An Exelon Company

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

Re: Formal Case No. 1130

Dear Ms. Westbrook-Sedgwick:

On June 5, 2020, the Public Service Commission of the District of Columbia ("Commission") issued Order No. 20364. In this Order the Commission directed Pepco to "begin updating the hosting capacity maps on its website on a monthly basis, within 30 days from the date of the Order, if it has not already done so."[1] The Commission further directed Pepco to "file a report within 120 days, informing the Commission of the status of other software, methods and assumptions to improve the granularity and accessibility of transparent hosting capacity information."[2]

Pepco confirms that it updates its hosting capacity maps on a monthly basis. Further, the attached report describes that status of software, methods, and assumptions used to improve Pepco's hosting capacity maps.

Pepco is in the process of scrubbing data for, *inter alia*, projects that are not moving forward. The scrubbing process will delay updates to some of the feeder hosting capacity results. Once the scrubbing process is complete, the normal update cycle will continue.

Sincerely,

/s/ *Andrea H. Harper*

Andrea H. Harper

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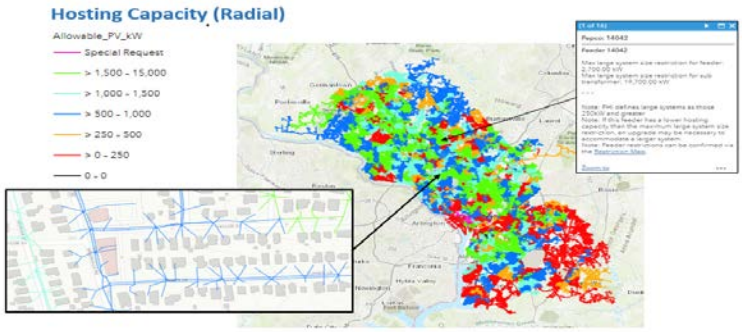
[1] *In the Matter of the Investigation into Modernizing the Energy Delivery System for Increased Sustainability*, Formal Case No. 1130, Order No. 20364 (Jun. 5, 2020) ("Order No. 20364") at ¶ 97.
[2] *Id*.

Report on Pepco's Hosting Capacity Maps

Pepco provides a variety of tools that allow a holistic understanding of feeder hosting capacity in the District of Columbia. As discussed in Order No. 20286, Pepco makes available on its website a Hosting Capacity Map[3] that provides a general idea of how much solar a feeder can accommodate before violations occur. The Hosting Capacity Map allows customers to navigate directly to specific addresses and analyze that location for interconnection feasibility. Customers can use this information to help determine if solar or other distributed energy resources ("DERs") can be accommodated at their homes. Developers can use this information to help size or site projects. Hosting Capacity Maps are a proactive way Pepco supports customer interconnections and helps developers find suitable locations for DER installations. Each feeder's hosting capacity is unique, varies over time, and depends heavily on the location and size of the PV interconnected to it. Because hosting capacities need to be updated regularly as conditions change over time, Pepco updates its hosting capacity maps monthly and when there is a change of installed generation greater than 500kW. Below is an image of the Hosting Capacity Map.



Pepco's feeder solar hosting capacity that is depicted in the Hosting Capacity Map is calculated using what is known as the stochastic methodology. This approach is a well-understood technique that helps approximate the way future photovoltaic ("PV") systems may be added to the feeder. Under the stochastic method, Pepco uses a PV Hosting Capacity Analysis application to first run a base-case analysis on individual feeders that can start with either (1) the feeder's current PV and control devices modeled or (2) all PV removed from the feeder. The application then applies a random allocation of PV to the customers on that feeder until the penetration level being tested is reached. This process is repeated, and the results are reviewed for any operating violations. Once the highest penetration level or remaining hosting capacity of the feeder is determined, that value is stored with all the other feeders in a database that informs Pepco's online ArcGIS tool to create a visual representations, by color, of each feeder's hosting capacity.

[3] The hosting capacity maps are available here: https://www.pepco.com/SmartEnergy/MyGreenPowerConnection/Pages/HostingCapacityMap.aspx

The Hosting Capacity Map will differ depending on the characteristics of the system. For instance, for radial feeders the Hosting Capacity Map[4] reflects the primary and secondary lines to help customers directly see the feeder and color to which their premise is connected. The hosting capacity depicted is granular enough to provide customers with insight into the amount of DER that can be accommodated on the feeder before limits are reached that would cause a system violation.

On underground networked feeders, such as those serving the District's downtown region which utilizes network transformers and network protectors, the situation is more complicated. Pepco must limit the amount of export on network systems to avoid inadvertent operation of network protectors, triggering outages. When network protectors sense reverse power flow from the customer side, they trip and open to prevent the reverse power flow (export) from causing flowing back into the primary system. This protection creates a more reliable network system.

As a result of the characteristics of the network system, the networked feeder Hosting Capacity Map[5] displays the hosting capacity of specific network transformers instead of the hosting capacity of the entire feeder, as is provided on the Hosting Capacity Map for radial feeders. Similar to the radial feeder Hosting Capacity Map, the networked feeder Hosting Capacity Map displays the amount of DER that can be accommodated at a specific transformer that may serve a spot network or area/grid network. The hosting capacity is the limit that would cause a system violation.

Some feeders are restricted to a maximum size where limits have been reached—such as reverse power on a substation transformer at Minimum Daytime Load, voltage limits, or aggregate limit of large systems. If these thresholds are exceeded, the additional DER could result in voltage operating limit violations or create other dangerous conditions. That is why Pepco also makes available on its website a Restricted Circuit Map that provides information regarding circuits that will accept up to certain size units or limit additional DER installations without Distribution System Upgrades[6] because the feeder has reached a DER threshold after which violations of voltage operating limits or other dangerous conditions may occur. An image of the Restricted Circuit Map is provided below.

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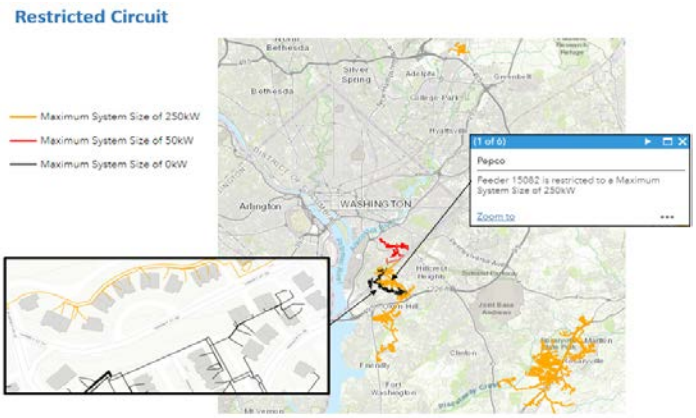
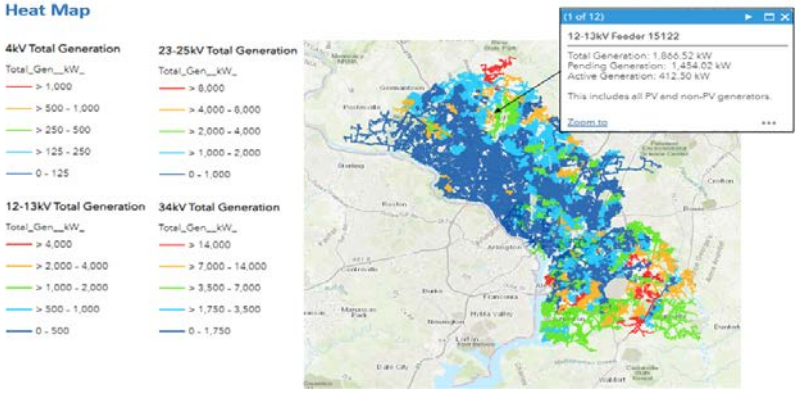
[4] The radial feeder hosting capacity map is available here: http://pepco.maps.arcgis.com/apps/webappviewer/index.html?id=5c02592c8e0541b188eef9cbd8a2c9c0

[5] The underground networked feeder hosting capacity map is available here: http://www.arcgis.com/home/webmap/viewer.html?webmap=015b300984074e4396e8f2b09f9df64e&extent=-77.1429,38.8698,-76.9349,38.9768

[6] Terms that are not defined within this report hold the meaning defined in Chapter 40 of the D.C.M.R.



The final interconnection map that aids in an understanding of the hosting capacity of the various feeders in the District of Columbia is a Solar Heat Map.[7] This innovative map has been in place since 2018 and provides more information to customers and developers regarding how much solar generation is currently installed and pending installation on circuits. The map can be filtered to display the active projects only, pending projects only, or the combination of active and pending queued projects by voltage class. This allows customers to not only see how much additional DER can be accommodated on a feeder but also how much already exists. The combination of the Hosting Capacity Map, the Restricted Circuit Map and the Solar Heat Map provides customers with the ability to analyze a feeder to understand the amount of remaining hosting capacity compared to the active and pending PV generation in the queue. This provides customers with an increased understanding of the feeder's current status. An image of the Solar Heat Map is provided below.



In 2020, Pepco enhanced the Solar Heat Map to show individual projects in a manner that comports with District law. Pepco now includes colored dots on the Solar Heat Map that represent a range of system sizes. Specifically, Pepco uses a blue dot for systems sized up to 50 kW, a green dot for systems sized between 50 kW and 100 kW, an

[7] The solar heat map is available here: http://pepco.maps.arcgis.com/apps/webappviewer/index.html?id=508c6bccdbeb4c69b20fa7dc53abf6ca Pepco also has posted a video illustrating to customers how to get the most benefit from the hosting capacity maps at https://youtu.be/qwtgfZkApbM

orange dot to represent systems sized between 100 kW and 500 kW, and a red dot for systems 500 kW and above. With this enhancement, developers can see more granular system information regarding all systems in the District. Below is an image showing how the dots representing system size ranges are used on the Solar Heat Map.

Because of the tension between the computational power and runtimes needed to calculate hosting capacity using the stochastic method and the importance of frequent updates to give customers and developers more accurate information, Pepco plans to increase the computational power available for this process. This will include moving the databases and processes that facilitate hosting capacity studies to a cloud-based virtual machine, improving data quality, and other efforts that will allow for more automated calculations and updates needed to support the dynamics of hosting capacity.

CERTIFICATE OF SERVICE

I hereby certify that a copy of Potomac Electric Power Company's P 97 October 3 2020 Capacity Map Update was served this October 5, 2020 on all parties in Formal Case No. 1130 by electronic mail.

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