ORDER NO. 88406

IN THE MATTER OF THE REVIEW OF ANNUAL PERFORMANCE REPORTS ON ELECTRIC SERVICE RELLIABILITY FILED PURSUANT TO COMAR 20.50.12.11	* * * * * *	BEFORE THE PUBLIC SERVICE COMMISSION OF MARYLAND _____ CASE NO. 9353 _____

Issue Date: September 28, 2017

Pursuant to the Maryland Electricity Service Quality and Reliability Act[1] and the regulations promulgated by the Commission in Code of Maryland Regulations ("COMAR") 20.50.12 *et seq*., the Maryland Public Service Commission ("Commission") accepts the annual reliability performance reports filed by Baltimore Gas and Electric Company ("BGE"), Potomac Electric Power Company ("Pepco"), Delmarva Power & Light Company ("Delmarva"), Potomac Edison Company ("Potomac Edison"), Choptank Electric Cooperative, Inc. ("Choptank"), and Southern Maryland Electric Cooperative, Inc. ("SMECO"), (collectively "the Electric Companies"), and notes the Corrective Action Plans filed by each of the Electric Companies addressing the standards for which they were deficient, as further discussed below.

I. INTRODUCTION AND PROCEDURAL HISTORY

The Maryland Electricity Service Quality and Reliability Act requires that "each electric company provide its customers with high levels of service quality and reliability

[1] Chapter 168 of the Acts of 2011.

in a cost-effective manner, as measured by objective and verifiable standards."[2] In accordance with the Act, the Commission established specific service quality and reliability standards that are designed to improve reliability and ensure an objectively high level of performance tailored to each Electric Company. Specifically, the Commission enacted benchmark standards for service quality and reliability through Rule Making 43 ("RM43"), which are codified in COMAR 20.50.12 *et seq.*[3] The Commission held a second rulemaking session on September 1-2, 2015, which set more stringent system-wide reliability standards for the Electric Companies to meet for years 2016 through 2019.[4] The service quality and reliability standards address a wide range of categories including system-wide reliability, poorest performing feeders, multiple device activation, service interruption, downed wire response, customer communication, and vegetation management. The 2016 reporting year, addressed herein, represents the fourth full year since these reliability standards were established.

COMAR 20.50.12.11 requires that each Electric Company serving 40,000 or more customers in Maryland submit an annual performance report by April 1 of each year that summarizes the electric service reliability results for the preceding year.[5] PUA § 7-213(f) provides that the Commission shall determine whether each Electric Company

[2] *See* Section 7-213(b) of the Public Utilities Article ("PUA") of the Maryland Code.

[3] *See* RM43, *Revisions to COMAR 20.50 – Service Supplied by Electric Companies – Proposed Reliability and Service Quality Standards*. The regulations became effective on May 28, 2012.

[4] Additionally, as further discussed below, Pepco and Delmarva agreed to further reduce their System Average Interruption Duration Index and System Average Interruption Frequency Index scores below what COMAR would otherwise have required as a condition for Commission approval of the merger of their parent corporation, Pepco Holdings, Inc., with Exelon Corporation. See Order No. 86990 in Case 9361, *In the Matter of the Merger of Exelon Corporation and Pepco Holdings, Inc*.

[5] Because April 1, 2017 was a Saturday, the filing deadline was extended to Monday, April 3, 2017.

has met the relevant service quality and reliability standards and authorizes the Commission to take appropriate corrective action where compliance is not met.[6]

On or about April 1, 2017, the Electric Companies timely filed their respective annual reports with the Commission covering the period from January 1, 2016 through December 31, 2016.[7] On April 20, 2017, the Commission issued a Notice establishing this proceeding, setting a date for hearing, and providing an opportunity for parties to file written comments on the annual reliability reports. In a Supplemental Notice issued May 17, 2017, the Commission directed the Electric Companies and the Commission's Technical Staff ("Staff") to be prepared to testify regarding the RM 43 Work Group Report on Vegetation Management filed by Staff on January 23, 2017. On July 13, 2017, Montgomery County, Maryland filed comments with the Commission addressing the Annual Performance Reports. Maryland's Office of People's Counsel ("OPC") filed its Comments on July 14, 2017. Also on July 14, 2017, Staff filed its Engineering Division Review of Annual Performance Reports on Electric Service Reliability ("Staff Review").

On Tuesday, July 25, 2017, the Commission conducted a legislative-style hearing to consider the reliability reports filed by the Electric Companies and the comments filed by the parties. Each party made a presentation to the Commission during this hearing and presented a witness to answer Commission questions.

[6] For example, PUA §§ 7-213(f)(2)(ii) and 7-213(e)(1)(iii) authorize the Commission to require an Electric Company to file a Corrective Action Plan that delineates specific steps the company will take to meet the standards. PUA §§ 7-213(f)(2) and 13-201 authorize the Commission to impose appropriate civil penalties for noncompliance.

[7] The data provided by the Electric Companies in their reports cover the reporting period from January 1, 2016 through December 31, 2016, with the exception of the Poorest Performing Feeder and Multiple Device Activation standards, where outage data is submitted that covers the 12-month period ending on September 30, 2016.

II. DISCUSSION

A. System-Wide Reliability Standards

COMAR 20.50.12.02D(1) sets forth the minimum standards with which each Electric Company must comply regarding system-wide reliability. Specifically, those regulations set targets for each Electric Company for System Average Interruption Frequency Index ("SAIFI")[8] and System Average Interruption Duration Index ("SAIDI").[9] For 2016, BGE, Delmarva, and SMECO fully met their system-wide reliability performance standards. However, Choptank failed to meet its SAIDI target. Additionally, Potomac Edison and Pepco missed their SAIFI targets.[10] Those Electric Companies filed Corrective Action Plans to improve their respective SAIDI and SAIFI scores, which are discussed further below.

Staff conducted several trend analyses for the reporting year to further measure the Electric Companies' system-wide reliability. Staff noted that Delmarva and Pepco demonstrated "significant overall performance improvements over the entire five-year period" that the standards have been in place, even taking into account that Pepco has for the first time missed its SAIFI target.[11] Staff described BGE's five-year performance as "fairly steady" and noted that although Potomac Edison's five-year average SAIFI is "among the best (lowest) of the six Electric Companies over the past five years," the

[8] SAIFI represents how often customers on average experience an interruption in a given year. Mathematically, it is equal to the number of customer interruptions divided by the total number of customers serviced on the electric system.

[9] SAIDI measures the total time that customers on average face interrupted service in a given year. It is equal to the number of customer interruption minutes divided by the total number of customers serviced on the electric system.

[10] While Pepco surpassed its SAIFI target required in COMAR 20.50.12, it failed to meet the SAIFI target for 2016 it agreed to as part of its Exelon-PHI merger commitments.

[11] Staff Review at 9.

company has evidenced a decline in performance recently.[12] Staff further noted that SMECO's performance has improved significantly since 2012. Staff observed a decline in performance by Choptank, but noted that the company has never missed its SAIFI target since the reliability regulations were promulgated.

Staff also conducted a three-year analysis of the Electric Companies' system-wide reliability. Staff observed that Delmarva, Pepco, and SMECO performed better than their three-year average SAIFI, with SMECO posting the best SAIFI score among all companies in 2016.[13] Delmarva, Pepco, and SMECO also exhibited better than average SAIDI scores over the three years analyzed, with Pepco posting the best SAIDI among all companies in 2016. Staff also evaluated the Electric Companies using the Customer Average Interruption Duration Index ("CAIDI"),[14] and found that Delmarva, Potomac Edison, Pepco, and SMECO demonstrated improvement in this metric in 2016 when compared to their 2015 scores.[15] Delmarva posted the best CAIDI among all companies in 2016.

Staff additionally conducted a rolling two-year trend analysis to eliminate aberrations that could be caused by a single good or bad year. The SAIFI two-year trend shows a "decided improvement in reliability" for Delmarva and Pepco from the 2012/2013 period to the 2015/2016 period.[16] The other four Electric Companies show steady performance during the same periods. Regarding SAIDI, BGE, Delmarva,

[12] *Id*.

[13] Staff Review at 16.

[14] CAIDI measures the average time required to restore service to customers per interruption. It is calculated by dividing SAIDI by SAIFI.

[15] Staff Review at 17.

[16] *Id.*

Potomac Edison, and Pepco show "continued improvement in reliability" under the rolling two-year trend analysis, while SAIDI performance for Choptank and SMECO has declined.[17] Finally, with respect to CAIDI, the two-year trend analysis demonstrates that BGE, Delmarva, and Potomac Edison have shown continued improvement in the time required to restore service to customers who experience an interruption, while Pepco has shown a "slight to negligible decline in performance."[18] Choptank and SMECO declined in CAIDI performance during this time.

Corrective Action Plans

Pepco did not meet the 2016 SAIFI target established as one of Exelon's merger commitments in Case No. 9361, *In the Matter of the Merger of Exelon Corporation and Pepco Holdings, Inc.* Prior to the merger, COMAR 20.50.12.02D(1) specified that Pepco achieve a 2016 SAIFI of 1.25. However, as one of the purported benefits of approving the merger, Pepco committed to achieving a SAIFI of 1.05. That commitment was reflected in the Commission's order approving the merger, Order No. 86990 at Appendix A, p. A-13. C. Pepco did, however, achieve a SAIDI of 108 minutes for 2016, which more than met the merger commitment of 124.0 minutes or less.

Pepco observes that it missed the 2016 target by only 3% and that its SAIFI of 1.08 "is nonetheless the best performance ever by the Company."[19] Pepco also provides explanation for why it missed its SAIFI target. First, the company explains that it experienced several intense, local storms that impacted reliability but did not qualify as

[17] *Id*. at 18.

[18] *Id.* at 19.

[19] Pepco January 31, 2017 Corrective Action Plan at 5.

Major Outage Events under COMAR. Pepco states that the storms caused 157,311 customer interruptions, adding 0.28 to its SAIFI, and representing 26% of the total system SAIFI for 2016.[20] Second, Pepco notes that a fire at the Oak Grove Substation in Prince George's County on February 28, 2016 contributed to a higher than expected SAIFI. Finally, the company states that the merger, which was approved by this Commission on May 15, 2015, was not approved by the Public Service Commission of the District of Columbia until March 23, 2016, several months later than expected. Pepco therefore argues that the integration of the companies could not begin until later than anticipated, delaying the implementation of Exelon best practices and merger operational synergies, which Pepco expected would improve its SAIFI score.

In order to improve its SAIFI and ensure compliance with the more stringent targets set through the merger case, Pepco filed a Corrective Action Plan on January 31, 2017.[21] According to Pepco, the Plan is designed to "augment existing reliability programs and initiatives to improve performance to a level which meets and/or exceeds the required reliability indices specified in Order No. 86990." It will be implemented over a three-year period and is composed of four primary components: (1) acceleration of poorest performing feeder work; (2) implementation of a substation bus interruption remediation plan; (3) implementation of a distribution automation and sectionalization acceleration plan; and (4) implementation of area plans for the Crain Highway Substation in Prince George's County and the Norbeck Substation in Montgomery County. Pepco confirmed that, pursuant to its merger commitments, the initiatives will "be implemented

[20] *Id.*

[21] Mail Log No. 212198.

within the reliability budgets approved by the Commission in Order No. 86990." In other words, Pepco's ratepayers will not be required to provide additional funds for Pepco to meet its merger commitments.

The Commission is disappointed that Pepco failed to meet its 2016 SAIFI merger commitments, despite Pepco's lamentation that the approval process in the District of Columbia took longer than expected. Pepco's commitment to improve reliability as a result of the merger was a significant factor in the Commission granting approval. Condition 8 of Order No. 86990 provides: "If Delmarva or Pepco fails to meet the reliability-performance levels set out above in any of the years 2016-2020, then the Commission's RM43 mitigation and penalty provisions shall apply…" Those provisions include the filing of a Corrective Action Plan, explanation for why the target was missed, and the possible imposition of a civil penalty.

Taking into consideration Pepco's significant decrease in SAIFI between 2015 and 2016 (from 1.13 to 1.08)[22] as well as the fact that the company more than met its 2016 merger SAIDI goal (reporting 108.0 interruption minutes vs. the merger target of 124.0),[23] we will not impose a penalty at this time. We accept Pepco's Corrective Action Plan. We remind Pepco and Delmarva,[24] however, that Condition 8 of the Merger Order provides that if either of the SAIFI or SAIDI reliability-performance levels is not met in any of the years 2018 through 2020, then Delmarva and/or Pepco "shall automatically

[22] Staff Review at 9.

[23] *Id.*

[24] Unlike Pepco, Delmarva's more stringent targets do not take effect until 2018.

make a compliance payment to the Electric Reliability Remediation Fund … which payment shall not be recoverable in customer rates…"[25]

Potomac Edison and Choptank also failed to meet certain system-wide reliability standards. Potomac Edison reported a SAIFI of 1.14, missing the 1.08 SAIFI required by COMAR for the year 2016. Potomac Edison provided an explanation of the missed target, stating that it experienced a significant outage event in the Frederick area that resulted in the loss of two 230 kV transmission lines, six substations and 48 circuits, and ultimately the interruption of 41,000 customers.[26] The cause of the incident was equipment failure, including the failure of a capacitor bank vacuum switch. Potomac Edison states that the event did not qualify as a Major Outage Event because its customers were restored in less than 24 hours; however, had the event been excluded, Potomac Edison would have scored 0.98 on its SAIFI.[27] In its Corrective Action Plan, Potomac Edison states that it has performed a review of its transmission equipment to identify other capacitor banks containing similar vacuum switches, and the company has initiated a plan to inspect and repair the remaining vacuum switches on its system. Potomac Edison also plans to accelerate the inspection and maintenance cycle of other equipment that failed during the incident in Frederick.

Choptank's 2016 reported SAIDI of 156.84 interruption minutes exceeds the COMAR required 152.40 minutes.[28] In its evaluation of outages on its system, Choptank concludes that vegetation, lightning, and accidents were the leading contributors to its

[25] Case No. 9361, Order No. 86990 at A-13 – A-14.

[26] Potomac Edison 2016 Annual Report at 3.

[27] *Id*.

[28] Staff Review at 14.

increase in SAIDI. The company states that an increase in the number of storms, with attendant high winds and lightning strikes, caused damage to the electrical system. Choptank reviewed the outages caused by lightning and is installing better and deeper ground rods where appropriate.[29] Additionally, Choptank's vegetation management program is nearing the end of its five-year cycle that started in mid-2012, and the company observes that some trees (referred to as "cyclebusters") have grown faster than anticipated, interfering with the company's easements. Accordingly, Choptank has directed "hot-spot vegetation management crews" to find these problem trees and bring them back into compliance before the next tree-trimming cycle. Finally, Choptank has examined vehicular accidents involving its equipment and is examining cost-effective ways to reduce the likelihood of such an accident impacting the company's equipment.

We accept the Corrective Action Plans of Potomac Edison and Choptank. We direct those Electric Companies as well as Pepco to file by October 31, 2017, an interim assessment of the effectiveness of their plans, including updated 2017 SAIFI and SAIDI data through the third quarter of 2017. We commend BGE, Delmarva, and SMECO for meeting their system-wide reliability standards.

B. Poorest Performing Feeder Standards

COMAR 20.50.12.03 directs each Electric Company to report to the Commission the three percent of feeders assigned to Maryland that are identified by the Electric Company as having the poorest feeder reliability, as measured through SAIDI, SAIFI, and CAIDI indices. COMAR 20.50.12.03C requires that each Electric Company identify

[29] Choptank 2016 Reliability Report, Corrective Action Plan at 1.

actions to improve the reliability of those poorly-performing feeders. The regulations prohibit "repeat offenders," by specifying that no feeder ranked in the poorest performing three percent of feeders shall subsequently perform in the poorest performing three percent during either of the two subsequent 12-month reporting periods, after allowing one 12-month reporting period for the utility to implement remediation measures.[30] In other words, the standard prohibits any feeders identified as poorest performing feeders ("PPFs") in 2013 or 2014, after receiving remedial actions, from being reported as repeat PPFs in 2016.

The six Electric Companies collectively maintain 2,887 feeders, 91 of which were identified as their lowest PPFs in 2016. These 91 feeders reported a SAIFI and a SAIFI about 3.5 times the overall system average for all feeders in the State.[31] As required by COMAR, the Electric Companies proposed a variety of measures to improve the reliability of their PPFs.

All six Electric Companies reported having *repeat* PPFs, in contravention of the COMAR requirements. Specifically, BGE reported six PPFs, Delmarva four, Pepco two, and Potomac Edison, Choptank, and SMECO one each.[32] Staff observes that the average SAIFI and SAIDI of the repeat PPFs in 2016 was actually slightly better than the average SAIFI and SAIDI of all 2016 PPFs, indicating that "as a group [the repeat PPFs] are not necessarily the worst among all poorest performing feeders.[33] Additionally, that statistic

[30] COMAR 20.50.12.03A(5).

[31] Staff Review at 20.

[32] *Id.*

[33] *Id.*

indicates that the Electric Utilities' remediation efforts may be having positive effect, even if not enough to remove certain feeders from the list of PPFs.

Each Electric Company filed a Corrective Action Plan to describe further remediation measures that will be taken to improve the performance of repeat PPFs. BGE's Corrective Action Plan for its six repeat PPFs outlines enhanced vegetation management opportunities, including additional tree-trimming and tree removal; reactive cable replacements; increased sectionalization through the installation of additional overhead and pad-mounted distribution automation reclosers; and the installation of additional underground cable, through the company's 2017 Cable Replacement Program.[34] In order to remediate its four repeat PPFs, Delmarva proposes to install additional reclosers for sectionalizing future faulted zones; expand distribution automation schemes; enhance vegetation management; install additional equipment, including poles, crossarms, cutouts, additional fusing, and lightning protection; install selective undergrounding; and replace overhead primary wire. Additionally, in the long-term (2017 to 2018), Delmarva plans to energize a new 34 kV substation and to enhance circuit reconfigurations and distribution automation expansion.[35] Pepco's Corrective Action Plan for its two repeat PPFs includes enhanced vegetation management; the upgrade and reconfiguration of feeder cable; and the installation of additional reclosers, which will be integrated into an automatic sectionalizing and reclosing scheme in the near future.[36] Potomac Edison's Corrective Action Plan for its repeat PPF entails circuit

[34] BGE 2016 Annual Performance Report, Poorest Performing Feeders Corrective Action Plan at 6-14.

[35] Delmarva 2016 Annual Performance Report, Corrective Action Plan for Repeat Poorest Performing Feeders at 5-12.

[36] Pepco 2016 Annual Performance Report, Poorest Performing Feeders Corrective Action Plan at 5-7.

hardening, including the installation of external fusing and animal guards on transformers; the installation of sectionalizing devices and fault indicators; and the remediation of danger trees.[37] Regarding its repeat PPF, Choptank's Corrective Action Plan provides for the replacement of fuses with reclosers and "hot-spot trim[ing]."[38] Finally, SMECO addresses its repeat PPF by proposing 6.8 line miles of cable replacement, in addition to its past efforts to increase circuit capacity and sectionalization.[39]

Based on its review of the Electric Companies' Corrective Action Plans, Staff concludes that the reliability of the feeders will likely improve to the extent that they will no longer be considered PPFs for, at a minimum, the years 2018 to 2019, as required by COMAR.[40] No party challenged the Corrective Action Plans as insufficient or excessive. In reviewing the Corrective Action Plans for repeat PPFs, we find them reasonably targeted toward bringing the feeders into compliance with COMAR requirements. Accordingly, we accept the Corrective Action Plans submitted by the Electric Companies.

Request to Reconvene Work Group on PPFs

In the Commission's Order on the 2015 Annual Performance Reports (Order No. 87754), we directed Staff to lead a work group to address issues related to PPFs and repeat PPFs. One of the issues we directed parties to consider was whether there may be a point where it is no longer cost-effective to further remediate repeat PPFs. See, for

[37] Potomac Edison 2016 Annual Performance Report at 14.

[38] Choptank 2016 Annual Performance Report at 9.

[39] SMECO 2016 Annual Performance Report at 11.

[40] Staff Review at 22.

example, Order No. 87754 at 9, stating "the Electricity Service Quality and Reliability Act does not contemplate further investment on an 'unlimited basis,' but rather envisions that reliability investment 'would be constrained by cost effectiveness.'"[41] During this year's hearing, parties echoed these concerns. OPC, for example, stated "...it might be that we are reaching diminishing returns, for each additional dollar of reliability spending we're getting much, much less as far as actual reliability improvement."[42]

Charged with addressing cost-effectiveness and other PPF concerns, Staff convened the PPF work group on September 22, 2016 and representatives of the six Electric Companies and OPC attended. The group met ten times between September 22 and December 15, 2016. Staff submitted a progress report on January 31, 2017, stating that the parties agreed that since the inception of RM43, system-wide reliably metrics for all distribution systems in Maryland have substantially improved.[43] The group also discussed potential improvements to COMAR regulations that would focus cost-effective remediation on feeders that are genuine outliers in performance.[44] Staff now recommends that the Commission reconvene the PPF work group to review how the

[41] Order No. 87754 at 9, citing 2016 Hrg. Tr. at 120-21 (OPC).

[42] Hrg. Tr. at 179, (OPC, Ouslander).

[43] Poorest Performance Feeder, Workgroup Progress Report (Mail Log No. 212204) at 8. See also, Staff Review at 46, stating: "overall Maryland electric system reliability has steadily improved since the promulgation of RM43."

[44] The work group recommended the following three changes to COMAR: (i) Performance-based PPF selection criteria, which unifies the selection of PPFs across all Maryland Electric Companies; (ii) Three categories of outage exclusion criteria, consolidated across the Electric Companies; and (iii) Elimination of the current "remediation period" and the determination of repeat PPF status by its appearance on the PPF list for three consecutive years.
Workgroup Progress Report at 14.

proposed changes to COMAR would impact prior year PPF selection, the number of PPFs, remedial plans, and the cost to avoid repeat PPF, among other issues.[45]

OPC generally supports the recommendations of the work group but observes that the Commission will need to initiate a formal rulemaking for any changes to take effect.[46] Montgomery County requests that in considering any changes to the PPF standard, "the Commission consider how customers experience outages."[47] Montgomery County explains that even if overall system reliability is improving, a customer will be dissatisfied "if they feel they experience a seemingly higher number of outages than their neighbors."

We direct Staff to reconvene the work group on PPFs and repeat PPFs.[48] We concur with the findings of the Work Group Progress Report that distribution reliability has substantially improved as a result of RM43 and we are generally pleased with the high level of distribution service provided by the Electric Companies. The RM43 regulations compelled the companies to augment reliability spending in order to achieve a high level of performance, and we want the companies to maintain distribution reliability at that level as a integral part of their normal operations as a regulated public utility.

[45] In its September 27, 2017 Administrative Meeting, the Commission approved BGE's proposal to revise the method by which it selects feeders for inclusion in its Poorest Performing Feeder Program. BGE proposed to modify its selection criteria so that it does not first divide distribution feeders between those serving 1 to 100 customers and those serving more than 100 customers, before it ranks the feeders using interruption data. See BGE's August 9, 2017 correspondence to the Commission; Mail Log # 216413.

[46] OPC Comments at 11.

[47] Montgomery County Comments at 6.

[48] The work group will be led by Staff, will include all six of the Electric Companies, and will be open to all other interested parties, including OPC and Montgomery County. The work group will examine those issues outlined by Staff in its Review and discussed during the hearing in this matter related to PPFs and repeat PPFs. Staff is directed to file a progress report summarizing the work group discussions and any related recommendations no later than January 30, 2018.

However, the parties raise legitimate issues as to whether there are diminishing returns associated with continually targeting the lowest three percent of feeders for potential remediation. See Pepco/Delmarva hearing comments, stating: "We believe that no matter how great your system is, you're always going to have poorest performers; however, the diminishing returns from going after some of those that aren't necessarily outliers from a reliability perspective may tend to get a little costly."[49]

We agree that conceptually the Electricity Service Quality and Reliability Act does not contemplate further investment on an unlimited basis, but rather envisions that reliability investment must be constrained by the principle of cost effectiveness. We are also open to the idea that in order to focus ratepayer dollars on cost-effective remediation of feeders that are genuine outliers in performance, changes to COMAR may be necessary. The work group is authorized to explore such possibilities.

We also agree with OPC that the future proceedings to set the appropriate metrics for system-wide reliability provide an opportunity to reexamine the value of additional reliability in light of the principle of cost-effectiveness.[50] See OPC Comments at 23, stating "unfettered utility spending for reliability investments will, at some point, start providing diminished returns in the value of additional reliability performance." Although OPC acknowledges that it is not clear that the point of diminishing returns has been reached, the agency suggests that the parties should meet in a work group format to discuss an acceptable cost/benefit analysis to be applied for additional reliability improvements.

[49] Hrg. Tr. at 136, (Pepco/Delmarva, Clark).

[50] Hrg. Tr. at 180, (OPC, Ouslander).

With regard to future system-wide reliability targets, the Electric Companies must file their plans for setting and achieving new SAIDI and SAIFI targets by 2019. The new targets will be applicable for the years 2020 through 2023.[51] However, by the time the Electric Company plans are filed, it may be too late for parties to suggest and the Commission to direct significant change. We therefore direct parties to begin the conversation now, including through a work group to discuss future system-wide reliability targets and an acceptable cost/benefit analysis to be applied to additional reliability improvements.[52]

C. Multiple Device Activation Standards

COMAR 20.50.12.04 requires each Electric Company to report the number of protective devices that activated five or more times during the applicable reporting period and that caused sustained interruptions in electric service, including during Major Outage Events, to more than ten Maryland customers.[53] The Electric Companies are required to implement reasonable remediation measures to reduce the number of activations and describe the measures in their annual performance reports. Similar to the repeat PPF standard discussed above, COMAR 20.50.12.04D provides that the protective devices reported under this standard shall not exceed this standard during either of the two subsequent 12-month reporting periods after allowing one 12-month reporting period for

[51] See Hrg. Tr. at 67, (Staff, Borkoski).

[52] The parties are welcome to combine this work group with the work group addressing PPFs and repeat PPFS. Staff is directed to file a progress report with the Commission no later than January 30, 2018.

[53] Protective devices include substation breakers and reclosures, line reclosures, line sectionalizing equipment, and line fuses (COMAR 20.50.01.03B(43)).

remediation measures. Any Electric Company that fails to meet the standard is required to file with the Commission a plan setting forth its proposed corrective actions.

In 2016, the Electric Companies reported 68 protective devices that activated five or more times. Staff observed that this figure represents a significant decrease compared to the number of activations in 2012, when the standard was first introduced.[54] Delmarva, Potomac Edison, and Pepco have shown the most significant decrease in device activations over the five-year period. Moreover, no Electric Company reported any repeat multiple activation devices in 2016. We therefore commend the Electric Companies for meeting the Multiple Device Activation Standards.

D. Additional Reliability Indices

In addition to the SAIDI, SAIFI and CAIDI calculations discussed above, COMAR 20.50.12.05 requires that the Electric Companies calculate and report to the Commission two additional reliability indices. Specifically, Electric Companies must report Customers Experiencing Multiple Interruptions ("$CEMI_n$") and Momentary Average Interruption Frequency Index ("$MAIFI_E$"). $CEMI_n$ measures the ratio of customers experiencing multiple sustained interruptions (including customers experiencing three or more, five or more, seven or more, or nine or more interruptions as reported IEEE standards),[55] against the total number of customers served on the system. Similarly, $MAIFI_E$ calculates the ratio of customers experiencing multiple momentary interruptions compared to the total number of customers on the system. COMAR 20.50.12.05(B) and (C) state that if the Electric Company is unable to provide these

[54] Staff Review at 25.

[55] Institute of Electrical and Electronics Engineers.

calculations, it must present to the Commission a reason why, as well as an estimation of the cost to provide the information in the future.

Only BGE, Delmarva, and Pepco provided $MAIFI_E$ numbers. Choptank, Potomac Edison, and SMECO do not at this time have the capability to provide the data and, pursuant to COMAR requirements, have provided explanations as to why they lack this capability as well as the cost estimates to furnish the information in the future. The $MAIFI_E$ data show a declining number of interruptions for BGE and Pepco and a generally steady number of interruptions for Delmarva from the year 2012 to the present.[56]

Regarding $CEMI_n$, the number of Maryland customers experiencing three or more, five or more, seven or more, and nine or more sustained interruptions has been reduced significantly overall.[57] Choptank and Potomac Edison, however, showed a decline in $CEMI_n$ performance since 2012. We commend those Electric Companies that were able to report their CEMI and MAIFI data.

E. Service Interruption Standards

COMAR 20.50.12.06A requires that Electric Companies restore service within eight hours of an outage to at least 92 percent of their customers that experience sustained interruptions during normal conditions. COMAR 20.50.12.06B provides that Electric Companies must restore service within 50 hours to at least 95 percent of their customers experiencing sustained interruptions during Major Outage Events, where the total number

[56] Staff Review at 27.

[57] *Id.* at 28.

of sustained interruptions is less than or equal to 400,000 or 40 percent of the Electric Company's total number of customers, whichever is less.

For 2016, all six Electric Companies met the Service Interruption Standard for normal conditions. Delmarva showed the highest percentage restoration rate of customers experiencing sustained interruptions during normal conditions, restoring 99.46 percent of customers.[58] Additionally, all six Electric Companies met the standard for major outage events in 2016, with all six companies restoring service to100 percent of customers within 50 hours after a major outage event. We commend the Electric Companies for meeting the Service Interruption Standards.

F. Downed Wire Response Standard

COMAR 20.50.12.07 requires that each Electric Company respond to a downed electric wire guarded by a government emergency responder within four hours of notification by a fire department, police department, or 911 emergency dispatcher at least 90 percent of the time. All Electric Companies exceeded this standard for the 2016 reporting year. Pepco, SMECO, and Choptank posted perfect scores of 100 percent.[59] We commend the Electric Companies for meeting this important standard.

G. Customer Communications Standards

COMAR 20.50.12.08A requires that each Electric Company answer within 30 seconds, on an annual basis, at least 75 percent of all calls placed to the Electric Company for customer service or outage reporting purposes. All Electric Companies met this standard in 2016. Pepco, which did not meet the standard for 2015 (answering 73.9

[58] *Id*. at 29.

[59] *Id*.

percent of calls within 30 seconds that year), reported the second highest answered-call rate this year at 88.0 percent.[60] Delmarva also showed significant improvement in this metric, increasing its 81.9 percent call rate in 2015 to 93.8 percent in 2016.[61]

COMAR 20.50.12.08B provides that each Electric Company must achieve an annual average abandoned call percentage rate of five percent or less. In 2016, all Electric Companies met this standard, with Pepco showing the most dramatic improvement in this metric. In 2015, Pepco did not meet the standard, reporting an abandoned call rate of 8.26 percent. The Commission expressed concern with Pepco's performance, stating that "customer communication is an essential element of the Reliability Act" and characterizing as "troubling" the downward trend in customer communication performance exhibited by all of the Electric Companies in 2015.[62] Since 2015, however, Pepco filed and executed a Corrective Action Plan, fully implemented a new customer management and billing system, and enhanced training of its customer service representatives. For 2016, Pepco reports a significantly reduced abandoned call rate of 2.25 percent. Additionally, Staff observes with regard to both customer communication metrics that the Electric Companies have demonstrated "an almost across the board improvement in performance from 2015 to 2016 with Delmarva and Pepco

[60] *Id*. at 31. Delmarva reported the highest percentage of calls answered within 30 seconds.

[61] Staff Review at 31.

[62] Order No. 87754 at 14.

showing the most significant improvement."[63] We commend the companies for their strong performance in 2016 regarding customer communication.[64]

H. Vegetation Management Standards

COMAR 20.50.12.09 addresses vegetation management programs and requires that each Electric Company trim vegetation on a certain percentage of the Electric Company's total distribution miles each year. The regulation requires each Electric Company to develop its own vegetation management program that addresses tree pruning and removal; vegetation management around poles, substations, and energized overhead electric plant; vegetation management along rights-of-way; inspections; and public education regarding vegetation management practices, among other requirements.

All of the Electric Companies exceeded the COMAR requirements for vegetation management for reporting year 2016. Staff notes that the Electric Companies trimmed an aggregate of 6,934 circuit miles in 2016.[65] In addition to providing data related to overhead circuit miles trimmed and miles of vegetation management performed, Staff's Review listed vegetation management expenditures, including vegetation management cost per mile. Pepco showed the highest cost per mile at $17,168 – a cost that is significantly above the next highest cost per mile (BGE, at $11,136 per mile).[66] During the hearing, the Commission inquired about this disparity and commented on the

[63] Staff Review at 31.

[64] We decline at this time to grant OPC's request to create a work group to consider setting additional telephone communication standards. See OPC Comments at 18.

[65] Staff Review at 33.

[66] *Id.*

importance of vegetation management being cost effective.[67] It is our expectation that over time, Pepco's vegetation management cost per mile will be brought more in line with the experiences of the other utilities in the State. In future Annual Reports, the Commission directs parties to provide further information regarding the cost per mile of vegetation management, including what measures may reduce the cost. Regarding Pepco in particular, we would like to know if any Exelon best practices may help reduce this figure.

We commend the Electric Companies for meeting their vegetation management targets. As we have stated in previous Orders, because vegetation management work may impact customers, the Companies should continue to place priority on communicating effectively with customers and addressing customer concerns as they carry out their vegetation management programs.[68]

I. Periodic Equipment Inspections

COMAR 20.50.12.10A requires that each utility adopt and follow written operation and maintenance ("O&M") procedures for its electric plant in order to maintain safe and reliable service. In accordance with those requirements, each Electric Company filed O&M plans with the Commission in August 2012, detailing their procedures for the inspection and maintenance of wood poles, overhead circuits and equipment, pad-

[67] See Hrg. Tr. at 33.

[68] On January 23, 2017, the work group on vegetation management filed its final report addressing vegetation management best practices, including related customer communication issues. Staff now recommends that the Electric Companies continue to convene a work group periodically to share best practices on customer communication and public awareness for vegetation management practices. We agree that this work group provides a valuable opportunity for the Electric Companies and the parties to share best practices and customer communication concerns and authorizes the work group to continue to meet periodically.

mounted transformers and underground equipment, line capacitors and substations.[69] In the present proceeding, all Electric Companies demonstrated that they completed their inspection and maintenance activities, in compliance with their filed plans, and therefore met the Periodic Equipment Inspections standard, with the exception of BGE.

In 2017, BGE self-reported to Staff that its periodic equipment inspection work scheduled for 2015 and 2016 was not fully completed and that a total of at least 3,111 periodic equipment inspections had been discovered as of July 12, 2017.[70] BGE further revealed that its investigation of missed inspections was ongoing and that the total number of missed inspections could rise. BGE attributed this mistake to "human error" and "lost equipment records" experienced as a result of transitioning to a new work management system in 2015.[71] BGE stated that it will file an updated Corrective Action Plan when its investigations are complete after August 31, 2017.[72]

We find that BGE's failure to meet the Periodic Equipment Inspections standard constitutes a serious omission. RM43 created the Periodic Equipment Inspection standard because equipment failure is a leading cause of outages.[73] Failure to meet scheduled equipment inspections can therefore pose a risk to reliability. Additionally, equipment failure can pose significant risks to the health of the public and to Electric Company personnel. The magnitude of missed equipment inspections (at least 3,111, but potentially more) is also alarming, as is BGE's admission that it is in non-compliance for

[69] BGE filed revised O&M plans on January 31, 2014 and November 3, 2016.

[70] Staff Review at 34; Hrg. Tr. at 36.

[71] Staff Review at 34.

[72] As of the issuance date of this Order, BGE has not yet filed its Corrective Action Plan regarding Periodic Equipment Inspections.

[73] Hrg. Tr. at 35, (Staff, Austin).

years 2015 and 2016. We agree with Staff that BGE's act of discovering and immediately self-reporting the problem is a mitigating factor.[74] However, we consider this oversight significant. A failure to come into full compliance with this standard will not be taken lightly by the Commission and may result in further actions beyond those contained in this Order. We therefore direct BGE to file a Corrective Action Plan that provides a detailed explanation of (i) the total number of inspections missed; (ii) the root cause(s) of the failure to meet this standard; (iii) corrective actions to inspect equipment where inspections were omitted; and (iv) how the company will avoid any such error in the future and prevent recurrence of failure to comply with this standard.

IT IS, THEREFORE, this 28th day of September, in the year Two Thousand Seventeen,

ORDERED: (1) That the service quality and reliability annual reports of BGE, Pepco, Delmarva, Potomac Edison, Choptank, and SMECO are accepted;

(2) That the Corrective Action Plans of BGE, Pepco, Delmarva, Potomac Edison, Choptank, and SMECO are hereby noted;

(3) That Pepco, Potomac Edison, and Choptank will each file by October 31, 2017 an interim assessment of the effectiveness of their respective Corrective Action Plans regarding System-Wide Reliability Standards, including updated 2017 SAIFI and SAIDI data through the third quarter of 2017;

(4) That Staff will reconvene the work group on PPFs and repeat PPFs, which will include all six of the Electric Companies and be open to all other interested parties, including OPC and Montgomery County, and Staff shall file a progress

[74] Hrg. Tr. at 199-200, (Staff, Borkoski).

report summarizing the work group discussions and any related recommendations no later than January 30, 2018;

(5) That Staff will lead a work group addressing future system-wide reliability targets for years 2020 through 2023, which will include all six of the Electric Companies and be open to all other interested parties, including OPC and Montgomery County, and Staff shall file a progress report summarizing the work group discussions and any related recommendations no later than January 30, 2018;

(6) That the work group that met to share best practices on customer communication and public awareness related to vegetation management is authorized to continue to meet periodically; and

(7) That BGE is directed to file a Corrective Action Plan no later than November 30, 2017, related to the Periodic Equipment Inspections standard that provides a detailed explanation of (i) the total number of inspections missed; (ii) the root cause(s) of the failure to meet this standard; (iii) corrective actions to inspect equipment where inspections were omitted; and (iv) how the company will avoid any such error in the future.

/s/ W. Kevin Hughes

/s/ Michael T. Richard

/s/ Anthony J. O'Donnell

Commissioners*

Commissioners Odogwu Obi Linton and Mindy L. Herman did not participate in this decision.