BEFORE THE
MARYLAND PUBLIC SERVICE COMMISSION

In the Matter of the Review of Annual Performance Reports on Electric Service Reliability Filed Pursuant to COMAR 20.50.12.11	Case No. 9353 (2025)

THE MARYLAND OFFICE OF PEOPLE'S COUNSEL'S COMMENTS ON THE MARYLAND ELECTRIC DISTRIBUTION COMPANIES' 2024 ANNUAL RELIABILITY PERFORMANCE REPORTS

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INTRODUCTION

The Maryland Electric Service Quality and Reliability Act sets a clear goal: electric companies must provide "high levels of service quality and reliability in a cost-effective manner."[1] The law also makes clear that utilities that fall short must be "held accountable."[2] To enforce that mandate, the Public Service Commission adopted reliability regulations in COMAR 20.50—updated periodically—which establish service quality and reliability standards for the state's largest electric distribution companies ("EDCs").[3] These utilities must file annual performance reports to allow the Commission to determine whether they are meeting those standards.[4]

The law, enacted in 2011 in the wake of back-to-back major storms and prolonged outages, reflected public frustration with unreliable service. By the time COMAR 20.50 took effect in 2012, Maryland had endured multiple multi-day outages over two years. Since then, the state's investor-owned utilities have spent hundreds of millions on reliability-related capital projects. These efforts have produced measurable improvements. Maryland's utilities now boast top-tier national performance, and the Commission's docket reflects a decade of steady progress toward the high reliability levels envisioned by the 2011 law.

But the cost-effectiveness of these investments is unclear. Even as utilities achieve strong reliability metrics, they continue to seek increasingly strict performance standards—

[1] Pub. Utils. Art. ("PUA") § 7-213(b)
[2] *Id*.
[3] COMAR 20.50.12.01 (applying only to electric utilities with 40,000 or more customers); *see also* PUA 7-213(c) (exempting small rural electric cooperatives and municipal electric utilities).
[4] PUA § 7-213(a)-(g).

most recently for the 2024–2027 cycle. Utilities use these tougher targets to justify even more capital investment, locking in decades of ratepayer funding, despite diminishing returns. Customer perception survey results used to set the 2024-2027 reliability standards showed a consistent pattern: Marylanders are generally satisfied with current reliability, don't want to pay more for marginal improvements, and are most concerned about major outage events[5]—events that are excluded from standard reliability metrics.

Current analysis in the reliability docket fails to capture this disconnect. The Commission evaluates overall spending relative to marginal gains in performance but does not consider customer sentiment or the opportunity cost of other, more impactful investments. A further gap exists between the reliability docket and utility rate cases. Utilities often justify capital spending in the reliability docket based on self-imposed targets, but only examine project-level prudency during rate proceedings—where the same reliability standards again shape the outcome.

Maryland's regulatory framework for electric reliability needs a course correction. While reliability standards keep climbing, the added value to ratepayers has stalled. With steep rate increases on the horizon and the potential for growing demands on the grid, the focus must shift toward practical resilience, true cost-effectiveness, and what matters most to customers. Recent Commission initiatives—such as the Major Outage Events workgroup and early steps toward resilience metrics—offer a timely opening to make that shift.

[5] Pursuant to COMAR 20.50.12.02, each EDC filed customer perception survey results in the RM43 docket in March 2022. Some EDCs filed the results as part of their 2024-2027 reliability standards proposals, while other EDCs filed the results as separate filings. The survey results consistently showed that customers are most concerned about utility rates and long-duration interruptions.

Below, OPC first addresses each EDC's performance under COMAR 20.50.12's reliability metrics.[6] For each utility, OPC assesses compliance during the 2024 reporting period and examines the relationship between the utility's capital expenditures ("CapEx"), operations and maintenance ("O&M") spending, and its System Average Interruption Frequency Index ("SAIFI") and System Average Interruption Duration Index ("SAIDI") performance. These reviews highlight concerns about whether utilities' spending aligns with actual reliability outcomes, particularly when investments are beginning to yield diminishing returns.

Part I of OPC's comments evaluates utility performance under $SAIDI^{(MED)}$, a metric designed to reflect resilience by measuring the duration of service interruptions during major event days. This metric offers critical insights that complement average-day reliability metrics. As climate change accelerates, it is essential for Maryland's reliability framework to evolve and place greater emphasis on resilience—the system's ability to prepare for, withstand, and recover from major disruptions.

Also in Part I, OPC considers the impact of the EDCs' CapEx spending on grid reliability and resilience. OPC observes that utilities have leaned heavily on large-scale capital projects to drive reliability gains. But these investments often fail to show strong correlation with improved performance, especially as systems approach the limits of achievable reliability. As EDCs have increased capex spending, customers have not seen commensurate reliability benefits. These impacts may be missed by the EDCs because, by

[6] OPC's analysis, comments, and recommendations were made with the assistance of Continuum Associates, LLC.

and large, they do not conduct a cost-effectiveness analysis for reliability projects. OPC recommends rebalancing investment priorities toward smaller, more targeted capital improvements and lower-cost interventions such as proactive vegetation management, which tend to offer better returns for ratepayers.

Part II responds to the Commission's directive in its prior reliability order to review and provide feedback on the current methodology for evaluating utility performance. OPC supports expanding the evaluation framework to incorporate additional tracking metrics and a formal benefit-cost analysis for reliability-related expenses. A more structured, data-driven framework will better ensure that reliability targets serve the public interest and direct spending toward strategies that improve both day-to-day reliability and long-term system resilience.

Finally, **Part III** addresses Potomac Edison's failure to meet its reliability targets in 2024. Based on the performance data and analyses detailed in the prior sections, OPC recommends that the Commission require a corrective action plan from Potomac Edison. That plan should be guided by a transparent rubric that prioritizes accountability, measurable outcomes, and alignment between spending and performance.

2024 RELIABILITY EVALUATION AND METRICS

Each year, Maryland's qualifying EDCs are required to meet specific annual System Average Interruption Frequency Index ("SAIFI") and System Average Interruption Duration Index ("SAIDI") targets set in COMAR 20.50. As shown below, Baltimore Gas & Electric Company ("BGE"), Delmarva Power & Light ("DPL"),

Potomac Electric Power Company ("Pepco"), and Southern Maryland Electric Cooperative ("SMECO") each exceeded their SAIFI and SAIDI targets for 2024. The Potomac Edison Company ("PE"), however, failed to meet both its 2024 targets. OPC addresses each EDC's performance separately below.

Table 1: SAIFI and SAIDI Performance of Maryland EDCs in 2024

	2024 SAIFI	2024 SAIFI Margin	Met SAIFI COMAR Standards in 2024?	2024 SAIDI	2024 SAIDI Margin	Met SAIDI COMAR Standards in 2024?
BGE	0.71	18%	Yes	85.2	4%	Yes
DPL	0.66	36%	Yes	66	15%	Yes
PE	1.07	-2%	No	159.3	-12%	No
Pepco	0.52	35%	Yes	48	33%	Yes
SMECO	1.13	11%	Yes	113.9	14%	Yes

1. BGE's 2024 Reliability Performance

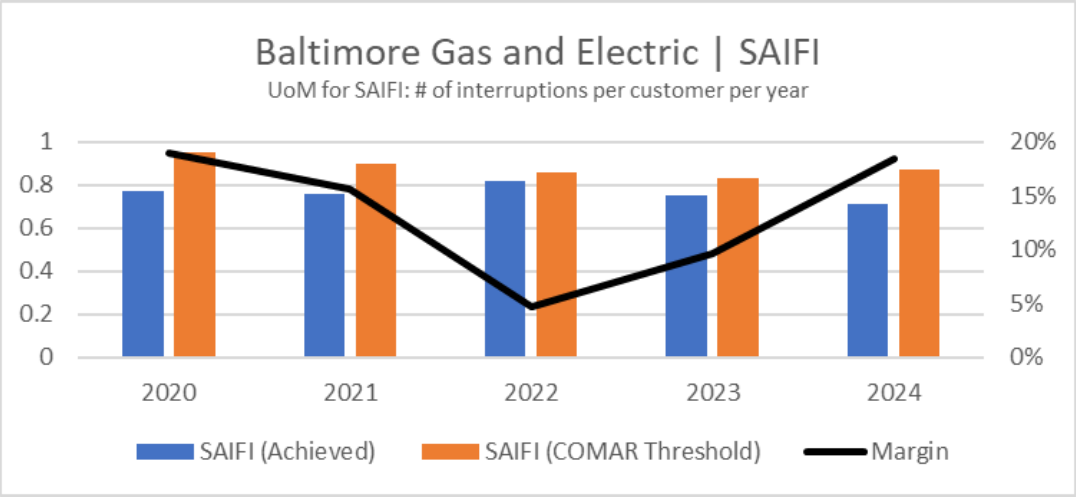
BGE met its 2024 SAIFI and SAIDI targets. However, though the company improved its SAIFI margin, BGE's SAIDI margin sharply decreased. As in 2023, BGE decreased momentary interruptions overall, but the company saw an increase in the number of customers experiencing multiple interruptions across its service area. BGE also continues to show mismatches between its budgeted and actual expenses related to reliability. In 2024, BGE overspent its distribution capital expenditures ("CapEx") budget by 40% and its distribution operations and maintenance ("O&M") budget by 13%.

1.1. BGE's SAIFI and SAIDI Performance

Compared to 2023, BGE improved its SAIFI performance in 2024. Against a 2024 SAIFI target of 0.87, BGE achieved a SAIFI of 0.71. This achievement improved BGE's

SAIFI margin[7] to 18%, a notable increase from the 10% margin in 2023. Figure 1 shows BGE's SAIFI performance from 2020 through 2024 and the SAIFI margins it achieved during the same period.

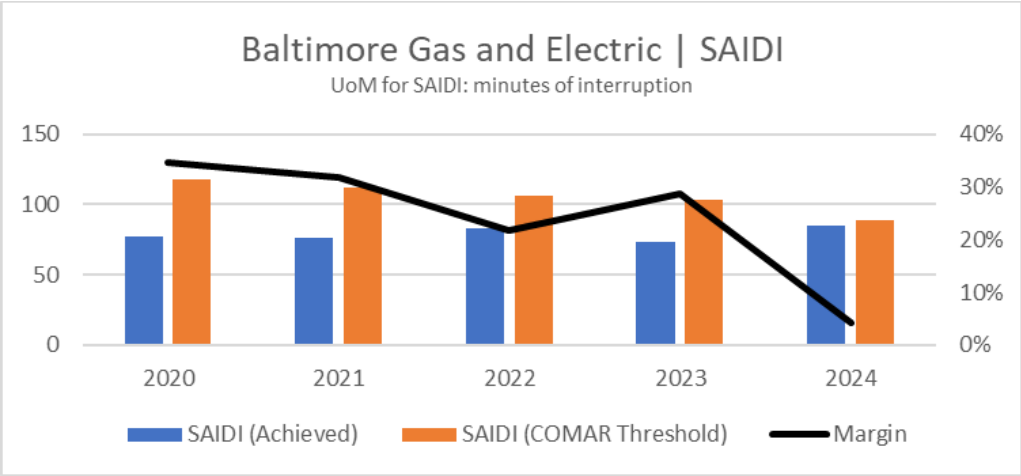
Figure 1: BGE SAIFI Performance – 2020-2024



BGE's 2024 SAIDI performance saw a deterioration. BGE's 2024 SAIDI target was 89 minutes, and the company achieved a SAIDI of 85.2 minutes. This achievement caused BGE's SAIDI margin to drop to 4% in 2024, down from 29% the previous year. This reduction in SAIDI margin indicates a need for BGE to address duration of customer outages. BGE's SAIDI performance for 2020 through 2024 is shown in Figure 2.

Figure 2: BGE SAIDI Performance – 2020-2024

[7] Margin is calculated as the difference achieved value of a metric and COMAR defined minimum threshold, and it is an indicator of performance vs. target of a certain reliability metric.



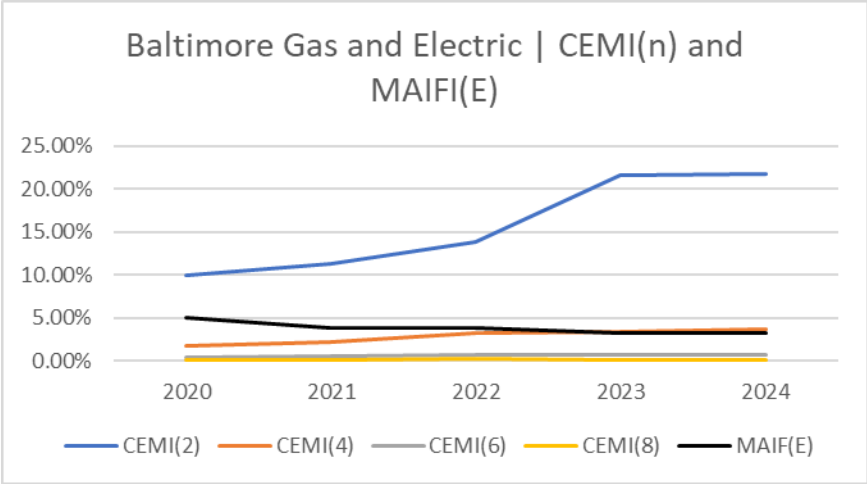
1.2. BGE's Momentary Average Interruption Frequency Index ("$MAIFI_E$") Performance

$MAIFI_E$ is the average number of momentary interruptions that a customer experiences during a given period, typically a year. In $MAIFI_E$, the "E" denotes the number of events.[8] BGE's $MAIFI_E$ performance has been improving since 2022. Compared to a $MAIFI_E$ of 3.24% in 2023, BGE's $MAIFI_E$ was 3.19% in 2024. BGE's falling $MAIFI_E$ indicates that the number of customers experiencing momentary interruptions and/or the number of momentary interruptions is decreasing overall. COMAR does not enforce a minimum binding standard or target for $MAIFI_E$. However, the performance category measured by $MAIFI_E$ can be a nuisance to electricity users due to the momentary nature of outages that are recorded as part of the $MAIFI_E$ index. Also, the momentary outages measured by $MAIFI_E$ can damage or decrease the useful life of electrical equipment and appliances. Figure 3 (below) shows BGE's performance on the $MAIFI_E$ from 2020 through

[8] $MAIFI_E$ is calculated by summing the number of device operations (opening and reclosing is counted as one event), multiplying the operations by the number of customers affected, and dividing by the total number of customers served.

2024.

Figure 3: BGE CEMIn and MAIFIE Performance – 2020-2024

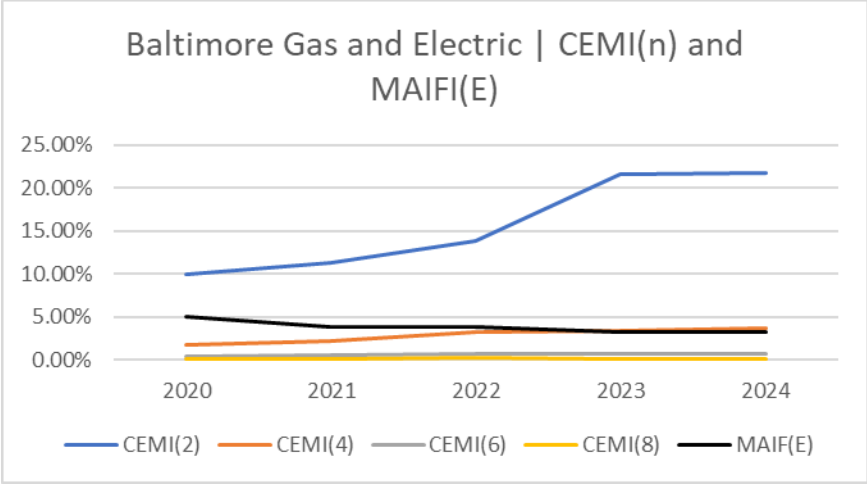


1.3. BGE's Customers Experiencing Multiple Interruption ("$CEMI_n$") Performance

$CEMI_n$ is the ratio of the total number of customers experiencing more than "n" sustained interruptions, divided by the total number of customers served by an EDC. Under COMAR 20.50.12.05, $CEMI_n$ for various tiers shows the customers experiencing two or more ($CEMI_2$), four or more ($CEMI_4$), six or more ($CEMI_6$), and eight or more ($CEMI_8$) sustained interruptions.

BGE's $CEMI_n$ matrix shows slight deterioration in 2024. For each tier, BGE's performance showed an increase from 2023 performance: $CEMI_2$ increased from 21.56% percent to 21.80%, $CEMI_4$ increased from 3.43 percent to 3.67 percent, and both $CEMI_6$ and $CEMI_8$ showed minor increases. While BGE's increases are small, they interrupt the prior trend of improvement observed for $CEMI_6$ and $CEMI_8$ between 2022 and 2023. This suggests areas for renewed focus in minimizing repeated outages for customers. Figure 3 shows BGE's performance on the $CEMI_n$ from 2020 through 2024.

Figure 3: BGE CEMIn and MAIFIE Performance – 2020-2024



1.4. BGE's Transmission and Distribution Capital Expenditure ("CapEx") and Operations and Maintenance ("O&M") Expenditure to Support Reliable Electric Service[9]

1.4.1. Distribution CapEx and O&M Spending

As in the past, BGE's distribution CapEx and O&M spending to maintain reliability shows wide variances between the company's budgeted and actual spending. For 2024, BGE budgeted $196.2 million in distribution CapEx, but the company spent approximately $263.9 million, an overspend of about 35%.

Compared to BGE's distribution CapEx spending in 2023, its 2024 distribution CapEx spending was slightly lower by approximately 2%. Despite this, the labor hours expended in 2024 increased by about 15 percent compared to 2023, possibly reflecting a shift in work scope or efficiency changes. BGE's distribution CapEx per hour spent in 2024 was $454.71/hour, which is lower than the 2023 value. This indicates that labor efficiency

[9] BGE reports capex and O&M expenses for both distribution and transmission in the company's annual filing.

declined in 2024 compared to 2023.

BGE's distribution O&M spending showed a similar trend, with the actual spending in 2024 at $179.6 million, about 17% higher than the company's budgeted $153.3 million. This overspending is higher than the 13% overspending observed in 2023. Compared to 2023, BGE's actual distribution O&M spending increased by 10 percent. BGE's per hour distribution O&M spent in 2024 was $331.57/hour, which is higher than the 2023 value of $305.81/hour. This indicates that labor efficiency increased in 2024 compared to 2023.

1.4.2. Transmission CapEx and O&M Spending

BGE's transmission CapEx and O&M spending shows different trends than the company's distribution spending. In 2024, BGE spent $164.5 million compared to a budget of $173.2 million, resulting in a 5% underspend. This follows the pattern seen in 2023. In 2024, labor expended by BGE for transmission CapEx increased by 5%, leading to significantly higher labor cost efficiency for transmission CapEx spending compared to 2023. BGE's transmission CapEx per hour spent in 2024 is $1642.30/hour, which is higher than the 2023 value. This indicates that labor efficiency increased in 2024 compared to 2023.

Transmission O&M spending in 2024 was $34.17 million, about 18% below the budgeted $41.85 million, representing less underspending compared to 2023. BGE's transmission O&M per hour spent in 2024 is $376/hour, which is higher than the 2023 value. This indicates that labor efficiency increased in 2024 compared to 2023.

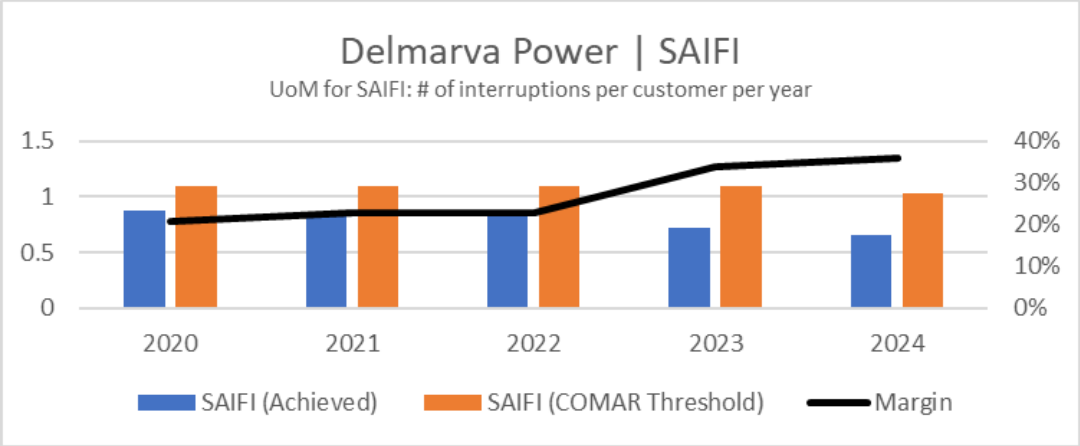
2. DPL's 2024 Reliability Performance

DPL met its 2024 SAIFI and SAIDI targets. For SAIFI, DPL achieved the highest marginal performance among the EDCs, and the company also improved its SAIDI performance compared to 2023. DPL showed improvement in both the number of momentary outages experienced by customers and the number of customers who experienced multiple outages in its service territory. Despite the improvements, DPL continues to report a relatively high number of customers experiencing six or more annual outages. DPL underspent its budgeted distribution O&M by 20% and overspent its budgeted CapEx by 1%.

2.1. DPL's SAIFI and SAIDI Performance

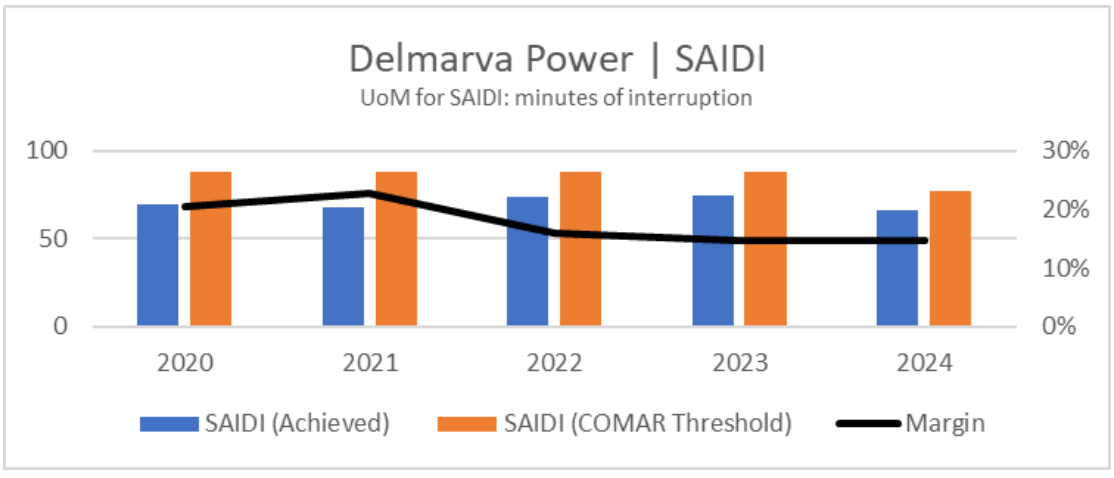
DPL continued its strong SAIFI performance in 2024, achieving a SAIFI of 0.66 against a COMAR target of 1.03. DPL's performance resulted in a margin of 36%, an improvement from 34% in 2023 and highest margin among the EDCs. DPL's SAIFI performance for 2020 through 2024 with the SAIFI margins it achieved during the same period is shown in Figure 4.

Figure 4: DPL SAIFI Performance – 2020-2024



DPL also improved its SAIDI performance in 2024, recording a SAIDI of 66 minutes compared to 75 minutes in 2023. Despite the improvement, DPL's SAIDI margin remained steady at 15%, reflecting a 2024's more stringent target of 77.4 minutes, down from 88 minutes in 2023. DPL's SAIDI performance for 2020 through 2024 is shown in Figure 5.

Figure 5: DPL SAIDI Performance – 2020-2024



2.2. DPL's MAIFI$_E$ Performance

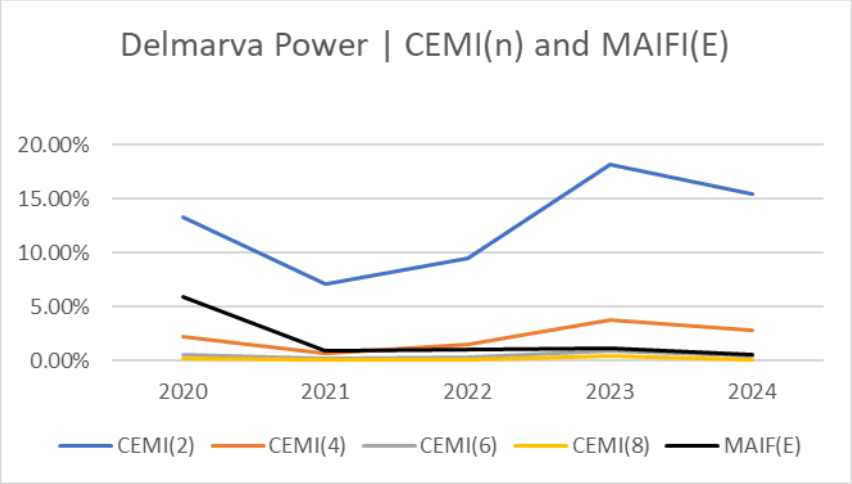
DPL's MAIFI$_E$, DPL improved in 2024 compared to 2023. DPL reported a

$MAIFI_E$ of 0.62% in 2024, significantly lower than the 1.17% reported in 2023. This improvement suggests effective mitigation measures have been implemented to reduce momentary outages, benefiting DPL's customers. Figure 6 below shows DPL's performance on the $MAIFI_E$ from 2020 through 2024.

2.3. DPL's $CEMI_n$ Performance

DPL's $CEMI_n$ matrix shows some improvement in 2024. Compared to 2023, DPL's $CEMI_2$ improved from 18.22% to 15.40%, $CEMI_4$ improved from 3.76% to 2.86%, $CEMI_6$ improved from 0.97% to 0.50%, and $CEMI_8$ improved from 0.51% to 0.09%. This improvement in $CEMI_n$ aligns with DPL's improved $MAIFI_E$ performance and indicates that fewer customers are experiencing multiple sustained interruptions, contributing to enhanced service reliability. Figure 6 shows DPL's performance on the $CEMI_n$ from 2020 through 2024.

Figure 6: DPL $CEMI_n$ and $MAIFI_E$ Performance – 2020-2024



2.4. DPL's Transmission and Distribution CapEx and O&M Expenditure to Support Reliable Electric Service

2.4.1. Distribution O&M Spending

For distribution O&M, DPL budgeted $26.94 million, but the company spent $21.47 million compared to its budgeted amount of $26.94 million, a 20% underspend. DPL's distribution O&M per hour spent in 2024 is $411.49/hour, which is lower than the 2023 value of $606/hour. This indicates that labor efficiency decreased in 2024 compared to 2023.

2.4.2. Transmission O&M Spending

Similar to DPL's distribution O&M spend, the company underspent on transmission O&M spending by 18% in 2024 at $2.59 million compared to the budgeted amount of $3.17 million. Notably, in 2024, DPL's labor hours increased significantly, from 771 hours in 2023 to 6,597 hours in 2024, representing a 756% increase. This sharp increase in labor suggests either the resumption of previously deferred maintenance activities or an expansion in scope. DPL's transmission O&M per hour spent in 2024 is $392.6/hour, which is lower than the 2023 value of $5,236/hour.[10] This indicates that labor efficiency drastically decreased in 2024 compared to 2023.

2.4.3. Transmission and Distribution CapEx Spending[11]

DPL's actual CapEx spending to support reliability upgrades for 2024 was $80.74 million, 1% higher than the budgeted amount of $79.7 million. This marks a reversal of

[10] In DPL's 2023 reliability filing, the utility reported its O&M cost was approximately $4.04 million and its associated labor hours were 771. Using these reported numbers (O&M Spending/Labor Hours), OPC calculated that DPL spent approximately $5,236/hour on O&M in 2023.
[11] DPL did not provide a breakdown of transmission and distribution capex.

2023's minor underspending. Compared to 2023, the 2024 labor hours increased significantly by 17 percent, from 152,721 in 2023 to 179,098 in 2024. DPL's transmission and distribution CapEx per hour spent in 2024 was $450.81/hour, higher than the 2023 value of $429.54/hour. This indicates that labor efficiency slightly increased in 2024 compared to 2023.

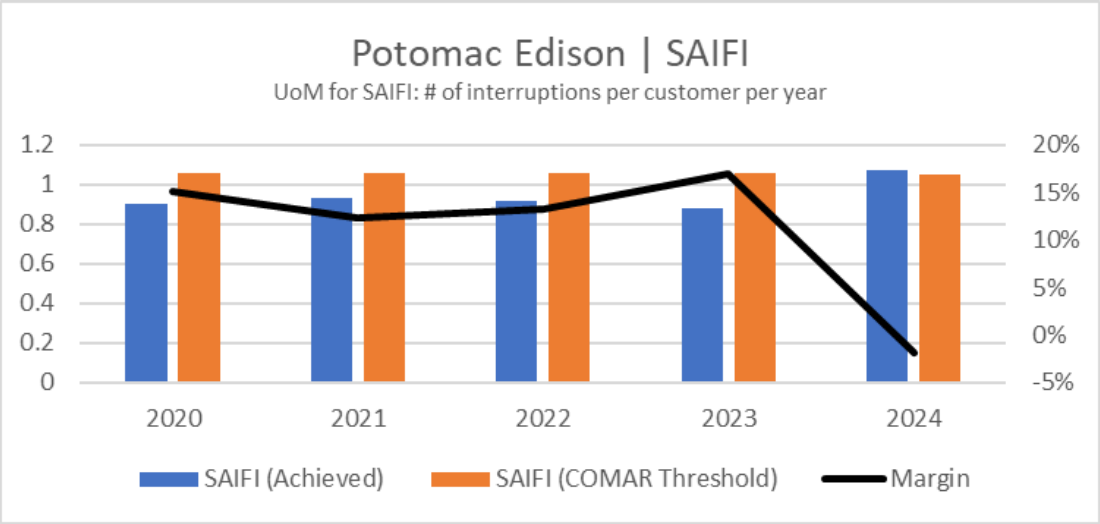
3. PE's 2024 Reliability Performance

PE failed to meet both its SAIFI and SAIDI performance targets for 2024. The company also saw the number of momentary interruptions increase, and PE retained an elevated number of customers who experienced multiple interruptions across its service territory. Despite failing its targets, PE overspent its distribution CapEx budget by 33%. At the same time, the company underspent its O&M budget by 16%.

3.1. PE's SAIFI and SAIDI Performance

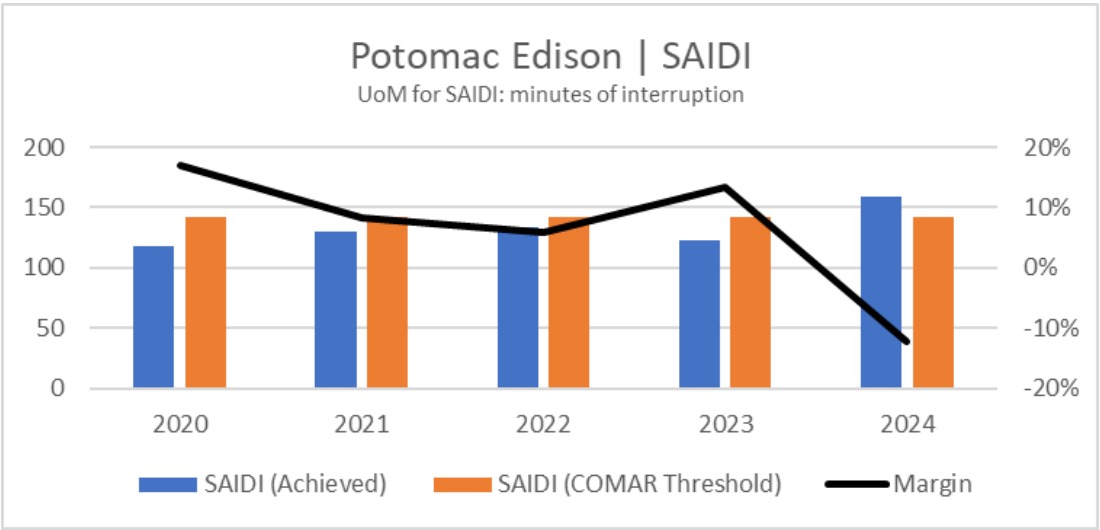
PE reported a decline in SAIFI performance in 2024. PE's SAIFI increased to 1.07 in 2024, surpassing the COMAR target of 1.05, resulting in a negative margin of 2%. This is the first time since 2020 that PE failed to meet its SAIFI target. This drop in SAIFI performance suggests potential operational challenges impacting reliability. Figure 7 shows PE's SAIFI performance for 2020 through 2024 and the SAIFI margins it achieved during the same period.

Figure 7: PE SAIFI Performance – 2020-2024



PE's SAIDI performance also deteriorated significantly, with the company's SAIDI rising to 159.3 minutes in 2024, above the COMAR target of 142 minutes, resulting in a negative margin of 12%. PE's SAIDI performance for 2020 through 2024 is shown in Figure 8.

Figure 8: PE SAIDI Performance – 2020-2024



3.2. PE's MAIFI Performance

For 2024, PE reported a MAIFI[12] of 9.73%, higher than the 5.66 percent reported in 2023. This increase indicates that the number of PE customers experiencing momentary interruptions and/or the number of momentary interruptions is increasing overall, which is a deterioration in performance. According to PE, the company must gather MAIFI data by manually reading counters from line reclosers annually. Reclosers are set to reclose as many as three times before locking out on the fourth operation. Adjacent reclosers can operate in succession for the same fault, potentially resulting in multiple counter readings for each fault on the overhead system. PE's MAIFI could be artificially higher due to the company's data collection approach. Figure 9 below shows PE's performance on the MAIFI from 2020 through 2024.

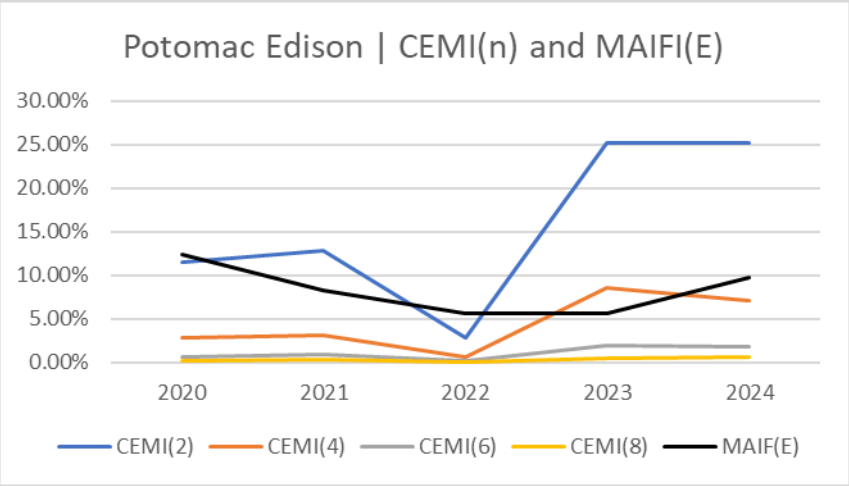
3.3. PE's $CEMI_n$ Performance

Using normalized data, PE's $CEMI_n$ indices show a mixed but generally concerning trend in 2024. PE's $CEMI_2$ metric remains elevated at 25.10%, nearly unchanged from 25.20% in 2023. This suggests PE has a sustained high proportion of customers experiencing two or more interruptions. However, PE's $CEMI_4$ improved from 8.50% in 2023 to 7.00% in 2024. Similarly, $CEMI_6$ slightly decreased from 1.90% to 1.70%. Conversely, $CEMI_8$ increased from 0.40% in 2023 to 0.60% in 2024, a negative development that indicates more customers are experiencing eight or more sustained interruptions. These patterns suggest that a significant subset of customers continue to

[12] PE can report only MAIFI, not $MAIFI_E$. PE does not have smart meters and must rely on gathering data by manually reading counters from line reclosers annually.

face frequent interruptions, which could impact customer satisfaction and potentially damage electrical equipment due to repeated power disruptions. Figure 9 shows PE's performance on the CEMIn from 2020 through 2024.

Figure 9: PE $CEMI_n$ and MAIFI Performance – 2020-2024



3.4. PE's CapEx and O&M Expenditure to Support Reliable Electric Service[13]

3.4.1. Distribution CapEx and O&M Spending

PE's distribution CapEx and O&M spending to maintain reliability show varying trends between budgeted and actual spending. In 2024, PE budgeted $38.92 million in distribution CapEx but spent approximately $51.71 million, a 33% increase. Compared to PE's distribution CapEx spending in 2023, the company's 2024 distribution CapEx spending was approximately 4% higher, and the labor hours expended in 2024 decreased by about 14%. PE's distribution CapEx per hour spent in 2024 is $396.8/hour, which is higher than the 2023 value of $324.78/hour. This indicates that labor efficiency increased in 2024 compared to 2023.

[13] PE reported both distribution and transmission capex and O&M expenses for 2024.

PE's 2024 distribution O&M spending showed reverse trends. In 2024, PE's actual distribution O&M spending was $24.21 million, about 8% lower than the budgeted amount of $26.21 million. PE's distribution O&M per hour spent in 2024 is $288.67/hour, which is higher than the 2023 value of $228.69/hour. This indicates that labor efficiency increased in 2024 compared to 2023.

3.4.2. Transmission CapEx and O&M Spending

PE's 2024 transmission CapEx spending shows a different trend than the company's distribution CapEx spend. In 2024, PE budgeted $76.78 million for transmission capex, but the company only spent $58.75 million, an underspending of 23%. PE's transmission CapEx per hour spent in 2024 is $984.35/hour, which is lower than the 2023 value of $1,288.38/hour. This indicates that labor efficiency reduced in 2024 compared to 2023.

PE underspent on transmission O&M in 2024 by 30%, with the company spending $6.34 million, compared to budgeted $9.08 million. Overall, PE spent 22% higher in 2024 on transmission O&M compared to 2023. PE's transmission O&M per hour spent in 2024 is $462/hour, which is higher than the 2023 value of $271.68/hour. This indicates that labor efficiency increased in 2024 compared to 2023.

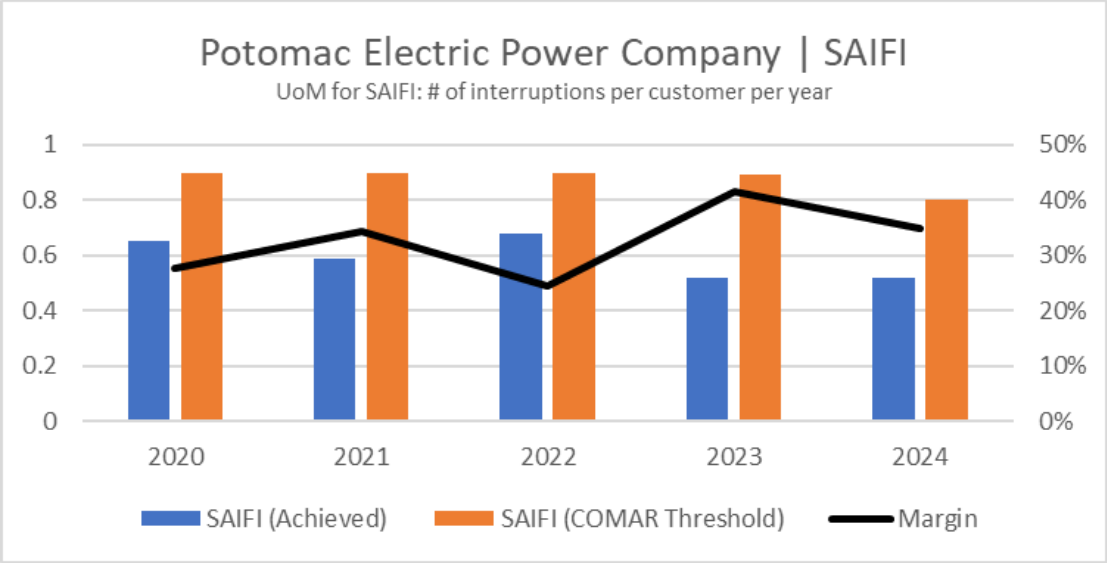
4. Pepco's 2024 Reliability Performance

Pepco met its 2024 SAIFI and SAIDI targets. Compared to 2023, Pepco also improved its average momentary interruptions and the number of customers experiencing multiple outages across its service territory. Pepco underspent its distribution O&M budget by 4%, but overspent its CapEx budget by 38%.

4.1. Pepco's SAIFI and SAIDI Performance

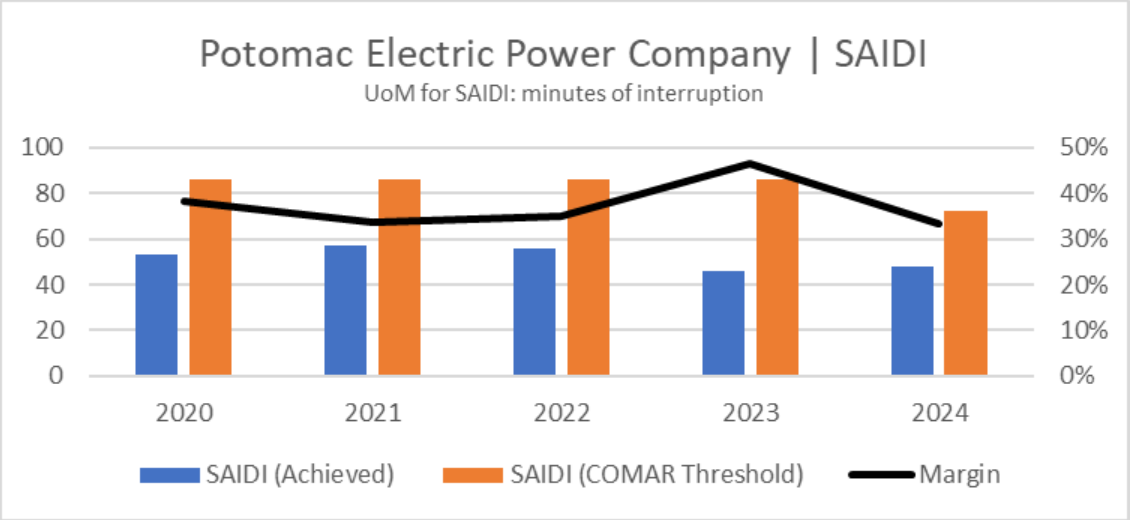
Pepco maintained strong reliability metrics in 2024. The company's SAIFI remained stable at 0.52, achieving a margin of 35% against 2024's more stringent target of 0.8. This highlights Pepco's continued high operational performance in limiting outage frequency. Pepco's SAIFI performance for 2020 through 2024 with the SAIFI margins it achieved during the same period is shown in Figure 10.

Figure 10: Pepco SAIFI Performance – 2020-2024



Pepco's 2024 SAIDI was 48 minutes in 2024, well below the company's target of 72 minutes, resulting in a margin of 33%. Pepco remains the best SAIDI performer the Maryland EDCs, demonstrating sustained customer value. Pepco's SAIDI performance for 2020 through 2024 is shown in Figure 11.

Figure 11: Pepco SAIDI Performance – 2020-2024



4.2. Pepco's $MAIFI_E$ Performance

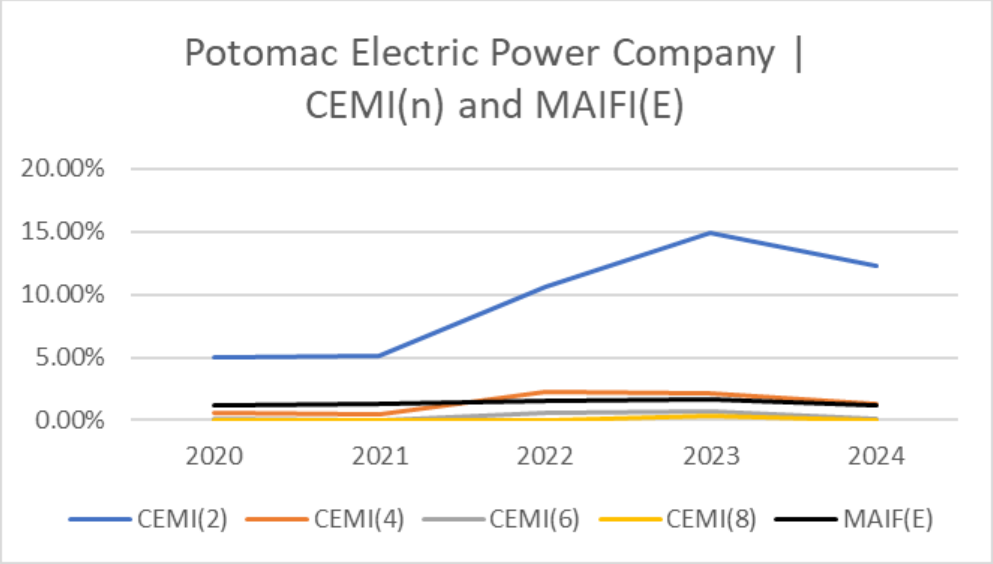
For 2024, Pepco reported a $MAIFI_E$ of 1.18%, reflecting an improvement from 2023. This decrease indicates a positive development where fewer customers are experiencing momentary interruptions, or the number of momentary interruptions has decreased overall. Despite this improvement in 2024, Pepco's $MAIFI_E$ remains above the 2020 level 1.13 percent, signaling some variability in performance over the five-year period. Compared to other Maryland EDCs, Pepco's 2024 $MAIFI_E$ is moderate. This suggests Pepco is making progress on momentary interruptions, but continued efforts are necessary to further reduce these events and improve overall service reliability. Figure 12 below shows Pepco's performance on the $MAIFI_E$ from 2020 through 2024.

4.3. Pepco's $CEMI_n$ Performance

Pepco's $CEMI_n$ matrix for 2024 shows overall improvement compared to 2023. From 2023 to 2024, Pepco's $CEMI_2$ improved from 14.88% to 12.33%, $CEMI_4$ improved from 2.08% to 1.27%, $CEMI_6$ improved from 0.76% to 0.07%, and $CEMI_8$ improved

from 0.29% to 0.00%. Pepco's positive trend in $CEMI_n$ contrasts somewhat with the earlier rising $MAIFI_E$ trend seen through 2023, suggesting that while momentary interruptions fluctuated, sustained interruption experiences improved in 2024. When compared to peer companies, Pepco's 2024 $CEMI_n$ performance is relatively strong. Figure 12 shows PEPCO's performance on the $CEMI_n$ from 2020 through 2024.

Figure 12: Pepco $CEMI_n$ and $MAIFI_E$ Performance – 2020-2024



4.4. Pepco's Transmission and Distribution CapEx and O&M Expenditure to Support Reliable Electric Service

4.4.1. Distribution O&M Spending

For distribution O&M expenditures, Pepco maintains a comparatively accurate budget forecasting. In 2024, Pepco budgeted $55.12 million for distribution O&M, but the company spent approximately $52.87 million, 4% less. In 2023, Pepco spent 3% more than its budgeted amount.

Compared to 2023, Pepco's total distribution O&M spending decreased by 15 %. Despite that decline, total labor expended by Pepco increased by 57% in 2024 to 144,317 hours. Pepco's distribution O&M per hour spent in 2024 is $366.35/hour, lower than the 2023 value of $674.39/hour. This indicates that labor efficiency declined in 2024 compared to 2023.

4.4.2. Transmission O&M Spending

For 2024, Pepco budgeted $10.14 million for transmission O&M spend. The company's actual transmission O&M spending for 2024 was $10.48 million, a 3% overspend. Per hour in 2024, Pepco spent $305 on transmission O&M, an increase from 2023. This indicates that labor efficiency increased in 2024 compared to 2023.

4.4.3. Transmission and Distribution CapEx Spending[14]

In 2024, Pepco spent $175.87 million in CapEx to support reliability upgrades. Compared to the company's budgeted $127.05 million, the company overspent by 38%. In 2023, Pepco overspent its budgeted CapEx by 45 %. Pepco's transmission and

[14] Like its affiliate DPL, Pepco did not provide a breakdown of transmission and distribution capex.

distribution CapEx per hour in 2024 is $542/hour, lower than the 2023 value of $561/hour. This indicates that labor efficiency declined in 2024 compared to 2023.

Though Pepco continues to perform well on its reliability metrics, the company continues to report wide discrepancies between budgeted and actual spending for transmission and distribution CapEx. Pepco should further improve its forecasting methodologies and better align its planning with actual expenditure trends, especially considering the significant financial and operational implications.

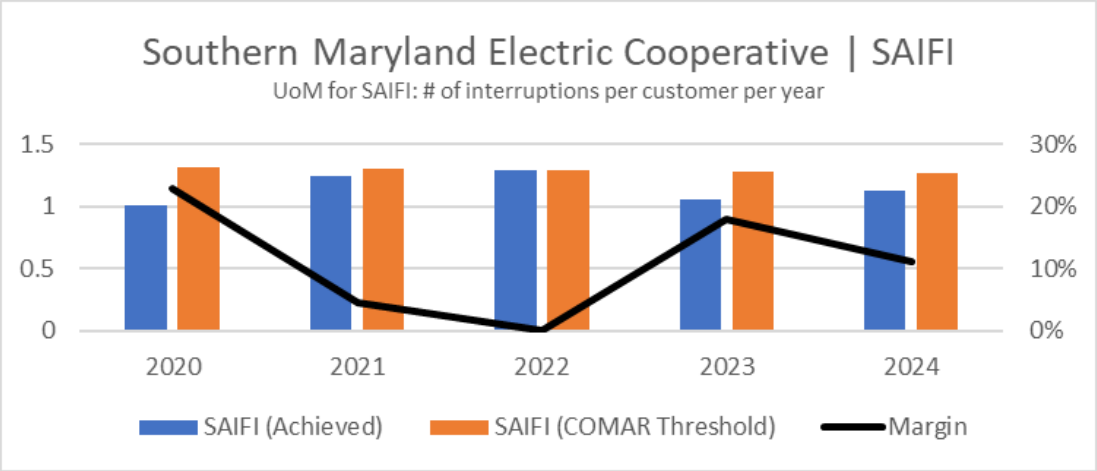
5. SMECO's 2024 Reliability Performance

SMECO met its 2024 SAIFI and SAIDI targets. Compared to 2023, the cooperative improved its performance in the number of momentary interruptions, but SMECO showed mixed results in the number of customers experiencing multiple interruptions across its service area. SMECO overspent its distribution O&M budget by 9% and underspent its CapEx budget by 17%.

5.1. SMECO's SAIFI and SAIDI Performance

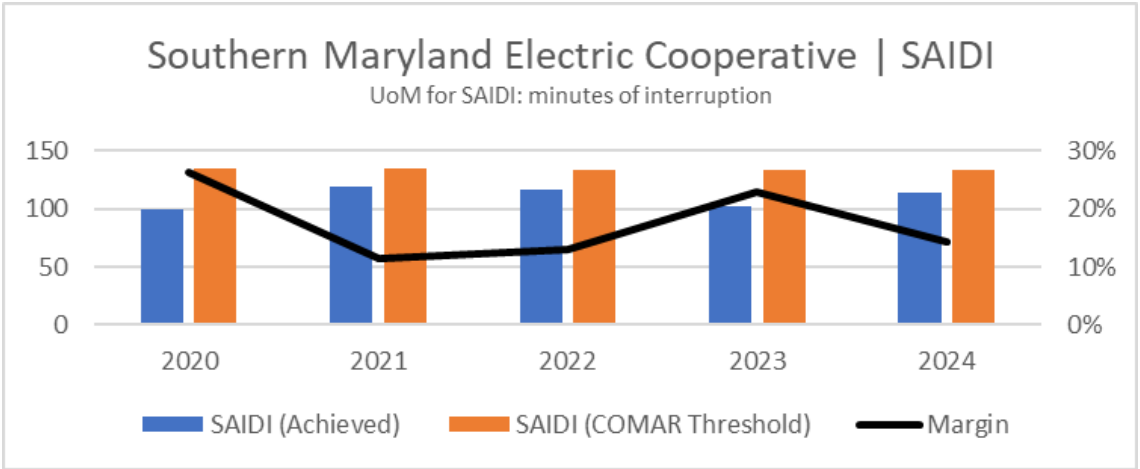
SMECO met its 2024 SAIFI target of 1.27 with a margin of 11%. This reflects a decrease from the 18% margin achieved in 2023. SMECO's SAIFI performance in 2024 is an improvement compared to pre-2023 data. SMECO's SAIFI performance for 2020 through 2024 is shown in Figure 13.

Figure 13: SMECO SAIFI Performance – 2020-2024



SMECO's 2024 SAIDI shows a deterioration compared to 2023. In 2024, SMECO recorded a SAIDI of 113.9 minutes against a target of 132.9 minutes, resulting in a 14% margin. SMECO's SAIDI performance for 2020 through 2024 is shown in Figure 14.

Figure 14: SMECO SAIDI Performance – 2020-2024



5.2. SMECO's $MAIFI_E$ Performance

SMECO continued to demonstrate strong performance in 2024 with a $MAIFI_E$ of 0.53%, improving further from 0.62 percent in 2023 and continuing a downward trend since 2020, when the $MAIFI_E$ was 3.26 percent. SMECO's 2024 $MAIFI_E$ is a continued

improvement on its 2020 $MAIFI_E$ of 3.26%. This consistent improvement signifies a reduction in momentary interruptions experienced by customers and reflects SMECO's effectiveness in managing momentary outages. Compared to other Maryland EDCs, SMECO has the lowest 2024 $MAIFI_E$. Figure 15 below shows SMECO's performance on the MAIFIE from 2020 through 2024.

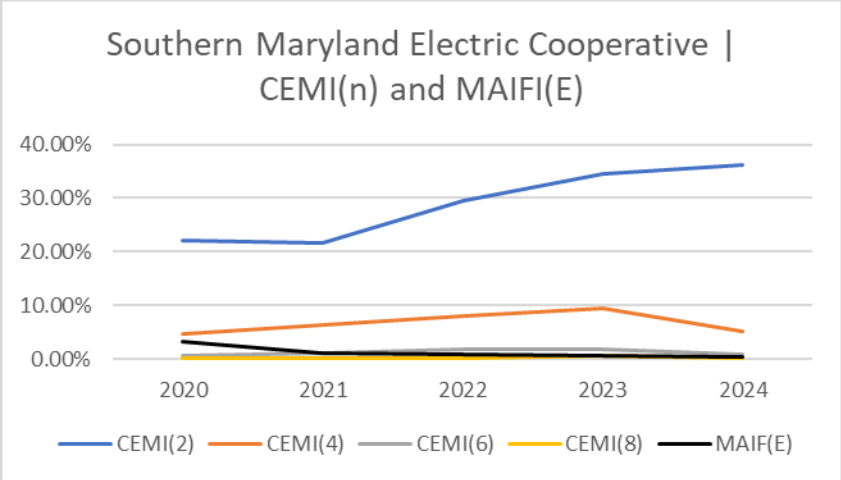
5.3. SMECO's $CEMI_n$ Performance

SMECO's 2024 $CEMI_n$ data revealed mixed results. The proportion of customers experiencing two or more sustained interruptions ($CEMI_2$) increased from 34.60% in 2023 to 36.30% in 2024, indicating more customers are facing multiple interruptions. In contrast, SMECO's $CEMI_4$ decreased significantly from 9.40% to 5.30%, $CEMI_6$ improved from 1.90% to 1.00%, and $CEMI_8$ decreased from 0.60% to 0.20%. This pattern indicates that SMECO has been effective in reducing the frequency of customers experiencing higher numbers of interruptions (four or more), but challenges remain in limiting the overall number of customers experiencing multiple sustained interruptions at the lower thresholds. The increase in $CEMI_2$ is notable and may warrant focused attention from SMECO to understand underlying causes and to improve reliability for a larger segment of its customer base.

SMECO's high $CEMI_2$ percentage contrasts with its low $MAIFI_E$, indicating that while momentary interruptions are low, sustained interruptions still affect a significant portion of its customers. This disparity highlights the complexity of reliability performance and the need for continued monitoring and targeted reliability improvements. Figure 15 shows SMECO's performance on the CEMIn from 2020

through 2024.

Figure 15: SMECO $CEMI_n$ and $MAIFI_E$ Performance – 2020-2024



5.4. SMECO's Transmission and Distribution CapEx and O&M Expenditure to Support Reliable Electric Service

5.4.1. Distribution O&M Spending

For 2024, SMECO budgeted $34.37 million for distribution O&M, but the company spent $37.52 million, representing a 9% overspend. SMECO's total distribution O&M spending in 2024 increased by 12% from 2023. SMECO's total labor expended for distribution O&M in 2024 also increased by approximately 7%, in line with the growth in its O&M budget. SMECO's distribution O&M spent per hour in 2024 was $137.8/hour, slightly higher than the 2023 value of $131.7/hour. This indicates that labor efficiency slightly increased in 2024 compared to 2023. This growth suggests a continued investment in maintaining system reliability, although SMECO must ensure cost efficiency is preserved with the increase in both spending and labor.

5.4.2. Transmission O&M Spending

SMECO's actual transmission O&M spending was $4.21 million in 2024, down 9% from the budgeted $4.64 million. This is consistent with the cooperative's trend in 2023. SMECO's actual transmission O&M spending in 2024 was virtually unchanged compared to 2023, when SMECO also spent $4.2 million. However, SMECO spent 29% less labor on transmission O&M in 2024, decreasing from 39,401 hours in 2023 to 28,067 hours in 2024. SMECO's transmission O&M per hour spent in 2024 is $150/hour, which is higher than the 2023 value of $106.6/hour. This indicates that labor efficiency increased in 2024 compared to 2023.

5.4.3. Transmission and Distribution CapEx Spending[15]

In 2024, SMECO spent $33.08 million to support reliability upgrades, which was 17% lower than its budgeted $39.76 million. SMECO spent 1% less in its actual aggregate CapEx spending in 2024 compared to 2023, when the cooperative spent $33.5 million. SMECO's labor utilization increased significantly, however, up 74% from 172,262 hours in 2023 to 300,345 hours in 2024. SMECO's transmission and distribution CapEx per hour spent in 2024 was $110.14/hour, lower than the 2023 value of $194.47/hour. This indicates that labor efficiency significantly declined in 2024 compared to 2023. SMECO's gap between budgeted and actual CapEx spending remains substantial. SMECO should improve its forecasting practices and streamline their internal processes and develop strategies to align budgeted and actual expenditures more closely.

[15] SMECO did not provide a breakdown of transmission and distribution capex.

COMMENTS

I. The Commission must reassess CapEx-heavy reliability strategies that fail to improve resilience.

Reliability and resilience are not distinct goals—they are two sides of the same coin. As the Commission's Electric Distribution System Resiliency Workgroup defines it, resilience is a utility's ability to withstand and recover from extreme, high-impact events.[16] These are precisely the types of outages that the RM43's 2022 surveys show Maryland ratepayers are concerned about the most—events that can last days, disrupt lives, and erode confidence in electric service.[17]

They also threaten long-term reliability. A grid that cannot recover from major storms will, over time, deteriorate in day-to-day performance. Without targeted planning for resilience, reliability gains become temporary. Maryland's EDCs have already achieved top-tier performance on traditional reliability metrics. But that success will not be meaningful for residential ratepayers unless the Commission holds utilities accountable for performance during major events. It is time to bring resilience into the center of utility oversight.

Not all spending contributes equally to resilience. OPC's analysis shows that EDCs are increasingly investing in capital-intensive projects that fail to deliver corresponding improvements in reliability or resilience. The solution to improved grid performance does

[16] Status Report of the Electric Distribution System Resiliency Workgroup, ML No. 314603 (CN 9353, Jan. 2, 2025) at 3.

[17] Pursuant to COMAR 20.50.12.02, each EDC filed customer perception survey results in the RM43 docket in March 2022. Some EDCs filed the results as part of their 2024-2027 reliability standards proposals, while other EDCs filed the results as separate filings. The survey results consistently showed that customers are most concerned about utility rates and long-duration interruptions.

not lie in EDCs indiscriminately increasing CapEx spend, but in targeted investments. In addition to SAIDI$^{(MED)}$, OPC assessed the relationship between increased CapEx and both reliability and resiliency metrics over the period from 2020 to 2024. Ultimately, OPC found little to no impact between increased CapEx spending and improving reliability and resiliency metrics.[18]

A. The Commission should require the EDCs to report SAIDI$^{(MED)}$ so stakeholders can continue to review resiliency performance.

To evaluate resilience performance, OPC used data from the annual reliability reports filed by Maryland's EDCs, focusing on a metric called SAIDI$^{(MED)}$. This metric isolates the duration of customer outages that occur during major event days. It is calculated as the difference between total SAIDI and the SAIDI excluding major event interruptions.[19] In short, SAIDI$^{(MED)}$ tells us how long customers were without power *during the worst days on the grid*.

To assess the resilience performance of Maryland's EDCs, OPC used various metrics provided by EDCs in their annual reliability reports, coupled with additional quantitative assessments. To ensure a sufficient sample size, OPC assessed SAIDI$^{(MED)}$ using the five-year period from 2020 through 2024. Figure 16 shows the SAIDI$^{(MED)}$ trend of Maryland EDCs from 2020 until 2024.

[18] More detail of the analysis is provided in Exhibits A and B attached to these comments.
[19] SAIDI$^{(MED)}$ is an industry-standard metric that is typically used to assess and measure the resiliency of an EDC, defined as: SAIDI$^{(MED)}$ = SAIDI for All Interruptions (minus) (SAIDI for All Interruptions (minus) IEEE Major Event Day Interruption Data).

Figure 16: SAIDI$^{(MED)}$ Performance of Maryland EDCs – 2020-2024

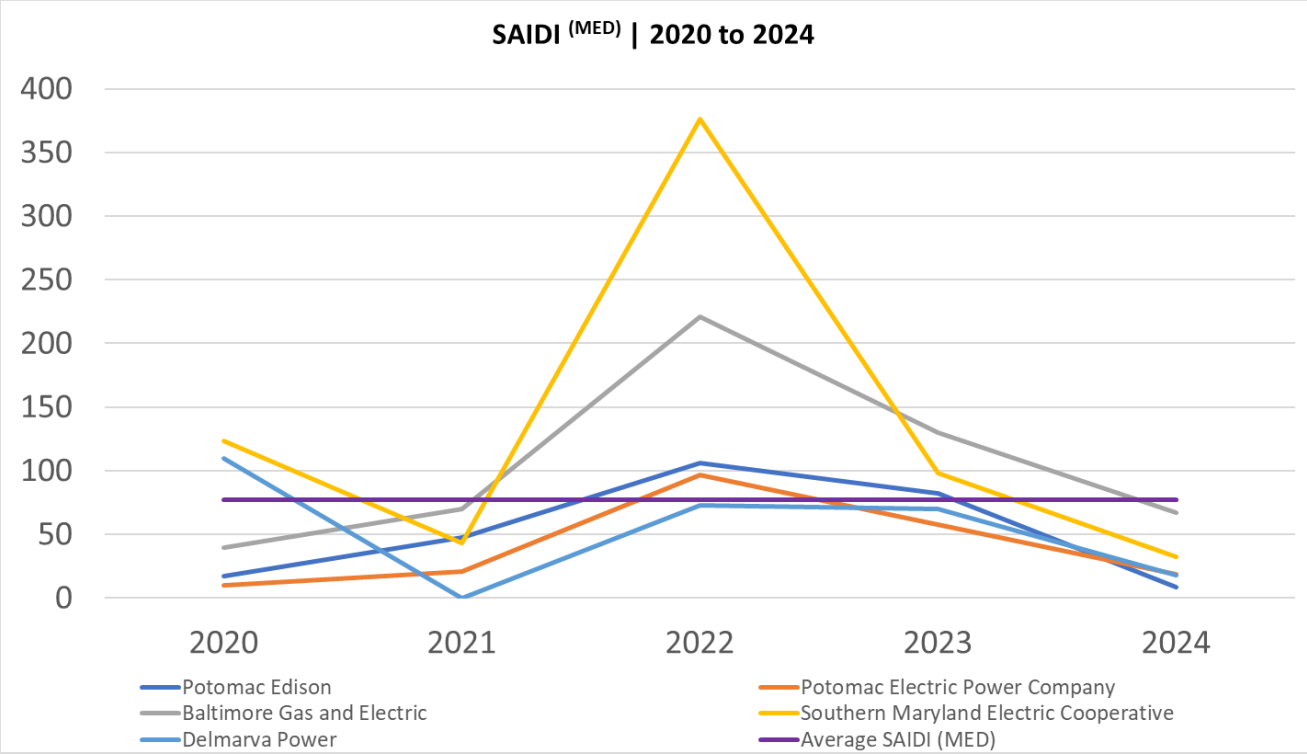


Table 2 below shows the overall reduction of SAIDI$^{(MED)}$ for all EDCs over the same five-year period. A negative value represents a reduction in the metric, which indicates higher resilience.

Table 2: SAIDI$^{(MED)}$ Performance of Maryland EDC 2020 - 2024

SAIDI (MED) Performance	2020	2021	2022	2023	2024	2020 - 2024
Electricity Distribution Utility	SAIDI (MED) | 2020	SAIDI (MED) | 2021	SAIDI (MED) | 2022	SAIDI (MED) | 2023	SAIDI (MED) | 2024	SAID (MED) Performance Over a 5-year Period
Potomac Edison	17.3	47.4	105.8	82.2	8.3	-52%
Potomac Electric Power Company	10	21	97	58	19	90%
Baltimore Gas and Electric	39.4	69.8	220.9	130.1	66.9	70%
Southern Maryland Electric Cooperative	123.3	43.3	376.3	98.4	32.1	-74%
Delmarva Power	110	0	73	70	18	-84%

PE, SMECO, and DPL showed significant improvement in SAIDI$^{(MED)}$, with the

duration of power outages decreasing between 52% and 84% over the five years reviewed. BGE and Pepco, however, showed a significant deterioration in SAIDI$^{(MED)}$ over the same five-year period. Notably, though, both BGE and Pepco currently perform well on traditional reliability metrics.

In 2024, the SAIDI$^{(MED)}$ of each EDC was below the five-year average SAIDI$^{(MED)}$ of all Maryland EDCs of 77.5 minutes. Based on the assessment of average SAIDI$^{(MED)}$ over the five-year period, SMECO is currently the least resilient EDC, followed by BGE. As shown in Figure 16, SMECO and BGE also display significantly less resilience to major weather events, such as those experienced in 2022. In 2022, SMECO and BGE experienced significant spikes in SAIDI $^{(MED)}$, while Maryland's other EDCs remained relatively stable.

It is critical to track the resiliency metric SAIDI$^{(MED)}$ for different Maryland EDCs on an ongoing annual basis, similar to how the Commission currently monitors reliability metrics SAIFI and SAIDI. It is insufficient for the Commission to track only SAIFI and SAIDI because they exclude major event days and mask the types of disruptions that matter most to customers. If the Commission continues to rely solely on these metrics, it will overlook the most severe challenges facing the grid. OPC recommends that the Commission require EDCs to report annual SAIDI$^{(MED)}$ results and consider possible minimum thresholds in COMAR.

B. Increased CapEx spending has not produced commensurate gains in resilience or reliability.

Despite growth in CapEx over the past five years, the data show no consistent correlation between higher CapEx and improved grid performance. In fact, in several

instances the relationship runs in the opposite direction. Quantitative data analysis reveals a weak relationship between increased CapEx spending and improvement in resiliency and reliability metrics SAIDI$^{(MED)}$, SAIDI, and SAIFI. Maryland's EDCs are reaching a point where increased CapEx spending has little to no impact on the improvement of grid performance. And the EDCs are recognizing this trend as well.[20] BGE acknowledged in its 2023 and 2024 annual reliability reports that the company's Reliability Process Initiative "has been indicating less need for full feeder construction projects due to diminishing returns on customer interruptions."[21] Similarly, SMECO stated in response to a data request that the cooperative's reliability indices show that "additional reliability improvement is flattening out and likely reaching the point of diminishing returns."[22] This analysis calls into question the cost-effectiveness of such continued spending. Instead, OPC's analysis suggests that lower-cost measures—like improved vegetation management and targeted CapEx investments—are required to improve Maryland EDC reliability and resiliency performance.

1. Increased CapEx spending does not consistently improve an EDC's SAIDI$^{(MED)}$ performance.

Using Pearson correlation coefficients—a common statistical measure that quantifies the strength and direction of a linear relationship between two variables—OPC assessed the linear relationship between CapEx and SAIDI$^{(MED)}$ for each EDC.[23] The

[20] BGE Response to OPC DR 6-1; SMECO Response to OPC DR 7-1.
[21] BGE 2024 Annual Performance Report at 6, 8; BGE 2023 Annual Performance Report at 5; *see also* BGE Response to OPC DR 6-1.
[22] SMECO Response to OPC DR 7-1.
[23] *See* Exhibit A.

results show that higher CapEx does not consistently reduce SAIDI$^{(MED)}$, suggesting other factors significantly influence resilience outcomes. The methodology used for OPC's analysis involved calculating the Pearson correlation coefficient (r). Put plainly:

- The Pearson correlation coefficient shows whether, and how much, **two variables move together**.
- The value of **r ranges from -1 to 1**:
    - **+1** means a **perfect positive relationship** (as one goes up, the other goes up).
    - **0** means **no relationship** (they do not seem connected).
    - **-1** means a **perfect negative relationship** (as one goes up, the other goes down).

Applied to CapEx spending and SAIDI$^{(MED)}$, the Pearson correlation coefficient operates as follows:

- Positive r: Higher CapEx is associated with higher SAIDI$^{(MED)}$ (i.e., worse resilience).
- Negative r: Higher CapEx is associated with lower SAIDI$^{(MED)}$ (i.e., better resilience).
- $r \approx 0$: No significant linear relationship between CapEx and SAIDI$^{(MED)}$.

OPC's analysis revealed the following:

- **PE**: r = 0.086

    - Very weak positive correlation. Higher CapEx is marginally associated with higher SAIDI$^{(MED)}$. CapEx has almost no linear relationship with SAIDI$^{(MED)}$.

- **Pepco**: r = 0.343
    - Moderate positive correlation. Higher CapEx is associated with higher SAIDI$^{(MED)}$, indicating worse resilience.
- **BGE**: r = 0.734
    - Strong positive correlation. Higher CapEx is associated with higher SAIDI$^{(MED)}$, indicating worse resilience.
- **SMECO**: r = -0.149
    - Very weak negative correlation. CapEx has a minimal linear relationship with SAIDI$^{(MED)}$.
- **DPL**: r = -0.193
    - Weaker negative correlation. CapEx has almost no linear relationship with SAIDI$^{(MED)}$.

In plain terms: three of five EDCs showed no meaningful correlation between higher CapEx and improved SAIDI$^{(MED)}$. For the other two EDCs—Pepco and BGE—higher capital spending correlated with worse resilience outcomes. These findings undermine the presumption that capital projects inherently strengthen the grid.

2. CapEx spending has a weak correlation to avoided customer interruptions and avoided outage minutes per customer.

OPC also used the Pearson correlation coefficient to analyze the relationship between CapEx spending and both cost per interruption avoided per customer and cost per outage minute avoided per customer. Unlike more limited methods that look at only cost per customer or cost per avoidance, OPC's combined analysis considered how much each affected customer is paying for each avoidance. Then, OPC assessed the relationship between increased CapEx spending and per-customer costs to achieve avoided outages. OPC found weak correlations across all utilities, meaning that increased CapEx spending did not consistently lead to more cost-effective outage avoidance for affected customers.[24]

As shown below, OPC developed three new metrics for this analysis: CapEx per Customer Affected, Cost Per Customer Interruption Avoided, and Cost Per Customer-Minute Outage Avoided. OPC developed two additional metrics—Cost per Interruption Avoided per Customer, and Cost per Outage Minute Avoided per Customer—to normalize the previously developed metrics based on the number of customers affected. The analysis uses data from 2020 to 2024 for CapEx (in millions of dollars), Customers Affected, Customer Interruptions Avoided, and Customer Outage Minutes Avoided. The metrics were calculated as follows, with CapEx being the EDC-reported CapEx spending each year:[25]

[24] *See* Exhibit B.

[25] Because not all EDCs report separate distribution and transmission capex figures, OPC used total capex to normalize results across the ECs.

- **Per-Customer Calculation:**
    - CapEx per Customer Affected: CapEx ÷ Customers Affected.
    - Cost per Interruption Avoided per Customer: CapEx ÷ Customer Interruptions Avoided ÷ Customers Affected.
    - Cost per Outage Minute Avoided per Customer: CapEx ÷ Customer Outage Minutes Avoided ÷ Customers Affected.
- **Overall Calculations:**
    - Cost Per Customer Interruption Avoided: CapEx × 1,000,000 ÷ Customer Interruptions Avoided.
    - Cost Per Customer-Minute Outage Avoided: CapEx × 1,000,000 ÷ Customer Outage Minutes Avoided. Negative values indicate worse reliability (i.e., more interruptions or outage minutes than the previous year).

Using data for Customer Interruptions Avoided and Customer Outage Minutes Avoided over the period from 2020 through 2024, the analysis reveals weak correlations between CapEx spending and these metrics across all EDCs (Pearson correlation coefficients ranging from -0.114 to -0.127). SMECO shows the strongest positive correlation for interruptions (0.63), while BGE shows a moderate negative correlation for outage minutes (-0.22).

Overall, the results confirm that higher CapEx does not reliably yield fewer interruptions or shorter outages per customer dollar. The variability in outcomes—especially in years like 2022, where performance cratered across several utilities—

suggests that external conditions, operational practices, and project targeting play a far larger role than raw capital spending.

C. The Commission should redirect focus toward targeted CapEx and enhanced O&M.

The analysis completed above shows that the improvement in CapEx-driven upgrades does not provide commensurate improvements in $SAIDI^{(MED)}$, SAIDI, and SAIFI. Maryland's EDCs appear to be reaching a point of diminishing returns on traditional capital-intensive investments. Though CapEx-driven upgrades may have a place in the mix of solutions that need to be implemented to address EDCs' long-term reliability needs, the Commission should encourage EDCs to prioritize lower-cost, higher-impact solutions like vegetation management and targeted feeder upgrades. Targeted CapEx and O&M spending is important to gain the most efficiency and effectiveness of these spends on reliability and resilience metrics going forward.

II. The method that the Commission and stakeholders use to evaluate annual EDC reliability reports must evolve to meet new challenges and expectations.

As requested by the Commission last year, OPC recommends several changes to the annual evaluation of Maryland EDC reliability performance. OPC's recommendations are centered around additional metrics that the EDCs should track and report to the Commission each year, and which other stakeholders will use to evaluate the performance of the EDCs.

Maryland's current approach to evaluating electric reliability needs a reset. Despite years of steadily rising reliability standards and hundreds of millions in utility capital spending, the value to ratepayers is increasingly unclear. The Commission's Reliability

Targets Work Group ("RTWG") process focused on system-wide performance metrics—like SAIDI and SAIFI—that obscure deeper problems related to cost-effectiveness and resilience. These metrics can reward expensive capital projects that yield diminishing returns while failing to capture what matters most to customers: avoiding prolonged, disruptive outages and ensuring the grid can withstand major events.

We recommend a set of targeted reforms to bring the Commission's reliability oversight in line with economic logic and lived customer experience. We urge the Commission to (1) adopt $SAIDI^{(MED)}$ as a tracked metric; (2) require EDCs to perform and publish benefit-cost analyses ("BCAs") when proposing reliability investments; and (3) elevate targeted, lower-cost O&M strategies—especially vegetation management—over capital-intensive projects that often fail to deliver measurable benefits.

A. The Commission should require EDCs to report $SAIDI^{(MED)}$ in the annual reliability reports.

The Commission should enhance its overall focus beyond the reliability metrics it currently tracks—SAIDI, SAIFI, CAIDI, $CEMI_n$, and $MAIF_E$. Specifically, the Commission should incorporate $SAIDI^{(MED)}$ as one of the metrics it tracks on an annual basis.

The Commission's current reliability reporting framework misses the mark by excluding one of the most critical metrics of all: $SAIDI^{(MED)}$, or the System Average Interruption Duration Index for Major Event Days. Unlike SAIDI or SAIFI, which track routine outages, $SAIDI^{(MED)}$ captures how a utility performs when it matters most—during storms, extreme weather, or other high-impact events.

This is not a theoretical concern. Major event days now account for a significant share of customer outage minutes, and the trend is worsening. As climate impacts increase

the frequency and severity of storms, resilience must be part of the reliability conversation. SAIDI$^{(MED)}$ does exactly that. It quantifies how quickly and effectively a utility can restore service during widespread disruptions.

The Commission should require utilities to report SAIDI$^{(MED)}$. Without it, the most disruptive outages are left out of the evaluation process entirely.

B. The Commission should require EDCs to perform a benefit-cost analysis ("BCA") when deciding between a CapEx and O&M reliability solutions for a specific reliability need.

A BCA provides a structured framework to systematically compare the costs of CapEx investments (e.g., infrastructure upgrades, grid modernization) against quantifiable benefits, such as reduced customer interruptions and outage minutes. By assigning monetary values to both costs and benefits, a BCA enables stakeholders to assess whether investments deliver sufficient value. For instance, total EDC CapEx spending ranged from $25.38 million to $451.15 million from 2020 to 2024, but the correlation with cost-effectiveness metrics (e.g., Cost Per Interruption Avoided per Customer) was negligible. A BCA can clarify whether these expenditures are justified.

Similarly, a BCA helps prioritize projects with the highest return on investment. In OPC's analysis, negative values for metrics like Cost Per Interruption Avoided per Customer suggest that some CapEx investments may not have yielded expected reductions in outages. By applying a BCA, decisionmakers can identify which projects (e.g., grid hardening vs. automation systems) provide the most significant reduction in outages per dollar spent, ensuring efficient allocation of limited resources.

CapEx projects often have long-term impacts that may not be immediately

reflected in annual metrics, as evidenced by the weak correlation (-0.114) between CapEx and the Cost Per Interruption Avoided per Customer. A BCA could include long-term benefits, such as enhanced grid reliability, reduced maintenance costs, and improved customer satisfaction, which may not be captured in short-term metrics like outage minutes avoided.

A BCA also provides a transparent methodology that communicates the rationale for investment decisions to stakeholders, including regulators, customers, and investors. For EDCs like BGE with high CapEx spending without commensurate reductions in interruptions,, a BCA can justify expenditures by demonstrating how benefits (e.g., future outage prevention) outweigh costs. This transparency is critical for maintaining public and regulator trust.

As observed in cases where customer interruptions increased despite high CapEx, CapEx investments may fail to deliver expected outcomes. A BCA can preempt this result by quantifying risks (e.g., weather-related outages) and their impact on benefits, thereby helping EDCs develop contingency plans and prioritize resilient infrastructure investments.

Finally, a BCA enables benchmarking of cost-effectiveness across EDCs, such as comparing PE's CapEx efficiency (e.g., $69.92 million in 2020) with BGE ($357.75 million in 2020). By standardizing the evaluation of costs and benefits, a BCA highlights best practices and identifies areas for improvement, fostering collaboration and knowledge-sharing among EDCs.

C. Reliability oversight should prioritize targeted, cost-effective strategies over broad capital projects.

There is a weak correlation between CapEx investments and reliability improvements. OPC's analysis of the 2020–2024 data revealed negligible correlations between CapEx spending and key cost-effectiveness metrics: -0.114 for Cost Per Interruption Avoided per Customer and -0.127 for Cost Per Outage Minute Avoided per Customer. This suggests that large-scale capital projects—like grid modernization or new infrastructure—may not translate into short-term reductions in outages and interruptions. In contrast, targeted O&M investments—focused on routine maintenance, vegetation management, and operational efficiencies—can directly address immediate causes of outages (e.g., equipment failures, tree-related disruptions), offering faster and more measurable reliability improvements.

Similarly, targeted strategies deliver more immediate and flexible improvements than largescale capital projects. Unlike large CapEx projects, which often involve long-term infrastructure upgrades with benefits realized over years (e.g., new substations or grid automation systems), targeted investments deliver more immediate results. For instance, proactive maintenance activities like equipment inspections, repairs, and vegetation management can prevent outages caused by aging infrastructure or environmental factors.

O&M methods—like vegetation management—tend to deliver more cost-effective reliability improvements. EDCs with high CapEx (e.g., BGE, with $268.7 million in 2023 distribution CapEx) did not consistently achieve positive cost-effectiveness metrics, while lower O&M budgets (e.g., Southern Maryland Electric Cooperative, $37.66 million

in transmission and distribution in 2023) often coincided with favorable reliability outcomes (49,517,154 minutes avoided). O&M activities—such as predictive maintenance using data analytics or rapid response teams—are often less costly than capital projects and can target high-impact areas (e.g., critical feeders with frequent outages). By prioritizing O&M over CapEx solutions, EDCs would likely achieve greater cost-effectiveness per interruption or outage minute avoided.

O&M solutions do not risk the same delays faced by large capital projects. CapEx projects often face delays due to regulatory approvals, supply chain issues, or construction challenges. These delays can result in negative reliability outcomes. O&M investments, such as regular equipment testing or workforce training, are less susceptible to such risks and can be implemented incrementally.

Also, O&M solutions and targeted strategies can better address external factors driving most electric outages. The data suggests that external factors, such as weather events or vegetation interference, significantly impact outages. O&M investments directly address these factors through activities like tree trimming, storm preparedness, and rapid restoration protocols. For example, enhanced vegetation management can prevent outages caused by fallen branches, a common issue for EDCs like DPL. Increasing O&M budgets for such targeted interventions can reduce outage frequency and duration more effectively than capital-intensive solutions.

Targeted O&M strategies also complement long-term capital projects and investments. While major CapEx projects can be essential for long-term infrastructure upgrades, targeted O&M ensures the sustained performance of existing and new assets.

For instance, a new substation (a CapEx spend) requires regular maintenance (an O&M spend) to operate reliably. By increasing O&M investments, EDCs can maximize the effectiveness of prior CapEx projects, ensuring that infrastructure investments deliver sustained benefits rather than degrading due to inadequate maintenance.

O&M investments can include advanced technologies—like predictive maintenance tools, outage management systems, and data analytics—that enable EDCs to identify and address reliability issues proactively. The variability in cost-effectiveness metrics across EDCs (e.g., Pepco's positive 0.0379 Cost Per Interruption Avoided per Customer in 2021 vs. SMECO's -0.0261) suggests that targeted O&M interventions could stabilize outcomes. By investing in O&M-driven analytics, EDCs can prioritize high-risk areas, reducing the likelihood of negative reliability metrics and optimizing resource allocation.

D. Vegetation management is a cost-effective, high-impact reliability strategy that should be prioritized.

Tree-related outages are one of the most frequent and preventable causes of service interruptions in Maryland. Yet many utilities continue to prioritize costly capital upgrades—like automation or new substations—while underinvesting in the basic O&M strategy that could yield immediate visible gains: proactive vegetation management.

Vegetation interference is a leading cause of outages, especially during storms. OPC's analysis of 2020–2024 data reveals troubling inconsistencies between utility spending and reliability outcomes, including multiple years where EDCs recorded

negative customer outage minutes avoided despite high capital expenditures.[26] These results suggest that weather and vegetation—not aging infrastructure—are driving much of the unreliability that capital spending fails to fix.

Unlike capital projects, which can take years to deliver benefits, vegetation management has immediate and measurable impacts. Regular trimming, removal of hazardous trees, and right-of-way clearing directly reduce outages caused by falling limbs and overgrowth. These activities are cheaper, faster to deploy, and less vulnerable to regulatory or construction delays. And unlike speculative grid modernization, the benefits of vegetation management show up quickly in metrics like SAIFI and SAIDI.

Vegetation management also enhances grid resilience, helping the system withstand extreme weather events. By mitigating the single most common cause of storm-related outages, this strategy reduces both outage frequency and duration. And it doesn't just protect current infrastructure—vegetation management ensures that past and future capital investments actually deliver value, rather than being compromised by preventable vegetation impacts.

For these reasons, the Commission should direct EDCs to prioritize vegetation management in their annual reliability planning. Every dollar redirected from ineffective capital projects to targeted vegetation work will deliver more immediate and visible improvements for ratepayers.

[26] For example, Pepco reported -9,018,661 customer outage minutes in 2021, and BGE reported -211,362,555 customer outage minutes in 2022. The numbers were calculated as follows: Customer Outage Minutes Avoided for PEPCO (2021) = 36,887,567 (2020) − 45,906,228 (2021) = −9,018,661 minutes; Customer Outage Minutes Avoided for BGE (2022) = 193,561,980 (2021) − 404,924,535 (2022) = −211,362,555 minutes.

III. The Commission should require Potomac Edison to submit a corrective action plan.

As discussed above, Potomac Edison ("PE") failed to meet both its SAIFI and SAIDI targets for 2024. In its annual reliability filing, PE attributes this performance failure to two primary causes: animal-caused outages at specific substations and increased storm activity throughout its service territory. As explained in preceding sections, reliability and resilience are fundamentally interconnected, and the most effective way to maintain and improve distribution grid performance is through targeted, cost-effective strategies—not indiscriminate capital spending.

Given PE's explanation for its failure to meet reliability standards, we recommend that the Commission require PE's response to align with the cost-effective, targeted principles outlined in these comments. Rather than imposing a financial penalty, the Commission should direct PE to file a corrective action plan. That plan should identify the underlying causes of the company's failure to meet the reliability targets and provide a detailed explanation of lower-cost or more targeted strategies that PE could have implemented to prevent or mitigate those causes. For example, the plan could include enhanced vegetation management practices, targeted improvements to specific feeders, or improved animal containment protocols at substations and other sensitive locations.

Looking ahead, PE's reliability filings should also include a cost-effectiveness assessment of any proposed reliability-related investment. These filings should be structured in a way that enables public stakeholders to review and comment on the company's plans. By requiring PE to justify its proposed strategies not only on technical grounds but also on cost-effectiveness—and by making those plans subject to public

scrutiny—the Commission can help ensure that PE's future investments deliver tangible, measurable benefits to ratepayers.

CONCLUSION

The Commission's oversight of electric reliability must evolve to meet the moment. Maryland's electric distribution companies are reaching the point of diminishing returns on traditional reliability metrics—yet customer expectations, extreme weather risks, and affordability challenges continue to rise. This disconnect demands a strategic pivot.

We urge the Commission to reorient its evaluation framework toward cost-effective, real-world outcomes. That means expanding tracked metrics to include $SAIDI^{(MED)}$, requiring benefit-cost analyses for major investments, prioritizing low-cost O&M strategies like vegetation management, and demanding accountability from utilities like Potomac Edison when performance falls short.

Maryland ratepayers are not served by blind spending or generic upgrades—they are served by deliberate, transparent, and evidence-based investments that reduce the frequency and duration of outages. The Commission has the tools to lead this shift. These comments offer a practical roadmap for doing so. We respectfully urge the Commission to adopt OPC's recommendations and bring its reliability oversight into alignment with the needs—and the realities—of Maryland's electric customers.

[Continued for signatures]

Respectfully submitted,

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Dated: July 8, 2025.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 8th day of July 2025, the foregoing Comments of the Maryland Office of People's Counsel were e-mailed to all parties of record to this proceeding.

/electronic signature/
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EXHIBIT A

Analysis of CAPEX and SAIDI$^{(MED)}$ Relationship | 2020 through 2024

Introduction

This memo evaluates the relationship between Capital Expenditure (CAPEX)[1] and System Average Interruption Duration Index (SAIDI) with Major Event Days (MED) included, referred to as SAIDI$^{(MED)}$,[2] for Potomac Edison, Potomac Electric Power Company, Baltimore Gas and Electric, Southern Maryland Electric Cooperative, and Delmarva Power, using data from 2020 to 2024. The analysis tests the hypothesis that increased CAPEX does not necessarily lead to lower SAIDI$^{(MED)}$, where lower SAIDI$^{(MED)}$ indicates improved resilience. Using Pearson correlation coefficients, we assess the linear relationship between CAPEX and SAIDI$^{(MED)}$ (in minutes) for each utility. The results reinforce the position that higher CAPEX does not consistently reduce SAIDI$^{(MED)}$, suggesting other factors significantly influence resilience outcomes.

Dataset

- **Potomac Edison**:
  - SAIDI$^{(MED)}$: [17.3, 47.4, 105.8, 82.2, 8.3]
  - CAPEX: [69.92, 77.51, 89.03, 104.56, 110.46]
- **Potomac Electric Power Company**:
  - SAIDI$^{(MED)}$: [10, 21, 97, 58, 19]
  - CAPEX: [119.84, 137.54, 152.45, 180.94, 175.87]
- **Baltimore Gas and Electric**:
  - SAIDI$^{(MED)}$: [39.4, 69.8, 220.9, 130.1, 66.9]
  - CAPEX: [357.75, 397.71, 444.77, 451.15, 428.36]
- **Southern Maryland Electric Cooperative**:
  - SAIDI$^{(MED)}$: [123.3, 43.3, 376.3, 98.4, 32.1]
  - CAPEX: [25.38, 25.76, 28.67, 33.49, 33.08]
- **Delmarva Power**:
  - SAIDI$^{(MED)}$: [110, 0, 73, 70, 18]
  - CAPEX: [76.46, 70.10, 60.66, 65.59, 80.74]

[1] CAPEX reflects investments in infrastructure and upgrades, typically expected to enhance resilience.
[2] SAIDI$^{(MED)}$ measures the average outage duration per customer, excluding major event days, serving as a key resilience metric.

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Methodology

The Pearson correlation coefficient (r) was calculated to assess the linear relationship between SAIDI$^{(MED)}$ and CAPEX for each utility. The coefficient ranges from -1 to 1:

- Positive r: Higher CAPEX is associated with higher SAIDI$^{(MED)}$ (worse resilience).
- Negative r: Higher CAPEX is associated with lower SAIDI$^{(MED)}$ (better resilience).
- r ≈ 0: No significant linear relationship.

The formula used is:

$$r = \frac{\sum(x_i - \bar{x})\,(y_i - \bar{y})}{\sqrt{\sum(x_i - \bar{x})^2 \sum(y_i - \bar{y})^2}}$$

where x_i is SAIDI$^{(MED)}$, y_i is CAPEX, and $\bar{x}$, $\bar{y}$ are their respective means.

Results

The correlation coefficients for each utility, based on 2020–2024 data, are as follows:

1. **Potomac Edison**: r = 0.086
    a. Very weak positive correlation. Higher CAPEX is marginally associated with higher SAIDI$^{(MED)}$. CAPEX has almost no linear relationship with SAIDI$^{(MED)}$.
2. **Potomac Electric Power Company**: r = 0.343
    a. Moderate positive correlation. Higher CAPEX is associated with higher SAIDI$^{(MED)}$, indicating worse resilience.
3. **Baltimore Gas and Electric**: r = 0.734
    a. Strong positive correlation. Higher CAPEX is associated with higher SAIDI$^{(MED)}$, indicating worse resilience.
4. **Southern Maryland Electric Cooperative**: r = -0.149
    a. Very weak negative correlation. CAPEX has a minimal linear relationship with SAIDI$^{(MED)}$.
5. **Delmarva Power**: r = -0.193
    a. Weaker negative correlation, but the relationship is negligible.

Discussion

The results support the hypothesis that increased CAPEX does not necessarily translate to lower SAIDI$^{(MED)}$. Key findings include:

1) **Inconsistent Impact**: The coefficients range from -0.193 to 0.734, reflecting diverse relationships across utilities. Positive correlations (Potomac Edison, Potomac Electric, Baltimore Gas) are counterintuitive, as higher CAPEX is expected to reduce SAIDI. Southern Maryland Electric Cooperative, and Delmarva Power show very weak negative correlations (-0.149, and -0.193), suggesting a negligible improvement in resilience with higher CAPEX. These correlations are too weak to indicate a meaningful relationship.
2) **Counterintuitive Trends**: Potomac Electric Power Company and Baltimore Gas and Electric exhibit stronger positive correlations (0.343 and 0.734), where higher CAPEX is associated with higher SAIDI$^{(MED)}$, indicating worse resilience.
3) **Possible Explanations**:
   a) **External Influences**: Operational practices, O&M measures such as vegetation management, which is the leading cause of customer outages with MD EDCs, and the time required to restore customers, especially after major events, maintenance strategies, or minor outages (even with MED excluded) may drive SAIDI$^{(MED)}$ more than CAPEX spend.
   b) **Lagging Effects**: Infrastructure investments may require years to impact SAIDI$^{(MED)}$, as upgrades take time to implement and stabilize. This was one of the comments PE made in response to a recent DR as well.
   c) **Non-Resilience Investments**: CAPEX may prioritize capacity expansion or regulatory compliance over resilience, limiting its effect on SAIDI$^{(MED)}$.
   d) **Data Variability**: Significant fluctuations (e.g., Southern Maryland's SAIDI$^{(MED)}$ of 376.3 in 2022, Delmarva Power's 0 in 2021) suggest potential outliers, but that should be considered in the context of factors affecting correlations.

Conclusion

The analysis confirms that increased CAPEX does not consistently lead to lower SAIDI$^{(MED)}$ across the five utilities from 2020 to 2024. Potomac Edison, Southern Maryland Electric Cooperative, and Delmarva Power show negligible negative correlations, while Potomac Electric Power Company and Baltimore Gas and Electric show strong positive correlations, indicating worse resilience with higher CAPEX. These findings highlight that CAPEX alone is not a reliable driver of SAIDI$^{(MED)}$ performance. Other factors, such as O&M expenses, enhanced vegetation management, focused investments, both CAPEX and OPEX, project implementation timelines, or external conditions, likely play significant roles in resilience outcomes.

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EXHIBIT B

Cost-Effectiveness Analysis of Electricity Distribution Utilities Reliability Metrics - Interruptions Avoided and Customer Outage Minutes Avoided |Assessment Period – 2020 through 2024

Introduction

This report assesses the cost-effectiveness of CAPEX for five utilities—Potomac Electric Power Company, Potomac Edison, Baltimore Gas and Electric, Southern Maryland Electric Cooperative, and Delmarva Power—from 2020 to 2024, using per-customer and total metrics, with 2019–2023 data as baselines for each year. The analysis focuses on Customer Interruptions Avoided and Customer Outage Minutes Avoided, both of which are measures for distribution system reliability. The analysis, conducted per customer and in total, reveals varied performance. Potomac Edison excels in 2020 with the lowest costs per interruption ($573.89) and per minute ($1.02), while Southern Maryland Electric Cooperative achieves the lowest costs in 2023 ($319.21 per interruption, $0.68 per minute). Frequent negative outcomes, particularly in 2022, indicate that CAPEX alone does not consistently improve reliability. The 2023 recovery across utilities suggests a lesser impact of weather, such as storm events, which had a significant impact in 2022, though results vary in 2024.

Using data for Customer Interruptions Avoided and Customer Outage Minutes Avoided over a five period from 2020 through 2024, the analysis reveals weak correlations between CAPEX spend and these metrics across all utilities (Pearson correlation coefficients ranging from -0.063 to 0.763). Southern Maryland Electric Cooperative shows the strongest positive correlation for interruptions (0.630), while Potomac Electric Power Company shows a very weak negative correlation for outage minutes (-0.052). These findings suggest that higher CAPEX does not consistently translate to lower costs per interruption or minute avoided, highlighting the influence of external factors or inefficiencies in capital allocation.

Methodology

The analysis uses data from 2020 to 2024, covering CAPEX (in millions), Customers Affected, Customer Interruptions Avoided, and Customer Outage Minutes Avoided. Metrics are calculated as follows:

- CAPEX: Capital Expenditure, excluding O&M.

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- **Per-Customer Analysis:**
  - CAPEX per Customer Affected: CAPEX ÷ Customers Affected.
  - Cost per Interruption Avoided per Customer: CAPEX ÷ Customer Interruptions Avoided ÷ Customers Affected.
  - Cost per Outage Minute Avoided per Customer: CAPEX ÷ Customer Outage Minutes Avoided ÷ Customers Affected.

- **Total Analysis:**
  - Cost Per Customer Interruption Avoided: CAPEX × 1,000,000 ÷ Customer Interruptions Avoided.
  - Cost Per Customer-Minute Outage Avoided: CAPEX × 1,000,000 ÷ Customer Outage Minutes Avoided. Negative values indicate worse reliability (more interruptions or outage minutes than the previous year).

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Year 2020														
Electricity Distribution Utility	Outages		Customers Affected		Customer Interruptions Avoided	Customer Outage Minutes		Customer Outage Minutes Avoided	CAPEX (millions)	O&M (millions)	Cost Per Interruption Avoided (based on CAPEX spend only)	Cost Per Outage Minute Avoided (based on CAPEX spend only)	Cost Per Interruption Avoided per Customer (based on CAPEX spend only)	Cost Per Outage Minute Avoided per Customer (based on CAPEX spend only)
	2019	2020	2019	2020		2019	2020		2020	2020				
Potomac Electric Power Company	7,855	7,725	476,474	404,605	71,869	42,634,225	36,887,567	5,746,658	$ 119.84	$ 55.53	$ 1,667.50	$ 20.85	$ 0.00412	$ 0.0000515
Potomac Edison	7,253	5,493	382,195	260,368	121,827	105,698,686	36,960,793	68,737,893	$ 69.92	$ 21.16	$ 573.89	$ 1.02	$ 0.00220	$ 0.0000039
Baltimore Gas and Electric	21,334	20,350	1,374,731	1,250,427	124,304	166,960,622	153,544,440	13,416,182	$ 357.75	$ 172.78	$ 2,878.02	$ 26.67	$ 0.00230	$ 0.0000213
Southern Maryland Electric Cooperative	7,770	7,622	181,185	260,581	-79,396	18,827,692	37,448,745	-18,621,053	$ 25.38	$ 32.75	$ (319.66)	$ (1.36)	$ (0.00123)	$ (0.0000052)
Delmarva Power	3,911	4,306	216,136	240,228	-24,092	21,650,061	37,435,077	-15,785,016	$ 76.46	$ 23.40	$ (3,173.64)	$ (4.84)	$ (0.01321)	$ (0.0000202)

Year 2021														
Electricity Distribution Utility	Outages		Customers Affected		Customer Interruptions Avoided	Customer Outage Minutes		Customer Outage Minutes Avoided	CAPEX (millions)	O&M (millions)	Cost Per Interruption Avoided (based on CAPEX spend only)	Cost Per Outage Minute Avoided (based on CAPEX spend only)	Cost Per Interruption Avoided per Customer (based on CAPEX spend only)	Cost Per Outage Minute Avoided per Customer (based on CAPEX spend only)
	2020	2021	2020	2021		2020	2021		2021	2021				
Potomac Electric Power Company	7,725	7,394	404,605	395,420	9,185	36,887,567	45,906,228	-9,018,661	$ 137.54	$ 59.09	$ 14,973.94	$ (15.25)	$ 0.0379	$ (0.0000386)
Potomac Edison	5,493	6,075	260,368	296,465	-36,097	36,960,793	49,602,938	-12,642,145	$ 77.51	$ 26.68	$ (2,147.23)	$ (6.13)	$ (0.0072)	$ (0.0000207)
Baltimore Gas and Electric	20,350	21,560	1,250,427	1,339,856	-89,429	153,544,440	193,561,980	-40,017,540	$ 397.71	$ 174.56	$ (4,447.22)	$ (9.94)	$ (0.0033)	$ (0.0000074)
Southern Maryland Electric Cooperative	7,622	7,785	260,581	264,315	-3,734	37,448,745	27,449,011	9,999,734	$ 25.76	$ 33.83	$ (6,898.77)	$ 2.58	$ (0.0261)	$ 0.0000097
Delmarva Power	4,306	3,695	240,228	178,329	61,899	37,435,077	14,179,613	23,255,464	$ 70.10	$ 26.42	$ 1,132.42	$ 3.01	$ 0.0064	$ 0.0000169

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Year 2022														
Electricity Distribution Utility	Outages		Customers Affected		Customer Interruptions Avoided	Customer Outage Minutes		Customer Outage Minutes Avoided	CAPEX (millions)	O&M (millions)	Cost Per Interruption Avoided (based on CAPEX spend only)	Cost Per Outage Minute Avoided (based on CAPEX spend only)	Cost Per Interruption Avoided per Customer (based on CAPEX spend only)	Cost Per Outage Minute Avoided per Customer (based on CAPEX spend only)
	2021	2022	2021	2022		2021	2022		2022	2022				
Potomac Electric Power Company	7,394	7,745	395,420	589,529	-194,109	45,906,228	90,377,433	-44,471,205	$ 152.45	$ 59.55	$ (785.39)	$ (3.43)	$ (0.00133)	$ (0.00000581)
Potomac Edison	6,075	6,405	296,465	331,984	-35,519	49,602,938	68,108,636	-18,505,698	$ 89.03	$ 32.51	$ (2,506.64)	$ (4.81)	$ (0.00755)	$ (0.00001449)
Baltimore Gas and Electric	21,560	22,718	1,339,856	1,539,835	-199,979	193,561,980	404,924,535	- 211,362,555	$ 444.77	$ 176.68	$ (2,224.08)	$ (2.10)	$ (0.00144)	$ (0.00000137)
Southern Maryland Electric Cooperative	7,785	9,100	264,315	337,693	-73,378	27,449,011	84,696,354	-57,247,343	$ 28.67	$ 37.29	$ (390.72)	$ (0.50)	$ (0.00116)	$ (0.00000148)
Delmarva Power	3,695	4,167	178,329	196,206	-17,877	14,179,613	30,964,116	-16,784,503	$ 60.66	$ 23.57	$ (3,393.19)	$ (3.61)	$ (0.01729)	$ (0.00001842)

Year 2023														
Electricity Distribution Utility	Outages		Customers Affected		Customer Interruptions Avoided	Customer Outage Minutes		Customer Outage Minutes Avoided	CAPEX (millions)	O&M (millions)	Cost Per Interruption Avoided (based on CAPEX spend only)	Cost Per Outage Minute Avoided (based on CAPEX spend only)	Cost Per Interruption Avoided per Customer (based on CAPEX spend only)	Cost Per Outage Minute Avoided per Customer (based on CAPEX spend only)
	2022	2023	2022	2023		2022	2023		2023	2023				
Potomac Electric Power Company	7,745	7,594	589,529	402,438	187,091	90,377,433	61,776,029	28,601,404	$ 180.94	$ 72.79	$ 967.10	$ 6.33	$ 0.00240	$ 0.0000157
Potomac Edison	6,405	6,879	331,984	297,881	34,103	68,108,636	58,307,595	9,801,041	$ 104.56	$ 25.85	$ 3,065.87	$ 10.67	$ 0.01029	$ 0.0000358
Baltimore Gas and Electric	22,718	19,667	1,539,835	1,364,407	175,428	404,924,535	272,886,608	132,037,927	$ 451.15	$ 191.86	$ 2,571.73	$ 3.42	$ 0.00188	$ 0.0000025
Southern Maryland Electric Cooperative	9,100	7,146	337,693	232,792	104,901	84,696,354	35,179,200	49,517,154	$ 33.49	$ 37.66	$ 319.21	$ 0.68	$ 0.00137	$ 0.0000029
Delmarva Power	4,167	3,752	196,206	180,926	15,280	30,964,116	30,753,948	210,168	$ 65.59	$ 29.36	$ 4,292.65	$ 312.09	$ 0.02373	$ 0.0017250

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Year 2024														
Electricity Distribution Utility	Outages		Customers Affected		Customer Interruptions Avoided	Customer Outage Minutes		Customer Outage Minutes Avoided	CAPEX (millions)	O&M (millions)	Cost Per Interruption Avoided (based on CAPEX spend only)	Cost Per Outage Minute Avoided (based on CAPEX spend only)	Cost Per Interruption Avoided per Customer (based on CAPEX spend only)	Cost Per Outage Minute Avoided per Customer (based on CAPEX spend only)
	2023	2024	2023	2024		2023	2024		2024	2024				
Potomac Electric Power Company	7,594	6,861	402,438	368,923	33,515	61,776,029	40,194,786	21,581,243	$ 175.87	$ 63.35	$ 5,247.50	$ 8.15	$ 0.0142	$ 0.00002209
Potomac Edison	6,879	8,078	297,881	317,216	-19,335	58,307,595	47,727,386	10,580,209	$ 110.46	$ 30.55	$ (5,712.96)	$ 10.44	$ (0.0180)	$ 0.00003291
Baltimore Gas and Electric	19,667	19,747	1,364,407	1,177,906	186,501	272,886,608	204,578,056	68,308,552	$ 428.37	$ 213.78	$ 2,296.88	$ 6.27	$ 0.0019	$ 0.00000532
Southern Maryland Electric Cooperative	7,146	5,921	232,792	231,497	1,295	35,179,200	25,887,114	9,292,086	$ 33.08	$ 41.73	$ 25,544.40	$ 3.56	$ 0.1103	$ 0.00001538
Delmarva Power	3,752	3,852	180,926	156,589	24,337	30,753,948	17,887,045	12,866,903	$ 80.74	$ 24.06	$ 3,317.58	$ 6.28	$ 0.0212	$ 0.00004007

Discussion

Per-Customer Insights

- **Potomac Edison (2020):** Highly efficient with $0.00220 per interruption avoided and $0.00000390 per outage minute avoided, driven by significant reductions (121,827 interruptions, 68,737,893 minutes) with $69.92M CAPEX. Performance declines in 2021, 2022, and 2024 with negative outcomes. In 2020 through 2024, PE's CAPEX spend increases significantly, increasing from $69.9M in 2020 to $110.5M, an increase of 581%, whilst it showed negative performance in three out of five years.

- **Southern Maryland Electric Cooperative:** Lowest CAPEX per customer affected ($84.90 in 2022 to $143.87 in 2023), but negative outcomes in 2020–2022 limit efficiency. In 2023, it achieves $0.00137 per interruption and $0.00000291 per minute, the lowest across years, though 2024 sees a spike ($0.1103 per interruption due to only 1,295 interruptions avoided). Southern Maryland Electric Cooperative's CAPEX spend between 2023 and 2024 remained relatively flat.

- **Baltimore Gas and Electric:** Moderate CAPEX per customer ($286.13 in 2020 to $363.64 in 2024), it had the largest number of customers affected by outages (between 1.2M - 1.5M). Efficiency peaks in 2023 ($0.00188 per interruption), with consistent positive outcomes in 2020, 2023, and 2024. BGE has one of the highest CAPEX spends amongst Maryland EDC, which increased from $357.8M in 2020 to $451.2M in 2023, and $428.4M in 2024.

- **Potomac Electric Power Company:** High CAPEX per customer, peaking at $476.66 in 2024. Efficiency is strong in 2023 ($0.00240 per interruption) but weaker in 2021 ($0.0379 per interruption) due to minimal interruptions avoided (9,185).

- **Delmarva Power:** High CAPEX per customer (e.g., $515.62 in 2024), with strong efficiency in 2021 ($0.00635 per interruption) but negative outcomes in 2020 and 2022. The 2023 cost per minute ($0.00172) is high due to minimal minutes avoided (210,168).

Total Insights

- **2020:** Potomac Edison leads with $573.88 per interruption and $1.02 per minute, reflecting high efficiency with $69.92M CAPEX for 121,827 interruptions and 68,737,893 minutes avoided. Baltimore Gas follows ($2,877.89 per interruption, $26.67 per minute), while Southern Maryland Electric Cooperative (-$319.73 per interruption) and Delmarva (-$3,173.83 per interruption) show negative outcomes.

- **2021:** Delmarva excels ($1,132.69 per interruption, $3.01 per minute) with $70.10M CAPEX for 61,899 interruptions avoided. Potomac Electric ($14,974.96 per interruption) is less efficient due to low interruptions avoided (9,185). Others show negative outcomes, except Southern Maryland Electric Cooperative for minutes ($2.58).

- **2022:** All utilities exhibit negative outcomes, with Southern Maryland Electric Cooperative least negative (-$390.72 per interruption, -$0.50 per minute), suggesting systemic issues, possibly weather-related, such as severe impact of significant storms, or CAPEX misallocation.

- **2023:** Southern Maryland Electric Cooperative leads ($319.23 per interruption, $0.68 per minute) with $33.49M CAPEX for 104,901 interruptions and 49,517,154 minutes avoided. Potomac Electric ($967.06 per interruption) and Baltimore Gas ($2,571.43 per interruption) also perform well.

- **2024:** Baltimore Gas ($2,296.76 per interruption, $6.27 per minute) and Delmarva ($3,317.21 per interruption, $6.27 per minute) maintain efficiency. Southern Maryland Electric Cooperative's $25,544.40 per interruption is high due to minimal interruptions avoided (1,295), and Potomac Edison shows negative interruptions (-$5,712.96).

Correlation Insights

- **Weak Overall Correlations**: The weak negative correlations (-0.114 for interruptions, -0.127 for minutes) across all utilities indicate that CAPEX increases minimally reduce per-customer costs. This suggests external factors (e.g., weather, grid conditions) or inefficient CAPEX allocation play significant roles. The overall CAPEX investments that the Maryland EDC are making not very effective or efficient in terms of enhancing reliability for Maryland ratepayers.
- **Utility-Specific Patterns**:
    - **Southern Maryland Electric Cooperative**: Stronger positive correlation for interruptions (0.63) reflects the 2024 outlier ($0.1103), where low interruptions avoided inflate costs despite moderate CAPEX ($33.08M).
    - **Potomac Electric**: Weaker negative correlation for minutes (-0.214) suggests higher CAPEX (e.g., $180.94M in 2023) can reduce costs per minute, but results are inconsistent (Cost Per Outage Minute Avoided per Customer for 2021: -$0.0000386) and the impact is minimal.
    - **Others**: Negligible or weak correlations (e.g., Baltimore Gas: -0.063 for interruptions, Delmarva: 0.302 for interruptions) indicate no clear linear relationship, likely due to variability in reliability outcomes (e.g., negative values across all utilities in 2022).

- **Outlier Impact**: Southern Maryland Electric Cooperative 2024 ($0.1103 per interruption) and Delmarva 2023 ($0.00172 per minute) skew correlations due to minimal outcomes (1,295 interruptions, 210,168 minutes), inflating costs despite moderate CAPEX.
- Maryland EDCs display a stronger positive correlation between CAPEX spent and the reliability metrics evaluated as part of this analysis, i.e., in some cases, as the CAPEX investment increases, customer reliability also decreases.
    - PE's correlation between CAPEX spend and Cost Per Outage Minute Avoided per Customer (based on CAPEX spend only) is 0.763
    - Southern Maryland Electric Cooperative's correlation between CAPEX spend and Cost Per Interruption Avoided per Customer (based on CAPEX spend only) is 0.63
- Maryland EDCs display a weaker negative correlation between CAPEX spent and the reliability metrics evaluated as part of this analysis, i.e., in some cases, as the CAPEX investment increases, customer reliability also increases.
    - BGE's correlation between CAPEX spend and Cost Per Outage Minute Avoided per Customer (based on CAPEX spend only) is -0.597
    - PE's correlation between CAPEX spend and Cost Per Interruption Avoided per Customer (based on CAPEX spend only) is -0.215

Conclusion

The analysis demonstrates that CAPEX spending from 2020 to 2024 does not consistently improve reliability. Potomac Edison (2020) and Southern Maryland Electric Cooperative (2023) achieve high efficiency, with costs as low as $573.88 and $319.23 per interruption, respectively. Baltimore Gas and Delmarva show resilience in 2023–2024, while the universal negative outcomes in 2022 highlight external challenges, such as storms or misallocated investments.

The correlation analysis reveals that CAPEX spend has a weak and inconsistent relationship with cost-effectiveness metrics across the five utilities from 2020 to 2024. The overall Pearson correlations (-0.114 for interruptions, -0.127 for minutes) suggest that higher CAPEX does reduce Cost Per Interruption Avoided per Customer and Cost Per Outage Minute Avoided per Customer, but the impact is very small, almost negligible. Southern Maryland Electric Cooperative's strong positive correlation for interruptions (0.630) is driven by an outlier (2024), while BGE's moderate negative correlation for minutes (-0.597) shows some efficiency gains with higher CAPEX. The universal negative outcomes in 2022 and variable performance (e.g., Southern Maryland Electric Cooperative's 2023 success vs. 2024 inefficiency) indicate that external factors, such as weather or grid challenges, and the scale of reliability improvements significantly influence cost-effectiveness. Targeted CAPEX allocation is critical for maximizing reliability gains.

When only CAPEX investments are targeted for assessment of Electricity Distribution Utilities' reliability metrics—Interruptions Avoided and Customer Outage Minutes Avoided—high-impact capital investments are critical for cost-effective reliability improvements.

IN THE MATTER OF THE REVIEW OF ANNUAL PERFORMANCE REPORTS ON ELECTRIC SERVICE RELIABILITY FILED PURSUANT TO COMAR 20.50.12.11

Case No. 9353

Data Responses referenced in OPC's Comments

BGE Response to OPC DR 6-1

SMECO Response to OPC DR 7-1

Case No. 9353
Annual Reliability Report CY2024
(ML No. 317356)
Baltimore Gas and Electric Company
Response to OPC Data Request 6
Received Date: June 17, 2025
Response Date: July 2, 2025

Item No.: OPCDR6-1

For purposes of its Annual Performance Report, how does BGE determine whether the utility classifies an expense as an operating and maintenance expense or a capital expense?

RESPONSE:

BGE prepares its financial statements, which are audited by a third-party accounting firm each year, in conformance with Generally Accepted Accounting Principles ("GAAP") and applicable FERC and SEC regulations. To be recorded to capital, costs must be attributable to the construction of an asset that will provide benefits over more than one accounting period. The FERC Uniform System of Accounts provides specificity on the types of costs attributable to the construction of a capital asset. The company records its costs in accordance with those guidelines in all financial reports and filings.

OFFICE OF PEOPLE'S COUNSEL
DATA REQUEST SET NO. 7
TO
SOUTHERN MARYLAND ELECTRIC COOPERATIVE
Case No. 9353

7-1 On page six of the BGE's Annual Performance Report, BGE says that "the RPI Program has been indicating less need for full feeder construction projects due to diminishing returns on customer interruptions…"

a. Does SMECO have the ability to identify if one of its reliability programs is reaching the point of diminishing returns on customer interruptions?

Response:

As stated in SMECO's approved 2024 through 2027 reliability target report filing, SMECO's historical SAIDI and SAIFI reliability indices trend indicates additional reliability improvement is flattening out and likely reaching the point of diminishing returns. SMECO's reliability projects work together as one overall inclusive program that does not single out one specific project type's contribution to overall reliability system improvements.

b. If not, why not? What would SMECO need (including, but not limited to data, technical ability, methodology, etc.) in order to make such a determination?

Response: N/A

c. Has SMECO determined that any of its reliability programs are reaching the point of diminishing returns on customer interruptions?

Response: See response for 7-1 a.