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June 17, 2020

Ms. Brinda Westbrook-Sedgwick
Commission Secretary
Public Service Commission
of the District of Columbia
1325 G Street, N.W., Suite 800
Washington DC, 20005

Re: Formal Case No. 1144

Dear Ms. Westbrook-Sedgwick:

Enclosed please find Potomac Electric Power Company's report regarding its efforts to develop non-wires alternatives to defer construction of the new Ward 8 substation, in accordance with Paragraph 95 of Order No. 20274 in the above-referenced proceeding.

Please feel free to contact me if you have any questions regarding this matter.

Sincerely,

/s/ Andrea H. Harper

Andrea H. Harper

Enclosures

cc: All Parties of Record

Order No. 20274 at Paragraph 95: NWAs for Ward 8 Substation Deferral.

Pursuant to the Order No. 20274, Paragraph 95, directive for Pepco to “provide a preliminary assessment and implementation framework for battery energy storage deployment which may enable the new Substation deferral at Ward 8 (Alabama Avenue),” in the context of “demonstration projects which would integrating more NWAs throughout the electric distribution system,” Pepco submits the following report regarding its efforts to develop NWAs to defer construction of the new Ward 8 substation.

Pepco strongly supports the District’s clean energy and innovation goals and the actions taken by the Commission to advance those initiatives, including its directive regarding the use of non-wires alternatives (“NWAs”) to defer the need for a new substation in Ward 8 to meet capacity needs currently forecasted for the 2029 timeframe. The Commission has indicated a clear and consistent interest in the development of NWAs in a series of Orders and subsequent directives, including: 1) for Pepco to report on its plans for battery storage at the New Mt. Vernon Substation,¹ 2) approval of the distribution system planning (“DSP”) and NWA process (“DSP/NWA Process”) and directive to report on an accelerated schedule for implementation in Order No. 20286,² and 3) a directive for Pepco to report on the development of NWA projects in Order No. 20364.³

NWAs, including utility-scale Distributed Energy Resources (“DERs”), will play an important role in meeting the District’s clean energy and grid modernization goals. The load growth driving the need for a new Ward 8 substation provides the opportunity to explore using DERs—such as solar panels, battery storage, and demand response programs—for peak load reduction. As a result, these DER deployments will enable Pepco to develop operational experience and provide broader knowledge for its District of Columbia system in the use of DERs to manage capacity constraints, improve resiliency, and understand the overall impact on the functioning of the distribution system.

The capacity need in Ward 8 will require a substantial amount of peak load shaving to allow for deferral of the new Ward 8 substation. In response, Pepco recognizes that a portfolio of projects will be needed before 2029. The 2029-need date will allow Pepco to develop this portfolio over time and through a combination of solutions established through the DSP/NWA Process and demonstration projects outside of the DSP/NWA Process, both on its own and in partnership with third parties. Included herein is a discussion of the first two demonstration projects that will be implemented to help defer the Ward 8 substation as well as a discussion of how the DSP/NWA Process will be used to add other NWA solutions to the portfolio.

The projects that Pepco is currently evaluating leverage technological advancements and steady cost declines for both lithium-ion batteries (“LIB”) and smart inverters.⁴ Pepco will deploy these

¹ *In the Matter of the Potomac Electric Power Company’s Notice to Construct Two 230kV Underground Circuits from the Takoma Substation to the Rebuilt Harvard Substation, and from the Rebuilt Harvard Substation to the Rebuilt Champlain Substation (Capital Grid Project)*, Formal Case No. 1144, Order No. 20274 (Dec. 20, 2019) at P 94.

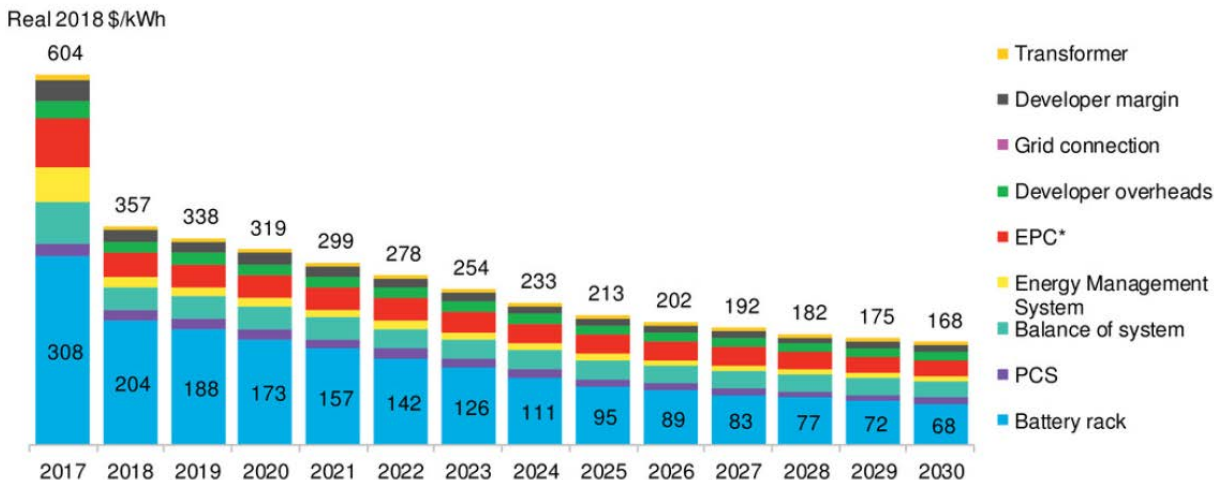
² *In the Matter of the Investigation into Modernizing the Energy Delivery System for Increased Sustainability*, Formal Case No. 1130, Order No. 20286 (January 24, 2020) at P 38.

³ *In the Matter of the Investigation into Modernizing the Energy Delivery System for Increased Sustainability*, Formal Case No. 1130, Order No. 20364 (June 6, 2020) at P 72 (“Order No. 20364”).

⁴ Available at <https://about.bnef.com/blog/energy-storage-investments-boom-battery-costs-halve-next-decade/>

technologies in a way that meets both the District’s clean energy and innovation goals and provides benefits to ratepayers.

Figure 82: Capital costs for a nameplate 20MW/80MWh AC fully-installed energy storage system



Source: BloombergNEF Note: Excludes warranty costs, which are often paid annually rather than as part of the initial capital expenditure. These costs do not explicitly include any taxes, although due to a lack of transparency in the market, some may be unknowingly included. This is for a brownfield development so excludes grid connection costs. Includes a 10% EPC margin and developer margin set at 6%. Does not include salvage costs or project augmentation. See accompanying Excel for full breakdown.

The first demonstration project that Pepco will deploy will be a utility-owned 1- (“mega watt”) MW, 3-hour battery.⁵ This project will be deployed on an existing Pepco property at Congress Heights, avoiding costly property acquisition. It will serve both to help defer the Ward 8 substation and defer a feeder upgrade in the area. This demonstration project will provide important learnings regarding procurement, engineering design, construction and peak load shaving and deferral capabilities. Since the demonstration project is planned to be in-service in 2022, the learnings from this project will be important in informing future demonstration projects and NWA solutions selected through the DSP/NWA Process.

The second demonstration project, referenced in Order No. 20364,⁶ involves a utility-owned battery and third party-owned generation. Pepco and the District Department of Energy and Environment are currently exploring a project demonstrating a “Solar Saturation Microgrid” design, which is undergoing evaluation to provide reliable, cost-effective peak reduction on the order of 1-to-2 MW. DOEE and Urban Ingenuity first presented this demonstration in the PowerPath DC Non-Wires Alternatives Working Group. This installation could be implemented by 2024, prior to the estimated 2029 need-date for capacity expansion in Ward 8. Installing the solar saturation microgrid well before the need date allows Pepco to perform simulated loading events to gain experience with using the microgrid as a load-shaving resource during peak loading

⁵ Pepco discussed this battery project in the Capital Grid proceeding.

⁶ Order No. 20364 at PP 69-72.

periods. Positive results could lead to replication of the design at additional sites in Ward 8 and elsewhere in Pepco's service territory, contributing to further capacity expansion deferral and resiliency.

A Solar Saturation Microgrid enables residential neighborhoods, including single-family homes, to deploy saturation levels of rooftop solar, with participation of roughly 80% of the roofs in a given neighborhood. With the inclusion of smart inverters, centralized battery storage, enhanced communications, and a microgrid controller with dedicated software, the usual limitations on solar hosting capacity would not apply. The same battery storage assets would also enable dispatchable load reductions at hours of peak demand, alleviating stress on the local feeders and substation. The same assets could also enable microgrid islanding during broader grid outages, providing additional resiliency to a given community.

Finally, Pepco will address the capacity need requiring the Ward 8 substation through the DSP/NWA Process. As the forecasted 2029 need date is far enough out in time, Pepco will be able to address this capacity constraint through the DSP/NWA Process on an iterative basis, incrementally adding to the portfolio of NWA solutions over time to defer the forecasted Ward 8 substation-need date. Similar to the demonstration projects, the learnings from each of the DSP/NWA Process-selected solutions will inform future projects.

Continued evolution of existing regulations around contracting with third parties for DER deployment and operations and other emergent issues will require Commission action to carry out these innovative approaches. For example, an independent operator of solar and storage assets could contract with Pepco for peak demand reduction services that would be obligated at peak loading periods in Ward 8 via a long-term agreement that could be added to rate base and earn a return. Moreover, Pepco will evaluate potential NWA solutions submitted in the DSP/NWA Process through a benefits-cost analysis ("BCA") methodology.⁷ Because the BCA requires a wires solution against which to compare the cost of any NWA solution, Pepco will be required to complete the design for the substation. In order to be able to properly recover for that design, Pepco will require Commission action specifically allowing for capital recovery of the design.

Pepco will continue to explore these and other avenues to expand the development of DERs and NWAs in the District and will file a follow-up to this report regarding the Company's progress deploying battery storage in Ward 8 and in implementing the NWA/DSP process.

⁷ Pepco will report the details of this methodology in the September filing directed by Order No. 20364.

CERTIFICATE OF SERVICE

I hereby certify that a copy of Potomac Electric Power Company's Report was sent to all parties on this June 17, 2020 by electronic mail to:

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