zones. "APS" represents the Allegheny Power Zone, of which PE is a sub-zone.

[33] *See* Appendix Table 3(a) for more information on in-State peak demand forecasts for Maryland utilities, available for summer and winter, and by gross and net of DSM programs. *See* Appendix Table 3(b) for the same information, presented as system wide data for utilities operating in Maryland.

[34] *PJM Load Forecast Report,* PJM, (Jan. 2016) at 2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.

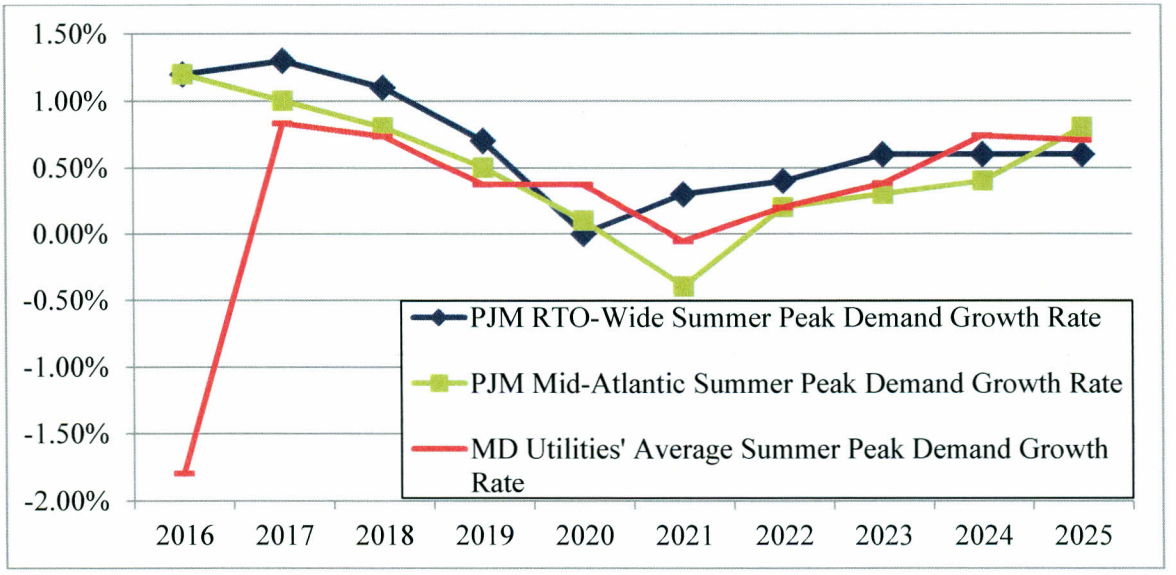
[35] *Id.* at 62-63, Table B-5.

[36] *Id.* Three of the Maryland PJM zones (BGE, DPL, and Pepco) are considered to be part of the PJM Mid-Atlantic Region. The fourth Maryland PJM zone (APS) is presented as part of the PJM Western Region data set.

[37] *Id.* at 52

Also reflected in Figure 7 is a brief spike in the summer peak demand growth rates for the PJM RTO and the Maryland utilities in 2017, after which time the growth rates generally level off through 2025. The PJM 2016 Load Forecast report notes that 2021 corresponds to the next Regional Transmission Expansion Plan ("RTEP") study year, which may account for the fact that the 2016 forecast shows a projected 5.1% decrease in the PJM RTO summer peak demand forecast in 2021 as compared to the 2015 forecast.[38] This projected decrease had different implications in various zones throughout the PJM RTO, however, and it translated into a smaller decline of only 0.4% projected summer peak demand growth rate for 2021 in the PJM Mid-Atlantic Region.[39]

Figure 7: Average of Utilities' Projected Summer Peak Demand Growth Rates (Gross of DSM) Compared to Projected Summer Peak Demand Growth Rates for PJM Mid-Atlantic and PJM RTO[40]



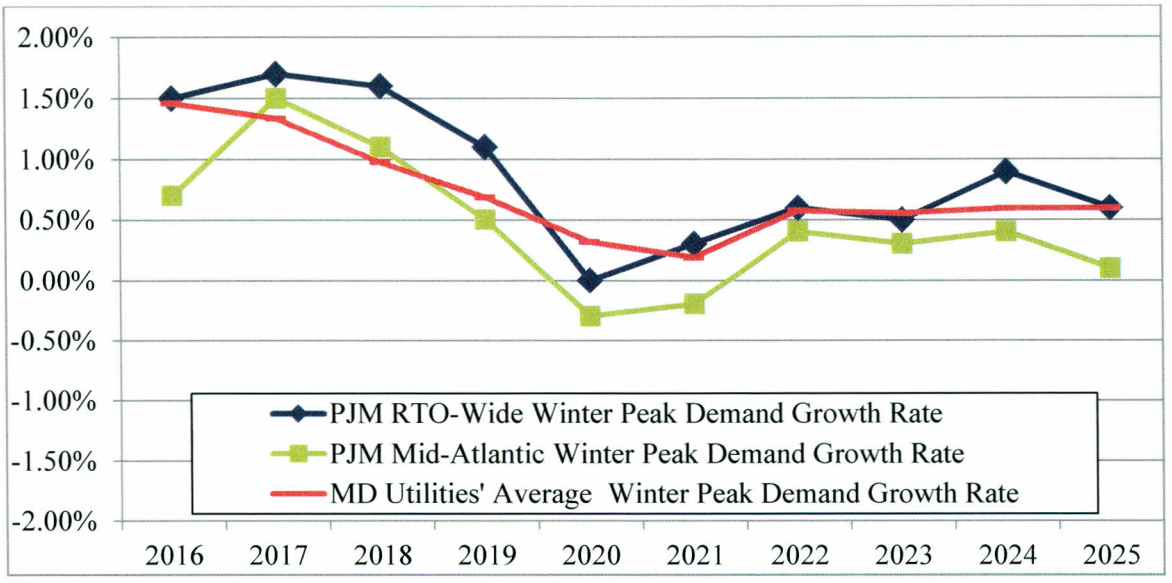
The Maryland utilities also provided peak demand forecasts for the winter season in response to the Ten-Year Plan data request. Figure 8 below depicts an average of the Maryland utilities' forecasted winter peak demands, contrasted with winter peak demand forecasts for the PJM Mid-Atlantic Region and for the PJM RTO. A visual comparison of Figure 7 and Figure 8 illustrates that the aggregated Maryland utilities' winter peak demand forecast follows a trajectory comparable to the summer peak demand growth rate projections. Both the PJM summer and winter peak demand forecasts and the PJM GDP growth forecast follow a pattern of peaking in the near-term before transitioning to a more modest level of projected growth in the second half of the planning period. The Maryland utilities' summer and winter peak demand forecasts also follow this pattern.

[38] *Id.* at 2.

[39] *Id.* at Table B-1.

[40] The Utilities' average summer peak demand growth rates were calculated using the Utilities' data responses to the Commission's 2016 data request for the Ten-Year Plan. *See* Appendix Table 3(a)(i).

Figure 8: Average of Utilities' Projected Winter Peak Demand Growth Rates (Gross of DSM) Compared to Projected Winter Peak Demand Growth Rates for PJM Mid-Atlantic and PJM RTO[41,42]



As shown in Table 5 and Table 6 below, the ten-year forecasted Maryland growth rates of summer and winter peak demand (gross of DSM) are 0.5% and 0.7%, respectively.[43] In 2025 at the end of this planning timeframe, these growth rates translate into an expected summer peak demand load (gross of DSM) for the Maryland service territory of 14,903 MW and an expected winter peak demand load (gross of DSM) for Maryland of 13,380 MW.[44]

Table 5: Maryland Summer Peak Demand Forecast (MW) (Gross of DSM)[45,46]

	Berlin	BGE	Choptank	DPL	Easton	Hagers -town	PE	Pepco	SMECO	Total
Change (2016-2025)	1	245	48	31	2	3	95	98	99	622
Percent Change (2016-2025)	6.5%	3.5%	17.3%	3.3%	3.5%	4.7%	5.9%	2.9%	10.8%	4.4%
Compound Annual Growth Rate	0.7%	0.4%	1.8%	0.4%	0.4%	0.5%	0.6%	0.3%	1.2%	0.5%

[41] *See* Appendix Table 3(a)(iii).
[42] *PJM Load Forecast Report,* PJM, (Jan. 2016) at Table B-2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.
[43] *See* Appendix Table 3(a).
[44] *See* Appendix Tables 3(a)(i) and 3(a)(iii).
[45] *Id.*
[46] Thurmont and Williamsport were not included in this table because the companies do not have any changes in their peak demand forecasts over the ten-year period.

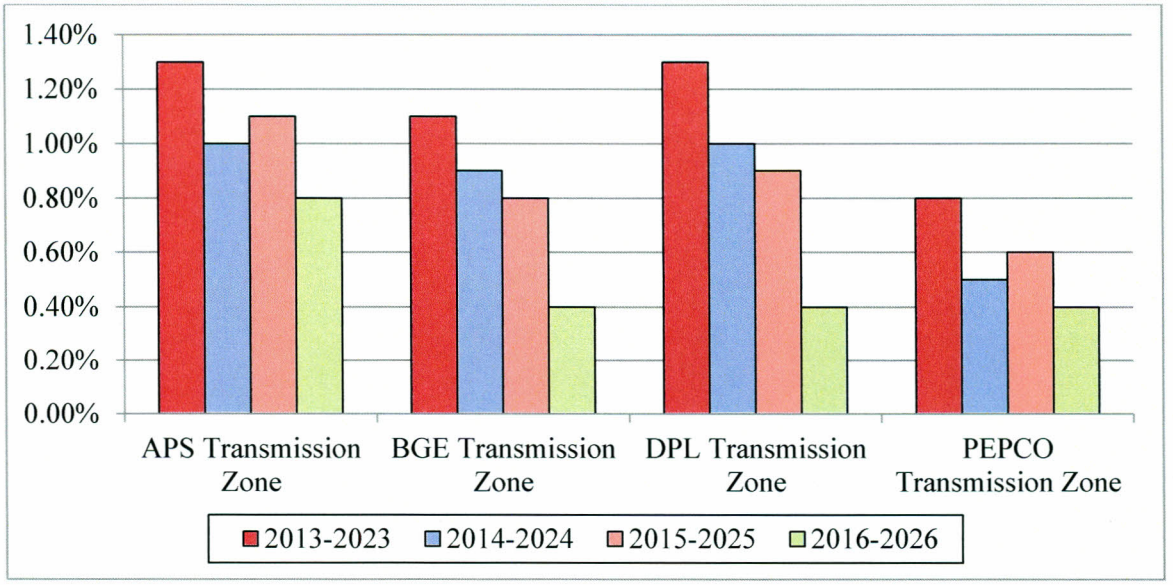
Table 6: Maryland Winter Peak Demand Forecast (MW) (Gross of DSM)[47, 48]

	Berlin	BGE	Choptank	DPL	Easton	Hagers -town	PE	Pepco	SMECO	Total
Change (2016-2025)	1	227	36	59	3	3	123	141	160	754
Percent Change (2016-2025)	11.7%	3.8%	13.5%	6.1%	5.9%	4.3%	7.1%	5.2%	18.9%	6.0%
Compound Annual Growth Rate	1.2%	0.4%	1.4%	0.7%	0.6%	0.5%	0.8%	0.6%	1.9%	0.7%

Figure 9 and Figure 10 compare the current and historical peak demand growth rates for the four PJM zones of which Maryland is comprised. As illustrated below, all four zones are projecting lower levels of growth than forecasted during the previous planning period. This trend corresponds to the utilities' peak demand forecasts, summarized in Table 5 and Table 6 above, which reflect diminished projections for the BGE, DPL, PE, and Pepco service territories relative to the previous planning period. Figure 11 illustrates that both the summer and winter peak demand growth rates of the PJM RTO and the PJM Mid-Atlantic region have also declined from the previous planning period. This is largely attributable to the changes that PJM made in the load forecast models since the 2015 report; these changes are intended to better reflect weather, heating and cooling equipment saturation and efficiency, and the distributed solar generation deployed throughout PJM.[49]

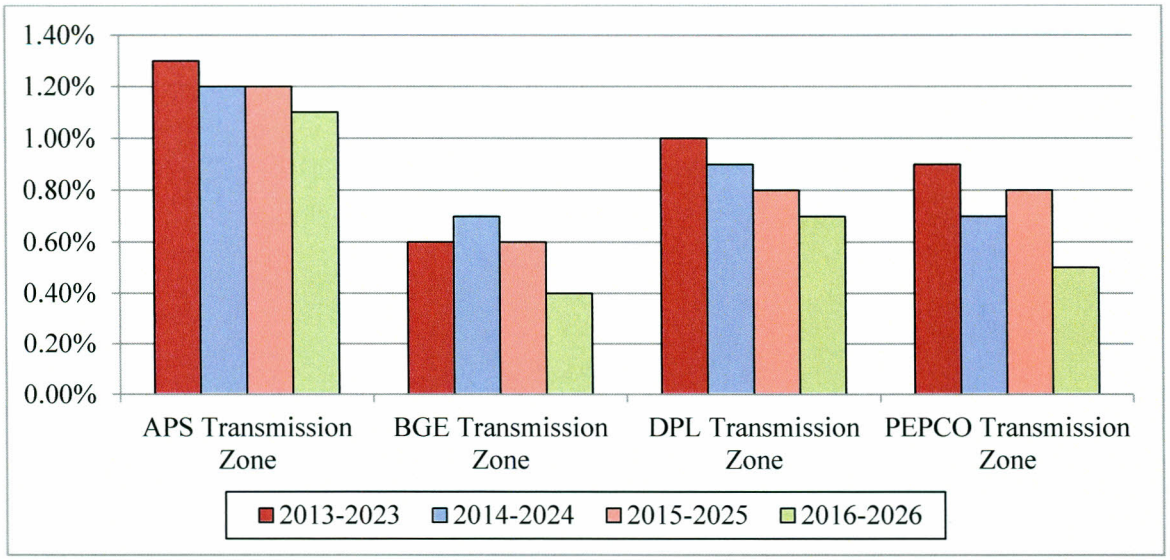
[47] *See* Appendix Tables 3(a)(i) and 3(a)(iii).
[48] Thurmont and Williamsport were not included in this table because the companies do not have any changes in their peak demand forecasts over the ten year period.
[49] *PJM Load Forecast Report,* PJM, (Jan. 2016) at 1-2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.

Figure 9: Comparison of Maryland PJM Zones' Ten-Year Summer Peak Load Growth Rates as Reported in PJM Load Forecast Reports of 2013, 2014, 2015, and 2016[50]



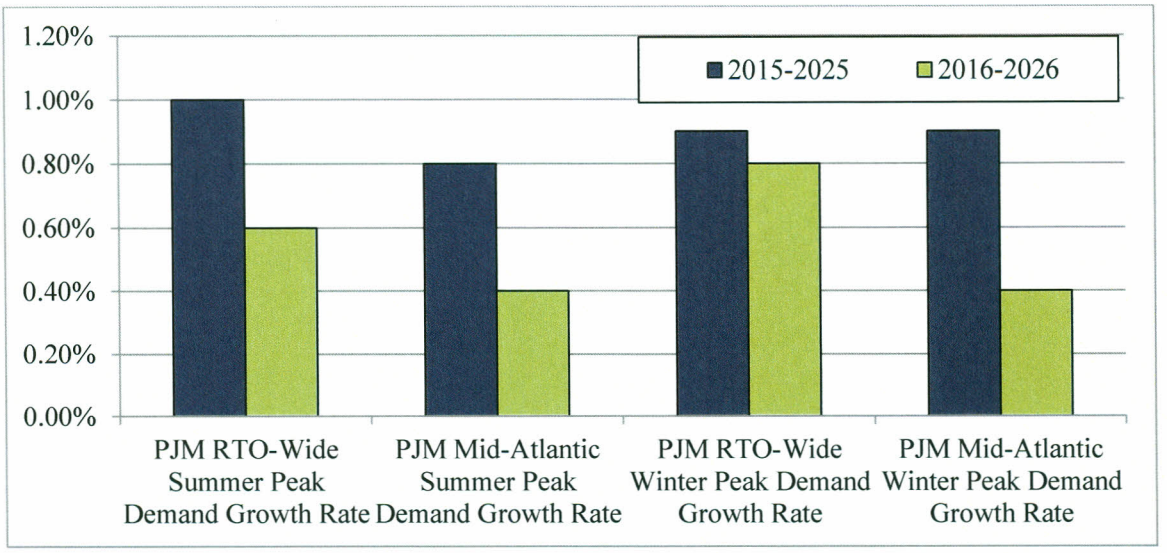
[50] *See PJM Load Forecast Report,* PJM, (Jan. 2013) at Table B-1, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2013-load-forecast-report.ashx; *PJM Load Forecast Report,* PJM, (Jan. 2014) at Table B-1, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2014-load-forecast-report.ashx; *PJM Load Forecast Report*, PJM, (Jan. 2015) at Table B-1, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2015-load-forecast-report.ashx; *PJM Load Forecast Report,* PJM, (Jan. 2016) at Table B-1, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.

Figure 10: Comparison of Maryland PJM Zones' Ten-Year Winter Peak Load Growth Rates as Reported in PJM Load Forecast Reports of 2012, 2013, 2014, and 2015[51]



[51] *See PJM Load Forecast Report,* PJM, (Jan. 2013) at Table B-2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2013-load-forecast-report.ashx; *PJM Load Forecast Report,* PJM, (Jan. 2014) at Table B-2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2014-load-forecast-report.ashx; *PJM Load Forecast Report*, PJM, (Jan. 2015) at Table B-2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2015-load-forecast-report.ashx; *PJM Load Forecast Report,* PJM, (Jan. 2016) at Table B-2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.

Figure 11: Comparison of PJM Ten-Year Peak Load Growth Rates as Reported in PJM Load Forecast Reports of 2015 and 2016[52]



D. Impact of Demand Side Management

DSM programs result in lower growth of both energy sales and peak demand. To evaluate the impact of DSM programs, this section reflects the Maryland utilities' energy sales forecasts *after* the benefits of DSM programs are included ("net of DSM"). For purposes of this section, only the five utilities participating in EmPOWER Maryland are evaluated: BGE, DPL, PE, Pepco, and SMECO ("the Participating Utilities").[53] According to the Participating Utilities' Ten-Year Plan forecasts, the DSM programs will save a total of 33,279 GWh over the planning period. These savings will be achieved by reducing the annual rate of growth in energy sales and peak demand.

Figure 12 below shows the impact of the Participating Utilities' DSM programs on their respective energy sales projections over the duration of the ten-year planning period. BGE is forecasting the largest quantity of energy savings stemming from DSM programs, most notably from its Residential Lighting and Appliances Programs, and Smart Grid Programs, which represent 20.6% and 26% of BGE's forecasted savings,

[52] *PJM Load Forecast Report*, PJM, (Jan. 2015) at Table B-1 and Table B-2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2015-load-forecast-report.ashx; *PJM Load Forecast Report,* PJM, (Jan. 2016) at Table B-1 and Table B-2, http://www.pjm.com/~/media/library/reports-notices/load-forecast/2016-load-report.ashx.

[53] *See* The EmPOWER Maryland Report to the General Assembly for more information on the energy efficiency and demand response programs associated with EmPOWER Maryland, *available at:* http://www.psc.state.md.us/wp-content/uploads/2016-EmPOWER-Maryland-Energy-Efficiency-Act-Standard-Report.pdf.

respectively.[54] Conversely, SMECO is forecasting the lowest quantity of savings attributable to DSM programs, due primarily to the fact that the Cooperative does not implement as many programs outside of its traditional energy efficiency and conservation ("EE&C") portfolio as compared to the other utilities. While SMECO operates a conservation voltage reduction ("CVR") program in addition to its EE&C portfolio, other Participating Utilities offer additional programs, such as: Dynamic Pricing, Streetlights, and High Efficiency Transformers.

Figure 12: Impact of the Participating Utilities' DSM Programs on the Ten-Year Energy Sales Projections (MWh)[55]

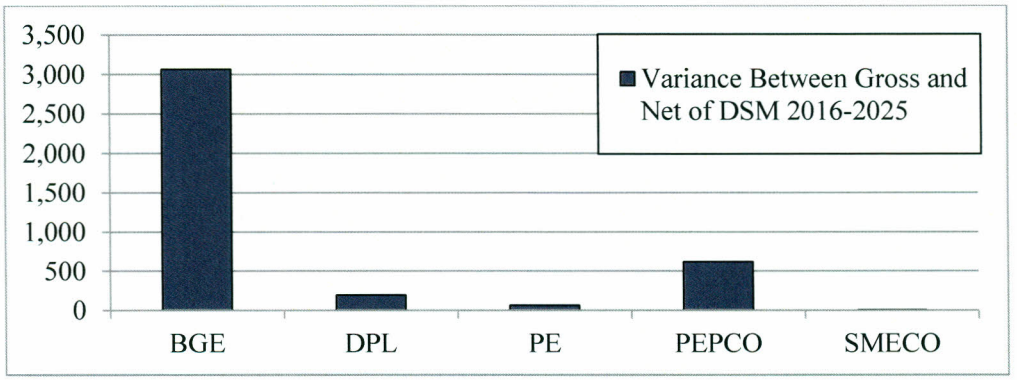
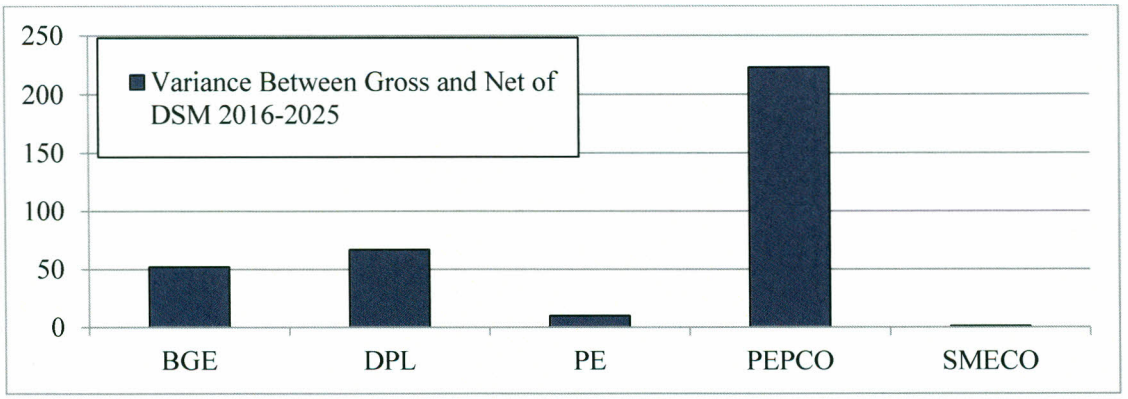


Figure 13 details the impact of the DSM programs on the Participating Utilities' 2016 peak demand forecasts as compared to their respective 2025 projections. As noted above, all of the Participating Utilities' programs are expected to experience an increased differential in peak demand growth attributable to DSM programs; however, Pepco is projecting the largest demand savings to accrue during the planning period attributable to the DSM programs. Pepco is forecasting that summer peak demand will be lower in 2025 than in 2016 due to its DSM programs, despite forecasted growth of 9% in the number of customers during the planning period and a summer peak demand growth rate (gross of DSM) for the 2016 – 2025 planning period of 2.9%.

[54] BGE's response to Staff's Data Request. The percentages represent the total savings the programs comprise of the 2015-2017 program cycle plan.
[55] *See* Appendix Table 2(a)(i) and 2(a)(ii) for the data used to make this Figure.

Figure 13: Impact of the Participating Utilities' DSM Programs on the Ten-Year Summer Peak Load (MW)[56]



The tables below compare the growth in DSM savings across the Participating Utilities from 2016 to 2018. The forecasted savings post-2017, however, fluctuate in derivation method and amount across the Participating Utilities given that Commission-approved plans for utility-implemented EE&C programs pertain to the 2015 – 2017 program cycle only at this time.[57] Table 7 shows the growth in demand savings from DSM programs due to EE&C portfolios, while Table 8 shows the growth in total demand savings attributable to DSM programs as a whole. The variation in the magnitude of impact of the EE&C and DSM programs by utility are due to the different sizes of the programs offered and the way in which the data was forecasted by the Participating Utilities. Also, the Commission notes that demand savings projections later in the 2016 – 2025 planning horizon may be affected by future iterations of EmPOWER Maryland program cycle proposals, as well as pending changes to the capacity market as a result of PJM's Capacity Performance Proposal.[58]

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[56] *See* Appendix Table 3(a)(i) and 3(a)(ii) for the data used to make this Figure.

[57] Because the Commission has only approved plans pertaining to the 2015 – 2017 program cycle at this date, BGE did not include any EE&C savings projections after 2017, with the exception of its Residential Demand Response Program. The other Participating Utilities assume a constant level of savings post-2017.

[58] On June 15, 2015, the FERC approved a proposal by PJM to dramatically restructure its capacity market, referred to as the "capacity performance" ("CP") proposal. PJM noted that its proposal is intended to result in larger capacity payments for the most reliable resources, and higher penalties for non-performers. Critics of the CP proposal, including the Maryland Commission, countered that the changes are unnecessary for reliable service operations and will likely increase electricity end user costs significantly, and further that the CP proposal generates major concerns regarding the future of DR and intermittent resources. Without modification to the CP proposal, the Maryland Commission and others warned that the majority of DR resources will be required to withdraw from the PJM market. On November 17, 2016, PJM filed with the FERC several improvements to the CP proposal, which it asserts will increase opportunities for seasonal resources (such as summer-focused DR programs) to participate in the capacity auctions. With FERC approval, the changes would be in effect for the May 2017 auction for the 2020 – 2021 delivery year. Because of the uncertainty surrounding the PJM CP proposal and proposed modifications, this Ten-Year Plan does not speculate further as to the CP proposal's impact on Maryland utilities' future DSM savings during the remainder of the ten-year planning horizon; however, future iterations of the Ten-Year Plan will explore this topic further.

Table 7: Average Annual Increase in Demand Savings due to DSM Programs from 2016 to 2018 for EE&C Programs[59]

Description	BGE	DPL	PE	Pepco	SMECO
Average Annual MW Savings Increase due to DSM Programs	-4.2%	16.4%	4.5%	13.6%	0.4%

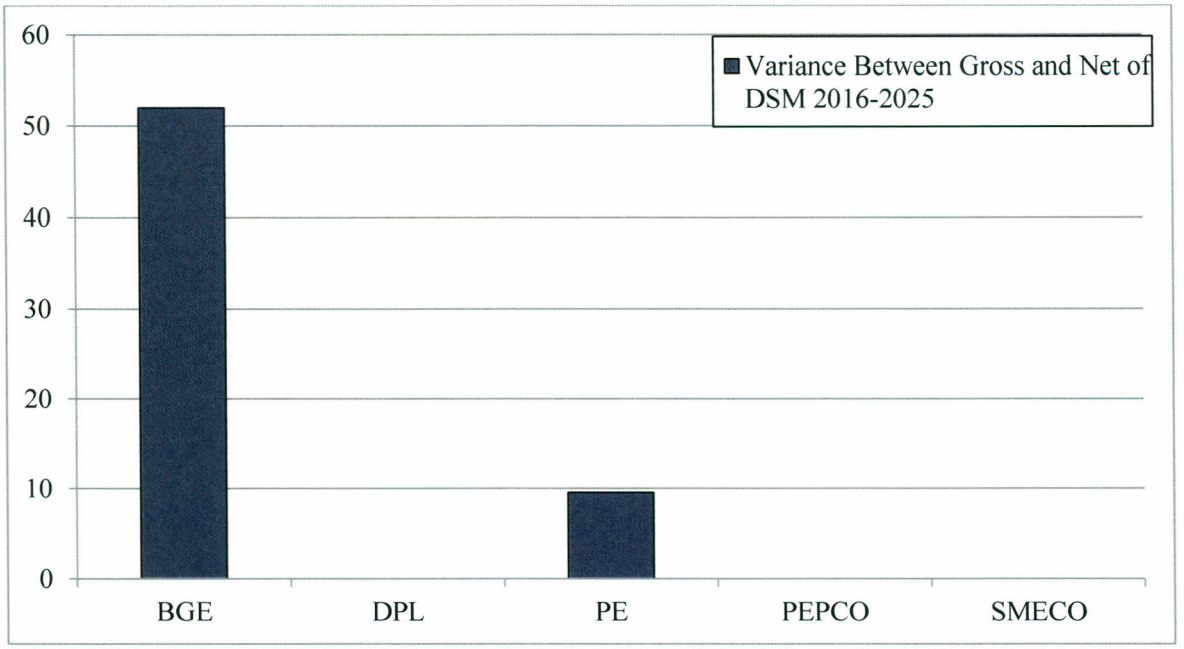
Table 8: Average Annual Increase in Demand Savings due to DSM Programs from 2016 to 2018 for All DSM Programs[60]

Description	BGE	DPL	PE	Pepco	SMECO
Average Annual MW Savings Increase due to DSM Programs	0.1%	11.7%	3.8%	10.3%	0.3%

As illustrated by Figure 14, none of the Participating Utilities are forecasting a significant reduction in *winter* peak demand due to the DSM programs, since the majority of DSM programs focus on summer peak demand reduction opportunities. While Pepco and DPL operate energy efficiency programs similar to the other Participating Utilities, the PHI Companies did not project any DSM program savings for the winter peak load. Conversely, BGE projected sizeable winter peak demand savings, attributable to a combination of its residential direct load control (*i.e.,* hot water heaters), CVR, Dynamic Pricing, and Smart Grid program offerings. PE and SMECO reported savings from several EE&C programs as well; although due to a reporting nuance, the graph below appears to reflect a zero net impact for the SMECO service territory.[61]

[59] Responses to the Commission's Ten-Year Plan Data Requests.
[60] *Id.*
[61] SMECO reports a difference in the total numbers for gross and net winter peak demand; however, there is no difference in the growth rates.

Figure 14: Impact of the Participating Utilities' DSM Programs on the Ten-Year Winter Peak Load (MW)[62]



[62] *See* Appendix Tables 3(a)(iii) and 3(a)(iv) for data used to derive this graph.

IV. Transmission, Supply, and Generation

In order to ensure a safe, reliable, and economic supply of electricity in Maryland, an appropriate balance of generation, DSM, imports, and transmission must be achieved. While importation and DSM offer ancillary benefits to managing the power supply, it is critical that local generation is established and maintained to mitigate the risk to Maryland's long-term reliability.

For purposes of the Ten-Year Plan, the congestion costs and the role of transmission infrastructure in planning processes are discussed in Section IV.A; Section IV.B focuses on the State-specific impact of Maryland's status as a net importer of electricity. Information related to the Commission's concerns about the capacity, composition, and advanced age of Maryland's current generation profile is discussed in Section IV.C.

Maryland depends on regional transmission and importation by the PJM market system. All load serving entities in PJM are required to ensure that they have sufficient capacity contracts to provide reliable electric service during periods of peak demand. As of 2014, Maryland's net summer generating capacity was approximately 12,264 MW.[63] Maryland's peak demand forecast for 2016, net of utility demand-side management and energy conservation measures, is approximately 12,392 MW.[64] Although Maryland's summer peak demand has grown faster than the State's net summer generating capacity over the last several years, Maryland was able to meet 98.3% of its summer peak demand with in-State generation in 2014.[65] This is consistent with the trend in Maryland energy imports discussed in more detail in Part B of this section.

A. Regional Transmission [66]

PJM in its 2015 Regional Transmission Expansion Plan ("RTEP") authorized various electric transmission improvement projects. The development of the RTEP takes into account the total effects of system trends, which are often driven by federal and state policy decisions. The planning process takes into consideration: generator deactivations for environmental compliance; changes in generator fuel sources; and changes in reliability criteria, such as diminished load, winter weather, and transmission infrastructure.[67]

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[63] The U.S. Energy Information Administration ("EIA"), State Electricity Profile: Maryland; http://www.eia.gov/electricity/state/Maryland/.
[64] *See* Appendix Table 3(a)(ii).
[65] The EIA's most recent data available is from 2014. The next anticipated release date is listed as February 2017.
[66] *See* Appendix Table 4 for a full list of transmission enhancements proposed by Maryland utilities.
[67] *2015 Regional Transmission Expansion Plan.* PJM, (Aug. 7, 2015) at 5 - 7, http://pjm.com/~/media/documents/reports/2015-rtep/2015-rtep-book-1.ashx.

1. Regional Transmission Congestion

Congestion reflects the underlying characteristics of the power system, including the nature and capability of transmission facilities as well as the cost and geographical distribution of facilities. Congestion occurs when available, least-cost energy cannot be delivered to all load because of inadequate transmission facilities, thereby causing the price of energy in the constrained area to be higher than in an unconstrained area.[68] PJM's Locational Marginal Pricing ("LMP") system is designed to reflect the value of energy at a specific location and time of delivery, thus measuring the impact of congestion throughout the PJM system.

As shown in Table 9, in 2015 the congestion costs decreased for the first time in three years. Total congestion costs for the PJM RTO decreased by 28.3% ($546.9 million) between 2014 and 2015; whereas, the total PJM congestion costs increased by 185.4% ($1,255.3 million) between calendar years 2013 and 2014.[69] The APS control zone continues to experience congestion causing higher prices in the BGE, Pepco, and DPL control zones. According to PJM, AP was the sixth most congested PJM zone in 2015.[70] This is a decline from 2014, in which the APS zone was the fourth most congested PJM zone. This decline corresponds to the lower congestion costs experienced by the rest of the Maryland zones in 2015.

[68] Monitoring Analytics, *State of the Market Report for PJM - 2015*, PJM, (March 10, 2016) at 415, http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2015/2015-som-pjm-volume2.pdf.
[69] Monitoring Analytics, *State of the Market Report for PJM – 2015 Appendix*, PJM, (March 10, 2016) at 601, http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2015/2015-som-pjm-volume2-appendix.pdf.
[70] *Id.* at 600.

Table 9: PJM Total Annual Zonal Congestion Costs, 2012 – 2015[71]

PJM Control Zone	2012 Total Annual Zonal Congestion Costs ($ million)	2013 Total Annual Zonal Congestion Costs ($ million)	2014 Total Annual Zonal Congestion Costs ($ million)	2015 Total Annual Zonal Congestion Costs ($ million)
Allegheny Power (Potomac Edison)	$52.50	$92.80	$189.50	$93.70
Baltimore Gas and Electric	$34.40	$38.20	$150.70	$126.80
Delmarva Power	$14.80	$18.10	$112.30	$48.40
Potomac Electric Power[72]	$12.50	$65.90	$148.20	$132.70
Maryland Zones Total	**$114.20**	**$215.00**	**$600.70**	**$401.60**
PJM RTO Total Annual Zonal Congestion Costs ($ Million)	**$529.00**	**$676.90**	**$1,932.20**	**$1,385.30**
Percent Attributed to MD Zones	**21.6%**	**31.8%**	**31.1%**	**29.0%**
Change in Costs for PJM RTO From Previous Year	**-47.0%**	**28.0%**	**185.4%**	**-28.3%**
Change in Costs for MD Zones From Previous Year	**-62.5%**	**88.3%**	**179.4%**	**-33.1%**

2. Regional Transmission Upgrades

The Commission recognizes the need to maintain and improve the transmission system within Maryland in order to ensure safe, reliable, and economic electricity service to the State's ratepayers. As with increases in local generating capacity and the reduction

[71] *Id.*

[72] In 2016, the North American Electric Reliability Corporation ("NERC") determined that SMECO's 230 kV facilities should be considered as part of the bulk electric system, resulting in a requirement that SMECO register with NERC as a transmission owner with respect to the applicable facilities. On November 1, 2016, PJM and SMECO submitted a joint filing with the Federal Energy Regulatory Commission ("FERC") in Docket No. ER17-282 proposing to make SMECO subject to PJM transmission operations and planning protocols. Subject to FERC approval of the SMECO/PJM filing, SMECO will be added to the Transmission Owners Agreement as a Zero Revenue Requirement Party. Zonal congestion costs for SMECO will continue to be reflected in the Pepco Transmission Control Zone. *See* PJM Interconnection, LLC, *Docket No. ER17-282-000 (OATT) and Docket No. ER17-283-000(TOA)* (Nov. 1, 2016), http://www.pjm.com/media/documents/etariff/FercDockets/2003/20161101-er17-282-000.pdf.

of system load, transmission expansions and improvements can reduce congestion and LMP differences among zones; such improvements may also support reliability requirements and mitigate economic concerns.

Appendix Table 4 lists all transmission enhancements identified by the Maryland utilities in response to data requests for the Ten-Year Plan. Together, the 64 identified transmission enhancements in Appendix Table 4 account for over 266 miles of upgrades.

B. Electricity Imports

Maryland continues to be a net importer of electricity, similar to many other states in PJM.[73] As of 2014, 44% of the electricity consumed in the State is imported from other states.[74] As illustrated in the table below, nine of the 13 PJM states plus the District of Columbia are net importers of electricity. In a nationwide comparison, Maryland is the third largest electricity importer based on percentage of electricity sales.[75] Only the District of Columbia and Massachusetts exceed Maryland in the percentage of electricity sales that are imported. In contrast, as of 2014, the states within the PJM region that exported more electricity in aggregate than consumed within each state are: Illinois, Kentucky, Pennsylvania, and West Virginia.[76] Table 10 shows the percentage of retail sales that was imported by Maryland in 2014, along with other net-importing states in the PJM RTO and the country.

[73] PJM operates, but does not own, the transmission systems in: (1) Maryland; (2) all or part of 12 other states; and (3) the District of Columbia. With FERC approval, PJM undertakes the task of coordinating the movement of wholesale electricity and provides access to the transmission grid for utility and non-utility users alike. Within the PJM region, power plants are dispatched to meet load requirements without regard to operating company boundaries. Generally, adjacent utility service territories import or export wholesale electricity as needed to reduce the total amount of capacity required by balancing retail load and generation capacity.

[74] *State Electricity Profiles 2014*, U.S. Energy Information Administration, (June 3, 2016) at Table 10, http://www.eia.gov/electricity/state/maryland/xls/sept10md.xls.

[75] *State Electricity Profiles 2014*, U.S. Energy Information Administration, (June 3, 2016), at Table 10 (for each state, http://www.eia.gov/electricity/state/index.cfm.

[76] *Id.*

Table 10: State Electricity Imports (Year 2014) (GWh) [77]

State	Retail Sales	Direct Use	Losses	Total Sales, Direct Use and Losses	Net Interstate Trade	International Imports	International Exports	Net Imports	Percent Retail Sales Imported
District of Columbia	11,193,589	33,870	591,994	11,819,453	(11,887,551)	-	-	(11,887,551)	101%
Massachusetts	54,469,292	1,103,383	2,880,710	58,453,385	(26,575,746)	1,422,472	3,041	(27,995,177)	48%
Maryland	61,683,869	844,760	3,262,266	65,790,895	(28,524,880)	181,263	1,047	(28,705,096)	44%
Idaho	23,233,284	583,865	128,735	23,945,884	(10,155,326)	17,008	29,187	(10,143,147)	42%
Delaware	11,338,477	720,525	599,656	12,658,658	(5,092,542)	-	-	(5,092,542)	40%
Virginia	112,098,381	1,576,943	5,928,531	119,603,855	(43,825,494)	-	-	(43,825,494)	37%
California	262,584,786	11,180,448	13,887,284	287,652,518	(79,719,494)	12,369,304	60,333	(92,028,465)	32%
Tennessee	100,219,230	2,463,339	5,300,280	107,982,849	(29,691,017)	-	-	(29,691,017)	27%
Minnesota	68,719,367	1,123,692	3,634,351	73,477,410	(10,564,064)	7,189,258	441,090	(17,312,232)	24%
Rhode Island	7,643,104	28,310	404,220	8,075,634	(1,711,876)	174,739	65	(1,886,550)	23%
Wisconsin	69,494,755	2,117,420	3,675,359	75,287,534	(15,065,290)	-	-	(15,065,290)	20%
Maine	12,002,661	3,151,592	634,783	15,789,036	1,826,718	4,703,435	190,871	(2,685,846)	17%
Ohio	150,679,713	1,181,447	7,968,977	159,830,137	(27,180,562)	-	-	(27,180,562)	17%
South Dakota	12,354,726	89	653,403	13,008,218	(2,162,766)	-	-	(2,162,766)	17%
Georgia	135,789,932	4,565,846	7,181,503	147,537,281	(23,346,370)	-	-	(23,346,370)	16%
New Jersey	73,866,078	941,245	3,906,545	78,713,868	(11,325,166)	234,419	1,253	(11,558,332)	15%
New York	147,371,913	2,100,982	7,794,038	157,266,933	(5,827,936)	17,133,060	1,029,534	(21,931,462)	14%
North Carolina	133,132,776	2,303,797	7,040,974	142,477,547	(15,948,056)	-	-	(15,948,056)	11%
Louisiana	90,628,316	20,316,681	4,793,047	115,738,044	(12,607,417)	-	-	(12,607,417)	11%
Florida	226,078,111	5,375,185	11,956,561	243,409,857	(16,134,883)	-	-	(16,134,883)	7%
Colorado	53,396,521	83,636	2,823,974	56,304,131	(3,110,756)	279	6,912	(3,104,123)	6%
Indiana	106,942,504	7,958,621	5,655,853	120,556,978	(6,413,732)	45,782	1,361	(6,458,153)	5%
Michigan	103,314,098	2,333,108	5,463,958	111,111,164	297,513	6,175,525	331,263	(5,546,749)	5%
Nevada	35,075,606	105,014	1,855,039	37,035,659	(1,420,798)	40,345	766	(1,460,377)	4%
Texas	389,669,820	34,883,315	20,608,413	445,161,548	(12,680,699)	12,888	437,364	(12,256,223)	3%
Missouri	83,878,397	276,799	4,436,065	88,591,261	(1,773,731)	-	-	(1,773,731)	2%

Maryland continues to be a net importer as in-State generation has declined in recent years. In 2007, Maryland resources generated over 50 million MWh in electricity. By 2014, however, in-State resources generated slightly under 38 million MWh.[78]

The EmPOWER Maryland program, along with other energy efficiency efforts across the State, contributes to a decrease in the peak demand, which reduces the need to increase capacity and generation capabilities both in Maryland and throughout the PJM region. On a per capita basis, Maryland's actual peak demand for 2014 was 2.07 kW.[79] Compared to the per capita peak demand in 2007 of 2.56 kW, there has been a 19% decrease over the last 7 years.

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[77] *Id.*

[78] *Electricity Power Industry Generation by Primary Energy Source, 1990-2014 Maryland*, U.S. Energy Information Administration, (June 2016) at Table 5, http://www.eia.gov/electricity/state/maryland/xls/sept05md.xls.

[79] *Per Capita Peak Electricity Consumption*, Maryland StateStat, Per Capita Peak Electricity Demand Line Chart (2014), https://data.maryland.gov/Energy-and-Environment/Per-Capita-Peak-Electricity-Demand-Line-Chart/iue3-nwie.

C. Maryland Capacity and Generation Profiles

The capacity and generation profiles of in-State resources must be comprehensively analyzed for both short- and long-term reliability planning purposes, due to the uncertain future of coal-fired generation.[80] In Case No. 9214, the Commission observed that the State's reliability risk is further heightened because neighboring states that export electricity into Maryland also have at-risk coal-fired generation.[81]

1. Conventional Capacity and Generation Profiles, 2014

Coal-fired power plants represent 39% of the electric generating capacity in Maryland, of which almost 90% of such capacity is aged 31 years or older. Within this category, 52.4% is considered "at-risk," as defined by PJM.[82] Table 11 and Table 12 below depict the electric generating capacity in Maryland, as well as the age of plants by fuel type.[83]

Table 11: Maryland Summer Peak Capacity Profile, 2014[84]

	Capacity	
Primary Fuel Type	**Summer (MW)**	**Percent Of Total**
Coal	4,739.0	39.0%
Oil and Gas	4,779.4	39.3%
Nuclear	1,707.8	14.0%
Hydroelectric	590.0	4.9%
Other and Renewables	342.6	2.8%
Total	**12,158.8**	**100.0%**

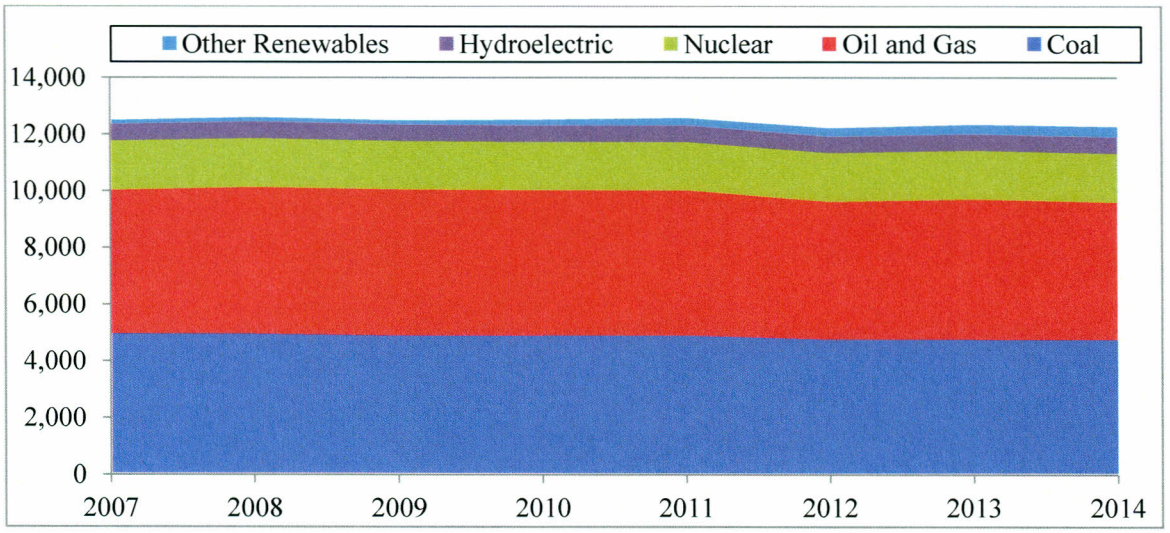
[80] The uncertainty stems from the economic pressure on coal as a result of decreasing natural gas prices, as well as from regulations promulgated by the U.S. Environmental Protection Agency.
[81] Case No. 9214, *In the Matter of Whether New Generating Facilities Are Needed to Meet Long-Term Demand for Standard Offer Service.* Order No. 84815 (April 12, 2012) at 19.
[82] PJM categorizes coal generation more than 40 years old and less than 400 MW as at "high-risk" of retirement. Case No. 9214, *In the Matter of Whether New Generating Facilities Are Needed to Meet Long-Term Demand for Standard Offer Service*, PJM Comments (January 13, 2012) at 11-12.
[83] *See* Appendix Table 5 for a complete list of Maryland generation capacity in 2014.
[84] *Report EIA-860: "3_1_Generator_Y2014" Excel*, U.S. Energy Information Administration (last visited June 6, 2016), http://www.eia.gov/cneaf/electricity/page/eia860.html.

Table 12: Age of Maryland Generation by Fuel Type, 2014[85]

Primary Fuel Type	Age of Plants, By Percent			
	1-10 Years	11-20 Years	21-30 Years	31+ Years
Coal	0.0%	5.6%	5.6%	88.9%
Oil and Gas	9.5%	20.0%	17.1%	53.3%
Nuclear	0.0%	0.0%	0.0%	100.0%
Hydroelectric	0.0%	0.0%	0.0%	100.0%
Other and Renewables	78.7%	8.2%	11.5%	1.6%

Maryland's summer peak capacity profile decreased by 75 MW in 2014 compared to 2013, as illustrated in Figure 15. While this represents an overall decline statewide compared to the immediately preceding year, this is still an improvement over 2012. The new capacity added in 2014 can be attributed to increases in renewable generation from solar and wind.

Figure 15: Maryland Summer Capacity Profile (MW), 2007 – 2014[86]



Maryland's generating profile differs from its capacity profile. Coal and nuclear facilities typically generate an overwhelming majority of all electricity produced in Maryland, even though these resources represent a little over half of in-State capacity.[87]

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[85] *Id.*

[86] *Electricity Power Industry Capability by Primary Energy Source, 1990-2014 Maryland*, U.S. Energy Information Administration, (June 2016) at Table 4, http://www.eia.gov/electricity/state/maryland/xls/sept04md.xls.

[87] *See supra* Table 11. Coal facilities represented 39% of the in-State capacity in 2014, while nuclear facilities represented 14% of capacity. Therefore, coal and nuclear facilities combined for almost 53% of Maryland's generating capacity profile in 2014.

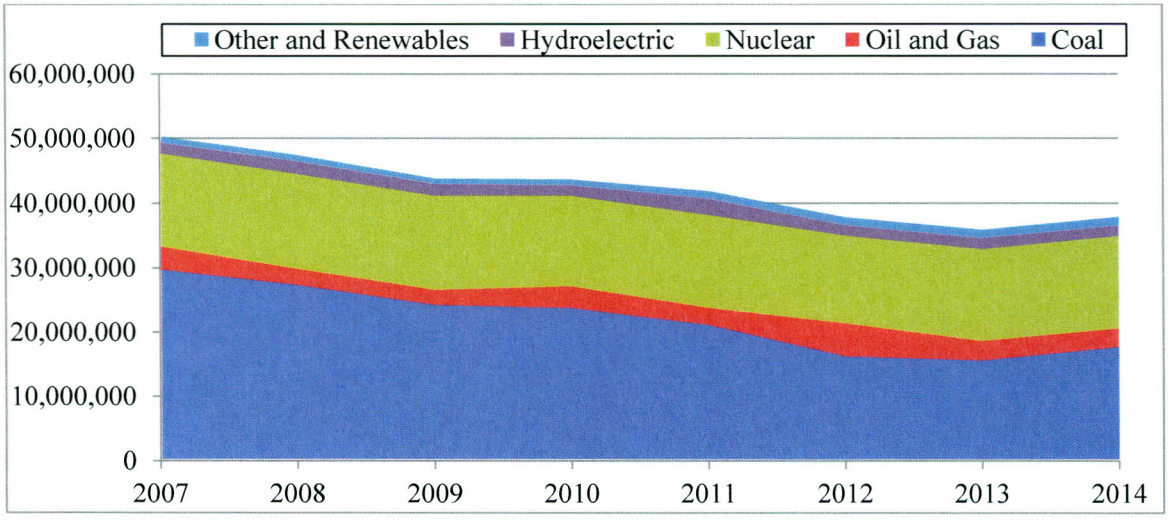
Conversely, oil and natural gas facilities, which operate as mid-merit or peaking units that come on-line when needed, generate less than 8% of the electric energy produced in Maryland while representing over 39% of in-State capacity.[88] Table 13 summarizes Maryland's 2014 in-State generation profile according to fuel source.

Table 13: Maryland Generation Profile, 2014[89]

Primary Fuel Source	Generation	
	Annual (MWh)	Percent of Total
Coal	17,603,291	46.5%
Oil & Gas	2,969,346	7.8%
Nuclear	14,343,334	37.9%
Hydroelectric	1,615,523	4.3%
Other & Renewables	1,302,159	3.4%
Total	**37,833,653**	**100.0%**

Unlike the stability historically exhibited by Maryland's summer capacity profile, the percentage of in-State generation derived from various fuel sources continues to evolve as illustrated in Figure 16 below. Between 2007 and 2014, in-state coal generation decreased by approximately 12,086 GWh, causing the percentage of in-state generation derived from coal to decrease from 59.2% in 2007, to roughly 46.5% in 2014.

Figure 16: Maryland Generation Profile, 2007 – 2014[90]



[88] *Id.*
[89] *State Electricity Profiles 2014*, U.S. Energy Information Administration, (June 6, 2016) at Table 5, http://www.eia.gov/electricity/state/Maryland/xls/sept05md.xls.
[90] *Electricity Power Industry Generation by Primary Energy Source, 1990-2014* Maryland, U.S. Energy Information Administration, (June 2016) at Table 5, http://www.eia.gov/electricity/state/maryland/xls/sept05md.xls

The standard life expectancy for coal generation facilities is approximately 40 years, though extensions can often be granted for up to 60 years. This assessment places a significant percentage of total Maryland coal generation capacity at or near the end of its normal operational life, a fact made especially concerning considering that coal generation facilities provided 46.5% of the in-State generation in 2014. If operational extensions for Maryland coal generation units are not requested, the need for additional in-State resources will be further necessitated to avoid potential reliability concerns.

PJM currently registers 6,361 MW of capacity resources requesting deactivation within the RTO.[91] The only plant with a pending deactivation request located in Maryland is Wagner 2 (BGE zone, 135 MW). PJM states that the reliability analysis for Wagner 2 is complete and no impacts were identified.[92]

Outside of the State, but within the four transmission zones that include Maryland, there are two plants requesting deactivation – McKee 1 and McKee 2 in the DPL zone, which account for a combined 34 MW of capacity.[93] PJM completed a reliability analysis and identified no reliability impacts associated with the May 31, 2017 scheduled deactivation of McKee 1 and McKee 2.[94]

2. Proposed Conventional Generation Additions[95]

The construction of new generation, both conventional and renewable, is a way to address the in-State capacity and electricity import issues discussed in previous sections. As illustrated in Table 14 below, all of the new conventional generation proposed in Maryland during the 2016 – 2025 planning period is natural gas fired. There is no proposed new coal, oil, or nuclear generation in the State during the planning period. There are four projects from two different transmission owners planned, with projected in-service dates ranging between 2017 and 2018. The four facilities, represented in the below chart and totaling 3,355 MW, are currently under construction.

[91] *Future Deactivations,* PJM (last visited November, 2016), http://www.pjm.com/~/media/planning/gen-retire/pending-deactivation-requests-xls.ashx.
[92] *Id.*
[93] *Id.*
[94] *Id.*
[95] *See* Appendix Table 6 for a complete list of new conventional generation proposed in Maryland.

Table 14: Proposed New Conventional Generation in Maryland (MW) [96]

Transmission Owner	Project Name	PJM Queue Status	Fuel Type	Project Capacity (MW)	Projected In-Service Date
ODEC	Wildcat Point Generation Facility	Under Construction	natural gas	1,000	2017 Q2
PEPCO	CPV St. Charles Energy Center	Under Construction	natural gas	725	2016 Q4
PEPCO	Mattawoman Energy LLC	Under Construction	natural gas	1,038	2019 Q2
PEPCO	Burches Hill – Chalk Point	Under Construction	natural gas	736	2018 Q2

3. Renewable Generation and Proposed Additions[97]

The Commission recognizes the importance renewable generation plays in meeting Maryland's energy needs while also addressing environmental concerns. Renewable energy resources located in Maryland generated 416,826 MWh of electricity in 2015, as shown below in Table 15. The largest source of non-hydroelectric renewable energy was the Montgomery County Resource Recovery facility, which is a municipal solid waste ("MSW") facility and represents a discretely dispatchable energy resource. In 2015, the Montgomery County MSW facility generated 329,219 MWh.

Table 15: Maryland Generation (MWh) from Renewable Sources, 2015[98]

Primary Fuel Source	2015 Generation (MWh)	Percent of Total Renewable Generation
Biomass & Refuse	329,219	80.0%
Methane / Landfill Gas	27,213	6.5%
Solar	60,162	14.4%
Wind	224	0.1%
Other	8	0.0%
Total	**416,826**	**100.0%**

Based on the PJM queue, Maryland's renewable generation capacity is planned to increase by an estimated 2,209 MW over the next few years as shown in Table 16 below. This does not, however, account for smaller renewable generators, notably residential

[96] *Generation Queues: Active (Maryland)*, PJM (November, 2016) http://www.pjm.com/planning/generation-interconnection/generation-queue-active.aspx.

[97] Maryland's Renewable Portfolio Standard has helped incent a significant amount of new renewable generation capacity in Maryland via Renewable Energy Credits ("RECs") and the Alternative Compliance Payments submitted to the Strategic Energy Investment Fund. RECs are the environmental attributes of renewable generation, and are separate from the actual electricity generation from Maryland's renewable resources. More details can be found at the *Renewable Energy Standard Report;* available at: *http://www.psc.state.md.us/wp-content/uploads/2016-Renewable-Energy-Portfolio-Report.pdf.*

[98] *See* Appendix Table 7 for unit-by-unit reporting as provided by the Maryland utilities.

solar; these smaller renewable generators are not required to obtain PJM interconnection status, but simply require interconnection with the local utility.

Table 16: Proposed New Renewable Generation in Maryland

Transmission Owner	Fuel Type	In-Service Date Range[99]	Total Capacity (MW)
APS	Solar	2016 - 2017	28.5
BGE	Hydro	2014	0.4
	Methane	2013	4
	Solar	2016 - 2018	22
DPL	Solar	2016 - 2018	224.5
	Wind	2016 - 2018	250
Total (MW):			**529.4**

Additionally, the amount of solar resources in Maryland will continue to increase due to a suite of State policy initiatives: the requirement that the RPS solar carve-out be interconnected to the distribution network serving Maryland; net metering incentives; tax incentives; the community solar pilot program; and grants administered by the Maryland Energy Administration. The increasing renewable generation penetration may have the potential to impact the grid, and the Commission will continue to monitor the successful integration of these renewables.

[99] In-service dates of 2013 and 2014 represent initial in-service projections and do not account for any delays experienced during construction.

V. Conclusion

Electricity sector planning will continue to be effected by several different issues over the next ten years, including projections regarding Maryland utility customers, energy sales, and in-State capacity and generation profiles. The Maryland utilities' load forecasts indicate a modest amount of projected annual growth in the number of customers, energy sales, and peak demand throughout the State during the 2016 – 2025 planning horizon. The PJM interconnection queue indicates an expected increase in both conventional and renewable generation in the State over the next several years. In response to these, and other developments, the 2017 – 2026 Ten-Year Plan will review and assess the impacts that the above-mentioned issues will have on Maryland's long-term electricity resource planning.

VI. Appendices to the Public Service Commission of Maryland's Ten-Year Plan (2016 – 2025) of Electric Companies in Maryland

*All data in the following appendices was derived from the Utilities' responses to Staff's Data Request

Appendix 1(a): Maryland Customer Forecasts

Appendix Table 1(a)(i): All Customer Classes (number of customers)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	2,490	1,266,847	53,214	203,860	10,582	17,243	261,906	564,619	164,029	2,827	988	**2,548,605**
2017	2,515	1,275,756	53,648	204,847	10,601	17,329	263,663	570,196	165,586	2,827	988	**2,567,957**
2018	2,528	1,284,686	53,795	205,791	10,620	17,416	265,696	575,726	167,284	2,827	988	**2,587,357**
2019	2,541	1,293,575	54,285	206,705	10,639	17,503	267,849	581,149	169,102	2,827	988	**2,607,162**
2020	2,553	1,302,313	54,547	207,591	10,658	17,591	270,077	586,676	170,980	2,827	988	**2,626,801**
2021	2,579	1,310,566	54,800	208,481	10,677	17,679	272,345	592,258	172,897	2,827	988	**2,646,097**
2022	2,605	1,318,371	55,059	209,375	10,696	17,767	274,645	597,893	174,878	2,827	988	**2,665,104**
2023	2,631	1,325,948	55,317	210,273	10,715	17,856	276,967	603,584	176,912	2,827	988	**2,684,018**
2024	2,657	1,333,578	55,558	211,175	10,734	17,945	279,313	609,330	178,982	2,827	988	**2,703,087**
2025	2,684	1,341,302	55,799	212,080	10,753	18,034	281,671	615,132	181,115	2,827	988	**2,722,384**
Change (2016-2025)	**193**	**74,455**	**2,585**	**8,220**	**171**	**791**	**19,765**	**50,513**	**17,086**	-	-	**173,779**
Percent Change (2016-2025)	**7.8%**	**5.9%**	**4.9%**	**4.0%**	**1.6%**	**4.6%**	**7.5%**	**8.9%**	**10.4%**	**0.0%**	**0.0%**	**6.8%**
Compound Annual Growth Rate	**0.8%**	**0.6%**	**0.5%**	**0.4%**	**0.2%**	**0.5%**	**0.8%**	**1.0%**	**1.1%**	**0.0%**	**0.0%**	**0.7%**

Note: A&N and Somerset did not report applicable information for this table.

Appendix Table 1(a)(ii): Residential (number of customers)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	2,051	1,141,501	48,104	176,883	8,238	14,686	229,849	514,277	148,865	2,452	842	**2,287,748**
2017	2,076	1,149,602	48,496	177,732	8,251	14,759	231,406	519,532	150,242	2,452	842	**2,305,390**
2018	2,086	1,157,768	48,824	178,551	8,264	14,833	233,200	524,803	151,720	2,452	842	**2,323,343**
2019	2,097	1,165,930	49,072	179,347	8,277	14,907	235,106	529,984	153,298	2,452	842	**2,341,312**
2020	2,107	1,173,980	49,309	180,122	8,290	14,982	237,083	535,280	154,926	2,452	842	**2,359,373**
2021	2,128	1,181,611	49,538	180,900	8,303	15,057	239,093	540,629	156,593	2,452	842	**2,377,146**
2022	2,149	1,188,858	49,772	181,682	8,316	15,132	241,128	546,031	158,324	2,452	842	**2,394,686**
2023	2,171	1,195,933	50,004	182,467	8,329	15,208	243,185	551,487	160,118	2,452	842	**2,412,196**
2024	2,193	1,203,084	50,222	183,256	8,342	15,284	245,262	556,997	161,958	2,452	842	**2,429,892**
2025	2,215	1,210,347	50,440	184,048	8,355	15,360	247,351	562,563	163,871	2,452	842	**2,447,844**
Change (2016-2025)	**164**	**68,846**	**2,336**	**7,165**	**117**	**674**	**17,502**	**48,286**	**15,006**	-	-	**160,096**
Percent Change (2016-2025)	**8.0%**	**6.0%**	**4.9%**	**4.1%**	**1.4%**	**4.6%**	**7.6%**	**9.4%**	**10.1%**	**0.0%**	**0.0%**	**7.0%**
Compound Annual Growth Rate	**0.9%**	**0.7%**	**0.5%**	**0.4%**	**0.2%**	**0.5%**	**0.8%**	**1.0%**	**1.1%**	**0.0%**	**0.0%**	**0.8%**

Note: A&N and Somerset did not report applicable information for this table.

Appendix 1(a) (Continued): Maryland Customer Forecasts

Appendix Table 1(a)(iii): Commercial (number of customers)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	305	113,038	4,849	26,477	2,344	2,509	29,012	50,246	15,160	328	122	**244,390**
2017	305	113,634	4,889	26,610	2,350	2,522	29,216	50,569	15,340	328	122	**245,885**
2018	307	114,177	4,922	26,733	2,356	2,535	29,459	50,827	15,560	328	122	**247,326**
2019	309	114,675	4,947	26,850	2,362	2,548	29,711	51,070	15,800	328	122	**248,722**
2020	310	115,128	4,971	26,960	2,368	2,561	29,966	51,302	16,050	328	122	**250,066**
2021	313	115,516	4,994	27,071	2,374	2,574	30,230	51,535	16,300	328	122	**251,357**
2022	316	115,839	5,017	27,182	2,380	2,587	30,498	51,768	16,550	328	122	**252,587**
2023	319	116,103	5,041	27,293	2,386	2,600	30,769	52,003	16,790	328	122	**253,754**
2024	323	116,338	5,063	27,405	2,392	2,613	31,041	52,239	17,020	328	122	**254,884**
2025	326	116,548	5,085	27,518	2,398	2,626	31,315	52,476	17,240	328	122	**255,982**
Change (2016-2025)	**21**	**3,510**	**236**	**1,041**	**54**	**117**	**2,303**	**2,230**	**2,080**	-	-	**11,592**
Percent Change (2016-2025)	**6.9%**	**3.1%**	**4.9%**	**3.9%**	**2.3%**	**4.7%**	**7.9%**	**4.4%**	**13.7%**	**0.0%**	**0.0%**	**4.7%**
Compound Annual Growth Rate	**0.7%**	**0.3%**	**0.3%**	**0.4%**	**0.3%**	**0.5%**	**0.9%**	**0.5%**	**1.4%**	**0.0%**	**0.0%**	**0.5%**

Note: A&N and Somerset did not report applicable information for this table.

Appendix Table 1(a)(iv): Industrial (number of customers)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	113	12,022	25	228	0	48	2,740	0	4	9	15	**15,204**
2017	113	12,235	25	232	0	48	2,737	0	4	9	15	**15,418**
2018	114	12,457	25	233	0	48	2,735	0	4	9	15	**15,640**
2019	114	12,687	25	233	0	48	2,732	0	4	9	15	**15,867**
2020	115	12,923	25	234	0	48	2,730	0	4	9	15	**16,103**
2021	116	13,158	25	234	0	48	2,727	0	4	9	15	**16,336**
2022	117	13,394	26	235	0	48	2,725	0	4	9	15	**16,573**
2023	118	13,633	26	235	0	48	2,722	0	4	9	15	**16,810**
2024	120	13,878	26	235	0	48	2,720	0	4	9	15	**17,055**
2025	121	14,130	26	236	0	48	2,718	0	4	9	15	**17,307**
Change (2016-2025)	**8**	**2,108**	**1**	**8**	-	-	**(22)**	-	-	-	-	**2,103**
Percent Change (2016-2025)	**7.1%**	**17.5%**	**4.0%**	**3.5%**	**N/A**	**0.0%**	**-0.8%**	**N/A**	**0.0%**	**0.0%**	**0.0%**	**13.8%**
Compound Annual Growth Rate	**0.8%**	**1.8%**	**0.4%**	**0.4%**	**N/A**	**0.0%**	**-0.1%**	**N/A**	**0.0%**	**0.0%**	**0.0%**	**1.4%**

Note: A&N and Somerset did not report applicable information for this table.

Appendix 1(a) (Continued): Maryland Customer Forecasts

Appendix Table 1(a)(v): Other (number of customers)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	21	286	236	272	0	0	303	96	0	38	9	**1,261**
2017	21	285	238	273	0	0	301	96	0	38	9	**1,261**
2018	21	284	240	274	0	0	299	95	0	38	9	**1,260**
2019	21	283	241	274	0	0	297	95	0	38	9	**1,258**
2020	21	282	242	275	0	0	295	95	0	38	9	**1,257**
2021	22	281	243	276	0	0	293	94	0	38	9	**1,256**
2022	22	280	244	277	0	0	291	94	0	38	9	**1,255**
2023	22	279	246	278	0	0	289	94	0	38	9	**1,255**
2024	22	278	247	278	0	0	287	93	0	38	9	**1,252**
2025	22	277	248	279	0	0	285	93	0	38	9	**1,251**
Change (2016-2025)	**1**	**(9)**	**12**	**7**	**-**	**-**	**(18)**	**(3)**	**-**	**-**	**-**	**(10)**
Percent Change (2016-2025)	**4.8%**	**-3.1%**	**5.1%**	**2.6%**	**N/A**	**N/A**	**-5.9%**	**-3.1%**	**N/A**	**0.0%**	**0.0%**	**-0.8%**
Compound Annual Growth Rate	**0.5%**	**-0.4%**	**0.6%**	**0.3%**	**N/A**	**N/A**	**-0.7%**	**-0.4%**	**N/A**	**0.0%**	**0.0%**	**-0.1%**

Note: A&N and Somerset did not report applicable information for this table.
Note: The "Other" rate class refers to customers that do not fall into one of the listed classes; street lighting is an example of a rate class included under "Other."

Appendix Table 1(a)(vi): Resale (number of customers)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	0	0	0	0	0	0	3	0	0	0	0	**3**
2017	0	0	0	0	0	0	3	0	0	0	0	**3**
2018	0	0	0	0	0	0	3	0	0	0	0	**3**
2019	0	0	0	0	0	0	3	0	0	0	0	**3**
2020	0	0	0	0	0	0	3	0	0	0	0	**3**
2021	0	0	0	0	0	0	3	0	0	0	0	**3**
2022	0	0	0	0	0	0	3	0	0	0	0	**3**
2023	0	0	0	0	0	0	3	0	0	0	0	**3**
2024	0	0	0	0	0	0	3	0	0	0	0	**3**
2025	0	0	0	0	0	0	3	0	0	0	0	**3**
Change (2016-2025)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Percent Change (2016-2025)	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**0.0%**	**N/A**	**N/A**	**N/A**	**N/A**	**0.0%**
Compound Annual Growth Rate	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**0.0%**	**N/A**	**N/A**	**N/A**	**N/A**	**0.0%**

Note: A&N and Somerset did not report applicable information for this table.
Note: The "Resale" class refers to "Sales for Resale," which is energy supplied to other electric utilities, cooperatives, municipalities, and federal and state electric agencies for resale to end-use consumers. PE is the only utility with any resale customers; these wholesale customers are PJM, Monongahela Power Company, West Penn Power Company and Old Dominion Electric Cooperative.

Appendix 1(b): 2015 Customer Numbers and Energy Sales

Appendix Table 1(b)(i): Customer Class Breakdown as of December 31, 2015 (number of customers)

	System Wide						Maryland					
Utility	Resi-dential	Com-mercial	In-dustrial	Other	Sales for Resale	Total	Resi-dential	Com-mercial	In-dustrial	Other	Sales for Resale	Total
Berlin	2,036	306	113	21	-	**2,476**	2,036	306	113	21	-	**2,476**
BGE	1,132,934	112,721	11,825	286	-	**1,257,766**	1,132,934	112,721	11,825	286	-	**1,257,766**
Chop-tank	47,770	4,835	25	235	-	**52,865**	47,770	4,835	25	235	-	**52,865**
DPL	450,247	60,458	441	619	-	**511,765**	175,691	26,314	223	265	-	**202,492**
Easton	8,225	2,338	-	-	-	**10,563**	8,225	2,338	-	-	-	**10,563**
Hagers-town	14,686	2,509	48	-	-	**17,243**	14,686	2,509	48	-	-	**17,243**
PE	347,324	45,093	4,686	610	4	**397,717**	228,054	28,360	2,745	305	2	**259,466**
PEPCO	762,035	75,165	-	127	-	**837,327**	507,863	49,034	-	99	-	**556,996**
SMECO	146,123	15,007	4	365	-	**161,500**	146,123	15,007	4	365	-	**161,500**
Thur-mont	2,457	328	9	38	-	**2,832**	2,457	328	9	38	-	**2,832**
William-sport	847	124	15	9	-	**995**	847	124	15	9	-	**995**
Total	**2,914,684**	**318,884**	**17,166**	**2,311**	**4**	**3,253,049**	**2,266,686**	**241,876**	**15,007**	**1,623**	**2**	**2,525,194**

Note: A&N and Somerset did not report applicable information for this table.
Note: "System wide" includes the entire distribution system of a utility, which may extend beyond the Maryland service territory into Washington, D.C.; Delaware; and parts of West Virginia. The affected utilities include DPL, PE, and Pepco.

Appendix Table 1(b)(ii): Utilities' 2015 Energy Sales by Customer Class (GWh)

	System Wide						Maryland					
Utility	Resi-dential	Com-mercial	In-dustrial	Other	Sales for Resale	Total	Resi-dential	Com-mercial	In-dustrial	Other	Sales for Resale	Total
Berlin	26	3	14	0	-	**43**	26	3	14	0	-	**43**
BGE	13,066	3,035	14,296	293	-	**30,690**	13,066	3,035	14,296	293	-	**30,690**
Chop-tank	720	221	89	-	-	**1,030**	720	221	89	-	-	**1,030**
DPL	3,174	3,470	1,578	34	-	**8,257**	2,266	1,741	408	12	-	**4,428**
Easton	112	152	-	-	-	**264**						-
Hagers-town	159	97	49	-	-	**305**	159	97	49	-	-	**305**
PE	5,184	2,952	2,446	22	1,207	**11,810**	3,321	2,086	1,635	16	1,204	**8,261**
PEPCO	8,516	20,084	-	66	-	**28,666**	6,030	8,788	-	66	-	**14,884**
SMECO	2,211	1,303	39	7	-	**3,560**	2,211	1,303	39	7	-	**3,560**
Thur-mont	39	16	24	1	-	**80**	39	16	24	1	-	**80**
William-sport	10	3	8	0	-	**21**	10	3	8	0	-	**21**
Total	**33,216**	**31,337**	**18,543**	**423**	**1,207**	**84,726**	**27,847**	**17,294**	**16,562**	**395**	**1,204**	**63,302**

Note: A&N and Somerset did not report applicable information for this table.
Note: "System wide" includes the entire distribution system of a utility, which may extend beyond the Maryland service territory into Washington, D.C.; Delaware; and parts of West Virginia. The affected utilities include DPL, PE, and Pepco.

Appendix 2(a): Energy Sales Forecast by Utility (Maryland Service Territory Only)

Appendix Table 2(a)(i): Maryland Energy Sales Forecast, Gross of DSM (GWh)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	42	31,579	1,121	4,526	265	306	8,038	15,253	3,699	80	21	**64,930**
2017	43	32,042	1,155	4,505	267	308	8,128	15,306	3,740	80	21	**65,595**
2018	44	32,476	1,185	4,486	268	310	8,166	15,350	3,783	80	21	**66,168**
2019	44	32,857	1,211	4,455	269	312	8,220	15,395	3,841	80	21	**66,705**
2020	44	33,252	1,236	4,406	271	314	8,257	15,438	3,880	80	21	**67,199**
2021	45	33,538	1,259	4,352	272	316	8,303	15,486	3,922	80	21	**67,593**
2022	45	33,856	1,282	4,304	273	318	8,363	15,542	3,962	80	21	**68,046**
2023	45	34,205	1,305	4,256	274	320	8,441	15,597	3,999	80	21	**68,543**
2024	46	34,559	1,327	4,209	276	322	8,522	15,653	4,040	80	21	**69,055**
2025	46	34,878	1,348	4,163	277	324	8,608	15,709	4,076	80	21	**69,530**
Change (2016-2025)	**4**	**3,299**	**227**	**(363)**	**12**	**18**	**570**	**456**	**377**	-	-	**4,600**
Percent Change (2016-2025)	**10.2%**	**10.4%**	**20.2%**	**-8.0%**	**4.5%**	**5.9%**	**7.1%**	**3.0%**	**10.2%**	**0.0%**	**0.0%**	**7.1%**
Compound Annual Growth Rate	**1.1%**	**1.1%**	**2.1%**	**-0.9%**	**0.5%**	**0.6%**	**0.8%**	**0.3%**	**1.1%**	**0.0%**	**0.0%**	**0.8%**

Note: A&N and Somerset did not report applicable information for this table.

Appendix Table 2(a)(ii): Maryland Energy Sales Forecast, Net of DSM (GWh)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	42	31,066	1,120	4,215	265	306	7,491	14,053	3,641	80	21	**62,300**
2017	43	31,188	1,153	4,129	267	308	7,517	13,899	3,679	80	21	**62,284**
2018	44	31,282	1,183	4,044	268	310	7,555	13,736	3,722	80	21	**62,245**
2019	44	31,322	1,210	3,947	269	312	7,608	13,574	3,780	80	21	**62,167**
2020	44	31,377	1,234	3,898	271	314	7,646	13,618	3,819	80	21	**62,322**
2021	45	31,322	1,257	3,845	272	316	7,692	13,665	3,861	80	21	**62,376**
2022	45	31,300	1,280	3,796	273	318	7,752	13,721	3,901	80	21	**62,487**
2023	45	31,308	1,304	3,748	274	320	7,829	13,776	3,938	80	21	**62,643**
2024	46	31,322	1,326	3,701	276	322	7,911	13,832	3,979	80	21	**62,816**
2025	46	31,300	1,347	3,655	277	324	7,997	13,888	4,015	80	21	**62,950**
Change (2016-2025)	**4**	**234**	**227**	**(560)**	**12**	**18**	**506**	**(165)**	**374**	-	-	**650**
Percent Change (2016-2025)	**10.2%**	**0.8%**	**20.3%**	**-13.3%**	**4.5%**	**5.9%**	**6.8%**	**-1.2%**	**10.3%**	**0.0%**	**0.0%**	**1.0%**
Compound Annual Growth Rate	**1.1%**	**0.1%**	**2.1%**	**-1.6%**	**0.5%**	**0.6%**	**0.7%**	**-0.1%**	**1.1%**	**0.0%**	**0.0%**	**0.1%**

Note: A&N and Somerset did not report applicable information for this table.

Appendix 2(b): Energy Sales Forecast by Utility (System Wide)

Appendix Table 2(b)(i): System Wide Energy Sales Forecast, Gross of DSM (GWh)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	42	31,579	1,121	12,570	265	306	15,092	26,260	3,699	80	21	**91,035**
2017	43	32,042	1,155	12,581	267	308	15,272	26,348	3,740	80	21	**91,857**
2018	44	32,476	1,185	12,598	268	310	15,478	26,415	3,783	80	21	**92,657**
2019	44	32,857	1,211	12,605	269	312	15,617	26,483	3,841	80	21	**93,340**
2020	44	33,252	1,236	12,598	271	314	15,722	26,554	3,880	80	21	**93,972**
2021	45	33,538	1,259	12,590	272	316	15,831	26,625	3,922	80	21	**94,498**
2022	45	33,856	1,282	12,585	273	318	15,957	26,713	3,962	80	21	**95,092**
2023	45	34,205	1,305	12,580	274	320	16,104	26,818	3,999	80	21	**95,751**
2024	46	34,559	1,327	12,574	276	322	16,255	26,911	4,040	80	21	**96,411**
2025	46	34,878	1,348	12,569	277	324	16,415	27,000	4,076	80	21	**97,034**
Change (2016-2025)	**4**	**3,299**	**227**	**(1)**	**12**	**18**	**1,323**	**740**	**377**	-	-	**5,999**
Percent Change (2016-2025)	**10.2%**	**10.4%**	**20.2%**	**0.0%**	**4.5%**	**5.9%**	**8.8%**	**2.8%**	**10.2%**	**0.0%**	**0.0%**	**6.6%**
Compound Annual Growth Rate	**1.1%**	**1.1%**	**2.1%**	**0.0%**	**0.5%**	**0.6%**	**0.9%**	**0.3%**	**1.1%**	**0.0%**	**0.0%**	**0.7%**

Note: A&N and Somerset did not report applicable information for this table.
Note: "System wide" includes the entire distribution system of a utility, which may extend beyond the Maryland service territory into Washington, D.C., Delaware, and parts of West Virginia. The affected utilities include DPL, PE, and Pepco.

Appendix Table 2(b)(ii): System Wide Energy Sales Forecast, Net of DSM (GWh)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	42	31,066	1,120	12,231	265	306	14,521	25,017	3,641	80	21	**88,310**
2017	43	31,188	1,153	12,176	267	308	14,631	24,898	3,679	80	21	**88,444**
2018	44	31,282	1,183	12,128	268	310	14,832	24,758	3,722	80	21	**88,628**
2019	44	31,322	1,210	12,069	269	312	14,970	24,620	3,780	80	21	**88,697**
2020	44	31,377	1,234	12,062	271	314	15,075	24,690	3,819	80	21	**88,987**
2021	45	31,322	1,257	12,054	272	316	15,185	24,762	3,861	80	21	**89,175**
2022	45	31,300	1,280	12,049	273	318	15,311	24,850	3,901	80	21	**89,428**
2023	45	31,308	1,304	12,043	274	320	15,457	24,954	3,938	80	21	**89,744**
2024	46	31,322	1,326	12,038	276	322	15,609	25,047	3,979	80	21	**90,066**
2025	46	31,300	1,347	12,033	277	324	15,768	25,136	4,015	80	21	**90,347**
Change (2016-2025)	**4**	**234**	**227**	**(198)**	**12**	**18**	**1,247**	**119**	**374**	-	-	**2,037**
Percent Change (2016-2025)	**10.2%**	**0.8%**	**20.3%**	**-1.6%**	**4.5%**	**5.9%**	**8.6%**	**0.5%**	**10.3%**	**0.0%**	**0.0%**	**2.3%**
Compound Annual Growth Rate	**1.1%**	**0.1%**	**2.1%**	**-0.2%**	**0.5%**	**0.6%**	**0.9%**	**0.1%**	**1.1%**	**0.0%**	**0.0%**	**0.3%**

Note: A&N and Somerset did not report applicable information for this table.
Note: "System wide" includes the entire distribution system of a utility, which may extend beyond the Maryland service territory into Washington, D.C.; Delaware; and parts of West Virginia. The affected utilities include DPL, PE, and Pepco.

Appendix 3(a): Peak Demand Forecasts (Maryland Service Territory Only)

Appendix Table 3(a)(i): Maryland Summer, Gross of DSM Programs (MW)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	11	6,945	277	953	59	58	1,613	3,433	914	14	4	**14,281**
2017	11	6,989	285	963	60	58	1,633	3,460	924	14	4	**14,400**
2018	11	7,060	289	969	60	59	1,639	3,468	934	14	4	**14,505**
2019	11	7,064	294	972	60	59	1,647	3,489	946	14	4	**14,560**
2020	11	7,079	299	973	60	59	1,653	3,506	956	14	4	**14,614**
2021	11	7,064	304	971	60	60	1,661	3,490	967	14	4	**14,605**
2022	11	7,060	309	973	61	60	1,670	3,495	978	14	4	**14,635**
2023	11	7,078	315	974	61	60	1,682	3,501	990	14	4	**14,690**
2024	11	7,140	321	978	61	60	1,695	3,513	1,001	14	4	**14,799**
2025	12	7,190	325	984	61	61	1,709	3,531	1,013	14	4	**14,903**
Change (2016-2025)	**1**	**245**	**48**	**31**	**2**	**3**	**95**	**98**	**99**	-	-	**622**
Percent Change (2016-2025)	**6.5%**	**3.5%**	**17.3%**	**3.3%**	**3.5%**	**4.7%**	**5.9%**	**2.9%**	**10.8%**	**0.0%**	**0.0%**	**4.4%**
Compound Annual Growth Rate	**0.7%**	**0.4%**	**1.8%**	**0.4%**	**0.4%**	**0.5%**	**0.6%**	**0.3%**	**1.1%**	**0.0%**	**0.0%**	**0.5%**

Note: A&N and Somerset did not report applicable information for this table.

Appendix Table 3(a)(ii): Maryland Summer, Net of DSM Programs (MW) [100, 101]

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	4	6,048	269	783	59	58	1,527	2,781	845	14	4	**12,392**
2017	4	6,064	278	769	60	58	1,536	2,733	854	14	4	**12,373**
2018	4	6,172	282	753	60	59	1,542	2,667	864	14	4	**12,420**
2019	4	6,165	287	734	60	59	1,550	2,613	876	14	4	**12,366**
2020	4	6,165	292	735	60	59	1,556	2,630	886	14	4	**12,405**
2021	4	6,135	297	733	60	60	1,564	2,615	897	14	4	**12,383**
2022	4	6,122	303	735	61	60	1,573	2,619	908	14	4	**12,403**
2023	4	6,137	308	736	61	60	1,585	2,626	920	14	4	**12,456**
2024	5	6,194	314	740	61	60	1,598	2,638	931	14	4	**12,559**
2025	5	6,241	319	747	61	61	1,612	2,656	943	14	4	**12,662**
Change (2016-2025)	**1**	**193**	**50**	**(36)**	**2**	**3**	**85**	**(125)**	**98**	-	-	**271**
Percent Change (2016-2025)	**17.9%**	**3.2%**	**18.6%**	**-4.6%**	**3.5%**	**4.7%**	**5.6%**	**-4.5%**	**11.6%**	**0.0%**	**0.0%**	**2.2%**
Compound Annual Growth Rate	**1.9%**	**0.3%**	**1.9%**	**-0.5%**	**0.4%**	**0.5%**	**0.6%**	**-0.5%**	**1.2%**	**0.0%**	**0.0%**	**0.2%**

Note: A&N and Somerset did not report applicable information for this table.

[100] Berlin reported to Staff 6.8MW of DSM savings per year. This was attributed to the town generating 6.8MW of fossil fuel generation from generators that they own, operate, and dispatch - independent of PJM.

[101] Choptank's DSM programs include: a voluntary program among the consumers to drop load during "beat-the-peak" alerts; a legacy A/C & water heater switch program; and the availability of experimental interruptible rates, in which a few consumers are still enrolled.

Appendix 3(a) (Continued): Peak Demand Forecasts (Maryland Service Territory Only)

Appendix Table 3(a)(iii): Maryland Winter, Gross of DSM Programs (MW)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	12	5,941	267	968	58	68	1,725	2,707	848	26	5	**12,626**
2017	13	5,994	268	981	58	68	1,743	2,741	896	26	5	**12,794**
2018	13	6,044	272	994	59	69	1,757	2,771	910	26	5	**12,919**
2019	13	6,078	276	1,003	59	69	1,765	2,791	923	26	5	**13,008**
2020	13	6,080	281	1,005	60	69	1,773	2,800	937	26	5	**13,049**
2021	13	6,077	286	1,006	60	70	1,785	2,796	950	26	5	**13,074**
2022	13	6,098	291	1,009	60	70	1,800	2,811	965	26	5	**13,149**
2023	13	6,118	296	1,014	61	70	1,816	2,823	979	26	5	**13,222**
2024	13	6,142	299	1,020	61	71	1,833	2,836	994	26	5	**13,300**
2025	13	6,168	303	1,027	61	71	1,848	2,848	1,008	26	5	**13,380**
Change (2016-2025)	**1**	**227**	**36**	**59**	**3**	**3**	**123**	**141**	**160**	**-**	**-**	**754**
Percent Change (2016-2025)	**11.7%**	**3.8%**	**13.5%**	**6.1%**	**5.9%**	**4.3%**	**7.1%**	**5.2%**	**18.9%**	**0.0%**	**0.0%**	**6.0%**
Compound Annual Growth Rate	**1.2%**	**0.4%**	**1.4%**	**0.7%**	**0.6%**	**0.5%**	**0.8%**	**0.6%**	**1.9%**	**0.0%**	**0.0%**	**0.6%**

Note: A&N and Somerset did not report applicable information for this table.

Appendix Table 3(a)(iv): Maryland Winter, Net of DSM Programs (MW)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	12	5,856	261	968	58	68	1,642	2,707	844	26	5	**12,448**
2017	13	5,895	262	981	58	68	1,651	2,741	892	26	5	**12,593**
2018	13	5,939	266	994	59	69	1,665	2,771	906	26	5	**12,712**
2019	13	5,966	271	1,003	59	69	1,673	2,791	919	26	5	**12,795**
2020	13	5,958	276	1,005	60	69	1,681	2,800	933	26	5	**12,826**
2021	13	5,946	281	1,006	60	70	1,693	2,796	946	26	5	**12,842**
2022	13	5,962	286	1,009	60	70	1,708	2,811	961	26	5	**12,912**
2023	13	5,982	291	1,014	61	70	1,724	2,823	975	26	5	**12,985**
2024	13	6,005	295	1,020	61	71	1,741	2,836	990	26	5	**13,063**
2025	13	6,031	299	1,027	61	71	1,756	2,848	1,004	26	5	**13,142**
Change (2016-2025)	**1**	**175**	**38**	**59**	**3**	**3**	**114**	**141**	**160**	**-**	**-**	**694**
Percent Change (2016-2025)	**11.7%**	**3.0%**	**14.6%**	**6.1%**	**5.9%**	**4.3%**	**6.9%**	**5.2%**	**19.0%**	**0.0%**	**0.0%**	**5.6%**
Compound Annual Growth Rate	**1.2%**	**0.3%**	**1.5%**	**0.7%**	**0.6%**	**0.5%**	**0.7%**	**0.6%**	**1.9%**	**0.0%**	**0.0%**	**0.6%**

Note: A&N and Somerset did not report applicable information for this table

Appendix 3(b): Peak Demand Forecasts (System Wide)

Appendix Table 3(b)(i): System Wide Summer, Gross of DSM (MW)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	11	6,945	277	3,991	59	58	2,972	6,563	914	14	4	**21,750**
2017	11	6,989	285	4,030	60	58	3,008	6,614	924	14	4	**21,938**
2018	11	7,060	289	4,055	60	59	3,041	6,630	934	14	4	**22,097**
2019	11	7,064	294	4,068	60	59	3,060	6,669	946	14	4	**22,190**
2020	11	7,079	299	4,071	60	59	3,074	6,702	956	14	4	**22,270**
2021	11	7,064	304	4,064	60	60	3,091	6,672	967	14	4	**22,251**
2022	11	7,060	309	4,071	61	60	3,111	6,680	978	14	4	**22,298**
2023	11	7,078	315	4,076	61	60	3,135	6,693	990	14	4	**22,377**
2024	11	7,140	321	4,092	61	60	3,160	6,716	1,001	14	4	**22,520**
2025	12	7,190	325	4,121	61	61	3,187	6,750	1,013	14	4	**22,677**
Change (2016-2025)	**1**	**245**	**48**	**130**	**2**	**3**	**215**	**187**	**99**	-	-	**927**
Percent Change (2016-2025)	**6.5%**	**3.5%**	**17.3%**	**3.3%**	**3.5%**	**4.7%**	**7.2%**	**2.8%**	**10.8%**	**0.0%**	**0.0%**	**4.3%**
Compound Annual Growth Rate	**0.7%**	**0.4%**	**1.8%**	**0.4%**	**0.4%**	**0.5%**	**0.8%**	**0.3%**	**1.1%**	**0.0%**	**0.0%**	**0.5%**

Note: A&N and Somerset did not report applicable information for this table.
Note: "System wide" includes the entire distribution system of a utility, which may extend beyond the Maryland service territory into Washington, D.C.; Delaware; and parts of West Virginia. The affected utilities include DPL, PE, and Pepco.

Appendix Table 3(b)(ii): System Wide Summer, Net of DSM (MW)[102]

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	4	6,048	269	3,644	59	58	2,881	5,881	845	14	4	**19,649**
2017	4	6,064	278	3,663	60	58	2,906	5,858	854	14	4	**19,704**
2018	4	6,172	282	3,669	60	59	2,938	5,799	864	14	4	**19,805**
2019	4	6,165	287	3,663	60	59	2,957	5,764	876	14	4	**19,794**
2020	4	6,165	292	3,666	60	59	2,971	5,797	886	14	4	**19,859**
2021	4	6,135	297	3,659	60	60	2,988	5,767	897	14	4	**19,825**
2022	4	6,122	303	3,666	61	60	3,008	5,775	908	14	4	**19,865**
2023	4	6,137	308	3,671	61	60	3,032	5,788	920	14	4	**19,939**
2024	5	6,194	314	3,687	61	60	3,057	5,811	931	14	4	**20,078**
2025	5	6,241	319	3,716	61	61	3,084	5,845	943	14	4	**20,232**
Change (2016-2025)	**1**	**193**	**50**	**72**	**2**	**3**	**203**	**(36)**	**98**	-	-	**583**
Percent Change (2016-2025)	**17.9%**	**3.2%**	**18.6%**	**2.0%**	**3.5%**	**4.7%**	**7.0%**	**-0.6%**	**11.6%**	**0.0%**	**0.0%**	**3.0%**
Compound Annual Growth Rate	**1.9%**	**0.3%**	**1.9%**	**0.2%**	**0.4%**	**0.5%**	**0.8%**	**-0.1%**	**1.2%**	**0.0%**	**0.0%**	**0.3%**

Note: A&N and Somerset did not report applicable information for this table.
Note: "System wide" includes the entire distribution system of a utility, which may extend beyond the Maryland service territory into Washington, D.C.; Delaware; and parts of West Virginia. The affected utilities include DPL, PE, and Pepco.

[102] Berlin reported to Staff 6.8MW of DSM savings per year. This was attributed to the town generating 6.8MW of fossil fuel generation from generators that they own, operate, and dispatch, independent of PJM.

Appendix 3(b) (Continued): Peak Demand Forecasts (System Wide)

Appendix Table 3(b)(iii): System Wide Winter, Gross of DSM (MW)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	12	5,941	267	968	58	68	3,356	5,386	848	26	5	**16,868**
2017	13	5,994	268	981	58	68	3,405	5,455	896	26	5	**17,102**
2018	13	6,044	272	994	59	69	3,445	5,514	910	26	5	**17,282**
2019	13	6,078	276	1,003	59	69	3,465	5,555	923	26	5	**17,404**
2020	13	6,080	281	1,005	60	69	3,485	5,572	937	26	5	**17,464**
2021	13	6,077	286	1,006	60	70	3,509	5,564	950	26	5	**17,496**
2022	13	6,098	291	1,009	60	70	3,539	5,593	965	26	5	**17,600**
2023	13	6,118	296	1,014	61	70	3,571	5,617	979	26	5	**17,700**
2024	13	6,142	299	1,020	61	71	3,604	5,643	994	26	5	**17,808**
2025	13	6,168	303	1,027	61	71	3,634	5,668	1,008	26	5	**17,914**
Change (2016-2025)	**1**	**227**	**36**	**59**	**3**	**3**	**278**	**282**	**160**	**-**	**-**	**1,047**
Percent Change (2016-2025)	**11.7%**	**3.8%**	**13.5%**	**6.1%**	**5.9%**	**4.3%**	**8.3%**	**5.2%**	**18.9%**	**0.0%**	**0.0%**	**6.2%**
Compound Annual Growth Rate	**1.2%**	**0.4%**	**1.4%**	**0.7%**	**0.6%**	**0.5%**	**0.9%**	**0.6%**	**1.9%**	**0.0%**	**0.0%**	**0.7%**

Note: A&N and Somerset did not report applicable information for this table.
Note: "System wide" includes the entire distribution system of a utility, which may extend beyond the Maryland service territory into Washington, D.C.; Delaware; and parts of West Virginia. The affected utilities include DPL, PE, and Pepco.

Appendix Table 3(b)(iv): System Wide Winter, Net of DSM (MW)

Year	Berlin	BGE	Chop-tank	DPL	Easton	Hagers-town	PE	Pepco	SMECO	Thur-mont	William -sport	Total
2016	12	5,856	261	968	58	68	3,269	5,386	844	26	5	**16,685**
2017	13	5,895	262	981	58	68	3,307	5,455	892	26	5	**16,895**
2018	13	5,939	266	994	59	69	3,347	5,514	906	26	5	**17,069**
2019	13	5,966	271	1,003	59	69	3,367	5,555	919	26	5	**17,185**
2020	13	5,958	276	1,005	60	69	3,387	5,572	933	26	5	**17,235**
2021	13	5,946	281	1,006	60	70	3,411	5,564	946	26	5	**17,258**
2022	13	5,962	286	1,009	60	70	3,441	5,593	961	26	5	**17,357**
2023	13	5,982	291	1,014	61	70	3,473	5,617	975	26	5	**17,457**
2024	13	6,005	295	1,020	61	71	3,506	5,643	990	26	5	**17,565**
2025	13	6,031	299	1,027	61	71	3,536	5,668	1,004	26	5	**17,671**
Change (2016-2025)	**1**	**175**	**38**	**59**	**3**	**3**	**267**	**282**	**160**	**-**	**-**	**986**
Percent Change (2016-2025)	**11.7%**	**3.0%**	**14.6%**	**6.1%**	**5.9%**	**4.3%**	**8.2%**	**5.2%**	**19.0%**	**0.0%**	**0.0%**	**5.9%**
Compound Annual Growth Rate	**1.2%**	**0.3%**	**1.5%**	**0.7%**	**0.6%**	**0.5%**	**0.9%**	**0.6%**	**1.9%**	**0.0%**	**0.0%**	**0.6%**

Note: A&N and Somerset did not report applicable information for this table.
Note: "System wide" includes the entire distribution system of a utility, which may extend beyond the Maryland service territory into Washington, D.C.; Delaware; and parts of West Virginia. The affected utilities include DPL, PE, and Pepco.

Appendix 4: Transmission Enhancements, by Service Territory

Appendix Table 4: Transmission Enhancements, by Service Territory

								Start location		End Location	
Trans-mission Owner	Vol-tage (kV)	Length (miles)	No. of Cir-cuits	Start Date	Comp. Date	In-Service Date	Purpose	County	Terminal	County	Terminal
BGE	115	1	1	Sep-16	Jun-16	Jun-16	Baseline Transmission Reliability	Baltimore City	Orchard St	Baltimore City	Constitution St
BGE	230	8.6	1	Jan-16	Jun-16	Jun-16	Baseline Transmission Reliability	Harford	Conastone	Harford	Graceton
BGE	230	13.7	1	Jan-16	Jun-16	Jun-16	Baseline Transmission Reliability	Harford	Graceton	Harford	Bagley
BGE	230	6.1	2	Apr-16	Jun-16	Jun-16	Baseline Transmission Reliability	Harford	Raphael Rd	Harford	Bagley
BGE	115	0.2	2	Jun-16	Jun-16	Jun-16	Baseline Transmission Reliability	Baltimore City	Coldspring	Baltimore City	Camp Small
BGE	115	3	1	Jun-16	Jun-16	Jun-16	Baseline Transmission Reliability	Anne Arundel	Waugh Chapel	Anne Arundel	Bestgate
BGE	115	3	1	Jun-16	Jun-16	Jun-16	Baseline Transmission Reliability	Harford	Joppatowne	Harford	Raphael Rd
BGE	115	3	2	Jun-16	Dec-16	Dec-16	Distribution Adequacy	Baltimore City	Westport	Baltimore City	Wilkens
BGE	115	4.27	2	Jan-16	Dec-16	Dec-16	Distribution Adequacy	Baltimore City	Hazelwood	Baltimore City	Loch Raven
BGE	230	4	2	Jan-16	Jun-16	Jun-16	Baseline Transmission Reliability	Baltimore County	Northwest	Baltimore County	Hanover Pike
DPL	138	25.9	1	Jan-12	Jun-15	Jun-15	Baseline Transmission Reliability	Queen Annes	Wye Mills	Queen Annes	Church
DPL	138	5.22	1	Mar-11	Jun-15	Jun-15	Baseline Transmission Reliability	Cecil	Cecil	New Castle	Glasgow
DPL	69	8.74	1	Feb-13	Dec-17	Dec-17	Supplemental Transmission Reliability	Worcester	Worcester	Worcester	Ocean City
DPL	69	N/A	N/A	Sep-13	Apr-15	Apr-15	Baseline Transmission Reliability	Talbot	Easton	Talbot	Easton
DPL	69	4.42	1	Dec-13	May-16	May-16	Supplemental Transmission Reliability	Dorchester	Vienna	Wicomico	Sharptown
DPL	138	30.91	1	May-13	May-18	May-18	Baseline Transmission Reliability	Wicomico	Piney Grove	Accomac k (VA)	Wattsville
DPL	69	N/A	N/A	Apr-14	Jun-15	Jun-15	Baseline Transmission Reliability	Somerset	Loretto	Somerset	Loretto
DPL	69	23.49	1	Oct-12	May-17	May-17	Baseline Transmission Reliability	Wicomico	North Salisbury	Worcester	Worcester
DPL	138	26	1	Aug-13	Dec-17	Dec-17	Supplemental Transmission Reliability	Queen Annes	Church	Caroline	Steele
DPL	69	4.51	1	Feb-14	Dec-17	Dec-17	Supplemental Transmission Reliability	Wicomico	Mt. Hermon	Wicomico	Chesapeake
DPL	69	15.04	2	Apr-12	Dec-20	Dec-20	Supplemental Transmission Reliability	Somerset	Kings Creek	Somerset	Crisfield
DPL	230	23.02	1	Jan-15	Jan-17	Jan-17	Supplemental Transmission Reliability	Sussex (DE)	Milford	Caroline	Steele
DPL	69	7.02	1	Apr-14	Dec-17	Dec-17	Supplemental Transmission Reliability	Wicomico	North Salisbury	Wicomico	Fruitland
DPL	138	8.62	1	Apr-15	Dec-18	Dec-18	Supplemental Transmission Reliability	Queen Annes	Wye Mills	Caroline	Hillsboro
DPL	138	-	1	Sep-12	Dec-16	Dec-16	Supplemental Transmission Reliability	Somerset	Kings Creek	Somerset	Kings Creek
DPL	230	-	1	Sep-14	May-18	May-18	Supplemental Transmission Reliability	Cecil	Crest	Cecil	Crest
DPL	69	-	1	Nov-15	Sep-17	Sep-17	NetworkTransmission Upgrade	Dorchester	New Substation	Dorcheste r	New Substation
DPL	69	-	1	May-14	Mar-16	Mar-16	Network Transmission Upgrade	Queen Annes	Wye Mills	Queen Annes	Wye Mills
DPL	138	-	1	Jan-15	Dec-16	Dec-16	Network Transmission Upgrade	Somerset	Kings Creek	Somerset	Kings Creek
DPL	69	-	1	Oct-14	Dec-15	Dec-15	Network Transmission Upgrade	Talbot	Easton	Dorcheste r	Todd
DPL	69	-	1	Oct-15	Apr-18	Apr-18	Network Transmission Upgrade	Kent	New Substation	Kent	New Substation

Appendix 4 (Continued): Transmission Enhancements, by Service Territory

								Start location		End Location	
Trans-mission Owner	Vol-tage (kV)	Length (miles)	No. of Cir-cuits	Start Date	Comp. Date	In-Service Date	Purpose	County	Terminal	County	Terminal
DPL	138	-	1	May-15	Dec-18	Dec-18	Maryland Corrective Action Plan	Queen Annes	Centreville	Queen Annes	Centreville
DPL	69	-	1	Jan-15	Dec-19	Dec-19	Maryland Corrective Action Plan / Load Driven	Kent	McCleans	Kent	McCleans
PE	138	0.1	2	2013	Suspend ed	2015	Accommodate for Generator Interconnection	Allegany	Dans Mountain (new)	Allegany	Carlos Junction-Ridgeley
PE	138	0	1	2014	Apr-15	Apr-15	Baseline Transmission Reliability	Berkeley, WV	Nipetown	Washington	Reid
PE	230	0	1	2015	2016	2016	Baseline Transmission Reliability	Frederick	Doubs	Frederick	Lime Kiln (Section 207)
PE	230	0	1	2015	2016	2016	Baseline Transmission Reliability	Frederick	Doubs	Frederick	Lime Kiln (Section 231)
PE	138	0	1	2016	2016	2016	Baseline Transmission Reliability	Washington	Paramount	Washington	Reid
PE	138	0	1	2016	2016	2016	Baseline Transmission Reliability	Washington	Halfway	Washington	Paramount
PE	138	0	1	2016	2016	2016	Baseline Transmission Reliability	Washington	Reid	Washington	Paramount
PE	138	0	1	2016	2017	2017	Baseline Transmission Reliability	Berkeley, WV	Marlowe	Washington	Halfway
PE	138	0.1	2	2015	Cancell ed	2017	Distribution Adequacy	Garrett	Swanton (new)	Preston, WV	Albright
PE	138	0.1	1	2015	Cancell ed	2017	Distribution Adequacy	Garrett	Mt. Zion	Garrett	Swanton (new)
PE	138	0	1	2017	2017	2017	Accommodate for Generator Interconnection	Cumberland	Cumberland	Cumberland	Ridgeley
PE	138	0.1	1	2016	2017	2017	Accommodate for Generator Interconnection	Garrett	Hazelton	Garrett	AA1-047
PE	138	0.1	1	2016	2017	2017	Accommodate for Generator Interconnection	Garrett	AA1-047	Garrett	Jennings
PE	138	0	1	2016	2016	2016	Baseline Transmission Reliability	Berkeley, WV	Nipetown	Berkeley, WV	Bedington
PE	138	0	1	2018	2019	2019	Baseline Transmission Reliability	Carroll	Carroll	Montgomery	Germantow n
PE	230	0	1	2016	2017	2017	Baseline Transmission Reliability	Montgomery	Damascus	Montgomery	Damascus
PE	138	0.1	1	2016	2017	2017	Distribution Adequacy	Washington	Ringgold	Frederick	Wolfsville (new)
PE	138	0.1	1	2016	2017	2017	Distribution Adequacy	Frederick	Wolfsville (new)	Frederick	Catoctin
PEPCO	230	10.83	1	Jun-13	2/2015	2/2015	Baseline Transmission Reliability	Prince George's	Ritchie	DC	Buzzard Point
PEPCO	230	8.84	2	Jan-13	6/2015	6/2015	Transmission Ower Indentified Reliability	Prince George's	Burontsville	Prince George's	Takoma
PEPCO	230	10.13	1	May-13	2/2015	2/2015	Baseline Transmission Reliability	Montgomery	Dickerson H	Montgomery	Quince Orchard
PEPCO	230	n/a	n/a	Sep-13	3/2016	3/2016	Baseline Transmission Reliability	Montgomery	Brighton	Montgomery	Brighton
PEPCO	230	n/a	n/a	Sep-13	3/2016	3/2016	Baseline Transmission Reliability	Montgomery	Dickerson H	Montgomery	Dickerson H
PEPCO	230	n/a	n/a	Dec-08	12/1/2015	12/1/2015	Baseline Transmission Reliability	Prince George's	Oak Grove/ Chalk Point	Prince George's	Oak Grove/ Chalk Point
PEPCO	230	n/a	n/a	Sep-14	4/2016	4/2016	Generation Interconnection	Prince George's	(New) Keslon Ridge	Prince George's	(New) Keslon Ridge

Appendix 4 (Continued): Transmission Enhancements, by Service Territory

								Start location		End Location	
Trans-mission Owner	**Vol-tage (kV)**	**Length (miles)**	**No. of Cir-cuits**	**Start Date**	**Comp. Date**	**In-Service Date**	**Purpose**	**County**	**Terminal**	**County**	**Terminal**
PEPCO	230	n/a	n/a	Sep-14	6/2018	6/2018	Generation Interconnection	Prince George's	(New) Mattawoman	Prince George's	(New) Mattawoman
PEPCO	230	n/a	1	Sep-14	6/2018	6/2018	Generation Interconnection	Prince George's	Burches Hill	Prince George's	(New) Mattawoman
PEPCO	230	n/a	n/a	Sep-14	6/2018	6/2018	Generation Interconnection	Prince George's	Burches Hill	Prince George's	Burches Hill
PEPCO	500	n/a	n/a	Sep-14	6/2018	6/2018	Generation Interconnection	Prince George's	(New) Cheltenham	Prince George's	(New) Cheltenham
SMECO	69	3.1	1	Mar-15	Nov-15	Feb-16	Capacity / Reliability	Charles	Hawkins Gate	Charles	Wooded Glen
SMECO	69	3	1	Mar-15	Nov-15	Feb-16	Capacity / Reliability	Charles	Wooded Glen	Charles	Dorchester

Appendix 5: List of Maryland Generators, as of December 31, 2015

Appendix Table 5: List of Maryland Generators, as of December 31, 2015

Owner / Operator	Plant Name	County	Capacity Statistics (MW)		
			Nameplate	Summer	% Summer
A & N Electric Coop	Smith Island	Somerset	1.7	1.6	0.0%
AES WR Ltd Partnership	AES Warrior Run Cogeneration Facility	Allegany	229.0	180.0	1.5%
American Sugar Refining, Inc.	Domino Sugar Baltimore	Baltimore City	17.5	17.5	0.1%
Baltimore City, City Council of	Back River Waste Water Treatment	Baltimore City	3.0	4.6	0.0%
Berlin, Town of - (MD)	Berlin	Worcester	9.0	9.0	0.1%
Bloom Energy	Green Machine	Anne Arundel	1.7	1.6	0.0%
BP Piney & Deep Creek LLC	Deep Creek	Garrett	20.0	18.0	0.1%
Calpine Mid-Atlantic Generation LLC	Crisfield	Somerset	11.6	10.4	0.1%
Calvert Cliffs Nuclear PP LLC	Calvert Cliffs Nuclear Power Plant	Calvert	1,828.7	1,707.8	13.9%
Constellation Power Source Gen	Notch Cliff	Baltimore	144.0	116.7	1.0%
Constellation Power Source Gen	Riverside	Baltimore	122.2	113.0	0.9%
Constellation Power Source Gen	Gould Street	Baltimore City	103.5	97.0	0.8%
Constellation Power Source Gen	Philadelphia	Baltimore City	82.8	60.9	0.5%
Constellation Power Source Gen	Westport	Baltimore City	121.5	115.8	0.9%
Constellation Power Source Gen	Perryman	Harford	404.4	353.6	2.9%
Constellation Solar Horizons LLC	Mount Saint Mary's	Frederick	13.7	13.7	0.1%
Constellation Solar Maryland, LLC	McCormick & Co. Inc. at Belcamp	Hartford	1.4	1.4	0.0%
Constellation Solar Maryland, LLC	General Motors Corp. at White Marsh	Baltimore	1.0	1.0	0.0%
Constellation Solar Maryland II, LLC	UMMS at Pocomoke	Somerset	2.8	2.8	0.0%
Covanta Montgomery, Inc.	Montgomery County Resource Recovery	Montgomery	67.8	54.0	0.4%
Criterion Power Partners LLC	Criterion Wind Project	Garrett	70.0	70.0	0.6%
Dominion Cove Point LNG, LP	Cove Point LNG Terminal	Calvert	91.6	81.8	0.7%
Eastern Landfill Gas LLC	Eastern Landfill Gas LLC	Baltimore	3.0	3.0	0.0%
Easton Utilities Comm	Easton	Talbot	33.6	31.9	0.3%
Easton Utilities Comm	Easton 2	Talbot	38.8	37.0	0.3%
Energy Recovery Operations, Inc	Harford Waste to Energy Facility	Harford	1.2	1.1	0.0%
Exelon Power	Conowingo	Harford	530.8	572.0	4.7%
FC Landfill Energy	FC Landfill Energy	Frederick	2.2	2.0	0.0%
First Solar Asset Management	Maryland Solar	Washington	27.0	20.9	0.2%
Fourmile Wind Energy, LLC	Fourmile Ridge	Garrett	40.0	40.0	0.3%
GenOn Mid-Atlantic LLC	Dickerson	Montgomery	933.0	831.0	6.8%
GenOn Mid-Atlantic LLC	Morgantown Generating Plant	Charles	1,548.0	1,423.0	11.6%
GSA Metropolitan Service Center	Central Utility Plant at White Oak	Montgomery	54.3	54.0	0.4%
Howard County - Maryland	Alpha Ridge LFG	Howard	1.0	1.0	0.0%
IKEA Property Inc	IKEA College Park 411	Prince George's	1.0	1.0	0.0%
IKEA Property Inc	IKEA Perryville 460	Cecil	2.1	2.0	0.0%
Industrial Power Generating Company	Wicomico	Wicomico	5.4	5.4	0.0%
KMC Thermo, LLC	Brandywine Power Facility	Prince George's	288.8	230.0	1.9%
LES Operations Services LLC	Millersville LFG	Anne Arundel	3.2	3.0	0.0%
Maryland Environmental Service	Eastern Correctional Institute	Somerset	5.8	4.6	0.0%
NAEA Rock Springs LLC	NAEA Rock Springs LLC	Cecil	772.6	653.5	5.3%
Naval Facilities Engineering Command	Goddard Steam Plant	Charles	12.4	10.0	0.1%
NewPage Corp-Luke	Luke Mill	Allegany	65.0	60.0	0.5%
NRG Chalk Point LLC	Chalk Point LLC	Prince Georges	2,647.0	2,248.0	18.3%
NRG Solar Arrowhead LLC	FedEx Field Solar Facility	Prince George's	2.0	2.0	0.0%
NRG Vienna Operations Inc	Vienna Operations	Dorchester	180.6	168.9	1.4%
NVT Licenses, LLC	UMES (MD) - Princess Anne	Somerset	2.2	2.1	0.0%
Power Choice/Pepco Energy Serv	NIH Cogeneration Facility	Montgomery	22.0	21.2	0.2%
Prince George's County	Brown Station Road Plant I	Prince Georges	2.7	2.4	0.0%
Prince George's County	Brown Station Road Plant II	Prince Georges	4.0	3.2	0.0%
Raven Power Holdings	Brandon Shores	Anne Arundel	1,370.0	1,273.0	10.4%
Raven Power Holdings	C P Crane	Baltimore	415.8	399.0	3.3%
Raven Power Holdings	Herbert A Wagner	Anne Arundel	1,058.5	975.9	8.0%
Roth Rock Wind Farm LLC	Roth Rock Wind Farm LLC	Garrett	40.0	40.0	0.3%
Roth Rock Wind Farm LLC	Roth Rock North Wind Farm, LLC	Garrett	10.0	10.0	0.1%
SCE Engineers	Montgomery County Oaks LFGE Plant	Montgomery	2.4	2.3	0.0%

Appendix 5 (Continued): List of Maryland Generators, as of December 31, 2015

Owner / Operator	Plant Name	County	Capacity Statistics (MW)		
			Nameplate	Summer	% Summer
SMECO Solar LLC	Herbert Farm Solar	Charles	5.5	5.5	0.0%
SolarCity Corporation	Queen Anne's County	Queen Anne's	2.0	2.0	0.0%
SunE SEM 1, LLC	Chimes West Friendship (Nixon Farms)	Howard	1.5	1.2	0.0%
Trigen Inner Harbor East, LLC	Inner Harbor East Heating	Baltimore City	2.1	2.1	0.0%
Trigen-Cinergy Solutions College Park	UMCP CHP Plant	Prince Georges	27.4	20.8	0.2%
Washington Gas Energy Services, Inc.	Kent County-Kennedyville	Kent	1.0	1.0	0.0%
Washington Gas Energy Services, Inc.	Kent County - Worton Complex	Kent	1.0	1.0	0.0%
Washington Gas Energy Services, Inc.	Perdue Salisbury Photovoltaic	Wicomico	1.0	1.0	0.0%
Washington Gas Energy Services, Inc.	Rock Hall	Kent	1.0	1.0	0.0%
Wheelabrator Environmental Systems	Wheelabrator Baltimore Refuse	Baltimore City	64.5	61.3	0.5%
			13,582.3	**12,263.5**	**100.0%**

Appendix 6: 2015 Retired RECs by Facility (in-State and Out-of-State) and by Source

Appendix Table 6: 2015 Retired RECs by Facility (in-State and Out-of-State) and by Source[103]

Tier 1*

Facility Name	Resource	State	Quantity	WND %	Tier 1
Adam	WND	IL	1,772	0.12%	0.03%
AEP Blue Creek	WND	OH	22,440	1.53%	0.35%
AEP Fowler Ridge	WND	IN	70,540	4.82%	1.10%
AEP Meadow Lake	WND	IN	13,176	0.90%	0.20%
AEP Wildcat	WND	IN	973	0.07%	0.02%
AP Beech Ridge	WND	WV	27,650	1.89%	0.43%
AP Criterion	WND	MD	239	0.02%	0.00%
AP Greenland	WND	WV	36,067	2.46%	0.56%
AP Laural	WND	WV	5,458	0.37%	0.08%
AP Pinnacle	WND	WV	151,232	10.33%	2.35%
AP Roth Rock	WND	MD	21,494	1.47%	0.33%
AP South Chestnut	WND	PA	2,985	0.20%	0.05%
Armenia Mt.	WND	PA	13,790	0.94%	0.21%
Bishop Hill	WND	IL	350,000	23.90%	5.44%
Camp Grove	WND	IL	433	0.03%	0.01%
Cayuga Ridge	WND	IL	384,970	26.29%	5.98%
Crystal Lake	WND	IA	19,235	1.31%	0.30%
Crystal Lake Wind	WND	IA	15,641	1.07%	0.24%
Eco Grove	WND	IL	5,557	0.38%	0.09%
Fowler Ridge	WND	IN	35,089	2.40%	0.55%
Grand Ridge	WND	IL	19,722	1.35%	0.31%
Haviland Wind	WND	OH	3,974	0.27%	0.06%
Klondike Rd	WND	MD	169	0.01%	0.00%
Laurel Hills	WND	PA	1,776	0.12%	0.03%
Locust Ridge	WND	PA	6,338	0.43%	0.10%
Lookout	WND	PA	53,590	3.66%	0.83%
Mehoopany	WND	PA	99,224	6.78%	1.54%
Minonk	WND	IL	20,502	1.40%	0.32%
Patton	WND	PA	1,360	0.09%	0.02%
Stony Creek	WND	PA	74,607	5.10%	1.16%
Top Crop	WND	IL	4,135	0.28%	0.06%
		Total	**1,464,138**	**100.00%**	**22.75%**

Facility Name	Resource	State	Quantity	BLQ %	Tier 1
AEP W Kingsport	BLQ	TN	234,402	12.61%	3.64%
Chillicothe	BLQ	OH	154,392	8.31%	2.40%
Covington	BLQ	VA	419,126	22.56%	6.51%
Franklin Mill	BLQ	VA	220,076	11.84%	3.42%
Hopewell Mill	BLQ	VA	187,071	10.07%	2.91%
Johnsonburg	BLQ	PA	30,208	1.63%	0.47%
Kapstone Kraft Pape	BLQ	NC	179,995	9.69%	2.80%
Luke Mill	BLQ	MD	65,887	3.55%	1.02%
Spring Grove	BLQ	PA	81,811	4.40%	1.27%
West Point Mill	BLQ	VA	285,235	15.35%	4.43%
		Total	**1,858,203**	**100.00%**	**28.88%**

Facility Name	Resource	State	Quantity	OBG %	Tier 1
AEP Zanesville	OBG	OH	28	0.43%	0.00%
Buckeye BioGas	OBG	OH	1,037	16.04%	0.02%
Central Ohio	OBG	OH	833	12.89%	0.01%
French Creek	OBG	OH	232	3.59%	0.00%
Haviland	OBG	OH	1,229	19.01%	0.02%
Van Erk Dairy	OBG	OH	460	7.12%	0.01%
Wooster	OBG	OH	2,366	36.60%	0.04%
Zanesville	OBG	OH	279	4.32%	0.00%
		Total	**6,464**	**100.00%**	**0.10%**

Tier 1*

Facility Name	Resource	State	Quantity	WAT %	Tier 1
AEP Buck	WAT	VA	60,318	4.50%	0.94%
AEP Fries	WAT	VA	16,086	1.20%	0.25%
AEP Glen Ferris	WAT	WV	19,766	1.48%	0.31%
Allegheny	WAT	PA	60,559	4.52%	0.94%
Allegheny Lock	WAT	PA	64,497	4.81%	1.00%
Allegheny River	WAT	PA	199,448	14.89%	3.10%
AP Misc Hydro	WAT	WV	71,338	5.33%	1.11%
Beardslee	WAT	NY	37,681	2.81%	0.59%
Beebee	WAT	NY	23,383	1.75%	0.36%
Big Shoals	WAT	VA	2,000	0.15%	0.03%
Black River	WAT	NY	22,175	1.66%	0.34%
Brasfield	WAT	VA	8,387	0.63%	0.13%
Coleman Falls	WAT	VA	8,273	0.62%	0.13%
Conemaugh	WAT	PA	4,889	0.36%	0.08%
Cushaw	WAT	VA	8,816	0.66%	0.14%
Deep Creek	WAT	MD	5,000	0.37%	0.08%
Deferiet	WAT	NY	53,202	3.97%	0.83%
Dixon	WAT	IL	13,593	1.01%	0.21%
E.J. West	WAT	NY	38,911	2.90%	0.60%
French Paper	WAT	MI	6,879	0.51%	0.11%
Granby	WAT	NY	33,740	2.52%	0.52%
Great Falls	WAT	NJ	6,681	0.50%	0.10%
Halifax	WAT	VA	2,214	0.17%	0.03%
Holcomb Rock	WAT	VA	10,975	0.82%	0.17%
Inghams	WAT	NY	11,011	0.82%	0.17%
Lakeview	WAT	VA	1,633	0.12%	0.03%
London	WAT	WV	70,155	5.24%	1.09%
Lyons Falls	WAT	NY	10,289	0.77%	0.16%
Marmet	WAT	WV	63,698	4.76%	0.99%
Mother Ann Lee	WAT	KY	338	0.03%	0.01%
Niagara	WAT	VA	5,505	0.41%	0.09%
Prospect	WAT	NY	73,240	5.47%	1.14%
Schoolfield	WAT	VA	13,528	1.01%	0.21%
Snowden	WAT	VA	17,579	1.31%	0.27%
Soft Maple	WAT	NY	18,894	1.41%	0.29%
Trenton	WAT	NY	115,906	8.65%	1.80%
Upper Sterling	WAT	IL	9,491	0.71%	0.15%
VP Emporia	WAT	VA	7,783	0.58%	0.12%
Winfield	WAT	WV	94,033	7.02%	1.46%
York Haven	WAT	PA	47,676	3.56%	0.74%
		Total	**1,339,570**	**100.00%**	**20.82%**

Facility Name	Resource	State	Quantity	GEO %	Tier 1
Florenzo	GEO	MD	34	27.87%	0.00%
Freeman	GEO	MD	13	10.66%	0.00%
Massey	GEO	MD	43	35.25%	0.00%
Sakakihara	GEO	MD	7	5.74%	0.00%
Wise	GEO	MD	25	20.49%	0.00%
		Total	**122**	**100.00%**	**0.00%**

Facility Name	Resource	State	Quantity	MSW %	Tier 1
Covanta Fairfax	MSW	VA	7,440	1.25%	0.12%
Montgomery County	MSW	MD	339,710	57.04%	5.28%
Wheelabrator	MSW	MD	248,377	41.71%	3.86%
		Total	**595,527**	**100.00%**	**9.25%**

[103] Further information regarding the most recent RPS compliance data will be available in the Commission's forthcoming Renewable Energy Portfolio Standard Report with data for calendar year 2015.

Appendix 6 (Continued): 2015 Retired RECs by Facility (in-State and Out-of-State) and by Source

Tier 1 (Cont'd)*

Facility Name	Resource	State	Quantity	AB %	Tier 1
Kapstone Kraft	AB	NC	317	100.00%	0.00%
		Total	**317**	**100.00%**	**0.00%**

Facility Name	Resource	State	Quantity	WDS %	Tier 1
AEP W Kingsport	WDS	TN	32,684	4.68%	0.51%
Coshocton Mill	WDS	OH	14,319	2.05%	0.22%
Covington	WDS	VA	160,732	23.02%	2.50%
Cox Waste	WDS	KY	8,681	1.24%	0.13%
Hopewell Mill	WDS	VA	22,966	3.29%	0.36%
Kapstone Kraft	WDS	NC	1,565	0.22%	0.02%
Multitrade	WDS	VA	65,873	9.44%	1.02%
VP South Boston	WDS	VA	332,971	47.70%	5.17%
West Point Mill	WDS	VA	58,307	8.35%	0.91%
		Total	**698,098**	**100.00%**	**10.85%**

Facility Name	Resource	State	Quantity	LFG %	Tier 1
AP Arden	LFG	PA	1,685	0.98%	0.03%
Bavarian	LFG	KY	5,264	3.05%	0.08%
BC Millersville	LFG	MD	2,087	1.21%	0.03%
Broad Mountain	LFG	PA	875	0.51%	0.01%
CID	LFG	IL	7,417	4.29%	0.12%
Croda Atlas Point	LFG	DE	4,654	2.69%	0.07%
DPL NWLND	LFG	MD	8,218	4.76%	0.13%
Fairless Hills	LFG	PA	1,670	0.97%	0.03%
FE Carbon	LFG	OH	7,604	4.40%	0.12%
FE Erie County	LFG	OH	2,018	1.17%	0.03%
FE Lorain	LFG	OH	8,641	5.00%	0.13%
FE Mahoning	LFG	OH	2,104	1.22%	0.03%
Green Valley	LFG	KY	2,409	1.39%	0.04%
Greene Valley	LFG	IL	16,602	9.61%	0.26%
Hardin County	LFG	KY	677	0.39%	0.01%
Lake Gas Recovery	LFG	IL	9,525	5.51%	0.15%
Laurel Ridge	LFG	KY	1,686	0.98%	0.03%
Lorain County	LFG	OH	16,733	9.69%	0.26%
Mallard Lake	LFG	IL	3,247	1.88%	0.05%
Monmouth	LFG	NJ	1,746	1.01%	0.03%
New Bern	LFG	NC	10,452	6.05%	0.16%
O'brien Edgeboro	LFG	NJ	3,286	1.90%	0.05%
PE SE Ches Co	LFG	PA	19	0.01%	0.00%
Pendleton County	LFG	KY	1,416	0.82%	0.02%
PEP Oaks	LFG	MD	711	0.41%	0.01%
PEP Ritchie Brown	LFG	MD	2,747	1.59%	0.04%
PEP Ritchie PG	LFG	MD	1,419	0.82%	0.02%
PL Archbald	LFG	PA	223	0.13%	0.00%
Prairie View	LFG	IL	1,685	0.98%	0.03%
Rochelle Energy	LFG	IL	1,866	1.08%	0.03%
Settlers Hill	LFG	IL	4,978	2.88%	0.08%
Tullytown	LFG	PA	4,329	2.51%	0.07%
VP Amelia	LFG	VA	1,392	0.81%	0.02%
VP Brunswick	LFG	VA	1,526	0.88%	0.02%
VP King	LFG	VA	77	0.04%	0.00%
VP Northeast	LFG	VA	4,323	2.50%	0.07%
VP Peninsula	LFG	VA	990	0.57%	0.02%
Woodland	LFG	IL	26,412	15.29%	0.41%
		Total	**172,713**	**100.00%**	**2.68%**

Tier 2

Facility Name	Resource	State	Quantity	WAT %	Tier 2
AEP Summerville	WAT	WV	5,559	0.36%	0.36%
Conowingo	WAT	MD	964,881	63.01%	63.01%
Covanta	WAT	WV	33,342	2.18%	2.18%
Falls	WAT	NC	9,087	0.59%	0.59%
Gaston	WAT	NC	7,525	0.49%	0.49%
High Rock	WAT	NC	40,789	2.66%	2.66%
Lake Lynn	WAT	PA	111,900	7.31%	7.31%
Narrows	WAT	NC	680	0.04%	0.04%
Piney	WAT	PA	43,570	2.85%	2.85%
Racine	WAT	OH	7,146	0.47%	0.47%
Roanoke	WAT	NC	32,367	2.11%	2.11%
Safe Harbor	WAT	PA	206,252	13.47%	13.47%
Tuckertown	WAT	NC	4,656	0.30%	0.30%
XIC Calderwood	WAT	TN	43,682	2.85%	2.85%
XIC Cheoah	WAT	NC	19,869	1.30%	1.30%
		Total	**1,531,305**	**100.00%**	**100.00%**

Tier 1 REC Total	6,135,152
SREC Total	299,534
Tier 2 REC Total	1,531,305
Grand Total	7,965,991

Resource Definitions

Agriculture Crops	AB	Municipal Solid Waste	MSW
Black Liquor	BLQ	Other Biomass Gas	OBG
Geothermal	GEO	Wood/Waste Solids	WDS
Landfill Gas	LFG	Wind	WND
Hydroelectric	WAT		

*Solar facilities are not represented in this table. In 2015, 16,172 facilities produced 299,534 SRECs.

Appendix 7: Proposed New Renewable Generation in Maryland PJM Queue

Appendix Table 7: Proposed New Renewable Generation in Maryland PJM Queue
Effective Date: November, 2016 ["Under Construction"]

Transmission Owner	Project Name	County Location	PJM Queue Status	PJM Queue #	Fuel Type	Project Capacity (MW)	Projected In-Service Date
APS	Clear Spring 12.5kV	Washington	Under Construction	AA1-093	solar	3.5	2016 Q4
APS	Cotoctin-Troutville Junction 34.5kV	Frederick	Under Construction	AA1-109	solar	9	2017 Q3
APS	Downsville 34.5kV	Washington	Under Construction	AA2-159	solar	16	2017 Q3
BGE	Friendship Manor	Howard	Under Construction	Y1-045	solar	2	2017 Q3
BGE	Otter Point 34.5kV	Baltimore County	Under Construction	Y2-100	methane	4	2013 Q2
BGE	Perryman Solar	Harford	Under Construction	Y2-117	solar	20	2016 Q4
BGE	Ashton 480V	Montgomery	Under Construction	Y3-074	hydro	0.4	2014 Q3
DPL	Crisfield 25kV	Somerset	Under Construction	AA1-059	solar	6	2018 Q2
DPL	Kings Creek-Loretto 138kV	Somerset	Under Construction	AA1-102	solar	150	2018 Q4
DPL	Vienna	Dorchester	Under Construction	V2-028	solar	6	2018 Q4
DPL	Loretto-Kings Creek 138kV	Somerset	Under Construction	X1-096	wind	150	2016 Q4
DPL	Todd 69kV	Anne Arundel	Under Construction	X3-008	solar	20	2017 Q3
DPL	West Cambridge-Vienna 69kV	Dorchester	Under Construction	X3-015	solar	19.5	2017 Q3
DPL	Chestertown-Millington 69kV	Kent	Under Construction	Y3-033	wind	100	2018 Q2
DPL	Church 25kV	Queen Anne's	Under Construction	Z1-081	solar	6	2017 Q3
DPL	Worcester South 25kV	Worcester	Under Construction	Z2-076	solar	6	2017 Q3
DPL	Worcester North 25kV	Worcester	Under Construction	Z2-077	solar	6	2017 Q3
DPL	Church 25kV	Kent	Under Construction	Z2-097	solar	5	2017 Q4
					Total:	**529.4**	