ORDER NO. 88813

IN THE MATTER OF THE PERFORMANCE OF POTOMAC ELECTRIC POWER COMPANY AND BALTIMORE GAS AND ELECTRIC COMPANY DURING THE MARCH 2, 2018 WINTER STORM RILEY	* * * * * * * *	BEFORE THE PUBLIC SERVICE COMMISSION OF MARYLAND Case No. 9485

Issued: August 31, 2018

On March 2, 2018, a powerful Nor'easter (referred to as "Winter Storm Riley") struck several northeastern, southeastern, and Mid-Atlantic States, interrupting electric service to 774,821 Maryland customers.[1] Governor Hogan issued a State of Emergency at 9:34 p.m. on March 2, which continued to 5:30 p.m. on March 8, 2018. While Winter Storm Riley affected customers in each of the Maryland electric utilities' service territories, Baltimore Gas and Electric Company ("BGE") and Potomac Electric Power Company ("Pepco") customers were the most affected in terms of number of customer interruptions and the most prolonged outages. In total, BGE experienced 407,383 outages, completing restoration efforts in 6.9 days. Pepco experienced 142,884 outages, completing its restoration efforts in 6.7 days.

Pursuant to Code of Maryland Regulations ("COMAR") 20.50.12.13, BGE and Pepco submitted Major Outage Event ("MOE") Reports within three weeks after the

[1] At peak, there were 312,241 electric service outages in Maryland at 3:00 p.m. on March 2, 2018. The outage levels experienced by BGE and Pepco defined Winter Storm Riley as a "major outage event" under Code of Maryland Regulations 29.50.01.03.03.

event, on April 2, 2018.[2] The Maryland Public Service Commission's ("Commission") Engineering Staff ("Staff") analyzed the companies' reports and submitted its Winter Storm Riley Final Report to the Commission on May 23, 2018.[3] The Commission initiated this proceeding on June 15, 2018, to investigate the performance of BGE and Pepco during this major outage event,[4] in light of the assessments made by Staff.

A. Staff's Winter Storm Riley Final Report

In its Winter Storm Riley Final Report, Staff concluded that (1) Pepco violated COMAR 20.50.12.13(15) by failing to include lessons learned and future plans to improve service restoration efforts in its Winter Storm Riley MOE Report, and (2) that BGE failed to comply with COMAR 20.50.12.06D by failing to restore service to its customers as quickly and safely as possible. Based on its analysis, Staff recommended that the Commission order Pepco to undertake a comprehensive lessons learned session with all functional areas and that *both* Pepco and BGE be directed to provide the Commission with corrective action plans in compliance with MD. CODE ANN., Public Utilities Article ("PUA") § 7-213(f)(2)(ii). Additionally, in response to these

[2] *See* BGE Major Outage Event Report for Winter Storm Riley, ML# 219772, and Pepco Major Storm Report, ML# 219778.

[3] Staff's Winter Storm Riley Report also assessed the performance of Choptank Electric Cooperative, Inc., Southern Maryland Electric Cooperative, Inc., Delmarva Power & Light Company and The Potomac Edison Company. Less than 40% of customers in these service territories experienced outages. Although Staff recommended that "Maryland restoration data" needs to be corrected in these companies' periodic MEMA reporting, no corrective action plan requirements (or other actions) were recommended for these utilities.

[4] Winter Storm Riley was described as having undergone "bombogenesis": a popular term used by meteorologists, as a weather event that occurs when a mid-latitude cyclone rapidly intensifies, dropping at least 24 millibars over 24 hours. https://oceanservice.noaa.gov/facts/bombogenesis.html The storm battered the eastern United States with strong winds, coastal flooding and heavy, wet snow from February 28 – March 1, 2018, bringing near hurricane-force winds to Maryland, with peak winds occurring on March 2, 2018. Maryland experienced winter windstorm carrying gusts up to 70 mph through Maryland on Friday, uprooting large trees, closing or clogging many of the state's gateway bridges and roads, and leaving a quarter of a million people without power. Gov. Hogan declared a state of emergency on the evening of March 2. http://www.baltimoresun.com/news/weather/weather-blog/bs-md-high-winds-march-20180228-story.html

deficiencies, Staff recommended that the Commission may wish to consider issuing a show cause order to determine if a civil penalty is warranted for each BGE and Pepco under PUA § 13-201.

1. Analysis of Pepco's Performance

Staff summarized Pepco's Winter Storm Riley storm preparation, outage response, and overall performances as follows:

Staff's greatest emphasis with regard to Pepco was placed on the company's significant overstatement of outage impacts. Staff notes that into the second day of this event, "Pepco appeared to think it was dealing with a storm impact at least double what had actually transpired." Staff noted that that error may have had impacts not only on Pepco's restoration efforts but also on BGE's efforts as well, due to a disproportionate allocation of crews between the two companies.[5]

In total, 25.5% of Pepco's total customer base was impacted by Winter Storm Riley. Pepco was the third most impacted Maryland utility during this event (based on 1 in 1,410 poles replaced). Pepco officially finished its restoration effort in 6.7 days, but effectively finished in 4.6 days, which Staff notes as being higher than the State average of 3.9 days.[6]

Staff reported that Pepco's Winter Storm Riley Customer Average Interruption Duration Index ("CAIDI") of 8.62 was the third lowest of Maryland utilities, thus below the Statewide average CAIDI of 9.08 hours.[7] Staff also noted that Pepco appeared to experience significant issues responding to wires down, and the company had the third

[5] *Id*. at 54. Pepco's over estimation error also affected critical decisions made by State and local officials in response to this event.
[6] *See* Staff's May 31, 2018 Final Report, ML# 220905 at 53.
[7] *Id.*

lowest performance among Maryland utilities at 70.0% in providing relief to government emergency response personnel with regard to guarding downed wires. Staff indicated that Pepco appeared to have restored critical customers essential to public health and safety within a timely manner; however, 70 "VI" facilities (*i.e.*, facilities housing vulnerable individuals) remained without power longer than 48 hours.[8]

Pepco's %/CR50 of 97.98% ranked fourth among Maryland utilities, which was above the Statewide average of 97.44%.

- ***Pepco Response***

Pepco recognizes that it could have done a better job in its Major Outage Event Report communicating and in demonstrating that it had conducted a self-assessment and identified lessons learned, as required under COMAR 20.50.12.13(15). However, the company states that the statement in its Major Outage Event Report that "[t]here are no specific lessons learned or improvements identified as a result of this event" was incorrect.[9] According to Pepco, its comments in response to Staff's Final Report demonstrates that it in fact "did conduct a self-assessment of its action during Winter Storm Riley," identified lessons learned and has undertaken action items to address issues identified by its self-assessment – most notably – addressing the outage management system ("OMS") algorithm to recognize the effect of the increased number of reclosers on the Pepco system has on outage numbers.

In response to Staff's recommendations, Pepco insists that the company has already undertaken a comprehensive lessons learned session with all storm functional areas and therefore a correction action plan (pursuant to PUA § 7-213(f)(2)(ii)) should

[8] *Id.*
[9] Pepco's June 29, 2018 Response to Staff's Final Report, ML# 221111 at 7.

not be directed.[10] Pepco also urges that the Commission reject Staff's recommendation that the assessment of civil penalties should be considered with regard to the company's response to Winter Storm Riley.

Pepco notes that even on an event-specific basis, the company met the %CR50 restoration (annual standard) by restoring service to *more than* 95% of its customers experiencing sustained interruptions within 50 hours. However, the company also acknowledges that it significantly overstated its outages, an overstatement that Pepco attributed to its OMS. Although unlike BGE, Pepco did seek external assistance prior to the event. However, by overstating its outages, Pepco did not release excess resources to other Maryland utilities for their use in the Statewide Winter Storm Riley restoration either.

Similar to BGE, Pepco also commented on other aspects of Staff's analysis, including the company's coordination with emergency management agencies, and its wires down response, but most significantly addressed the company's lack of awareness of the interplay between its OMS system and increased reclosers on the company's distribution system in advance of Winter Storm Riley.

2. Analysis of BGE's Performance

Staff summarized BGE's Winter Storm Riley storm preparation, outage response, and overall performances as follows:

Staff noted that 31.7% of BGE's total customer base was impacted, and that from a system perspective (based on a pole replacement analysis), BGE experienced the

[10] Despite Pepco's explanation, Staff insists that the company's efforts to comply with COMAR 20.50.12.13(15) with regard to lessons learned is "three months" after the fact, and does not satisfy Staff's concern that this COMAR requirement was violated.

second highest impact in Maryland with 1 in every 1,226 poles replaced. Staff also noted that BGE both officially and effectively finished its restoration efforts in 6.9 days (which was "the longest effective restoration" period in Maryland by over 2.3 days, and a full 3 days over the State-effective restoration average of 3.9 days).[11]

In connection with Winter Storm Riley, Staff further reported that BGE's CAIDI of 16.6 hours was highest of the Maryland utilities, exceeding the State's average CAIDI of 9.08 hours.[12] Staff also criticized the company for its delay in performing a damage assessment in a timely manner and the overuse of the "other" (cause of outage) category in the company's outage reporting. In other areas, Staff noted that BGE experienced significant issues responding to downed wires and in providing relief to government emergency responders guarding downed wires. Staff further noted that BGE "was the last utility to issue a global ETR [Estimated Time of Restoration] Saturday evening" and extended it once during the storm "which is an improvement opportunity."[13] Staff also indicated that 65 VI facilities remained without service for longer than 48 hours, but noted that the company did a good job getting schools back in service by Monday, March 5, 2018.

Most notably, however, Staff criticized BGE's pre-storm estimation of the potential impact of the event, based on the company's reliance on its own internal weather forecast rather than the National Weather Service ("NWS") forecast (which was on target for this event). According to Staff, in this instance, the use of internal weather forecasts misled the company to underestimate the impact of Winter Storm Riley, which

[11] *See* Staff's May 31, 2018 Winter Storm Riley Final Report ("Final Report"), ML# 220905 at 48.
[12] *Id*. at 48-49.
[13] *Id.* at 49.

in turn caused BGE to fail to seek external assistance beforehand. Finally, Staff asserted that in violation of COMAR 20.50.12.06D, BGE failed to restore service "as quickly and safely as permitted" to its customers experiencing interruptions during a major outage event in which the total number of sustained interruptions was greater than 400,000 or 40% of the utility's total customers.[14]

Although recognizing that COMAR 20.50.12.06B does not apply to BGE in this *specific* major outage event, Staff insists that applying the %/CR50 metric[15] to BGE in this instance shows that the company underperformed by yielding only 91% customer restorations within 50 hours as compared to the annual COMAR 20.50.12.06B standard of 95%CR50. Staff notes that the number of outages exceeding 400,000 was only 7,383, which is a small margin above the COMAR 20.50.12.06B (%/CR50) threshold. Pressing the point, Staff notes that if all 7,383 outages above the 400,000 threshold were restored with zero minutes of outage duration, BGE's %/CR50 score for Winter Storm Riley still would have been only 92.7%, indicating what Staff believes represents an *underperformance* by BGE in its Winter Storm Riley restoration.

- ***BGE Response***

BGE acknowledges that every weather event is an opportunity to learn from its experiences and to improve all aspects of the company's storm response performance. The company also does not oppose filing a corrective action plan with the Commission, as recommended by Staff.[16] BGE, however, objects to any consideration of a civil

[14] *Id*. at 50.
[15] %/CR50 = Percentage of customers restored within 50 hours. Staff assessed that BGE's Winter Storm Riley event-specific %/CR50 metric in this instance was 91%. (Staff Final Report, ML# 220905 at 29)
[16] BGE's June 29, 2018 Response to Staff's Final Report, ML# 221112 at 1.

penalty based on Staff's assessment that the company failed to restore service to its customers as quickly and safely as possible in response to Winter Storm Riley.

BGE takes issue with Staff's comparison of its performance during this event with the performance by other Maryland utilities, and notes that a finding that certain aspects of BGE's performance were not as good as the other Maryland electric utilities is not the same as a finding that BGE did not restore service as quickly as safely as possible.[17] The company points out that utility comparisons during the storm is difficult because of the different circumstances faced by each utility, noting that "BGE's peak outages were more than four times greater than the utility with the second highest peak."[18]

BGE also insists that Winter Storm Quinn (a secondary storm that occurred on the evening of March 6, 2018), which Staff assessed as "inconsequential" to its analysis, caused new outages for critical customers and likely downed wires and blocked roadways as well. According to BGE, the impact of Winter Storm Quinn was not "inconsequential," as its effects took resources away from the restoration of customers affected directly by Winter Storm Riley.[19]

With regard to Staff's critique of the company's reliance on internal weather forecasts – and not the NWS forecast – BGE insists that its internal forecasts (from Earth Networks and Climate Impact Company) not only focus on BGE's service territory, but also look at the specifics of the projected storm's impact to four separate regions of the

[17] *Id*. at 1-2. The company also takes issue with Staff's observation that BGE performed "by far the worst" of the Maryland utilities in response to Winter Storm Riley.
[18] *Id*. at 6. For instance, according to BGE, a analysis of the comparable magnitude of BGE's peak would have impacted the company's work-down curve, which BGE notes was shifted later because BGE did not experience its peak outage level until almost seven hours later than some of the other Maryland utilities. Also, based on the number of outages experienced by BGE in comparison to other Maryland utilities, BGE suggests that it would have taken the other Maryland utilities from 13.1 to 52.6 hours to restore as many outages as BGE experienced. *Id.* at 7.
[19] *Id.* at 11.

company's service territory. BGE argued that NWS forecasts tend to be more generic and less focused, thereby potentially reducing the utility's attention to areas that likely tend to be most vulnerable. BGE also responded to Staff's assessment of the company in comparison to other Maryland utilities with respect to pole replacement and the use of bucket trucks, noting that the time and resources needed to replace poles differs depending upon where the pole was installed, *i.e.*, along a roadside where there are no trees versus along a rear lot where the wires could be entangled in and among trees. BGE further noted that its ability to restore service to customers was significantly hampered because bucket trucks could not be utilized for at least six hours on Friday, March 2, and intermittently on Saturday, March 3, due to the company's safety standards that restrict the use of bucket trucks when wind speeds exceeded 30 mph.[20]

The company's response also addressed Staff's critique of BGE's use of a global ETR, prioritization of customer restoration, restoration balancing among local jurisdictions, traffic signals and blocked roadways, relieving government emergency personnel from guarding downed utility wires, and restoration of VI facilities.

Most significantly, however, BGE insists that Staff's use of the %/CR50 metric, which is applicable on an annual basis under COMAR 20.50.12.06B, is irrelevant for purposes of assessing whether the company restored service as quickly and safely as possible in response to Winter Storm Riley. BGE notes that by the end of 2018, the company could experience additional major outage events with less than 400,000 customer interruptions, and the time to restore outages from those events would

[20] *Id*. at 11-13.

be combined with the results of Winter Storm Riley to assess the company's compliance with the *annual* 95%CR50 metric.

3. OPC Comments

The Maryland Office of People's Counsel ("OPC") filed comments in response to the responses filed by BGE and Pepco with regard to Staff's Final Report. OPC notes (as did others) that Winter Storm Riley was the first major weather event on the scale of the previous storms affecting Maryland since 2010 and 2012. Based on the utilities' storm preparation and restoration performance in response to this event, OPC believes that the problems revealed by the restoration efforts (of all six Maryland utilities) during Winter Storm Riley suggests that changes to COMAR may be needed.[21]

In the interim, OPC agrees with Staff that both Pepco and BGE should submit corrective action plans to address the shortcomings in their Winter Storm Riley performance. OPC notes that the shortcomings manifested by the companies' performance in response to Winter Storm Riley may end up constituting "other violations" that cannot be evaluated until the end of 2018, such as "excessive delays in responding to downed wires." If a utility's performance (or underperformance) in response to Winter Storm Riley contribute to what may be assessed as "violations" of the utility's annual performance standards, OPC suggests that it may be preferable to address them on an annual basis in order to avoid piecemeal litigation. Thus, OPC suggests consideration of civil penalties (if any) in connection with the Commission's annual review of the Companies' performance in Case No. 9353.

[21] OPC Comments, ML# 221277 at 6.

B. Discussion

Pepco insists that notwithstanding Staff's assessment, the company did in fact conduct a lessons learned session with regard to Winter Storm Riley, and by way of its response to Staff's Winter Storm Riley Final Report, reported the findings of its lessons learned to the Commission. Staff maintains that Pepco's "report" failed to comply with COMAR 20.50.12.13(1), and that the company's after action review does not satisfy the requirement of this regulation. We agree, and as recommended by Staff, will direct Pepco to file a corrective action plan in accordance with PUA § 7-213(f)(2)(ii).

BGE disagrees with Staff's assessment that the company should (and perhaps could) have restored customers more quickly and safely than it did – disputing Staff's suggested application of the 95%CR50 metric to the Winter Storm Riley event – by attempting to show (on a comparative basis) that for the 6.9 days it took BGE to restore 407,383 customers it would have taken the other utilities from 13.1 to 52.6 days to do the same. However, Staff notes that its conclusion was not based merely on a direct comparison between BGE and the other utilities, but based on BGE's actual performance in terms of the number of outages restored per day as a percentage of the utility's total number of customers.[22] Staff insists that as the larger utility, with more resources, BGE should be expected to restore more outages per day than the other companies. However, the company is correct that 95%CR50 is an *annual* metric that is not event specific, despite the fact that the 400,000 outage-threshold (in BGE's case) was exceeded by only a relatively small number.

[22] Staff's Reply Comments, ML# 221278 at 3.

Overall, we agree with OPC (and with the point made by Staff's Winter Storm Riley Final Report) that the existing RM 43 reliability metrics may be less stringent than they should be at the margin where – outages at or above 400,000 customer occur during a specific event – the 95%CR50 metric does not apply. However, because the 95%CR50 metric is an annual requirement and does not apply when a utility experiences more than 400,000 outages or outage of 40% of its customers, an assessment of whether BGE failed to restore customers as quickly and safely as possible cannot be determined until the company's 2018 annual reliability report is considered. Staff's assumption that a larger utility, such as BGE, should be expected to restore more outages per day than other companies may fail to recognize a variety of other factors, but as with the review of major outage events thresholds, this is a discussion best considered when reviewing the utilities' annual performance, not when reviewing a single event.

C. Commission Decision

. Winter Storm Riley was the first major outage event reported by BGE and Pepco since 2012, and since the Commission adopted heightened electric reliability and outage restoration requirements through Rulemaking 43.[23] Also since then, Maryland electric utilities have made numerous reliability investments. BGE and Pepco also have fully implemented Advanced Meter Infrastructure ("AMI"), systems marketed heavily as systems that would help identify outages more quickly and allow for more efficient and effective post-storm customer restoration. In light of these factors, Staff assessed the utilities' storm preparation and recovery effort versus the impact, or "withstand"

[23] Rulemaking 43 – Revisions to COMAR 20.50 - Service Supplied by Electric Companies - Reliability and Service Quality Standards.

component of the resiliency definition.[24] The Commission has not formally adopted a resiliency definition, as Staff's Winter Storm Riley Analysis suggests. Nonetheless, despite that COMAR 20.50 sets forth an *annual* outage restoration requirement of 95%CR50, we do not view BGE's 91% restoration – of slightly more than 400,000 customers in 50 hours (in this specific event) – as necessarily the quickest and safest restoration possible.[25]

Despite AMI and substantial infrastructure investments, the restoration performance by Pepco, in terms of outage forecasting and lessons learned, and BGE, in terms of speed of restoration, were no better – and in some cases worse – than in response to storm events where much greater outage numbers were recorded. Although the Commission will reserve judgment on whether additional remedies are warranted at this time, Pepco and BGE (and all other Maryland utilities) are urged to fortify their preparatory efforts and their outage reporting systems in advance of future potential weather events. Additionally, Staff (with input from OPC and the utilities) is encouraged to continue reviewing current service reliability and restoration standards, in order to assess where appropriate tightening of those standards is reasonable.

Upon reviewing the companies' Major Event Outage Reports along with Staff's Final Report, as well as comments by the companies and reply comments by Staff, the Commission (1) accepts Staff's recommendation that Pepco and BGE be required to file corrective action plans reflective of lessons learned in response to Winter Storm Riley, (2) directs Pepco to address over-reporting of customer outages, and (3) holds in

[24] Staff 's May 31, 2018 Winter Storm Riley Final Report, ML# 220905 at 8.
[25] Staff's and OPC's forward-looking approach to assessing the companies' response to Winter Storm Riley merits further consideration in our review of the utilities' annual performance and future COMAR – Reliability and Service Quality Standards – revisions.

abeyance any determination regarding whether civil penalties should be assessed against BGE and Pepco due to violations identified by Staff in connection with COMAR service restoration requirements, subject to a review of the companies' 2018 Annual Performance Reports. BGE and Pepco shall file their corrective action plans as discussed herein no later than October 15, 2018.

IT IS THEREFORE, this 31st day of August, in the year Two Thousand Eighteen, by the Maryland Public Service Commission,

ORDERED: (1) That Baltimore Gas and Electric Company and Potomac Edison Electric Power Company are each directed to file a corrective action as set forth in the Order no later than October 15, 2018; and

(2) That Potomac Electric Power Company is directed to address and correct any issue with its outage management system algorithm to resolve future over-reporting of customer outages.

Jason M. Stanek

Michael T. Richard

Anthony J. O'Donnell

Odogwu Obi Linton

Mindy L. Herman
Commissioners