ORDER NO. 90381

In the Matter of the Review of Annual Performance Reports on Electric Service Reliability Filed Pursuant to COMAR 20.50.12.11	* * * * * * * *	BEFORE THE PUBLIC SERVICE COMMISSION OF MARYLAND CASE NO. 9353

Issue Date: October 7, 2022

ORDER ON 2021 ELECTRIC RELIABILITY PERFORMANCE REPORTS

1. Pursuant to the Maryland Electricity Service Quality and Reliability Act[1] and the Code of Maryland Regulations ("COMAR") 20.50.12 *et seq.*, the Maryland Public Service Commission accepts the annual reliability performance reports filed by Baltimore Gas and Electric Company ("BGE"), the Potomac Electric Power Company ("Pepco"), Delmarva Power & Light Company ("Delmarva"), The Potomac Edison Company ("Potomac Edison"), and Southern Maryland Electric Cooperative, Inc. ("SMECO") (collectively the "electric companies").[2] The Commission also accepts the Corrective Action Plan filed by Pepco in response to the violation of a certain performance standard described below.

I. INTRODUCTION AND PROCEDURAL HISTORY

2. The Maryland Electricity Service Quality and Reliability Act requires that "each electric company provide its customers with high levels of service quality and reliability in a cost-effective manner, as measured by objective and verifiable standards."[3] In accordance with the Act, the

[1] Chapter 168 of the Acts of 2011 (codified as Md. Ann. Code, Pub. Util. Art. § 7-213 (West 2019)).
[2] Choptank Electric Cooperative, Inc. ("Choptank") did not file an Annual Reliability Report this year because it became a Member-Regulated Cooperative in August of 2020.
[3] PUA § 7-213(b).

Commission established 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 initial benchmark standards for service quality and reliability through Rule Making 43 ("RM43"). These standards are codified in COMAR 20.50.12 e*t seq.*[4]

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. On March 6, 2019, the Commission issued Order No. 89056 and docketed Rule Making 67 (RM67) to accept utility proposed system-wide System Average Interruption Frequency Index ("SAIFI") and System Average Interruption Duration Index ("SAIDI") reliability targets for years 2020 through 2023. In Case No. 9361, Pepco and Delmarva agreed to further reduce their SAIDI and SAIFI scores below what COMAR would otherwise have required as a condition of Commission approval of the merger of their parent corporation, Pepco Holdings, Inc., with Exelon Corporation.[5] On August 12, 2021, the Commission issued Order No. 89908, which established a work group on next-cycle reliability standards, under the leadership of Staff, to consider further RM43 standard changes. On March 22, 2022, the Commission's Technical Staff ("Staff") submitted proposed revisions to COMAR regulations as recommended by the work group. In conjunction with the filing of their annual reliability reports, the electric companies also submitted proposed next cycle goals for years 2024-2027.[6]

[4] *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.

[5] *See* Order No. 86990 in Case No. 9361, *In the Matter of the Merger of Exelon Corporation and Pepco Holdings, Inc.*

[6] The next cycle reliability metrics for 2024-2027 are not the subject of this Order and will be addressed in a future rulemaking. Staff is directed to file a proposal for rulemaking related to the electric companies' next cycle reliability metrics for the years 2024-2027.

4. The service quality and reliability standards address a wide range of performance categories, including system-wide reliability, poorest performing feeders, multiple device activation, service interruption, downed wire response, customer communication, and vegetation management. The 2021 reporting year, addressed herein, represents the ninth full year since these reliability standards were established in 2012.

5. 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. Public Utilities Article, *Annotated Code of Maryland,* ("PUA") § 7-213(f) provides that the Commission shall determine whether each electric company has met the relevant service quality and reliability standards and authorizes the Commission to take appropriate corrective action where compliance is not met.[7]

6. On or before April 1, 2022,[8] the electric companies filed their respective annual reports with the Commission, covering the period from January 1, 2021, through December 31, 2021.[9] On April 8, 2022, the Commission issued a Notice of Annual Reliability Hearing and Opportunity to Comment.[10] The notice scheduled a legislative-style hearing for July 28-29, 2022, for the purpose of reviewing the electric companies' annual reliability reports and to determine whether the electric companies met the service quality and reliability standards adopted by the Commission. The notice further provided that the Commission would consider the proposed

[7] 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 with the PUA or COMAR.

[8] Potomac Edison filed its 2021 Annual Performance Report on March 25, 2022 (Maillog No. 239759), and BGE filed its 2021 Annual Performance Report on March 31, 2022 (Maillog No. 239925).

[9] The data provided by the electric companies in their reports cover the reporting period from January 1, 2021, through December 31, 2021, 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, 2021.

[10] Maillog No. 240105.

revisions to COMAR regulations recommended by the RM43 Standard Changes Work Group, and that it would conduct a review of the electric companies' recommended reliability standards covering the years 2024 through 2027. The notice also provided an opportunity for parties to file written comments.[11]

7. On April 26, 2022, Potomac Edison filed a supplement to its annual reliability report.[12] Potomac Edison, Delmarva, and Pepco filed errata to their annual reliability reports on May 3, and June 14, 2022.[13] On June 14, 2022, Pepco filed a corrective action plan in response to a violation of one of its performance standards.[14]

8. On July 21, 2022, several intervening parties filed comments with the Commission, including the Maryland Office of People's Counsel ("OPC"), Montgomery County, Maryland and SMECO.[15] Also on July 21, 2022, Staff filed three separate documents, which include (i) the Engineering Division's Review of Annual Performance Reports on Electric Service Reliability ("Staff Annual Review"); (ii) Staff Engineering Division Review of Proposed System-Wide Reliability Standards for 2024 – 2027 ("Staff Next Cycle Review"); and (iii) Comments on Proposed RM43 Regulation Revisions ("Staff RM43 Review").[16]

9. On July 28, 2022, the Commission conducted a hearing to review the electric companies' annual reliability reports and to determine compliance with the service quality and reliability standards; to consider proposed revisions to COMAR regulations recommended by the RM43 Standard Changes Work Group; and to review proposed next cycle reliability standards covering

[11] Written comments were required to be filed with the Commission's Executive Secretary by July 21, 2022.
[12] Maillog No. 240370.
[13] Maillog Nos. 240542, 241091, and 241092.
[14] Maillog No. 241096.
[15] Maillog Nos. 241553, 241556, and 241566.
[16] Maillog No. 241567.

years 2024 through 2027. Each party made a presentation to the Commission during the hearing and was available to answer Commission questions.

II. DISCUSSION

A. System-Wide Reliability Standards

10. 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's SAIFI[17] and SAIDI.[18]

11. The system-wide reliability data reported by the electric companies has historically excluded Major Outage Events, pursuant to COMAR 20.50.12.02D.[19] In 2021, no electric company reported experiencing a Major Outage Event. Electric companies are also required to calculate SAIFI and SAIDI performance using the Institute of Electric and Electronic Engineers ("IEEE") 2.5 Beta Method, which excludes Major Event Days.[20] In 2021, BGE, Potomac Edison, Pepco, and SMECO reported experiencing IEEE Major Event Days.[21] Specifically, BGE experienced 10, Pepco three, SMECO five, and Potomac Edison four Major Event Days in 2021.[22] Delmarva did not experience any IEEE Major Event Days in 2021.

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[17] 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.

[18] 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.

[19] COMAR currently defines Major Outage Event as an event where: (i) "More than 10 percent or 100,000, whichever is less, of the electric utility's Maryland customers experience a sustained interruption of electric service; and (ii) Restoration of electric service to any of these customers takes more than 24 hours. COMAR 20.50.01.03B(27). Prior to January 1, 2020, a Major Outage Event also included the declaration of a state of emergency by the federal, State, or local government in the utility's service territory if the emergency involved interruption of electric service.

[20] The 2.5 Beta Method was developed by IEEE with the intent of providing a mechanism to remove extraordinary events, known as "outliers," by defining a Major Event Day with respect to distribution reliability performance. The method is known as the 2.5 Beta Method because, based on daily SAIDI, the statistical formula uses events greater than 2.5 standard deviations to define Major Event Days. Staff Annual Review at 1 n. 3. The year 2021 marks the second year that electric companies were required to calculate SAIFI/SAIDI performance using the IEEE 2.5 Beta Method.

[21] Staff Annual Review at 16.

[22] *Id.* at 3. Staff observed that BGE's 10 Major Event Days for 2021 and eight Major Event Days for 2020 are three times the statewide average, and well above what was expected statistically. *Id.* at 16-17. Staff stated that it will

12. In 2021, all six electric companies fully met their SAIFI and SAIDI targets. Pepco posted the lowest SAIFI, reporting 0.59 interruptions, which is below its COMAR standard of 0.90. Pepco also posted the lowest SAIDI, reporting a duration of 57 minutes, which is below its COMAR standard of 86 minutes. The electric companies reported SAIDI and SAIFI numbers and targets are provided below:

Table 1: 2021 SAIFI and SAIDI Scores

	SAIFI		SAIDI	
Utility	**Reported**	**COMAR Standard**	**Reported (Minutes)**	**COMAR Standard (Minutes)**
BGE	0.76	0.90	76.4	112.0
Delmarva	0.85	1.10	68.0	88.0
Potomac Edison	0.93	1.06	130.2	142.0
Pepco	0.59	0.90	57.0	86.0
SMECO	1.24	1.30	118.9	134.4

13. Staff conducted several trend analyses for the reporting year to measure how the electric companies' system-wide reliability has changed over time, including a three-year trend analysis. Staff found that for 2021, BGE, Pepco, Delmarva, and Potomac Edison performed better than their three-year average SAIFI.[23] SMECO, however, demonstrated a 22.7% increase in SAIFI between 2020 and 2021, which the company attributed to more severe localized weather events in 2021 that did not exceed the Major Event Day threshold.[24] Additionally, Staff reported that BGE, Pepco, and Delmarva showed continuous improvement in SAIFI performance for the past three years, while Potomac Edison showed a slight increase in its SAIFI score from 2020 to 2021. Similarly, for SAIDI, Staff stated that all electric companies, with the exception of SMECO, performed better

monitor these Major Event Day trends in the future to better understand the reasons for the statistical anomalies. *See also* Hr'g. Tr. at 18-19 (Borkoski).

[23] *Id*. at 21-22.

[24] *Id*. at 22; SMECO Response to Staff DR 1-5.

than their respective three-year averages. BGE and Delmarva showed continuous SAIDI performance improvement over the past three years, while SMECO attributed its SAIDI increase of 19.3% in 2021 to more severe localized weather events.[25]

14. Staff also evaluated the electric companies using the Customer Average Interruption Duration Index ("CAIDI"). CAIDI measures the average time required to restore service to customers per interruption.[26] For 2021, Delmarva, Potomac Edison, and SMECO performed better than their three-year average CAIDI, while BGE and Pepco performed worse than their three-year average.[27]

15. Staff also performed a rolling two-year trend analysis, which averaged data over two year increments from 2014/2015 to the present, in order to reduce the effects of an atypical single year performance. Staff's two-year SAIFI analysis shows generally improving reliability for Pepco, Delmarva, BGE, and Potomac Edison, with SMECO showing worsening SAIFI performance for the most recent two-year average, due primarily to a decline in performance in 2021.[28] Regarding SAIDI, Staff's analysis demonstrated a generally improving performance for Pepco, Delmarva, and BGE. Staff found that SMECO's SAIDI performance deteriorated in the most recent two-year average, while Potomac Edison's performance evidenced a generally deteriorating trend from 2014-2015 to 2019-2020, with improvement in 2020-2021.[29]

16. Additionally, Staff's rolling two-year CAIDI trend analysis for the period 2014/2015 through 2020/2021 showed continued improvement in service restoration times for Delmarva,

[25] Staff Annual Review at 22-23.

[26] CAIDI is calculated by dividing the number of customer interruption minutes by the number of customer interruptions. *Id*. at 7.

[27] *Id*. at 24. Montgomery County has suggested that the Commission include CAIDI as a performance standard, though the RM43 Standard Changes Work Group disagreed with that recommendation. Montgomery County comments at 3.

[28] Staff Annual Review at 25.

[29] *Id*. at 26.

while BGE, Pepco and SMECO maintained a steady performance. Potomac Edison's rolling two-year CAIDI trend demonstrated a declining performance from 2014-2015 to 2019-2020, but improvement for the most recent two-year average.[30]

17. Staff also reviewed the performance of Maryland's electric companies against electric utilities outside the State. Based on its analysis of investor-owned utility benchmarking, Staff found that for 2021, BGE, Pepco, Delmarva, and SMECO are in the top quartile of their peers, while Potomac Edison is in the second quartile of its peers for SAIFI and the third quartile for SAIDI.[31]

18. Finally, in its Annual Review, Staff provided a new metric for measuring resilience – $SAIDI_{MED}$ – which is the SAIDI that a system experiences during Major Event Days, and which "can be a useful measure of that system's resiliency."[32] Staff stated that $SAIDI_{MED}$ represents the total time customers on average did not have service during Major Event Days in a given year. The lower the electric company's $SAIDI_{MED}$, the more resilient is its electrical distribution system to the major events that affected it during a given time period.[33]

19. Using this metric, Staff found that Pepco was the most resilient electric utility in Maryland, with Delmarva also performing better than average.[34] BGE and Potomac Edison performed slightly below average. SMECO performed significantly worse than average. Staff concluded that more investigation is needed into the value of $SAIDI_{MED}$, and that Staff would continue to provide analysis of this new resilience metric in future annual reliability performance reports, at the

[30] *Id*. at 27.
[31] *Id*. at 19-20.
[32] *Id*. at 71-72. During the hearing, Staff clarified that it was treating $SAIDI_{MED}$ as a "tracking metric" for informational purposes, and that it was too early to make definitive conclusions about electric company resilience using this metric at this time. Hr'g. Tr. at 20-21 (Borkoski).
[33] Staff defined resilience as "a measure of the ability of a system to withstand major unplanned service disruptions that are triggered by extraordinary events." Staff Annual Review at 71.
[34] Staff Annual Review at 74.

Commission's direction. The Commission finds that $SAIDI_{MED}$ may provide helpful insight into the electric companies' resiliency, and directs that Staff continue to provide analysis of this metric in future reports.

B. Poorest Performing Feeder Standards

20. The Poorest Performing Feeder ("PPF") Standard requires that electric companies report to the Commission SAIDI, SAIFI, and CAIDI indices for all feeders assigned to Maryland that are identified by the utility as having the poorest feeder reliability, defined as "all feeders having circuit reliability performance 250 percent or more above the utility's system-wide SAIFI and SAIDI[.]"[35] The PPF standard further provides that "no feeder shall appear in a utility's list of poorest performing feeders during three consecutive 12-month reporting periods, unless the utility has undertaken reasonable remediation measures to improve the performance of the feeder."[36]

21. In 2021, all five electric companies reported PPFs. In particular, the electric companies recorded 44 PPFs, which is roughly 1.3 percent of the total number of feeders in Maryland, and which serve approximately 33,600 customers in the State. Staff observed that the number of PPFs is significantly higher than the 34 total PPFs the electric companies reported for 2020.[37]

22. The electric companies proposed and implemented remedial action to address these PPFs that includes tree trimming, re-conductoring, pole replacement, undergrounding, and installing additional equipment such as animal guards, lightning arresters, sectionalizing devices, and trips

[35] COMAR 20.50.12.03A(1) and A(3).

[36] COMAR 20.50.12.03A(4). The current PPF standard is in its fourth year since the Commission adopted COMAR revisions in RM63, *Service Supplied by Electric Companies – Service Quality and Reliability Standards – Poorest Performing Feeder Standard.* (*See* COMAR 20.50.12.03, revision October 2018.) The new standard is designed to better identify feeders that are significant outliers in performance. See Hr'g. Tr. at 19 (Borkoski).

[37] Staff Annual Review at 29.

savers. Staff commented that the electric companies' remedial actions to address PPFs are acceptable.[38]

23. No electric company reported a *repeat* PPF in 2021.[39] Therefore, all electric companies are in compliance with the Poorest Performing Feeder Standard for 2021.

C. Multiple Device Activation Standards

24. 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 which caused sustained interruptions in electric service, including during Major Outage Events, to more than 10 Maryland customers.[40] The electric companies are required to implement reasonable remediation measures to reduce the number of activations and describe these measures in their annual performance reports. COMAR 20.50.12.04D provides that the protective devices reported under this standard shall not exceed the standard during either of the two subsequent 12-month reporting periods, after allowing one 12-month reporting period for remediation measures. Any electric company that fails to meet this standard is required to file with the Commission a remediation plan setting forth its proposed corrective actions.

25. A total of 50 multiple device activations ("MDAs") were reported in 2021. Line or tap fuse activations represented the largest number of MDAs (31), with BGE reporting 12.[41] The electric companies also reported 15 recloser activations, and four circuit breaker activations. The electric companies reported no transformer activations or substation activations for 2021. BGE

[38] *Id*. at 30-31.

[39] Montgomery County commented that repeat PPFs create at least two distinct issues, which are (i) " a customer will not be satisfied if they feel that they experience a seemingly higher number of outages than their neighbors;" and (ii) feeders that serve special medical needs facilities are especially critical and should be given particular attention. Montgomery County Comments at 5.

[40] COMAR 20.50.01.03B(43) provides that protective devices include substation breakers and reclosers, line reclosers, line sectionalizing equipment, and line fuses.

[41] Staff Annual Review at 32.

reported 28 MDAs of all types, representing 56% of the 50 total MDAs. Staff stated that BGE experienced more MDAs in 2021 than it did in reporting year 2020, which BGE attributed to a rise in storm activity for the year.[42] Montgomery County commented that there is a "continued need to focus attention on special medical needs facilities" when analyzing utility compliance with the MDA standard.[43]

26. Each of the electric companies investigated their respective MDAs in the field and implemented remediation measures. Remedial actions taken to address MDAs included cable replacement, selective undergrounding, and vegetation management. Staff reviewed the electric company remedial actions to address MDAs and concluded that they are acceptable.[44]

27. In 2021, BGE, Delmarva, Potomac Edison, and SMECO, reported that they experienced no *repeat* multiple device activations. Only Pepco reported experiencing a repeat MDA. Pepco reported that one protective device—a fuse with ID number FS749451-210120-5159—activated five or more times in the 2021 reporting period and was an MDA in 2019 and 2020.[45] Pepco stated that the activations were caused by underground cable failure and that it promptly initiated a project in June of 2019 to perform an underground residential distribution ("URD") cable replacement.

28. Nevertheless, Pepco experienced two delays with regard to this project. First, Pepco proposed that the underground route of the URD cable travel directly under the City of Rockville's Horizon Hill Park. However, the City of Rockville denied the permit design, and required that the URD cable be rerouted away from the park. Pepco resolved this issue by submitting a redesigned

[42] *Id*. at 33; BGE Response to Staff DR No. 4-1.
[43] Montgomery County Comments at 6.
[44] *Id*. at 33.
[45] Pepco Corrective Action Plan at 2. Pepco stated that this protective device experienced seven activations for the 2019 reporting period, five activations for the 2020 reporting period, and five activations for the 2021 reporting period.

permit application that was approved on December 31, 2019.[46] Second, Pepco awarded the URD cable replacement work in April 2020; however, the company experienced "performance issues" with the selected contractor, subsequently removed it from its list of approved bidders, and awarded the remainder of the work to a second contractor who completed the project in February 2021.[47] Pepco stated that its corrective action plan to replace the URD cable was completed on February 4, 2021, and that there have been no device activations for this fuse since 2020.[48]

29. Staff commented that Pepco's explanation for its failure to timely implement corrective action in 2020 is reasonable and that its June 14, 2022 corrective action plan further explaining the problem and its resolution is also reasonable. Staff further opined that the 182 customers who are currently served by this fuse are expected to benefit from the implementation of Pepco's corrective action.[49] Accordingly, Staff witness Borkoski testified against issuing a penalty related to Pepco's MDA violation.[50]

30. The Commission finds Pepco's corrective action plan appropriate and approves it. The Commission additionally finds that no penalty is appropriate for Pepco's MDA violation. The company took prudent steps to remediate the protective device in June 2019, when it initiated its project to perform URD cable replacement. Pepco's project was delayed in order to redesign its permit application to avoid traveling under the City of Rockville's Horizon Hill Park, and because of certain performance issues related to its first contractor. However, Pepco should have alerted the Commission when it fired its first contractor that its corrective action plan would be delayed and that it would not meet its COMAR requirement related to MDAs.[51]

[46] Pepco Corrective Action Plan at 2-3.
[47] *Id*. at 3; Hr'g. Tr. at 28 (Stewart).
[48] Pepco Corrective Action Plan at 4.
[49] Staff Annual Review at 31-32.
[50] Hr'g. Tr. at 21 (Borkoski). *See also* Staff Annual Review at 79.
[51] *See* Hr'g. Tr. at 29-30 (O'Donnell and Stewart).

D. Additional Reliability Indices

31. In addition to reporting SAIDI, SAIFI, and CAIDI, 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 ("$CEMI_n$")[52] and Momentary Average Interruption Frequency Index ("$MAIFI_E$").[53] $CEMI_n$ measures the ratio of customers experiencing multiple sustained interruptions against the total number of customers served on the system[54] and $MAIFI_E$ measures the ratio of the total number of momentary interruption events against the total number of customers served on the system. $MAIFI_E$ records multiple circuit operations that occur close to each other in time as a single event. It is helpful in indicating whether companies that report lower SAIFI are doing so at the expense of increased momentary outages.[55] If an electric company is unable to provide either of these calculations, it must present to the Commission a reason why, as well as an estimate of the cost to provide the information in the future.[56]

32. In 2021, BGE, Pepco, SMECO,[57] and Delmarva reported $MAIFI_E$ performance. Potomac Edison reported MAIFI performance data instead of $MAIFI_E$ data.[58] Pursuant to COMAR

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[52] $CEMI_n$ is calculated as the ratio of the total number of customers experiencing sustained interruptions equal to or greater than "n," where n is the number of interruptions, divided by the total number of customers served.

[53] $MAIFI_E$ is calculated as the ratio of the total number of customer momentary interruption events divided by the total number of customers served, where E is equal to the number of interruption events.

[54] This number includes customers experiencing three or more, five or more, seven or more, or nine or more interruptions.

[55] Staff Annual Review at 35. Staff asserts "it is important that Electric Companies reduce all outages and not simply substitute sustained outages with momentary outages." *Id.*

[56] *See* COMAR 20.50.12.05B; *see also* COMAR 20.50.12.05C.

[57] 2020 is the first year that SMECO provided $MAIFI_E$ data. SMECO stated that it calculated 2021 system $MAIFI_E$ using available SCADA substation breaker momentary operation data. The company decided not to include line recloser operational data in the $MAIFI_E$ calculation because the data did not provide sufficient detail to accurately exclude interruptions that occurred prior to a sustained interruption event. SMECO 2021 Annual Performance Report at 17, n. 4.

[58] Potomac Edison reported a MAIFI of 8.3 for review year 2021. Potomac Edison 2021 Annual Performance Report at 3. MAIFI alone does not differentiate between the number of interruption events - it simply records every individual circuit operation. For that reason, Staff argues that $MAIFI_E$ is a superior metric to assess the customer experience than MAIFI. Staff states that "often electric utility system protection schemes may operate circuit devices several times to

20.50.12.05C, Potomac Edison provided an explanation for why it does not have the capability to perform these $MAIFI_E$ calculations.[59] Although Potomac Edison currently lacks the tools to calculate $MAIFI_E$, Staff observed that compared to 2020, Potomac Edison's MAIFI performance improved in 2021.

33. Staff stated that since the installation of distribution automation in the Maryland service territories began (beginning in 2013), there has been a decrease in momentary outages in the Pepco service territory, "which seems to indicate that the lower SAIFI experienced in [this] service territory during that time period has not come at the expense of increased momentary outages."[60] Staff found that BGE's trend demonstrates an increase in momentary outages from 2013 to 2018, with steady reduction in $MAIFI_E$ since that time. Delmarva demonstrated a significant reduction in $MAIFI_E$ from 2020 to 2021, which the company attributed to increased recloser segmentation throughout the territory, combined with decreased lightning events.[61] SMECO presented $MAIFI_E$ data for the first time in 2020. Insufficient data existed for Staff to analyze a multi-year trend for the company; however, Staff observed that SMECO reported a $MAIFI_E$ of 3.26 for 2020 and a $MAIFI_E$ of 1.16 for 2021.[62]

34. All electric companies reported $CEMI_n$ data for 2021. SMECO had the highest percentage of customers experiencing three or more interruptions in all customer categories except $CEMI_8$,

clear an electrical fault as part of one event," which $MAIFI_E$ would recognize, but MAIFI would not. Staff Annual Review at 34.

[59] Potomac Edison stated that it is able to report MAIFI, but not $MAIFI_E$ data because it "does not have smart meters and must rely on gathering data by manually reading counters from line reclosers annually." Potomac Edison 2021 Annual Reliability Report at 3, n. 2. For the same reason, Potomac Edison is unable to calculate MAIFI excluding major event data. The company further stated that "Operations during major events cannot be differentiated. The ability to calculate this excluding major event data would require a multimillion-dollar investment in smart meters." Potomac Edison 2021 Annual Reliability Report at 3, n. 3.

[60] Staff Annual Review at 35-36.

[61] *Id*.at 36; Delmarva Response to Staff DR 1-5.

[62] *See* Staff Annual Review at 37, Table 12.

where Potomac Edison showed the highest percentage.[63] Potomac Edison demonstrated the second highest score for $CEMI_2$, $CEMI_4$, and $CEMI_6$. Pepco performed best (with the lowest average $CEMI_n$) in every category, followed by Delmarva and BGE respectively.

35. Staff reported that from the first full year since the implementation of RM43 in 2013, the number of customers experiencing multiple interruptions has generally decreased, and that "the averages are trending in the right direction."[64] All electric companies are currently in compliance with $MAIFI_E$ and $CEMI_n$ reporting requirements.

E. Service Interruption Standards

36. COMAR 20.50.12.06A requires that electric companies restore service within eight hours, from the time when the utility knew or should have known of an outage, to at least 92 percent of their customers that experienced sustained interruptions during normal conditions. Additionally, 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 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. An electric company is required to restore service as quickly and safely as permitted to its customers experiencing sustained interruptions during each major outage event in which the total number of sustained interruptions is greater than 400,000 or 40 percent of the utility's total number of customers, whichever is less.[65]

[63] Staff Annual Review at 38. The electric companies are required to report annual $CEMI_n$ for customers experiencing three or more ($CEMI_2$), five or more ($CEMI_4$), seven or more ($CEMI_6$), and nine or more ($CEMI_8$) sustained interruptions in a single calendar year.
[64] Staff Annual Review at 38.
[65] COMAR 20.50.12.06D.

37. In 2021, all electric companies met the requirements for normal conditions. SMECO posted the highest restoration rate, restoring 99% of customers who experienced sustained interruptions during normal conditions, followed by Delmarva at 98.9% and Pepco at 98.2%.[66] No electric company reported experiencing a Major Outage Event in 2021; therefore, that portion of the reliability standard is not applicable for that reporting year.

F. Downed Wire Response Standard

38. COMAR 20.50.12.07A requires that each electric company respond to a government emergency responder-guarded downed electric utility wire within three hours after notification by a fire department, police department, or 911 emergency dispatcher at least 90 percent of the time.[67] This standard was revised in 2019 to become more stringent, with 2020 representing the first full year of implementation of the new standard.[68] COMAR 20.50.12.07D provides that each company shall exercise reasonable care to reduce the potential hazard caused by a downed electric wire to which its employees, its customers, and the general public may be subjected.

39. All five electric companies met the Downed Wire Response Standard for 2021. Each Company responded to at least 90 percent of government emergency responder-guarded downed electric wires within three hours.[69] SMECO posted the highest response rates, responding to 100% of government emergency responder-guarded downed wires within the time frames required by this Standard, followed by Potomac Edison at 99.4% and BGE at 98.6%.[70]

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[66] Staff Annual Review at 40.

[67] The Commission has previously observed: "Given the potentially life-threatening nature of downed wires, compliance with this standard is imperative." Order No. 89056, *In the Matter of the Review of Annual Performance Reports of Electric Service Reliability Filed Pursuant to COMAR 20.50.12.11*, Case No 9353, (March 6, 2019) at 26.

[68] On November 6, 2019, pursuant to RM 67, the Commission adopted the new three-hour downed wire response standard, which requires electric companies to report their downed wire response information under the enhanced standard beginning December 2, 2019. Maillog No. 227390. Prior to RM 67, the regulation required a response within four hours.

[69] Staff Annual Review at 41-42.

[70] *Id*.at 42.

G. Customer Communications Standards

40. COMAR 20.50.12.08 sets standards for customer communications metrics, which include standards for the percentage of calls answered within 30 seconds, and for the percentage of calls abandoned by the customer. 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 2021.[71] Delmarva posted the highest answered-call rate this year, answering 94.5% of calls placed to it for customer service or outage reporting purposes within 30 seconds.[72] Pepco reported the next highest rate at 93.8%.

41. COMAR 20.50.12.08 provides that each electric company must achieve an annual average abandoned call rate of 5% or less. In 2021, all five electric companies satisfied this standard. Delmarva reported the lowest abandoned call rate at 0.49%. Pepco reported the next lowest abandoned call rate at 0.63%.[73]

42. In Order No. 89260, the Commission found that the current customer communication metrics "do not fully demonstrate whether a customer's concerns are being resolved during the communication process…. [and that] it is important to prevent backsliding regarding the customer communication standards."[74] The Commission therefore directed Staff to convene a work group to address the customer communication standards and tasked the work group with proposing "shared best practices" for electric companies when handling customer communications.

[71] *Id*. at 43.
[72] *Id*.
[73] *Id*.
[74] Case No. 9353, *In the Matter of the Review of Annual Performance Reports on Electric Service Reliability*, Order No 89260 (Sept. 6, 2019) at 17.

43. Staff convened the Customer Communication Work Group ("CCWG")[75] on September 26, 2019, and on June 1, 2020, Staff filed a CCWG Final Report with the Commission, which included consensus recommendations for best practices[76] and metrics that are best suited for measuring a company's performance, with regard to customer communications. The CCWG proposed three metrics for measuring call center performance and quality of service provided related to customer communications. Those metrics are: (i) First call resolution (whether, from the customers' perspective, their inquiry was resolved to their satisfaction in a single interaction); (ii) Customer service representative average handling time (the average amount of time needed to resolve a customer's request); and (iii) percentage of time a vulnerable individual customer is notified in advance of storms.[77]

44. In Order No. 89629, the Commission approved the recommendations of the CCWG, finding that the three recommended metrics will further help measure call center performance and quality of service related to customer communications beyond the metrics contained in the existing customer communications standard.[78] Nevertheless, given the variability across the electric industry in practice and definitions, the Commission determined that the three metrics would be tracked and reported in each electric company's annual reliability report as "supplemental customer communication information," and that the metrics would not be adopted as performance standards at this time.[79]

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[75] The CCWG consisted of the six electric companies (including Choptank), OPC, and Staff.

[76] The 16 best practices generally relate to call center capabilities, customer service representative performance, staffing protocols, and backup call center plans. Most of the electric companies have either implemented or are planning to implement these best practices.

[77] Customer Communication Final Report, Maillog No. 230543.

[78] Case No. 9353, *In the Matter of the Review of Annual Performance Reports on Electric Service Reliability*, Order No 89629 (Sept. 1, 2020) at 22.

[79] Order No. 89629 at 22. Staff observed, for example, that a major challenge to developing a uniform FCR metric is that it varies across the industry and no utility has the same definition. Staff Annual Review at 44.

45. For 2021, the electric companies reported an average 76.5% first call resolution ("FCR"), indicating that these customers perceived that their inquiry was resolved to their satisfaction in a single interaction. This 2021 metric marks a slight increase from last year's 75% FCR.[80] SMECO reported the highest percentage FCR at 89.1%, followed by Pepco at 78%.[81] Nevertheless, Staff observed that the electric companies do not share a uniform FCR metric. BGE, Delmarva, Potomac Edison and Pepco have an internal measurement system for determining FCR, while SMECO tracks FCR performance by reviewing call quality monitoring, speech analytics, and customer satisfaction surveys. SMECO did not have a formal FCR metric in place for review year 2020; however, it has developed this metric for 2021.[82]

46. Staff reports that all electric companies have had a customer service representative ("CSR") average handling time metric in place for years. For review year 2021, the electric companies reported an average seven-minute CSR handling time. Potomac Edison reported the shortest average CSR handling time at 346 seconds (or 5.8 minutes), followed by SMECO at 377 seconds (6.3 minutes).

47. Staff reported that BGE, Delmarva, Pepco and SMECO all have an internal system that notifies their vulnerable individual ("VI") customers who enrolled in the special needs program to prepare for the possibility of an extended outage prior to a storm event.[83] These companies also have the capability to track the percentage of successful notifications to VI customers. For 2021,

[80] Staff Annual Review at 44.
[81] *Id*. at 45.
[82] *Id*. at 44.
[83] *Id*.

BGE and Potomac Edison each reported that their VI customers were notified 100% of the time in advance of a storm.[84] SMECO reported that it notified its VI customers 97% of the time.[85]

H. Vegetation Management Standards

48. COMAR 20.50.12.09 addresses vegetation management standards 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 that each electric company develop its own vegetation management program to address tree pruning and removal; vegetation management around poles, substations, and overhead electric plant; vegetation management along rights-of-way; inspections; and public education regarding vegetation management practices, among other requirements.[86]

49. Pursuant to COMAR 20.50.12.09F, each electric company must adopt either a four-year or five-year trim cycle. Based on the company's chosen trim cycle, it is then required to perform no less than a specified amount of vegetation management to its electric distribution system each year. All of the electric companies utilized four-year trim cycles in 2021.[87]

50. In 2021, all of the electric companies met or exceeded their minimum vegetation management requirements to combine for a total of 6,487 circuit miles of vegetation management trimming across the state of Maryland.[88] The Commission therefore notes that all of the electric companies have met their vegetation management targets. The electric companies should continue

[84] As authorized by Order No. 89629, Potomac Edison provides advance notifications to customers, including VI customers, who request such communications. However, Potomac Edison does not provide advance notifications to customers who have not affirmatively requested the service.

[85] Staff Annual Review at 45. Delmarva and Pepco did not place any VI customer notifications in 2021 given that they experienced no major outage events and did not determine that other storms rose to the level of requiring VI notification.

[86] COMAR 20.50.12.09B(2).

[87] Potomac Edison transitioned from a five to a four-year trim cycle beginning in January 2021.

[88] Staff Annual Review at 48.

to place priority on vegetation management, on communicating effectively with customers, and on addressing customer concerns as they carry out their vegetation management programs.

51. In past orders, the Commission has also focused on the per-mile cost of the electric companies' vegetation management programs. Staff reported that in 2021, the average vegetation management cost per mile was $11,631, an increase of approximately 12% compared to the average vegetation management cost per mile reported in 2020 ($10,419).[89] Each of the electric companies reported increases in its total vegetation management costs incurred in 2021 as well as its per-mile vegetation management costs. Potomac Edison reported the largest increase in total vegetation management costs at approximately $3 million, which it attributed primarily to switching from a five-year trim cycle to a four-year trim cycle and the resulting addition of 175 circuit miles to its planned routine tree trimming.[90] SMECO reported the largest increase in average costs-per-mile, reporting an increase of approximately $1,569 per mile, which the company attributes to its inclusion of "all-in" vegetation management costs, as well as increased contractor costs for labor and equipment.[91] Pepco reported the highest average cost per mile at $16,084 in 2021, an increase of approximately 16% compared to 2020. Finally, BGE reported the next highest average cost-per-mile in 2021 at $13,389 per mile.

I. Periodic Equipment Inspections

52. COMAR 20.50.12.10A requires that each electric company adopt and follow written operation and maintenance ("O&M") procedures for its electric plant in order to maintain safe and

[89] Staff Annual Review at 49.

[90] *Id*.

[91] In Order No. 89629, the Commission directed that the electric companies meet with Staff and other stakeholders to file with the Commission a consensus definition of "all-in" vegetation management costs, in order to facilitate accurate, apples-to-apples comparisons between electric companies of vegetation management costs. On February 9, 2021, the Vegetation Management Cost Work Group filed a final report, which provided a consensus definition of all-in costs, including capital and O&M vegetation management costs. *See* February 9, 2021, Vegetation Management Cost Work Group Final Report, Maillog No. 233700.

reliable service. The programs should be designed to achieve, at a minimum, the level of reliability established by the Commission's regulations. In accordance with those requirements, each of the electric companies 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-mounted transformers and underground equipment, line capacitors, and substations. COMAR 20.50.12.10 provides that if any electric company elects to make material changes to its O&M programs, a revised O&M program manual must be filed with the Commission no later than 60 days prior to the implementation of the changes, absent exigent circumstances.[92] In 2021, BGE revised its O&M program manual for changes that will take effect during the 2022 calendar year.[93]

53. Staff reported that it conducted virtual annual records inspections and held virtual meetings with each of the electric companies for the 2021 calendar year. Staff completed its final inspection of the O&M records for 2021 on June 8, 2022, and found no violations by any of the electric companies related to the Periodic Equipment Inspections Standard.[94] Accordingly, the Commission finds that each of the electric companies satisfied this standard for review year 2021.

J. BGE's Underground Fault Detector Program

54. In its Underground Fault Detector program proposed in its most recent rate case, BGE proposed to install a new smart fault detection system for its underground feeders. In Order No. 89678, the Commission determined that BGE should recover the costs of the program only after it demonstrates (through reporting in Case No. 9353) that there are no risks to full scale

[92] If exigent circumstances exist, the electric company must file the changes with the Commission no later than 30 days after implementation.
[93] *See* Maillog No. 237980.
[94] Staff Annual Review at 51.

deployment of the pilot program and that program benefits are being obtained as projected after the devices have been in place for a reasonable evaluation period.[95]

55. In its Annual Review, Staff stated that it inquired of BGE whether the company believes the implementation of the program in 2021 provides sufficient time for demonstrating the reliability benefits of the program.[96] BGE responded that although it identified benefits such as reduced outage times and increased visibility of system conditions, sufficient time has not yet passed to fully quantify the benefits provided by the devices. BGE stated that an assessment period spanning multiple seasonal changes will be necessary to collect data and fully quantify benefits.[97] In the meantime, Staff stated that it will continue to monitor the progress of BGE in developing the reliability benefits of the program and whether a plan for a wide-spread adoption should be undertaken. Accordingly, no further action is required by the Commission on this matter at this time.

IT IS, THEREFORE, this 7th day of October, in the year Two Thousand Twenty-Two, **ORDERED** that:

(1) The service quality and reliability annual reports of BGE, Pepco, Delmarva, Potomac Edison, and SMECO are accepted;

(2) The corrective actions plan of the Potomac Electric Power Company ("Pepco") is hereby approved;

(3) Staff continue to provide analysis of the $SAIDI_{MED}$ resiliency metric in future annual reliability performance reports; and

[95] Case No. 9645, *Application of Baltimore Gas and Electric Company for an Electric and Gas Multi-Year Plan,* Order No. 89678 (Dec. 16, 2020) at 98.
[96] Staff Annual Review at 56; *See also* Hr'g. Tr. at 13-14 (Derrerie).
[97] Staff Annual Review at 57; BGE Response to Staff DR 1-9.

(4) Staff is directed to file within 60 days a proposal for rulemaking related to the electric companies' next cycle reliability metrics for the years 2024-2027.

/s/ Jason M. Stanek

/s/ Michael T. Richard

/s/ Anthony J. O'Donnell

/s/ Odogwu Obi Linton

/s/ Patrice M. Bubar
Commissioners