ORDER NO. 89056

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: March 6, 2019

Pursuant to the *Maryland Electric Service Quality and Reliability Act* and the regulations of the Maryland Public Service Commission ("Commission") addressing next cycle reliability standards, Baltimore Gas and Electric Company ("BGE"), Potomac Electric Power Company ("Pepco"), Delmarva Power & Light Company ("Delmarva"), The Potomac Edison Company ("Potomac Edison"), Southern Maryland Electric Cooperative, Inc. ("SMECO"), and Choptank Electric Cooperative, Inc. ("Choptank") (collectively, "the Electric Companies") filed proposed system-wide reliability targets for the years 2020 through 2023. This Order accepts the proposed reliability standards and addresses other issues raised in the Commission's review of next cycle standards, including the Code of Maryland Regulations ("COMAR") definition of "Major Outage Event" and the 2.5 Beta Method; the "not-to-exceed" reliability cost standards, proposed by the Commission's Technical Staff ("Staff"); planning margins; Potomac Edison's proposed exclusion of planned outages; reliability best practices; customer perception surveys; and the downed wire response standard.

I. PROCEDURAL HISTORY

In 2011, the Maryland General Assembly passed the *Maryland Electric Service Quality and Reliability Act* ("Act").[1] The 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."[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, in Rule Making 43 ("RM43"), the Commission enacted comprehensive service quality and reliability standards that include system-wide reliability, poorest performing feeders, multiple device activation, service interruption, downed wire response, customer communication, and vegetation management.[3] Those regulations became effective on May 28, 2012. Beginning on September 1, 2015, the Commission held a second rulemaking session to set more stringent system-wide reliability standards for the Electric Companies to meet for the years 2016 through 2019.

As part of a package of commitments related to the merger of Exelon Corporation with Pepco Holdings, Inc., Pepco and Delmarva agreed to further reduce their System Average Interruption Frequency Index ("SAIFI") and System Average Interruption

[1] House Bill 391; Chapter 168 of the Acts of 2011.
[2] Section 7-213(b) of the Public Utilities Article ("PUA"), *Annotated Code of Maryland*.
[3] *See* RM43, *Revisions to COMAR 20.50 – Service Supplied by Electric Companies – Proposed Reliability and Service Quality Standards*.

Duration Index ("SAIDI") scores below what COMAR would have otherwise required.[4] In Order No. 86990, the Commission accepted these merger commitments and ordered that they supersede the previous COMAR standards and become effective for years 2017 to 2020 for Pepco and years 2018 to 2020 for Delmarva.[5]

On September 28, 2017, in Order No. 88406, the Commission directed Staff to lead a work group to address future system-wide reliability targets for the years 2020 through 2023 for BGE, Potomac Edison, Choptank, and SMECO; and years 2021 through 2023 for Pepco and Delmarva.[6] In response to that directive, Staff convened the Reliability Targets Work Group ("RTWG"), which filed its final report on January 5, 2018, entitled *Proposal for Addressing Future System-Wide Reliability Targets & the Cost Effectiveness of Additional Reliability for the Years 2020 Through 2023* ("Final Report"). The RTWG Final Report sets forth five base reliability scenario options that provide a minimum to maximum cost range with associated reliability implications for Commission consideration.[7] The Final Report also sets forth reliability planning best practices that Staff urged the utilities to consider adopting for inclusion in their "next cycle" reliability reports.[8]

---

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

[5] Order No. 86990, Condition 8. Pepco's more stringent merger standards became applicable for reporting year 2017, while Delmarva's elevated targets did not take effect until 2018.

[6] Order No. 88406 at 16.

[7] Those five scenarios are (i) Minimum Cost Goal, (ii) Flat Cost Goal, (iii) Flat Reliability Goal, (iv) Company Goal, and (v) First Quartile Goal. The Electric Companies presented their company goal scenarios to the Commission as their preferred standards for the years 2020 through 2023. The company goal scenario may be the same as the first quartile goal, where the Electric Company has already achieved first quartile performance. August 28, 2018 Hearing Transcript ("Tr.") at 28. (Austin).

[8] The Final Report discusses reliability best practices such as waterfall charts, reliability normalization, planning margins, and the 2.5 Beta Method. Nevertheless, the Final Report notes that not every utility is currently able to meet the best practices listed in the Report and that the RTWG is not recommending a one-size-fits-all approach. *See* Final Report at 15, 25.

One of the best practices discussed in the Final Report is the 2.5 Beta Method—a statistics-based methodology that identifies and removes outlier events that are not representative of a utility's normal operating conditions. The RTWG recommended that the Commission utilize the 2.5 Beta Method for setting 2020 through 2023 reliability standards. On February 14, 2018, the Commission issued Order No. 88573, wherein it declined at that time to modify COMAR by exclusively adopting the 2.5 Beta Method. Instead, the Commission required that the utilities provide SAIFI and SAIDI reliability information using both the IEEE 2.5 Beta Method and utilizing COMAR-defined Major Outage Event exclusions.

On March 28, 2018, Choptank filed its proposal for addressing service reliability standards for the period of 2020 through 2023. Potomac Edison and SMECO filed their respective recommendations on March 29, 2018. On April 2, 2018, Pepco and Delmarva filed their proposals for service reliability standards for the period of 2021 through 2023; and BGE filed its recommendation for SAIFI and SAIDI standards for 2020 through 2023. On May 21, 2018, BGE, Pepco, Delmarva, and Potomac Edison each filed updates to their proposed service reliability standards, including revisions to their Minimum Cost Scenarios as requested by Staff. On May 23, 2018, the Commission issued a Notice of Hearing and Opportunity to Comment on the 2017 Annual Performance Reports filed by the Electric Companies as well as the next cycle reliability standards filed pursuant to COMAR 20.50.12.02. In that Notice, the Commission set a comment schedule and a legislative-style hearing to be held July 26 through July 27, 2018.

On July 19, 2018, Montgomery County, Maryland, filed comments that addressed the Electric Companies' annual reliability reports as well as the recommended next cycle

reliability standards. Also, on that date, the Maryland Office of People's Counsel ("OPC") filed comments, and Staff filed its Review of System-Wide Reliability Standards for 2020-2023. Staff additionally filed a separate document addressing the COMAR definition of Major Outage Event. On July 24, 2018, Potomac Edison, Choptank, and SMECO filed joint comments on future system-wide reliability standards that addressed Staff's Review. On July 24, 2018, in response to the Electric Companies' request to delay the procedural schedule to respond to Staff's comments and recommendations, the Commission issued a Modified Notice extending the comment date and rescheduling the hearing to August 28, 2018. On August 22, 2018, BGE, Pepco, and Delmarva (together, the "Exelon Utilities") filed Joint Reply Comments. Staff, OPC, Potomac Edison, and Montgomery County also filed additional comments addressing next cycle reliability standards on that date.

A. DISCUSSION

1. Major Outage Events and the 2.5 Beta Method

COMAR provides that each Electric Company's annual SAIFI and SAIDI reliability standard shall be measured against the company's system-wide annual SAIFI and SAIDI results, including all interruption data minus Major Outage Events ("MOEs").[9] The subtraction of MOE interruption data allows the Commission to measure system reliability under normal conditions. In its comments, Staff voiced five concerns with the Commission's current definition of MOEs contained in

[9] COMAR 20.50.01.03B(27) defines MOE as "an event during which: (a) Both: (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; or (b) The federal, State, or local government declares an official state of emergency in the utility's service territory and the emergency involves interruption of electric service.

COMAR 20.50.01.03B(27). These concerns relate to the fact that an MOE is defined to include every federal, State, or local government declaration of an official state of emergency in the utility's service territory and the emergency involves interruption of electric service. First, Staff commented that states of emergency have been declared when there has been minimal or no impact on reliability.[10] Second, Staff contended that there are inconsistencies in the way local jurisdictions declare states of emergency, such that the same event may trigger an MOE in one local jurisdiction but not another. Third, a declaration of a state-wide emergency may be impactful only to specific, local areas, but the state of emergency may persist throughout the entire State until the emergency has been addressed in the local, impacted area.[11] Fourth, pursuant to COMAR 20.50.12.02C(2), Electric Companies may exclude from their annual reliability reports MOE interruption data resulting from emergency declarations, regardless of whether a minimal relationship exists between the state of emergency and the outage causes. Finally, Staff commented that there may be a significant difference between the *effective* end of an MOE, when outages have been restored, and the *official* end of an MOE, when the governmental entity declares the state of emergency over.[12] Staff stated that if the Commission accepts the recommendation of the RTWG to utilize the 2.5 Beta Method for setting future reliability standards and for measuring annual compliance with these reliability standards, the problems Staff raised that are associated with the definition of MOE will be resolved.

[10] Staff Comments Regarding the Definition of Major Outage Event (July 19, 2018) at 2–3.
[11] *Id*. at 4.
[12] *Id*. at 6.

The 2.5 Beta Method ("Method") was developed by the Institute of Electrical and Electronic Engineers ("IEEE").[13] The Method uses a statistical formula to remove events (referred to as outliers) that are far away from normal operating conditions, and it enables utilities to calculate reliability indices on a normalized basis. Without the removal of such outliers, variation in annual reliability performance would prevent the setting of meaningful targets. The 2.5 Beta Method separately classifies interruptions associated with an identified Major Event Day ("MED") and excludes MEDs from non-storm related reliability index calculations.

The RTWG Report stated that if the 2.5 Beta Method was used for setting future reliability standards in Maryland and for measuring annual compliance with the standards, Electric Companies would require smaller planning margins because the reliability indices would be measured with less variability. The RTWG further predicted that reduced planning margins would reduce costs, as the Electric Companies could eliminate the expense of trying to account for statistical outliers when planning their reliability programs. The Electric Companies expressed general agreement with the RTWG's conclusions.[14]

The RTWG acknowledged that some outliers are currently removed through COMAR's definition of Major Outage Event. Nevertheless, the RTWG stated that several low frequency, high impact, localized events continue to be included as part of normal operating conditions. Accordingly, the RTWG included the 2.5 Beta Method in its Report as an industry best practice and recommended that the Method be utilized by

[13] IEEE is a large technical professional organization, whose mission statement is to "foster technological innovation and excellence for the benefit of humanity." https://www.ieee.org/about/vision-mission.html.
[14] Potomac Edison Comments at 3-4; BGE 2020-2023 Recommended Reliability Standards at 2, 15; Delmarva 2021-2023 Recommended Reliability Standards at 4.

utilities in Maryland.[15] Potomac Edison commented that it supports adoption of the 2.5 Beta Method. The company asserted that the method provides an improved means of normalizing reliability data, reduces variation from year to year, and is easy to understand and execute.[16] Potomac Edison further argued that the 2.5 Beta Method avoids certain problems inherent in using COMAR-defined MOEs to exclude outages.

In its Review, Staff argued that the Electric Companies would reduce the cost of their reliability programs only modestly by switching to the 2.5 Beta Method.[17] Accordingly, Staff recommended that the Commission not require that the 2.5 Beta Method be used for setting future cycle SAIFI and SAIDI standards. Although Montgomery County initially voiced concern about the 2.5 Beta Method,[18] it commented that upon review, it recommended its adoption, arguing that the consistency of the 2.5 Beta Method will allow utilities to measure overall performance normalized for outliers.[19]

OPC stated that it supports reducing the cost of meeting reliability targets, but is concerned that utilizing the 2.5 Beta Method could reduce the reliability actually being experienced by customers over time.[20] Accordingly, OPC recommended that if the Commission approves the use of the 2.5 Beta Method, then the Commission should also require that the current COMAR reporting requirements be continued in parallel with the

[15] RTWG Report at 13.
[16] Potomac Edison Comments at 3.
[17] Engineering Division Review of System-Wide Reliability Standards for 2020-2023 ("Staff Next Cycle Review") at 28, 31, and 48. Staff noted, for example, that BGE, Delmarva, and Pepco would reduce their average SAIFI by only 0.03 if the 2.5 Beta Method were used.
[18] *See* RTWG Final Report at 13, n. 27.
[19] Montgomery County Comments at 12. Montgomery County also recommended that the Commission ensure that any standards for 2020 through 2023 "focus on continual improvement" and "prevent the risk of backsliding" into declining reliability. *Id*.
[20] OPC July 19, 2018 Comments at 32.

2.5 Beta Method reporting and standards. OPC argued that requiring dual reporting would allow parties to identify any degradation of electric service reliability over time.

Finally, BGE argued that if the Commission adopts the 2.5 Beta Method, it should modify the method to prevent variability in MEDs.[21] BGE explained that the 2.5 Beta Method analyzes SAIDI numbers over a period of five years and determines a threshold referred to as T_{MED}. Events that exceed this threshold are excluded from the utility's calculation of its actual yearly indices. For Maryland utilities generally, the T_{MED} has decreased over the last several years as the State has experienced mild weather, meaning smaller outage events will qualify as outliers. The opposite can also occur, however. A period of extreme weather would increase T_{MED} values and result in only larger events qualifying as MEDs.[22] BGE stated: "If several major events occur resulting in an increased T_{MED} in future years, it could be extremely difficult for BGE to meet the reliability standards as it will become unable to exclude weather events that would have been excludable using its current T_{MED}."[23] In order to address this phenomenon, BGE proposed that T_{MED} values be "frozen" at 2018 levels.[24]

Commission Decision

The Commission accepts the recommendation of the RTWG to utilize the 2.5 Beta Method for both setting future reliability standards and for measuring annual compliance with those reliability standards. The 2.5 Beta Method is an industry best practice, it provides an effective means of normalizing reliability data, and it reduces

[21] BGE 2020-2023 Recommended Reliability Standards at 15-16.
[22] Staff Next Cycle Review at 34.
[23] BGE 2020-2023 Recommended Reliability Standards at 16. During the hearing, Mr. Summerson expressed concern that successive hurricanes could increase T_{MED} values, reduce exclusions, and make it difficult for BGE to meet its reliability standards. Tr. at 159. (Summerson).
[24] Tr. at 167.

variation from year to year. As discussed in this proceeding, the definition of MOE under the Commission's COMAR regulations does not account for high impact but short duration events that would be considered MEDs using the 2.5 Beta Method. The 2.5 Beta Method also avoids the problems discussed by Staff in using MOEs to exclude outlier events when measuring compliance with SAIFI and SAIDI reliability standards. As Staff concluded, "the reliability impetus for needing 'state of emergency' outage exclusions will be negated as there will be another means to obtain outage exclusions for truly impactful events on reliability." Although Staff characterized the cost savings to utilities of using this method as modest, the adoption of this method should still allow some cost reduction.

The Commission also accepts OPC's recommendation regarding dual reporting. The Commission will require that the current COMAR reporting requirements, such as the reporting of reliability index performance excluding traditional COMAR-based MOEs, continue in parallel with the 2.5 Beta Method reporting and standards. This decision is consistent with the recommendation of the RTWG that the Commission's adoption of the 2.5 Beta Method for SAIFI and SAIDI system-wide reliability standards should not affect the current COMAR 20.50.01.03(27) definition of an MOE or any of the COMAR 20.50.12.13 MOE Reporting Requirements.[25] Dual reporting will also help parties to identify any degradation of electric service reliability over time. Despite being required to report system-wide reliability data using both COMAR-defined MOEs and the 2.5 Beta Method, however, the Electric Companies' annual reliability performance

[25] RTWG Final Report at 14, n. 31.

will be reviewed for compliance based on their ability to meet SAIFI and SAIDI standards adjusted using the 2.5 Beta Method.

Finally, the Commission declines BGE's recommendation to freeze T_{MED} values. As Staff provided in its comments, the suggested freezing of T_{MED} calculations is not a standard application of the 2.5 Beta Method. In fact, neither Staff nor any other party to this proceeding indicated that any other state freezes T_{MED} values in the manner recommended by BGE.[26]

2. Not-To-Exceed Cap

Staff commented that at the beginning of the RM43 rulemaking proceeding, reliability improvement was the compelling objective of the Commission and the parties. Now, however, after having achieved significant reliability improvement over several years, Staff argued that "equal focus needs to be on the cost to customers of reliability improvements."[27] In order to contain costs, Staff recommended that for the development of next cycle reliability standards, reliability compliance should be coupled with "not-to-exceed" reliability cost standards.[28] Staff argued that this type of cost cap has precedent in Condition 8 of Order No. 86990, involving the Commission's approval of the Exelon–PHI merger. Condition 8 stipulates annual not-to-exceed budget targets for capital and O&M reliability driven expenditures for Pepco and Delmarva. Staff proposed to include the cost caps on both scheduled and unscheduled maintenance, in order to control total reliability cost per customer. For example, Staff recommended that the Commission hold BGE accountable to the average $206 combined capital and O&M reliability cost per

[26] Staff Next Cycle Review at 35.
[27] *Id*. at 44.
[28] *Id.*

customer that the utility projects is needed over a four-year period to achieve its proposed reliability standards.[29] Similarly, Staff recommended that the Commission impose on the other Electric Companies the following not-to-exceed limits on combined capital and O&M reliability cost per customer: Delmarva $467; Pepco $360; and Potomac Edison $301. (Staff did not propose not-to-exceed budgets for Maryland's electric cooperatives, SMECO and Choptank).

The Electric Companies opposed Staff's cost cap proposal. Potomac Edison, SMECO, and Choptank argued that (i) the Electric Companies and other stakeholders had insufficient notice of Staff's proposal and lacked a reasonable opportunity to evaluate and respond to it, (ii) the details of the proposal are vague and require refinement before the Electric Companies can respond, and (iii) State-wide rules of this nature may only be adopted through a formal rulemaking.[30] The Exelon Utilities argued that Staff's proposal lacks critical detail regarding consequences for non-compliance, including what the term "hold accountable" means.[31] The Exelon Utilities further asserted that neither § 7-213 of the PUA nor relevant COMAR provisions provide for spending caps on how each Electric Company meets its reliability standards. Although PUA § 7-213(b) provides that each company shall provide its customers with high levels of service quality in a "cost-effective manner," the Exelon Utilities contended that the prudency and cost-effectiveness of reliability spending should be undertaken in a base rate case proceeding pursuant to PUA § 4-201. "The amount spent by a utility to comply with the reliability standards has no impact upon a utility's current distribution rates unless and until the

[29] *Id* at 48.
[30] Potomac Edison July 24, 2018 correspondence at 2-3.
[31] Joint Exelon Utility Reply Comments at 19-20.

utility seeks recovery for such costs and the Commission determines that the amount spent by the utility was prudent."[32] According to the Exelon Utilities, adopting spending caps would put the Commission in the inappropriate position of prejudging for utility management the prudent amount each utility should spend in order to meet its reliability standards.

OPC also voiced concern with Staff's proposed reliability spending caps. OPC noted, for example, that COMAR requires SAIFI and SAIDI standards for each utility, but does not require that a utility commit to spending caps.[33] Additionally, OPC cautioned that had the utilities realized that their cost recovery would be limited to their reliability planning estimates, those estimates would likely have reflected more contingency consideration. Accordingly, OPC recommended that Staff's proposal be postponed for further discussion rather than being approved now.

In its Supplemental Comments, Staff acknowledged party concerns with its initial recommendation and proposed a "transitional alternative" that would involve enhanced reporting requirements in lieu of not-to-exceed cost caps.[34] In particular, Staff suggested that the Electric Companies provide reconciliation explanations for any material difference between their projected expenditures by category provided in their 2020–2023 SAIFI and SAIDI standard filings versus the actual costs they incur for the reporting year. Similarly, in their Annual Performance Reports where the Electric Companies discuss their two years of forward-looking reliability cost projections, the Electric Companies would submit reconciliation explanations for material differences in their

[32] *Id* at 22.
[33] OPC August 22, 2018 Comments at 10.
[34] Staff Supplemental Comments at 7.

projected expenditures by category originally provided in their 2020-2023 SAIF and SAIDI filings. Staff contended that the reconciliations would provide increased transparency to inform the Commission of changes to Electric Company plans and expenditures and allow parties to evaluate the reliability and cost implications of material changes. The Electric Companies supported this compromise position in place of Staff's original recommendation to impose cost caps.[35]

Commission Decision

Staff's cost cap proposal is premature at this time and lacks material details. Instead of imposing a ceiling on the companies' reliability spending in this proceeding, the Commission accepts Staff's compromise proposal to require enhanced reporting, where the Electric Companies will provide a reconciliation between what they originally filed in determining their 2020 to 2023 reliability standards versus what they actually spend. The reconciliations will allow parties to comment on any material differences, focus on where and why costs may be rising or falling, and fully evaluate costs in addition to reliability performance as part of the annual reliability performance hearings.[36] As the Electric Companies acknowledged, imprudent expenditures always may be challenged in a base rate proceeding.

3. Planning Margins

Among the Electric Companies, BGE, Delmarva, Potomac Edison, and Pepco use planning margins in their SAIFI planning to provide a buffer to hedge goal attainment to account for potential sources of reliability variability, such as weather. SMECO and

[35] Tr. at 142. (Clark).
[36] *See* Tr. at 89-90 (Borkoski).

Choptank do not use this statistical tool.[37] A further discussion of planning margins is included in Section 6 below entitled, "Maryland's Electric Cooperatives." Among the Electric Companies that use planning margins, Staff observed that a significant variation exists in the size of the different margins proposed in the Electric Companies' next cycle reliability standards.[38] Such variation affects the SAIFI and SAIDI performance standards recommended by each company, and makes it easier for Electric Companies with larger planning margins to comply with COMAR performance requirements. For example, Staff noted that Potomac Edison proposed a planning margin of 9.1 percent (approximately one standard deviation), while Pepco, Delmarva and BGE utilized margins above 20 percent, with BGE using the largest at 26.8 percent.[39] The 9.1 percent planning margin would lead to a failure to meet the reliability standard approximately once every six years, while a planning margin of 18 percent would lead to a failure approximately once every 43 years.[40] Staff recommended that the Electric Companies utilize a consistent approach to planning margins, and argued that an ideal planning margin is between one and two standard deviations. Staff additionally concluded that the proposed planning margins of more than 20 percent were too conservative, leading to reliability standards that the Electric Companies were statistically unlikely to ever fail to meet, and which would impose excessive costs on ratepayers.[41] For that reason, Staff recommended that the Commission approve reliability standards that are calculated with

[37] Tr. at 36 (Taborsky).
[38] Staff Next Cycle Review at 28.
[39] *Id* at 30.
[40] Tr. at 80. (Borkoski).
[41] BGE contested the conclusion that low planning margins reduce costs, arguing that the utility views compliance with reliability standards as imperative and that it would have to "do what it takes to meet that target." *See* Tr. at 173-74 (Summerson; Dickens).

planning margins that are no more than ten percent of SAIFI.[42] Staff also calculated new SAIFI and SAIDI standards for the Exelon Utilities utilizing a ten percent planning margin in place of the planning margins originally proposed by those companies. OPC supported Staff's recommendation to use a ten percent planning margin, as well as the more aggressive reliability standards Staff proposed for BGE, Delmarva, and Pepco.[43]

The Exelon Utilities responded that Staff's substantial reduction to the planning margins and revised SAIDI and SAIFI standards were significantly more stringent than those proposed by the Exelon Utilities, and ultimately "too aggressive and simply not appropriate."[44] Additionally, the Exelon Utilities disagreed with the statistical method utilized by Staff as a basis for its recommendation of a lower planning margin.[45] The Exelon Utilities also objected to Staff's imposition of Potomac Edison's planning margin methodology on the Exelon Utilities, as well as Staff's selection of a ten percent planning margin.[46]

Nevertheless, after the Commission granted the request to delay the procedural schedule, the Exelon Utilities and Staff negotiated a consensus agreement on reduced planning margins[47] and revised SAIFI and SAIDI reliability standards that enhance future reliability expectations above what was originally filed.[48] The Exelon Utilities expressed

[42] Staff Next Cycle Review at 48.
[43] OPC August 22, 2018 Comments at 9.
[44] Joint Exelon Utility Reply Comments at 10.
[45] For example, the Exelon Utilities argued that Staff used the "ideal" planning margins for Delmarva and Pepco rather than the actual planning margins used in those utilities' respective filings, and made other mathematical errors. *Id*. at 12-13.
[46] Joint Exelon Utility Reply Comments at 9-10.
[47] BGE, Delmarva, and Pepco agreed to reduced planning margins of approximately 20 percent, 19.6 percent, and 19.0 percent, respectively. Tr. at 84-85. (Borkoski).
[48] Tr. at 91; Joint Exelon Utility Reply Comments at 4. Although Staff still argues that a planning margin below 20 percent may be appropriate and achievable, it agreed to support a 20 percent planning margin alternative in this proceeding "to continue a smoother standards transition from the current cycle to the next cycle."

that the revised reliability standards will be challenging to achieve and will require the utilities to continually improve the reliability of the services they provide to customers, but will include a more reasonable level of headroom for unexpected events and weather outside the historical norm.

Commission Decision

The Commission accepts the revised reliability standards and planning margins agreed upon by Staff and the Electric Companies. (*See* further discussion of Reliability Standards, *infra*). The Commission agrees with Staff that for purposes of setting reliability standards, it is helpful for Electric Companies to utilize planning margins that are consistent. Such consistency assists the Commission in making meaningful cross-utility comparisons regarding issues such as reliability and cost. Nevertheless, the Commission will not direct that a particular planning margin be utilized in this proceeding. The Electric Companies provided valid explanations for why they selected their respective planning margins in setting their company goals. Instead, the Commission will accept the revised reliability standards and planning margins agreed upon by the parties.

4. Reliability Standards

Staff conducted several analyses to measure the costs and benefits of the proposed reliability programs of the Electric Companies. First, Staff assessed their cost effectiveness, measured as the incremental cost of reliability spending divided by the reliability improvement benefit for the measurement period.[49] Staff determined that BGE

[49] Staff Next Cycle Review at 20.

has the most cost-effective reliability programs, with Choptank a close second.[50] Staff also assessed cost efficiency, which measures the average reliability cost per customer per year. Staff found that Choptank is the most cost efficient of the Electric Companies, followed by BGE and Potomac Edison. Staff additionally conducted a societal benefits versus costs analysis utilizing a tool developed by the United States Department of Energy called the Interruption Cost Estimate ("DOE ICE") Calculator.[51] Staff utilized the DOE ICE Calculator to assess whether the incremental societal benefits of improved reliability exceed the cost of the improvements to the Electric Companies (and their customers), and ultimately whether Staff believed that the costs to ratepayers of the proposed company goal scenarios were justified.

Staff found that the societal benefits/costs of the Electric Company goals were all above 100—meaning that their benefits exceeded costs. However, Staff initially found that Pepco's company goal programs were only marginally cost beneficial, yielding a benefits to costs ratio of 104 percent. Staff asserted that Pepco's reliability programs appear to have reached a point of diminishing returns, and noted that the company's reliability cost per customer is high compared to other Electric Companies.[52] Pepco responded that (i) the benefits to costs ratio of 104 supports the conclusion that Pepco's reliability programs are in fact cost effective, and (ii) the benefits to costs ratio would have been much higher (278 percent) if the company had not instituted its 69 kV Feeder Rebuild project.[53] That project, a 12-year program to rebuild aging infrastructure, including thirteen 69kV circuits, is not expected to significantly improve future SAIFI

[50] *Id* at 24.
[51] *Id* at 38.
[52] *Id* at 53.
[53] Exelon Utility Joint Reply Comments at 14, 16-18.

and SAIDI scores, but it is expected to improve resiliency and maintain reliability levels to customers under all circumstances, not just blue sky conditions.[54] After meeting with Pepco, Staff verified that the benefit/cost ratio improved from 104 percent to 278 percent as measured by the DOE ICE calculator, when the company's 69 kV Feeder Rebuild project is removed.[55]

After the extension of the procedural schedule, the Electric Companies and Staff met to discuss planning margins, spending caps, and SAIFI and SAIDI reliability standards. As discussed above, Staff agreed to withdraw its spending cap proposal in exchange for enhanced reporting requirements and reduced planning margins. The parties also agreed to revised SAIDI and SAIFI reliability requirements.[56] Those revised standards are set forth below:

[54] Pepco asserted that it "must address aging infrastructure issues to maintain the reliability gains it has achieved." Joint Exelon Utility Comments at 18. Pepco stated that it performed a resiliency study in 2013-2014 that indicated that under normal weather conditions, certain 69 kV circuits could endure a single line fault without outages because of redundancy. However, those circuits were vulnerable to low frequency/ high impact events that could affect more than one 69 kV line feeding a particular substation and result in a "significant large outage." Pepco therefore determined it would redesign these 69 kV circuits to meet a higher resiliency standard, despite the fact that the improvements are not likely to move SAIFI or SAIDI scores substantially lower.

[55] Staff Supplemental Comments at 2.

[56] Exelon Utility Joint Reply Comments at 4-5; Staff Supplemental Comments at 5. The revised SAIDI and SAIFI standards applied only to the Exelon Companies, as Staff had already agreed with Potomac Edison, Choptank, and SMECO regarding their respective SAIFI and SAIDI standard proposals.

Table 1: SAIFI and SAIDI Standards (COMAR)[57]

Electric Company		2020	2021	2022	2023
BGE	SAIFI	1.00	0.96	0.92	0.89
	SAIDI	127	121	115	111
Choptank	SAIFI	1.36	1.35	1.35	1.34
	SAIDI	147	146	145	144
Delmarva	SAIFI	1.12*	1.12	1.11	1.09
	SAIDI	97*	97	97	97
Pepco	SAIFI	0.90*	0.90	0.90	0.89
	SAIDI	91*	91	91	91
Potomac Edison	SAIFI	1.08	1.08	1.08	1.08
	SAIDI	151	151	151	151
SMECO	SAIFI	1.31	1.30	1.29	1.28
	SAIDI	135.0	134.4	133.8	133.2

***** 2020 SAIFI and SAIDI standards for Delmarva and Pepco reflect Exelon–PHI merger commitments.

Commission Decision

The Commission approves the SAIFI and SAIDI reliability standards for the years 2020 through 2023 agreed to by the parties. Customers depend on reliable electric service both at home and at their workplace, and in an era of continuously sensitive equipment and connectivity, reliability is crucial. Therefore, both maintenance and improvement of reliability is vital to customers' comfort and productivity. Nevertheless, the Commission is cognizant of the need to avoid unduly burdensome impacts on

[57] Given that the Commission is approving the IEEE 2.5 Beta Method, the SAIFI and SAIDI reliability standards presented in Table 1 will be converted into the corresponding values utilizing the 2.5 Beta Method when the standards are published and become effective in COMAR. *See* Tr. at 41-42.

ratepayers.[58] The Commission finds that the proposed standards strike a reasonable balance between maintaining and improving reliability, and the costs for that maintenance and improvement. The reliability standards are also consistent with the customer perception surveys, discussed below, which measure in part the willingness of customers to financially shoulder additional reliability improvement. The standards are also consistent with the recommendation of Montgomery County to avoid backsliding and focus on continued improvement.[59] These standards will be converted to IEEE 2.5 Beta Method values in a forthcoming rulemaking.

5. Planned Outages

Potomac Edison argued that planned outages should not be included in system reliability statistics, as long as customers are given more than 24-hours' notice of the planned outage.[60] The company argued that this change would allow it to complete required maintenance without hindering its reliability performance. Potomac Edison further stated that during major outage events, it makes temporary repairs to restore service quickly, and after the event has passed, addresses planned outages to make the repairs permanent. To the extent the change is not made, Potomac Edison argues that it would be under pressure to complete the repairs during storms, thereby increasing outage duration. "In effect, including planned outages creates an unnecessary tension between two different Commission goals—faster storm response and lower SAIDI and SAIFI."[61]

Staff opposed Potomac Edison's proposal to remove planned outages from system reliability statistics. Staff argued that "from the customer's perspective … an interruption

[58] *See* Tr. at 191. (Czarski).
[59] Montgomery County Comments at 12.
[60] Potomac Edison Comments at 4.
[61] *Id*.

whether planned or unplanned is still an inconvenience."[62] Staff also contended that including the effect of planned outages in reliability would incentivize Electric Companies to reduce the effects of planned outages.[63] Additionally Staff indicated that the companies responded in their discovery requests that they would not reduce spending on reliability if planned outages were excluded. OPC supported Staff's position, stating that any interruption of service still affects the quality of service experienced by the customer, and that the reliability standards should incentivize the Electric Companies to make planned interruptions more efficient to minimize their effects on customers.[64]

Commission Decision

The Commission denies Potomac Edison's request to exclude planned outages from system reliability statistics. Planned outages are currently included in SAIFI and SAIDI performance metrics pursuant to COMAR. Potomac Edison has not provided sufficient evidence to demonstrate that this long-standing methodology presents a statewide concern that requires change. Additionally, although notice of a planned outage may enable a customer to reschedule certain electric usage, the outage still reduces the quality of service experienced by that customer. For that reason, the reliability standards should retain an incentive for Electric Companies to minimize outage duration, including outage minutes that are planned.[65] As Staff noted during the hearing,

[62] Staff Next Cycle Review at 35.
[63] *Id* at 36; Tr. at 60. (Borkoski).
[64] OPC August 22, 2018 Comments at 11.
[65] Of course, nothing in this decision should be read to discourage utilities from notifying their customers of planned outages to help mitigate the inconvenience of such outages, as Potomac Edison currently does. Tr. at 121-22. (McGettigan).

"[i]ncluding planned outages in SAIFI and SAIDI standards provides incentive for rapid repair and efficient management of planned outages."[66]

6. Maryland's Electric Cooperatives

Staff noted some concerns with regard to the reliability performance of Maryland's electric cooperatives, SMECO and Choptank. Staff stated that SMECO's reliability cost per customer is "extremely high," indicating that its reliability improvement programs are inefficient.[67] Staff also observed that SMECO and Choptank do not use planning margins or many of the other reliability best practices described in the RTWG Report.[68] In review of the annual performance reports, Staff argued that SMECO and Choptank were less likely to meet their respective SAIFI targets because they do not utilize planning margins and encouraged them to do so in the future.[69] Staff also recommended that these two cooperatives "take steps to further develop their reliability planning capabilities to utilize reliability planning best practices for projecting future cost reliability scenarios."[70] SMECO witness MacDougall testified at the hearing that SMECO representatives met with the Mr. Borkoski in August 2018 and that "SMECO will be able to give Staff the data it needs in the future and implement Staff's recommendations."[71]

[66] Tr. at 57-58. (Taborsky). The Electric Companies are free to address planned outages in their annual reports, including by submitting additional data that provides SAIFI and SAIDI results with planned outages excluded.
[67] Staff Next Cycle Review at 57.
[68] Tr. at 78. (Borkoski).
[69] Staff Review of Annual Performance Reports on Electric Service Reliability at 19.
[70] Staff Next Cycle Review at 58.
[71] Tr. at 93. (MacDougall).

Commission Decision

The Commission encourages, but is not requiring, SMECO and Choptank to further develop their reliability planning capabilities, including by using planning margins. As Staff explained, planning margins provide a hedge to account for potential sources of variability such as weather, and assist utilities in overcoming unexpected contingencies to achieve reliability targets.[72] The Commission also encourages the cooperatives to take steps to further develop other reliability planning capacities, through incorporation of some of the best practices recommended in the RTWG's Final Report. In particular, the cooperatives should enhance their capability to associate cost with reliability, including by determining their respective minimum cost and company goal scenarios.[73]

7. Customer Perception Surveys

COMAR 20.50.12.14 requires that the Electric Companies conduct customer perception surveys every four years, at the same time that they file their proposed annual next cycle reliability filings. The regulation requires that the surveys address customer perception of the utilities' reliability performance, vegetation management activities, the effectiveness of customer communications, and service quality performance. Additionally, the Electric Companies inquired about the willingness of customers to pay for additional reliability. During the hearing, the parties noted a lack of consistency in survey methodology.[74] Specifically, Staff observed that comparing customer perception

[72] *Id* at 9-10; Tr. at 78-79. (Borkoski).
[73] Staff indicated that development of the minimum cost and company goal scenarios by the electric cooperatives was important to Staff's role in reviewing and providing guidance to the Commission on next cycle reliability standards. Tr. at 87. (Borkoski).
[74] Tr. at 21-22. (Borkoski).

results between utilities is difficult because the methodology and rating systems used to measure the level of customer satisfaction varies for each utility. "[S]ince each company administered their own surveys with their own questioning technique and response scale, the utility responses and scoring cannot be directly compared to each other."[75] Nevertheless, the customer surveys demonstrated strong satisfaction scores, with utilities reporting the following overall satisfaction percentages: Potomac Edison 95%, BGE 92%, Choptank 91%, Delmarva 87%, SMECO 87%, and Pepco 81%. The Electric Companies also reported the following satisfaction rate with restoring power after a storm: Delmarva 93%, BGE 90%, Choptank 88%, SMECO 76%, Potomac Edison 72%, and Pepco 68%.[76]

Commission Decision

The customer perception surveys present valuable information relating to customer satisfaction with utility performance, as well as the willingness of customers to incur additional cost in order to improve reliability. The Commission agrees with Staff, however, that the value of the customer perception responses would be enhanced with greater consistency among the Electric Companies' respective questionnaires.[77] The Commission therefore directs Staff to reconvene the RTWG to address customer perception surveys, with the goal of developing consistency of methodology for asking

[75] Staff Next Cycle Review at 6.
[76] *Id*. at 47-56.
[77] The Electric Companies appear to agree that there is a lack of consistency among utilities in customer perception surveys. *See* Tr. at 94-95 (McDougall). ("[I]t's really difficult to compare the utilities' responses. Because they're not apples to apples. The utilities design their own questions. But more so…the way we measure those responses is different…. But I think a work group could bring some uniformity to the surveys that would help the analyses.")

questions and reporting data, such as by creating a core set of questions and obtaining a minimum level of statistical validity.

8. 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. Given the potentially life-threatening nature of downed wires, compliance with this standard is imperative. The Electric Companies have consistently met or exceeded this standard each year. In fact, aggregate Electric Company compliance with this standard has approached 100 percent. During the hearing, the Commission considered whether four hours was too long for Electric Companies to respond to downed wires.[78] A four-hour window for utility personnel to respond to live or sparking wire reports may expose the public to unnecessary risk and unduly encumber other emergency personnel, such as police officers or fire fighters who must guard the wires until the Electric Companies respond. Accordingly, the Commission will propose through rulemaking a new downed wire response standard that will require that an Electric Company respond within two hours to a downed electric wire guarded by emergency responders. The Commission will also consider whether the standard should treat various types of downed wire situations differently—a topic that was discussed during the hearing.[79]

[78] Tr. at 185-86.
[79] *See* Tr. at 185-86. (Brennan) (discussing Pepco's priority system for differentiating between different types of wires, and whether the Downed Wire Response Standard should be amended to create two different response times, depending on the wire type.)

IT IS THEREFORE, this 6th day of March, in the year Two Thousand and Nineteen, by the Public Service Commission of Maryland,

ORDERED: (1) That the proposed SAIFI and SAIDI reliability standards and planning margins agreed to by the parties and discussed in this Order are accepted;

(2) That the IEEE 2.5 Beta Method will be used for setting future reliability standards and for measuring annual compliance with those reliability standards, with the concomitant requirement that the Electric Companies also provide SAIFI and SAIDI reliability information using COMAR-defined Major Outage Event exclusions;

(3) That Staff's proposed not-to-exceed reliability cost standards are not accepted, but that the Electric Companies will be required to provide the following reconciliation explanations in their annual reliability performance reports submitted pursuant to COMAR 20.50.12.11:

The Electric Companies shall provide reconciliation explanations for material differences of their projected expenditures by category provided in their 2020 – 2023 SAIFI and SAIDI standard filings used for setting their standards versus the actual costs they incur for the reporting year; and

> In their two-year forward looking reliability cost projections that the Electric Companies make pursuant to COMAR 20.50.12.11A(6), the Electric Companies shall also include reconciliation explanations for material differences in their projected expenditures by category originally provided in their 2020 – 2023 SAIFI and SAIDI filings.

(4) That the Potomac Edison proposal to exclude planned outages from system reliability statistics is denied;

(5) That Staff is directed to convene a workgroup to address customer perception surveys in order to develop a consistent methodology;

(6) That Staff is directed to submit revised proposed regulations to establish a new downed wire response standard that will require that an Electric Company respond within two hours to a downed electric wire guarded by emergency responders; and

(7) That an administrative rulemaking docket, RM67, is hereby initiated to consider the revisions to COMAR 20.50.01 and COMAR 20.50.12 that are consistent with the decisions herein. Staff is direct to submit revised proposed regulations within 60 days of the date of this Order.

/s/ Jason M. Stanek

/s/ Michael T. Richard

/s/ Anthony J. O'Donnell

/s/ Odogwu Obi Linton

/s/ Mindy L. Herman
Commissioners