3. Recommended Action

RA

Issue Notices of Proposed Rulemaking to adopt definitions for the various types of Distributed Energy Resources that are pertinent to the District's grid modernization efforts.

Based on the preceding discussion, Staff recommends that DER, and each of the subcategories of DER pertinent to the District, be defined in the Commission's rules, if they are not already adequately defined. Specifically, the Commission should adopt definitions for: (1) distributed energy resource, (2) distributed generation ("DG"), (3) fossil fuel generators, (4) cogeneration systems, (5) fuel cells, (6) microturbines, (7) NEM facilities, (8) back-up generators, (9) energy storage, (10) batteries, (11) electric vehicles, (12) fly wheels, (13) demand response, and (14) microgrids.

Therefore, Staff has drafted a Notice of Proposed Rulemaking ("NOPR") containing definitions for each of these terms attached as Appendix E to this Report. The public may file comments on the draft NOPR definitions in conjunction with any comments filed on the entirety of this Staff Report.

Staff believes that adopting definitions for these terms will help remove some regulatory barriers to modernization efforts in the future, introduce some regulatory certainty, and provide Stakeholders an opportunity to inform the Commission before regulations are finalized. Once the rules related to these DER categories are finalized, Staff recommends that the Commission update other related rules that may be impacted by these new definitions, like the Commission's interconnection rules.

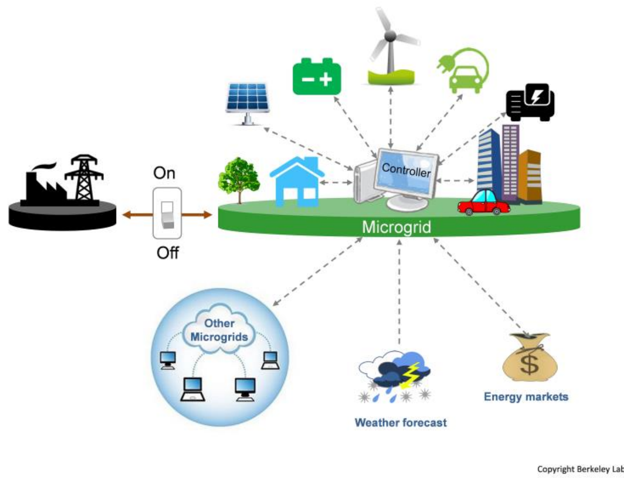
C. Microgrids in the District

Generally, a microgrid is a combination of generation and load within a defined electrical boundary that is able to disconnect from the larger distribution system and "island" itself to continue providing electricity to its load when there is a disruption on the larger distribution system. This unique ability to go into "island" mode is derived from a disconnection switch that is a sophisticated mechanism that allows the microgrid to separate from and to rejoin the larger distribution system without interruption.[166] Absent these features, a true microgrid does not exist, what exists instead is an electric distribution system with affiliated generation.

Once islanded, the microgrid requires a control system, possibly including energy storage, to balance the generation and loads within its electrical boundaries to ensure the stability of the system. Both the disconnection switch and microgrid control system represent additional costs of microgrid service which must be recovered either from the load served or another source.

[166] In a building with backup generation, there is typically a pause before the generator picks up the load.

Additionally, "[m]icrogrids help with the integration of growing deployments of renewable sources of energy such as solar and wind and other DER such as cogeneration, energy storage, and [demand response]. By using local sources of energy to serve local loads, there is a reduction of energy losses in transmission and distribution, which further increase efficiency of the grid."[167] The avoidance of losses is a function of local generation, not the microgrid functionality.



As was discussed earlier, the Commission is responsible for insuring that charges made for electricity and natural gas are "just, reasonable, and nondiscriminatory."[168] Additionally, the Commission, for public health and safety purposes, has clear authority over the placement of any "wires, pipes, conduits, ducts, or other fixtures in, over, or under the streets, highways, and public places, in the District" related to the provision of natural gas or electricity.[169] The Commission also has the duty to ensure that services provided are reliable and safe as well as to protect residential consumers' rights. The Commission's responsibility to regulate these matters applies broadly, not just to customers of Pepco and Washington Gas.

As to how microgrids fit within the Commission's mandates and the District's current statutory and regulatory framework, it is important to recognize that microgrids both generate and physically transport electricity within the microgrid boundary, which means that it provides a distribution service. Neither the generation nor distribution service is unique to a microgrid but the exact relationship of these services with their owner/operator(s) and the owner/operator's relationship to the load are important for classifying the microgrid within the regulatory structure and determining how the Commission's jurisdiction applies.

167 NARUC Distributed Energy Resources Rate Design and Compensation Manual, at 48 (November 2016).

168 D.C. Code § 1-204.93.

169 D.C. Code § 34-301.

1. Types of Microgrids

In the industry, there are two types of microgrids widely recognized: (1) a campus-style microgrid; and (2) an area, community, or public-purpose microgrid.[170] A campus style microgrid serves assets within the perimeter of a discrete campus – *e.g.*, a university, corporate, or government campus, a prison, or a military base.[171] Campus microgrids generally do not cross public rights-of-way or incorporate public utility infrastructure.[172] An area, community, or public purpose microgrid serves a group of customers, likely with municipal or other public facilities as anchor tenants.[173] Area microgrids do typically cross public rights-of-way and incorporate public utility infrastructure.[174] Examples of an area, community, or public-purpose microgrid may include communication centers, police and fire stations, hospitals, waste water treatment plants, schools, emergency shelters, grocery stores, and gas stations.[175]

In assessing the regulatory implications of microgrids, the primary question is whether the microgrid constitutes an "electric company" under D.C. Code § 34-207, which is an entity ". . . physically transmitting or distributing electricity in the District of Columbia to retail electric customers." As discussed above, all microgrids involve the physical transmission of electricity from the generation to the load. Thus, the controlling question is whether the load in the microgrid constitutes "retail electric customers" such that the microgrid is classified as an electric company. As defined in D.C. Code § 34-1501 (12), a "customer" is "means a purchaser of electricity for end use in the District of Columbia." The use of the word retail in the definition of electric company serves to distinguish between retail (end use) and wholesale (sale for resale) customers.

A microgrid that itself is also the retail electric customer represents the simplest configuration of a microgrid. One example is a campus-style microgrid, where a single entity, like a university, owns and operates every component of the microgrid and internalizes all costs associated with the microgrid (*e.g.*, Princeton University in New Jersey). In this arrangement, the university, or microgrid operator, would not be an electric company, utility, or electricity supplier,[176] but

[170] There is also a third type of microgrid configuration – a hybrid microgrid. Hybrid microgrids can contain a combination of various components of both campus and area microgrids and raise similar functionality issues as those discussed in this section.

[171] Matt Grimley and John Farrell, *Mighty Microgrids*, Institute for Self-Reliance, Energy Democracy Initiative Report (March 2016); *see also*, Microgrid Institute, *About Microgrids* (2014).

[172] Microgrid Institute, *About Microgrids* (2014).

[173] Matt Grimley and John Farrell, *Mighty Microgrids*, Institute for Self-Reliance, Energy Democracy Initiative Report (March 2016); *see also*, Microgrid Institute, *About Microgrids* (2014).

[174] Microgrid Institute, *About Microgrids* (2014).

[175] Microgrid Knowledge, *Community Microgrids, A Guide for Mayors and City Leaders Seeking Clean, Reliable and Locally Controlled Energy* (2015).

[176] This phrase is used from multiple times in the D.C. Code to provide exemptions from the definitions of "Electrical Company," D.C. Code §34-207; "Gas Company," D.C. Code §34-209; "Electricity Supplier," D.C. Code §34-1431 (6)(A), D.C. Code §34-1501 (17)(A), "Natural Gas Supplier," D.C. Code §34-1671.02 (12).

instead it is a utility "customer" because the microgrid operator purchases electricity from the utility (Pepco) "for end use in the District of Columbia."[177]

On the other hand, if the microgrid generates electricity and provides distribution services to retail electric customers (e.g. end users), then it is an "electrical company" under the D.C. Code.[178] The classification of an area microgrid as an electrical company raises important issues related to the functionality of microgrids.

First, as an electrical company, the microgrid would have to seek approval from the Commission regarding whether the rates being charged to customers are just and reasonable, among other things. Also, it could not generate electricity for resale or otherwise "engage in the business of an electricity supplier in the District of Columbia except through an affiliate."[179] This does not mean, however, that the distribution and generation operations of the microgrid could not be set up under common, overall ownership. It would simply mean that there would be an electric company operating the microgrid's distribution system and an electric supplier operating and selling the microgrid's generation all under the umbrella of a parent company.

The second issue is that if the microgrid were an electric company, the microgrid would be subject to a host of regulations applicable to electric companies and it would be required to operate its distribution system in an open manner. Specifically, D.C. Code § 34-1513 (a)(1) requires electrical companies to:

> provide distribution services to all customers and electricity suppliers on rates, terms of access, and conditions that are comparable to the electric company's own use of its distribution system. The electric company shall not operate its distribution system in a manner that favors the electricity supply of the electric company's affiliates.[180]

These restrictions tie into the fact that the District's customer choice mandate provides "customers" with certain rights that would prevent a public purpose microgrid from restricting the customer's ability to purchase electricity to only the microgrid. Specifically, "regardless of customer class,"[181] electricity suppliers and consumers have the right to:

> use and interconnect with the electric distribution system on a nondiscriminatory basis in order to distribute electricity from any electric supplier to any customer. Under this right, consumers

177 D.C. Code § 34-1501 (12).

178 *See* D.C. Code § 34-1501 (12).

179 D.C. Code § 34-1513 (a).

180 D.C. Code § 34-1506 (a)(1).

181 D.C. Code § 34-1502 (b)(1).

shall have the opportunity to purchase electricity supply from their choice of licensed electricity suppliers.[182]

Retail choice allows customers of an electric utility to purchase the generation and transmission components of their electrical service from competitive energy providers, meaning that any customers within an area microgrid would have the right to choose the service provider of the generation and transmission components of their electrical service when the microgrid is not islanded.[183] The requirement to provide retail choice could eliminate one of the primary business benefits to being a microgrid operator in the first place, namely having "captive" customers within the boundary of the microgrid. Instead of being bound by the prices charged by the microgrid operator, the customers within an area microgrid would likely purchase electricity generated at prices competitive with those offered by the SOS provider or other electricity suppliers.

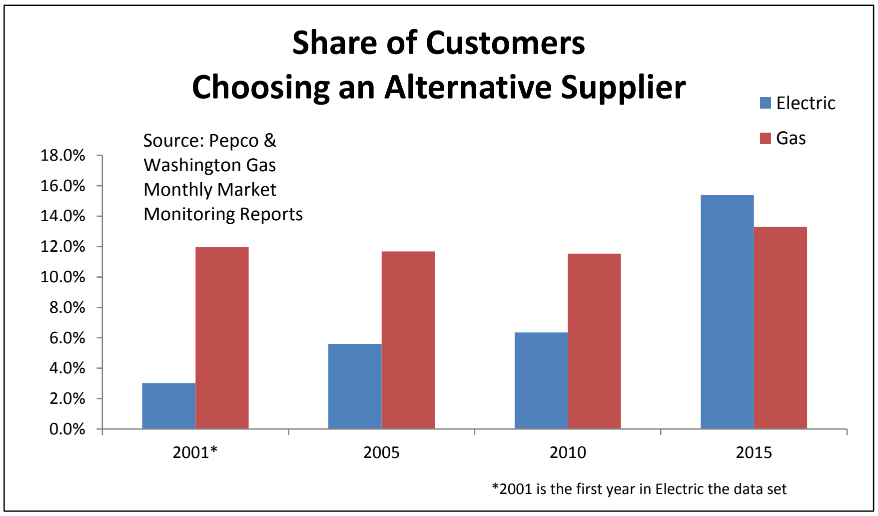


FIGURE 4: SHARE OF CUSTOMERS CHOOSING AN AES

Along with the issues already discussed as it relates to area microgrids with multiple customers, the Commission would need to ensure that microgrid operators meet the Commission's safety and reliability standards,[184] comply with RPS requirements,[185] report fuel mix and emissions,[186] and incorporate the microgrid into the Commission's – and OPC's – assessment process. Furthermore, since an area microgrid operator would be considered to be an electric company, the Commission would have jurisdiction over any consumer complaints stemming from the

182 D.C. Code § 34-1501 (14).

183 Whether this right would persist when the microgrid is islanded is an interesting question. Under the BGE Microgrid proposal submitted in Maryland, islanded customers would pay the SOS rate; BGE proposed that the entire project be paid for by a surcharge recovered from all BGE customers.

184 D.C. Code § 34-401 (a).

185 D.C. Code § 34-1432.

186 D.C. Code § 34-1504 (2).

operation of the microgrid, including billing disputes. Therefore, the applicability of Commission's Consumer Bill of Rights ("CBOR") rules would also have to be considered.

2. Potential Microgrid Benefits

Serving Nearby Neighborhoods. Some proponents of microgrids claim that a microgrid could provide power to neighboring residents during a wider power outage. For example, during Hurricane Sandy, the microgrid at Princeton University, which "operates synchronized (connected) with the local utility," kept the university running when much of New Jersey had no power.[187] Additionally, Princeton was able to assist local residents whose homes remained dark during and after the storm by inviting them to "warm up, recharge phones and other electronic devices and use wireless internet service at the hospitality center on campus." The University "also offered a heavy duty electricity generator for use by Princeton municipal authorities if necessary."[188] However, for a campus microgrid like Princeton's to distribute electricity to nearby neighborhoods the electrical boundary and associated control system of the microgrid would have to be extended to the neighborhoods in question; that is, those nearby residents must be incorporated into the microgrid. If that were to occur, then the campus microgrid boundary would cross public rights-of-way to provide electricity to nearby customers – making it an area microgrid subject to regulations applicable to electric companies. Furthermore, the additional expense of incorporating a microgrid in such a manner would have to be paid for either solely by the residents that benefit (through the creation of a separate distribution service rate class), recovered from all of the customers on the distribution system, or subsidized by taxpayers.

Energy Storage and Microgrids. In order to support control operations during islanding, microgrid designs frequently incorporate energy storage components. An added bonus comes when the energy storage can be used when the microgrid is in non-islanded mode to sell ancillary services to the transmission system. However, the storage capacity required to provide such ancillary services is likely to be larger than what is required to support islanding of the microgrid.

Environmental Benefits. A microgrid typically has, at its core, a combined heat and power system ("CHP"). CHP runs on natural gas but also makes use of what is otherwise waste heat, raising the energy efficiency of the CHP system to a very high level. It is this efficiency in exploiting the energy content of the natural gas that makes it a benefit to the environment; more power, heating, and cooling can be produced with fewer emissions. However, the environmental benefits of CHP can be had without the added expense of microgrid functionality.[189]

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187 Consulting-Specifying Engineer, *Case Study: Microgrid at Princeton University*, by Paul Barter and Edward Borer, accessed June 8, 2015. http://www.csemag.com/single-article/case-study-microgrid-at-princeton-university/a852c6c36420f738c8ecf66de7aa3dd1.html

188 Princeton University, "University assists first responders, area residents after Hurricane Sandy" by Office of Communications. https://www.princeton.edu/main/news/archive/S35/23/41C55/index.xml?section=topstories

189 The 2013 Walter Reed Utility Infrastructure Guide: Roadmap to a Sustainable Future provides many details of the "tri-generation" CHP project proposed for the Walter Reed site but contains no mention of "microgrid."

3. Microgrid Concerns

As discussed above, several issues arise when residential and/or commercial customers are served by a micro grid, including: What Commission rules must the microgrid operator comply with? What safety and design standards are the microgrid operators required to adhere to? How should the costs related to microgrid functionalities be recovered?

An important threshold question is whether a microgrid operator must to apply for the Commission's permission to build electric distribution facilities.[190] Any microgrid distribution system under 69,000 volts would fall below the size threshold for Smaller Scale Construction. Therefore, operators of such microgrids would not be required to file a certificate of public convenience and necessity ("CPCN") for the microgrid's *electric distribution facilities*.[191] An area microgrid which has customers, however, would be required to file for CPCN for its *generation facilities* because the facility generates electricity for sale to customers.

Another question that must be answered is whether the microgrid's electric distribution facilities are behind the customer's meter ("BTM") or in front of the retail customer's meter? In the case of BTM facilities, like campus-style microgrids (*e.g.*, Princeton University), the microgrid's electric distribution facilities distribute electricity to electricity users who do not pay for their electricity directly because it is included in the university's budget. If residents and businesses inside the microgrid boundary pay for utilities through their rent, then these users are in a position similar to master metered apartment ("MMA") residents.[192] As discussed above, the CBOR would not apply to these types of BTM facilities because the residents would not fit the definition of "customer."[193] However, the Commission's submetering rules may apply to

[190] 15 DCMR § 2100.1. Provisions for Construction of Electric Generating Facilities and Transmission Lines. This Chapter shall govern the construction of electric generating facilities, overhead transmission lines designed to carry sixty-nine thousand (69,000) volts or more, underground transmission lines in excess of sixty-nine thousand (69,000) volts as well as any substations connected to such lines. Authority: D.C. Code, 2001 Ed. §§ 34 - 301, 34 - 302, and 34 -1516.

[191] 15 DCMR § 2199.1. When used in this chapter, the following terms and phrases shall have the meaning ascribed: Smaller-Scale Construction - any construction project which involves providing electricity to a customer for which a Certificate of Public Convenience and Necessity is not required pursuant to this chapter. 15 DCMR § 2110 Annual Report on Smaller Scale Construction 2110.1. Electric corporations operating in the District of Columbia shall submit an annual report, on or before February 15th of each calendar year, which summarizes smaller-scale construction and the costs associated with each project undertaken by the corporation during the preceding year. SOURCE: Final Rulemaking published at 40 DCR 8359, 8366 (December 3, 1993); as amended by Final Rulemaking published at 51 DCR 8653 (September 3, 2004).

[192] 15 DCMR § 1899.1. When used in this chapter, the following terms and phrases shall have the meaning ascribed: Commercial Customer - a non-residential customer of a utility. Non-residential customers shall include electric customers served from the master-metered apartment tariff.

[193] 15 DCMR § 399.1. When used in this chapter, the following terms and phrases shall have the meaning ascribed: Customer: an accountholder or purchaser of electric, natural gas or Telecommunications services for residential use in the District of Columbia, excluding master-metered apartments with four or more units. An Account holder is a person in whose name an account with a Utility, Energy Supplier, or Telecommunications Service Provider has been established.

commercial customers.[194] Submetering in the District has not been extended to residential customers.

Pursuant to D.C. Code § 34-301, the Commission has jurisdiction to regulate utilities to maintain public health and safety.[195] In the case of in front of the meter facilities, the CBOR and the Commission's EQSS rules should apply, whether owned by Pepco or another entity. However, BTM facilities are not required to adhere to the Commission's safety and reliability regulations. Therefore, the question becomes, in the absence of Commission regulation over the design and safety of these BTM facilities, which design and safety standards for electric distribution facilities should apply to these facilities — the National Electrical Safety Code ("NESC")[196] or the National Electrical Code ("NEC")?[197]

Another key point of consideration regarding the functionality of different types of microgrids is cost recovery.[198] In other words, how will the microgrid operator recover costs for investments, like the sophisticated control system needed to operate a microgrid if the users are retail customers? Arguably, in the case of a campus microgrid, a private institution like a university or industrial facility, which is not an electrical company under the D.C. Code, could recover the microgrid costs through the institution's operating budget. Similarly, even where a campus microgrid serves a mixed-use development, the costs could be recovered from residents and businesses through their rent or home owner's association fees. However, where residents and businesses within the microgrid boundary are either classified as customers under the D.C. Code or treated as customers by the microgrid operator in the sense that each are metered for their electricity and required to pay energy charges on a per-kWh basis, then the additional microgrid

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194 15 DCMR § 4401.3. The owner shall not engage in submetering or energy allocation with a tenant without first securing from that tenant, a written agreement for the purchase of electricity or natural gas. The agreement, which may be part of the tenant's lease agreement, shall be executed before any electricity or natural gas is delivered. The owner, upon establishing a submetering or energy allocation practice, agrees to supply any and all tenants with electricity or natural gas and shall be bound by such terms and conditions in acting upon agreements for electric service or natural gas service.

195 Commission shall, within its jurisdiction: "reasonably promote the public interest, preserve the public health, and protect those using such gas or electricity." D.C. Code § 34-301.

196 Utilities, their employees, contractors and manufacturers — as well as telephone companies, cable TV providers, railways and other organizations in the exercise of functioning as a utility — look to the NESC for practical safeguarding guidelines. IEEE's National Electrical Safety Code (NESC) is also known as American National Standard C2. It is a consensus standard that has been prepared by the National Electrical Safety Code Committee under procedures approved by the American National Standards Institute (ANSI). The membership of the NESC Committee is composed of national organizations and is certified by ANSI as having an appropriate balance of the interests of members of the public, utility workers, regulatory agencies, and the various types of private and public utilities. Utility regulators in the US and more than 100 nations use the Code at least in part. https://standards.ieee.org/about/nesc/nesc_2017_brochure.pdf.

197 The DCRA likely requires adherence to the NEC by anyone applying for a building permit that involves electrical work behind the meter.

198 Under current law, the provider of electric distribution service must apply to the Commission to increase rates; logically, then, any provider of electric distribution service to residential customers would need to apply to the Commission to establish or increase the rates charged for that service. *See* D.C. Code § 34-901.

costs of the disconnection switch and microgrid control system would need to be recovered as part of the microgrid's distribution rates. Additionally, the Commission would need to consider how any bills to retail customers served by a microgrid would reflect Pepco's distribution costs as they relate to serving the microgrid as well as other broadly applicable social charges such as the District's Right of Way Fee, SETF Surcharge, EATF Surcharge, and RAD Surcharge.

D. Interconnection Rules & Notice of Construction Procedures

1. Existing Legal & Regulatory Framework

15 DCMR Chapter 40 establishes the District of Columbia Small Generator Interconnection ("DCSGIR") rules which, pursuant to 15 DCMR 4000.1, apply to facilities satisfying the following criteria: "(a) The total nameplate capacity of the small generator facility is equal to or less than 10 megawatts (MW); (b) The small generator facility is not subject to the interconnection requirements of PJM Interconnection; and (c) The small generator facility is designed to operate in parallel with the electric distribution system." The DCSGIR set forth the procedures and standards for customers with on-site generation to interconnect with Pepco's electric distribution system. Currently, there are no standard interconnection procedures for connecting microgrids or energy storage systems to the larger electric distribution grid in the District.[199] However, the certification of interconnection equipment under 15 DCMR § 4002 requires compliance with IEEE 1547 standards.[200]

It must be pointed out that on July 25, 2016, the District Council passed the Renewable Portfolio Standard Expansion Amendment Act of 2016 ("RPS Act of 2016").[201] The RPS Act of 2016 increased the capacity for customer-generator facilities eligible to engage in RPS, from 10 MW to 15 MW.

The Commission also has an open proceeding, Formal Case No. 1050, which is an investigation of the implementation of interconnection standards in the District of Columbia. In the context of Formal Case No. 1050, the Commission reviews Pepco's Annual Interconnection Report, assesses the effectiveness of the implementation process, and has directed Pepco to take steps to improve the application process.[202] In order to address concerns about Pepco's interconnection process and the barriers it presents to customers, the Commission held a legislative-style hearing on July 21, 2015.[203] Since that hearing, efforts have been made by Pepco and the Commission to

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199 WGL Energy's Comments to Order 18144 at 14.

200 WGL Energy's Comments to Order 18144 at 14.

201 B21-0650 Renewable Portfolio Standard Expansion Amendment Act of 2016 ("RPS Act of 2016"), was enacted July 25, 2016. *See D.C. Act A21-0466.* The RPS Expansion Amendment Act of 2016 became effective October 8, 2016. *See D.C. Law L21-0154.*

202 *Formal Case No. 1050, In the Matter of the Investigation of Implementation of Interconnection Standards in the District of Columbia* ("*Formal Case No. 1050*"), Order No. 14017, rel. July 31, 2006 ("Order No. 14017").

203 *Formal Case No. 1050*; Transcript of Legislative-style Hearing held on July 21, 2015; July 24, 2015.

improve the interconnection process. For example, by Order No. 18113, issued February 29, 2016, the Commission directed Pepco to begin including a list of names, locations, fuel type, and kW capacities of Level 2, Level 3, and Level 4 facilities approved during the reporting year in its Annual Interconnection Report.[204] The Commission also issued Order No. 18269, on July 14, 2016, which granted Pepco's request to remove the $100 application fee for Level 1 interconnection applicants.[205] Furthermore, on October 17, 2016, the Commission issued Order No. 18575, which contained directives for Pepco to take certain steps to improve the implementation of interconnection in the District, including, among other directives:

(1) direction for Pepco to modify the "Requested Work" label on its website to be more user-friendly,
(2) report response time to customer calls beginning with the 2016 Annual Report,
(3) direction to provide quarterly reports with information on the number of applications that missed approval deadlines,
(4) direction to include a remedial plan for missed deadlines in its quarterly report,
(5) provide an incomplete application report each quarter, and
(6) direction for Pepco to provide specific data for currently interconnected solar and non-solar facilities to facilitate our internal monitoring of small generation facilities.[206]

Additionally, improving interconnection measures by Pepco was a merger commitment in Formal Case No. 1119.[207] On June 21, 2016, Pepco filed an "Interconnection of Distributed Energy Resources" report in order to address DER-related commitments resulting from the Commission's approval of the PHI's merger with Exelon. In that report, among other things, PHI discusses its interconnection application review and approval process as well as improvements being adopted to help facilitate the interconnection of proposed renewable-energy projects to Pepco's distribution system. In the report, PHI recognized the growing number of interconnection applications being filed with Pepco and "the increasing need to streamline the interconnection application review process to minimize delays, decrease operating issues, and improve the overall customer interconnection experience." PHI noted its efforts to streamline the process includes: "a new online application website," "a new application fee process, increased internal cross-jurisdiction facilitation and coordination, and reduction in processing time down to one business day for customer class, voicemail returns, and Green Power Connection Mailbox messages."

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204 *Formal Case No. 1050*, Order No. 18113, ¶ 35, rel. February 29, 2016 "Order No. 18113").

205 *Formal Case No. 1119, Formal Case No. 1050,* Pepco's Request to Eliminate the Level 1 Small Generation Interconnection Fee ("Pepco's Request"), filed June 17, 2016; Order No. 18269, rel. July 17, 2016 ("Order No. 18269"). Pepco made its request pursuant to Order No. 18148.

206 *Formal Case No. 1050,* Order No. 18575, rel. October 17, 2016 ("Order No. 18575"). The Commission provided a host of directives for Pepco to improve its interconnection process in ¶¶42-47 of the Order.

207 *See Formal Case No. 1119*, Order No. 18148, rel. March 23, 2016, Attachment B, at 25-28 ("Order No. 18148").

PHI also notes increased customer education and outreach measures to educate customers on the interconnection process as well as the implementation of expedited technical review of interconnection applications ("Fast Track Process") that meet certain criteria. PHI notes the development of an electrical data interchange ("EDI") tool that went live in April 2016 to allow "customers and customer representatives to access historical electric usage." Several of these identified improvements relate to proposed requirements by stakeholders in this proceeding. The Commission should consider whether these changes in the interconnection process go far enough to facilitate DER deployment or whether additional regulations are needed.

The Interconnection Report also identifies challenges to incorporating behind-the-meter solar and energy storage, such as potential system impacts on the grid, inappropriate net-metering standards, concern regarding accounting for Renewable Energy Certificates ("RECs"), lack of communication between the customer system and utility that may lead to negative impact on the macrogrid, as well as procedural and administrative challenges which Staff will discuss in more detail.

In a December 22, 2106 newsletter, DC SUN provided an early review of Pepco's new online portal that supports Net Energy Metering ("NEM") interconnections, Green Power Connection.[208] DC SUN indicates that the new portal allows customers to electronically request that Pepco send suppliers 24 months of historical data so that the solar installer can properly size a solar system for the customer's usage. DC SUN reports that "this tool functions well and can serve as a great way for potential solar customers to share their utility usage with installers" and "provides a more streamlined solution for managing the interconnection process and is a major step forward for Pepco."[209] DC SUN further notes that "[t]his tool shows a significant improvement in the interconnection process over the past few years."[210]

2. Legal & Regulatory Challenges

Several stakeholders, including the District Government, Pennoni, WGL Energy, MDV-SEIA, and GSA submitted comments asserting that a key component to facilitating DER development in the District is the creation of streamlined interconnection rules. More specifically, MDV-SEIA asserts that the process for interconnection approvals must be improved as currently there are too many uncertainties placed on project developers by long and inconsistent timelines. In order to facilitate DG, MDVA-SEIA asserts the "Commission should focus on eliminating ambiguities in the application process, making information on potential technical obstacles

208 DC Solar United Neighborhoods, Online Portal Streamlines Solar Interconnection Process, December 22, 2016, http://www.dcsun.org/2016/12/22/online-portal-streamlines-solar-interconnection-process/ , accessed January 11, 2017.

209 DC Solar United Neighborhoods, Online Portal Streamlines Solar Interconnection Process, December 22, 2016, http://www.dcsun.org/2016/12/22/online-portal-streamlines-solar-interconnection-process/, accessed January 11, 2017.

210 DC Solar United Neighborhoods, Online Portal Streamlines Solar Interconnection Process, December 22, 2016, http://www.dcsun.org/2016/12/22/online-portal-streamlines-solar-interconnection-process/, accessed January 11, 2017.

readily available to developers early in the project development cycle," including a clear statement of the criteria for interconnection approval and publishing the capacity available for additional interconnections on individual circuits.[211] Grid2.0 asserts that the Commission should allow for any DER that complies with existing rules and regulations, adding that in "instances where there is a dispute on the effect of DG to the grid, there should be provisions for the owner/operator of the DG to either contest any utility objection, or install necessary technology to manage the DG in a manner consistent with best practices."

In addition, stakeholders suggest expedited permitting processes for Qualified DER systems and solar energy developers to decrease costs associated with project development.[212] Pennoni recognized that microgrids facilities fall into different categories and suggested a "tiered approval process based on the distributed generation facility's: (1) technology type; (2) generating capacity; (3) physical location; and (4) industry peer review certification."[213] Pennoni asserts that taking a tiered approach will help the Commission facilitate DER deployment by "laying out precisely how different types of [DG] will be approved under D.C. Code § 34-1516" and lessening "the administrative burden of seeking approval by pre-qualifying certain types of" DG.[214] Pennoni also suggests that the Commission could adopt a four tier process and that to comply with the notice and hearing requirements of D.C. Code § 34-1516, the tiers could be adopted through a notice and hearing.[215]

GSA suggests that the Commission establish a "streamlined and pro-forma approval process" in order to facilitate review and approval of DG Facilities with many of the requirements being maintained or implemented by the Commission.[216] WGL Energy suggests the creation of enforcement provisions related to interconnection regulations to hold the utility accountable.

Stakeholders further suggest that the Commission: (1) adopt interconnection procedures that "require the electric utility to interconnect competitive microgrid facilities to the distribution grid in the same manner that distributed generation ("DG") is now being interconnected but with enforceable timelines, like missed deadline penalties; (2) adapt Pepco's interconnection tariff standards to wide-spread distributed generation deployment and microgrids in the District; (3) require Pepco to interconnect microgrids in the District that have a capacity up to 20 MW; (4) direct Pepco to provide stakeholders with information regarding the benefits/harms/costs of distributed generation and microgrids to the larger distribution grid related to a customer's choice of self-consumption or sales to the grid; and (5) require non-discriminatory access to the

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211 MDV-SEIA Comments to Order 18144 at 2.

212 DOEE/DCG Comments to Order 18144 at 6-7.

213 Pennoni Comments to Order 18144 at 4.

214 Pennoni Comments to Order 18144 at 4.

215 Pennoni Comments to Order 18144 at 4.

216 GSA Comments to Order 18144 as 3. In its filing GSA provides a bulleted list of considerations for the streamlined approval process, including: identifying key criteria, acceptable sources of power, necessary zoning approvals, required reliability studies, required interconnection agreements, etc.

distribution system – require electric company to open all interconnection requests to third party bids." WGL also suggests requiring Pepco to provide microgrids acting as, or coordinating with competitive suppliers with wheeling services, project developers can provide competitive services to District residences and businesses.[217]

Also, as WGL Energy mentions in its comments, when the Commission approved the merger of PHI Companies with Exelon Corporation the Commission accepted Pepco's commitment to implement specific enhancements to the present interconnection process for behind-the-meter, small distributed generation in the District.[218] The enhancements include making available to project developer service territory maps uploaded on PHI's website and updated periodically, system size restrictions, secondary network circuits, and other valuable information needed to support interconnection requests under 15 DCMR Chapter 4000.[219] Also, the enhancements include planning for distributed generation penetration, evaluating the long term effects and benefits of distributed generation on grid reliability and efficiency, providing a transparent process for reviewing and approving applications to interconnect distributed generation projects, providing maps showing the location and size of circuit constraints, providing access to customer usage data, maintaining a list of accepted inverter equipment, committing to maintain existing interconnections within twenty business days after an applicant submits a certificate of completion and an inspection certificate, and eliminating the current \$100 application fee for Level One applications. Finally, Pepco committed to establish behind-the-meter generation and battery information protocols and to establish an enhanced communication plan to promote behind-the-meter generation with input from stakeholders.[220]

As WGL Energy noted in its MEDSIS Workshop comments, there are no standard interconnection procedures for connecting microgrids or energy storage systems to the larger electric distribution grid in the District.[221] Both microgrids and energy storage facilities present unique qualities, which distinguish them from small capacity generators. As was stated elsewhere, microgrids have all three elements: generation, transmission and distribution. Because they have generation, one of the concerns with microgrids is the potential for them to feed energy back to the macrogrid and possibly affect reliability for standard customers of the electric distribution company ("EDC"). Section 4002 of the DCSGIR contains requirements for inverters to protect against the negative impact of two-way power flow between the small capacity generator and the distribution system.

Energy storage facilities present a different challenge. Although they do not possess the elements of transmission and distribution like microgrids, there is a possibility that storage facilities suddenly may feed a surge of their stored energy to a portion of the EDC's network and

[217] WGL Energy's Comments to Order 18144 at 16.

[218] WGL Energy's Comment to Order 18144 at 14.

[219] *See Formal Case No. 1119*, Order No. 18148, Attachment B, at 25-28.

[220] *See Formal Case No. 1119*, Order No. 18148, Attachment B, at 25-28.

[221] WGL Energy's Comments to Order 18144 at 14.

threaten reliability. Based on this concern, it seems that energy storage may affect the distribution system in a similar fashion as a generating facility. Similar to Microgrids, Section 4002, pertaining to inverters, should be amended to address energy storage facilities as well, depending on their capacity, energy storage facilities may fall under any of the four levels of review in Chapter 40 of DCSGIR. However, because energy storage has some of the properties of generating facilities but are not generating facilities, they may warrant their own section of review.

Another issue that must be considered is whether the Commission should require Pepco to provide wheeling services to microgrids now or the near future. As discussed in the microgrids section of this Report, it is currently unclear how microgrids will be configured in the District. Microgrids must first be defined and it must be determined whether microgrids will be permitted to net export. If they are allowed to net export, then the issue becomes whether they should be designated as competitive retail suppliers. If they are treated as competitive retail suppliers, then the discussion of retail wheeling services must also be addressed. In the absences of such determinations, it is premature for the Commission to make a determination on the feasibility of Pepco providing retail wheeling services to microgrids.

As mentioned above, on October 17, 2016, the Commission issued Order No. 18575 in Formal Case No. 1050, wherein the Commission continues to address the barriers for customers to engage in interconnection.[222] In that Order, the Commission stated that Pepco has recently implemented an online interconnection application process, pursuant to Attachment B of Order No. 18160, approving the merger.[223] The automated process contains the prompts that will facilitate completion of the application, will hopefully remove the processing delays commenters have experienced, and allow for the applicants to provide the necessary information to ensure their application are processed expeditiously.

In addition, Order No. 18575 noted that another source of delay that may have affect system operators is the delayed receipt of authorizations to operate (“ATOs”).[224] ATOs are issued by Pepco after a small generating facility has been certified but before the operator has approval to operate on the Pepco’s distribution system. There is no regulatory timeline for the issuance of an ATO. Delays may range from 33 to 139 days from the time Pepco receives the system operator’s certificate of completion to the time Pepco issues the ATO.[225] Pepco asserts that in the fourth quarter of 2015, with the implementation of the new process and system, the Company processed 99 percent of ATO letters within 20 business days.[226] In addition, in Attachment B to Order No. 18160, which approved the merger, the Joint Applicants committed to issuing ATOs within 20 business days. They also commit to maintain statistics on their progress in this regard

[222] *Formal Case No. 1050*, Order No. 18575, rel. October 17, 2016 (Order No. 18575”).

[223] *Formal Case No. 1119*, Order No. 18148, Attachment B, ¶ 125.

[224] *Formal Case No. 1050*, Order No. 18575, ¶ 8, rel. October 17, 2016.

[225] *Formal Case No. 1050*, Testimony of Solar Solutions (Greiterman), Tr. at 70.

[226] *Formal Case No. 1050*, Pepco’s Interconnection Annual Report for 2015 at 8.

and to report their statistics annually, and commit to implement or state what remedial action they took if their ATOs fall below 90% within the 20-day business day window.[227]

Finally, pursuant to Order No. 18160, the Joint Applicants filed a Petition for a rulemaking to amend certain provisions of Chapter 40 of the DCSGIR.[228] Among the proposed amendments to Chapter 40, is a modification to Subsection 4004.3, which would define the term "ATO" and make the 20-business day deadline for ATOs a requirement in the Commission rules.[229]

3. Recommended Actions

Staff is aware that measures are being taken in the Formal Case No. 1050 docket to address interconnection issues. Therefore, Staff refrains from making additional interconnection related recommendations in this Report. However, Staff believes that there are points of consideration that should be highlighted as Formal Case No. 1050 proceeds. Specifically, in addition to the interconnection measures currently being considered and implemented by the Commission, the Commission should consider interconnection procedures for distributed generation ("DG"), energy storage systems and microgrids within the context of the existing Formal Case No. 1050 docket.

Specifically, the Commission should consider streamlining the rules and procedures for interconnecting DERs, including revising 15 DCMR § 4002 to allow smart inverter deployment or to add islanding standards for distribution generation.[230] Also, Section 4002 may need to be amended to ensure that the proper inverters are required so the electric distribution system is not compromised. The Commission may also consider the following questions as it streamlines its interconnection procedures:

- If the Pepco's measures are not effective and the interconnection application delays persist, should the Commission impose deadline and penalty provisions?
- What penalty would be reasonable given that Pepco's conduct does not rise to the level of failing to provide safe, reliable service?
- Consider a Pepco feasibility report on expanding the Green Power Connection website, which mainly facilitates the interconnection of solar photovoltaic systems ("PV"), to support customer deployment of all types of Distributed Energy Resources ("DER").

Furthermore, Sections 4003 of Title 15 of the DCMR sets forth a tiered system, Levels 1 through 4, for the review and evaluation of the small capacity generation facilities that seek to

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227 *Formal Case No. 1119*, Order No. 18148, Attachment B at ¶ 123.

228 *Formal Case No. 1119*, Pepco's Petition of Potomac Electric Power Company for the Commission to Initiate a Rulemaking Proceeding to Amend 15 DCMR §§ 4004, 4099, and 3602 ("Petition"), filed July 18, 2016.

229 *Formal Case No. 1119*, Petition at 1.

230 Solar inverters are one of the most important components of a solar energy system. Inverters are power electronic devices which convert the direct current produced by photovoltaic ("PV") panels into alternating current. Smart inverters have advanced functions that serve to ensure the stability and reliability of the grid.

interconnect with Pepco's distribution network.[231] Sections 4004-4007, establishes the levels of review for each tier based upon the capacity (size in kWs) and complexity of the generation facility with Level 4 (Section 4007) addressing the largest and most complex facilities.[232] In light of the discussion in this Report, Staff believes Section 4007 will need to be amended to address microgrids. One particular element that should be addressed in this provision is the operating requirements needed to support a microgrid's islanding capability.

In the alternative to amending Section 4007 to address microgrids, as suggested by Pennoni, it may be more appropriate, given the unique characteristics and technical requirements of microgrids, to create a separate tier level of microgrid-specific interconnection procedures. It is worth noting that IEEE is discussing and considering a set of new interconnection standards, which includes islanding, and such standards may be suited to the configurations and challenges microgrids will present to in the District.[233]

RA

Issue a Notice of Proposed Rulemaking to Adopt Streamlined Notice of Construction Rules for Renewables Generating Facility Approvals to within 20 days

Some stakeholders suggest that expedited permitting processes for Qualified DER systems and solar energy developers be implemented to decrease costs associated with project development.[234] Staff agrees that such processes should be expedited. As discussed above, Staff recommends that the Commission issue NOPRs to define the various types of DER pertinent to the District, which will subsequently be incorporated into the Commission's rules governing interconnection with Pepco's distribution system. However, that process will take some time because of the need to define the DER terms prior to streamlining the interconnection process.

However, Staff recommends that, on a more immediate note, the Commission take action to streamline its the notice of construction ("NOC") rules for renewable generating facilities that sell electricity. Within the bounds of the District's existing statute concerning the construction of new electricity generation in the District, the Commission has the ability to make regulatory changes to speed the approval of any requests for new construction of renewable distributed generators. As outlined above, the 1999 Act and the DC Code require that the Commission

231 15 DCMR §§ 4004-4007 (2009).

232 15 DCMR §§ 4004-4007 (2009).

233 IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems.

234 DOEE/DCG Comments at 6-7.

approve any proposed construction of generating facility that sells electricity at retail or wholesale if it is in the “public interest” after “notice and hearing.”[235]

The Commission’s rules implementing this section cover the construction of electric generating facilities and transmission lines.[236] These rules provide for compliance without firm deadlines and make no distinction between fossil fuel powered generation and renewable generation sources. The equal treatment of fossil fuel powered generation and renewable generation in the current rules may present a burden on renewable distributed generation applicants and work against the District Council’s intent to increase sources of clean power generation in the District.

The Committee Report for that 1999 Act states that, the Commission should consider the following three factors when reviewing applications for the construction of renewable generating facilities:

(1) “whether the applicant has complied or will comply with all applicable zoning and environmental laws;”
(2) “if a proposed generation facility will be relatively small and unobtrusive to the surrounding community, and will increase system reliability, its construction is likely to be in the public interest;” and
(3) whether it “will run on clean sources of power,” as the District Council wants “to encourage as much as possible, the construction of generating facilities that will produce ‘clean’ electricity. Thus, if a generating facility will operate on renewable sources of power, its construction is likely to be in the public interest.”[237]

Therefore, Staff recommends that the Commission issue a NOPR amending the construction of electric generating facilities and transmission lines rules to speed the construction of renewable distributed generation. Specifically, Staff recommends that the Commission adopt the three factors laid out in the Committee Report on the 1999 Act and provide that, in the absence of a filed objection, applicants who meet those conditions will be approved by the Commission within twenty days of filing a completed application. Staff believes that adopting these changes is an appropriate use of light touch regulation and would be in line with District policies favoring renewable energy. Staff has attached a draft NOPR reflecting these recommended changes at Appendix F to this Report. The public may comment on the appropriateness of these proposed changes in conjunction with comments filed on the entirety of this Staff Report.

[235] D.C. Code § 34-1516 (2001).

[236] 15 DCMR §§ 2100-2199 (2004).

[237] Council of the District of Columbia, on Consumer and Regulatory Affairs Committee Report on the Retail Electric Competition and Consumer Protection Act of 1999 (December 1999) at 90-91.

E. Utility Ownership of DER Generation

1. Existing Legal and Regulatory Framework

As discussed earlier, the 1999 Act introduced competition to the retail sale of electricity in the District. As part of introducing competition, the Act limited the ability of Pepco, as the electricity distribution company, to sell electricity and curtailed Generating Facilities located in the District.

The 1999 Act carved out two means through which "the electric company" is involved in selling electricity. The first is Standard Offer Service ("SOS"), the District's default electricity service, which Pepco manages with Commission and OPC oversight as the Commission appointed SOS Administrator.[238] Through SOS, Pepco sells electricity it procured through the SOS auction process directly to customers. The second is detailed in D.C. Code § 34-1513 (a), which provides: "Other than its provision of standard offer service, the electric company shall not engage in the business of an electricity supplier in the District of Columbia except through an affiliate." Further, the Pepco affiliate would need to register as an electricity supplier under D.C. Code § 34-1505.[239] Under this arrangement, Pepco does not sell electricity; it is an affiliate of Pepco that engages in sales. Therefore, reading these two provisions together Pepco, the regulated distribution company, may only sell electricity as the SOS Administrator.

Regarding electricity generation in the District, during the Act's passage, Pepco was required to divest itself of its generation plants, including its Benning Road and Buzzard Point Generating Facilities in the District.[240] The Act established a means for Pepco to sell to a third-party or transition these facilities to an affiliate as well as examining their decommissioning.[241] Further, the Act mandated that any new generation facility constructed in the District for the sale of electricity must be found by the Commission after notice and comment to be in the public interest.[242] As a result of the requirement that Pepco, as the electric company, maintain the District's electric distribution system (D.C. Code § 34-1506) and the prohibition against Pepco, as the electric company, engaging in the business of an electricity supplier, Pepco no longer owns generation facilities in the District for the purpose of selling electricity.

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238 D.C. Code §34-1509 (2001).

239 D.C. Code §34-1513 (b) (2001).

240 *See Formal Case No. 945, In the Matter of the Investigation into Electric Service Market Competition and Regulatory Practices*, Order No. 11576, at 1-4, rel. December 30, 1999 ("Order No. 11576"). *See also*, D.C. Code §§34-1519 and 34-1520.

241 D.C. Code § 34-1519 (2001).

242 D.C. Code § 34-1516 (2001).

2. Legal & Regulatory Challenges

MRC notes Pepco's continued role in electricity distribution in its comments asserting that "current regulations also allow for a utility-microgrid partnership, in which the utility owns the wires within the microgrid, while a microgrid developer or customers retain ownership of the included generation."[243] Pepco also acknowledges such an arrangement and explains that:

> Both the electric company and third parties may own the generation portion of the microgrid, provided that, other than in its capacity as the SOS administrator, an electric company may not sell generation to retail customers except through an affiliate.[244]

However, with the proliferation of DER in the District an emerging issue is whether Pepco should be able to own generation sourced from DERs. While some commenters assert that Pepco should not be able to own generation, Pepco argues that it should. More specifically, Pepco states that it currently owns installed solar systems on two of its substations (Northeast Substation and Benning 230 kV Substation) and additional solar will be included in the new Waterfront Substation.[245] Pepco explains that these solar facilities are "NEM facilities and all generation [will be] used to reduce station service requirements."[246] Further, Pepco explains that these solar panels can also be used to support zoning requirements for a specific piece of utility property.[247]

3. Recommended Action

Some commenters have expressed concerns about Pepco's ownership of DER facilities and the potential interference that such ownership could have in the competitive market. Other commenters presume that the 1999 Act prevents Pepco from owning electricity generating facilities. However, it is Staff's opinion that the 1999 Act does not limit Pepco's ability to own generation; it only limits Pepco's ability to *sell* electricity produced by any generation source that it owns. As Pepco points out in its comments, it currently owns limited DER facilities, NEM solar facilities, to produce power to support the operation of its substations.[248] These facilities support Pepco's operation of the distribution system and the District's zoning requirements. As to Pepco's relationship with a microgrid, in its comments, the Company also clearly states that it may only own the generation through its role as the SOS Administrator or through an affiliate.

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243 MRC Comments to Order 18144 at 5.

244 Pepco Comments at 18, citing D.C. Code §§ 34-1513 (a)(b) (2001).

245 Pepco's Comments to Order 18144 at 15. Staff notes that Pepco has mentioned potential ownership of solar generation from a large solar installation at the Waterfront station, but that has not yet materialized.

246 Pepco's Comments to Order 18144 at 15.

247 Pepco's Comments to Order 18144 at 15, citing 11 DCMR § 3400, et seq.

248 Pepco's Comments to Order 18144 at 18.

Therefore, there is no need for Commission action regarding Pepco's ownership of DER facilities so long as the electricity generated by such facilities is not sold but is instead used by Pepco to support the reliable operation of the distribution system.

RA

Issue a NOPR to adopt a definition of "Electrical Company" that clarifies that the term expressly excludes any person or entity distributing electricity from a behind-the-meter generator to a single retail customer behind the same meter.

On a related note, Commission Staff recommends that the Commission clarify that the definition of "Electrical Company" found in D.C. Code § 34-207, shall be interpreted to expressly exclude any person or entity distributing electricity from a behind-the-meter generator to a single retail customer behind the same meter. Interpreting the term in this manner serves multiple purposes.[249] First, as currently drafted, an electrical company "includes every corporation, company, association, joint-stock company or association, partnership, or person doing business in the District of Columbia, their leases, trustees, or receivers, appointed by any court whatsoever, *physically transmitting or distributing electricity in the District of Columbia to retail electric customers*."[250] Meaning that, for example, a PV system operator selling electricity generated from the system to a single customer behind Pepco's meter would be an electrical company subject to a host of Commission regulations aimed at the Utility, like taxation and assessment requirements.[251]

While that PV system operator would be an electrical supplier selling electricity[252] and, therefore, subject to notice of construction ("NOC") requirements under D.C. Code § 34-1516,[253]

249 Although a supplier transmitting electricity over Pepco's distribution system is clearly subject to Commission regulation, there is no clear intent for the Commission to regulate a supplier who transmits electricity over its own distribution system on the customer side of the meter.

250 D.C. Code § 34-207, "The term excludes any building owner, lessee, or manager who, respectively, owns leases, or manages, the internal distribution system serving the building and who supplies electricity and other related electricity services solely to occupants of the building for use by the occupants."

251 *See, e.g.*, D.C. Code § 47-2501(d-1), "each electric company that provides distribution services to District of Columbia ratepayers shall… [p]ay to the Mayor a tax of $0.0007 for each kilowatt-hour of electricity delivered to end-users in the District of Columbia…."

252 D.C. Code § 34-1501(17), an electricity supplier is "a person, including an aggregator, broker, or marketer, who generates electricity; sells electricity; or purchases, brokers, arranges or, markets electricity for sale to customers."

253 D.C. Code § 34-1516, "[n]o person shall construct an electric generating facility for the purpose of the retail or wholesale sale of electricity unless the Commission first determines, after notice and a hearing, that the construction of the generating facility is in the public interest."

Staff does not believe that the application of the term electrical company should be or was intended to apply to renewable energy providers selling power to a single behind-the-meter customer.[254] Nor does such an interpretation make sense in today's energy landscape.

Second, interpreting "electrical company" to exclude behind-the-meter sales of electricity to a single customer also provides clarity to stakeholders as to how certain facilities will be regulated by the Commission. This will help ensure the regulatory risk does not inhibit development of renewable distributed generation located behind-the-meter.

A draft NOPR reflecting Staff's proposed changes is attached to this Report at Attachment E. The public should comment on the appropriateness of Staff's proposed changes in conjunction with comments filed on the entirety of this Staff Report.

F. Retail or Wholesale "Sale" of Energy

1. Existing Legal & Regulatory Framework

The MEDSIS initiative explores the use of competitive markets to expand the role of distributed generation ("DG") in providing greater value to the energy delivery system. However, the Commission's ability to facilitate new competitive markets for DER within the District is limited to transactions at the retail or end-user level. The provisions of Title 34 of the D.C. Code, are to be "applied and construed free of conflict with the Constitution and laws relating to interstate commerce."[255] The Federal Power Act claims federal jurisdiction over "the transmission of electric energy in interstate commerce and to the sale of electric energy at wholesale in interstate commerce."[256] It defines "sale of electric energy at wholesale" as "a sale of electric energy to any person for resale."[257] Consequently, states' regulatory oversight is generally limited to retail sales of electric energy and the distribution of electric energy. According to some, wholesale transactions are subject to state, and not FERC, jurisdiction when both the generation facility and the wholesale purchaser are co-located on an electric utility's distribution facilities.[258] FERC, however, has not subscribed to this viewpoint.

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[254] Section 1516 was added to Title 34 of D.C. Code pursuant to the 1999 Act. The Committee Report for that Act states that, with respect to the applicability of Section 1516, "if a proposed generation facility will be relatively small and unobtrusive to the surrounding community, and will increase system reliability, its construction is likely to be in the public interest." The Committee Report also states that in considering whether a generation facility is in the public interest, the Commission should consider whether it "will run on clean sources of power," as the Council wants "to encourage as much as possible, the construction of generating facilities that will produce 'clean' electricity. Thus, if a generating facility will operate on renewable sources of power, its construction is likely to be in the public interest."

[255] D.C. Code §34-101.

[256] *Federal Power Act* ("FPA"), 16 U.S.C. 824(b)(1*).*

[257] *FPA*, 16 U.S.C. 824 (d).

[258] Lindh and Bone, *State Jurisdiction Over Distributed Generators*, 34 Energy L.J 499, 524-528 (2013).

Nevertheless, states are given a limited delegation of authority under the Public Utilities Regulatory Policy Act of 1978 ("PURPA") and the Energy Policy Act of 2005 to regulate wholesale sales of electric power between qualifying small power production facilities of less than 80 MW and electric utilities. This regulation is twofold, consisting of a conditional "must-take" purchase obligation and rate-setting authority. The must-take obligation applies when the small power production facility (Qualifying Facility or "QF") does not have nondiscriminatory access to a regional competitive wholesale power market (such as the PJM Interconnect). FERC employs a rebuttable presumption, under Part 292 of its regulations (18 C.F.R.), that QFs of 20 MW or less do not have such access.[259] A state's authority to set prices in these wholesale transactions is subject to a price cap equal to the electric utility's avoided cost of power.[260] In determining this avoided cost, a state may use a multi-tiered rate structure that sets different avoided costs according to differing generator characteristics. The price applicable to the QF would be the avoided cost assigned to the generator type that matches that of the QF.[261]

A number of states have used their rate-setting authority under PURPA to implement special tariff programs under which electric utilities under their jurisdictions are required to enter into long-term purchase agreements with Distributed Energy Resources (called "Feed-In Tariffs").[262] California's Renewable Market Adjusting Tariff ("Re-MAT") program is a Feed-In Tariff program applicable to DERs with a capacity of 20 MW or less and requires a ten-year purchase commitment, with prices set under a multi-tiered avoided cost pricing structure.[263] Pricing under PURPA is intended to justify an electric utility paying above-market prices over a protracted period, sufficient to make development of DERs economically viable.

States have attempted to implement regulatory programs involving intrastate wholesale transactions. Legal arguments in support of these state programs have been made that a wholesale transaction must also be in interstate commerce before FERC jurisdiction would be triggered. However, decisions by both FERC and the Courts would indicate that this differentiation might be difficult to defend. Of particular note for MEDSIS purposes is FERC's rejection of an argument by Sacramento Municipal Utility District (SMUD). Specifically, SMUD requested that FERC limit its review of feed-in tariffs solely where wholesale transactions are involved that would be in interstate commerce and recognize that FERC has no jurisdiction over distributed generation ("DG") sales that are intrastate transactions in all respects. With little analysis or explanation, FERC dismissed SMUD's concern stating:

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259 FERC Docket No. RM05-36-000, Order No. 671, 71 FR 7852 at 50, 74 (February 2, 2006).

260 16 U.S.C. 824a-3(a)(1982).

261 18 C.F.R. 292.101(b)(6)(1985).

262 As of May 2013, these states were Hawaii, California, Maine, Oregon, Rhode Island, Vermont and Washington. U.S. Energy Information Administration, *Feed-In Tariffs or similar programs*, https://www.eia.gov/electricity/policies/provider_programs.cfm (accessed October 19, 2016.)

263 *Windy Creek Solar LLC*, 153 FERC ¶ 61,027 at 3 (October 15, 2015).

> We deny SMUD's request that the Commission clarify that distribution-level facilities and distribution-level feed-in tariffs do not implicate Commission jurisdiction. The FPA grants the Commission exclusive jurisdiction to regulate sales for resale of electric energy and transmission in interstate commerce by public utilities. The Commission's FPA authority to regulate sales for resale of electric energy and transmission in interstate commerce by public utilities is not dependent on the location of generation or transmission facilities, but rather on the definition of, as particularly relevant here, wholesale sales contained in the FPA.[264]

Other efforts by states to encourage construction of new generation such as Maryland's program that offered a contract for differences based on what a generator earned in the PJM market as well as a similar New Jersey program, have been struck down by the courts. In ruling against the Maryland program the Supreme Court opened the door for further experimentation asserting:

> Our holding is limited: We reject Maryland's program only because it disregards an interstate wholesale rate required by FERC. We therefore need not and do not address the permissibility of various other measures States might employ to encourage development of new or clean generation, including tax incentives, land grants, direct subsidies, construction of state-owned generation facilities, or re-regulation of the energy sector. Nothing in this opinion should be read to foreclose Maryland and other States from encouraging production of new or clean generation through measures "untethered to a generator's wholesale market participation.[265]

It is unclear as to what other transactional structure might be deemed "tethered" to the RTO market prices and subject to FERC jurisdiction.

Within the D.C. Code, the sale of electricity or natural gas is often a key element of the Commission's jurisdiction over an energy transaction. As part of the 1999 Act and 2004 Act, the Council of the District of Columbia curtailed the Commission's jurisdiction over energy transactions by providing that: "the supply and sale of electricity shall not be regulated by the Commission except as expressly set forth in Chapter 15 of this title; provided further, that the supply and sale of natural gas by a licensed natural gas supplier shall not be regulated by the Commission except as expressly set forth in Chapter 16C of this title."[266] Within those

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264 *California Public Utilities Commission vs. Southern California Edison Company et. al.*, 132 FERC ¶ 61,047 (2010) at 29.

265 *Hughes v. Talen Energy Marketing*, 578 U.S. ___ (2016) Slip. Op. at 15.

266 D.C. Code § 34-403 (2001), referencing D.C. Code §§ 34-1501 to 34-1522 (concerning the sale and supply of electricity), and D.C. Code §§ 34-1671.01 to 34-1617.14 (concerning the sale and supply of natural gas).

provisions the presence of a "sale" is a critical component of the definition of "electricity supplier," "broker," "marketer," and "natural gas supplier" as well as providing the Commission jurisdiction over the construction of new generating facilities in the District.[267] The absence of a sale is also significant in denying the Commission jurisdiction as the Council has specified that the ownership or operation of an electric vehicle charging station is not covered by the definitions of "electrical company" or "public utility" provided that the station "does not sell or distribute electricity."[268]

2. Legal & Regulatory Challenges

The Commission asked stakeholders to comment on what constitutes the retail or wholesale "sale" of electricity produced by a distributed generating facility because, as discussed earlier, D.C. Code § 34-1516 states that "[n]o person shall construct an electric generating facility for the purpose of the retail or wholesale sale of electricity unless the Commission first determines, after notice and a hearing, that the construction of the electric generating facility is in the public interest."[269] This language raises the question of what constitutes the retail or wholesale sale of electricity, thus, requiring Commission review?[270]

Pepco asserts that a retail sale occurs when electricity is sold to an end user. A wholesale sale occurs when electricity is sold for re-sale (*i.e.*, electricity is not consumed by the purchaser but, rather, is re-sold by the purchaser).[271] Therefore, a sale between a DER and the utility or the wholesale market would be a "wholesale sale," because assuming the utility or wholesale market would resell the electricity to other consumers, such sales trigger FERC jurisdiction.[272]

The District Government, while not having a workable definition to provide, notes that the definition of "sale" was developed when there was only one-way power flow and now the "existing definition is rigid."[273] The District Governments suggests a modification to the definition of "sale" that would facilitate anticipated Smart Grid and DER, carefully developed by stakeholders.[274] DC Climate Action asserts that "no retail or wholesale 'sale' of electricity is

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267 *See* D.C. Code § 34-1501 (7), (17), (19) (2001), D.C. Code § 34-1671.02 (12) (2001), and D.C. Code § 34-1516 (2001).

268 *See* D.C. Code § 34-207 (2001), and D.C. Code § 34-214 (2001).

269 *Formal Case No. 1130*, Order No. 18144, ¶ 6, rel. March 18, 2016.

270 This language also raises the question of whether microgrids producing excess energy for sale in the District are subject to electric supplier license requirements.

271 Pepco's Comments to Order No. 18144 at 25.

272 Pennoni Comments to Order No. 18144 at 13-14.

273 DOEE/DCG Comments to Order No. 18144 at 11.

274 DOEE/DCG Comments to Order No. 18144 at 11.

involved when a distributed generation facility is serving the needs of its owner(s) or a limited set of users."[275]

3. Recommended Action

Since the electricity market has developed beyond the operating concepts that formed the basis of the 1999 Act, the Commission needs flexibility in when and how to regulate the sale of electricity consistent with new technologies and with current policies supporting the goals that have been articulated in the Mayor's Plan for a Sustainable DC and the legislative mandates that have been set out in key pieces of legislation such as the CAEA. The sale of electricity under comprehensive contracts between a behind-the-meter generator and a customer behind the same meter for fixed periods of time, such as through a PPA, does not require the same level of Commission supervision as sales involving competitive suppliers who purchase energy in wholesale markets, wheel it across the distribution system, and sell it to customers on a month-to-month basis.

Staff notes that such sales-related concerns are not applicable to the District's natural gas market because there is no "generation" of natural gas behind-the-meter. All natural gas continues to be wheeled across the distribution system to the customer as envisioned by the 2004 Act.

RA

Amend Regulatory Definition of "Electricity Supplier"

One approach to clarifying the role of energy sales within the Commission's jurisdiction is to amend various statutory definitions of "electricity supplier," "broker," and "marketer"[276] to provide the greatest clarity about what type of sale is covered. Another approach would be for the Commission to seek specific statutory authority to define "sale" through our regulations so that the Commission can adapt the definition as new market opportunities develop.

Alternatively, the Commission could amend its definition of "electricity supplier" to exclude "[a]ny person or entity who owns a behind-the-meter generator and sells or supplies the electricity from that generator to a retail customer or customers behind the same meter." Such an exemption does not contravene the 1999 Act as it focused on suppliers connecting the wholesale market, through the distribution system, to the customer, while a behind-the-meter PPA is more

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275 DC Climate Action Comments to Order No. 18144 at 2 (April 18, 2016). Several of the commenters seem to be in agreement about the definition of retail versus wholesale "sale" of electricity – nothing that net metering is not a sale of electricity because it involves rollover credits and not the exchange of money for over producing energy.

276 *See* D.C. Code § 34-1501 (7), (17), (19) (2001), and D.C. Code § 34-1671.02 (12) (2001).

akin to a customer-generator[277] and does not utilize the distribution system for electricity delivery. Other changes may be appropriate to exempt any generation that does not use Pepco's lines from the definition of "retail sale" so as to ensure that distributed generation ("DG") and microgrids are not over regulated.

A draft NOPR reflecting Staff's proposed changes is attached to this Report at Appendix E. The public should comment on the appropriateness of Staff's proposed changes in conjunction with comments filed on the entirety of this Staff Report.

G. Distributed Resource Planning

1. Existing Legal & Regulatory Framework

Currently, there are no statutes or Commission rules that address Distributed Resource Planning in the District.

2. Legal & Regulatory Challenges

Several stakeholders assert that the Commission should require investor-owned utilities to develop Distribution Resource Plans ("DRP") that take into account existing and future DER projects. The District Government asserts that a utility DRP should identify optimal locations for DER; propose standard tariffs and contracts to facilitate DER deployment; and provide a granular picture of the distribution system's characteristics.[278] OPC also asserts that the Commission should require the Districts energy utility companies to develop and submit detailed grid modernization and DER integration plans similar to those submitted in California, Hawaii, and New York.

In Section 5 of the Integration Plan submitted by Pepco on June 21, 2016, as required by the Merger agreement, Pepco Holdings, Inc. ("PHI") notes that "Distribution System Planning develops feeder, distribution substation transformer, and total distribution substation peak load projections over a ten-year period – taking into account the impact of existing and pending DERs" and "PHI is working to develop a method to forecast future anticipated DERs (*i.e.* those neither in operation currently nor those known to be pending) and appropriate criteria to incorporate such resources into its planning process."[279] PHI further asserts that it "is in the process of developing four key modifications to its planning process that addresses the commitment for incorporating the impact of distributed renewable energy:

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277 D.C. Code § 34-1501 (15) (2001) ("Customer-generator" means a residential or commercial customer that owns and operates an electric generating facility that: (A) Has a capacity of not more than 1000 kilowatts; (B) Uses renewable resources, cogeneration, fuel cells, or microturbines; (C) Is located on the customer's premises; (D) Is interconnected with the electric company's transmission and distribution facilities; and (E) Is intended primarily to offset all or part of the customer's own electricity requirements.)

278 DOEE/DCG Comments to Order No. 18144 at 6.

279 Integration Report at 40. Staff notes that on September 26, 2016, Pepco filed an updated PHI Integration Plan in Formal Case No. 1119.

(1) The creation of a five-year NEM [photovoltaic (PV)] forecast based upon historical interconnection applications by PHI utility.
(2) Incorporation of the forecasted PV capacity and corresponding load reductions into the short-term load forecast and the Ten-Year Load Forecast (which are the key inputs in the Distribution System Planning Process and the initiation of the construction recommendation process).
(3) Reconciliation of historical peaks for planning purposes, the peak values will be adjusted to account for solar capacity additions.
(4) Incorporation of criteria to account for active and planned DERs under different operating conditions and system restoration efforts that ensure operations under multiple system configurations.[280]

However, based on what has been provided in the Integration Report, some initial considerations for the Commission are: (1) whether PHI's proposed Distributed Resource Plan components are sufficient, or whether additional information and data is needed; (2) how long PHI's short-term planning period should be (3 years, 5 years?); and (3) what kind of data Pepco needs to release to market participants in order to facilitate DER penetration (*i.e.*, identify optimal locations for DERs on the system).

3. Recommended Action

On June 30, 2016, Pepco filed an Application requesting authority to increase existing distribution service rates and charges for electric service in the District of Columbia by $85.5 million, representing an increase of approximately 23.7% increase in Pepco's distribution revenues.[281] On September 22, 2016, the Commission in Order No. 18550, designated the issues and established the procedural schedule for this proceeding.[282] In Attachment A, Issue No. 18 of the Order, the Commission designates the following issue regarding Pepco's short-term and long-term load forecasting: Are Pepco's short-term and long-term load forecasts reasonable?

a. Is Pepco's load forecast used in formulating the construction budget and driving the distribution system planning reasonable?
b. Does Pepco's load forecast reasonably and properly account for the effects of environmentally beneficial and load reducing measures on the load growth projections and capital requirements included in the Construction Program Report, including: (a) solar and other forms of customer-owned, behind-the-meter

280 Integration Report at 40-41.

281 *Formal Case No. 1139, In the Matter of the Application of Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service* ("*Formal Case No.* 1139"), at 3, filed June 30, 2016 ("Pepco's Application"). In supplemental testimony, Pepco revised its request to $82.1 million, representing a 22.72% increase in distribution revenues.

282 *Formal Case No.* 1139, Order No. 18550, rel. September 22, 2016 ("Order No. 18550").

generation; (b) energy storage facilities; (c) energy efficiency; (d) energy conservation; and (e) similar load reducing measures?

c. Are the system, substation and feeder level load growth projections used to justify the Reliability projects, Customer Driven projects, and Load projects contained in the Construction Program Report reasonable?
d. What steps should be taken to improve Pepco's short-term and long-term load forecast process and reporting for the future?[283]

Since this issue directly relates to Pepco's future Distribution Resource Planning and is currently being litigated in Formal Case No 1139, Staff recommends that this issue be revisited after the final order in Formal Case No. 1139 is issued to determine what, if any, additional recommendations should be proposed to the Commission. Preliminarily, however, Staff believes that it is important that Pepco provide a robust Distribution Resource Plan. To that end, Staff recommends that the Commission direct Pepco to review and respond to some of the key initial considerations noted above as the plan is developed. However, any recommendations should come out of Formal Case No. 1139. Internally, the MEDSIS team will continue to review best practices in the industry as it pertains to Distribution Resource Planning and be prepared to follow-up the Final Order in Formal Case No. 1139 with additional recommendations on this topic if necessary.[284]

VI. ECONOMIC ASPECTS OF MEDSIS

A. Introduction

The theory and practice of economic regulation can be found at the heart of every discussion of energy delivery modernization. The District of Columbia MEDSIS proceeding is no exception. There are several reasons for this. In the first place, local distribution of natural gas and electricity are regulated monopolies, with the Commission setting rates for distribution service through contested proceedings that are governed by precedent and statute. Based on evidence, the Commission approves rates that are "just and reasonable."

Furthermore, distribution system modernization raises the possibility of new types of services and new investments by the regulated utilities, requiring the modification of the existing rate structure or the creation of new types of tariffs. It also puts on the table new opportunities for third-party investors seeking to provide new services to either the regulated utility or distribution system customers, or both. Finally, the modernization debate has also put forward the idea that new communication and generation technologies may make possible a restructuring of electric

283 *Formal Case No.* 1139, Order No. 18550, Attachment A, Issue No. 18.

284 "Substantive stakeholder involvement in the utility planning process beginning now, and institutionalized into the future – independent of the PSC and docketed cases." *Formal Case No. 1130*, Comments of the Grid 2.0 Working Group, DC Climate Action, DC Environmental Network, and Chesapeake Climate Action Network Comments to Order 18144, at 3, filed July 25, 2016 ("Grid 2.0, DC Climate, DCEN, and CCAN Collective Comments to Order No. 18144").

distribution systems analogous to the deregulation of generation and transmission that has been implemented in about half of the states in the country.

This section will identify a number of the key issues of economic regulation raised by participants in the MEDSIS proceeding. Selected comments of MEDSIS participants are cited below for illustrative purposes; no attempt is made to provide a comprehensive summary of all input pertaining to economic regulation.

The rates charged by a regulated utility allow it to recover the costs of providing service, including a market rate of return. Ratemaking principles require that these costs be fairly apportioned among the different classes of customers served.

Under the laws of the District of Columbia, the Commission sets rates for the provision of electric distribution service only. Distribution service accounts for roughly one quarter of residential electric customers' bills; the remainder represents the cost of generation and transmission service. Generators sell their output in the PJM wholesale market; Pepco conducts annual auctions for default energy service (under Commission supervision) while competitive retail electricity suppliers procure energy on behalf of their customers. Transmission rates are regulated by the Federal Energy Regulatory Commission ("FERC").

With respect to ratemaking, the MEDSIS proceeding challenges us to consider whether (1) ratemaking can be adjusted to give the both customers and the electric distribution company incentives to meet peak demand through less costly approaches and (2) market forces be used to harness third parties to provide less costly means of serving peak demand?[285] The Grid 2.0 Working Group, DC Climate Action, DC Environmental Network, and Chesapeake Climate Action Network urged the Commission to "[s]timulate and promote a 'sharing economy' and 'energy democracy' so that locally owned renewable energy and locally owned micro-grids flourish—distribute wealth and benefits within the city, and integrate seamlessly with the current system."[286] Pennoni argued that:

> Effective competition at the retail level is likely the best way to facilitate and encourage the development of DERs that will in turn modernize the grid and support increased sustainability. Competition, by its nature, creates an incentive for innovation and lowers prices. Thus, competition at the retail level between utilities, governments and commercial enterprises will create incentives for utilities and other businesses to innovate, invest in new

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285 The New York Commission "found that significant technological innovation in software and hardware systems that improve the intelligence and flexibility of the delivery system, and similar advances that have significantly reduced the cost and increased the value of DERs, present the opportunity to fundamentally improve how utilities meet their service obligations." NY PSC Case 14-M-0101 - Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision; Staff White Paper on Ratemaking and Utility Business Models (July 28, 2015) at 2.

286 *Formal Case No. 1130*, Comments of the Grid 2.0 Working Group, DC Climate Action, DC Environmental Network, and Chesapeake Climate Action Network, at 3, filed July 25, 2016.

> technology, and provide new services. This innovation will drive the creation of a modern electricity delivery system and will bring benefits to all citizens, in terms of reliability, resiliency, lower CO_2 emissions and affordable prices for energy.[287]

In the District of Columbia, similarly to other so-called restructured jurisdictions, customers' electric bills are divided into three service components: generation ("G"), transmission ("T"), and distribution ("D"). This is known as "unbundled service."

- "G" represents the generation of energy and is measured in kilowatt hours ("kWh"). Most energy is produced at large, central power generation stations that are connected to the distribution system by transmission lines. The price of energy is established in wholesale markets under rules governed by the Federal Energy Regulatory Commission ("FERC"). For the region that includes the District, the market is operated by PJM.

- "T" represents the transmission of energy between generating stations and local distribution system over high-voltage transmission lines. Rates for transmission service are cost-based and determined by the FERC.

- "D" stands for the distribution system that connects high-voltage transmission lines to the lower voltage power lines that run through neighborhoods and connect to homes and businesses. Included are the costs of substations and lower voltage power lines ("feeders") as well as administrative and billing costs.

New technologies have increased the opportunities for electricity customers – residential, commercial, and governmental – to supply their own energy needs through DERs. DERs also may have the potential to provide valuable services to the distribution system at a lower cost than traditional utility investments. (Many commenters use the word "grid" which confuses distribution and transmission services which are very different, in both physical and regulatory terms.)

Future deliberations of DER-related rate changes will not occur in a vacuum. DERs aside, there is substantial contention among stakeholders in every base rate case with regard to the fairness and efficiency of the existing rate structure, unrelated to DER.[288] These ongoing conflicts, which may be a natural part of the rate-setting process, are likely to have significant impact on the evolution of DER rate policies.

While Staff provides a discussion of various economic issues related to the MEDSIS Initiative, due to the fact that the Commission has several open proceedings, most notably Formal Cases Nos. 1137 (WGL rate case) and 1139 (Pepco rate case), that are currently litigating the very

287 Comments of Pennoni to Order No. 18144 at 2.

288 Under the rates established in the last base rate case, the "R" class of residential customers does not cover its cost of service. The Commission is committed to addressing this on a gradual basis. *See Formal Case No. 1103*, Order No. 17424, ¶ 438, rel. March 26, 2014.

same topics discussed in this section, Staff has refrained from making any recommendations to the Commission. Instead, Staff believes it is appropriate to revisit these issues after the final orders have been issued in the rate proceedings. At that time, Staff will determine, based on the directives from the Commission, whether additional recommendations on these matters should be given.

B. Load Forecasting & Distribution System Planning

Several participants have highlighted, in their view, the centrality of distribution system planning for MEDSIS. For example, the District Government states:

> One of the most significant challenges to achieving the goals of FC 1130 may be the lack of system information and signals provided to the market. As already mentioned, some states have taken the first steps to modernizing the grid, and in each of these states, distribution-level planning is one of the first undertakings.[289]

The District Government further asserted that "The Commission could begin this work by convening a working group with the task of developing a plan to evaluate Pepco's assessment of system capacity and projected demand growth in the area and a consensus strategy to mitigate, delay or optimize the ratepayer-financed investment."[290]

Other MEDSIS participants joined this call for a more open and transparent process for planning the electric distribution system in the District of Columbia to facilitate modernization and identify DER investment opportunities. Because the value of DER for the distribution system appears to be very sensitive to location, some parties have argued for more granular planning information. The Microgrid Resources Coalition pointed out that:

> Legislation passed in 2013 requires utilities to submit distributed resources plan proposals to the California Public Utilities Commission for approval. The plans identify optimal locations for the deployment of distributed resources.[291]

The Coalition urges the Commission to consider "a process for unsolicited proposals from microgrid providers to meet needs identified in distribution system planning."[292]

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289 DOEE/DCG Comments to Order No. 18144 at 5.

290 *Formal Case No. 1130*, District Government of Columbia Supplementary Comment for the Third Information Session, at 3, filed May 23, 2016 ("DCG Supp. Comments to Order No. 18144").

291 *MRC* Comments to Order No. 18144 at 7.

292 *MRC* Comments to Order No. 18144 at 8.

Grid 2.0 argues that "Optimization of DER on the distribution, transmission, and generation elements of the District's electric grid should be a value function of location (integrated distribution planning); set by the PSC, and periodically balanced as necessary."[293]

The Commission has ordered load forecasting and distribution system planning to be included in Formal Case No. 1139, Pepco's Application for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service in Issue 18*:*

> Are Pepco's short- term and long-term load forecasts reasonable?
>
> a. Is Pepco's load forecast used in formulating the construction budget and driving the distribution system planning reasonable?
> b. Does Pepco's load forecast reasonably and properly account for the effects of environmentally beneficial and load reducing measures on the load growth projections and capital requirements included in the Construction Program Report, including: (a) solar and other forms of customer-owned, behind-the-meter generation; (b) energy storage facilities; (c) energy efficiency; (d) energy conservation; and (e) similar load reducing measures?
> c. Are the system, substation and feeder level load growth projections used to justify the Reliability projects, Customer Driven projects, and Load projects contained in the Construction Program Report reasonable?
> d. What steps should be taken to improve Pepco's short-term and long-term load forecast process and reporting for the future?[294]

The Commission also ordered parties to consider Issue 6 in Formal Case No. 1137, WGL's Application for authority to increase exiting rates and charges for Gas Service; and to revise terms and conditions related to gas service in the District of Columbia:

> Is WGL's long-term plan for capital expenditure projects (including test year projects) reasonable, appropriate, and complete? Does WGL's long term plan support goals to provide a safer, reliable, efficient, and cost effective delivery of energy in the District?[295]

Staff recommends suspending consideration of distribution system planning in Formal Case No. 1130 pending the final orders in Formal Case Nos. 1137 and 1139. There may be interest in

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293 *Formal Case No. 1130*, Grid 2.0, DC Climate, DCEN, and CCAN Collective Comments to Order No. 18144 at 3, filed July 25, 2016.

294 *Formal Case No. 1139*, Order No. 18550, at Attachment A, page 3.

295 *Formal Case No. 1137*, *In The Matter of The Application of Washington Gas Light Company For Authority To Increase Existing Rates and Charges For Gas Service* ("*Formal Case No. 1137*"), Order No. 18172, Attachment A ("Order No. 18172").

resuming discussion of this topic under the MEDSIS rubric in order to pursue matters not covered by the final order in either case.

C. Demand Management

A number of MEDSIS participants addressed the potential of demand management programs of various types to reduce system and/or substation peak demands. For example, the presentation by H.G. Chissell on behalf of the Advanced Energy Group highlighted experiences in New York City with the Distribution Load Relief Program and the Commercial System Relief Program.[296] He also explained the Brooklyn Queens Demand Management project and the Distributed Storage Incentive program, among others.

In Formal Case No. 1139, Pepco has proposed Adjustment 27 - Reflection of Direct Load Control (DLC) Program Costs.[297] Pepco's demand management program is also under consideration in Formal Case No. 1086 – Pepco's request for approval of a residential air conditioner direct load control program.[298] In view of the open proceedings related to demand management in the District of Columbia, the Staff cannot provide further any analysis or recommendation on this topic.

D. Time-Varying Rates

DC Climate Action stated: "Now that a body of experience is building in other jurisdictions, and that smart meters are fully deployed in the District, evaluate the cost/benefit of Time-Variant Pricing options as default (with opt-out), combined with critical peak rebates for load shifting."[299]

DC Sun recommended "dynamic pricing that allows customers to respond to real-time price signals."[300] The Institute for Policy Integrity commented that "The lack of dynamic pricing not only insulates consumers from receiving correct signals about the true cost of electricity, it also limits the incentives for distributed energy resources ("DER") to achieve maximum social benefit, as existing rate designs do not capture the full value of distributed energy resources."[301]

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296 *Formal Case No. 1030*, Advanced Energy Group presentation; MEDSIS Workshop, filed April 28, 2016.

297 *Formal Case No. 1139*, Direct Testimony of Ziminsky (June 30, 2016) at PEPCO (E)-1 Page 32.

298 *See Formal Case No. 1086*, Potomac Electric Power Company's Annual Direct Load Control ("DLC") Program Report, filed April 1, 2016.

299 *Formal Case No. 1130*, DC Climate Action Initial Comments, at 9, filed September 1, 2015 ("DC Climate Action Initial Comments").

300 *Formal Case No. 1130*, DC Solar United Neighbors Initial Comments, at 5, filed August 31, 2015 ("DC SUN Initial Comments").

301 *Formal Case No. 1130*, Institute for Policy Integrity at New York University School of Law Comments, at 12, filed August 31, 2015 ("NYC Law Comments").

Some have suggested modifications to generation rates to achieve the goals of demand reduction and energy efficiency. These could include time of use rates ("TOU") that charge higher kWh rates at certain times of day and of the year, or peak rates that are higher on the very hottest (or coldest) days. TOU rates could be offered on an opt-in or opt-out basis.

The significant mismatch between flat retail electricity rates and the dramatic temporal variation in the actual cost of electricity production sends poor price signals to customers. Time-varying rates ("TVR") can partially or even fully remedy this problem.

Many economists have identified – for decades – TVR pricing as a best practice for rate design; most commercial and industrial customers have some form of TVR.[302] Well-designed time-varying pricing may encourage customers to minimize electricity use during high cost periods, helping to reduce utility system costs over time. Some describe TVR as the key to "flexible load" which envisions technology-enabled individual customers and aggregators responding to incentives to shift the times when energy is used; flexible load is another form of DER.[303]

Consumer advocates tend to be skeptical of time-varying rates in part because of the impact on low-income households, households with older or very young members or with medical conditions; these households may have less ability than more sophisticated customers to respond to the incentives offered. Time-varying rate designs may make customer bills less stable and shift price risk from the utility to consumers. That's particularly the case with real-time pricing, where electricity rates fluctuate frequently (*e.g.*, every hour) to reflect changes in market prices.

Recent studies have found that residential consumers can adjust their usage effectively under other forms of time-varying rates, such as traditional time-of-use rates with on- and off-peak periods — and critical peak pricing variations that add a very high price during a very limited number of hours of the year.[304]

Another consideration is that under flat-rate pricing, "peaky" customers — who use more electricity when it is most expensive for the utility to acquire — are subsidized by less "peaky" customers who use more off-peak, inexpensive electricity. In general, distribution systems costs are higher when system load factor is lower.[305]

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[302] Wood, Lisa, et al; *Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives*, Lawrence Berkeley National Laboratory Future of Electric Utility Regulation Report No. 5 at 71 June 2016. https://emp.lbl.gov/sites/all/files/lbnl-1005742_1.pdf.

[303] Rocky Mountain Institute, The Economics of Demand Flexibility: "*How Flexiwatts Create Quantifiable Value for Customers and The Grid"* (August 2015). http://www.rmi.org/electricity_demand_flexibility.

[304] Wood, Lisa, et al; *Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives*; Lawrence Berkeley National Laboratory Future of Electric Utility Regulation Report No. 5 at 72 (June 2016). https://emp.lbl.gov/sites/all/files/lbnl-1005742_1.pdf.

[305] System load factor is the average load divided by the peak load in a specified time period.

Noting the variation in customer tolerance for this price risk, some recommend maintaining different rate options that allow customers to choose depending on their tolerance. Other observers hold that time-varying rates are "cost-effective for virtually all customers" due to falling costs of advanced metering infrastructure.[306]

The NARUC Manual notes that there are several types of "time-varying rates" including time of use, real-time pricing, dynamic pricing, and critical peak pricing.[307] These rate designs are intended to encourage consumers to shift usage away from peak times in order to lower peak demand; the NARUC Manual also notes that this can be accomplished with demand charges. The NARUC Manual goes on to describe the challenge of distributed generation ("DG") for regulated utility ratemaking:

> Rate making is often the result of a regulator balancing a variety of interests and goals of the parties, as well as technological and political considerations. The prevailing rates for any given utility represent a history of compromises—on goals, on the balancing of different rate design philosophies, on the practicality of a given rate component based on available data, and so forth. Given this history of compromises, there have always been "winners" and "losers" in rate design; DER just potentially shifts who are those winners and losers. The question then becomes whether the entirety of the rate structure that would apply to all customers of a given class, including DER customers, should be modified to better match cost-causative factors, or whether a special rate should be created that applies only to DER customers. There is a strong argument to be made for changing the rate structure that applies to all customers, as sending all customers the most appropriate price signal should result in the most economically efficient outcomes related to electricity consumption, as well as decisions on the installation of DER. For a number of reasons, regulators may decide this is not the best approach to recommend or to approve (e.g., promotion, neutrality, or demotion of DER; availability of data; customer acceptance or fears related thereto).[308]

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306 Wood, Lisa, et al, *Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives*; Lawrence Berkeley National Laboratory Future of Electric Utility Regulation Report No. 5 at 72 (June 2016). https://emp.lbl.gov/sites/all/files/lbnl-1005742_1.pdf.

307 *Distributed Energy Resources Rate Design and Compensation: A Manual Prepared by the NARUC Staff Subcommittee on Rate Design* at 26-31 (November 2016). http://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0.

308 *Distributed Energy Resources Rate Design and Compensation: A Manual Prepared by the NARUC Staff Subcommittee on Rate Design* at 75 (November 2016). http://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0.

This NARUC passage articulates the difficulty of separating rates and tariffs for DERs from questions related to the extant general rate structure. At the present time, both the electric and natural gas distribution companies have applied to increase their rates for distribution service and their applications are being considered by the Commission

In Formal Case No. 1139, the Commission ordered parties to provide testimony on Issue 15(f):

> Should Residential Time Metered ("RTM") tariff/rates be restructured and if so, how?[309]

Currently, the RTM tariff/rate has a flat rate design. Finally, it should be noted that the policy, economic, legal and technical issues and questions related to establishing a dynamic pricing plan in the District of Columbia are under consideration in Formal Case No. 1114.

Additionally, it should be noted that in Formal Case No. 1137 (WGL's rate case), the Commission ordered parties to address Issue 17:

> Are the proposed rate design and tariff changes, including but not limited to Rate Schedules 3 and 3A (interruptible customers), the proposed Rate Schedules 7 and 7A (combined heat and power/distributed generation facilities), the Multi-Family Piping Program, and the treatment of group-metered apartment customers under proposed Rate Schedules 2B and 2C reasonable in this case?[310]

In light of the open proceedings related to time-varying rates, in particular, and distribution utility rates, in general, before the Commission, the Staff cannot discuss this topic further.

E. Standby Tariff

According to the NARUC Manual, "Standby charges are charges assessed by utilities to customers with DER systems that do not generate enough electricity to meet their needs or may experience a planned or unplanned outage and therefore must receive power from the grid."[311] Typically, standby charges apply to larger industrial or commercial customers with their own generation and have not been applied to small residential renewable systems.[312] The Northeast

309 *Formal Case No. 1139*, Order No. 18550, Attachment A, at 3, rel. September 22, 2016.

310 *Formal Case No. 1137*, Order No. 18172, Attachment A, at 2-3, rel. April 21, 2016.

311 *Distributed Energy Resources Rate Design and Compensation: A Manual Prepared by the NARUC Staff Subcommittee on Rate Design* at 120 (November 2016). http://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0.

312 *Distributed Energy Resources Rate Design and Compensation: A Manual Prepared by the NARUC Staff Subcommittee on Rate Design* at 120-123 (November 2016).

Energy Efficiency Partnerships recommended that the Commission include standby tariffs among the topics it considers.[313]

Pepco's Standby Service Schedule "S" says: "A monthly reservation charge of $.45 per kw of contract demand shall be billed by the Company for standing ready to provide standby service. The contract demand shall be the maximum capacity for which the Company stands ready to serve."[314] The potential for the imposition of this tariff could be a disincentive for DER investors. However, so long as Pepco has an obligation to deliver energy to load in the event that the DER generator fails, then there are costs to provide that distribution service capacity. If those costs are not paid by the DER customer, then they will be spread among the remaining customers on the system.

In light of the open proceedings related to distribution utility rates before the Commission, the Staff cannot discuss this topic further.

F. Revenue Decoupling

Revenue decoupling severs the link between revenue and sales, allowing the distribution company to recover its revenue requirement even when kWh or therms per customer declines. In the words of the NARUC DER Manual, "Decoupling is intended to mitigate or eliminate revenue fluctuation for the utility resulting from the installation of energy efficiency and demand resource technology, DER, and external factors such as weather, economic conditions, and power outages."[315]

DC Climate Action urged the Commission to "Examine benefits of decoupling gas revenues from volume distributed, as was done successfully in the District in the case of electricity revenues, several years ago."[316]

The Commission adopted a revenue decoupling mechanism for Pepco in Order No. 15556, issued on September 28, 2009, in Formal Case No. 1053. Recently parties have raised questions about how the monthly customer numbers used by Pepco to adjust the monthly BSA surcharge.[317]

In Formal Case No. 1139, the Commission ordered parties to address Issue 4:

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313 *Formal Case No. 1130*, Northeast Energy Efficiency Partnerships Comments, at 4, filed August 31, 2015.

314 Pepco Standby Service Schedule "S;" First Revised Page No. R-16.

315 *Distributed Energy Resources Rate Design and Compensation: A Manual Prepared by the NARUC Staff Subcommittee on Rate Design*, at 35 (November 2016). http://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0.

316 DC Climate Action Initial Comments, at 3.

317 District of Columbia Public Service Commission Docket PEPBSAR.

> Should Pepco's BSA Mechanism be continued and, if so, what changes to the mechanism, if any, are necessary and appropriate?
>
> a. Has Pepco reasonably and appropriately developed the revenues per customer that will be used in BSA determinations subsequent to the conclusion of this proceeding?
> b. If the BSA is continued, what forecasts of kWh per rate class should be used in the monetary computation of monthly rate adjustment ($/kWh)?
> c. Are Pepco's test year numbers of customers and revenues developed in a manner consistent with the actual data presented in its BSA filings?
> d. How would the BSA mechanism be adjusted if MMA customer count changes from number of dwelling units to the number of buildings?[318]

Washington Gas has proposed a Revenue Normalization Adjustment to achieve gas decoupling in Formal Case No. 1137. Based on the fact that this issue is currently being litigated in Formal Case Nos. 1137 and 1139, Staff recommends that the Commission takes no action until those proceedings have finished.

G. Cost Effectiveness of Distributed Energy Resources

Several MEDSIS participants urged the Commission to develop or adapt an existing benefit-cost analysis framework for the evaluation of DER additions and distribution system investments. DC Climate Action recommended that the Commission should "Review cost effectiveness tools to adequately account for public health benefits of efficiency and renewables."[319] OPC commented that "Understanding the value of grid-modernization technology and distributed energy resources, such as distributed solar or microgrids, through a robust analysis of their costs and benefits is necessary to ensure that energy costs are affordable for all consumers."[320]

Kahrl, F, et al (September 2016) summarize the methodologies available for evaluating the cost effectiveness of distributed generation.

> Cost-effectiveness tests can be used to screen potential distributed generation ("DG") applications. In the context of resource planning, relevant tests include:
>
> - The *utility cost test*, which indicates the extent to which distributed generation will reduce the utility's revenue requirements;
> - The *total resource cost test*, which indicates the extent to which distributed generation will reduce the total costs to the utility system and the host customer;

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318 *Formal Case No. 1139*, Order No. 18550, Attachment A, at 1, rel. September 22, 2016.

319 DC Climate Action Initial Comments, at 3.

320 OPC's Comments in Response to Order No.18844, at 10, filed April 18, 2016.

- The *societal cost test*, which indicates the extent to which distributed generation will reduce total costs to society, including externalities; and
- The *ratepayer impact measure* test, which indicates the degree to which distributed generation impacts the bills of nonparticipants.[321]

In Formal Case No. 1139, Pepco has proposed Adjustment 27 – Reflection of Direct Load Control ("DLC") Program Costs.[322] Pepco has cited its cost effectiveness analysis in support of this proposed adjustment.[323] Because the Commission has yet to make a decision on this issue, Staff can provide no further analysis or recommendation on the cost effectiveness of the DLC program.

H. Performance-based Ratemaking

Several participants argued for including performance-based ratemaking in the MEDSIS proceeding. For example, GRID 2.0 asserted that "MEDSIS should optimize tariff structures to enable and expedite technology adoption and other desirable policy prescriptions. The role of performance based rate-making on linking tariffs to performance outcomes (and cost-benefit) should inform the process."[324] DC Climate Action urged the Commission to "Review and adopt Performance-based Rate Design to incentivize (and remove disincentives from) the optimization of energy efficiency and integration of clean energy resources in distribution systems."[325] Smarter Grid Solutions, Inc. similarly commented: "It is suggested a shift from cost-based to performance-based regulation should be considered within the scope of the Commission's proceedings. Performance-based regulation incentivizes utilities to achieve certain targets that deliver more holistic value to customers. Performance targets could include: environmental goals, system-wide efficiency, greater customer engagement, and increased DER integration."[326]

Performance-based ratemaking ("PBR") is a modification of traditional "cost of service" ratemaking. PBR can be implemented either through specific performance indicators or as a wholesale transformation, as with multi-year rate plans ("MRPs"). The following is the sequence of steps needed to define performance improvement measures ("PIMs") for a PBR program, suggested by several analysts.[327]

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[321] Kahrl, F, *et. al*, at 66-67, September 2016.

[322] *Formal Case No. 1139*, Direct Testimony of Ziminsky, PEPCO (E)-1 at 32, filed June 30, 2016.

[323] *Formal Case No. 1139*, Direct Testimony of Lefkowitz, at 5:3-8, filed June 30, 2016.

[324] *Formal Case No. 1130*, Grid 2.0, DC Climate, DCEN, and CCAN Collective Comments to Order No. 18144, at 3, filed July 25, 2016.

[325] DC Climate Action Initial Comments at 9.

[326] *Formal Case No. 1130*, Smarter Grid Solutions Inc. Initial Comments, at 2, filed August 31, 2015.

[327] Whited M., Woolf T., and Napoleon A. (2015); *Utility Performance Incentive Mechanisms: A Handbook for Regulators*; prepared for the Western Interstate Energy Board. http://www.synapse-energy.com/sites/default/files/Utility%20Performance%20Incentive%20Mechanisms%2014-098_0.pdf.

- Goals: What utility performance is desired and what quantitative targets can be used to measure desired performance outcomes?
- Existing incentives: A clear understanding of the incentives shaping utility decision making under current arrangements is helpful in establishing the rationale for change.
- Performance: Those areas of utility performance that warrant metrics based on policy goals should be identified.
- Reporting: Performance must be measured in a reliable, consistent fashion for reporting purposes.
- Targets: To provide clear direction to utilities, targets can be established to express the desired performance outcomes.
- Incentives: Appropriate penalties and rewards can be formulated around targets.
- Evaluate: Over time, experience with measurement, target levels and incentives should be assessed and changes made, if necessary.

PIMs can also be combined with a MRP. If the main concern of utility regulators "is to improve performance in specific areas, stand-alone PIMs might be sufficient to address these areas. If they instead seek wide-ranging performance improvements, including better capital cost management, [then] MRPs may be better suited to these goals than PIMs alone."[328]

Lowry and Woolf argue that MRPs can facilitate DERs:

> [Multi-year Rate Plans] can improve utility incentives to embrace DERs, if properly designed. Inherent advantages include the general incentive they can provide to slow rate base growth. Since DERs can be effective tools for reducing rate base growth, utilities have a stronger incentive to embrace them. For example, if a utility uses DERs to reduce the need for substation capex, it can keep some of the cost savings for several years, and possibly longer if there is a well-designed efficiency carry-over mechanism.[329]

It is well-established that, under cost-of-service regulation, whenever a utility's authorized rate of return is greater than the cost of raising capital, there may be a financial incentive to increase capital expenditures in order to increase rate base and thereby increase profits. Theoretically, prudence reviews can mitigate some of the incentive for excessive capital expenditures.

[328] Lowry, M. and Woolf, T. (2016); *Performance-Based Regulation in a High Distributed Energy Resources Future*; Lawrence Berkeley National Laboratory Future of Electric Utility Regulation Report No. 3 at page 63. https://emp.lbl.gov/sites/all/files/lbnl-1004130_0.pdf.

[329] Lowry, M. and Woolf, T. (2016); *Performance-Based Regulation in a High Distributed Energy Resources Future*; Lawrence Berkeley National Laboratory Future of Electric Utility Regulation Report No. 3 at page 26.

However, in practice, prudence reviews and disallowances are rare, burdensome, and are mostly applied to large capital expenditures.[330]

In Formal Case No. 1139, the Commission ordered parties to provide testimony on Issue 19:

> Should the Commission explore alternative ratemaking structures? (For example, a fully forecasted test year, Performance Based Ratemaking ("PBR"), price regulation, ranges of authorized return, categories of services, price-indexing, and or other alternative mechanisms). If so, which, why, and what elements of Pepco's rates, incentives, and operations and expenses are potential candidates for PBR?[331]

The Commission cites the District of Columbia statute permitting the use of "alternative forms of regulation."[332] Staff can offer no analysis on this topic pending the outcome of Formal Case No. 1139.

I. AMI Data

Several participants have argued that better use of AMI data could be made by identifying and pursuing opportunities to utilize the data collected by the smart meters already installed across the District. For example, GSA argued that "the Commission should examine how AMI investments can facilitate the integration of DG resources in distribution networks (for example, the development of network microgrids) by facilitating the exchange of data between customers, network operators, and resource suppliers."[333]

The Mission:data Coalition recommended:

> two low-cost strategies that provide consumers access to: (1) their own electricity usage and pricing/charge information through interval data provided via the utility's website in standardized formats (such as Green Button "Connect My Data"), and (2) their smart meter real-time usage data. Real-time data, as noted by the ACEEE, is especially powerful in enabling achievement of the highest level of customer savings. This can be accomplished

330 Corneli, S. and Kihm, S. (2015); *Electric Industry Structure and Regulatory Responses in a High Distributed Energy Resources Future*; Lawrence Berkeley National Laboratory Future of Electric Utility Regulation Report No. 1.

331 *Formal Case No. 1139*, Order No. 18550, Attachment A at 3-4, rel. September 22, 2016.

332 D.C. Code § 34-1504(d)(3) (Roles, duties, and powers of the Commission).

333 *Formal Case No. 1130*, Comments of U.S. General Services Administration Initial Comments at 2, filed August 31, 2015 ("GSA Initial Comments").

> through enablement of the Home/Business Area Network radio in an advanced meter.[334]

In Formal Case No. 1119, the merger applicants made the following commitment: "PHI shall provide electronic data interchange ('EDI') access to historical electric usage through Pepco's Green Button capability to its customers and to customer representatives (distributed energy companies and others who a customer designates to receive such information)."[335] During evidentiary hearings in Formal Case No. 1119, PHI President and CEO David Velazquez confirmed that Green Button Connect My Data functionality will be made available to all District customers.[336]

Because matters related to access to Pepco's AMI data, including use of the Home Area Network, are under deliberation in Formal Case No. 1098, Staff can provide no further analysis or recommendation in this Report.

J. Future Evolution of the Distribution System and the Potential for DER Markets

Across the country, discussions are under way regarding the notion of restructuring the distribution system in a manner analogous to the restructuring of the transmission and generation system that has been carried out in many jurisdictions. Market participants could buy and sell energy and ancillary services at the distribution level just as they can at the bulk-electric system level in the PJM region. The idea has taken many forms under different names, like "distribution system operator" (CA) or "distribution system service provider" (NY). The common idea is that because DERs have the ability to compete with the monopoly distribution company in the provision of both energy (kWh) and capacity (kW), the incumbent electric distribution provider cannot be trusted to operate its system in a manner that is fair to potential competitors. Smarter Grid Solutions, Inc. expressed it this way:

> "The participation of DERs in electricity markets should also be considered by the Commission as a means of promoting sustainable energy via market-based mechanisms. Participation of DERs in energy markets is particularly relevant if the District considers the utility as a DSPP – as is the case in New York – or as an aggregator and integrator of DERs, as described in the recent Distribution Resources Plans submitted by Californian utilities (PG&E, SCE, and SDG&E) to the California Public Utilities Commission on July 1, 2015. Market participation of DERs enables cost-efficient providers of electricity in a given area to obtain access to those end users who need it. Market participation

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334 *Formal Case No. 1130*, Mission: data Coalition Comments, at 3, filed August 31, 2015.

335 *Formal Case No. 1119*, Order No. 18160, Attachment B at 27, rel. April 4, 2016 ("Order No. 18160").

336 *Formal Case No. 1119*, Transcript of Evidentiary Hearing (December 2, 2015) at 314:4-15.

also enables active participation of utility customers in electricity markets, which encourages sustainable generation, efficiency efforts responsive demand."[337]

There are four different pricing models for the interaction of DER customers with a regulated utility. These are summarized by Hledik and Lazar in the table below.[338]

TABLE 5: SUMMARY OF THE FOUR PRICING MODELS

Table 3. Summary of the Four Pricing Models

Pricing Model	Description
Granular Rate	A detailed, disaggregated rate in which each distribution service is priced separately and avoided through self-supply or otherwise paid for by the DER customer
Buy/Sell Arrangement	A bifurcated rate in which the DER customer pays a simple, bundled price for use of the distribution system and is separately paid for distribution services provided to the utility under a different pricing structure
Procurement Model	Utilities procure distribution services from non-regulated third parties who aggregate the services provided by individual DER customers and compensate those customers accordingly
DER-Specific Rates	A different rate is offered to each class of DER customer to reflect the costs of serving that type of customer as well as the value of the services that the specific class of DER customers provide

Another MEDSIS participant contends that "the 'regulated monopoly' business model has run its course . . . the advent of stable and functioning energy markets evolving in 2005-2010, coupled with new technologies in transmission, command and control of electrical networks, the low cost of distributed generation ("DG"), and an increase in the demand for renewable energy generation have obviated this business model."[339]

Pennoni reported that "[m]any jurisdictions around the nation are investigating or pursuing grid modernization to some extent. Several of these jurisdictions are considering a long term vision of transforming incumbent public utilities into distribution system operators ("DSOs") that would operate the distribution system for the exchange of electricity similar to the manner that independent system operators operate the transmission system."[340]

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337 *Formal Case No. 1130*, Smarter Grid Solutions Inc. Comments at 4, filed August 31, 2015.

338 Hledik, Ryan and Lazar, Jim (May 2016); Distribution System Pricing with Distributed Energy Resources; Lawrence Berkeley National Laboratory Future of Electric Utility Regulation Report No. 4 at 16. https://emp.lbl.gov/sites/all/files/feur_4_20160518_fin-links2.pdf.

339 *Formal Case No. 1130*, DC Public Power Report on Methods and Process at 2, filed November 19, 2015.

340 *Formal Case No. 1130*, Pennoni Comments to Order No. 18144, at 14, filed April 18, 2016.

The most futuristic model is known as "transactive energy" or "TE." Under TE, the electric distribution company becomes a platform for multiple markets allowing customers to sell ancillary, capacity, and energy services to each other. Rates for DER services would be market determined, not set by the Commission.

The TE model, in order to be realized, will certainly require a significant upgrading of the distribution system infrastructure. Detailed information about not only usage but also voltage and frequency at each customer's premise as well as at transformers, control devices, and other points on feeders between customers and substations will be needed in one-second intervals or less. This massive flow of data would need to be gathered, fed into operations, used to administer markets, and archived for billing. The *NARUC DER Manual* points out that "[l]ong-standing public policy on resource planning and procurement relies on long-term recovery of investments, but TE focuses on a series of short-term transactions; ensuring adequate compensation and certainty for investments will need to be proved."[341]

The U.S. Department of Energy has also offered its vision of the future electricity system.

> The grid of the future will be an essential element in achieving the broad goals of promoting affordable, reliable, clean electricity and doing so in a manner that minimizes further human contributions to climate change. To do this, the grid of the future will have to accommodate and rely on an increasingly wide mix of resources, including central station and distributed generation (some of it variable in nature), energy storage, and responsive load. It should support a highly distributed architecture that integrates the bulk electric and distribution systems. It should enable the operation of microgrids that range from individual buildings to multi-firm industrial parks and operate in both integrated and autonomous modes.
>
> The grid of the future should be supported by a secure communication network — its information backbone — that will enable communication among all components of the grid, from generation to the customer level, and protect the system from cyber intrusions.
>
> In short, the grid of the future should seamlessly integrate generation, storage, and flexible end use. It should promote greater reliability, resilience, safety, security, affordability, and enable renewable energy, while achieving better economic and

341 *Distributed Energy Resources Rate Design and Compensation: A Manual Prepared by the NARUC Staff Subcommittee on Rate Design*, at 141 (November 2016). http://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0.

> environmental performance, including reductions in greenhouse gas (GHG) emissions. It will require business models and regulatory approaches that sustain grid investment and continued modernization while at the same time allow for innovation in both technologies and market structures.[342]

Communication and distribution generation technologies are evolving rapidly and the realization of some variation of distribution system restructuring at some point in the future cannot be ruled out.[343] However, there are numerous variations of the underlying restructuring model and many important questions that would need to be addressed in the District of Columbia context.

The core technical challenge at the heart of the DOE's vision is the two-way flow of electricity on the distribution system that is managed by a two-way flow of information. In the transactive energy model, a two-way flow of money is added. The information communication and storage requirements are substantial. Whether – and to what extent – Pepco's existing AMI infrastructure could be integrated into this vision for an advanced distribution management system or would need to be replaced remains an open question.

Securing the "grid of the future" may also add cost. The National Institute for Standards and Technology ("NIST") leads efforts to develop cyber security standards and NIST has given special attention to electric-sector modernization. NIST contends that progress towards "an advanced, digital infrastructure with two-way capabilities for communicating information, controlling equipment, and distributing energy" must have as a priority "devising effective strategies for protecting the privacy of smart grid-related data and for securing the computing and communication networks that will be central to the performance and availability of the envisioned electric power infrastructure. While integrating information technologies is essential to building the smart grid and realizing its benefits, the same networked technologies add complexity and also introduce new interdependencies and vulnerabilities. Approaches to secure these technologies and to protect privacy must be designed and implemented early in the transition to the smart grid."[344]

K. Conclusion

The economics of utility regulation are fundamental to any discussion of energy delivery system modernization and the future of distributed energy resources. The pace of DER adoption is dependent upon the economic policies, statutes, and regulations governing the energy delivery

342 *Quadrennial Energy Review Report: Energy Transmission, Storage, and Distribution Infrastructure*, U.S. Department of Energy, at 3-4 (April 2015).

343 *See* De Martini, Paul and Kristov, Lorenzo, Distribution Systems in a High Distributed Energy Resources Future: Planning, Market Design, Operation and Oversight, Lawrence Berkeley National Laboratory Future of Electric Utility Regulation Report No. 2, (October 2015). https://emp.lbl.gov/sites/all/files/FEUR_2%20distribution%20systems%2020151023_1.pdf

344 *Guidelines for Smart Grid Cybersecurity*, NISTIR 7628 Revision 1, at 6 (September 2014). http://dx.doi.org/10.6028/NIST.IR.7628r1.

systems those DERs interconnect with. In other words, the rates and tariffs paid by the utility for DER services and the terms on which DERs can offer services to other distribution system customers will influence the financial viability of DER investments.

The discussion and analysis of economic issues in this Staff Report is abbreviated due to the number of open regulatory proceedings and the legal designation of the Commission Staff as advisory rather than independent. However, after the issuance of final orders in Formal Case Nos. 1137 and 1139, Staff will, if necessary, provide the Commission with updated recommendations related to these issues.

VII. PROPOSED MEDSIS GRANT FUNDING PARAMETERS & PROPOSED DEMONSTRATION PROJECTS

A. Background

This section provides an overview of a preliminary framework, competitive process, and timeline for achieving the objectives of the MEDSIS Pilot Project program.

As a result of the PHI-Exelon Merger approved by the Commission in Order No. 18148 on March 23, 2016, a $21.55 million MEDSIS Pilot Project Fund Subaccount was created and the funds therein were directed to be used to support pilot projects related to energy delivery system modernization under consideration in Formal Case No. 1130.[345] Paragraph 5 of the Merger Commitments states:

> Within sixty (60) days after Merger close, Exelon shall provide funding in the amount of $21.55 million to the Formal Case No. 1130 MEDSIS Pilot Project Fund Subaccount within the Formal Case No. 1119 Escrow Fund. The fund shall be held in escrow until the Commission approves a pilot project and directs that the funds be released.[346]

As of May 20, 2016, Pepco established and funded the Formal Case No. 1119 Escrow Fund pursuant to Paragraph 4 of the Merger Commitments.[347] On the same date, Pepco executed an Escrow Agreement with a bank that will serve as Escrow Agent. The amounts in question have been irrevocably deposited, are held in trust by the Escrow Agent, and are recorded on Pepco's balance sheet as "restricted cash and cash equivalents." Pursuant to the Escrow Agreement terms, the Commission will approve the disbursements of any funds from the MEDSIS Pilot Project Fund Subaccount currently held in escrow.

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[345] *Formal Case No. 1119*, Order No. 18148, rel. March 23, 2016.

[346] *Formal Case No. 1119*, Order No. 18160, Attachment B, ¶ 5, rel. April 4, 2016.

[347] *Formal Case No. 1119*, Order No. 18160, Attachment B, ¶ 4, rel. April 4, 2016. At the same time, Pepco also created the Energy Efficiency and Energy Conservation Initiatives Fund Subaccount pursuant to Order No. 18160, Attachment B, ¶ 7(a), funded in the amount of $11.25 million.

As part of Formal Case No. 1130, the Commission asked Staff to consider what parameters and procedures could be applied to Pilot Projects requesting MEDSIS grant funding. Below, Staff provides suggested parameters and points of consideration pertaining to the approval of Pilot Projects funded by the MEDSIS Subaccount.

B. MEDSIS Pilot Projects

The MEDSIS Pilot Project Fund is a tool to further the goal of the MEDSIS proceeding "to identify technologies and policies that can modernize our energy delivery system for increased sustainability and will make our system more reliable, efficient, cost-effective and interactive."[348] The MEDSIS Pilot Project Fund will require a cooperative framework for the local distribution companies to work with third parties, with oversight by the Commission, to plan for and demonstrate technologies that will modernize and improve the energy distribution systems in the District of Columbia. That cooperative framework will ensure that (1) distribution companies support innovative projects, and (2) any interconnection and related costs for regulated utilities are made explicit. Staff recommends that interconnection costs be recovered in full from the Pilot Project entity, consistent with current Small Generator Interconnection Rules.

Staff recommends that the MEDSIS Pilot Project Fund provide grants for "pilot projects," in which a small-scale trial is used to determine whether a larger application is worthwhile and "demonstration projects," in which regulatory agencies waive particular regulatory requirements and evaluate the results. A MEDSIS project may combine elements of these two types of projects, as there may be promising or commercially viable technologies and systems that are deterred by existing regulations, regulatory uncertainty, funding challenges, risk, and or business plan uncertainty. Well-designed resource potential studies can produce valuable information to support market expansion.

Staff recommends that consideration be given to identifying policy priorities for Pilot Project applicants. Pilot Projects eligible for MEDSIS grants could include, but are not limited to, the following types of distributed energy resources ("DER"): advanced control systems, cogeneration systems, demand management, electric vehicles, energy storage, fuel cells, microgrids, photovoltaic systems ("PV"), smart inverters, voltage regulation, and district heating and cooling. For example, such priorities could include demonstrating the value of smart inverters or identifying opportunities for cogeneration projects.[349] The Commission should also prioritize evaluating outcomes and lessons learned through every stage of the programs. The

348 *Formal Case No. 1130*, Order No. 17912, ¶ 1, rel. June 12, 2015.

349 For a list of suggested MEDSIS Pilot Projects, see *Formal Case No. 1130*, Comments of the Grid 2.0 Working Group, DC Climate Action, DC Environmental Network, and Chesapeake Climate Action Network, at 3-6, filed July 25, 2016.

Fund may also support projects that address planning, integration, or interconnection issues related to higher levels of DER penetration in the District.[350]

Staff recommends that three types of projects not be eligible for MEDSIS Pilot Project grant funding. First, MEDSIS grants should not be used to test unproven technologies; the Commission relies on the federal energy labs and academia to take the lead on research and development. Second, energy efficiency programs should be excluded from eligibility for MEDSIS Pilot Project grants because funding for such programs is available under the Energy Efficiency and Energy Conservation Initiatives Fund Subaccount or through the SEU which also manages many energy efficiency programs. Third, projects proposed and lead by unregulated subsidiaries and affiliates of regulated utilities should not be eligible for MEDSIS Pilot Project grants.

Staff also recommends that an optimal selection of projects move forward based on a cross section of DER technologies. Projects currently planned or under development in the District of Columbia should be eligible to apply. Staff recommends that the size and financial wherewithal of applicants be considered to ensure that MEDSIS Pilot Project grant funds are directed towards worthy projects in need of support. Furthermore, Staff recommends that the benefit a broad cross section of District residents and that the public interest is advanced.

C. MEDSIS Pilot Project Grant Funding Sample Qualification Parameters

When submitting proposals for Pilot Projects funded by the MEDSIS Subaccount, Applicants may be asked to discuss their qualifications based upon a set of parameters. Staff has put forward sample parameters below (See Table 6). These preliminary parameters are intended for use in MEDSIS Grant Funding Phases One, Two, and Three (as described in Section D below).

TABLE 6: MEDSIS PILOT PROJECT GRANT FUNDING QUALIFICATION PARAMETERS

MEDSIS Pilot Project Grant Funding Qualification Parameters	
I	**Type and Purpose of the Pilot Project**
	1. Description of the proposed Pilot Project. a. How will the Pilot Project help modernize an energy delivery system in the District of Columbia? b. How much energy and/or demand capacity will the Pilot Project provide? c. Does the Pilot Project envision selling energy generated in excess of the site's own needs? If so, to who would it be sold and how would the resulting revenue be used? 2. Ownership and management structure of the Pilot project. a. Will the Pilot Project be owned by a regulated utility, public agency, private, or non-profit entity during the Pilot Project phase? b. Who will operate the proposed project on an ongoing basis? c. If a proposed Pilot Project is utility-owned, what other ownership and operational structures, including third-party participation or service provider options, were explored and why were they rejected?

[350] Additionally, the MEDSIS Pilot Project program will further clarify the relationship between these types of projects and the regulated utilities, including any interconnection-related requirements.

MEDSIS Pilot Project Grant Funding Qualification Parameters
3. Will the Pilot Project provide service to the general public or a more limited group of customers? a. How many ratepayers are estimated to benefit from this Pilot Project? b. Does this Pilot Project serve a single or multiple electric distribution rate classes or none? c. Does the Pilot Project provide employment opportunities for District residents and or businesses? (Both short-term construction and on-going jobs.)
II Reputation & Track Record of Applicants
1. The Applicant requesting funding must provide ample references for their business experience. 2. The Applicant must provide details of their experience relevant to the proposed project, including but not limited to, implementing DER facilities on a similar scale. 3. Is the Applicant, or any subcontractors, certified by the Office of Local Business Development ("OLBD") in the District Government as Certified Business Enterprises ("CBE") and Businesses in an Enterprise Zone? 4. Are any unregulated subsidiaries or affiliates of utilities regulated by the Public Service Commission involved directly or indirectly in the Applicant's proposal?
III Project Funding Plan
1. How much MEDSIS grant funding is requested? 2. Will private financing for components of the Pilot Project be sought? 3. Please explain whether any District or Federal government funding opportunities are available for the type of project being proposed. If so, have they been pursued? 4. What are the project funding requirements by source and use, by quarter and year?
IV Environmental Benefits
1. Is the Pilot Project a clean or renewable energy source? 2. What will be the short-term and long-term environmental impact of the Pilot Project on the following: a. Greenhouse gas emissions (carbon dioxide, methane, and other types) b. Aesthetic impact c. Air pollution emissions d. Nuisance emissions e. Environmental justice concerns. 3. How does the Pilot Project advance the District's Sustainable Energy Goals?[351] 4. The Applicant should address the following site selection considerations: a. Planning and permitting b. Public input c. Coordination with emergency management d. Historic preservation issues (if any).
V Interconnection Considerations
1. Does the Pilot Project require interconnection to the electric distribution system? a. Does the Pilot Project meet existing criteria established by the electric distribution utility for interconnection? b. Are there concerns related to the interconnection of the proposed technology into the electric distribution system? If so, what are those concerns and how will they be mitigated?

[351] *See Sustainability DC* (2012) at http://www.sustainabledc.org/wp-content/uploads/2012/10/SDC-Final-Plan_0.pdf.

MEDSIS Pilot Project Grant Funding Qualification Parameters

c. Have similar technologies been interconnected in the District of Columbia or elsewhere?

2. How does the Pilot Project fit into the corresponding utilities' (WGL or Pepco) long-term plans for the energy delivery system?
    a. Provide both short- and long-term impact analyses.
    b. Does the proposed location of the Pilot Project provide added benefit to ratepayers or the energy delivery system based on identified system weaknesses and or forecasted load needs?
    c. Do the project benefits include deferral of distribution system capital expenditures?

VI PJM Interconnection

1. Will PJM have operational visibility of the Pilot Project during operation?
2. Will the Pilot Project participate in PJM's organized markets?
3. Please describe any known FERC regulatory requirements that must be met by the proposed Pilot Project.

VII Commission Oversight

1. How will Commission oversight of the Pilot Project be ensured?
2. What waivers from existing Commission rules are being requested?
3. What reporting and evaluation strategy (e.g., Evaluation, Measurement and Verification protocols) are proposed to measure outcomes of the Pilot Project?
    a. Does the Applicant agree to publicly disclose financial information related to the Pilot Project so that the Commission and the public can gauge its success in isolation as well as compared to similar existing and proposed projects (i.e., total costs and revenues).
    b. Proposed timelines for project and all reports and evaluations.
4. How does the Applicant propose to handle disputes between the Applicant and the utility and or the Applicant and consumers?
5. What safety requirements, compliance measures, and consumer protections is the Applicant proposing?
    a. Detail safety and maintenance measures
    b. Consumer protection and retail choice requirements, if applicable[352]
    c. Community and industry educational development and planned outreach

VIII Public Interest Determination

1. To assess whether the Pilot Project is in the public interest, the Applicant must address the following factors:
    a. How will the proposed project increase reliability?
    b. How will the proposed project increase resiliency?
    c. How will the proposed project lower electric or gas bills for some or all ratepayers?
    d. Will the proposed project be cost effective over its expected life?
    e. How will it provide useful information that will further the energy system modernization goals?[353]
    f. How will it advance District of Columbia energy and sustainability goals?[354]

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[352] 15 DCMR §§ 300-399 - Consumer Rights and Responsibilities.

[353] It is the goal of the MEDSIS proceeding "to identify technologies and policies that can modernize our energy delivery system for increased sustainability and will make our system more reliable, efficient, cost-effective and interactive." *Formal Case No. 1130*, Order No. 17912, ¶ 1, rel. June 12, 2015.

MEDSIS Pilot Project Grant Funding Qualification Parameters

g. What other societal and environmental benefits will the proposed project provide?

IX Risk Management

1. How will the following types of risks be managed?
   a. Operational
   b. Construction
   c. Financial.
2. Describe the property and liability insurance coverage that will be in place for the Pilot Project.
3. Identify all regulatory waivers or exemptions needed to complete the Pilot Project.

X Enabling Contracts

1. Provide the status, description and copy of each contract needed to enable the Pilot Project, including the following:
   a. Power purchase agreements
   b. Design, engineering, and construction contracts
   c. Operating contracts
   d. Memoranda of understanding
   e. Financing agreements
   f. Siting permit requirements
   g. Environmental permitting
   h. Material lease agreements
   i. Site acquisition contracts.
2. Describe the reasonable and customary procurement processes employed to ensure fair and open competition.

XI Economic & Fiscal Impacts

1. Provide estimates of the property, sales, and other District tax revenue the project will generate during construction and operation for the first three years.
2. Describe the employment and business opportunities the project will create in the District.
3. Identify which District Wards and neighborhoods will benefit and how.

XII Impacts on the Obligation to Serve & Public Safety Responsibilities

1. Describe how the Pilot Project will ensure the provision of reliable electric or gas service to District customers.
2. Will the Pilot Project share the obligation to serve with another entity?
3. Explain how customers will receive electricity if the Pilot Project does not operate.
4. Describe the measures that will be in place to ensure the safety of the public.

[354] *See Sustainability DC* (2012) at http://www.sustainabledc.org/wp-content/uploads/2012/10/SDC-Final-Plan_0.pdf. See also DOEE's *Clean Energy DC* (November 2016).

D. MEDSIS Pilot Project Grant Funding Process & Timeline

Staff recommends that the Commission solicit projects, using a standardized RFQ/RFP process and timeline. The information noted below is Staff's proposal for a representative framework that would allow the Commission to execute the selection of pilot projects in a disciplined, transparent, systematic, and robust manner. Features of this framework have been deployed in other successful pilot projects across the industry. It is anticipated that Pilot Project grants will be awarded progressively over time as milestones are achieved.

TABLE 7: MEDSIS PILOT PROJECT GRANT FUNDING PROCESS & TIMELINE

MEDSIS Pilot Project Grant Funding Process & Timeline
PHASE ONE: Request for Qualifications (RFQ)
The governing body coordinates preparation of the RFQ, issues the RFQ, and evaluates responses. The RFQ will be based on parameters approved by the Commission. The RFQ process has been proven to be an efficient way to screen out unqualified applicants. Successful written applications should describe how the Pilot Project advances the MEDSIS goals, provides benefits for the District of Columbia and involves local partners. Applicants should describe their technical, operational, and financial track record. Applicants should also explain whether they, or any proposed subcontractors, are certified by the Office of Local Business Development (OLBD) in the District Government as Certified Business Enterprises (CBE) and Businesses in an Enterprise Zone. Staff will prepare the RFQ based on the parameters approved by the Commission. Qualified applicants will be eligible to receive funding for a feasibility study in the subsequent phase. ➢ Timeline: Three months. ➢ MEDSIS budget subtotal: Costs will be paid by applicants.
PHASE TWO: Feasibility Study Development & Completion
To ensure maximum participation, MEDSIS will fund commercial Feasibility Studies for up to \$150,000 each for selected applicants qualified in Phase One. Unproven technologies will be excluded (as noted) and applicants must provide a funding plan showing sources of funds and planned expenditures. Applicants can use their completed Feasibility Study to pursue private and public funding to match MEDSIS resources in the subsequent phases. The governing body will prepare minimum requirements for the Feasibility Studies that will include planning for business viability. The governing body will review the results of the Feasibility Studies and create a list of vetted projects eligible to be considered for further funding. ➢ Timeline: Up to six months. ➢ MEDSIS budget subtotal: Up to \$3 million for all funded Feasibility Studies (for the maximum amount, 20 projects could be funded at this stage).
PHASE THREE: Project Selection
The governing body will make recommendations to the Commission on which projects will advance to the next stage. ➢ Timeline: Three months.
PHASE FOUR: Design & Engineering
MEDSIS will provide partial funding for the cost of engineering, design, related IT – software and hardware development/design expenditures, including communication systems. The majority of such costs will be funded by the Applicant, its partners, and other sources. The applicant should also update the project business plans as required. Intellectual property protections may be needed during this phase.

MEDSIS Pilot Project Grant Funding Process & Timeline

- Timeline: Up to six months.
- MEDSIS budget subtotal: Up to $5-7 million for projects funded in this phase (number of funded projects depends on types of projects, capital intensity, scale, and availability of other funding).

PHASE FIVE: Siting, Permitting, & Construction

MEDSIS will provide funding for the cost of siting, permitting, and building the Pilot Project, including related IT-software/hardware system and communication system expenditures. Consideration will also be given to the need to provide some limited business model gap funding to help bring pilots to fruition. The majority of such costs will be funded by the Applicant, its partners, and other sources. Ongoing operating and maintenance costs will be the sole responsibility of the Applicant. The applicant should also update the project business plan as required.

- Timeline: Up to six months.
- MEDSIS budget subtotal: Up to $10-12 million for all build projects funded (number of funded projects depends on level of cost sharing achieved).

Procedures will be established for the ongoing monitoring, reporting, and evaluation of all MEDSIS Pilot Projects in development and after completion. The selection process will be structured to yield a minimum of six to 10 projects at Phase Five (as described above). Each Pilot Project will be required to provide annually an updated schedule with milestones, cost estimates, and a budget forecast of MEDSIS funding requirements in Phases Four and Five. MEDSIS-funded entities must demonstrate use of prudent and competitive contracting procedures.

In the furtherance of its fiduciary obligation, Staff recommends that the Commission publish an annual financial report, as a part of the "Annual MEDSIS Status Report," that includes a full reconciliation of all MEDSIS funds received and spent by each Pilot Project (See Table 13). The Commission will reserve the right to conduct independent audits or reviews on all funded projects.

Staff is open to suggestions from the public as to how the pilot projects approved for MEDSIS funding should be selected. Staff recommends, as one option for consideration, that an independent board, similar to the Smart Meter Pilot Program, Inc. ("SMPPI") board,[355] be formed and directed to evaluate the pilot applications using the finalized parameters from this Report, which will incorporate public comment. After reviewing all of the applications submitted using the finalized parameters as a guide, the board could draft a report detailing how each project selected complies with the parameters and why the ones selected are the most

[355] The Smart Meter Pilot Program, Inc., ("SMPPI") was a nonprofit corporation established with a $2 million contribution from Pepco in the Connectiv Merger settlement approved by the Commission on May 1, 2002 through Order No. 12395. The SMPPI board included Pepco, the Office of the People's Counsel, the Consumer Utility Board, IBEW Local 1900; and the Commission. *See Formal Case No. 1002,* In the Matter of the Joint Application of Pepco and the New RC, Inc. for Authorization and Approval of Merger Transaction, Order No. 13570, rel. May 3, 2005.

appropriate for MEDSIS funding. The board could then submit their report and the projects that they recommend be selected to the Commission for final approval.

The board could also provide a thorough analysis of the proposed MEDSIS funding relationship and contractual requirements between the Commission and the funding recipients. A related task is preparation of a model agreement (*e.g.*, letter of intent, memorandum of understanding, etc.) governing the relationship between the Commission and the MEDSIS-grant-funded entities setting forth the rights and obligations of both parties, including indemnification clauses. Alternatively, Commission Staff could make the recommendations as to which pilots should be approved by the Commission with assistance from an independent consultant.

Regardless of how the selection process is structured, Staff recommends that program start-up and recurring administrative costs be paid for by a combination of prudent disbursements from the Pilot Project Escrow Account and the Commission's operating budget. All payments for approved expenditures from the MEDSIS Subaccount will be made at the direction of the Commission and in accordance with the Escrow Agreement.

Staff will continue to review and assess the progress made in other jurisdictions that have similar pilot programs with the goal of identifying best practices and lessons learned as the MEDSIS Pilot Project effort unfolds.

Staff recommends that the Commission hold a MEDSIS Town Hall to garner public comment on the Proposed MEDSIS Grant Funding Parameters and Demonstration Projects. Staff recommends that the Town Hall be narrowly tailored to elicit public comment on the proposals discussed in this section of the Report, including but not limited to: the proposed governance structure, pilot project parameters, funding mechanisms, project selection criteria, and timelines for selecting projects. Staff recommends that the MEDSIS Town Hall be held within 40 days of issuance of this Report – well before the initial comments on the entirety of the MEDSIS Staff Report are due.

VIII. CONCLUSION & IMPLEMENTATION TIMETABLE

This MEDSIS Staff Report explains how the Commission can realize the goals of modernizing the energy delivery systems in the District within our statutory charge to ensure that safe, reliable, and affordable energy service is provided to District ratepayers. Staff has endeavored to provide an initial discussion to move the initiative forward by focusing on updating regulations that could hinder energy system modernization in the District as well as providing a preliminary framework for achieving the objectives of the MEDSIS Pilot Project program.

Staff recognizes that this is just the first step in a multi-year process. Additional efforts will be required, like adapting other Commission regulations, reviewing rate design issues, and considering appropriate tariffs. As indicated in this Report, several of those issues are entangled in the open base rate proceedings initiated by the electric and gas distribution companies. Once those proceedings have concluded, Staff recommends that MEDSIS move forward to engage the public and the entire stakeholder community in a new phase of public workshops. However, with this MEDSIS Report, Staff has tried to both address immediate issues as well as set the stage for addressing these more long-term issues in the future.

To that end, below Staff provides an Implementation Timetable which takes each Recommended Action ("RA") found in this Report and provides the next step to address the RA as well as the target completion date for implementing the RA. Staff notes that most of the RAs provided in this Report relate to regulatory changes needed to facilitate MEDSIS. These regulatory changes will be achieved by the Commission issuing Notices of Proposed Rulemakings ("NOPRs") and following the Commission's well-established notice and comment procedures for the adoption or amendment of regulations. The public can provide comment on the draft NOPRs attached to this Staff Report at Appendices E and F in conjunction with comments filed on the entirety of the Staff Report.

Furthermore, in Section VII of this Report, Staff has provided a preliminary framework for the MEDSIS Pilot Project program on which Stakeholders should also provide comment. As indicated in the Implementation Table below, comments on the entirety of the MEDSIS Staff Report, including the MEDSIS Pilot Project section are due 60 days after the date of the Report's issuance and reply comments are due 30 days thereafter.

Additionally, District law allows the Commission to declare components of distribution service to be competitive services (See the discussion in Section I.B.2 – "The District's Restructured Energy Market"). If a Stakeholder believes a specific service is a competitive service, then they should petition the Commission to declare it as such and provide support for the Commission making such a finding by addressing the required factors found in D.C. Code § 34-1504(e).

Staff encourages stakeholders and the public to remain engaged in the MEDSIS Initiative as it evolves because broad input from diverse sources has been, and will continue to be, crucial to ensuring that the rules adopted and decisions made by the Commission on the issues related to modernizing the District's energy systems are well-informed and thoroughly scrutinized. Staff is committed to maintaining a transparent process, where interested persons are provided an opportunity to comment on MEDSIS-related matters, like this Staff Report, the MEDSIS Pilot

Projects process, and the draft NOPRs attached to this Report, before official action is taken by the Commission. Therefore, Staff has recommended additional public participation methods, like holding a MEDSIS Town Hall on the Proposed MEDSIS Grant Funding Parameters and Demonstration Projects discussed in Section VII of this Report before initial comments are due.

Lastly, as the MEDSIS Initiative progresses, Staff will continue to monitor related proceedings in other jurisdictions and Staff recommends that the Commission remain dedicated, to the extent appropriate, to working with the District Government and other agencies to achieve the District's energy goals.

Table 8: Implementation Timetable

Implementation Timetable			
Regulatory Changes			
Item	**Recommended Action**	**Task**	**Target**
1.	Issue a Notice of Proposed Rulemaking to Adopt Definition of Distributed Energy Resource	Issue NOPRs within 60 days of receiving comments on the draft NOPRs attached to this Report at Appendix E	Initial comments on NOPRs due 30 days after issuance and Reply comments due 15 days later Issue Notice of Final Rulemakings (NOFRs) within 45 days of receiving reply comments
2.	Issue Notice of Proposed Rulemakings to Adopt Definitions for the Various Types of Distributed Energy Resources		
2.a	Issue a Notice of Proposed Rulemaking to Adopt Definition of Distributed Generation		
2.b	Issue a Notice of Proposed Rulemaking to Adopt Definition of Fossil fuels		
2.c	Issue a Notice of Proposed Rulemaking to Adopt Definition of Cogeneration systems		
2.d	Issue Notice of Proposed Rulemaking to Adopt Definition of Fuel Cells		
2.e	Issue Notice of Proposed Rulemaking to Adopt Definition of Microturbines		
2.f	Issue a Notice of Proposed Rulemaking to Adopt Definition of Behind-the-Meter Generator		
2.g	Issue a Notice of Proposed Rulemaking to Adopt Definition of Net Energy Metering Facilities		
2.h	Issue a Notice of Proposed Rulemaking to adopt Definition for Energy Storage		
2.i	Issue Notice of Proposed Rulemaking to Adopt Definition of Batteries		
2.j	Issue Notice of Proposed Rulemaking to Adopt the Definition of Electric Vehicles found in D.C. Code § 50-1501.01 (12)		

Implementation Timetable			
2.k	Issue Notice of Proposed Rulemaking to Adopt Definition of Fly-wheels		
2.l	Issue Notice of Proposed Rulemaking to Adopt Definition of Demand Response		
2.m	Issue Notice of Proposed Rulemaking to Adopt Definition of Microgrids		
3.	Issue a Notice of Proposed Rulemaking to Adopt a New Rule to Streamline Renewables Facility Approvals to within 20 days	Issue NOPRs within 60 days of receiving comments on the draft NOPRs attached to this Report at Appendix F	Initial comments on NOPRs due 30 days after issuance and Reply comments due 15 days later Issue Notice of Final Rulemakings (NOFRs) within 45 days of receiving reply comments
4.	Issue a Notice of Proposed Rulemaking to adopt a definition of “Electrical Company” that clarifies that the term expressly excludes any person or entity distributing electricity from a behind-the-meter generator to a single retail customer behind the same meter.	Issue NOPRs within 60 days of receiving comments on the draft NOPRs attached to this Report at Appendix E	Initial comments on NOPRs due 30 days after issuance and Reply comments due 15 days later Issue Notice of Final Rulemakings (NOFRs) within 45 days of receiving reply comments
5.	Issue Notice of Proposed Rulemaking to Amend the Definition of “Electricity Supplier”		
6.	Initiate Pilot Programs Funding process pursuant to § VII of this Staff Report	Pursuant to direction from the Commission, the Pilot Project Parameters shall be released for Comment. After the parameters are finalized, the Commission should issue RFQs to obtain project submissions that comport with final parameters.	RFQ(s) issued within 90 days of issuance of the Final Order on this Staff Report

Implementation Timetable		
Additional Recommended Actions –		
Item	**Recommended Action**	**Target**
1.	Issue MEDSIS Staff Report for public comment with an extended comment and reply comment periods. Staff recommends seeking comment on the entirety of MEDSIS Report, but specifically the Proposed MEDSIS Funding Parameters (Section VII).	Initial comments due 60 days after issuance of MEDSIS Staff Report and reply comments due 30 days thereafter
2.	After the issuance of Final Orders in Formal Case Nos. 1137 (WGL rate case) and 1139 (Pepco rate case), Staff should provide updated recommendations to the Commission on any issues implicated in this proceeding that have been tabled in this Report pending final orders.	90 days from the issuance of a final order in FC1137 and FC1139
3.	After the issuance of Final Orders in Formal Case Nos. 1137 (WGL rate case) and 1139 (Pepco rate case), open an Investigation into the utility's obligation to serve (Standby Rates) under various DER structures. Staff could form a working group to analyze the responsibility of the utility, provider, and customers.	90 days from the issuance of a final order in FC1137 and FC1139
4.	Hold a Town Hall meeting to garner public comment on Section VII of the Staff Report. More specifically, the proposed governance structure, pilot project parameters, funding mechanisms, project selection criteria, and timelines for selecting projects.	Within 40 days of issuance of MEDSIS Staff Report
5.	Monitor MEDSIS Initiatives in other jurisdictions, especially PHI jurisdictions, and leverage pending and completed studies from stakeholders	On-going
6.	Monitor and participate in on-going Stakeholder forums including, but not limited to: • Utility-sponsored sessions on DER: Maintaining Reliability & Integrating New Technology; Green Power Connection Solar Stakeholder Collaboratives and Webinars • MDV-SEIA, National Town Meetings on Smart Grid; Solar Electric Power Association meetings	On-going
7.	The Commission should issue an "Annual MEDSIS Status Report" to account for the progress of the MEDSIS Initiative, including but not limited to: (1) outlining lessons learned, status of proposed rulemakings and legislative changes, and other proposed actions to move the MEDSIS Initiative forward; (2) detail work completed, goals reached, and projects approved in the prior year as well as planned or approved for the coming year(s); (3) provide an accounting of the MEDSIS Pilot Project Fund, including fund balances, disbursements made in the year, and planned disbursements for the coming year(s). The "Annual MEDSIS Status Report" should be issued for public comment and included as a section in the Commission's Annual Report to Council.	Beginning in 2018

The Final Order issued on this Staff Report should include an updated Implementation Timetable that reflects the recommendations actually accepted by the Commission and any other Commission specific directives.

APPENDIX A - CONSUMER CHOICE & EMERGING TECHNOLOGIES

The role of the District's energy distribution system is evolving with changes in available technologies and shifts in consumer preferences.[356] District policies, including policies to propel adoption of more clean generation, provide guidance to the Commission on the District's short and long-term energy needs. The Commission is being forward looking and proactive in this modernization initiative, which will allow it to better accommodate the Commission's overall mission and the public interest as the District moves towards a modern, reliable, resilient, and cost-considerate energy distribution system, while simultaneously fostering competition and maintaining the financial health of the District's utilities. Based on this goal, Staff briefly discusses current changes in consumer preferences and emerging technologies in the energy sector that may impact the MEDSIS Initiative.

A. Consumer Choice

The country is aging while the District is getting younger. According to the U.S. Census Bureau, the median age in the District of Columbia decreased from 34.3 in 2010 to 33.7 in 2015 while the total population rose by more than 10 percent.[357] All consumers, including many younger consumers, display changing expectations and preferences. Many consumer services have increased the level of interaction with service providers, optionality in acquiring services, and a voice in choosing the types and environmental characteristics of the service they consume. A corresponding emergence of new delivery models, including peer-to-peer marketplace businesses (ex. UBER, Airbnb, EBay, *etc.*), is blurring the boundary between consumer and producers. Many consumers also increasingly prefer organic, green, and local choices as well as clean energy sources.[358]

Recent changes have come on top of earlier ones. From 1913 through the year 2000, Pepco was the sole electric utility company serving the District regulated by the Commission. In 1999, the D.C. Council passed the Retail Electric Competition and Consumer Protection Act of 1999 ("1999 Act"), authorizing the Commission to consider a Pepco request for approval to sell its generation plants and open the retail generation market to competition.[359] Similarly, the Retail Natural Gas Supplier Licensing and Consumer Protection Act of 2004 ("2004 Act")," was enacted with a purpose of opening access to the gas distribution system in a similar manner as the 1999 Act had for the electricity market. While consumer preference trends are changing, the

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[356] Paul De Martini and Lorenzo Kristov, *Distribution Systems in a High Distributed Energy Resources Future: Planning, Market Design, Operation and Oversight* pg. 14-17, https://emp.lbl.gov/sites/all/files/lbnl-1003797_presentation.pdf

[357] U.S. Census Bureau; American Community Survey 5-Year Estimates; https://www.census.gov/programs-surveys/acs/. "Median age" means that one half of the population is older and the other half is younger.

[358] *Actionable Insights for the New Energy Consumer: Accenture End-Consumer Observatory 2012*, Accenture, pgs. 12-14 https://www.accenture.com/_acnmedia/Accenture/next-gen/insight-unlocking-value-of-digital-consumer/PDF/Accenture-Actionable-Insights-New-Energy-Consumer.pdf.

[359] Retail Electric Competition and Consumer Protection Act of 1999, D.C. Law 13-107, enacted May 8, 2000.

utility industry remains predicated on a regulated monopoly for distribution service – with District energy suppliers competing for retail customers.

As asserted by Lawrence Berkeley National Laboratory, "[a]s the grid becomes increasingly digital and distributed, customization of services for electricity customers will continue to grow. Large commercial customers, for example, increasingly want renewable energy to meet their corporate sustainability goals; cities and towns are requesting customized services, such as help with microgrids, smart city services or renewable energy; and some residential customers want greater control over their energy use and/or renewable power or private rooftop solar to generate their own electricity. But some customers simply want plain vanilla electricity at an affordable price."[360]

The Berkeley Lab Report goes on to assert that "[a]lthough these megatrends are driving change, the speed of transformation to a great extent will depend on whether regulation evolves to accommodate these changes. The business model of electric utilities must change to reflect the changing generation mix. At the same time, the grid is more complex and customers have different expectations and needs, meaning that the regulatory model must also change. The utility business model can only change to the extent that regulation adjusts to facilitate these changes."[361] Staff believes that this is a key point and driver of the MEDSIS Initiative, namely to make sure that the Commission is doing its part to ensure that the regulatory system is not hindering development of the utility business model and market access which can foster grid modernization.

Staff also agrees that "[o]ver the next decade, regulation will have to provide a way for utilities to achieve new corporate and policy goals that meet the needs of their customers. That means meeting the traditional goals of providing safe, reliable and affordable electricity, as well as the new goals of providing even cleaner electricity and individualized customer services, while integrating and connecting more distributed energy resources and devices."[362]

B. Competition

Competition is an important value in our society and we all benefit from it on a daily basis. Most of the goods and services that we use and enjoy are sold to us in markets that are more or less competitive. As a result, new suppliers are allowed to enter a market if they can provide the good or service more cheaply and thereby take market share from established businesses.

For example, telephone service was once a regulated monopoly but technological changes like wireless phones and the Internet turned the old regulatory model upside down. More recently, new transportation services like UBER and Lyft have "disrupted" regulated taxicab service in many localities around the country. The possibility has emerged that technological change –

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[360] Lisa Schwartz, Lisa Wood, John Howat, *et al*, *Recovery of Utility Fixed Costs: Utility, Customer, Environmental and Economist Perspectives*, Future Electric Utility Regulation, Lawrence Berkeley National Laboratory LBNL-1005742, Report No. 5, at 14 (June 2016) ("Berkeley Lab Report No. 5").

[361] Berkeley Lab Report No. 5, at 14.

[362] Berkeley Lab Report No. 5, at 14.

including DERs – could also bring about a radical restructuring of the regulated monopoly in electric distribution service.

Safety, reliability, universal service, and affordability are also important values to society. These values have been well-served under the established system of utility regulation. Electric power is inherently dangerous; so safe application requires careful standards-setting, operation and maintenance, and system planning. The demand for reliability in distribution service grows daily, as society becomes ever more dependent on electronic devices in all aspects of our daily lives.

Herein lays the challenge for citizens, legislators, and regulators. Can competition be introduced into local electric *distribution* service without undermining safety, reliability, universal service, or affordability?

Driven by powerful forces of technological change that are forcing down costs rapidly, the revolution in distributed energy cannot be considered a passing fad. Customers who want to be able to take advantage of the benefits of DER ought to be able to do so without being deterred by prohibitive interconnection costs or other requirements imposed by the monopoly distribution service provider. At the same time, because the electric distribution company is a <u>regulated</u> monopoly, it is possible that the regulated rate system itself can be tilted in favor of some or all DER's. Any time costs are imposed on non-DER customers to support further DER deployment, we should consider whether or not the "monopoly" rate-setting procedure is being misused to promote investment in DER's by third-party investors.

Assuming unnecessary and unjustified barriers are removed, how much "help" do DERs really need – particularly in the med-term as DER costs continue to fall? Added stimulus for DER investment may not be needed. What tips the policy balance in favor of accelerating DERs are the *environmental benefits* -- a case can be made that more DERs are needed as an alternative to the existing carbon-intensive, central generation model.

The potential of DERs is very real; standing still is not an option for most stakeholders in the electric distribution system. One useful tool for confronting an uncertain future is scenario analysis. For example, the differential impact on stakeholders of business as usual, moderate DER to high DER growth could be identified through a scenario analysis exercise. Scenarios can be adjusted to take account of the dynamic nature of trends in DER technology and deployment.

C. Emerging Technologies

In the first decade of the 21st century, the utility industry increased its deployment of information and communication technology to improve operational efficiency. "Smart Grid" and "smart" metering was hailed as pioneering breakthroughs in distribution applications, though most industry veterans will agree that the application of many smart grid technologies has been largely confined to generation and transmission operations due to the higher cost of these technologies. Insufficient economic justification simply prohibited DER deployment in distribution systems in earlier decades. According to a "The Adoption of New Smart Grid

Technologies" report,[363] "EPRI (2011) conducted a study of customer costs required to enable a fully functioning smart grid above and beyond the costs to meet electric load growth and of the $338 billion to $476 billion total investment in deploying smart grid technology nationwide, costs related to the distribution system account for 69 to 71 percent of the total, while transmission and substation costs account for 19 to 24 percent of the total."[364]

Also beginning in the 21st century and accelerating in recent years, distributed and renewable energy technologies have declined rapidly in cost while increasing in quality. The cost of solar energy has declined by more than 70% since 2009.[365] As of November 2015, four years into the decade-long SunShot Initiative, the solar industry is about 70 percent of the way to achieving SunShot's cost target of $0.06 per kilowatt-hour for utility-scale PV (based on 2010 baseline figures).[366] These technologies — including solar, wind, light-emitting diode (LED) lighting, and recently energy storage — have catalyzed a cleaner and more efficient energy system. Reported system prices of residential and commercial PV systems declined 6–12 percent per year, on average, from 1998–2014, and by 9–21 percent from 2013–2014, depending on system size.[367] Some of the key and emerging trends in technology innovation include:

- Distributed energy resources are becoming more reliable and more affordable.
- Communication technologies are becoming more reliable, faster, and more standardized.
- Investment is flowing into clean energy technology, particularly deployment.
- In a range of industries, including transportation, lodging, ecommerce, and payments, platform technologies are transforming consumer engagement and often lowering costs.
- Data analytics have disrupted major industries like consumer retail.[368]

Disruptive growth in solar energy was met with genuine resistance from utilities, who cited operational challenges in matching intermittent and variable seasonal and daily output to a largely fixed load.[369] Innovations in load management, energy efficiency, and storage

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363 Christopher Guo, Craig A. Bond, and Ana Narayanan, *The Adoption of New Smart-Grid Technologies: Incentives, Outcomes, and Opportunities*, Report commissioned by the Rand Corporation Foundation, 2015, pg. 15. http://www.rand.org/content/dam/rand/pubs/research_reports/RR700/RR717/RAND_RR717.pdf

364 Christopher Guo, Craig A. Bond, and Ana Narayanan, *The Adoption of New Smart-Grid Technologies: Incentives, Outcomes, and Opportunities*, . Report commissioned by the Rand Corporation Foundation, 2015, pg. 41. http://www.rand.org/content/dam/rand/pubs/research_reports/RR700/RR717/RAND_RR717.pdf

365 Mark Bolinger and Joachim Seel, Utility-Scale Solar 2015, "*An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States*," at 34 (August 2016). https://emp.lbl.gov/sites/all/files/lbnl-1006037_report.pdf.

366 Energy.gov Office of the Energy Efficiency & Renewable Energy – Photovolics http://energy.gov/eere/sunshot/photovoltaics

367 *Photovoltaic System Pricing Trends: Historical, Recent, and Near-Term Projections 2015 Ed*., pg. 4, SunShot- U.S. Department of Energy. https://emp.lbl.gov/sites/all/files/pv_system_pricing_trends_presentation.pdf

368 Rhys Grossman, *The Industries that are Being Distributed the Most by Digital*, by Harvard Business Review, March 21, 2016. https://hbr.org/2016/03/the-industries-that-are-being-disrupted-the-most-by-digital

369 *Achieving High Performance with Solar Photovoltaic (PV) Integration*, Accenture, pg 14-15, 2011.. https://www.accenture.com/us-en/~/media/Accenture/Conversion-

technologies are offering solutions to the limitations of variable resources like distributed solar to deliver reliable, high quality power.[370]

Consumers are increasingly adopting DER technologies and in many cases are becoming producers and consumers, known as "prosumers."[371] This transition from consumer to prosumer has the potential to revolutionize retail choice with multiple products and services. In some sense, new forms of retail competition have emerged without any regulatory action. However, if left unaddressed these organic developments in retail competition may result in an unstable system, stranded assets, and higher costs for customers, particularly for those customers who are not responsive or not empowered to take advantage of innovative technologies.[372]

Assets/DotCom/Documents/Global/PDF/Industries_10/Accenture-Achieving-High-Performance-Solar-Photovoltaic-Integration.pdf

[370] Sandia Report, *Solar Energy Grid Integration Systems – Energy Storage (SEGIS-ES)*, U.S. Department of Energy, pg. 10-12, July 2008. http://prod.sandia.gov/techlib/access-control.cgi/2008/084247.pdf

[371] Residential Prosumers – Drivers and Policy Options, June 2014. http://iea-retd.org/wp-content/uploads/2014/06/RE-PROSUMERS_IEA-RETD_2014.pdf

[372] *The Economics of Grid Defection*, Rocky Mountain Institute, February 2014 http://www.rmi.org/electricity_grid_defection

APPENDIX B - CONCURRENT COMMISSION PROCEEDINGS & RULEMAKINGS CONTINUED

A. Commission Proceedings

1. Formal Case No. 874 (GPWG)

This matter involves the Commission's continuous review of WGL's Gas Procurement activities. In 1991, by Order No. 9793, the Commission created the Gas Procurement Working Group ("GPWG"), charged with reviewing and discussing gas procurement planning activities and strategies and filing a Gas Procurement Report ("GPR"). The GPWG was designed to assist the Commission in monitoring WGL's procurement programs by providing information on WGL's gas procurement activities and the cost of services.

Recently, the Commission, in Order No. 18552, issued September 22, 2016, noted that due to changes in the District's retail natural gas market, it was time for the Commission to consider the need for continuing the biennial GPR in its present format and whether and how the GPR could be useful for the Commission and the public in evaluating the natural gas procurement practices of WGL as the default natural gas supplier and in ensuring that the Company's rates charged for natural gas supply service are just and reasonable in today's restructured natural gas market. The Order indicated that to the extent there are other reasonable approaches to procuring natural gas, those approaches should be explored. Pursuant to the Commission's statutory obligation to ensure that every public utility doing business within the District of Columbia is required to furnish service and facilities that are reasonably safe and adequate, the Commission required WGL to provide information on its plans for the management and maintenance of its distribution system similar to the information we require of the Potomac Electric Power Company ("Pepco"), the District's regulated electric distribution company.

Therefore, in Order No. 18552 the Commission directed the GPWG to: (a) reevaluate what procurement practices and evaluation tools are truly necessary in a deregulated market for evaluating WGL's natural gas procurement practices and ensuring that the Company's rates charged for natural gas supply service are just and reasonable; (b) discuss and recommend how the existing GPR could be revised and streamlined to be consistent with the needs of the Commission in evaluating natural gas supply planning and acquisition in a restructured retail market by the default supplier; and (c) discuss and recommend reporting requirements that will enable the Commission to evaluate the effectiveness of WGL's distribution system management and maintenance with respect to increased system efficiency, performance and reliability; and present a status report with recommendations consistent with the objectives set forth in this paragraph within 90 days from the date of the next GPWG meeting which was scheduled to convene on December 6, 2016.

2. Formal Case No. 1017 (SOS)

Under the 1999 Act, all customers who do not choose to purchase their electricity from an electric supplier, or produce electricity themselves as a customer-generator, obtain electricity from the Standard Offer Service (SOS) Program. The SOS Program is the default source of electricity and is administered by the SOS Administrator, currently Pepco, under rules established by the Commission.[373]

Under the SOS Program, the SOS Administrator purchases electricity for SOS customers through power supply contracts in an annual auction. The SOS process provides SOS customers with generation rates that are reflective of market conditions while at the same time providing protection against extreme volatility. Currently, the SOS contracts between Pepco and wholesale providers cover three years of procurement for residential and small commercial customers. The contracts for large commercial customers cover one year of procurement. Three months after the annual bidding, the Commission posts the winning bidders on its website.

On February 1, 2013, the Commission initiated a review of the process for providing SOS in the District.[374] On April 30, 2014, Pepco Holdings, Inc. ("PHI"), the parent company of Pepco, and Exelon Corporation ("Exelon") announced Exelon's proposed purchase of PHI and, on June 18, 2014, submitted an application for a change of control to the Commission. The Commission recognized that its decision on the merger application could potentially impact the operation of the SOS Program because Pepco was then acting as the SOS Administrator and Exelon, through its subsidiaries, has been a frequent winning bidder at SOS auctions. The Commission concluded that the prospect of a subsidiary of Exelon bidding at future auctions where an Exelon-owned Pepco is functioning as the SOS Administrator might raise issues that interested persons would want to address and that the Commission would want to consider as part of its review of the SOS process. Therefore, the Commission suspended our review until such time as we completed our consideration of the merger.

On June 24, 2016, following the issuance of a final order on the Merger, the Commission resumed its review of the SOS Program.[375] The Commission is currently reviewing the comments received in response to the June 24th Order. Once the Commission completes this review of SOS, the Commission will release an Order detailing any changes to the SOS Program. Because the SOS provider could be a purchaser of distributed generation produced from DER facilities, the MEDSIS Initiative is following the outcome of the review of the SOS program and will incorporate it in future analysis.

3. Formal Case No. 1050 (Interconnection)

Interconnection is an important element in the implementation of the grid modernization process as it enables the enhancement of the macrogrid through connection of distributed generation

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[373] 15 DCMR §§ 4100-4199 (2015).

[374] *See Formal Case No. 1017, In the Matter of the Development and Designation of Standard Offer Service in the District of Columbia* ("*Formal Case No. 1017*"), Order No. 17064, rel. February 1, 2013.

[375] *Formal Case No. 1017*, Order No. 18257, rel. June 24, 2016.

("DG") and distributed generation resources ("DER"). With regard to the MEDSIS Initiative, clear interconnection procedures will be vital because interconnection is the means by which some of the components under the initiative, such as microgrids and electrical storage, may interact with and contribute to the modernization of the macrogrid. To that point, the Commission's interconnection rules, the District of Columbia Small Generator Interconnection Rules ("DCSGIR") under Chapter 40 of the DCMR, will be instrumental in facilitating grid modernization.

The Commission opened Formal Case No. 1050 on July 31, 2006, to initiate an inquiry into the feasibility of developing uniform interconnection procedures for all customers who have on-site generation and seek to interconnect with Pepco's distribution system.[376] Ultimately, the Commission determined that an interconnection standard is feasible and developed interconnection rules. On February 13, 2009, the Commission promulgated the DCSGIR.[377] The DCSGIR contain the procedures and standards for customers with on-site generation to interconnect with Pepco's electric distribution system.

On March 23, 2016, in Formal Case No. 1119, the Commission issued Order No. 18148, which approved the merger of Pepco and Exelon ("Joint Applicants").[378] In approving the merger, the Commission accepted the Joint Applicants' proposed settlement commitments to improve the interconnection process in the District. Pursuant to Order No. 18160, on July 18, 2016, Pepco filed a Petition to Initiate a Rulemaking Proceeding to Amend 15 DCMR §§ 4004, 4099, and 3602.[379] On July 14, 2016, the Commission issued Order No. 18269, which granted Pepco's request to remove the $100 application fee for Level 1 interconnection applicants.[380] Additionally, on July 25, 2016, the Council enacted the Renewable Portfolio Standard Expansion

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[376] *Formal Case No. 1050, In the Matter of the Investigation of Implementation of Interconnection Standards in the District of Columbia* ("*Formal Case No. 1050*"), Order No. 14017, ("Comment Order") rel. July 31, 2006.

[377] *Formal Case No. 1050, In the Matter of the Investigation of Implementation of Interconnection Standards in the District of Columbia* ("*Formal Case No. 1050*"), *56 D.C. Reg.* 001415-001487 (February 13, 2009); 15 DCMR §§ 4000-4099 (February 13, 2009).

[378] *Formal Case No. 1119*, Order No. 18148, rel. March 23, 2016, Attachment B, Revised Terms and Conditions for Merger ("Merger") of Exelon Corporation ("Exelon") and Pepco Holdings, Inc. ("PHI"), Including Potomac Electric Power Company ("Pepco") (hereinafter referred to as "Attachment B"); See also, Errata Order No. 18160, rel. April 4, 2016. Exelon Corporation ("Exelon") and Pepco Holdings, Inc. ("PHI"), and Potomac Electric Power Company are referred to as the "Joint Applicants."

[379] *Formal Case No. 1119*, Pepco's Petition of Potomac Electric Power Company for the Commission to Initiate a Rulemaking Proceeding to Amend 15 DCMR §§ 4004, 4099, and 3602 ("Petition"), filed July 18, 2016. The proposed amendments include: (1) adding a 20-business-day deadline for issuing the Authorization to Operate to 15 DCMR § 4004.3, (2) adding a definition of "Authorization to Operate" to 15 DCMR § 4099, and (3) establishing deadlines in 15 DCMR §§ 4004.3(a) and (c) and the new 20-business-day Authorization to Operate deadline under 15 DCMR § 4004.3.

[380] *Formal Case No. 1119, Formal Case No. 1050,* Pepco's Request to Eliminate the Level 1 Small Generation Interconnection Fee ("Pepco's Request"), filed June 17, 2016; Order No. 18269, rel. July 17, 2016. Pepco made its request pursuant to Order No. 18148.

Amendment Act of 2016 ("RPS Act of 2016"),[381] which will require an amendment to Chapter 40 of the Commission's rules to address the new capacity level of 15 MW for Small Generators.

On June 21, 2016, Pepco filed PHI's "Interconnection of Distributed Energy Resources" plan, which is addressed in greater detail below, with the Commission.[382] Generally, however, the plan contains purported interconnection enhancements being undertaken by PHI including: streamlining the interconnection application process, reducing the number of incomplete applications, shortening review and approval times, implementing a new automatic application fee tool, providing extensive FAQs, expediting technical review for small systems (< 10kW), and the development of an electronic data interchange ("EDI") for customers to access historical electric usage through the Company's Green Button capability.[383]

Finally, on October 17, 2016, the Commission issued Order No. 18575, which directed Pepco to take certain steps to improve the implementation of interconnection in the District, including, among other directives: (1) direction for Pepco to modify the "Requested Work" label on its website to be more user-friendly; (2) report response time to customer calls beginning with the 2016 Annual Report; (3) direction to provide quarterly reports with information on the number of applications that missed approval deadlines; (4) direction to include a remedial plan for missed deadlines in its quarterly report; (5) provide a quarterly report on the number of incomplete applications for that quarter; and (6) direction for Pepco to provide specific data for currently interconnected solar and non-solar facilities to facilitate our internal monitoring of small generation facilities.[384]

4. Formal Case No. 1086 (Direct Load Control)

On November 3, 2011, in Order No. 16602, the Commission approved Pepco's revised Residential Air Conditioner Direct Load Control ("DLC") Program with updated tariff pages, including a new Rider "R-DLC".[385] The DLC Program allows Pepco to curtail a customer's air conditioner or heat pumps for limited periods of time, during periods of high demand, in exchange for a customer bill credit. The reduction in demand is in turn sold by Pepco as an energy product into the PJM demand response market. The DLC Program was partly funded from Federal stimulus funds and any costs in excess of the Federal grant or PJM market revenues would be recovered through a regulatory asset.[386] On October 16, 2015, in Order No. 18003, the Commission approved Pepco's Phase II of its DLC Program, which extends the program out to

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381 The Renewable Portfolio Standard Expansion Amendment Act of 2016 ("RPS Act of 2016") was enacted July 25, 2016. *See D.C. Act 21-0466.* The RPS Act of 2016 became effective October 8, 2016. *See D.C. Law 21-0154.*

382 *Formal Case No. 1119*, Pepco Holdings LLC's Interconnection of Distributed Energy Resources Plan, filed June 21, 2016 ("DER Interconnection Plan").

383 *See generally*, DER Interconnection Plan.

384 *Formal Case No. 1050,* Order No. 18575, rel. October 17, 2016. The Commission provided a host of directives for Pepco to improve its interconnection process in ¶¶42-47 of the Order.

385 *See Formal Case No. 1086,* Order No. 16602, rel. November 3, 2011.

386 *See Formal Case No. 1086,* Order No. 16602, ¶ 8, rel. November 3, 2011.

December 31, 2017.[387] Since PJM wholesale market changes eliminated opportunities for the DLC Program to obtain revenue after the 2016 PJM Base Residual Auction for the delivery year 2019/2020, the Commission directed Pepco to continue to monitor wholesale market changes and file a reform plan as appropriate.[388] As part of the Phase II DLC Program, Pepco submitted an updated cost/benefit analysis for the DLC Program.[389] Both the recovery of the Formal Case No. 1086 regulatory asset and the DLC's Program cost/benefit analysis are at issue in Pepco's current base rate case, Formal Case No. 1139.

5. Formal Case No. 1098 (Data Access)

On May 17, 2012, Washington Gas Energy Services, a subsidiary of WGL Holding Company, filed a petition for the Commission to open an investigation into retail electricity suppliers' access to their customers' smart meter data to enable advanced pricing options such as dynamic pricing. The Commission, by order, convened a technical conference on July 31, 2012 and provided for the filing of a final report as well as comments.[390] Subsequently, the Commission adjudicated a Pepco dynamic pricing proposal in Formal Case Nos. 1086 and 1109, and investigated the "policy, economic, legal and technical issues" involved in dynamic pricing in Formal Case No. 1114. As a result of these cases the Commission moved numerous related data responses into the record of Formal Case No. 1098.[391] Following an update of the record to incorporate any new developments related to the Pepco's deployment of a new customer information system, Solution One, the Commission will issue an Order in early 2017.

6. Formal Case No. 1114 (Dynamic Pricing)

On March 28, 2014, in Order No. 17432, the Commission opened Formal Case No. 1114, to investigate the policy, economic, legal and technical issues and questions related to establishing a dynamic pricing plan (program) in the District.[392] Formal Case No. 1114 is related to Formal Case No. 1130 because some types of DER ownership models involve customer-owned and operated DER dynamic pricing programs or Price Responsive Demand programs that could be addressed in Formal Case No. 1114.

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387 *See Formal Case No. 1086*, Order No. 18003, ¶ 1, rel. October 16, 2015.

388 *See Formal Case No. 1086*, Order No. 18003, ¶ 13, rel. October 16, 2015.

389 *See Formal Case No. 1086*, Proposal of Potomac Electric Power Company for Phase II of its Direct Load Control Program, Attachment C, filed September 19, 2014.

390 *Formal Case No. 1098, In the Matter of the Investigation into Retail Electricity Supplier Access to Their Customers' Smart Meter Data* ("*Formal Case No. 1098*"), Order No. 16838, ¶¶ 7-8, rel. July 13, 2012.

391 *See Formal Case No. 1086, Formal Case No. 1098, Formal Case No. 1109*, Order No. 17359, ¶ 9, rel. January 24, 2014 and *Formal Case No. 1098, Formal Case No. 1114*, Order No. 17620, ¶ 9, rel. September 9, 2014.

392 *See Formal Case No. 1114, In the Matter of the Investigation into the Issues Regarding the Implementation of Dynamic Pricing in the District of Columbia*, Order No. 18170 rel. April 13, 2016.

7. Formal Case Nos. 1116/1121 (DC PLUG)

The District of Columbia Power Line Undergrounding ("DC PLUG") Initiative was created pursuant to Mayor's Order 2012-130, wherein Mayor Vincent Gray established a task force, which was given specific directives for analyzing "the technical feasibility, infrastructure options and reliability implications of undergrounding new or existing overhead electrical distribution facilities in the District of Columbia." Based on the task force's October 2013 final report recommending expedited legislation for the implementation of the undergrounding initiative, legislation governing the public-private partnership between Pepco and the District of Columbia Department of Transportation ("DDOT") to bury certain overhead power lines to improve electric service reliability in the District of Columbia, the Electric Company Infrastructure Improvement Financing Act of 2013, D.C. Bill 20-387, was introduced in the Council of the District of Columbia and became effective May 3, 2014, D.C. Law 20-102; D.C. Code § 34-1311, *et seq*. (the "Electric Undergrounding Act," or the "Act").

The Act provides for a joint DDOT and Pepco effort to move overhead electrical power lines underground. The project is expected to take 7-10 years to complete and to cost approximately $1 billion. The Act also authorizes the District of Columbia to issue bonds to fund the cost of the work to be performed by DDOT and other related financing costs pursuant to a financing order approved by the Commission. The bonds and costs of the work are to be funded through another surcharge to be collected by Pepco. On April 29, 2014, the Commission opened Formal Case No. 1116 to consider applications for approval of triennial plans.

On June 17, 2014, in accordance with Section 307(a) of the Act, Pepco and DDOT filed with the Commission the first Triennial Plan Application in Formal Case No. 1116, seeking the Commission's approval of their Triennial Underground Infrastructure Improvement Projects Plan. On August 1, 2014, in accordance with Section 302(b) of the Act, Pepco submitted an application for issuance of a financing order.

The Formal Case Nos. 1116 and 1121 dockets contain all matters related to the Commission's review and approval of the Applications ("Undergrounding Initiative"). On November 12, 2014, the Commission approved the Joint Application of Pepco and DDOT for the first Triennial Plan and the surcharge to be collected by Pepco. On November 24, 2014, the Commission in Formal Case No. 1121 approving Pepco's Application for a Financing Order including the imposition of a DDOT surcharge to be collected by Pepco.

Both Commission orders have been challenged and upheld by the D.C. Court of Appeals. However, the Court challenges delayed implementation of the DC PLUG initiative. The DC PLUG initiative has also been delayed by objection by the U.S. General Services Administration ("GSA") that the surcharges amount to a tax on the U.S. Government and are precluded by Federal government immunity. The District and Pepco are working together to propose legislation to the Council to address GSA's concern.[393] As the DC PLUG project aims to increase reliability of the electric grid, including deploying new technologies like distribution automation, it is important that MEDSIS follow the development of the proceeding and its potential impact on the MEDSIS Initiative.

[393] Council Hearing occurred on November 10, 2016 on Bill 21-0911, "Electric Company Infrastructure Improvement Financing Amendment Act of 2016."

8. Formal Case No. 1119 (Pepco-Exelon Merger)

By Order No. 18148, the Public Service Commission of the District of Columbia ("Commission") granted the Motion of the Exelon Corporation ("Exelon"), Pepco Holdings, Inc. ("PHI"), the Potomac Electric Power Company ("Pepco"), Exelon Energy Delivery Company, LLC ("EEDC"), and New Special Purpose Entity, LLC ("SPE") (collectively, the "Joint Applicants") to file the Joint Applicants' Request for Other Relief that was received on March 7, 2016; adopted the terms and conditions set out in Option 2 in the Joint Applicants' Request, as modified by the Order, as a resolution on the merits of the Merger Application as filed for the Commission's approval, pursuant to D.C. Code §§ 34-504 and 34-1001; and determined that the Joint Application for a change of control of Pepco to be effected by the Proposed Merger of PHI with Purple Acquisition Corp. ("Merger Sub"), a wholly-owned subsidiary of Exelon ("Joint Application"), as filed by the Joint Applicants and as amended by the terms set out in Attachment B to Order No. 18148.[394]

The final terms and merger related commitments are outlined in Order 18160. Several of the conditions explicitly mention, or are implicitly related to, the MEDSIS proceeding. Below, Staff provides is a list of Formal Case No. 1119 merger conditions that relate to Formal Case No. 1130, and in some instances, also relate to other Commission proceedings.[395]

TABLE 9: FORMAL CASE NO. 1119 MERGER CONDITIONS RELATED TO MEDSIS

Formal Case No. 1119 Merger Conditions Related to Formal Case No. 1130
Creation of Formal Case No. 1119 Escrow Fund
Merger Condition # 4. Within sixty (60) days after Merger close, Exelon shall provide Pepco with the funds and Pepco shall establish a Formal Case No. 1119 Escrow Fund with two subaccounts: the Formal Case No. 1130 MEDSIS Pilot Project Fund Subaccount and The Energy Efficiency and Energy Conservation Initiatives Fund Subaccount The escrowed funds shall be placed in an interest-bearing account or invested in instruments issued or guaranteed as to principal and interest and shall be administered by a third party administrator to be paid from a portion of the interest proceeds with the approval of the Commission. Any unused interest will be deposited proportionally into the two subaccounts.
Support for Formal Case No. 1130
Merger Condition # 5. Within sixty (60) days after Merger close, Exelon shall provide funding in the amount of $21.55 million to the Formal Case No. 1130 MEDSIS Pilot Project Fund Subaccount within the Formal Case No. 1119 Escrow Fund. The fund shall be held in escrow until the Commission approves a pilot project and directs that the funds be released. **Merger Condition # 7(a).** Within sixty (60) days after Merger close, Exelon shall provide funding in the amount of $11.25 million to the Energy Efficiency and Energy Conservation Initiatives Fund Subaccount within the Formal Case No. 1119 Escrow Fund to support innovative energy

[394] *See Formal Case No. 1119, In the Matter of the Joint Application of Exelon Corporation, Pepco Holdings, Inc., Potomac Electric Power Company, Exelon Energy Delivery Company, LLC and New Special Purpose Entity, LLC for Authorization and Approval of Proposed Merger Transaction* ("*Formal Case No. 1119*"), Order No. 18148, rel. March 23, 2016.

[395] Conditions 119, 120 (b)(i), 120 (b)(iv) below are related to Formal Case No. 1050.

conservation or energy efficiency programs targeted primarily towards both affordable multifamily units and master metered multifamily buildings which include low and limited income residents that are sponsored or operated by the District or by qualified non-profit entities that support and enable targeted energy-efficiency programs. The funds shall be held in escrow until the Commission directs that the funds be released.

Merger Condition # 56(c). By June 30, 2021, Pepco shall file with the Commission a comprehensive report on the reliability performance and prudence of actual spending levels for 2016-2020 to allow the Commission to determine whether the escrowed funds should be returned to the Formal Case No. 1130 MEDSIS Pilot Project Fund Subaccount or returned to the Company.

Enhancement to the Interconnection Process and Support for Customer-Owned Behind-the-Meter Distributed Generation

Merger Condition # 119. Pepco shall reflect in its distribution system planning actual and anticipated renewable generation penetration. Beginning not later than six months after closing of the Merger, Pepco's distribution system planning will include an analysis of the long term effects/benefits of the addition of behind-the-meter distributed generation attached to the distribution system within the District of Columbia, including any impacts on reliability and efficiency. Pepco will also work with PJM to evaluate any impacts that the growth in these resources may have on the stability of the distribution system in the District of Columbia.

Merger Condition # 120(b)(i). Provide a report to the Commission within ninety (90) days after Merger closing that provides its criteria limits for distributed energy resources that apply for connection to its distribution. This report shall include supporting studies and information that substantiate those limits. The report will describe and discuss how Pepco considers the generation profile of renewable energy relative to load, as well as discuss the approaches utilized in other jurisdictions that have addressed the issue of the impact of on-site renewable resources on the local grid and circuits. Pepco shall make itself available for discussions with the stakeholders on the report and to demonstrate the modeling tools used by Pepco to perform its analysis to accommodate additional distributed energy resources.

Merger Condition # 120(b)(iii). PHI has provided data to National Renewable Energy Laboratory ("NREL") as part of its in-depth work to review utility interconnection criteria. A report is expected to be issued by the end of 2015. PHI will evaluate its criteria with the criteria outlined in the NREL report to identify any improvements that may be made including treatment of behind-the-meter storage equipment. PHI shall share information, discuss approaches, evaluating interconnection criteria, working with NREL, and providing an opportunity for stakeholders to comment on PHI's proposed recommendations on interconnection criteria prior to public release. PHI will collaborate with stakeholders in good faith but nothing in these Terms and Conditions obligates PHI to accept or be bound by the recommendations of the stakeholders. This collaborative effort will be completed within one (1) year following the approval of the Merger.

Merger Condition # 120(b)(iv). PHI will consider the hourly load shape and the hourly generation of interconnected small generators as a factor to determine the hosting capacity for any given location of a circuit. PHI's hosting capacity determinations shall adopt the minimum daytime load ("MDL") supplemental review screen standards established in FERC Order 792 as well as findings from the collaborative research referenced above that allow for interconnection of distributed generation systems without additional need for study or upgrade investments (e.g., "Fast Track Capacity") as long as aggregate installed nameplate capacity on the circuit, including the proposed system, would not exceed 100% of MDL on the circuit and the proposed system passes a voltage and power quality screen and a safety and reliability screen.

Formal Case No. 1119 Merger Conditions Related to Formal Case No. 1130

Merger Condition # 124. In behind-the-meter applications where the battery never exports while in parallel with the grid and both the battery and the solar system share one inverter, no additional metering or monitoring equipment shall be required for a solar plus storage facility than would be required for a solar facility without storage technology. Pepco, through a stakeholder process, shall undertake appropriate further study of the issues regarding the coupling of solar and storage. As a result of such studies, stakeholders may recommend changes to this protocol to the Commission. Pepco, in consultation with Commission Staff and interested stakeholders, shall determine an appropriate target completion date for this review within one (1) year after Merger closing.

Support of Formal Case No. 1130 - (Investigation into MEDSIS)

Merger Condition # 127. The Commission, pursuant to Order No. 17912 issued on June 12, 2015, opened Formal Case No. 1130. Pepco, as the electric distribution utility in the District of Columbia, is an active participant in this proceeding and is subject to assessment to fund costs of the Commission and the OPC incurred in this proceeding in accordance with the laws of the District of Columbia. Exelon commits that it will support, and cause Pepco to continue to support, the Commission's objectives in opening this proceeding to identify technologies and policies that can modernize the District of Columbia energy delivery system for increased sustainability and to make the District of Columbia energy delivery system more reliable, efficient, cost-effective and interactive. Further, Pepco and Exelon shall support and facilitate the implementation of any pilot projects approved by the Commission that emerge from the Formal Case No. 1130 proceeding.

9. Formal Case No. 1137 (WGL Rate Case)

This matter is a natural gas base rate case in which WGL requests authority to earn an 8.23% overall rate of return, including a return on equity of 10.25%. WGL stated that the requested rates are designed to collect approximately $171.7 million in total annual revenues, which represents an increase in the Company's weather-normalized annual revenues of approximately $17.4 million of which $4.5 million reflects costs associated with system upgrades previously approved by the Commission and paid through customer surcharges. The Company represents that this reflects an overall increase of approximately 7.6% in revenues over and above current rates.

Issue No. 17 may have some relation to the MEDSIS initiative. Issue No. 17 states: Are the proposed rate design and tariff changes, including but not limited to Rate Schedules 3 and 3A (interruptible customers), the proposed Rate Schedules 7 and 7A (combined heat and power/distributed generation facilities), the Multi-Family Piping Program, and the treatment of group-metered apartment customers under proposed Rate Schedules 2B and 2C reasonable in this case?

There may be regulatory and tariff issues regarding cogeneration such as the Commission's authority and the adequacy and appropriateness of current regulations/tariffs and the need for consistency of definitions. The hearings for this matter were held on between mid-October and early November of 2016. The projected issuance of the final Order is March 2, 2017.

10. Formal Case No. 1139 (Pepco Rate Case)

Formal Case No. 1139, Pepco's latest rate case, was initiated on June 30, 2016, when Pepco filed an Application requesting authority to increase existing distribution service rates and charges for electric service in the District of Columbia by $85.5 million.[396] On September 22, 2016, the Commission issued Order No. 18550, which established the procedural schedule for the proceeding and designated the issues in the case. The Order provides the full list of designated issues at Attachment A. Of particular importance to the MEDSIS Initiative is Designated Issue No. 18, which addresses load forecasting as well as other system planning related matters that have been raised in Formal Case No. 1130. Specifically, Issue 18 states:

> Are Pepco's short- term and long-term load forecasts reasonable?
> a. Is Pepco's load forecast used in formulating the construction budget and driving the distribution system planning reasonable?
> b. Does Pepco's load forecast reasonably and properly account for the effects of environmentally beneficial and load reducing measures on the load growth projections and capital requirements included in the Construction Program Report, including: (a) solar and other forms of customer-owned, behind-the-meter generation; (b) energy storage facilities; (c) energy efficiency; (d) energy conservation; and (e) similar load reducing measures?
> c. Are the system, substation and feeder level load growth projections used to justify the Reliability projects, Customer Driven projects, and Load projects contained in the Construction Program Report reasonable?
> d. What steps should be taken to improve Pepco's short-term and long-term load forecast process and reporting for the future?[397]

The procedural schedule also provided in Order No. 18550 sets the evidentiary hearings for March 2017 and anticipates that the final order in the proceeding will be issued in July 2017, absent changes in the procedural schedule.[398]

B. Commission Rulemakings

1. Energy Supplier Rules: Formal Case No. 945 (Investigation into Market Competition) & RM46-2015-01 (Investigation into Licensure Rules)

In this rulemaking, the Commission, pursuant to its authority under Sections 34-1501 through 1520 and 34-1671.01 through 1671.14 of the D.C. Code, has previously given notice of the creation of Chapter 46 of Title 15 of the DCMR. Chapter 46 is a new chapter which establishes

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396 *Formal Case No. 1139*, *In the Matter of the Application of Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Services* ("*Formal Case No.* 1139"), at 3, filed June 30, 2016 ("Pepco's Application"). Subsequently, this request was revised to $82.1 million in supplemental testimony.

397 *Formal Case No. 1139,* Order No. 18550, Appendix A, rel. September 22, 2016.

398 *Formal Case No. 1139*, Order No. 18550, Attachment B.

rules governing the licensure and bonding of Electricity Suppliers in the District of Columbia, pursuant to the Retail Electric Competition and Consumer Protection Act of 1999 ("1999 Act") as codified in Sections 34-1501 through 1520 of the D.C. Code. Currently, the requirements for licensing Electricity Suppliers are set forth in Formal Case No. 945, Order No. 11796, rel. September 18, 2000. Bonding requirements for Electric Suppliers are set forth in Formal Case No. 945, Order No. 11862, rel. December 18, 2000.

This Rulemaking proposes to put the licensing and bonding requirements in a single chapter. The Notice of Proposed Rulemaking ("NOPR") includes the following attachments: (1) Supplier Application; (2) Form of Integrity Bond for Electric Suppliers other than Aggregators and Brokers-Surety Bond; (3) Form of Integrity Bond for Aggregators and Brokers-Surety Bond; (4) Form of Customer Payments Bond-Surety Bond; and (5) Notice of Application. A first NOPR was published on February 6, 2015 (62 *D.C. Reg.* 001712-001733) and comments were received in response to the NOPR. A second NOPR will be published with revised sections from the first NOPR based upon comments received. This rulemaking relates to Formal Case No. 1130 because it provides the rules for licensing and regulating potential DER market third-party providers who intend on supplying and reselling electricity in the District of Columbia.

2. Generating Facility Approval

Pursuant to D.C. Code § 34-1516, "no person shall construct an electric generating facility for the purpose of the retail or wholesale sale of electricity unless the Commission first determines, after notice and a hearing, that the construction of the electric generating facility is in the public interest."

In response to D.C. Code § 34-1516, the Commission developed regulations for reviewing and approving the construction of a generating facility. The Commission's rules are found in 15 DCMR Chapter 21, (Provision for Construction of Electric Generating Facilities and Transmission Lines). Specifically, 15 DCMR § 2100.2 states: "No person shall construct an electric generating facility in the District of Columbia for the purpose of selling electricity unless the Commission first determines, after notice and a hearing, that the construction of the facility is in the public interest." As part of the above provisions under 15 DCMR § 2112.1, "the Commission may, in its discretion, *waive or modify* any provision of this Chapter…." Also, pursuant to 15 DCMR § 2112.2, "the applicant may, at the time of application, request that the Commission waive any provision in this Chapter for good cause shown." The current rules make no distinction between renewable and fossil fuel generators.

This provision relates to MEDSIS because under the current rules before any type of electric generating facility (*i.e.*, microgrid) can be built for the purpose of selling electricity in the District, it must be reviewed by the Commission pursuant to the notice and hearing requirements established in 15 DCMR Chapter 21. However, to the best of Staff's knowledge, the Commission has yet to receive an application from any person or entity requesting Commission approval to construct an electric generating facility pursuant to the Chapter 21 rules.

3. Net Energy Metering & Community Net Metering

Net Energy Metering ("NEM") and Community Net Metering ("CNM"), discussed below, may also become prominent in the MEDSIS Initiative discussion. One of the benefits of grid modernization is that it allows the customer to participate and interact with the macrogrid through ownership or stake in distributed generation ("DG") facilities. As NEM and CNM evolve, the facilities may become valuable contributors to reliability of the macrogrid through the electricity they push on to the local distribution system. While these two practices are currently available in the District, the MEDSIS Initiative may be the forum to discuss how NEM and CNM may be expanded, through statute and regulation, to provide more benefits to the local distribution system.

In Formal Case No. 945, the Commission adopted Rulemaking No. 9 ("RM-9"), which addresses net energy metering and community net metering. Net Energy Metering ("NEM") is defined as **"**the difference between the kilowatt-hours consumed by a customer-generator and the kilowatt-hours generated by the customer-generator's facility over any time period determined as if measured by a single meter capable of registering the flow of electricity in two directions."[399] On February 10, 2005, the Commission issued Order No. 13501 adopting final rules and regulations implementing the NEM provisions of the District of Columbia Retail Electric Competition and Consumer Protection Act of 1999, as amended.[400] Since their adoption, the NEM Rules, Chapter 9 of the DCMR, have undergone modification. One modification was to ensure that NEM customers are compensated for their excess energy at the "Full Retail Rate," which consists of generation, transmission, and distribution credits.[401] The other key amendment to the NEM Rules was to ensure the rules comported with the "Clean and Affordable Energy Act of 2008,"[402] which increased the capacity of facilities eligible to participate in NEM, 100 kW to 1,000 kW.[403] NEM Rules have not been amended since that time. However, Chapter 9 itself has been amended and expanded to address another element of distributed generation, CNM.

CNM is defined as a billing arrangement under which the monetary value of electric energy generated by a Community Renewable Energy Facility ("CREF") and delivered to the Electric Company's local distribution facilities is used to create a billing credit for CREF Subscribers.[404] On October 17, 2013, the Council enacted the "Community Renewable Energy Amendment Act of 2013" ("CREA").[405] The CREA required the Commission to establish rules to facilitate the

399 15 DCMR § 999, Definitions.

400 *Formal Case No. 945*, Order No. 13501, rel. February 10, 2005; Retail Electric Competition and Consumer Protection Act of 1999, D.C. Code §§ 34-1501-1520 (2001 Ed.). The Notice of Final Rulemaking was published in the *D.C. Register* on February 18, 2005.

401 *Formal Case No. 945*, Order No. 14840, rel. June 25, 2008.

402 D.C. Code § 34-1501 (15) (2001 Ed.); The Clean and Affordable Energy Act ("CAEA") amended the definition for Customer-Generator. The CAEA became law on October 22, 2008. *See D.C. Law 17-250.*

403 D.C. Code § 34-1501 (15) (2001 Ed.).

404 15 DCMR § 999, Definitions.

405 The Community Renewable Energy Amendment Act of 2013 ("CREA") was enacted October 17, 2013. *See D.C. Act 20-0186.* The CREA became effective December 13, 2013. *See D.C. Law 20-0047.*

implementation of CNM in the District.[406] In Order No. 18762, the Commission adopted the CNM provisions, which resulted in the amendment of Chapter 9 of the DCMR.[407] Subsequently, the Community Renewable Energy Credit Rate Amendment Act of 2016 was enacted on August 18, 2016 and became effective October 8, 2016. This Act requires additional amendments that will impact the definition of the CREF Credit Rate and the Compensation for CRED Subscribers.[408] The Commission issued a NOPR regarding the CREF Credit Rate on October 28, 2016 and a Notice of Final Rulemaking on December 30, 2016.[409] Additionally, the Commission issued a Notice of Proposed Tariff on December 30, 2016 concerning Pepco's Proposed Community Net Metering Rider, which incorporates the revised CREF Credit Rate.[410]

While the Commission has promulgated the relevant rules for implementing the statutory requirements of Community Renewable Energy Credit Rate Amendment Act of 2016, the legislation has created two interrelated problems. First, the legislation requires the SOS Administrator to purchase CREF output at the price of the SOS Rate for Small Commercial Customers plus all other costs associated with being small Commercial Customer, *i.e.*, all non-energy related costs of being a Pepco Small Commercial customer. Unfortunately the SOS Administrator can only sell the CREF output at the SOS energy Rate for Small Commercial Customers, as all non-energy related costs collected by the SOS Administrator are passed on to the appropriate third-party for each associated cost. This results in a shortfall to the SOS Administrator of the total non-energy related costs for each kWh sold associated with being a Pepco Small Commercial customer.[411] To remain whole, the SOS Administrator has to pass these unrecoverable costs on to Pepco. Pepco has to have a way of recovering these cost or else these costs represent an illegal taking. CREA contains a method for Pepco to recover these costs in Section 122 of the CREA:

> …the electric company may seek recovery of any costs associated with the implementation of this act in a base rate case. In a base rate case filing that includes recovery of such costs, the electric company shall include in its filing with the Commission any

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406 *See* Sec. 2 of the CREA amending 118(b) of the Retail Electric Competition and Consumer Protection Act of 1999, which amends D.C. Official Code § 34-1518 by adding paragraph 5.

407 *Formal Case No. 945, In the Matter of the Investigation into Electric Service Market Competition and Regulatory Practices* ("*Formal Case No. 945*"); *RM9-2015-01, In Matter of 15 DCMR Chapter 9-Net Energy Metering-Community Renewable Energy Amendment Act of 2013* ("*RM9-2015-01*"), Order No. 17862, rel. April 24, 2015.

408 The Community Renewable Energy Credit Rate Clarification Amendment Act of 2016 ("CRECRCAA") was enacted August 18, 2016. *See D.C. Act A21-0488*. The CRECRCAA became effective October 8, 2016. *See D.C. Law L21-0160*.

409 *RM-09-2015-01*, Notice of Proposed Rulemaking re Chapter 9, 63 D.C. Reg. 013501-013502 (2016); *RM-09-2015-01*, Notice of Final Rulemaking re Chapter 9, 63 D.C. Reg. 016089-016090 (2016).

410 *RM-09-2015-01*, Notice of Proposed Tariff, 63 D.C. Reg. 016183-016185 (2016).

411 SOS rates are required to be determined through a competitive bidding process. If the payment of non-energy costs, associated with being a small Commercial Customer, to the CREF are passed on to SOS customers that would create an SOS rate that is, partially, determined through a non-competitive process in violation of Commission rules and sound rate making principles.

> benefits and costs to the electric company. Any recovery of the net costs by the electric company approved by the Commission shall occur solely through a rate assessment of the subscribers.

This effectively means that in Period 1 residential CREF subscribers receive a payment in excess the value of their CREF energy, *i.e.*, the total non-energy related costs associated with being Pepco Small Commercial customer, and in Period 2, Pepco recovers these same costs "solely through a rate assessment of the subscribers." The situation created by the interplay of these two pieces of legislation does not appear to be a viable long term arrangement.

C. Related Reports, Proceedings, & Industry Organizations

1. PHI Interconnection of Distributed Energy Resources Plan

On June 21, 2016, Pepco filed an "Interconnection of Distributed Energy Resources" report in order to address DER-related commitments resulting from the Commission's approval of the PHI's merger with Exelon.[412] In this report, among other things, PHI discusses its interconnection application review and approval process as well as improvements being adopted to help facilitate the interconnection of proposed renewable-energy projects to Pepco's distribution system. In the report, PHI recognized the growing number of interconnection applications being filed with Pepco and "the increasing need to streamline the interconnection application review process to minimize delays, decrease operating issues, and improve the overall customer interconnection experience."[413] PHI noted its efforts to streamline the process include "a new online application website," "a new application fee process, increased internal cross-jurisdiction facilitation and coordination, and reduction in processing time down to one business day for customer class, voicemail returns, and Green Power Connection Mailbox messages."[414]

PHI also notes increased customer education and outreach measures to educate customers on the interconnection process as well as the implementation of expedited technical review of interconnection applications ("Fast Track Process") that meet certain criteria.[415] PHI notes the development of an electrical data interchange ("EDI") tool that went live in April 2016 to allow "customers and customer representatives to access historical electric usage through the Company's Green Button capability."[416] Several of these identified improvements relate to proposed requirements by stakeholders in this proceeding. The Commission should consider whether these changes in the interconnection process go far enough to facilitate DER deployment or whether additional regulations are needed.

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412 *See Formal Case No. 1119*, Interconnection of Distributed Energy Resources Report, filed June 21, 2016 ("Interconnection Report").

413 Interconnection Report at 13.

414 Interconnection Report at 14.

415 Interconnection Report at 16-17.

416 Interconnection Report at 17. *See* www.pepco.com/gpc.

The Interconnection Report also identifies challenges to incorporating behind-the-meter solar and energy storage, such as potential system impacts on the grid, inappropriate net-metering standards, concerns regarding accounting for Renewable Energy Certificates ("RECs"), lack of communication between the customer and utility systems that may lead to negative impact on the macrogrid, as well as procedural and administrative challenges.[417]

2. PHI Distributed Energy Resources & the Distribution System Planning Process

On September 23, 2016, Pepco filed a report on "Distributed Energy Resources and the Distribution System Planning Process" in accordance with Paragraph 119 of Attachment B of the Order No. 18148 ("DER Planning Report").[418] The report notes that requests for interconnection of distributed generation ("DG") have increased greatly in recent years, across all PHI territories. The report says that "[t]his is largely due to consumer preferences, decreasing technology costs, and public policy objectives and incentives intended to incorporate greater amounts of renewable energy."[419]

The DER Planning Report provides an overview of PHI's peak load planning process and the various factors that guide PHI's consideration of distributed energy resources in the peak load planning process. The report explains how the peak load planning process considers demand response, energy efficiency, and distributed generation. PHI's efforts to engage DER stakeholders are described in the report. According to the report, "PHI is still in the early stages of evaluating how energy storage can be used to the benefit of the distribution system."[420]

3. MD PSC Case No. 9361 (Pepco-Exelon Merger) – Pepco filing on Merger Condition 14 and Initial Considerations for Grid Modernization in Maryland

On June 30, 2016, Pepco and Delmarva Power filed a request with the Maryland Public Service Commission ("MD PSC") for that Commission to initiate a MEDSIS-style "proceeding to examine opportunities to transform the electric distribution grid in the State of Maryland." More specifically, Pepco asserts that in accordance with Merger Condition 14 in Maryland, "Exelon will fund up to $500,000 for the Commission to retain a consultant to study relevant issues and facilitate [the] proceeding," which Pepco asserts "should address at a minimum the following topics: the incorporation of smart-grid technology, microgrids, renewable resources, and distributed generation" in a workgroup process with interested stakeholders.[421] Attached to Pepco's request to initiate a grid modernization proceeding in Maryland, the Company also

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417 Interconnection Report at 35-38.

418 *See Formal Case No. 1119*, Distributed Energy Resources and the Distribution System Planning Process Report, filed September 23, 2016 ("DER Planning Report").

419 DER Planning Report at 4.

420 DER Planning Report at 37.

421 MD PSC Case No. 9361, *Initial Considerations for Grid Modernization in Maryland*, at 1, filed June 30, 2016. ("Pepco MD MEDSIS Proposal").

included “a paper that provides the Commission and other stakeholders a high-level overview of the relevant issues and offers PHI’s perspective on key components to be considered in the grid modernization proceeding.” PHI contends that “[a]ll grid modernization efforts should be fully integrated with the distribution system to the maximum extent possible.”[422]

On September 26, 2016, the MD PSC opened “Public Conference 44 (PC44),” its proceeding on transforming the electric distribution system in Maryland, to consider the following key topics:

- Enhancing Rate Design options, particularly for electric vehicles
- Calculating benefits and costs of distributed energy resources (“DER”), including solar energy
- Maximizing Advanced Meter Infrastructure (Smart Meters) benefits
- Valuing Energy Storage properly
- Streamlining the Interconnection Process for distributed energy resources
- Evaluating Distribution System Planning
- Protecting Limited-Income Marylanders[423]

Comments were due on these issues by October 28, 2016. Commission Staff will monitor this proceeding.

4. Maryland Resiliency Through Microgrids Task Force Report

On February 25, 2014, Governor Martin O’Malley directed his Energy Advisor to lead a Resiliency Through Microgrids (“Task Force”) to study the statutory, regulatory, financial, and technical barriers to the deployment of microgrids in Maryland.[424] The Governor required the Task Force to develop a “roadmap for action” to pave the way for private sector deployment of microgrids across the State of Maryland.[425] On June 23, 2014, the Maryland Resiliency Through Microgrids Task Force Report (“Task Force Report”) was published.

In the Task Force Report, the Task Force defined a microgrid as a “collection of interconnected loads, generation assets, and advanced control equipment installed across a defined geographic area that is capable of disconnecting from the macrogrid (the utility scale electric distribution system) and operating independently.”[426] The Task Force indicated that “microgrids are currently being deployed across the State in numerous settings; one popular application is the “campus-style” microgrid.”[427] The Task Force reported that campus-style microgrids “serve a

[422] Pepco MD MEDSIS Proposal at 1-2.

[423] Public Conference 44, In the Matter of Transforming Maryland’s Electric Distribution Systems to Ensure that Electric Service is Customer-Centered, Affordable, Reliable, and Environmentally Sustainable in Maryland, Notice of Public Conference, rel. September 9, 2016.

[424] Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

[425] Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

[426] Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

[427] Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

singular customer on a single parcel of property."[428] However, the Task Force Report primarily focused on public purpose microgrids. The Task Force defined public purpose microgrids as those serving "critical community assets across multiple properties." The Task Force indicated that critical community assets "include resources that provide important community functions, such as community centers, commercial hubs, and emergency service complexes."[429] The Task Force discussed that "facilities that contribute to quality of life during an extended power outage could also be included in a public purpose microgrid."[430] Additionally, the Task Force indicated that "a public purpose microgrid may be owned in whole or in part by either an electric distribution company or a third party entity, and that it must provide services to multiple customers across multiple property lines."[431]

The Task Force recommended for the short term that the State of Maryland "focus on the development of utility-owned public purpose microgrids through advocacy and incentives."[432] Also, the Task Force recommended that "the Maryland Energy Administration conduct a holistic analysis of tariffs that help define the value of distributed generation ("DG") to the macrogrid as well as engage in a comprehensive review of siting, interconnection, and commissioning procedures."[433]

For the long term, the Task Force recommended that "the state focus on reducing barriers to entry to third parties (non-utilities) wishing to offer public purpose microgrid services to multiple customers in Maryland, whether those services are offered in new developments or over existing electric distribution company assets."[434]

The Task Force believes that these recommendations if implemented will speed the adoption of public purpose microgrids in Maryland.

5. OPC's Value of Solar Report (First Quarter 2017)

Pursuant to a legislative charge from the Council of the District of Columbia to address emerging alternatives for energy choice for residential consumers, the Office of the People's Counsel ("OPC") is in the process of producing a Value of Solar study for the District of Columbia. Consistent with the intent of the Council's directive, the Study will comprehensively assess the District's solar capacity and provide a framework for valuation of solar energy generation.

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428 Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

429 Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

430 Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

431 Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

432 Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i (June 23, 2014).

433 Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page i-ii (June 23, 2014).

434 Maryland Resiliency Through Microgrids Task Force Report, Executive Summary, Page ii (June 23, 2014).

OPC's Value of Solar Study will assess the District's physical solar capacity; evaluate the District of Columbia's current net metering policies; analyze the costs and benefits – including quantification of social, health, and environmental benefits – of distributed solar energy generation in the District of Columbia and the regional transmission grid; and provide a framework for determining a rate design approach that can facilitate solar deployment with minimal negative impact on ratepayers not participating in solar energy generation. The Study will also include a comprehensive empirical assessment of opportunities for increased participation in solar energy generation by limited- and low-income residents in the District.

OPC has retained consultants Synapse Energy Economics and Jerome Paige & Associates to conduct the Study. Synapse Energy Economics is performing the research and analysis on the value of solar for the District as a whole. Jerome Paige & Associates is conducting the research and analysis on DC low-income solar access issues. OPC anticipates that the entire project will be completed in the first Quarter of 2017.[435]

4. DOEE's Solar for All (February 2017)

"Solar for All" is a legislatively-mandated program for DOEE. It requires DOEE to use the Renewable Energy Development Fund ("REDF"), which is funded by alternative compliance payments under the Renewable Portfolio Standard program, to build enough solar capacity in the District to reduce the monthly electricity bill of at least 100,000 low-income households by 2032. The program also focuses on providing access to solar generation for non-profits, senior citizens, and small businesses. Notably, the program would allow the use of REDF for solar-ready improvements such as roof repair and electrical line upgrades. DOEE is scheduled to submit an Implementation Plan to the D.C. Council in February 2017.

5. DOEE's Microgrid Study (Urban Ingenuity)

In 2015 and 2016, Urban Ingenuity has led a research project on the feasibility of District energy microgrids in Washington DC under a grant from the District Department of Energy and Environment's (DOEE) Green Building Fund. The purpose of this work is to explore how District energy microgrids can form a platform for building a more modern, technologically enabled, environmentally sustainable, and climate resilient energy infrastructure for the Nation's capital. Specifically, this research is outlining a roadmap for supporting concrete microgrid projects in the District of Columbia by improving clarity on the technical, financial, and policy foundations for microgrid project development, and laying a platform for new government policy and agency program support for leading-edge District energy projects. This data-driven research is providing direct-decision support for property owners and developers to advance microgrids at specific sites in Washington DC. Work has included exploring market potential and technical feasibility for diverse sites, including proposed campus scale energy projects at the Saint Elizabeth's East Campus, Gallaudet University/Union Market, US General Services Administration Heating Operation and Transmission Division ("HOTD") plant, Walter Reed Army Medical Center, and other proposed economic development projects with potential to anchor innovative microgrid systems. Urban Ingenuity has also developed a customized site-screening tool to assess microgrid potential using available data, and is outlining policy

435 Status Updated provided by OPC on October 6, 2016 and January 9, 2017.

frameworks and financial resources to support district energy project development at new sites in Washington DC.

Moving forward in FY 2017, the team will continue to provide strategies to DOEE, other public agencies, and private developers, for improving policy and market certainty, and for expanding the engagement of capital markets and DC economic development resources in support of microgrid projects. These efforts will be supported by a go-to-market program of stakeholder outreach and microgrid "extension services;" bringing tools, analysis, and expert technical assistance to project-level decision-making to improve economic and environmental outcomes. This research acknowledges that building microgrids and "microgrid-ready" buildings and campuses is complicated, and that property owners need more support to move forward with projects. Improving the process of assessing, financing, and building microgrids will help guide community stakeholders and industry partners through the practical steps of microgrid development, and engage new private investment in building state-of-the-art clean energy infrastructure for District residents, ratepayers, and businesses. This research is conducted under fiscal sponsorship of the Community Foundation of the National Capital Region, with critical support from the engineering firm CHA, the Van Ness Feldman law firm, Microgrid Institute, UN Foundation Energy Future Coalition, Georgetown University Climate Center, Georgetown University Urban and Regional Planning Program, and other leading experts in the field. Urban Ingenuity also serves as program administrator to the Washington DC Property Assessed Clean Energy ("PACE") financing program, which is available to fund clean energy microgrid projects for commercial, institutional, and multi-family building owners in the District of Columbia.

6. D.C. Sustainability Plan

The District Government has issued a sustainability plan for the District that envisions short and long-term actions to move the District toward a more sustainable city over the course of 20 years.[436] In the DC Sustainability Plan the District lays out "2030 Goals and Targets," focusing both on the challenges and solutions to meeting those goals. Among those goals are "climate and environment," "built environment," and "energy." Staff believes that while the Commission's mission intersects most directly with "energy," all of these areas have aspects that overlap with the Commission's mission and, therefore, the Commission needs to consider the District's plans related to these topics and how those plans converge and diverge from potential Commission goals stemming from MEDSIS.[437]

- For "Climate and Environment," the District government wants to: (1) minimize the generation of greenhouse gas emissions from all sources by 50% by 2030; and (2)

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[436] Sustainable DC Plan - http://sustainable.dc.gov/sites/default/files/dc/sites/sustainable/page_content/attachments/DCS-008%20Report%20508.3j.pdf. *See also*, Sustainable DC Plan Summary - http://www.sustainabledc.org/wp-content/uploads/2012/10/SDC-Summary-Document-2-19_0.pdf

[437] "Policy prescriptions should align utility incentives to public interest outcomes as identified in DC statutes and the DC Sustainability Plan, including alignment with decarbonization of power generation (CO2 reduction goals), safety, and protection of environmental quality." Formal Case No. 1130; Comments of the Grid 2.0 Working Group, DC Climate Action, DC Environmental Network, and Chesapeake Climate Action Network, at 2, filed July 25, 2016.

advance physical adaptation and human preparedness to increase the District's resilience to future climate change by requiring new building and infrastructure projects to undergo climate change impact assessment as part of the regulatory planning process.[438]

- For "Built Environment," the District government wants to: (1) increase urban density; (2) develop attractive neighborhoods to create new economic opportunity and support a high quality of life; (3) improve the sustainability performance of existing buildings by retrofitting 100% of existing commercial and multi-family buildings to achieve net-zero energy standards; and (4) ensure the highest standard of green building for new construction by requiring all new construction to meet net-zero energy use standards.[439]
- For "Energy," the District government wants to: (1) improve the efficiency of energy use to reduce overall consumption by 50% by 2030; (2) increase the proportion of energy sourced from clean and renewable supplies to make up 50% of the Districts energy supply; (3) modernize energy infrastructure for improved efficiency and reliability by reducing annual power outages between 0 and 2 events of less than 100 minutes per year.[440]

In order to achieve these goals, the District government has made it clear that District government agencies, businesses, community organizations, among others, will have to collaborate in this effort. Furthermore, the District recognizes the immediate, short-term need to identify existing laws, regulations, and policies that conflict with sustainability goals and areas where new authority is required. Specifically, in Action 1.3 of the Sustainability Plan the District stated:

> Some new and innovative practices will conflict with existing laws or regulations while others may not even be possible in the District without new legal authority. Working with agencies, businesses, community stakeholders, and the DC Council, Sustainable DC staff will identify problem areas and develop solutions that pave the way for implementation of sustainable practices[441]

In April 2016, the Third Year Progress Report on the Sustainable DC Plan was released.[442] In energy field, the Report asserts that "[t]he District is doubling down on its commitment to increase the energy efficiency of District buildings – especially for low-income residents – and to increase the proportion of clean, renewable sources like wind and solar. At the same time, we're planning to increase the resilience of our systems in preparation for a changing climate."[443] The Report also provides the District's progress towards meeting the initial goals of the Sustainable DC Plan; noteworthy progress in the energy field includes:

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438 Sustainable DC Plan at 10.

439 Sustainable DC Plan at 11.

440 Sustainable DC Plan at 11.

441 Sustainable DC Plan at 17.

442 Sustainable DC Plan, Third Year Progress Report, April 2016 ("Sustainable DC Progress Report"). http://www.sustainabledc.org/wp-content/uploads/2014/04/SustainableDC2016ProgressReport.pdf

443 Sustainable DC Progress Report at 5.

- In 2015, the District added 800 small generator systems to the grid. A 54% increase over 2014 installations, these systems will generate an additional 9.37 megawatts of renewable energy.
- The Department of General Services will boost District Government's total solar power generation by 70% by installing solar on the roofs of 34 District-owned buildings. Projected to create 140 jobs, installation on the first five sites is underway.
- Between the 11.4 megawatts of solar power systems the Department of General Services is installing and the 46 megawatts of power purchased from a regional wind farm – the largest wind power purchase agreement of its kind by a U.S. city – 35-40% of the electricity used by the District Government will come from renewable energy.
- D.C. Water's innovative 10 megawatt anaerobic digester at Blue Plains Advanced Waste Water Treatment Plant produces enough energy to power 100 million vehicles miles traveled.
- The Department of Energy & Environment and the DC Sustainable Energy Utility invested approximately $23 million in energy efficiency and renewable energy services, yielding more than $92 million in lifetime energy savings for residents and businesses.[444]

The Commission should consider: (1) how does the Commission fit into this plan, and (2) how can the initiatives stemming from MEDSIS further both the Commission's mission and the short and long-term sustainability goals of the District.

7. Clean Energy DC

Clean Energy DC contains "DOEE's proposal to reduce greenhouse gas (GHG) emissions by 50% below 2006 levels by 2032."[445] *Clean Energy DC* provides recommendations across three major sections of the District's energy system: (1) Buildings, (2) Energy Supply, and (3) Transportation. *Clean Energy DC* asserts that "[e]ach section provides a pathway to achieving the District's targets and presents a full suite of climate and energy policies necessary to achieve them."[446] The CEP notes that it is "a 'living document' to continually guide the District based on new information."[447] Of particular relevance to the MEDSIS Initiative, *Clean Energy DC* asserts that the District Government has commissioned several studies to support its policies and program developments, including a study on the role of microgrids, which is forthcoming.[448]

Clean Energy DC also addresses the District's Electricity System Modernization and references the MEDSIS Initiative. Specifically, *Clean Energy DC* asserts that "a much higher proportion of the District's total electricity supply must be shifted to renewable energy to meet the District's

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444 Sustainable DC Progress Report at 5.

445 *Clean Energy DC The District of Columbia Climate and Energy Plan* at 3, October 2016 ("*Clean Energy DC*").

446 *Clean Energy DC* at 6.

447 *Clean Energy DC* at 10.

448 *Clean Energy DC* at 30.

targets, both from outside and within the District of Columbia" and that "[a]t the same time the District pursues these climate and energy targets, increasing pressures are being placed on the electricity grid" – like aging infrastructure.[449] *Clean Energy DC* notes that the District's Sustainability Plan "has set a goal to reduce the total number of annual power outages to between zero and two events of less than 100 minutes per year."[450] *Clean Energy DC* asserts that the District's current electrical grid is "inefficient" with "overall grid utilization at approximately 53%" which presents "a significant opportunity to improve the cost-effectiveness of the District's electricity system through a shift in grid infrastructure and operations."[451]

Clean Energy DC acknowledges that "the specific process through which jurisdictions will modernize their grid is not yet fully understood, one particular framework for grid modernization," however, is "a three-stage evolutionary process driven by higher DER adoption;" (1) Grid Modernization, (2) DER Integration, and (3) Distributed Markets.[452] The *Clean Energy DC* proposes the following policy objective be adopted by the District as it pertains to grid modernization:

> The District of Columbia will make a phased and strategic transition to a 21st Century energy supply system that supports the District in achieving its priorities as set forth in the Sustainable DC Plan. The modernized energy delivery system will be designed, operated, and regulated to empower District residents and businesses, while supporting innovation in energy services through advanced distributed energy resources and dynamic energy management capabilities. The system will be highly efficient, resilient, reliable, secure, flexible, and deliver affordable power to customers.[453]

8. Argonne National Lab & Exelon Research Partnership

The U.S. Department of Energy's Argonne National Laboratory ("Argonne") and Exelon have formed a five-year cooperative research and development agreement focused on identifying new technology and systems that will advance clean energy and contribute to the development of a next-generation energy grid.[454] The agreement combines Exelon's market knowledge with Argonne's broad research and expertise in all phases of energy production and delivery.[455] The

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449 *Clean Energy DC* at 133.

450 *Clean Energy DC* at 134.

451 *Clean Energy DC* at 133.

452 *Clean Energy DC* at 136.

453 *Clean Energy DC* at 136.

454 *Argonne National Lab and Exelon Launch Research and Development Partnership to Advance Next Generation Energy Technology*, Business Wire, October 19, 2016.

455 *Argonne National Lab and Exelon Launch Research and Development Partnership to Advance Next Generation Energy Technology*, Business Wire, October 19, 2016.

collaboration will further the goal of Argonne and the U.S. Department of Energy to identify technologies that have the potential to improve grid reliability, efficiency and stability, and introduce those technologies to the market where they can have the greatest benefit to consumers and the public.[456]

9. Mid-Atlantic Distributed Resources Initiative (MADRI)

The Commission and its Staff are active members in the MADRI working group. MADRI was established in 2004 by the public utility commissions of Delaware, District of Columbia, Maryland, New Jersey, and Pennsylvania, along with the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), Federal Energy Regulatory Commission (FERC), and PJM Interconnection.[457]

MADRI seeks to identify and remedy retail barriers to the deployment of distributed generation ("DG"), demand response, and energy efficiency in the Mid-Atlantic region. The guiding principle for MADRI is a belief that distributed resources should compete with generation and transmission to ensure grid reliability and a fully functioning wholesale electric market.[458]

MADRI has three main goals: (1) Educate stakeholders, especially state officials, on distributed resource opportunities, barriers, and solutions; (2) Develop alternative distributed resource solutions for states and others to implement; and (3) Pursue regional consensus on preferred solutions.[459]

In 2006, MADRI issued a MADRI Policy Statement in support of Mid-Atlantic DER Initiatives. MADRI encouraged "state utility policy makers and regulators to consider changes to encourage cost effective DER programs including: (1) removing market barriers; (2) developing appropriate regulatory treatments; (3) reducing utility disincentives to accommodating DER; (4) establishing DER program goals; (5) proving DER programs incentives; and (6) testing solutions at a pilot scale as step toward full implementation." MADRI suggested that state utility policymakers and regulators may consider special studies and pilot programs to evaluate the costs and benefits of DER technologies such as metering and communications infrastructure that enable dynamic retail pricing regimes.[460]

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[456] *Argonne National Lab and Exelon Launch Research and Development Partnership to Advance Next Generation Energy Technology*, Business Wire, October 19, 2016.

[457] *About MADRI*, Mid-Atlantic Distributed Resources Initiative Working Group, accessed November 1, 2016. http://sites.energetics.com/madri

[458] *About MADRI*, Mid-Atlantic Distributed Resources Initiative Working Group, accessed November 1, 2016. http://sites.energetics.com/madri

[459] *About MADRI*, Mid-Atlantic Distributed Resources Initiative Working Group, accessed November 1, 2016. http://sites.energetics.com/madri

[460] *About MADRI*, Mid-Atlantic Distributed Resources Initiative Working Group, accessed November 1, 2016. http://sites.energetics.com/madri

Since that time, the MADRI Working Group has met to discuss many topics relevant to MEDSIS, including: DERs, storage, distributed resources, integrated distribution planning, and the regulation of distributed resources.[461]

At the most recent meeting (September 2016), the topic for discussion was rate design options in the MADRI states, with a focus on the treatment of distributed energy resources and distributed generation ("DG").[462] MADRI Chairperson Kane attended and opened the meeting and Mr. Daniel Cleverdon from the Commission spoke on the topic "Designing Rates with Distributed Energy Resources in Mind."[463]

10. The National Council on Electricity Policy

The National Council on Electricity Policy ("Council"), Chaired by the Commission's Betty Ann Kane, is a joint venture among the National Conference of State Legislatures ("NCSL"), the National Association of Regulatory Utility Commissioners ("NARUC") and the National Association of State Energy Officials ("NASEO"). The Council was recently part of another collaborative, Eastern Interconnection States Planning Council ("EISPC"). On April 25-26, 2016, EISPC held its annual meeting. Among the presentations given at the meeting was one from the Department of Energy's ("DOE") Grid Modernization Laboratory Consortium ("GMLC"). GMLC's presentation indicated that there are 88 planned projects in the pipeline spanning a 3-year period that would total 220 million.[464]

The multi-year program plan included elements such as: (1) Devices and Integrated Systems, (2) Sensing and Measurement, (3) System Operations and Control, (4) Design and Planning Tools, (5) Security and Resilience, and (6) Institutional Support.[465] The presentation also provided topical areas for regional and state partnerships, including: (1) Resilience, (2) DERs, and (3) Grid Architecture.[466] The topical areas clearly address issues being considered in the MEDSIS Initiative. Finally in a broad sense, the presentation asked five questions, which, if tailored to the discussion of MEDSIS, may be helpful as the Commission moves forward.

1. How can we develop an inclusive functional map of our electricity supply system – one that shows all of the system's interactive components, and how specific parts strongly influence the operation of other parts?

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461 *About MADRI*, Mid-Atlantic Distributed Resources Initiative Working Group, accessed November 1, 2016. http://sites.energetics.com/madri/meetings_2015.html

462 *About MADRI*, Mid-Atlantic Distributed Resources Initiative Working Group, accessed November 1, 2016. .http://sites.energetics.com/madri/meetings_2016.html

463 *About MADRI*, Mid-Atlantic Distributed Resources Initiative Working Group, accessed November 1, 2016. http://sites.energetics.com/madri/meetings_2016.html

464 Department of Energy's ("DOE") Grid Modernization Laboratory Consortium Presentation, at 54.

465 Department of Energy's ("DOE") Grid Modernization Laboratory Consortium Presentation, at 55.

466 Department of Energy's ("DOE") Grid Modernization Laboratory Consortium Presentation, at 55.

2. Looking ahead five years, what are our system's most important strengths and weaknesses?
3. What important changes would we like to see become operational in the next 5-10 years?
4. If we decide to make changes, how can we protect ourselves against the risk of triggering unintended consequences?
5. How can we devise a least-regrets strategy for going forward?[467]

11. The National Association of Regulatory Utility Commissioners

The National Association of Regulatory Utility Commissioners ("NARUC") is a non-profit organization dedicated to representing the State public service commissions who regulate the utilities that provide essential services such as energy, telecommunications, power, water, and transportation. The Commission is a member of NARUC and Commission Staff regularly attend and participate in NARUC meetings and events. On July 21, 2016, NARUC announced that it created a draft *Manual on Distributed Energy Resources ("DER") Compensation*. The draft DER Compensation Manual is the result of a November 11, 2015, resolution adopted at NARUC's Annual Meeting to create a Staff Subcommittee on Rate Design to provide a forum for state commissions to address rate design challenges.[468]

The resolution also recognized the increasing importance of rate design issues in state policy. Organized in five main sections, the Manual describes the basic rate design process and how DER affects that process; defines DER and its relevance for states; identifies the challenges and questions raised by the details of rate design and compensation; outlines a variety of DER compensation methodologies; and provides a description of advanced technologies that may assist regulators and utilities in planning and monitoring DER development. Also, the Manual addresses the rapidly increasing deployment of DER, which includes solar PV, wind, combined heat and power ("CHP"), energy storage, demand response, electric vehicles, microgrids, and energy efficiency. One of the interesting points raised in the Manual is that net metering has created economic pressures, such as utility revenue erosion and cost recovery issues, as well as cost-shifting from net metered to non-metered customers.[469] This is also an important discussion as the Commission considers the further development and regulation of net metering in the District.

NARUC issued a Notice of Town Hall and Comment Period describing the process for input and comments to the draft Manual. The deadline for stakeholders to provide comments on the draft manual was September 2, 2016.[470] The Notice requested that commenters provide feedback on the questions:

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467 Department of Energy's ("DOE") Grid Modernization Laboratory Consortium Presentation, at 56.

468 *NARUC Press Release for the Draft Rate Design Manual and Notice for Town Hall Meeting*, issued July 21, 2016.

469 *NARUC Manual on Distributed Energy Resources ("DER") Compensation*, released July 21, 2016, at 22-27.

470 *NARUC Press Release for the Draft Rate Design Manual and Notice for Town Hall Meeting*, issued July 21, 2016.

1. Has the draft Manual addressed the issue in a comprehensive and useful manner?
2. Are there any other considerations not included in the draft Manual that impact Distributed Energy Resources?
3. Are there other compensation options not included in the draft Manual?
4. How could the Manual be written in a way that is more useful to regulators?
5. Should the draft Manual include a discussion of distribution system planning or distribution system operators?
6. Does the draft Manual provide sufficient discussion on considerations of equitable treatment between customers in the context of ratemaking?
7. Since the initial survey and request for information was released in March 2016, have there been any new developments that the Staff Subcommittee should take into account in this draft Manual?
8. Is the draft Manual missing any key technologies that should be included?[471]

The responses to these questions as well as the general feedback which was incorporated into the final draft of the Manual may be helpful in the Commission's efforts to consider and implement DER in the District.

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[471] *NARUC Notice for Town Hall Meeting*, issued July 21, 2016.

APPENDIX C – DEFINITIONS

1. **Behind-the-Meter Generators** – Generator systems restrictively operating in parallel with the electric system that establish interconnection agreements with Pepco or PJM (*i.e.*, gas-fired generator or steam plant). (DCMR §§ 2902, 2903, and 2999).

2. **Cogeneration Facilities** – Systems that produce both: (a) electric energy; and (b) steam or forms of useful energy (such as heat) that are used for industrial, commercial, heating, or cooling purposes. (D.C. Code § 47-1508(a)(12)).

3. **Community Net Metering Credit (CNM Credit)** – The credit realized by the subscriber, based on its ownership share in the CREF. The credit will be reflected on the subscriber's bills from the Electric Company. (DCMR § 999).

4. **Community Renewable Energy Facilities (CREFs)** – This is an arrangement that allows multiple customers to purchase shares or subscriptions in a single renewable energy generating facility (*i.e.*, neighborhood or condominium solar array). The generating facility may not be in proximity to the customer and is in front of the meter, unlike NEM. (D.C. Code §§ 34-1501(9B) and 34-1518.01; DCMR §§ 906, 999 and 4199).

5. **Community-net-metering (CNM) –** A billing arrangement under which the monetary value of electric energy generated by a Community Renewable Energy Facility and delivered to the electric company's local distribution facilities is used to offset electric energy charges accrued during a subscriber's applicable billing period. (D.C. Code § 34-1501, DCMR § 999).

6. **Customer Generation –** Generation that is not principally dedicated for sale into the wholesale electricity market. (DCMR § 2999).

7. **Electric Vehicle –** A vehicle which is powered by an electric motor drawing current from rechargeable storage batteries, fuel cells, or other portable sources of electrical current, and which may include a nonelectrical source of power designed to charge batteries and components thereof. (D.C. Code §§ 50-1501 (12)).

8. **Eligible Customer-Generator –** A customer-generator whose net energy metering system for renewable resources, cogeneration, fuel cells, and microturbines meets all applicable safety and performance standards. (DCMR § 999).

9. **Hybrid Vehicle –** A vehicle propelled by a combination of an electric motor and an internal combustion engine or other power source and components thereof. (D.C. Code §§ 50-1501 (12)).

10. **Market Participant –** Any electricity supplier (including an affiliate of the electric company) or any person providing billing services or services declared by the Commission to be Potentially Competitive Services. (D.C. Code § 34-1501(20)).

11. **Net Energy Billing –** A billing and metering practice under which a customer-generator is billed on the basis of net energy over the billing period. (DCMR § 999).

12. **Net Energy Metering Facilities** - Behind-the-meter ("BTM") generators of 1 MW or less used to offset customer's internal behind the meter loads (usage or consumption). (D.C. Code §§ 34-150(21) and 34-1518; DCMR §§ 900 and 999)

13. **PJM –** Pennsylvania-New Jersey-Maryland Interconnection, LLC, or any successor thereto. (DCMR § 4199).

14. **PJM Interconnection -** The regional transmission organization that is regulated by the Federal Energy Regulatory Commission and functionally controls the transmission system for the region that includes the District of Columbia. (DCMR § 2999).

15. **PJM Interconnection Region –** The area within the movement of wholesale electricity is coordinated by the PJM Interconnection, L.L.C. With respect to qualifying RECs, the following states are deemed within the PJM Interconnection Region as of October 2011; Delaware, the District of Columbia, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. (DCMR § 2999).

16. **Potentially Competitive Service –** A component of electric service (other than electricity supply and billing) determined by the Commission to be suitable for purchase by customers from alternative sellers under § 34-1504(e). (D.C. Code § 34-1501(23)).

17. **Public Purpose Program –** A program implemented with the intention of furthering the public purpose. (D.C. Code § 34-1501(24A)).

18. **Qualified Facilities under PURPA**[472] – These are small power production facilities and cogeneration facilities established by federal law that receive special rate and regulatory treatment.

19. **Renewable Energy Credit (REC) -** A credit representing one megawatt-hour of energy produced by a tier one or tier two renewable source located within the PJM Interconnection region or within a state that is adjacent to the PJM Interconnection region. (D.C. Code 34-1431(10); DCMR § 999 and 2999; Section 3(10) of the Renewable Energy Portfolio Act of 2004, effective April 12, 2005, D.C. Law 15-340).

20. **Renewable Energy Portfolio Standard (REPS) -** The percentage of electricity sales at retail in the District of Columbia that is to be derived from tier one renewable sources and tier two renewable sources in accordance with 34-1432(c). (D.C. Code 34-1431(11); DCMR § 2999)

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472 Public Utility Act of 1978 (PURPA), Pub.L. 95–617, 92 Stat. 3117, enacted November 9, 1978.

21. **Renewable On-site Generator** - A person that generates electricity onsite from a tier one renewable source or tier two renewable source for the person's own use. (D.C. Code 34-1431(12); DCMR § 2999).

22. **SOS Administrator** - Electricity supply made available on and after the initial implementation date to: (1) Customers not yet allowed to choose an electricity supplier under the phase-in of customer choice under § 34-1502; (2) Customers who contract for electricity with an electricity supplier, but who fail to receive delivery of electricity under such contracts; (3) Customers who cannot arrange to purchase electricity from an electricity supplier; and (4) Customers who do not choose an electricity supplier. (D.C. Code 34-1509 (a)(1)-(4); D.C. Code § 34-1501 (25A); DCMR §§ 999 and 4199, Section 109 of the Retail Electric Competition and Consumer Protection Act of 1999, effective May 9, 2000, DC Law 13-107).

23. **Standard Offer Classes -** The customer groupings within the Electric Company's utility territory specified in DCMR 4102.3.[473] (DCMR § 4199).

24. **Standard Offer Service (SOS) –** Provided by the Electric Company from the initial implementation date through February 5, 2005. (D.C. Code §§ 34-1509 (b) and 34-1501(26); DCMR §§ 999 and 4199; Section 109 of the Retail Electric Competition and Consumer Protection Act of May 9, 2000; D.C. Law 13-107)

25. **Standard Offer Service Provider** - Provider of standard offer service chosen pursuant to Chapter 29 of the Commission Rules. (DCMR § 999 and Chapter 29, Renewable Energy Portfolio Standard).

26. **Tier One Renewable Source -** One or more of the following types of energy sources; solar, wind, qualifying biomass, methane from the anaerobic decomposition or organic materials in a landfill or wastewater treatment plant, geothermal, ocean, and fuel cells producing electricity from a tier one renewable source under qualifying biomass and methane. (D.C. Code 34-1431(15); DCMR §§ 999 and 2999, Section 3(15) of the Renewable Energy Portfolio Act of 2004, effective April 12, 2005, D.C. Law 15-340).

27. **Tier Two Renewable Source** – One or more of the following types of energy sources; hydroelectric power other than pumped storage generation, waste-energy, or qualifying

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473 15 DCMR § 4102.3 states that "The SOS Administrator shall establish three (3) groups of customers ("SOS Customer Groups"):

> (a) Residential Customers shall include customers served under Electric Company Rate Schedules: R, AE, R-TM, R-TM-EX, RAD, and Master Metered Apartment customers, subject to any revisions made to those tariff sheets made by the Commission;
>
> (b) Small Commercial Customers shall include the customers served under Electric Company Rate Schedules: GS-LV non-demand, GS-3A non-demand, T, SL, TS, TN and SL-TN, subject to any revisions made to those tariff sheets made by the Commission; and
>
> (c) Large Commercial Customers shall include all commercial customers except those defined as Small Commercial Customers."

biomass use at a generation unit that started commercial operation on or before December 31, 2006, or achieves a total system, efficiency of less than 65% or uses black liquor. (D.C. Code 34-1431(16), DCMR §§ 999 and 2999).

28. **Wholesale Generators**[474] – Generation facilities that are authorized to participate in the PJM wholesale market.

29. **Wholesale electricity supplier** - The electric company, which, pursuant to § 34-1509, obtains bids from, and contracts for electric service with, third parties and provides standard offer service to retail customers. (D.C. Code §34-1501(29)).

30. **Wholesale Standard Offer Service Provider(s) or "Wholesale SOS Provider(s)" -** The entity(ies) selected pursuant to this chapter to provide all or a specified portion of electric generation service to consumers receiving Standard Offer Service. (DCMR §§ 4100 and 4199).

474 FERC Glossary Index defines Wholesale Electricity Markets as "[t]he purchase and sale of electricity from generators to resellers (who sell to retail customers) along with the ancillary services needed to maintain reliability and power quality at the transmission level." Available at https://www.ferc.gov/market-oversight/guide/glossary.asp

Additionally, pursuant to the Energy Policy Act of 1992(102nd Congress H.R.776.ENR), this federal legislation created a new class of power generators, exempt wholesale generators, that are exempt from the provisions of the Public Holding Company Act of 1935 and grants the authority to the Federal Energy Regulatory Commission ("FERC") to order and condition access by eligible parties to the interconnected transmission grid. Therefore exempt wholesale generator (EWG) are exempt from certain financial and legal restrictions stipulated in the Public Utilities Holding Company Act of 1935. Available at https://www.congress.gov/bill/102nd-congress/house-bill/776/text/enr

APPENDIX D – WORKSHOP PARTICIPATION DETAILS

Below, Staff provides: (1) a complete list of all Stakeholders who gave presentations at the workshops held in this proceeding; and (2) a complete citation list of all comments filed in the Formal Case No. 1130 docket, these comments are also available for review and print on the Commission's eDocket by visiting our website www.dcpsc.org/medsis.[475]

TABLE 10: LIST OF FORMAL CASE NO. 1130 WORKSHOP PRESENTERS

LIST OF FORMAL CASE NO. 1130 WORKSHOP PRESENTERS

October 1, 2015 – Kick-Off Workshop

1. District of Columbia Department of Energy & Environment
2. United States General Services Administration
3. Washington Gas Light Company
4. Potomac Electric Power Company
6. Downtown DC Business Improvement District

November 19, 2016 – Second Workshop

1. Urban Ingenuity
2. Grid Energy
3. Washington Gas Energy Systems
4. Downtown DC Business Improvement District
5. MD-DC-VA Solar Energy Industries Association
6. Georgetown University (LAWJ-1019-05 Practicum)
7. Thinkbox Group
8. DC Water
9. SKANSKA
10. District Department of General Services

April 28, 2016 – Third Workshop

1. Washington Gas Light Energy
2. Grid Energy
3. PJM Interconnection LLC
4. Solar City
5. Institute of Electrical and Electronics Engineers
6. American Council for an Energy-Efficient Economy
7. United States General Services Administration
8. District of Columbia Department of Energy & Environment
9. Urban Ingenuity
10. Georgetown Climate Center
11. westMONROE
12. U.S. Department of Energy
13. ICF

475 Interested persons can also access the presentations and archived video recordings of the workshops by visiting the "MEDSIS Initiative" webpage within the Commission's website at: http://www.dcpsc.org/medsis.

LIST OF FORMAL CASE NO. 1130 WORKSHOP PRESENTERS

14. Pennoni Associates
15 Potomac Electric Power Company
16 Energy Storage Association
17. Advanced Energy Group
18. MORE THAN SMART

TABLE 11: LIST OF COMMENTS FILED IN FORMAL CASE NO. 1130

LIST OF COMMENTS FILED IN FORMAL CASE NO. 1130

A-1 *Formal Case No. 1130*, Grid Energy, LLC Comments, filed August 29, 2016.

A-2 *Formal Case No. 1130*, EnerNOC, Inc. Comments, filed August 22, 2016.

A-3a *Formal Case No. 1130*, Grid 2.0 Working Group, DC Climate Action, DC Environmental Network, and Chesapeake Climate Action Network Comments to Order No. 18144, filed July 25, 2016.

A-3b *Formal Case No. 1130*, Grid 2.0 Working Group Comments to Order No. 18144, filed April 18, 2016.

A-3c *Formal Case No. 1130*, Grid 2.0 Chair Robert Robinson Comments, filed April 18, 2016.

A-3d *Formal Case No. 1130*, Grid 2.0 Working Group, DC Environmental Network, DC Chapter of Sierra Club, and DC Consumer Utility Board Initial Comments, filed August 31, 2015.

A-4a *Formal Case No. 1130*, Advanced Energy Economy Institute, filed June, 16, 2016.

A-4b *Formal Case No. 1130*, Advanced Energy Economy, filed April 18, 2016.

A-5a *Formal Case No. 1130,* District of Columbia Government Supplemental Comments, filed May 24, 2016.

A-5b *Formal Case No. 1130,* District of Columbia Government Comments to Order No. 18144, filed April 18, 2016.

A-5c *Formal Case No. 1130,* District of Columbia Government Initial Comments, filed August 31, 2015.

A-6a *Formal Case No. 1130,* NRG Energy Inc. Comments to Order No. 18144, filed May 13, 2016.

A-6b *Formal Case No. 1130,* NRG Energy Inc. Initial Comments, filed November 20, 2015.

A-7 *Formal Case No. 1130,* The Microgrid Resources Coalition by Drinker, Biddle and Reath, filed May 11, 2016.

A-8a *Formal Case No. 1130,* DC Climate Action Comments to Order No. 18144, filed April 19, 2016.

A-8b *Formal Case No. 1130,* DC Climate Action Initial Comments, filed September 1, 2015.

A-9 *Formal Case No. 1130,* Pennoni and Associate's Comments to Order No. 18144, filed April 18, 2016.

LIST OF COMMENTS FILED IN FORMAL CASE NO. 1130

A-10 *Formal Case No. 1130*, Urban Ingenuity Comments to Order No. 18144, filed April 18, 2016.

A-11a *Formal Case No. 1130*, Potomac Electric Power Company Comments to Order No. 18144, filed April 18, 2016.

A-11b *Formal Case No. 1130*, Potomac Electric Power Company Initial Comments, filed August 31, 2015.

A-12a *Formal Case No. 1130*, U.S. General Services Administration Comments to Order No. 18144, filed April 18, 2016.

A-12b *Formal Case No. 1130*, U.S. General Services Administration Initial Comments, filed August 31, 2015.

A-13a *Formal Case No. 1130*, Washington Gas Light Comments to Order No. 18144, filed April 18, 2016.

A-13b *Formal Case No. 1130*, Washington Gas Light Company Initial Comments, filed August 31, 2015.

A-14a *Formal Case No. 1130*, DC Solar United Neighborhoods Comments to Order No. 18144, filed April 18, 2016.

A-14b *Formal Case No. 1130*, DC Solar United Neighborhoods Initial Comments, August 31, 2015.

A-15a *Formal Case No. 1130*, Office of the People's Counsel Comments to Order No. 18144, filed April 18, 2016.

A-15b *Formal Case No. 1130*, Office of the People's Counsel Initial Comments, filed August 31, 2015.

A-16 *Formal Case No. 1130*, MDV-SEIA Comments to Order No. 18144, filed April 18, 2016.

A-17 *Formal Case No. 1130*, Sonnen, Inc. Comments to Order No. 18144, filed April 18, 2016.

A-18a *Formal Case No. 1130*, Washington Gas Energy Services, Inc. Comments to Order No. 18144, filed April 18, 2016.

A-18b *Formal Case No. 1130*, Washington Gas Energy Services, Inc. Initial Comments, filed August 31, 2015.

A-19a *Formal Case No. 1130*, SolarCity Inc. Comments to Order No. 18144, filed April 18, 2016.

A-19b *A Pathway to the Distributed Grid: Evaluating the economics of distributed energy resources and outlining a pathway to capturing their potential value*, SolarCity, Inc., April 18, 2016. (http://www.solarcity.com/sites/default/files/SolarCity_Distributed_Grid.pdf)

A-19c *Formal Case No. 1130*, SolarCity, Inc. Initial Comments, filed September 4. 2015.

A-20 Jim Rossi, *Federalism and the Net Metering Alternative*, Electricity Journal (2016).

LIST OF COMMENTS FILED IN FORMAL CASE NO. 1130

A-21a Michael Overturf, *A Framework For Economic Competition in Electricity Distribution Services*, DC Public Power, file November 19, 2015.

A-21b *Formal Case No. 1130*, DC Public Power Initial Comments, filed August 31, 2015.

A-22 *Formal Case No. 1130*, The George Washington University Law School Sustainable Energy Initiative, filed October 13, 2015.

A-23 *Formal Case No. 1130*, Quanta Technology, Inc. Comments, filed October 1, 2015.

A-24 *Formal Case No. 1130*, Underwriters Laboratories, Inc., filed September 18, 2015.

A-25 *Formal Case No. 1130*, SemaConnect, Inc. Comments, filed September 11, 2015.

A-26 *Formal Case No. 1130*, The Climate Group, filed September 3, 2015.

A-27 *Formal Case No. 1130*, TESLA, filed September 3, 2015.

A-28 *Formal Case No. 1130*, Wal-Mart Stores East, L.P., and Sam's East Inc. Comments, filed September 3, 2015.

A-29 *Formal Case No. 1130*, National Electrical Manufacturers Association, filed September 1, 2015.

A-30 *Formal Case No. 1130*, Northeast Energy Efficiency Partnerships, filed August 31, 2015.

A-31 *Formal Case No. 1130*, Downtown Business Improvement, filed August 31, 2015.

A-32 *Formal Case No. 1130*, Smarter Grid Solutions, filed August 31, 2015.

A-33 *Formal Case No. 1130*, New York University of Law Institute for Policy Integrity, filed August 31, 2015.

A-34 *Formal Case No. 1130*, Energy Storage Association, Policy and Advocacy Comments, filed August 31, 2015.

A-35 *Formal Case No. 1130*, Harvard Law School, Emmett Environment Law and Policy Clinic, filed August 31, 2015.

A-36 *Formal Case No. 1130*, Dominion Voltage Inc. and Dominion Energy Technology, Inc. Comments, filed August 31, 2015.

A-37a *Formal Case No. 1130*, Mission:data Coalition, filed August 26, 2016.

A-37b *Formal Case No. 1130*, Mission:data Coalition, filed August 31, 2015.

A-38 *Formal Case No. 1130*, Renewable Energy Systems Americas Inc., filed August 31, 2015.

A-39 *Formal Case No. 1130*, PJM Interconnection, filed August 31, 2015.

APPENDIX E – DRAFT NOTICE OF PROPOSED RULEMAKING

PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA

NOTICE OF PROPOSED RULEMAKING

FORMAL CASE NO. 1130, IN THE MATTER OF THE INVESTIGATION INTO MODERNIZING THE ENERGY DELIVERY SYSTEM FOR INCREASED SUSTAINABILITY;

RM-09-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 9 — NET ENERGY METERING;

RM-13-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 13 — RULES IMPLEMENTING THE PUBLIC UTILITIES REIMBURSEMENT FEE ACT OF 1980;

RM-29-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 29 — RENEWABLE ENERGY PORTFOLIO STANDARD;

RM-36-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 36 — ELECTRICITY QUALITY OF SERVICE STANDARDS;

RM-40-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 40 — DISTRICT OF COLUMBIA SMALL GENERATOR INTERCONNECTION RULES;

RM-41-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 41 — THE DISTRICT OF COLUMBIA STANDARD OFFER SERVICE RULES;

RM-42-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 42 — FUEL MIX AND EMISSIONS DISCLOSURE REPORTS; AND

RM-44-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 44 — SUBMETERING AND ENERGY ALLOCATION.

1. The Public Service Commission of the District of Columbia ("Commission") hereby gives notice, pursuant to Section 34-802 of the District of Columbia Code ("D.C. Code") and in accordance with Section 2-505 of the D.C. Code,[476] of its intent to amend the following provisions of Title 15 (Public Utilities and Cable Television) of the District of Columbia Municipal Regulations ("DCMR"): Chapter 9, "Net Energy Metering;" Chapter 13, "Rule Implementing the Public Utilities Reimbursement Fee Act of 1980;" Chapter 29, "Renewable Energy Portfolio Standard;" Chapter 36, "Electric Quality of Service Standards;" Chapter 40, "District of Columbia Small Generator Interconnection Rules;" Chapter 41, "The District of Columbia Standard Offer Service Rules;" Chapter 42, "Fuel Mix and Emissions Disclosure

[476] D.C. Code § 34-802 (2001); D.C. Code § 2-505 (2001).

Reports;" and Chapter 44, "Submetering and Energy Allocation." Amendments to the above referenced Chapters shall take effect in not less than sixty (60) days from the date of publication of this Notice of Proposed Rulemaking ("NOPR") in the *D.C. Register*.

2. The Government of the District of Columbia has established a clear policy of encouraging the deployment of Distributed Energy Resources ("DER"), including distributed generation, such as solar energy and cogeneration facilities both standing alone as well as part of microgrids. As deployment of distributed generation ("DG") expands and adjusts to meet demand, the Commission must examine how it can best use its regulatory authority to support the District's energy goals while simultaneously adhering to current statutes that prohibit the construction of generators and the sale of electricity without first obtaining Commission approval.

3. On March 17, 2016, in Order No. 18144, the Commission sought comments on more general but related questions concerning distributed generation deployment and the nature of a retail sale. These comments were considered by Staff and summarized in the Modernizing the Energy Delivery System for Increased Sustainability ("MEDSIS") Staff Report, issued in *Formal Case No. 1130* on January 25, 2017. In the MEDSIS Staff Report, Commission Staff also identifies various potential regulatory issues that create uncertainty in the deployment of new technologies on the District's natural gas and electricity distribution grids and provides recommended actions to address the issues identified. Most notably, Staff recommends that the Commission adopt and amend pertinent DER related definitions in our regulations in order to establish a consistent language for addressing the complex issues related to modernizing the District's energy systems, especially as it relates to DER deployment, going forward.

4. This NOPR, along with NOPRs issued concurrently concerning Chapter 46 "Electric Supplier Licensing" and Chapter 21 "Provisions for Construction of Electric Generating Facilities and Transmission Lines," aim to eliminate regulatory ambiguity. Further, establishing a consistent set of definitions will facilitate public input into the evolution of the Districts energy systems.

Section 999 of Chapter 9, Section 4199.1 of Chapter 41, and Section 4299.1 of Chapter 42, are amended to include the following:

> "**Electric company**" includes every corporation, company, association, joint-stock company or association, partnership, or person doing business in the District of Columbia, their lessees, trustees, or receivers appointed by any court whatsoever, physically transmitting or distributing electricity in the District of Columbia to retail electric customers, excluding any person or entity distributing electricity from a behind-the-meter generator to a single retail customer behind the same meter. In addition, the term excludes any building owner, lessee, or manager who, respectively, owns, leases, or manages, the internal distribution system serving the building and who supplies electricity and other electricity related services solely to the occupants of the building for use by the occupants. The term also excludes a Person or entity that does not sell or

distribute electricity and that owns or operates equipment used exclusively for the charging of electric vehicles.

In Section 999 of Chapter 9, Section 1399.1 of Chapter 13, Section 2999.1 of Chapter 29, Section 3699.1 of Chapter 36, Section 4199.1 of Chapter 41, Section 4299.1 of Chapter 42, and Section 4499.1 of Chapter 44, the definitions for "electricity supplier" or "competitive electricity supplier" are amended as follows:

"**Electricity supplier**" or "**competitive electricity supplier**" means a person, including an Aggregator, Broker, or Marketer, who generates electricity; sells electricity; or purchases, brokers, arranges or markets electricity or electric generation services for sale to customers. The term excludes the following:

(A) Building owners, lessees, or managers who manage the internal distribution system serving such building and who supply electricity solely to the occupants of the building for use by the occupants;

(B) Any Person who purchases electricity for its own use or for the use of its subsidiaries or affiliates;

(C) Any apartment building or office building manager who aggregates electric service requirements for his or her building or buildings, and who does not: (I) Take title to electricity; (II) Market electric services to the individually-metered tenants of his or her building; or (III) Engage in the resale of electric services to others;

(D) Property owners who supply small amounts of power, at cost, as an accommodation to lessors or licensees of the property;

(E) Consolidators;

(F) Community Renewable Energy Facilities (CREFs) as defined in Section 4199.1 and as described in Sections 4109.1 through 4109.3 pursuant to the Community Renewable Energy Amendment Act of 2013;

(G) An Electric Company;

(H) Nontraditional Marketers; and

(I) Any person or entity that owns a behind-the-meter generator and sells or supplies the electricity from that generator to a single retail customer or customers behind the same meter.

In Section 999 of Chapter 9, Section 1399.1 of Chapter 13, Section 3699.1 of Chapter 36, Section 4199.1 of Chapter 41, Section 4299.1 of Chapter 42, and Section 4499.1 of Chapter 44, the definition for "behind the meter generator" is added to clarify the meaning of "electricity supplier" as follows:

"**Behind-the-meter generator**" – a renewable on-site generator that is located behind a retail customer's meter such that no electric company-owned transmission or distribution facilities are used to deliver the energy from the generating unit to the on-site load**.**

Section 999.1 of Chapter 9, and Section 4099.1 of Chapter 40, are amended to include the following:

"**Battery**" – A device that is able to store electrical energy in the form of chemical energy, and convert that energy into electricity.

"**Back-up generation**" – Any electric generating facility, as defined in D.C. Code Section 34-205, which is connected to the electric distribution system in the District of Columbia and not subject to the Commission's Small Generator Interconnection Rules because it does not operate parallel to the electric distribution system.

"**Cogeneration facility**" or "**combined heat and power (CHP) facility**" – A system that produces both electric energy, steam, or other forms of useful energy (such as heat) that are used for industrial, commercial, heating, or cooling purposes.

"**Demand response**" – A reduction in the consumption of electric energy by customers from their expected consumption in response to either an increase in the price of electric energy or to incentive payments designed to induce lower consumption of electric energy.

"**Distributed energy resource**" **or "DER"** – A resource sited close to the customer's load that can provide all or some of the customer's energy needs and can also be used by the system to either reduce demand (such as demand response) or increase supply to satisfy the energy or ancillary service needs of the distribution system. The resources, if providing electricity or thermal energy, are small in scale, connected to the distribution system, and close to the load. Types of DER include, but are not limited to: photovoltaic solar, wind, cogeneration, energy storage, demand response, electric vehicles, microturbines, and energy efficiency.

"**Distributed generation**" – Any electric generating facility, as defined in D.C. Code Section 34-205, which is connected to the electric distribution system in the District of Columbia and subject to the Commission's Small Generator Interconnection Rules.

"**Electric vehicle**" – A vehicle which is powered by an electric motor drawing current from rechargeable storage batteries, fuel cells, or other portable sources of electrical current, and which may include a non-electrical source of power designed to charge batteries and components thereof.

"**Electric storage**" – A resource capable of receiving electric energy from the grid and storing it for later injection of electrical energy back to the grid regardless of where the resource is located on the electric distribution system. These resources include all types of electric storage technologies, regardless of their size, storage medium (*e.g.*, batteries, flywheels, electric vehicles, compressed air), or operational purpose.

"**Fly-wheel**" – A device that is able to store electrical energy in the form of kinetic energy, and convert that energy into electricity.

"**Fossil fuel generator**" – Any electric generating facility that utilizes coal, natural gas, or any other petroleum product as a fuel.

"**Fuel cell**" – A device that produces electricity through a chemical reaction between a source fuel and an oxidant.

"**Microgrid**" – A collection of interconnected loads, generation assets, and advanced control equipment, installed across a limited geographic area and within a defined electrical boundary that is capable of disconnecting from the larger electric distribution system. A microgrid may serve a single customer with several structures or serve multiple customers. A microgrid can connect and disconnect from the distribution system to enable it to operate in both interconnected or island mode.

"**Microturbine**" – A small combustion turbine with an output of 25 kW to 500 kW.

In Section 999.1 of Chapter 9, the definition of "eligible customer generator" is amended as follows to clarify that the term is synonymous with the term "net energy metering facility":

"**Eligible customer-generator**" or "**net energy metering facility**" means a customer-generator whose net energy metering system for renewable resources, cogeneration, fuel cells, and or microturbines meets all applicable safety and performance standards.

5. The MEDSIS Staff Report may be reviewed at the Office of the Commission Secretary, Public Service Commission of the District of Columbia, 1325 G Street, N.W., Suite 800, Washington, D.C. 20005, between the hours of 9:00 a.m. and 5:30 p.m., Monday through Friday as well as on the Commission's web site at www.dcpsc.org. Once at the website, open the "EDOCKET SYSTEM" tab, click on the "Search Current Dockets" and input "FC1130" as the case number and "XXA"[477] as the item number. Copies of the MEDSIS Staff Report are also available upon request, at a per-page reproduction cost, by contacting the Commission Secretary at (202) 626-5150 or psc-commissionsecretary@dc.gov.

6. All persons interested in commenting on content of this NOPR are invited to submit written comments and reply comments no later than sixty (60) and thirty (30) days, respectively, after the publication of this NOPR in the *D.C. Register*. Written comments should be filed with: Brinda Westbrook-Sedgwick, Commission Secretary, Public Service Commission of the District of Columbia, 1325 G Street, N.W., Suite 800, Washington, D.C. 20005, submitted

477 "XXA" serves as a placeholder for the actual item number that will be assigned to the MEDSIS Staff Report in the Formal Case No. 1130 docket.

via email to psc-commissionsecretary@dc.gov, or through the Commission's website at http://edocket.dcpsc.org/comments/submitpubliccomments.asp.

APPENDIX F – DRAFT NOTICE OF PROPOSED RULEMAKING

PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA

NOTICE OF PROPOSED RULEMAKING

FORMAL CASE NO. 1130, IN THE MATTER OF THE INVESTIGATION INTO MODERNIZING THE ENERGY DELIVERY SYSTEM FOR INCREASED SUSTAINABILITY; AND

RM21-2017-01, IN THE MATTER OF 15 DCMR CHAPTER 21-PROVISIONS FOR CONSTRUCTION OF ELECTRIC GENERATING FACILITES AND TRANSMISSION LINES

1. The Public Service Commission of the District of Columbia (Commission), pursuant to its authority under D.C. Official Code §§ 34-301, 34-302, 34-802, and 34-1516 (2001) (D.C. Code) and in accordance with D.C. Code § 2-505, hereby gives notice of its intent to amend Chapter 21, "Provisions for Construction of Electric Generating Facilities and Transmission Lines," of Title 15 (Public Utilities and Cable Television) of the District of Columbia Municipal Regulations, in not less than 30 days after publication of this notice in the *D.C. Register*.

2. The Government of the District of Columbia has established a clear policy of encouraging the deployment of Distributed Energy Resources (DER), including distributed generation (DG), such as solar energy facilities, microturbines, and cogeneration both as standalone as well as part of microgrids. As deployment of distributed generation expands and adjusts to meet demand, the Commission must examine how it can best use its broad regulatory authority to support the District's energy goals while simultaneously adhering to current statutes that prohibit the construction of generators and sale of electricity without first obtaining Commission approval.

3. On March 17, 2016, in Order No. 18144, the Commission sought comments on more general but related questions concerning distributed generation deployment and the nature of a retail sale. These comments were considered by Staff and summarized in the Modernizing the Energy Delivery System for Increased Sustainability (MEDSIS) Staff Report, issued in *Formal Case No. 1130* on January 25, 2017. In the MEDSIS Staff Report, Commission Staff also identifies various potential regulatory issues that create uncertainty in the deployment of new technologies on the District's natural gas and electricity distribution grids and provides recommended actions to address the issues identified. Most notably, Staff recommends that the Commission adopt and amend pertinent DER-related definitions in our regulations in order to establish a uniform language for addressing the complex issues related to modernizing the District's energy systems, especially as it relates to DER deployment, going forward.

4. This NOPR, along with NOPRs published concurrently concerning Chapters 9, 13, 29, 36, 40, 41, 42, and 44, work to eliminate any regulatory ambiguity. Finally, the definition of qualifying biomass in these Chapter 21 draft rules differs from the definitions of Tier I and Tier II qualifying biomass in the Commission's Chapter 29 rules governing the

District's Renewable Energy Portfolio Standard (REPS).[478] The Chapter 29 definitions of Tier I and Tier II qualifying biomass are in turn based on the statutory provisions for REPS in D.C. Code 34-1431 (2016 Supp.). The Commission's purpose in revising these construction rules is to promote the development of distributed generation and renewable energy as a general matter, while the District's REPS provides specific goals and financial incentives for the development of various renewable energy types. The definitions of biomass in this NOPR and Chapter 29 differ accordingly.

Chapter 21 of Title 15 of the DCMR is amended as follows:

2100 APPLICABILITY

Section 2100.1 is amended in its entirety to read as follows:

2100.1 This Chapter shall govern the construction of all electric generating facilities the electricity generated from which will be sold regardless of capacity, overhead transmission lines designed to carry sixty-nine thousand (69,000) volts or more, underground transmission lines in excess of sixty-nine thousand (69,000) volts as well as any substations connected to such lines.

Section 2100.2 is amended in its entirety to read as follows:

2100.2 No person shall construct an electric generating facility the electricity generated from which will be sold regardless of capacity, unless the Commission first determines, after notice and a hearing that the construction of the facility is in the public interest. Nor shall any person construct an overhead transmission line designed to carry sixty-nine thousand (69,000) volts or greater, or substation connected to such line, unless the project has been approved in accordance with this Chapter. Unless specifically required by law or other provision of this Chapter, Commission approval shall not be required for the routine repair and replacement activities necessary to maintain an electric generating facility or transmission line.

2101 APPLICATION FILING REQUIREMENTS FOR THE CONSTRUCTION OF FOSSIL FUEL, EXCEPT FOR MICROTURBINE, AND WASTE-TO-ENERGY ELECTRIC GENERATING FACILITIES. TRANSMISSION LINES, AND SUBSTATION CONNECTED TO TRANSMISSION LINE

Section 2101.1 is amended in its entirety to read as follows:

An application for approval of the construction of a fossil fuel (except for a microturbine) or waste-to-energy generating facility, transmission line, or substation covered under this Chapter shall include the following information:

(a) The name and address of the principal place of business of the applicant;

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478 *See* 15 DCMR § 2999.1 (2008, 2012, and 2016).

(b) The name, title, and address of the person authorized to receive notices and communications with respect to the application;

(c) The location or locations where the public may inspect or obtain a copy of the application;

(d) A list of each District of Columbia, state, or federal government agency having authority to approve or disapprove the construction or operation of the project and containing the following:

(1) A statement indicating whether the necessary approval from each agency has been obtained, with a copy of each approval or disapproval attached;

(2) A statement indicating the circumstances under which any necessary approval has not been obtained; and

(3) A statement indicating whether any waiver or variance has been requested, with a copy of each approval or disapproval attached.

(e) A general description of the generating station under § 2102, or the transmission line under § 2104, and the alternatives considered under §§ 2103 and 2104, respectively;

(f) The environmental information required under § 2108;

(g) A statement of the engineering justifications for the project;

(h) A statement of the safety considerations incorporated into the design, construction, and maintenance of the project;

(i) A statement of the socioeconomic impact of the project;

(j) A statement of contacts with community groups and the affected community;

(k) A statement that the applicant has complied with all applicable environmental and zoning laws; and

(l) A statement that the applicant has complied or will comply with the applicable PJM Interconnection, L.L.C. (PJM) tariff and requirements for the interconnection of new and expanded electric generating facilities within the PJM transmission system.

2102 DESCRIPTION OF FOSSIL FUEL (EXCEPT FOR MICROTURBINE) OR SOLID WASTE ELECTRIC GENERATING FACILITY

Section 2102.1 is amended in its entirety to read as follows:

2102.1 The description of the fossil fuel (except for microturbine) or waste-to-energy generating facility shall include the following:

(a) Location;

(b) All important design and engineering features, including fuel requirements, heat rates, emission rates, space requirements, transportation facilities, water requirements, and transmission requirements;

(c) Operational features, including operation and maintenance personnel and equipment;

(d) The schedule for engineering, construction, and operation of the generating stations;

(e) The impact of the proposed generating station on system operations, reliability, reserve margins, and capacity factors;

(f) A statement of the reasons for the selection of the design and the site of the generating facility, including the location and identification of the following sites from which the project would be clearly visible:

(1) Residential structures;

(2) Historical structure and land sites;

(3) Institutional land, including school hospitals, and pre-school facilities;

(4) Recreational area;

(5) Aesthetic;

(6) Archaeological;

(7) Wildlife management area; and

(8) Park or forest.

2103 ALTERNATIVE FOSSIL FUEL (EXCEPT FOR MICROTURBINE) OR WASTE-TO-ENERGY GENERATING FACILITY

Section 2103.1 is amended in its entirety to read as follows:

2103.1 The description of each alternative design or site considered for a fossil fuel (except for a microturbine) or waste-to-energy generating facility shall include the following:

The reasons for rejecting each alternative design or site.

2106 PROJECT COORDINATING COMMITTEE FOR FOSSIL FUEL (EXCEPT FOR MICROTURBINE) OR WASTE-TO-ENERGY GENERATING FACILITY, TRANSMISSION LINE, OR SUBSTATION CONNECTED TO TRANSMISSION LINE APPLICANT

Section 2106.1 is amended in its entirety to read as follows:

2106.1 Once an application for a fossil fuel (except for a microturbine) or waste-to-energy generating facility, transmission line, or substation connected to transmission line has been properly filed, the applicant may request the formation of a project coordinating committee. If the request is approved, the Committee shall consist of the following members:

(a) A chairperson, who shall be designated by the Commission;

(b) A representative of the applicant;

(c) A representative from the Office of the People's Counsel, if a notice of intent to participate on the committee is filed within ten (10) days of the date of the filing of a request to form a project coordinating committee;

(d) A representative from each District of Columbia agency that has as follows:

(1) Authority to issue a license, permit, or authorization before the construction or operation of the project; or

(2) A direct interest in the project.

(e) Pepco, if Pepco is not the applicant.

(f) A representative designated by the Executive Office of the Mayor; and

(g) A representative of any federal agency or independent system operator that, in the Commission's view, has an interest in the project.

2107 COMMUNITY ADVISORY GROUP

Section 2107.1 is amended in its entirety to read as follows:

2107.1 In order to inform and educate the community regarding the construction and operation of any proposed fossil fuel or waste-to-energy project, the applicant shall convene a community advisory group.

2108 ENVIRONMENTAL IMPACT STATEMENT FOR FOSSIL FUEL, EXCEPT FOR MICROTURBINE, OR WASTE-TO-ENERGY GENERATING FACILITY, TRANSMISSION LINE, OR SUBSTATION CONNECTED TO TRANSMISSION LINE

Section 2108.1 is amended in its entirety to read as follows:

2108.1 The applicant for a fossil fuel (except for a microturbine) or waste-to-energy generating facility, transmission line, or substation connected to transmission line shall submit an Environmental Impact Statement (EIS). At a minimum, the EIS shall evaluate the following potential environmental impacts:

(a) Air quality, National Ambient Air Quality Standards (NAAQS). The analysis of air quality shall include an analysis of the following six (6) criteria pollutants in the context of NAAQS:

(1) Sulfur dioxide;

(2) Nitrogen oxides;

(3) Carbon monoxide;

(4) Particulate matter (PM 2.5 and PM10);

(5) Ozone; and

(6) Lead.

(b) Air Quality, other emissions: The analysis of air quality shall include all other emissions regulated for the utility industry under the Federal Clean Air Act;

(c) Surface and ground water resources. The analysis of surface and ground water resources shall include the following:

(1) Water availability; and

(2) Water quality, including discharge, storm water runoff, and potential spill events.

(d) Land use, socioeconomic, and aesthetic conditions: The analysis of these items shall evaluate, at a minimum, the following:

(1) Appropriate zoning and compatibility with adjacent land use;

(2) Impact on traffic;

(3) Impact on cultural and historical resources; and

(4) Visibility impacts in terms of air pollution effects and aesthetics.

(e) Noise conditions: The analysis of noise shall include the following:

(1) A complete review of standards that will be met;

(2) The points of measurement for noise impacts;

(3) A comparison of the impact of the action to common outdoor sounds at that location; and

(4) A complete explanation of the methodology used for the noise impact measurements.

(f) Aquatic and terrestrial ecology resources: The analysis of aquatic and terrestrial ecology shall evaluate the impact upon the following:

(1) Fish;

(2) Wildlife;

(3) Vegetation; and

(4) Direct discharges into surface waters and impact on wetland habitats; and

(g) Electric and magnetic fields (EMF): Until applicable laws governing EMF are enacted, the applicant shall submit the following information:

(1) An update of the general research on the health effects of EMF;

(2) The relationship of the proposed action to the increase or decrease of EMF, including any mitigating measures that could be employed to decrease EMF;

(3) The applicant's efforts to measure and better understand background EMF in the communities affected by the proposed action; and

(4) If and when laws are enacted, then the EIS shall demonstrate compliance with all applicable laws.

2109 PHASED PROCEEDINGS ON THE APPLICATION FOR FOSSIL FUEL (EXCEPT FOR MICROTURBINE) OR WASTE-TO-ENERGY GENERATING FACILITY, TRANSMISSION LINE, OR SUBSTATION CONNECTED TO TRANSMISSION LINE

2109.1 The applicant for a fossil fuel (except for a microturbine) or waste-to-energy generating facility, transmission line, or substation connected to transmission line may request, or the Commission may on its own initiative direct, that the construction project be reviewed in two (2) or more phases.

The previous Section 2111, UNDERGROUND TRANSMISSION LINES IN EXCESS OF SIXTY-NINE THOUSAND VOLTS AND SUBSTATIONS CONNECTED TO SUCH LINES, is renumbered Section 2110

Add a new Section 2111, APPLICATION FILING REQUIREMENTS FOR THE CONSTRUCTION OF RENEWABLE ENERGY, MICROTURBINE, COMBINED HEAT AND POWER, AND FUEL CELL ELECTRIC GENERATING FACILITIES, to read as follows:

2111.1 An application for approval of the construction of a renewable energy, microturbine, combined heat and power, or fuel cell electric generating facility covered under this Chapter shall include the following information:

(a) The name, if any, and address of the facility;

(b) The name and address of the owner of the facility;

(c) The name and address of the operator of the facility;

(d) The name and address of the contact person;

(e) Fuel types:

(1) Solar energy, describe the system (photovoltaic or thermal; manufacturer/supplier; model name/number; system orientation, tilt and azimuth; and type of meter, including model number and name);

(2) Wind;

(3) Qualifying biomass;

(4) Methane from the anaerobic decomposition of organic materials in a landfill or wastewater treatment plant;

(5) Geothermal;

(6) Ocean, including energy from waves, tides, currents, and thermal differences;

(7) Fuel cells (identify source fuel);

(8) Fossil fuel type (for microturbine only);

(9) Hydroelectric power other than pumped storage;

(10) Liquid biofuels, including ethanol, biodiesel (vegetable oils and liquid animal fats), green diesel (derived from algae, grass, and other plant sources), and biogas (methane derived from animal manure and other digested organic material).

(f) Rated capacity in MW, to one decimal place, or in KW;

(g) Operational start date or date of approved interconnection with Pepco; and

(h) Whether the facility is a behind-the-meter generator.

2111.2 Unless an objection is filed in response to an application under this subsection or the Commission issues a procedure schedule to further consider the application within 20 business days, an application shall be deemed approved.

The previous Section 2110, ANNUAL REPORT ON SMALLER SCALE CONSTRUCTION, is renumbered Section 2112

The previous Section 2112, WAIVERS AND MODIFICATIONS, is renumbered Section 2113

2199 DEFINITIONS

The following definitions are added to Subsection 2199.1:

"Brush" means shrubs and stands of short, scrubby trees that do not reach merchantable size.

"Combined heat and power facility" means a system that produces both electric energy and steam or forms of useful energy (such as heat) that are used for industrial, commercial, heating, or cooling purposes.

"Dunnage" means loose materials or padding used to support or protect cargo within shipping containers.

"Fuel cell" means a device that produces electricity through a chemical reaction between a source fuel and an oxidant.

“Microturbine” means a small combustion turbine with an output of 25 kW to 500 kW.

“Qualifying biomass” means a solid, non-hazardous, cellulosic waste material that is segregated from other waste materials, and is derived from any of the following forest- related resources, with the exception of old growth timber, unsegregated solid waste, or post-consumer wastepaper:

(a) Mill residue;

(b) Precommercial soft wood thinning;

(c) Slash;

(d) Brush;

(e) Yard waste;

(f) A waste pallet, crate, or dunnage;

(g) Agricultural sources, including tree crops, vineyard materials, grain, legumes, sugar, and other crop by products or residues; or

(h) Cofired biomass.

“Slash” means:

(a) Tree tops, branches, bark, or other residue left on the ground after logging or other forestry operations; or

(b) Tree debris left after a natural catastrophe.

“Solar energy” means radiant energy, direct, diffuse, or reflected, received from the sun at wavelengths suitable for conversion into thermal, chemical, or electrical energy.

“Waste-to-energy” means waste treatment, including the use of a licensed facility that burns waste resources in high-efficiency furnaces/boilers, to produce electricity. Such resources include municipal solid waste and non-qualifying biomass but exclude waste coal.

5. Any person interested in commenting on the subject matter of this NOPR may submit written comments and reply comments 30) and 45 days, respectively, after the publication of this Notice in *D.C. Register*. Comments and reply comments are to be addressed to Brinda Westbrook-Sedgwick, Commission Secretary, Public Service Commission of the District of Columbia, 1325 G Street, N.W., Suite 800, Washington D.C., 20005, via email to psc-commissionsecretary@dc.gov, or through the Commission’s website at

http://edocket.dcpsc.org/comments/submitpubliccomments.asp. After the comment period expires, the Commission will take final rulemaking action.

Statement of Commissioner Richard Beverly

I want to take this opportunity to thank all of the Commission Staff members who worked on this report. The report lays the foundation for many of the things that we need to consider in designing a regulatory framework to meet the needs of the future.

My role prior to becoming a Commissioner was limited to a legal review and, for that reason, the overall direction of the report does not reflect any substantial input from me. Although I'm pleased that so many stakeholders participated in this process, our citizen stakeholders have not yet had a full opportunity to share their vision of the future. So, for me, the report is a useful exercise in making sure that all of our stakeholders have roughly the same understanding of the current regulatory environment.

Legislative Mandates

As we move forward, it's important to note that the Council of the District of Columbia (Council) and the District Department of Energy and Environment (DOEE) have articulated goals for energy policy in the District, in terms of renewables and carbon reduction. The Council adopted the Clean and Affordable Energy Act of 2008[1] and a series of laws beginning with the Renewable Portfolio Standard Act of 2004[2], which created renewable energy portfolio standards to promote the generation of electricity through renewable resources. In furtherance of the District's commitment to increase use of renewable forms of energy, the Council most recently adopted the Renewable Portfolio Standard Expansion Amendment Act of 2016.[3]

Executive Policy

Sustainable DC

In 2012, the District of Columbia's sustainability plan, entitled *Sustainable DC,* was released following a collaborative effort involving the input and participation of thousands of members of the local community with a pledge to make the District the world's most sustainable city. Led by

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1 D.C. Law 17-250, the "Clean and Affordable Energy Act of 2008," among other things, established a renewable energy incentive program in the District of Columbia; increased the renewable requirement, allow solar thermal to count as a Tier 1 solar resource, and increased the alternative compliance payment; established benchmarking requirements for all qualified public and private buildings; and amended the responsibilities of the Public Service Commission to require the Commission to consider the public safety, the economy of the District, the conservation of natural resources, and the preservation of environmental quality in supervising and regulating public utilities and energy companies.

2 D.C. Law 15-340, the "Renewable Portfolio Standard Act of 2004,"

3 D.C. Law 21-154, the "Renewable Portfolio Standard Expansion Amendment Act of 2016," adds waste heat from combined and sanitary sewage systems, and effluence from wastewater treatment to the list of Tier 1 renewable sources; raises the renewable portfolio and solar requirements to 50% and 5% by the year 2032, respectively; increases financial penalties for electricity suppliers who fail to comply with the renewable energy portfolio standard for the applicable year; and establishes a program within DOEE to assist low-income households, seniors, nonprofits, and small local businesses increase their access to the benefits of solar power. The program is required to reduce by at least 50% the electric bills of at least 100,000 of the District's low-income households with high energy burdens by December 31, 2032.

the District Office of Planning (OP) and DOEE, as well as other government agencies, the initiative brings a government-wide focus on environmental sustainability.[4]

Clean Energy DC

DOEE has recently released a draft of its climate and energy plan for the District, entitled *Clean Energy* DC, which contains the vision for the District to meet challenges presented by climate change and create a sustainable energy system that provides for the District's future energy needs.[5] *Clean Energy* DC proposes to reduce greenhouse gas (GHG) emissions by 50% below 2006 levels by 2032 while increasing use of renewable energy and reducing energy consumption, as directed by *Sustainable DC.*

Commission Action

As the Commission noted in Order No. 17539, the Commission, in response to a request from Grid 2.0 and the Sierra Club, stated it would "continue to investigate new technologies that could improve Pepco's grid with the incorporation of distributed generation including solar energy, and the exploration of micro-grid architecture opportunities, and other conservation and environmental quality issues, as we work to also ensure that Pepco provides safe and reliable electric service in the District of Columbia."[6] The Commission declined to do so because the request was made in the course of a rate proceeding.[7] The Commission further noted in Order No. 17851, in response to a request from DC Climate Action and Advisory Neighborhood Commission 6D06, that the Commission convene a working group to, among other things, "investigate the costs and benefits of installing state of the art interconnection infrastructure for distributed generation including substantial battery storage and smart inverters, along with financing options,"[8] that while it declined to form the requested working group as part of the Waterfront substation approval process, the Commission determined that it would open a new docket to "address in a more global way the future outlook for energy growth in the District of Columbia, the feasibility of deploying more energy storage facilities and increased distribution generation, and the impact of these new technologies on Pepco's load forecasting and construction plans for the city."[9] In response to that determination, the Commission opened this proceeding.

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4 Sustainable DC http://www.sustainabledc.org/

5 Clean Energy DC: The District of Columbia Climate and Energy Plan, Draft October 2016, accessed December 27, 2016. http://doee.dc.gov/cleanenergydc.

6 *Formal Case No. 1103, In the Matter of the Application of the Potomac Electric Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service,* Order No. 17539, rel. July 10, 2014, at ¶ 120.

7 *Formal Case No. 1103*, Order No. 17539, at ¶ 120.

8 *Formal Case No. 1123, In the Matter of the Potomac Electric Company's Notice to Construct a 230kV/138 kV/13 kV Substation and Four 230 kV/138 kV Underground Transmission Circuits on Buzzard Point,* Order No. 17851, rel. April 9, 2015 at ¶ 19.

9 *Formal Case No. 1123*, Order No. 17851, at ¶ 78.

So far, stakeholder input has been limited largely to developers, vendors, and interest groups whose views may be colored by their individual objectives.

In my opinion, the actions undertaken in the MEDSIS proceeding should be directly aligned with and in support of the District's executive policy and legislative mandates, so that the results of any initiatives in this proceeding are consistent with the direction in which the city is moving.

I note that *Clean Energy DC* makes eleven recommendations with regard to grid modernization. They include (1) defining a vision of the District's future electricity system to be used to define grid capabilities and characteristics and the transition needed to achieve this vision; (2) adopt a framework for valuing distributed energy resource costs and benefits; (3) support the collaborative development of an integrated distribution plan; (4) intervene in Commission proceedings related to grid modernization; (5) outline a path to overcome legislative and regulatory barriers to grid modernization; (6) conduct a hosting capacity study of the District's distribution grid; (7) develop a location-based profile of energy use and GHG emissions; (8) generate, evaluate, and prioritize a list of actions that can be taken immediately; (9) leverage existing advanced metering data; (10) identify near-term projects that should be coordinated with grid modernization activities; and (11) pursue pilot projects related to key modernization capabilities and technologies. Some of these goals are addressed in the Commission Staff Report while others are not.

However, I'm not simply concerned with ensuring that MEDSIS aligns with the District's energy goals and policies, but also that it, among other things: (1) addresses outages, especially in areas that have chronic problems; (2) ensures minimal impact on rates; (3) takes into consideration the effects of the D.C. Power Line Undergrounding initiative ("D.C. PLUG"); (4) promotes energy efficiency; (5) ensures system adequacy and resilience; (6) maintains adequate physical security and cybersecurity; (6) addresses the future role of the regulated distribution company; (7) protects customer privacy; (8) addresses distribution system planning; (8) interconnection standards; (8) hosting capacity analyses; (9) Volt/VAR optimization; and (10) time-varying rates as well as any changes to rate design, including performance based ratemaking.

This MEDSIS proceeding was initiated at the request of community stakeholders who are among those individuals and grassroots organizations whose views and opinions have been valuable in shaping and establishing the District's energy legislation and policies. It is important that the Commission approach this proceeding in a manner that builds on that foundation and includes the participation of not only developers and vendors, but also the community stakeholders who are directly engaged in the efforts to meet the District's goals.

Although the Commission declined to convene a working group to discuss this matter at an earlier stage of the proceeding, given the complexity of MEDSIS and the potential wide disparity of views on the subject, I think the time is right to consider either convening a working group or establishing a stakeholder Board so that all relevant issues can be discussed in a more fluid give and take manner. I recognize that the Staff proposes a Town Hall but, to me, that kind of a forum may not provide an optimal opportunity for truly meaningful participation on issues of this complexity. A working group or Board can give thoughtful consideration of all views, over whatever period of time is necessary, and then make a consensus recommendation (or, if necessary staggered recommendations) to the Commission on what, if any, staff recommendations are appropriate in the short or long terms as well as make independent recommendations of its own. Whether the vehicle is a working group or Board, it should provide for participation from the Executive Office of the Mayor, the Office of the People's Counsel, the Commission, consumer and environmental groups, Pepco, Washington Gas, competitive suppliers, and clean energy advocates. As part of its consideration, the working group or Board could consider the grid modernization efforts from California, Connecticut, Massachusetts, Minnesota, and New York, to name a few, and recommend to the Commission what, if any, of those initiatives hold promise for the District. I welcome comment on this approach.

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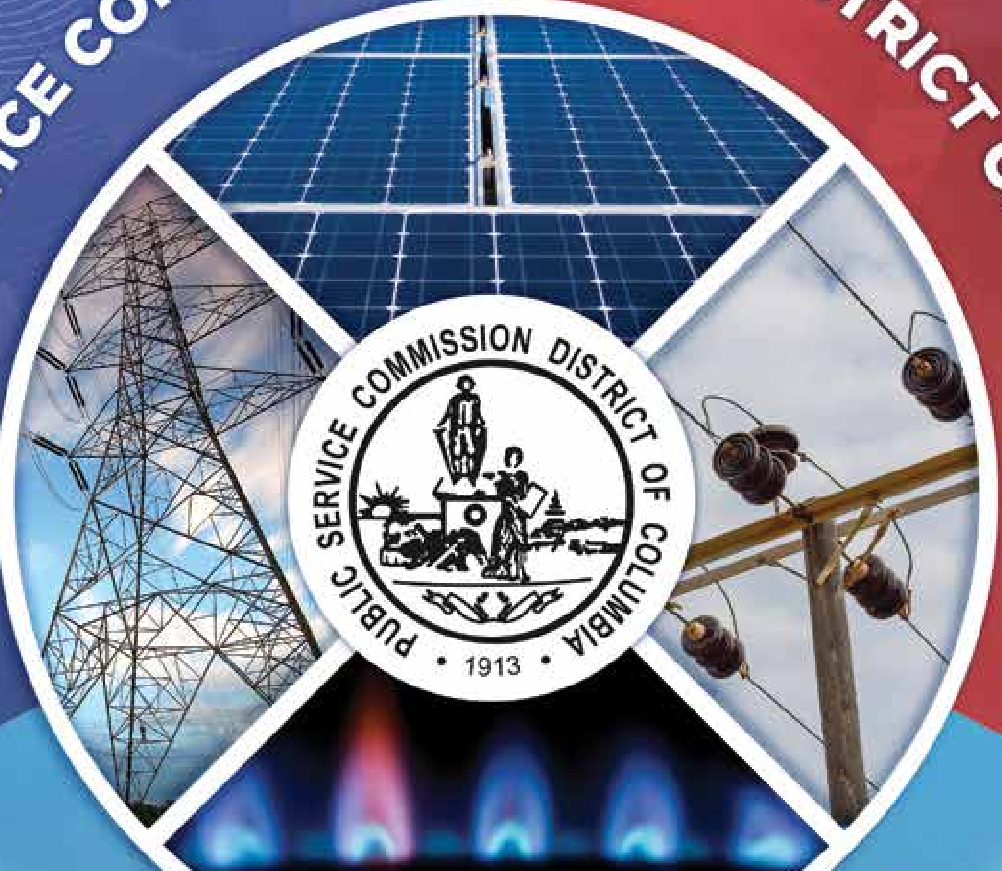
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA



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PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
1325 G Street N.W., Suite 800
Washington, D.C. 20005
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www.dcpsc.org

October 2017

The Honorable Muriel Bowser
Mayor, District of Columbia
Executive Office of the Mayor
1350 Pennsylvania Avenue, N.W.
Suite 316
Washington, D.C. 20004

Dear Mayor Bowser:

The Public Service Commission of the District of Columbia (Commission) has the honor of submitting the 2016 Annual Report. Except where otherwise noted, this Annual Report covers the calendar year period from January 1, 2016 through December 31, 2016.

The 2016 Annual Report provides a detailed review of the Commission's accomplishments in 2016. Most importantly, it provides an account to District ratepayers of how we worked to protect consumers by regulating electric, natural gas, and local telecommunications companies to ensure safe and reliable utility services.

As the energy and telecommunications industries undergo major transformations, the Commission will continue to be at the forefront of the relevant issues, working to serve the public interest.

Respectfully submitted,

Richard A. Beverly Commissioner	Betty Ann Kane Chairman	Willie L. Phillips Commissioner

PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA

2016 ANNUAL REPORT

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CHAIRMAN'S REMARKS

Betty Ann Kane • *Chairman*

The 2016 Annual Report of the Public Service Commission is intended to reflect our commitment to "Inform, Involve and Inspire."

It is important to us that we *inform* consumers, utilities and decision-makers in a timely manner and provide accurate information. As a quasi-judicial body, we commission studies and gather facts to make informed decisions based on solid evidence and thoughtful consideration.

We also *involve* stakeholders in those decisions. We actively invite community opinion on every major case, and offer workshops and "Town Hall Meetings" to ensure that we hear from all sides before making a decision. Our representatives involve themselves every business day in helping consumers make choices and resolve issues with utility service.

And we seek to *inspire*. We try to look forward, to anticipate beneficial developments in technology, energy use and resource conservation, and to promote new ideas that will bring those benefits to the District of Columbia. Our employees also seek to inspire each other by going the extra mile to achieve our mission of serving the public interest.

We are very proud of our 2016 accomplishments and our efforts to "*Inform, Involve* and *Inspire*" District consumers. Some of our accomplishments include:

- We approved the acquisition of Pepco by the Exelon Corporation. This controversial merger was conditioned upon a number of commitments made by the merged companies. We created a matrix showing the status of all 128 merger commitments to better serve District consumers. We update the matrix monthly to be sure that the companies satisfy the obligations we have imposed on them.

- We revised the electric and natural gas service discounts programs. We instituted changes in both the Residential Aid Discount (RAD) for qualified electricity customers and the Residential Essential service (RES) for qualified natural gas customers. These changes assure that customers can get discounts whether they are a customer of the distribution company or a competitive energy supplier.

CHAIRMAN'S REMARKS *CONTINUED*

- We held four community hearings, completed evidentiary proceedings and closed the record in a Washington Gas Light Company rate case. In March of 2017, we issued the decision in a timely fashion.

- We began an important proceeding called MEDSIS, or Modernizing the Energy Distribution System for Increased Sustainability. The goal of this proceeding is to find the barriers to modernization of the energy delivery system and to provide actionable solutions to overcome these barriers. In 2016, we hosted a series of workshops intended to identify technologies and projects for grid modernization. In 2017, we will take the next steps in achieving the goals we have set for ourselves.

- We have emphasized our public engagement. We published a book celebrating the centennial anniversary of the Commission, *The First 100 Years: Protecting the Public Interest.* We launched the book at a reception in March of 2016 hosted by Washington Post columnist John Kelley, who called the book "fascinating."

- We also hosted the first annual Winter Ready D.C. event which was designed to help community leaders and consumer advocates learn about how utility and government agencies prepare for the winter as well as tips on how to conserve heat and plan for emergencies.

- Finally, we launched our Social Media presence in September 2016. We can now be found on Facebook, Twitter and YouTube where we publicize events and provide information on Commission initiatives and how to participate in Commission proceedings.

As you read this annual report for 2016, we know you will gain more information about the Commission's work and initiatives. But most importantly, we hope to *"Inform, Involve and Inspire"* you.

CHAIRMAN BETTY ANN KANE

Betty Ann Kane • *Chairman*

Betty Ann Kane began her tenure as a Commissioner in March 2007. She became Chairman on March 3, 2009. In 2014, she was confirmed for a third term, to end on June 30, 2018.

Betty Ann Kane is an experienced public official combining over 35 years of service to the District of Columbia Government in elected and appointed positions with extensive private sector experience in regulatory, administrative and public policy matters. Before joining the DCPSC, Chairman Kane served as a Trustee and as Executive Director of the District of Columbia Retirement Board. She served four years as an At-Large member of the DC Board of Education, and was elected to three terms as an At-Large member of the City Council. Her service on the Council included chairing the Public Services and Cable Television Committee, with legislative, budgetary and oversight responsibility for the Public Service Commission, the Office of Peoples Counsel, and the Office of Cable Television.

Chairman Kane is a member of:

- National Association of Regulatory Utility Commissioners (NARUC) Board of Directors,
- NARUC Telecommunications Committee,
- NARUC appointee to the Virtual Working Group on Education,
- Training and Best Practices for The International Confederation of Energy Regulators, and
- Treasurer of the National Regulatory Research Institute (NRRI), the research arm of NARUC.

Additionally, she is a past Chairman of the Board of NRRI, and a past President of the Mid-Atlantic Conference of Regulatory Utilities Commissioners (MACRUC). Chairman Kane also serves in two FCC-appointed positions, as Chairman of the North American Numbering Council and as a member of the Joint Conference on Advanced Telecommunication Service.

She is a graduate of Middlebury College in Vermont and she also has a Master's Degree in English from Yale University. She has undertaken specialized academic study in Telecommunications Regulation at the Annenberg School, and in Investing and Finance at the Wharton School, University of Pennsylvania.

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COMMISSIONER WILLIE L. PHILLIPS

Willie L. Phillips • *Commissioner*

Willie L. Phillips was nominated by Mayor Vincent Gray and confirmed as a DCPSC Commissioner by the D.C. Council effective July 14, 2014, for a term ending June 30, 2018.

Commissioner Phillips is an experienced regulatory attorney combining over a decade of legal expertise in private practice and as in-house counsel. Commissioner Phillips has an extensive background in the areas of public utility regulation, bulk power system reliability, and corporate governance.

Prior to coming to the DCPSC, Commissioner Phillips served as Assistant General Counsel for the North American Electric Reliability Corporation (NERC), a not-for-profit international regulatory authority, in Washington, D.C. Before joining NERC, Phillips was an attorney at Van Ness Feldman LLP in Washington, D.C., where he advised clients on regulatory compliance and policy matters and assisted on litigation and administrative proceedings on the Federal and State level. He has also worked as an aide on Capitol Hill.

Commissioner Phillips is a member of the National Association of Regulatory Utility Commissioners, where he serves on the Committee on Electricity, and he is Secretary-Treasurer of the Mid-Atlantic Conference of Regulatory Utility Commissioners. He is also a member of the Keystone Policy Center Energy Board, Energy Bar Association, and American Association of Blacks in Energy.

Commissioner Phillips has a Bachelor of Science degree from the University of Montevallo and a Juris Doctor degree from Howard University School of Law. He is also a member of the District of Columbia Bar and Alabama State Bar Association.

COMMISSIONER RICHARD A. BEVERLY

Richard A. Beverly • *Commissioner*

Richard A. Beverly was nominated by Mayor Muriel Bowser and confirmed as a DCPSC Commissioner by the D.C. Council effective December 20, 2016, for a term ending June 30, 2020.

Commissioner Beverly has a long and distinguished record. He served as a Clinton Appointee to the U.S. Department of Labor's Administrative Review Board and has served as General Counsel for both the DCPSC and the Office of Employee Appeals for a total of over 30 years.

A Ward 1 resident, Mr. Beverly received a Bachelor Degree in Political Science from Howard University and a Juris Doctorate from American University.

PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA

DCPSC OVERVIEW

DCPSC Mission The Public Service Commission of the District of Columbia (DCPSC) was originally established by Congress in 1913 and was reaffirmed by Congress as an independent agency of the District of Columbia Government in the District of Columbia Home Rule Charter in 1973. The DCPSC functions as an independent, quasi-judicial agency in the District of Columbia Government.

The mission of the DCPSC is to serve the public interest by ensuring that financially healthy electric, natural gas, and telecommunications companies provide safe, reliable, and quality services at reasonable rates for District of Columbia residential, business, and government customers.

THE DCPSC CARRIES OUT ITS MISSION BY FOCUSING ON THE FOLLOWING GOALS:

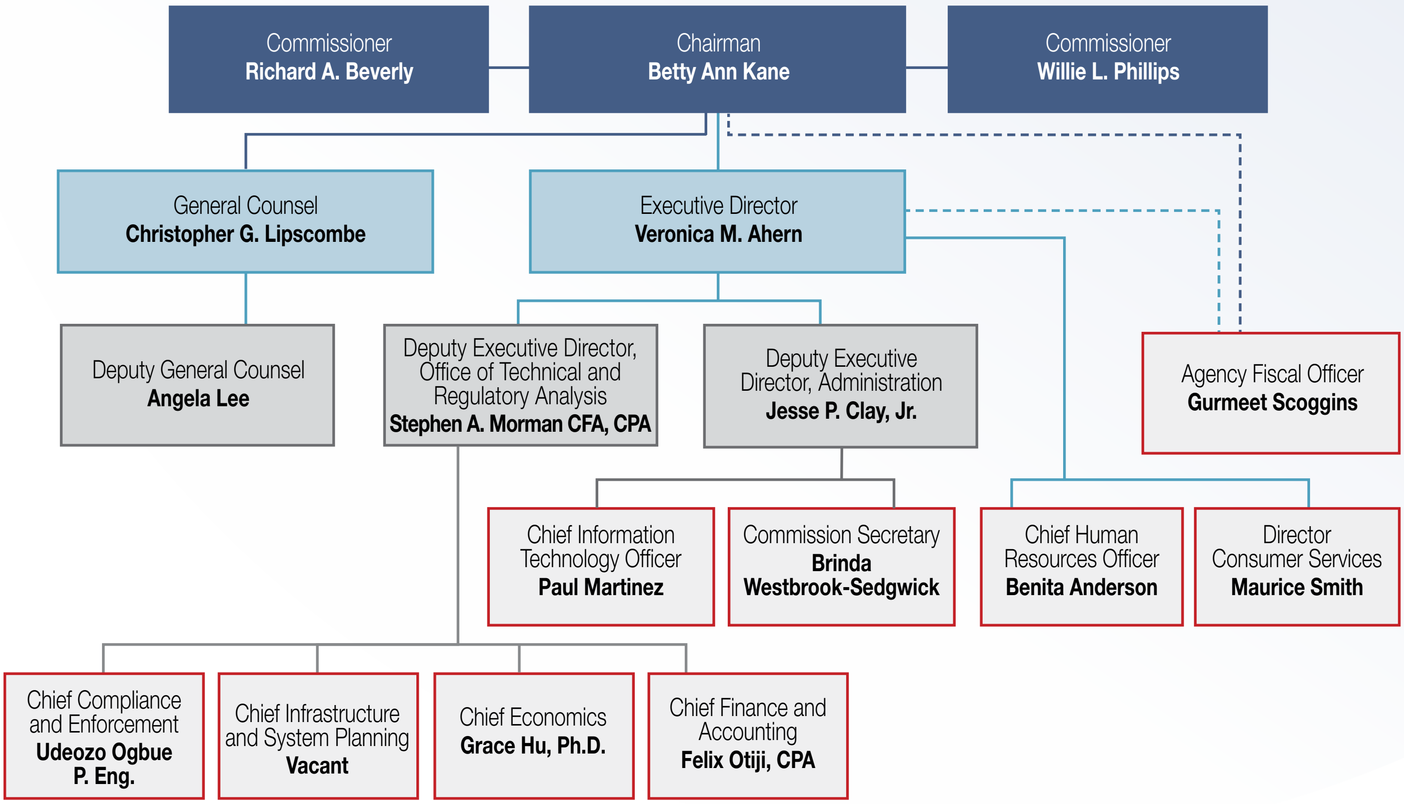
1. Motivating customer-and results-oriented employees;
2. Protecting consumers and public safety by ensuring safe, reliable, and quality utility services;
3. Regulating monopoly utility service providers to ensure their rates are just and reasonable;
4. Fostering fair and open competition among utility service providers;
5. Conserving natural resources and preserving environmental quality;
6. Resolving disputes among consumers and utility service providers;
7. Educating utility consumers and informing the public; and
8. Supporting the economy of the District of Columbia.

DCPSC STAFF

The DCPSC is under the leadership of the DCPSC Chairman and Commissioners who are appointed to four-year terms by the Mayor, with the advice and consent of the D.C. Council.

The DCPSC ended FY 2016 with 84 employees, including the DCPSC Chairman and two Commissioners. The PSC has a diverse workforce with a range of subject matter expertise in utility regulation, policy, and administration. Our employees include attorneys, economists, engineers, accountants, researchers, consumer specialists, and administrative personnel with experience working with the D.C. Council, District agencies, federal agencies, utilities, and District residents.

FY 2016 ORGANIZATIONAL CHART



Angela Lee became Deputy General Counsel in FY 2017.

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DCPSC OFFICES

The DCPSC has nine offices to help accomplish the organizational mission.

1. THE OFFICES OF THE CHAIRMAN AND COMMISSIONERS

The Offices of the Chairman and Commissioners consist of the Commissioners and their administrative and policy advisors. Through their Offices, the Commissioners review and make decisions on matters before the Commission and on issues of public policy pertaining to utility regulation and the mission of the Commission. The Commissioners provide testimony before the D.C. Council and represent the Commission on a local, regional and national level on various boards, committees, and task forces. These include, among others, participation in the D.C. Sustainable Energy Utility (DC SEU) Advisory Board, the Eastern Interconnection States' Planning Council (EISPC), the Organization of PJM States (OPSI), the Mid-Atlantic Conference of Regulatory Utility Commissioners (MACRUC), the Multi-State Task Force on Cybersecurity, and various committees of the National Association of Regulatory Utility Commissioners (NARUC).

Office of the Chairman Betty Ann Kane (L to R): Management Analyst Cary Hinton, Chairman Betty Ann Kane and Technical Advisor Daniel Cleverdon
Not Pictured Executive Assistant Wendy Newkirk

Office of Commissioner Richard A. Beverly (L to R): Executive Assistant Mable Spears, Commissioner Richard A. Beverly, and Policy Advisor Brian Edmonds

Office of Commissioner Willie L. Phillips (L to R): Executive Assistant LaWanda Hale, Commissioner Willie L. Phillips and Policy Advisor Felicia West

2. THE OFFICE OF THE GENERAL COUNSEL (OGC)

OGC advises the Commissioners on all matters and proceedings related to the DCPSC's statutory authority. OGC is responsible for all legal issues involving the day-to-day operations of the DCPSC, as well as a broad spectrum of issues that relate to the Commissioners' regulatory responsibilities including appellate representation before the D.C. Superior Court and the D.C. Court of Appeals. The staff attorneys prepare orders and legal advisory memoranda, and assist the Commissioners in conducting all proceedings. Staff counsel also serve as hearing officers in formal consumer and pay telephone complaint hearings. OGC monitors proceedings at the Federal Energy Regulatory Commission (FERC) and the Federal Communications Commission (FCC) and submit filings with the Federal agencies as appropriate. OGC also reviews legislation of the D.C. Council and prepares comments and or amendments on draft legislation that may impact the DCPSC and its jurisdictional authority.

OGC (L to R): First Row—Law Clerk Tiffany Ganthier, Paralegal Specialist Irvin Brooms, Attorney Advisor Richard Herskovitz, Regulatory Affairs Specialist Tiffany Frazier, General Counsel Christopher Lipscombe, Attorney Advisor Kim Lincoln-Stewart, Attorney Advisor Kenneth Glick, Attorney Advisor Milena Yordanova, and Attorney Advisor Lara Walt; Second Row— Attorney Advisor Naza Shelley, Attorney Advisor Ken Hughes, Attorney Advisor Craig Berry, and Attorney Advisor Noel Antonio
Not pictured—Attorney Advisor Sanford Speight, Intern Merancia Noelsaint

3. THE OFFICE OF THE EXECUTIVE DIRECTOR (OED)

OED is comprised of the Executive Director (ED) and two Special Assistants. The ED plans, directs, coordinates, and manages the internal affairs of the DCPSC on a day-to-day basis under the broad direction of the Chairman. The ED oversees the technical and administrative offices of the DCPSC and serves as the performance officer for the DCPSC. The ED is also responsible for all strategic planning initiatives and the management of the program side of the agency's budget and financial responsibilities.

OED (L to R): Special Assistant Aminta Daves, Executive Director Veronica Ahern, and Special Assistant Susan Nelson

4. THE OFFICE OF TECHNICAL AND REGULATORY ANALYSIS (OTRA)

OTRA (L to R): First Row—Chief Economist Grace Hu, Telecommunications Economist Edward Ongweso, Financial Analyst Timour Skrynnikov, Program Support Specialist Anjanette Parker, Pipeline Safety Engineer Manmohan Singh, Deputy Executive Director of Regulatory Matters Stephen A. Mormann,Compliance Inspector Damon Patterson, General Engineer Gary Pulliam, One Call Inspector James Modozie, Pipeline Safety Engineer Amrik Singh Kaisth, Economist Matthew Mercogliano, Compliance and Enforcement Officer Donald Jackson; Second Row—Senior Accountant Jason Benati, Economist Jonathan Morse, Senior Economist John Howley, Pipeline Safety Engineer Ahmadou Bagayoko, Staff Assistant Khadysha Moore, Chief of Finance and Accounting Felix Otiji, Senior Electricity Economist Roger Fujihara, Auditor Rodney Wilson
Not pictured—Chief of the Office of Compliance and Enforcement Udeozo Ogbue

OTRA advises the Commissioners on financial, accounting, economics, engineering, compliance, enforcement, and infrastructure and system planning issues in formal cases and rulemakings. In addition, OTRA staff monitors electric, natural gas, and local telecommunications markets at the retail and wholesale levels. This includes keeping abreast of energy activities at the Federal Energy Regulatory Commission (FERC) and PJM Interconnection (the Regional Transmission Organization) and telecommunications activities at the Federal Communications Commission (FCC). OTRA also tracks and analyzes energy and telecommunications prices at the local, regional, and federal levels. The Office also conducts compliance reviews, audits, inspections, and annual surveys to gauge the status of local competition in the District; helps manage formal cases and investigations, and enforces compliance of service providers. Furthermore, OTRA performs activities associated with utility assessments and prepares materials for the DCPSC Annual Report.

- **Office of Compliance and Enforcement (OCE)** protects consumers by monitoring and enforcing compliance of service providers. The enforcement matters handled by OCE in cooperation with OGC include pipeline safety requirements and electric and gas reliability standards.
- **Office of Economics (OE)** advises on complex economic matters involving the public utilities, particularly for utility rate cases. OE monitors electric, natural gas, and local telecommunications markets.
- **Office of Finance and Accounting (OFA)** advises the DCPSC on complex financial matters such as utility rate case analysis, regulatory filings, assessments, auditing investigations and studies.
- **Office of Infrastructure and System Planning (OISP)** is responsible for providing professional engineering and other technical support on all matters relating to the planning, design, construction, operation, maintenance and replacement of infrastructure and systems utilized by the electric, natural gas and local telephone companies.

5. THE OFFICE OF HUMAN RESOURCES (OHR)

OHR provides human resources services to the DCPSC so that it can attract, develop, retain, and motivate a qualified and diverse workforce. OHR facilitates employee training and development to increase productivity, enhance workforce skills, and improve morale and performance.

OHR (L to R): Management Liaison Specialist Natalie Taylor, Chief Human Resources Officer Benita Anderson and Human Resources Specialist Sophia Pryce

6. THE OFFICE OF CONSUMER SERVICES (OCS)

OCS serves as the consumer relations arm of the DCPSC. OCS's Consumer Specialists are responsible for mediating consumer complaints regarding utility service providers and responding to inquiries. OCS and its Consumer Specialists also implement and manage the DCPSC's community outreach program to help consumers make informed choices about retail electric and natural gas suppliers and raise awareness about the Utility Discount Program for low-income, District residents. OCS also keeps the Commissioners and staff informed of local and national consumer-related trends, and provides the DCPSC with information on how well local providers serve their customers. OCS is also responsible for issuing press releases, consumer advisories, and fact sheets as well as overseeing the preparation of the DCPSC's Annual Report.

OCS (L to R): First Row—Senior Consumer Specialist Margaret Moskowitz; OCS Director Maurice Smith, Graphic Designer Shola Kalejaiye; Second Row— Media Relations Specialist Kellie Armstead Didigu, Supervisory Consumer Services Specialist Donna Galloway, Senior Consumer Specialist Kenneth Ford

Not pictured—Consumer Specialist Aaron Aylor, Consumer Specialist Hicham Mokhtari, Consumer Education and Outreach Specialist Kristen Randolph

7. OFFICE OF DEPUTY EXECUTIVE DIRECTOR FOR ADMINISTRATIVE MATTERS (ODEDAM)

The Office of the Deputy Executive Director for Administrative Services (ODEDAM) is responsible for overseeing a variety of management and administrative areas, including Information Technology, Contracts and Procurement functions, Facility Management, Vehicle Administration, telephone administration, and other DCPSC administrative programs and projects. The Director of the Office of the Commission Secretary also reports to the Deputy Executive Director for Administrative Matters.

ODEDAM (L to R): Administrative Support Specialist Darnice Wright, Contract Specialist Karen Hester, Deputy Executive Director for Administrative Matters Dr. Jesse Clay, Jr., Chief Information Technology Officer Paul Martinez, IT Specialist Bruce Cho

Contracts and Procurements

As an independent agency, the DCPSC has its own procurement and contracting authority and, hence, its own rules and regulations, relative to that authority. ODEDAM is responsible for purchasing goods and services for the DCPSC. ODEDAM develops the purchasing/contracting methods that will ensure the best value, competition, and price, while meeting the DCPSC's requirements.

Other Administrative Areas

- Coordinates the One Fund charitable giving program in which there was 100% participation;
- Administers the DCPSC e-Procurement, e-Invoice, e-Travel Systems;
- Manages the DCPSC budget in cooperation with the Agency Fiscal Officer;
- Oversees DCPSC Information Technology Improvements.

8. THE OFFICE OF THE COMMISSION SECRETARY (OCMS)

The Office of the Commission Secretary (OCMS) is responsible for maintaining the official files of the Commission. The office serves as the custodian of the official files and documents and as the filing and distribution point for the public's access to Commission filings, orders, and other documents. OCMS also manages e-Docket, the Commission's electronic filing system. In addition, OCMS schedules, staffs and coordinates evidentiary, community, and public interest hearings and open meetings. OCMS provides coverage for the DCPSC's reception area, support for telephone calls placed to the DCPSC's primary telephone numbers and face-to-face service to DCPSC visitors. OCMS staff serves as the primary web administrator, and it determines, develops and updates the Commission's website content and mobile application, in addition to identifying data and content trends and problems. OCMS staff also serves as the key operator for copier and audio-visual equipment, schedules courier services, manages and delivers all Commission mail and hires transcription service providers. The Director of OCMS reports to the Deputy Executive Director for Administrative Matters.

OCMS (L to R) First Row—Public Information Assistant Hazel Doe, Commission Secretary Brinda Westbrook, Regulatory Docket Specialist Vasheena Butler; Second Row—Regulatory Docket Manager Carmen Davis, Regulatory Docket Specialist Alphonzo Harris, Regulatory Docket Specialist Harvey Jessup, Records Management Specialist Marvin Briggs
Not Pictured—Program Analyst Patrice Hunter

9. THE OFFICE OF THE AGENCY FISCAL OFFICER (OAFO)

The Office of the Agency Fiscal Officer (OAFO) is responsible for the execution of the DCPSC's annual operating budget and the tracking of expenditures in conformance with the approved budget. The OAFO staff is employed by the D.C. Chief Financial Officer. They are assigned to the Commission by the Office of the Chief Financial Officer (OCFO), but are primarily paid out of the DCPSC budget. The DCPSC's AFO is tasked with the responsibility of ensuring that the DCPSC's budgeting and financial operations are managed in compliance with OCFO guidelines. The OAFO manages all fund receipts and disbursements for each revenue type and for the DCPSC's formal cases. OAFO additionally is responsible for accounting operations for the DCPSC and the financial reporting of all funds to the DCPSC's Chairman, Executive Director, and the Associate CFO of the Economic Development and Regulation Cluster (ACFO). The AFO also supports the DCPSC Chairman during budget hearings before the D.C. Council's Committee on Business, Consumer and Regulatory Affairs.

OAFO (L to R): Agency Fiscal Officer Gurmeet Scoggins and Budget Analyst Vanetta Wells

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2016 MAJOR REGULATORY & ORGANIZATIONAL ACCOMPLISHMENTS

The mission of the DCPSC is to serve the public interest by ensuring that financially healthy electric, natural gas, and telecommunications companies provide safe, reliable, and quality services at reasonable rates for District of Columbia residential, business and government customers. In supervising and regulating public utilities and third-party suppliers, the DCPSC considers the public safety, the economy of the District, the conservation of natural resources and the preservation of environmental quality. The following major regulatory and organizational accomplishments highlight our commitment to achieving our mission.

REGULATORY ACCOMPLISHMENTS

MATTERS INVOLVING ELECTRICITY

- **Renewables**—Processed 779 Renewable Portfolio Standard (RPS) applications received in FY 2016; Monitored the District's energy suppliers to ensure they were only obtaining Renewable Energy Credits and Solar Renewable Energy Credits from energy facilities that comply with District law; Directed Pepco to modify its interconnection process to make the process more user-friendly (Order No. 18575); Prepared and submitted a timely RPS Report to the D.C. Council.

- **Formal Case No. 1017**—Monitored the competitive auction for electricity for Standard Offer Service (SOS) for District consumers who do not purchase their electricity from a competitive supplier and approved the new rates for SOS service.

- **Formal Case No. 1076**—Addressed the findings, conclusions and recommendations contained in the *Final Report: Siemens Management Audit of Pepco's System Reliability*; Found that Pepco's 2% Least Performing Feeder Program has been unable to provide sustained improvements in feeder reliability performance (Order 18167). In 2017, the Commission will consider how improvements in feeder reliability can be achieved.

- **Formal Case Nos. 1116 and 1121**—Continued steps toward implementation of the Commission's Orders concerning the Electric Company Infrastructure Improvement Financing Act of 2013, which Orders were affirmed by the District of Columbia Court of Appeals in January 2016 (FC 1116-2016-E-236); Accepted for filing the Joint Application of Pepco and the District Department of Transportation for Approval of Triennial Underground Infrastructure Improvement Projects; Held the Joint Application in abeyance pending resolution of financing issues (Order 18585); Participated in the Underground Projects Consumer Education Task Force.

- **Formal Case No. 1119**—On August 27, 2015, issued (Order No. 17947) which denied the Joint Application of Exelon Corporation, Pepco Holdings Inc. and Pepco for approval of a change of control of Pepco and found that the proposed merger as filed was not in the public interest; Considered a Nonunanimous Full Settlement Agreement and Stipulation (NSA) filed by Joint Applicants, the Office of the People's Counsel, the District of Columbia Government, the National Consumer Law Center, the National Housing Trust, and the Apartment and Office Building Association of Metropolitan Washington; Rejected the NSA, with one Commissioner proposing alternative terms for a Revised NSA that would, if accepted by the settling parties, result in the approval of the Revised NSA and the merger application (Order 18109); Considered a Request for Other Relief filed by the Joint Applicants, agreeing to the alternative terms,

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and concluded that the merger, as revised, was in the public interest (Orders 18148 and 18160); Denied applications for reconsideration of the approval of the Pepco/Exelon merger (Order 18243). An appeal of the Commission's decision was pending at the end of 2016.

- **Formal Case No. 1119** (Commitment Tracker) Created a Merger Commitment Tracker to identify the conditions placed upon Pepco and Exelon in the Merger Orders, and to follow the progress made by the companies on those commitments; Created a public version of the Commitment Tracker to be updated every month that will allow members of the public to see whether the companies have lived up to their commitments.

- **Formal Case No. 1120**—Accepted Pepco's Implementation Plan for a methodology for calculating the Residential Aid Credit (RAC) for the Residential Aid Discount (RAD) Program, a low-income assistance program for electricity customers in the District, including a RAC equal to the full distribution charge, resulting in a discount of approximately 30% for the average RAD customer, and allowing the RAD customer full portability of the discount (Order 18152).

- **Formal Case No. 1130**—Continued an inquiry into Modernizing the Energy Distribution System for Increased Sustainability (MEDSIS) to explore aspects of grid modernization and new developments that are fundamentally changing how electricity is being generated and delivered; Hosted a workshop to consider further the operational and regulatory changes that need to occur to allow use of more distributed energy resources, including presenters from, among others, the United States General Service Administration, the District Department of Energy and the Environment (DOEE), PJM Interconnection, Solar City, Pennoni Associates, and the IEEE; Continued work on a Staff Report for future development of a modern distribution system in the District of Columbia, including consideration of pilot programs to be supported by a $21.55 million sustainability fund created by Pepco and Exelon as one of the merger commitments.

- **Participation in Proceedings Before the Federal Energy Regulatory Commission (FERC)**—Participated in settlement negotiations that were approved by FERC in February 2016 to reduce the transmission formula rates of multiple Mid-Atlantic utilities, including Pepco, that are administered through PJM and passed-through to utilities' customers; Participated in a second FERC proceeding to re-allocate the construction costs of numerous new, high voltage transmission infrastructure projects located in the PJM area resulting in a reduction of the amount of new project costs to be shifted to PJM's eastern area transmission owners, including Pepco.

MATTERS INVOLVING GAS

- **Formal Case No. 874**—Required that the Gas Procurement Working Group reevaluate WGL Co's procurement practices given changes in the retail natural gas market. (Order 18552); Directed the Working Group to discuss and recommend how the Gas Procurement report can be revised and streamlined to help in evaluating natural gas supply planning and acquisition in a restructured retail market. The Commission expects to consider the results of the reevaluation in 2017.

- **Formal Case Nos. 1115 and 1027**—Considered progress in two Washington Gas Light Company construction programs: the Vintage Mechanical Coupling Replacement and Encapsulation Program and the Accelerated Pipeline Replacement Program; Reviewed a management audit of the Vintage Coupling Program and ordered new reporting requirements; Ordered that the parties convene a technical conference to discuss a project management tool that could be used to improve implementation of the two programs; (Order 18566); Reviewed construction documents and plans; Participated in Consumer Education events.

- **Formal Case 1126**—Directed WGL to refund to District ratepayers an estimated $2.4 million for over-delivery of natural gas during the 2008-2009 winter heating season (Order 18505); Ordered that the refund take place through a credit to the Actual Cost Adjustment, or the cost

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of gas; Required WGL to provide additional reporting on under- or over-deliveries of gas both to the Commission and to the Gas Procurement Working Group.

- **Formal Case No. 1127**—Continued the formal case to address the discount program for low-income natural gas customers in the District, the Residential Essential Service (RES) program; Adopted a new methodology for computing the credit associated with the RES Program, which simplified the computation and concluded that the program should be limited to the heating season, rather than year-round (Order 18565); Determined that the RES discount should be applied to the distribution portion of the bill such that the discount is approximately 25% of the total bill; Began oversight of WGL implementation of the new RES program.

- **Formal Case No. 1137**—Received a February 26, 2016 application from Washington Gas Light Company for a rate increase; Reviewed testimony and exhibits from witnesses from WGL, OPC and the Apartment and Office Building Association; Convened Community Hearings to solicit comment from interested citizens; and conducted evidentiary hearings. The Commission will determine the outcome of the rate case in 2017.

MATTERS INVOLVING TELECOMMUNICATIONS

- **RM28-2016-01 Universal Service**—Launched a rulemaking to amend Universal Service rules to achieve consistency with changes in the Federal Communications Commission Lifeline Modernization Order No. 18609.

- **Formal Case No. 1102**—Approved changes in Verizon's procedural manuals and other materials to make it clear that consumer have the ability to retain copper facilities and have those facilities repaired.

MATTERS INVOLVING MULTI-UTILITIES

- **Formal Case No. 1125**—Addressed promotion of the four Utility Discount Programs (UDP) in the District of Columbia: the Customer Assistance Program for water customers; Lifeline for telephone customers; Residential Aid Discount for electric customers; and Residential Essential Service for gas customers through the Utility Discount Program Education Working Group, comprising WGL, Pepco, Verizon D.C., D.C. Water, DOEE, OPC, and the Commission; Oversaw the Consumer Education Program, a multimedia program that targets low-income utility consumers in the District of Columbia to inform them of the four UDPs available.

ORGANIZATIONAL ACCOMPLISHMENTS

- In CY 2016, the Commission issued 162 formal case orders; opened 5 new formal cases; closed 5 formal cases; conducted 1358 natural gas pipeline safety inspections, One-Call inspections and pay telephone site inspections; processed 779 Renewable Portfolio Standards applications; responded to 949 consumer complaints and inquiries, and managed the licensing and oversight of about 100 competitive suppliers of energy and telecommunications services.

- The Commission's website, www.dcpsc.org, is the primary way that the Commission communicates with the public. In 2016, we undertook a top-to-bottom review of the website and made changes to make the website more user-friendly, more direct and less duplicative.

- In CY 2016, The Commission published the book, *"The First 100 Years, Protecting the Public Interest, 1913–2013,"* commemorating the Centennial anniversary of the Commission and containing a history of the Commission and the companies it regulates, in the context of the history of the District of Columbia. We hosted a seminar and reception for those interested in historical D.C. and provided the book to D.C. Government officials, area libraries and interested persons. We also prepared a scholarly version of the book with text, tables and charts showing the progress of regulation and regulated industries from 1913 to 2013 in the District of Columbia. This version is available by request.

- In October 2016, the Commission kicked off a new initiative, the "Winter Ready D.C. Campaign" to raise awareness about winter preparedness in the District of Columbia. The campaign began with a well-attended forum presenting panels of experts discussing how utilities are preparing for winter, what resources are available to District consumers and the District Government strategy for emergency preparedness. The Winter Ready campaign is part of the Commission's year-round efforts to hold utilities to tougher reliability standards, reduce outages and improve responsiveness and restoration times.

GOVERNMENTAL AND INDUSTRY ORGANIZATIONS

- **D.C. Sustainable Energy Utilities (DC SEU):** Chairman Kane serves as a board member for the District of Columbia Sustainable Energy Utility (DCSEU) that helps DC residents and businesses use less energy and save money. Since 2011, the DCSEU has delivered financial incentives, technical assistance, and information to District residents and businesses, helping them to save on their energy costs. The work of the SEU is funded in part through a surcharge that appears on the utility bills of District ratepayers.

- **Mid-Atlantic Distributed Resources Initiative (MADRI):** The Commission staff participates in MADRI meetings, along with representatives from the public utility commissions of Maryland, Delaware, New Jersey and Pennsylvania, the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), FERC and the PJM Interconnection, to identify and remedy retail barriers to the deployment of distributed generation, demand response and energy efficiency in the Mid-Atlantic region. Discussions have focused primarily on issues related to the deployment of distributed generation, with a focus on the deployment of solar. Chairman Kane serves as Chairman of MADRI.

- **Organization of PJM States, Inc. (OPSI):** The Commission participates in OPSI, an inter-governmental organization of utility regulatory agencies from the 14 jurisdictions that are in the service area of PJM Interconnection, Inc., the Regional Transmission Organization (RTO) approved by FERC. PJM operates the high-voltage electric transmission grid and wholesale electricity market for the service area. OPSI's activities include, but are not limited to, coordinating data/issues analyses and policy formulation related to PJM, its operations, its Independent Market Monitor, and related FERC matters. Commissioner Phillips serves on the Board of OPSI.

- **National Association of Regulatory Utility Commissioners (NARUC):** The Commissioners and the Commission Staff participate in educational and policy forums and committees sponsored by NARUC on a variety of subjects including electricity, natural gas, telecommunications, critical infrastructure, utility market place access, energy resources and the environment, and education and research. The Commission often hosts international delegations visiting Washington as part of NARUC's international programs. Chairman Kane serves on the NARUC Board of Directors and on the Telecommunications Committee, and Commissioner Phillips serves on the Electricity Committee.

- **National Regulatory Research Institute (NRRI):** The National Regulatory Research Institute (NRRI) was founded in 1976 by NARUC. NRRI serves as the research arm to NARUC and its members, the utility regulatory commissions of the fifty states and the District of Columbia in the US. NRRI's primary mission is to produce and disseminate relevant and applicable research related to the utility sector— natural gas, electricity, water and telecommunications. Chairman Kane is the Treasurer of NRRI.

- **Mid-Atlantic Conference of Regulatory Utilities Commissioners (MACRUC):** The Commissioners and Commission staff participate in MACRUC, a regional organization of eleven Mid-Atlantic state public utility commissions organized to address public utility regulatory, legislative and policy public issues through an Annual Education Conference and other educational forums and meetings.

- **Eastern Interconnection States Planning Council (EISPC):** The Eastern Interconnection States' Planning Council is an historic endeavor initially funded by an award from DOE pursuant to a provision of the American Recovery and Reinvestment Act (ARRA). The goal is to create collaboration among the states in the Eastern Interconnection. It is comprised of over 40 public utility commissions, Governors' offices, energy offices, and other key government representatives. The Council has focused on Eastern Interconnection Transmission planning issues and multi-state issues such as environmental compliance and reliability.

2016 FISCAL YEAR BUDGET

The DCPSC's budget is comprised of two primary revenue types: *Operating Funds (or Special Purpose Revenue)* and *Grant Funds*. As an independent, D.C. government agency, the DCPSC's operating budget is not funded by taxpayers, but rather by assessments levied on regulated utility companies based on their share of revenue derived in the D.C. marketplace. The DCPSC's expenditures for Special Purpose Revenue were $11,278,021 in FY 2014, $12,764,288 in FY 2015 and $13,428,498 in FY 2016. Grant funds are obtained through the Federal government. Total grant-funded expenditures were $206,881 in FY 2014, $442,571 in FY 2015 and $486,473 in FY 2016. In addition, the agency expended $17,477 in FY 2014, and $55,197 in FY 2015 in intra-District funds. No expenditures were incurred in intra-District category in FY 2016 (DCPSC as Seller). The expenditures in Private Donations were $11,567 in FY 2014, $14,615 in FY 2015 and $11,875 in FY 2016.

Public Service Commission (DH)
BUDGET vs EXPENDITURE SUMMARY
FY 2014-2016 (FY 2017 Approved)

(dollars in thousands)

FY 2014-2016 Budget Summary

Comptroller Source Group	FY 2014 Actual Exp.	FY 2015 Actual Exp.	FY 2016 Revised Budget	FY 2016 Actual Exp.	FY 2016 Unexp. Bal.	% FY 2016 Unexp. Bal.	FY 2017 Approved Budget	Variance Over FY 2016 Budget
0011-REGULAR PAY—CONT FULL TIME	5,729	6,393	6,851	6,781	70	1%	7,778	927
0012-REGULAR PAY—OTHER	903	1,017	1,029	1,044	-15	-1%	1,206	177
0013-ADDITIONAL GROSS PAY	19	86	67	67	0	0%	0	-67
0014-FRINGE BENEFITS—CURR PERSONNEL	1,278	1,429	1,617	1,557	60	4%	1,923	306
0015-OVERTIME	4	5	1	6	-5	-500%	0	-1
Subtotal Personnel Services (PS):	**7,933**	**8,930**	**9,565**	**9,455**	**110**	**1%**	**10,907**	**1,342**
0020-SUPPLIES AND MATERIALS	36	34	115	58	57	50%	37	-78
0030-ENERGY, COMM. AND BLDG RENTALS	2	2	10	2	8	80%	4	-6
0031-TELEPHONE, TELEGRAPH, TELEGRAM, ETC	78	78	107	83	24	22%	79	-28
0032-RENTALS—LAND AND STRUCTURES	2,336	1,855	1,247	1,181	66	5%	1,546	299
0033-JANITORIAL SERVICES	0	0	0	0	0	0%	0	0
0035-OCCUPANCY FIXED COSTS	0	0	0	0	0	0%	0	0
0040-OTHER SERVICES AND CHARGES	612	2,096	1,495	1,269	226	15%	904	-591
0041-CONTRACTUAL SERVICES—OTHER	271	141	584	212	372	64%	192	-392
0050-SUBSIDIES AND TRANSFERS	0	0	1,341	1,308	33	2%	0	-1,341
0070-EQUIPMENT & EQUIPMENT RENTAL	246	141	540	379	161	30%	221	-319
Subtotal Non-Personnel Services (NPS):	**3,581**	**4,347**	**5,439**	**4,492**	**947**	**5%**	**2,983**	**-2,456**
Gross Funds	**11,514**	**13,277**	**15,004**	**13,947**	**1,057**	**7%**	**13,890**	**-1,114**

FTEs

Appropriated Fund	FY 2014 Actual FTEs	FY 2015 Actual FTEs	FY 2016 Approved FTEs	FY 2016 Actual FTEs	FY 2016 FTE Variance	% Variance	FY 2017 Approved Budget	Variance Over FY 2016 Budget
Special Purpose Revenue	66.4	80.1	80.5	73.5	7.0	9%	80.6	0.8
Federal Grant Funds	1.6	2.9	3.1	3.1	0.0	0%	4.0	0.2
Gross Funds	**68.0**	**83.0**	**83.6**	**76.6**	**7.0**	**8%**	**84.6**	**1.0**

Note: The reduction the in the FY 2017 budget results from the absence of CSG 50 budget (Subsidies and Transfer/refunds to utility companies).

VOLVE INSPIRE

LIST OF CURRENT AND OPEN FORMAL CASES AND ISSUES IN 2016

Electric

1. **FC 766** Commission's fuel adjustment clause audit and review program
2. **FC 982** Electric Quality of Service Standards (EQSS), monthly outage reports, outage investigations, and follow-up and electric service restoration issues
3. **FC 1017** Pepco's default Standard Offer Service (SOS) for electricity customers who have not chosen an alternative generation supplier and transmission rate deadband filings
4. **FC 1050** Mid-Atlantic Distributed Resources Initiative (MADRI) model small generator interconnection procedures
5. **FC 1056** Pepco's implementation of Advanced Metering Infrastructure (AMI) including the deployment of smart meters and the development and implementation of a customer education program through the AMI Customer Education Working Group
6. **FC 1076** Pepco's rate case and related Cost Allocation Manual (CAM) and management audit issues
7. **FC 1085** Commission's investigation into a launch of a purchase of receivables (POR) program in the District of Columbia and the implementation of the POR program (Formal Case Closed in CY2016)
8. **FC 1086** Pepco's request for approval of a residential air conditioner direct load control program
9. **FC 1098** Washington Gas Energy Services' petition for an investigation into retail electricity supplier access to smart meter data
10. **FC 1099** Pepco's application for a certificate authorizing it to issue and sell up to $850,000,000.00 of long-term secured and unsecured debt securities
11. **FC 1101** OPC's petition for an investigation to establish a mechanism by which Pepco's management compensation will be adjusted for poor electric distribution system reliability performance in D.C.
12. **FC 1105** Commission's investigation into the business and solicitation practices of Starion Energy in the District
13. **FC 1114** Commission's investigation of the policy, economic, legal and technical issues and questions related to establishing a dynamic pricing plan in the District of Columbia. Suspended as of May 13, 2015, pursuant to Commission Order No. 17877
14. **FC 1116** Pepco/DDOT's application for approval of the Power Lines Underground Projects Plan
15. **FC 1117** Pepco's formal notice of plans to construct four 138 kV underground transmission circuits between Little Falls Parkway in Maryland and Pepco's Van Ness Substation in Northwest, D.C.

16. **FC 1119** Merger of Exelon Corporation, Pepco Holdings, Inc., Potomac Electric Power Company, Exelon Energy Delivery Company, LLC and New Special Purpose Entity, LLC

17. **FC 1120** Commission's investigation into the Residential Aid Discount

18. **FC 1121** Pepco's financing order application D.C. PLUG Initiative

19. **FC 1123** Pepco's formal notice of plans to construct a 230 kV/138 kV/13 kV substation and four 230 kV/138 kV underground transmission circuits on Buzzard Point in Southwest, D.C.

20. **FC 1124** Pepco's application for authorization to issue $750,000,000.00 of long-term secured or unsecured debt securities

21. **FC 1131** Commission's investigation into the Business Practices of Solar Solution, LLC

22. **FC 1132** Pepco's notice of tenants' rights and options and preliminary election card (Formal Case Closed in CY2016)

23. **FC 1136** Pepco's formal notice of plans to construct two 230 kV underground transmission circuits on Buzzard Point in Southwest, D.C.

24. **FC 1139** Pepco's application for authority to increase existing retail rates and charges for electric distribution service (Formal Case Opened in CY2016)

NATURAL GAS

1. **FC 787** WGL's application for authority to increase existing rates and charges for gas service

2. **FC 874** WGL's natural gas procurement plans

3. **FC 977** Commission's establishment and monitoring of WGL's quality of service standards

4. **FC 1027** Commission's investigation and monitoring of water leaks into WGL's distribution system, monitoring WGL's implementation of a vintage coupling encapsulation program, and the approval of a cost recovery mechanism

5. **FC 1089** Commission's development of natural gas pipeline safety rules and regulations

6. **FC 1106** Commission's investigation of WGL's Interruptible service customer class, the operation of WGL's distribution charge adjustment, how WGL's Class Cost of Service Study accounts for revenues from certain classes of customers, the proper design of interruptible service rates, and related issues

7. **FC 1110** WGL's application for approval of a weather normalization adjustment (Formal Case Closed in CY2016)

8. **FC 1115** WGL's request for approval of a revised accelerated pipeline replacement plan

9. **FC 1122** WGL's application for authority to issue debt securities and preferred stock

10. **FC 1126** OPC's complaint against WGL regarding its unlawful compensation of competitive service providers in violation of its Rate Schedule No. 5

VOLVE INSPIRE

11. **FC 1127** Commission's establishment of a discount program for low-income natural gas customers in the District of Columbia

12. **FC 1128** Integrys Energy Services—Natural Gas, LLC for itself and in its capacity as agent for Pepco Energy Services, Inc., Novec Energy Solutions, Inc., Direct Energy Services, LLC, and Bollinger Energy, LLC's complaint regarding Operational Flow Order Noncompliance Penalties Levied by WGL for the period January through March, 2014

13. **FC 1129** Commission's investigation into default gas service provided by Washington Gas Light Company through the Purchase Gas Charge in the District of Columbia

14. **FC 1133** WGL'S application for approval of special contract

15. **FC 1134** Commission's investigation into the Procurement Cost Adjustment (PCA) for Standard Offer Services (SOS)

16. **FC 1135** WGL's request to establish a regulatory asset

17. **FC 1137** WGL's application for authority to increase existing rates and charges for gas service; and to revise terms and conditions related to gas service in the District of Columbia (Formal Case Opened in CY2016)

18. **FC 1138** Commission's investigation into WGL's new billing system and process and the potential impact on customers and competitive natural gas suppliers (Formal Case Opened in CY2016)

19. **FC 1140** Commission's investigation into the establishment of a purchase of receivables program for natural gas suppliers and their customers in the District of Columbia (Formal Case Opened in CY2016)

20. **FC 1141** OPC's petition for an investigation into the Pipe Replacement and Meter Relocation Practice of WGL (Formal Case Opened in CY2016)

TELECOM

1. **FC 892 and TA** Requests for certification of Competitive Local Exchange Carriers (CLECs)

2. **FC 950** Commission's investigation into the Payment Center Operations of Verizon

3. **FC 962** Implementation of D.C. and Federal Telecommunications Competition Acts, including establishment of unbundled network element (UNE) rates

4. **FC 988** D.C. Universal Service Trust Fund (DCUSTF) and Telecommunications Relay Service (TRS) issues

5. **FC 990** Establishment and monitoring, wholesale and retail telecommunications quality of service standards for the District of Columbia and investigations of service quality in the telecommunications industry

6. **FC 1057** Verizon's petition for approval of Price Cap Plan 2007 and monitoring Verizon's promotional offerings

7. **FC 1090** OPC's request for an investigation into the reliability of Verizon's telecommunications infrastructure in the District of Columbia

INFORM INV

8. **FC 1102** Commission's investigation into the continued use of Verizon Washington, D.C., Inc.'s copper infrastructure to provide telecommunications services

9. **FC 1125** Orders, filings, and reports on the Consumer Education Program and Utility Discount Program Education Working Group

MULTI-UTILITY

1. **FC 712** Commission's rules, including the mandatory e-filing rulemaking and the implementation of the D.C. Council's Act regarding fines and forfeitures

2. **FC 1009** Commission's investigation into affiliated activities, promotional practices, and codes of conduct of regulated gas and electric companies (Formal Case Closed in CY2016)

3. **FC 1078** Commission's investigation into the adequacy of billing information provided to residential customers on monthly utility bills (Formal Case Closed in CY2016)

4. **FC 1130** Commission's investigation into Modernizing the Energy Delivery Structure for Increased Sustainability

PEPCO—EXELON MERGER COMMITMENTS

The DCPSC approved the Pepco-Exelon Merger on March 23, 2016 (F.C. No. 1119). In our efforts to keep the public informed regarding Pepco-Exelon's Merger Commitments, the Commission has developed a tracking system to monitor and update Pepco and Exelon's progress in meeting their 128 commitments.

Pepco-Exelon Commitments Tracking Matrix is available at http://dcpsc.org/fc1119mergertrackingmatrix.aspx

Matrix of Commitments From the Pepco-Exelon Merger
FC 1119 2016-E-1615 Order No. 18160 Attachment B

Completed | Merger Completion Date: March 23, 2016

* Exelon Corporation ("Exelon"), Pepco Holdings, Inc. ("PHI"), the Potomac Electric Power Company ("Pepco"), Exelon Energy Delivery Company, LLC ("EEDC"), and New Special Purpose Entity, LLC ("SPE") (collectively, the "Joint Applicants")

Due Date w / in the next 60 days | Version Date: September 15, 2017

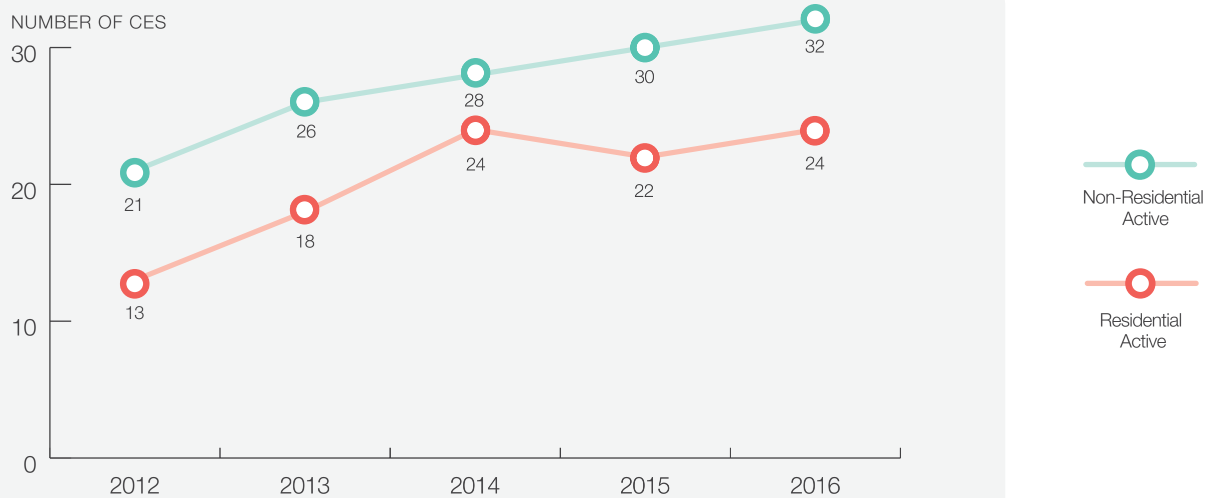
Past Completion Date | * Updated once a month on or about the 15th of each month.

Condition No.	Condition Terms	Due Date	Completed and / or Pending Verification	Relevant Filings
1	**Customer Investment Fund** 1. Exelon will provide a Customer Investment Fund ("CIF") to the District of Columbia with a value totaling $72.8 million. This represents a benefit of $215.94 per distribution customer (based on a customer count of 337,117 as of December 31, 2013). Pepco will not seek recovery of the CIF in utility rates. [The Commission directed and the] Joint Applicants* agree that the CIF shall be allocated as set forth in Paragraphs 2 through 7 below:	See Conditions 2 through 7 Below		See DR 1119-2016-E-311
2	**Customer Base Rate Credit** 2. Exelon will provide a Customer Base Rate Credit in the amount of $25.6 million, which can be used as a credit to offset rate increases for Pepco customers approved by the Commission in any Pepco base rate case filed after the close of the Merger until the Customer Base Rate Credit is fully utilized. Exelon will also provide an Incremental Offset of up to $1 Million per year to be treated as a regulatory asset with a 5% return. The parties in the next Pepco base rate case will be provided an opportunity to propose to the Commission how the Customer Base Rate Credit and Incremental Offset will be allocated among Pepco customers and over what period of time. No portion of the Customer Base Rate Credit shall be recovered in utility rates.	FC 1139 and Subsequent Rate Cases		
3	**Residential Customer Bill Credit** 3. Exelon will fund a one-time direct bill credit of $14 million to be distributed among Pepco residential customers (including RAD Program customers). The credit shall be provided within sixty (60) days after the Merger closing based on active accounts as of the billing cycle commencing thirty (30) days after the Merger closing.	Credit first reflected on customer bills on April 19, 2016.	April 19, 2016	See FC 1119 -2016 - E - 1619
4	**Creation of Formal Case No. 1119 Escrow Fund** 4. Within sixty (60) days after Merger close, Exelon shall provide Pepco with the funds and Pepco shall establish a Formal Case No. 1119 Escrow Fund with two subaccounts: the Formal Case No. 1130 MEDSIS Pilot Project Fund Subaccount and The Energy Efficiency and Energy Conservation Initiatives Fund Subaccount The escrowed funds shall be placed in an interest-bearing account or invested in instruments issued or guaranteed as to principle and interest and shall be administered by a third party administrator to be paid from a portion of the interest proceeds with the approval of the Commission. Any unused interest will be deposited proportionally into the two subaccounts.	May 22, 2016	May 20, 2016	See FC 1130 MEDSIS Staff Report

TABLES AND CHARTS

ELECTRICITY

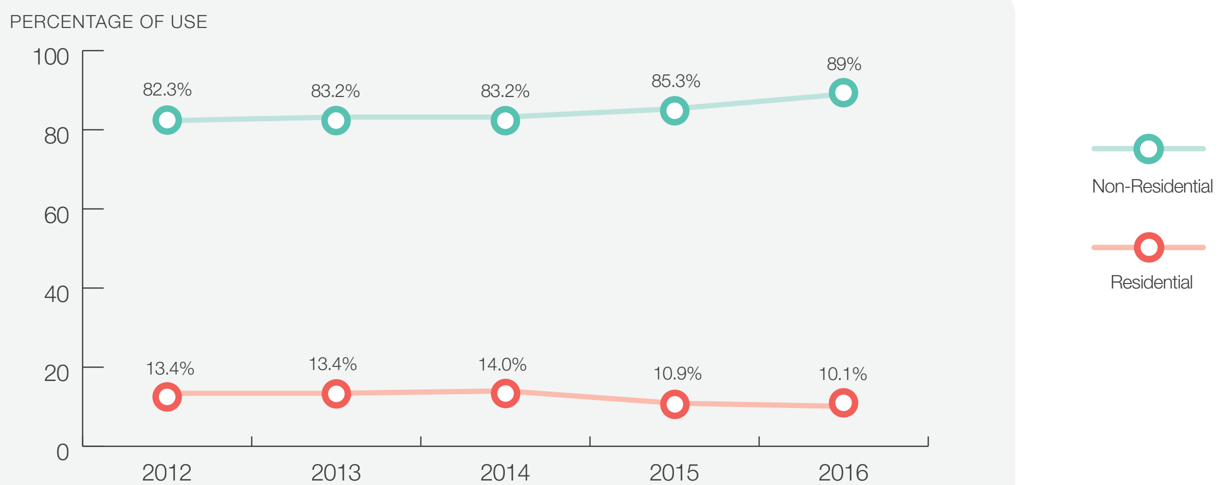
1. ACTIVE RESIDENTIAL AND NON-RESIDENTIAL COMPETITIVE ELECTRIC SUPPLIERS (CES) LICENSED TO PROVIDE SERVICE IN D.C. IN CY 2012–CY 2016



The number of active residential and non-residential **Competitive Electric Suppliers (CES)** in D.C. both increased by two in CY 2016.

Cumulative as of the end of Calendar Year (CY) 2016
Source: Pepco's Monthly Market Monitoring Report

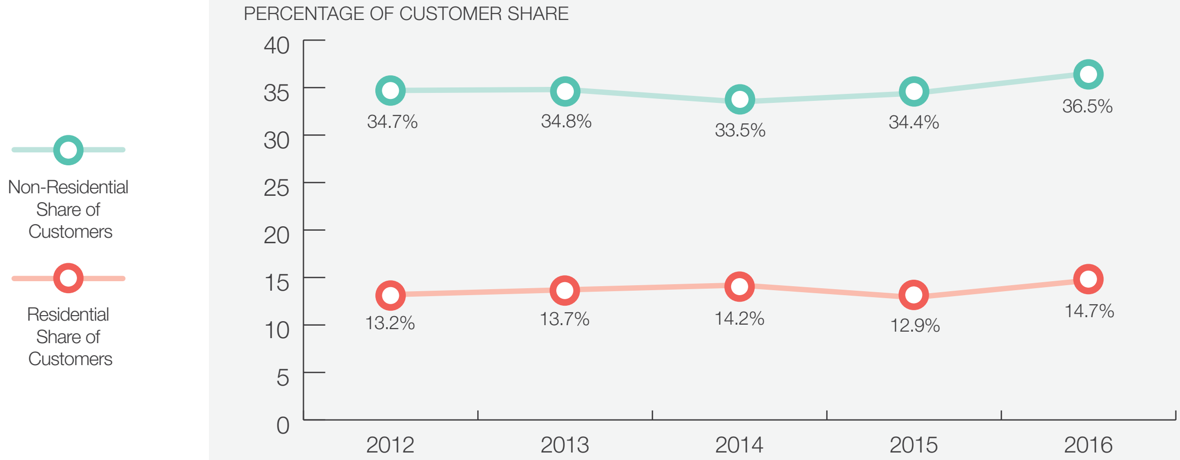
2. COMPETITIVE ELECTRIC SUPPLIERS' (CES) SHARE OF ELECTRICITY USAGE (% OF MWHS USED BY CES CUSTOMERS) IN CY 2012–CY 2016



In CY 2016, the **Competitive Electric Suppliers' (CES)** share of electricity usage in D.C. by residential customers decreased by 0.8% from 10.9% to 10.1%. The non-residential share of electricity usage increased by 3.7% from 85.3% to 89.0%.

Source: Pepco's Monthly Market Monitoring Report

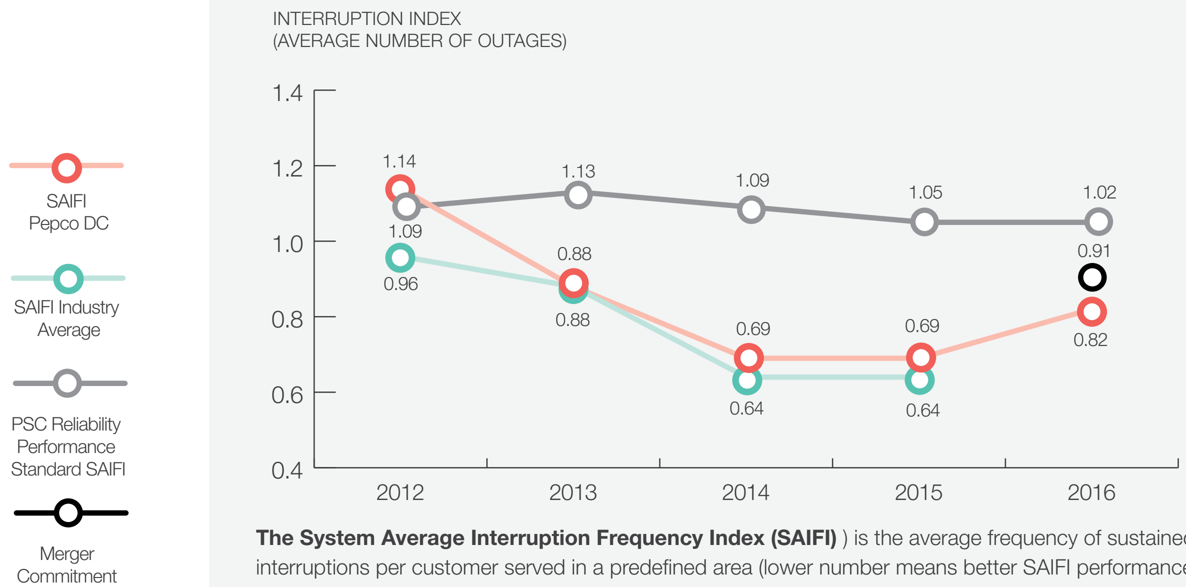
3. COMPETITIVE ELECTRIC SUPPLIERS' (CES) SHARE OF CUSTOMERS IN D.C. (%) IN CY 2012–CY 2016



In CY 2016, **the Competitive Electric Suppliers' (CES)** share of residential customers increased by 1.8% from 12.9% to 14.7%. The share of non-residential customers increased by 2.1% from 34.4% to 36.5%.

Source: DCPSC

4. SYSTEM AVERAGE INTERRUPTION FREQUENCY INDEX (SAIFI) IN CY 2012–CY 2016



The System Average Interruption Frequency Index (SAIFI)) is the average frequency of sustained interruptions per customer served in a predefined area (lower number means better SAIFI performance).

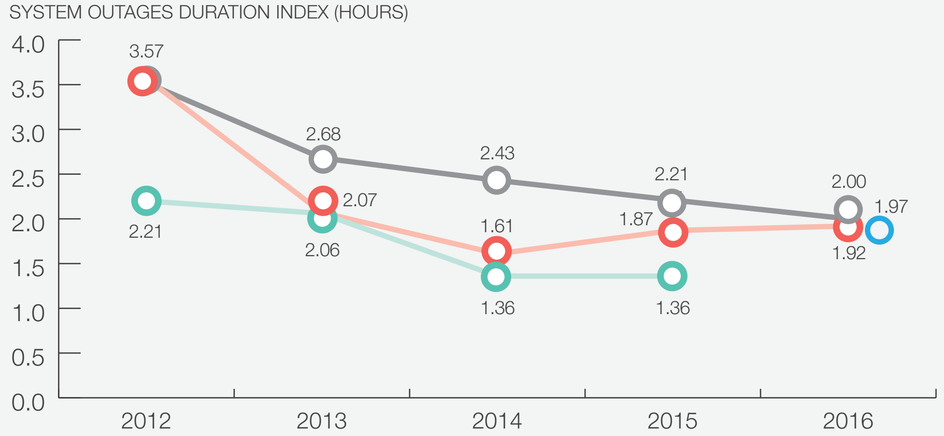
Pepco's SAIFI decreased each year from 2012 through 2015. In 2016, Pepco's performance in the District was slightly higher than the previous year (0.82 compared to 0.69) and was better than the DCPSC standard since 2013.

In 2016, Pepco's SAIFI of 0.82 was lower than DCPSC Reliability Performance Standard (EQSS SAIFI) of 1.02 and lower than FC. No. 1119 Merger Commitment SAIFI of 0.91.

**Note: 2016 SAIFI Industry Average is IEEE Industry median; Mean values not available. Industry update for 2016 is not available.*

Source: Pepco's 2017 Consolidated Report

5. SYSTEM AVERAGE INTERRUPTION DURATION INDEX (SAIDI) IN CY 2012–CY 2016



The System Average Interruption Duration Index (SAIDI) is the average length of time that the customers served in a predefined area are interrupted. In other words, SAIDI measures the average duration of system outages (lower number means better SAIDI performance).

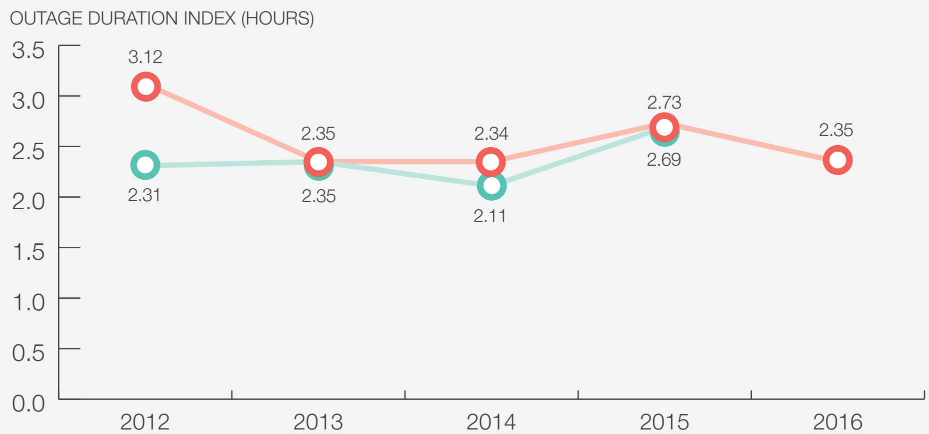
Since 2012, SAIDI has been better than the DCPSC standard.

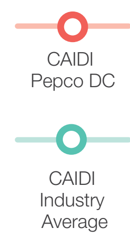
In 2016 there was an increase in SAIDI from 1.87 (2015) to 1.92 (2016). However, the 2016 performance is still better than the DCPSC Standard of 2.00 and the Merger Committment SAIDI standard of 1.97

**Note: 2016 SAIDI Industry Average is IEEE Industry median; Mean values not available. Industry update for 2016 is not available.*

Source: Pepco's 2017 Consolidated Report

6. CUSTOMER AVERAGE INTERRUPTION DURATION INDEX (CAIDI) IN CY 2012–CY 2016





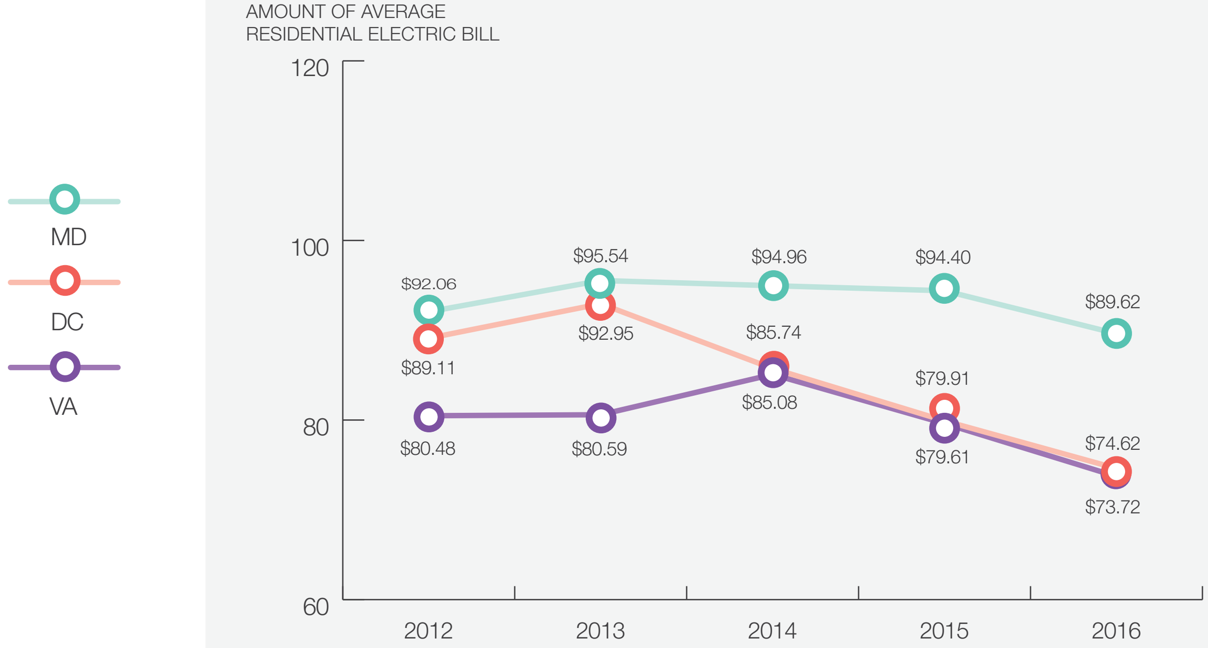
The Customer Average Interruption Duration Index (CAIDI) is the average time required to restore service to the customers experiencing a sustained interruption. In other words, it measures the average duration of outages per customer (lower number means better CAIDI performance).

In 2013, Pepco's CAIDI decreased from 3.12 to 2.35, matching the industry average. In 2014, Pepco's CAIDI decreased to 2.34, slightly below the industry average for the previous year. In 2015 there was an increase in CAIDI to 2.73. In 2016 there was a decrease in CAIDI to 2.35.

**Note: 2016 CAIDI Industry Average is IEEE Industry median; Mean values not available. Industry update for 2016 is not available.*

Source: Pepco's 2017 Consolidated Report

7. AVERAGE RESIDENTIAL ELECTRIC BILLS IN D.C., MD, & VA* IN CY 2012–CY 2016



In D.C., Pepco's average residential electric bill includes generation, transmission and distribution and all additional charges, including federal and D.C. taxes and surcharges. In CY 2016, the average monthly consumption for residential customers (both winter and summer seasons) was 604 kWh.

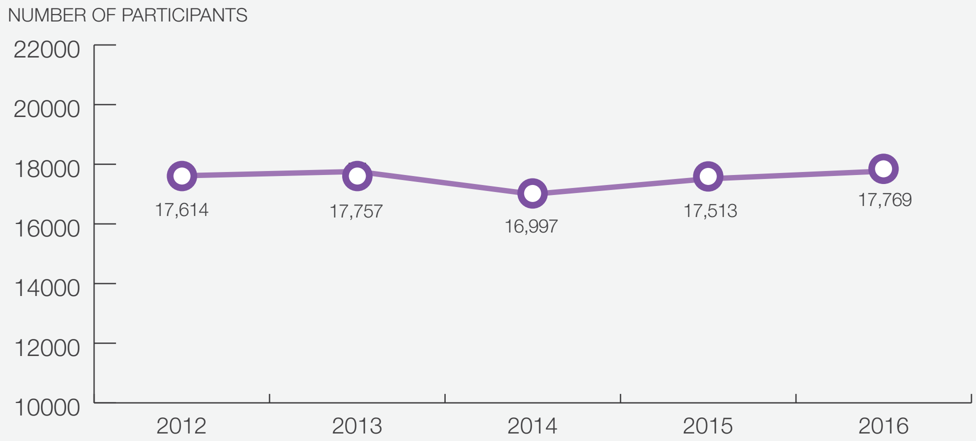
In CY 2016, average residential electric bills continued to be lower in D.C. than in Pepco's MD service territory. The average bills in D.C. were similar to the ones in Northern VA, where electric service is provided by Dominion Power.

The distribution charge (including fees, taxes and surcharges) represents about 35% of the average residential electric bill. The distribution charge is regulated by the DCPSC. The other 65% of the bill represents electricity generation and charges not regulated by the DCPSC such as transmission charges and fees. The electricity is sold by Pepco in its role as the default provider of Standard Offer Service (SOS) and by licensed competitive electric suppliers.

* D.C. and Maryland statistics refer to Pepco. Virginia statistics refer to Dominion Power in Northern Virginia.

Source: Pepco and DCPSC

8. ENROLLMENT IN PEPCO'S LOW INCOME RESIDENTIAL AID DISCOUNT (RAD) PROGRAM* IN CY 2012–CY 2016



The number of participants enrolled in Pepco's Low Income Residential Aid Discount (RAD) program dropped by 4.3% between CY 2013 and CY 2014. In CY 2015, enrollment increased by 3.3% from 2014 levels. In CY 2016, the trend of the increase in enrollment continued at 1.4% from 2015 levels.

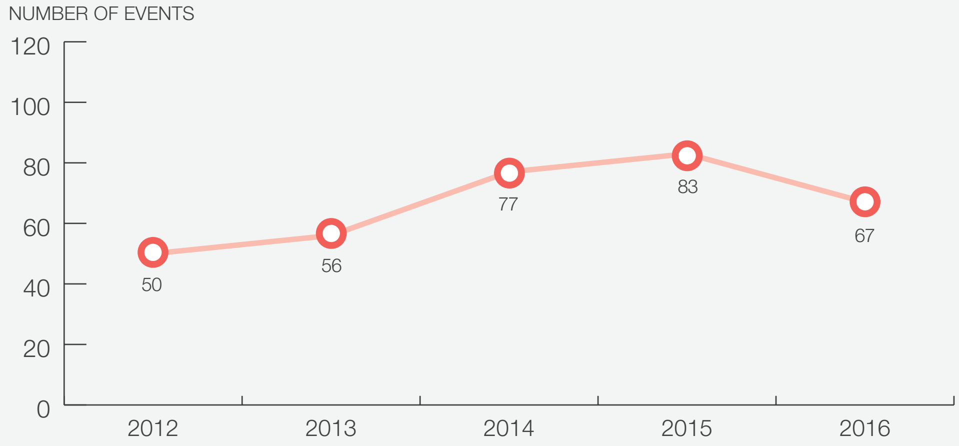
The DCPSC, in Order No. 17545, dated July 14, 2014, opened Formal Case No. 1120 to investigate the structure and application of low-income assistance for electricity customers and to design a discount program for low-income electricity customers that will work within the District's current restructured market.

The Commission convened a Technical Conference on July 23, 2014 and five additional meetings ending on March 19, 2015. On December 15, 2015, the Commission, in Order No. 18059, adopted a new methodology for computing the Residential Aid Credit (RAC) for eligible low-income electricity customers. The methodology for computing that Residential Aid Discount was changed to reflect a Residential Aid Credit equal to the full distribution charge each month, thereby allowing portability of the discount.

** Annual Average Numbers are used*

Source: Pepco & DCPSC

9. TOTAL NUMBER OF MANHOLE EVENTS (EXPLOSIONS, FIRES AND SMOKING MANHOLES) IN CY 2012–CY 2016



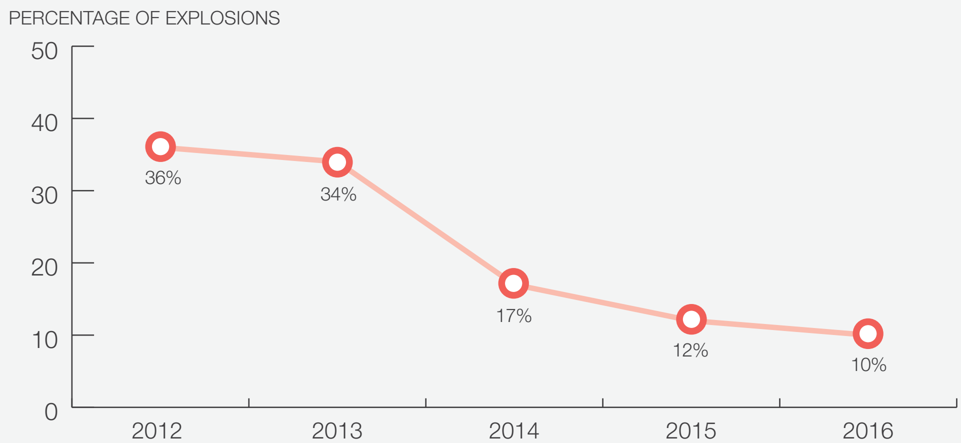
Reportable manhole events for CY 2016 decreased by 16 events when compared to CY 2015.

Reportable events may be considered a subset of underground (UG) equipment failures, and are comprised of equipment failures for which there is a significant visual result (smoke, flames, cover displaced). Among UG equipment failures, the most frequent involve cable.

Of these 67 manhole events, 50 were classified as Smoking Manholes, seven were classified as Manhole Explosions, and 10 were classified as Manhole Fires.

Source: Pepco's 2017 Annual Consolidated Report

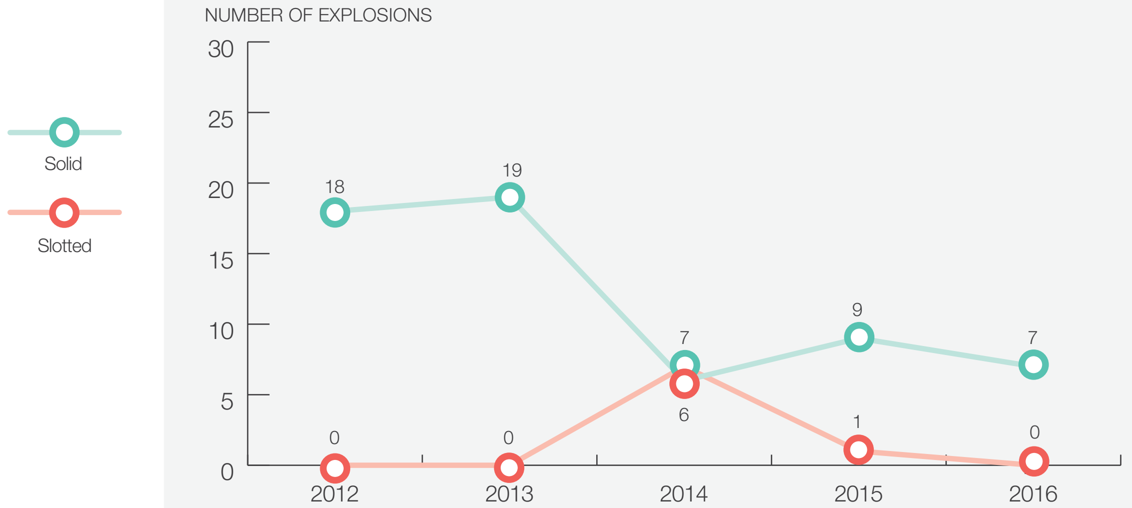
10. EXPLOSIONS AS A PERCENTAGE OF TOTAL MANHOLE EVENTS IN CY 2012–CY 2016



From CY 2012 through CY 2016, most of the reportable events were manhole smoking events. Explosions as a share of manhole incidents decreased from 34% in 2012 to 17% in CY 2014, to 12% in CY 2015 and continued to decline to 10% in CY 2016.

Source: Pepco's 2017 Annual Consolidated Report

11. NUMBER OF EXPLOSIONS FOR SLOTTED VS. SOLID MANHOLE COVERS IN CY 2012–CY 2016

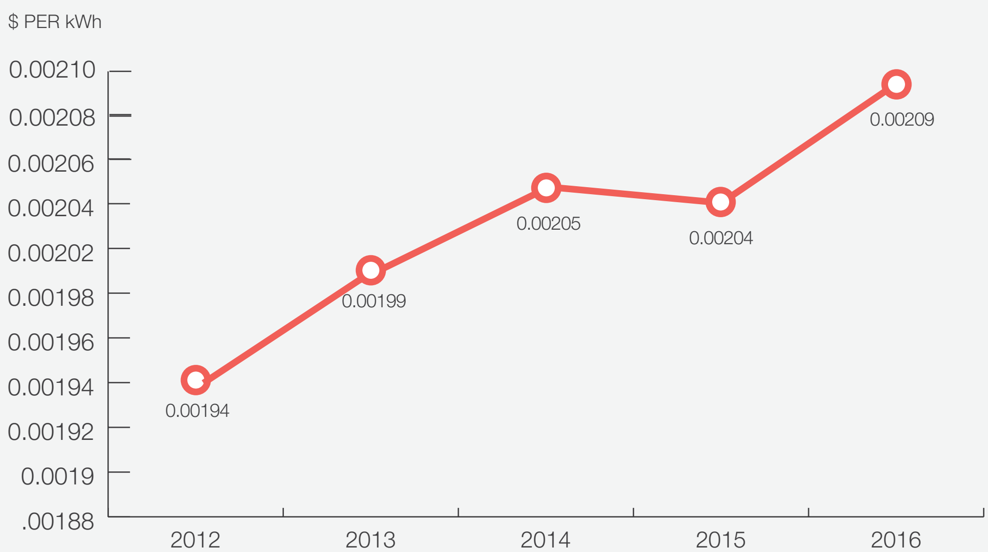


Slotted manhole covers are designed to minimize the frequency and impact of manhole events by allowing gas and smoke to vent from manholes in the event of an underground failure. Slotted manhole covers allow energy to disperse more easily when an event occurs, thereby preventing buildup of gases to potentially explosive proportions.The trade-off when installing slotted covers is that they allow more water and street run-off contaminants to enter the manhole than solid covers.

In CY 2016 there were seven explosions in solid manholes and none in slotted manholes.

Source: Pepco's 2017 Annual Consolidated Report

12. PEPCO'S PUBLIC SPACE OCCUPANCY SURCHARGE (RIDER PSOS) IN CY 2012–CY 2016 ($ PER KWH)



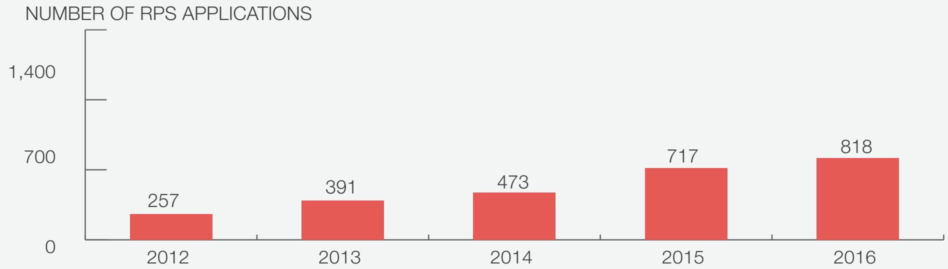
Pepco's **Rights-of-Way (ROW) Fee** is called a **Public Space Occupancy Surcharge Rider (Rider PSOS)** and it appears as a separate surcharge on Pepco's customers' bills.

Pepco files proposed PSOS updates once a year in docket ET00-2. The surcharge update consists of two parts reflecting: 1) the payments to be made by Pepco to the District of Columbia for the current year, and 2) the over or under recovery from the prior year. The DCPSC audits the PSOS to verify the costs the Company pays the District to lease space in underground conduits.

The PSOS rate per kilowatt-hour began to increase in CY 2013 and CY2014 due to prior years' under recovery. The CY 2016 Rate increased from $0.00204 in CY 2015 to $0.00209 in CY 2016.

Source: DCPSC

13. NUMBER OF RENEWABLE PORTFOLIO STANDARD (RPS) APPLICATIONS RECEIVED BY THE DCPSC IN CY 2012–CY 2016



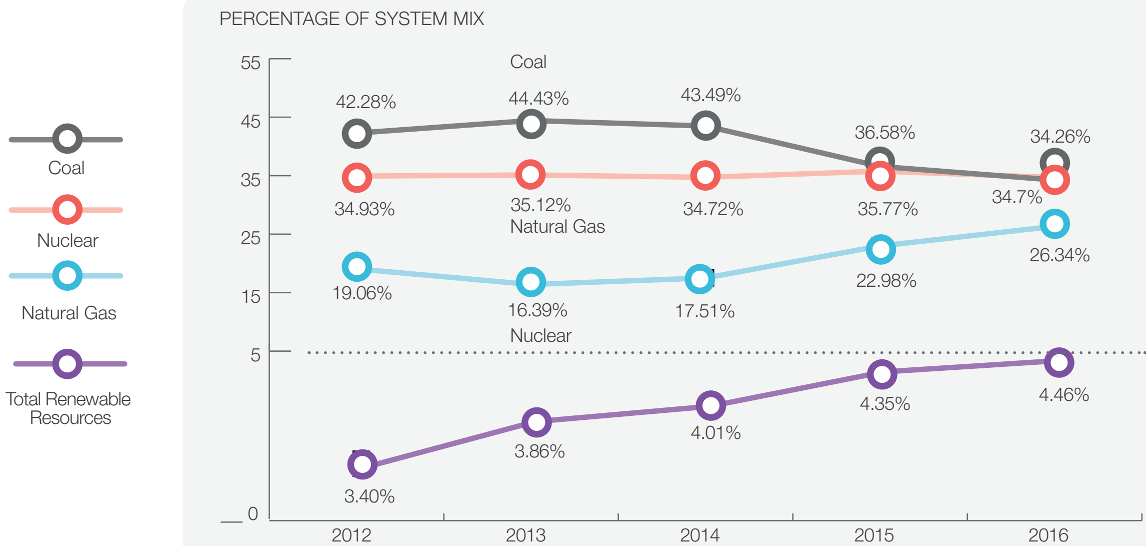
The impact of the Distributed Generation Emergency Amendment Act of 2011, which generally disallowed out-of-state solar energy systems explains the decrease in the number of Renewable Portfolio Standard (RPS) Applications in 2012.

However, that trend has now reversed. In CY 2012, the Commission received only 257 solar facility RPS applications, but in each subsequent year the number of applications increased. In CY 2015 there was a 52% increase in the applications compared to CY 2014.

In CY 2016 there was a 14% increase over CY 2015 to the high of 818.

Source: DCPSC

14. PJM SYSTEM MIX FOR THE PJM REGION, INCLUDING D.C. IN CY 2012–CY 2016



	2012	2013	2014	2015	2016
Coal	42.28%	44.43%	43.49%	36.58%	34.26%
Nuclear	34.93%	35.12%	34.72%	35.77%	34.70%
Natural Gas	19.06%	16.39%	17.51%	22.98%	26.34%
Oil	0.33%	0.19%	0.25%	0.28%	0.20%
Hydroelectric	0.82%	0.97%	0.95%	1.05%	1.04%
Other Renewable	2.58%	2.89%	3.05%	3.30%	3.42%
Captured Methane Gas	0.29%	0.29%	0.30%	0.32%	0.00%
Geothermal	0.00%	0.00%	0.00%	0.00%	0.13%
Solar	0.03%	0.05%	0.05%	0.07%	0.52%
Municipal Solid Waste	0.53%	0.52%	0.53%	0.55%	2.23%
Wind	1.62%	1.88%	1.95%	2.13%	0.23%
Wood, other biomass	0.11%	0.15%	0.23%	0.24%	4.46%

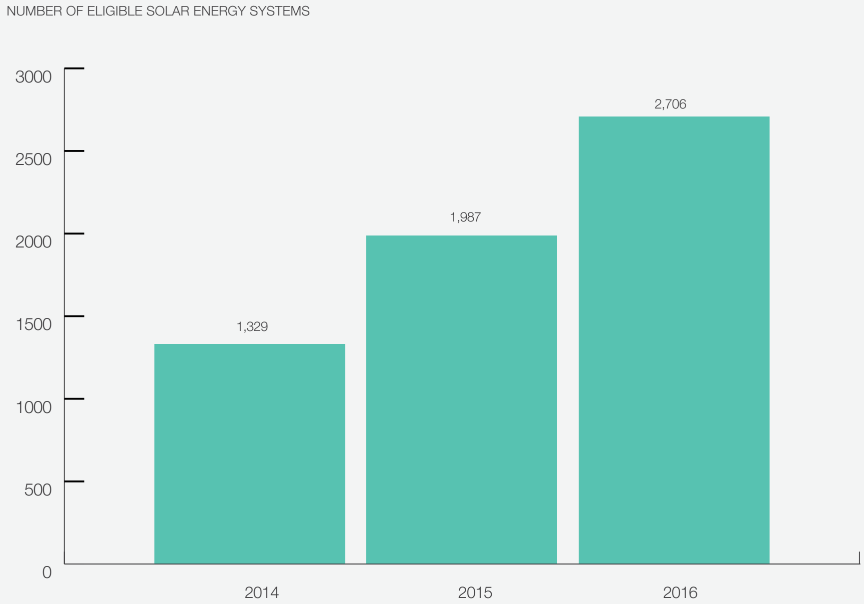
PJM Interconnection (PJM) is a regional transmission organization (RTO) that coordinates the buying, selling and delivery of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia.

The share of renewable resources in the PJM system mix for the PJM region of 13 states plus D.C., crossed the 4.00 % line in CY 2014. In CY 2016, the share of renewables in the PJM system mix was 4.46%.

Source: DCPSC

VOLVE INSPIRE

15. NUMBER OF SOLAR ENERGY SYSTEMS ELIGIBLE FOR RENEWABLE PORTFOLIO STANDARDS (RPS) PROGRAM IN D.C. IN CY 2014–CY 2016

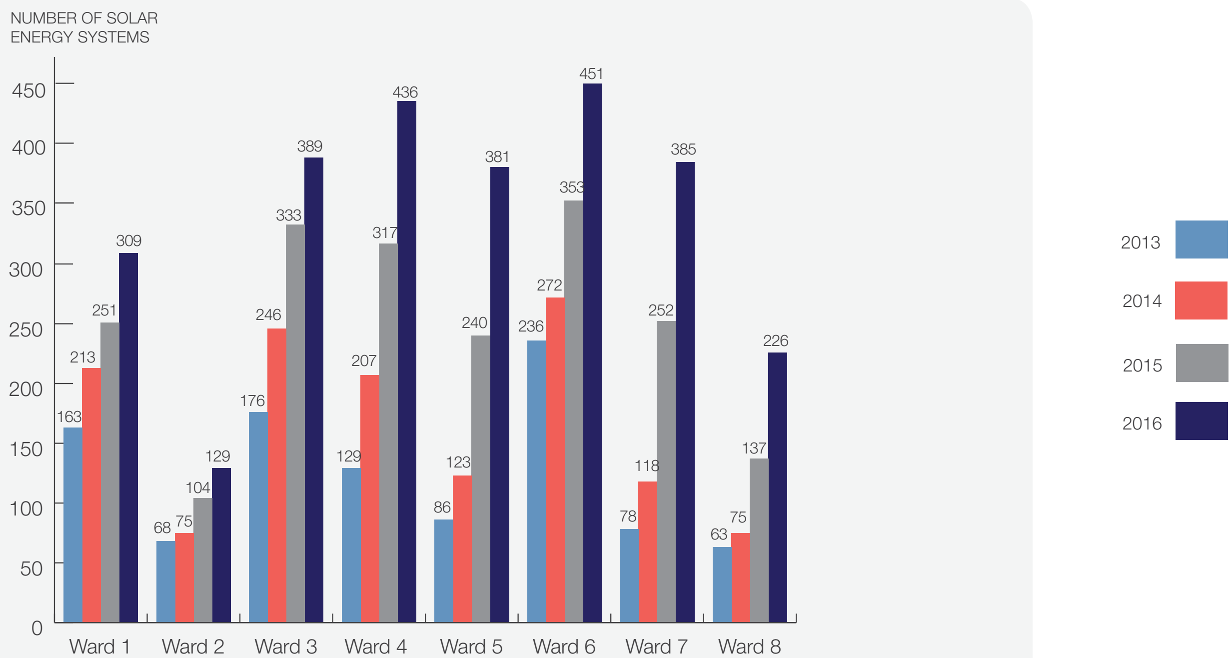


The number of Solar Energy Systems eligible for the **District's Renewable Portfolio Standards (RPS)** Program increased from 1,329 in 2014 to 1,987 in December 2015 and to 2,706 in December 2016 (an increase of approximately 36% year over year in 2016).

The total reported capacity associated with all of the all eligible solar facilities as of December 31, 2016 is about 50.8 MW, of which 30.2 MW is located with the District (the District's share is about 59% of the total).

Source: DCPSC

16. NUMBER OF SOLAR ENERGY SYSTEMS CERTIFIED BY DCPSC FOR SRECS IN D.C. BY WARD IN CY 2013–CY 2016



The number of Solar Energy Systems Certified by DCPSC for **Solar Renewable Energy Credits (SRECs)** for the **Renewable Portfolio Standards (RPS)** program in D.C. by Ward increased in all D.C. Wards in CY 2016 compared to CY 2015. The total number of certified solar energy systems increased by approximately 36% from 1,987 in CY 2015 to 2,706 in CY 2016.

Source: DCPSC

17. DEFAULT AND ACTIVE COMPETITIVE ELECTRIC SUPPLIERS (CES) SERVING THE DISTRICT IN CY 2016

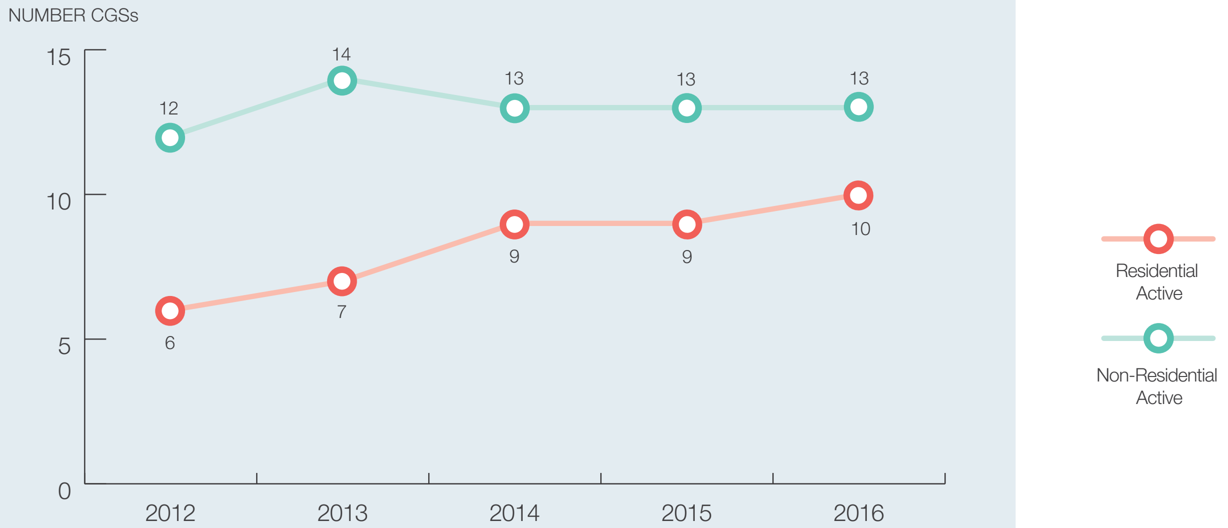
#	Company	Customer Service Telephone No.	Residential	Commercial
1	AEP Energy	(866) 258-3782	●	●
2	Agera Energy	(914) 236-1406	●	●
3	Ambit Energy	(877) 282-6248	●	●
4	Champion Energy Services	(888) 653-0094		●
5	Clearview Energy	(888) 257-8439	●	●
6	Consolidated Edison Solutions	(888) 210-8899	●	●
7	Constellation NewEnergy	(866) 237-7693	●	●
8	D.C. Gas and Electric	(855) 340-3243	●	●
9	Devonshire Energy	(617) 563-3765		●
10	Direct Energy	(866) 983-0800	●	●
11	Eligo Electric	(888) 744-8125	●	●
12	Energy Me	(855) 243-7270		●
13	Ethical Electric	(888) 844-9452	●	●
14	Horizon Power and Light	(866) 727-5658	●	●
15	IDT Energy	(877) 887-6866	●	●
16	Integrys Energy Services	(866) 920-9435		●
17	Liberty Power	(866) 769-3799	●	●
18	MidAmerican Energy	(800) 432-8574	●	●
19	NextEra Energy Services	(800) 882-1276	●	●
20	Noble Americas Energy Solutions	(877) 273-6772		●
21	PPL EnergyPlus	(800) 281-2000		●
22	Public Power	(888) 354-4415	●	●
23	NRG Home/Business	(855) 500-8703	●	●
24	GDF SUEZ Energy Resources NA	(866) 999-8374		●
25	Starion Energy	(800) 600-3040	●	●
26	Stream Energy	(202) 558-2002	●	●
27	UGI Energy Services	(800) 427-8545		●
28	Viridian Energy	(866) 663-2508	●	●
29	WGL Energy	(888) 884-9437	●	●
30	XOOM Energy	(877) 737-2662	●	●
31	PEPCO	(202) 833-7500	●	●
	Total CES and Pepco		**23**	**31**

Default and 30 Licensed Competitive Electric Suppliers (CES) serving the District as of December 31, 2016.
30 CES provided non-residential service and 22 provided residential service as of December 31, 2016.

VOLVE INSPIRE

NATURAL GAS

18. ACTIVE RESIDENTIAL AND NON-RESIDENTIAL COMPETITIVE GAS (CGS) SUPPLIERS LICENSED TO SERVE IN D.C. IN CY 2012–CY 2016

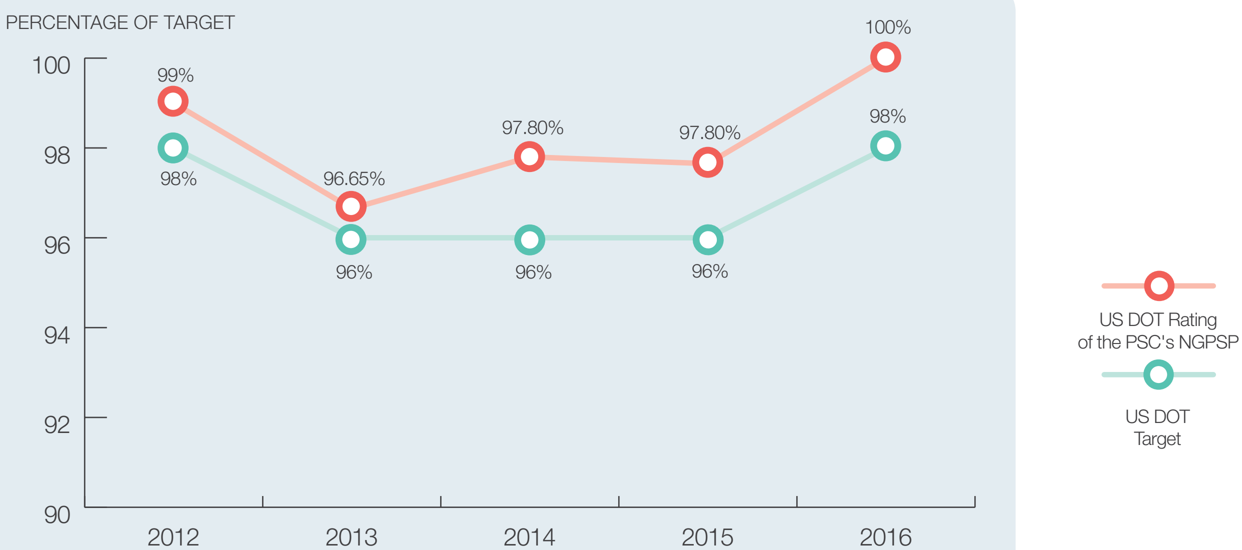


The number of Active Residential **Competitive Gas Suppliers (CGS)** increased by one in CY 2016 from nine in 2015. The number of Active Non-Residential CGS remained at 13 in CY 2016.

In 2016, the total number of CGS participating in the natural gas Customer Choice Programs in D.C. remained unchanged from the previous year.

Source: DCPSC

19. U.S. DOT RATINGS FOR THE DCPSC'S NATURAL GAS PIPELINE SAFETY PROGRAM IN CY 2012–CY 2016



The DCPSC's Natural Gas Pipeline Safety Program (NGPSP) is evaluated annually by U.S. DOT/PHMSA* in the areas of gas pipeline construction, operation, maintenance, records, drug and alcohol inspections and operator qualifications.

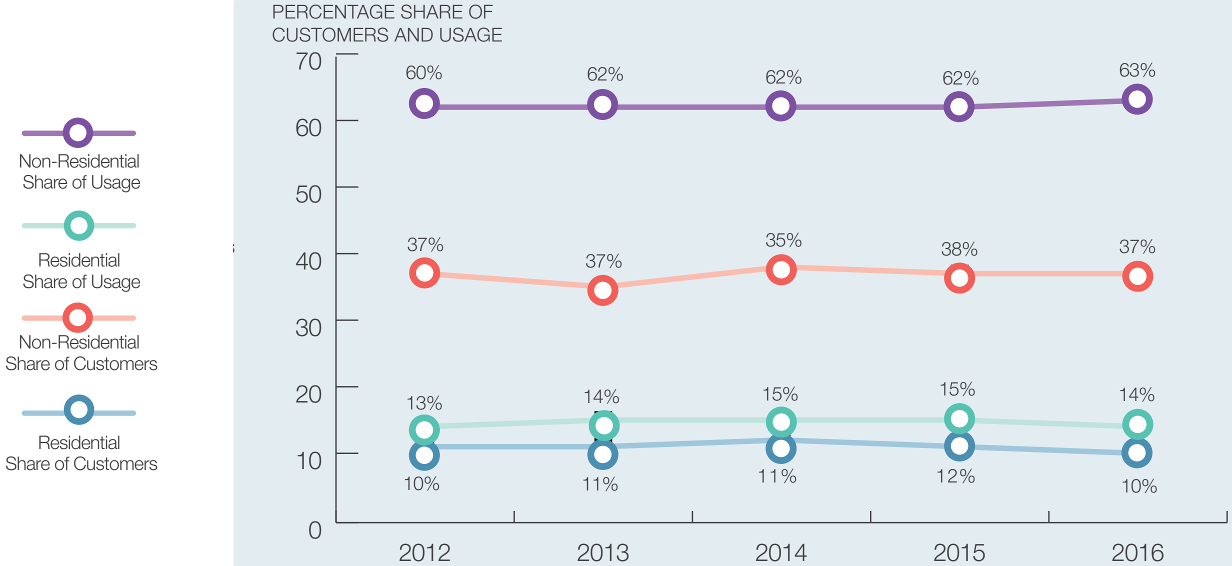
The DCPSC's goal is to achieve a rating equal to or better than the DOT target set each year. There is no 2016 audit result since the audit has yet to occur.

When the 2016 audit report is completed, the results will be available in the 2017 DCPSC Annual Report.

**DOT/PHMA—U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration.*

Source: DCPSC

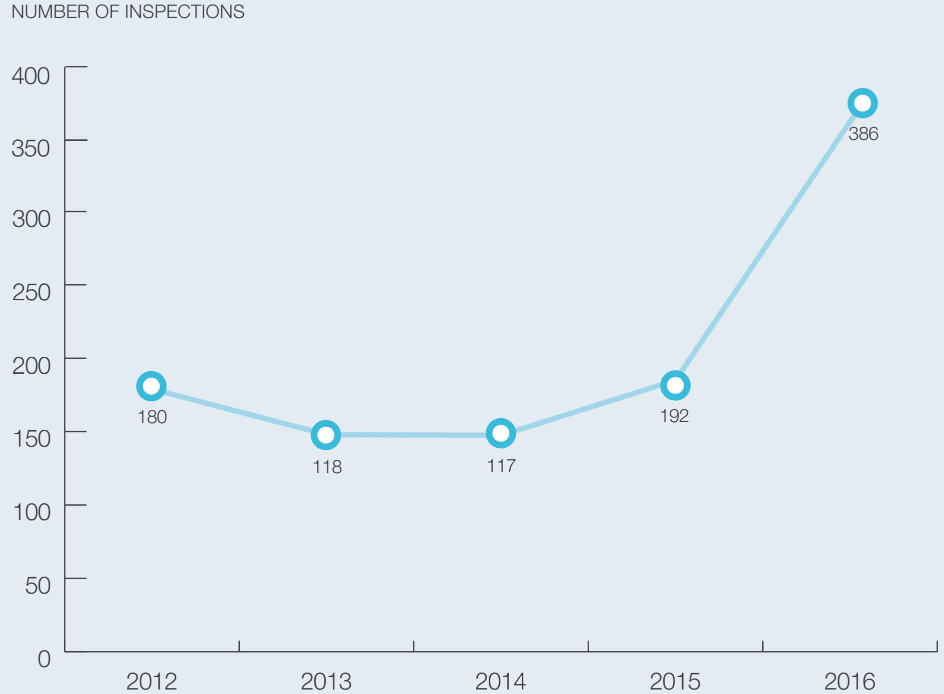
20. COMPETITIVE GAS SUPPLIERS' (CGS) SHARE OF CUSTOMERS AND SHARE OF USAGE IN CY 2012–CY 2016



Competitive Gas Suppliers' (CGS) residential and non-residential share of usage decreased and increased, accordingly by 1% in 2016. CGS' share of residential customers decreased by 1% and share of non-residential customers remained flat in CY 2016.

Source: DCPSC

21. NUMBER OF NATURAL GAS PIPELINE SAFETY FIELD INSPECTION ACTIVITIES PERFORMED IN CY 2012–CY 2016

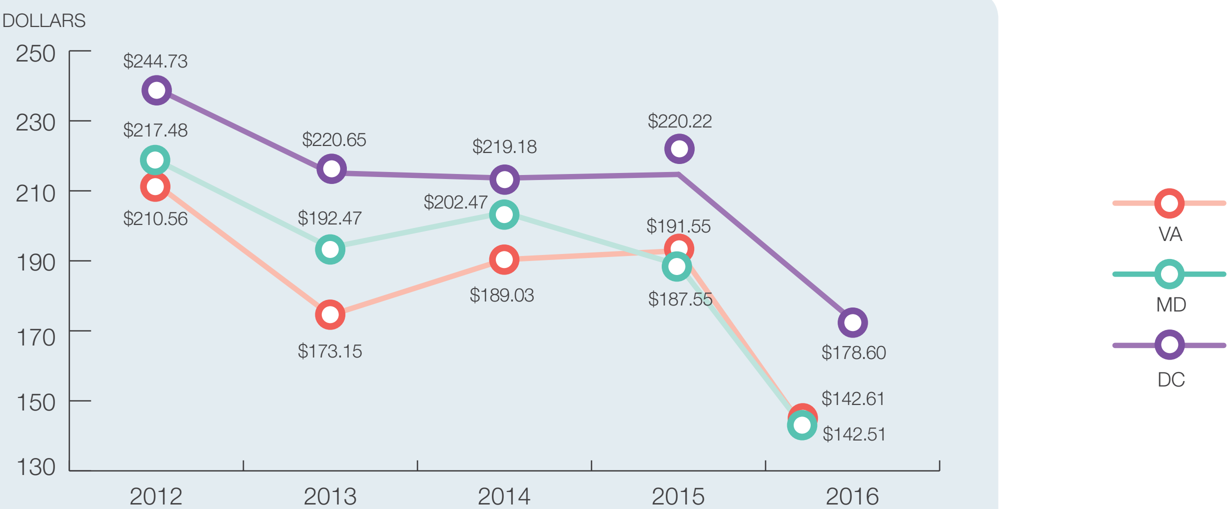


The number of natural gas pipeline safety field inspection activities increased from 117 in CY 2014 to 192 in CY 2015 and continued to increase to 386 in CY 2016.

The increase in activities was due to the recruitment and completed training of additional pipeline safety engineers/inspectors, acquisition of additional transportation and full deployment of all inspectors.

Source: DCPSC

22. WGL'S AVERAGE RESIDENTIAL NATURAL GAS BILLS IN D.C., MD AND VA (200 THERMS OF USAGE)* IN CY 2012–CY 2016

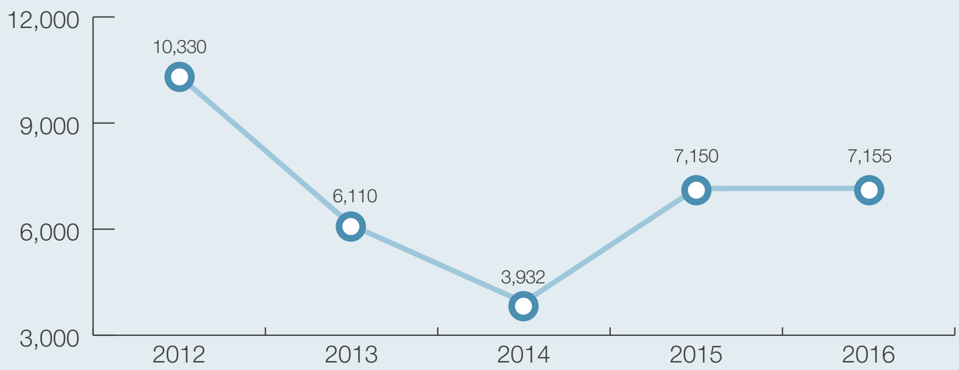


The average WGL bill includes the purchased gas charge, transmission charges, distribution charges and all applicable taxes, fees and surcharges. The average bill in D.C. is higher than in Maryland and Virginia because of taxes and rights-of-way fees. The average bill has tended to decrease as the purchased gas charge has declined since CY 2012.

Note: 200 therms of usage applies to all three jurisdictions served by WGL (D.C., MD and VA).

** As of January of each year*
Source: WGL and DCPSC

23. ENROLLMENT IN WGL'S LOW INCOME RESIDENTIAL ESSENTIAL SERVICE (RES) PROGRAM* IN CY 2012–CY 2016



Participation in WGL's low income **Residential Essential Service (RES)** program decreased by 36% in CY 2014, according to the enrollment numbers provided by WGL.

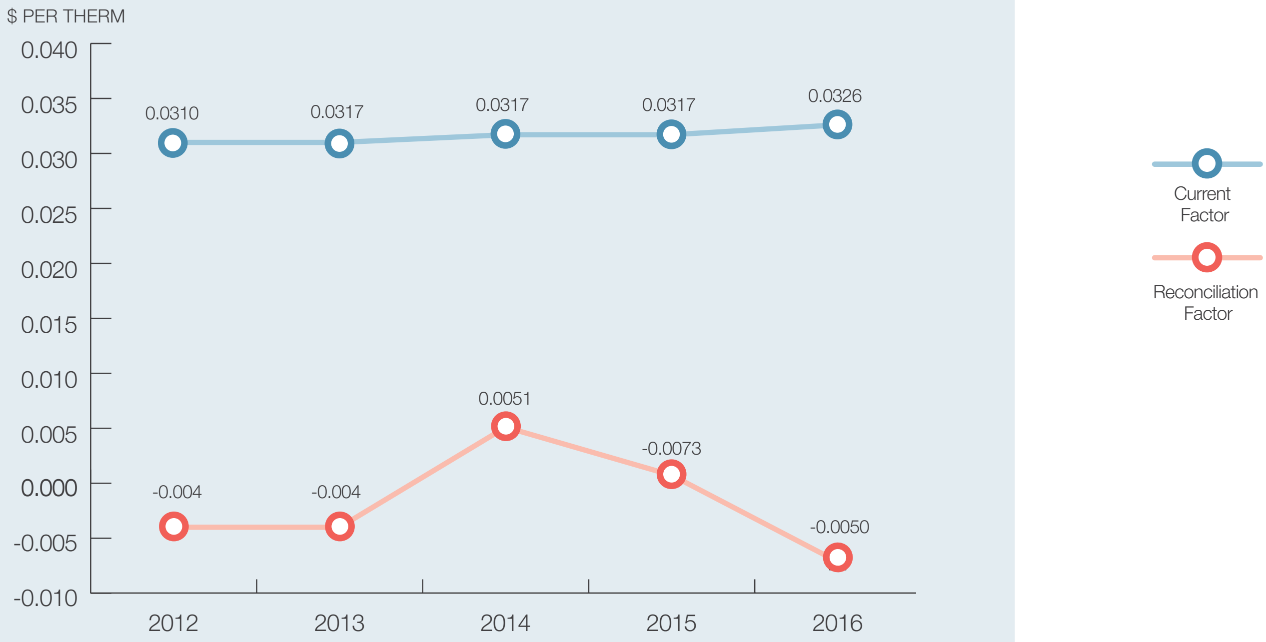
On July 14, 2014, the Council of the District of Columbia enacted the Residential Essential Service Subsidy Stabilization Emergency Amendment Act of 2014 (Act), which returned jurisdiction and responsibility over RES to the DCPSC.

On September 8, 2014, in accordance with the Act, the DCPSC, by Order No. 17624, opened Formal Case No. 1127. The Order designated the RES as the discount program for low-income natural gas customers in D.C., adopted the income level eligibility criteria duplicating the federal Low Income Home Energy Assistance Program (LIHEAP) income requirements and designated DOEE as the entity to administer the outreach and enrollment for the RES Program. There was an 82% increase in the number of RES participants in CY 2015 from 3,932 in CY 2014 to 7,150 in CY 2015. In CY 2016, the number of RES participants increased by 5 from 7,150 in CY 2015.

*The Department of Energy and Environment (DOEE) was responsible for the determination of the eligibility from 2009 to 2015.

WGL was responsible for actual enrollment of eligible customers. The enrollment numbers for the chart are provided by WGL.

24. WGL'S RIGHTS-OF-WAY FEES IN CY 2012–CY 2016 ($ PER THERM)

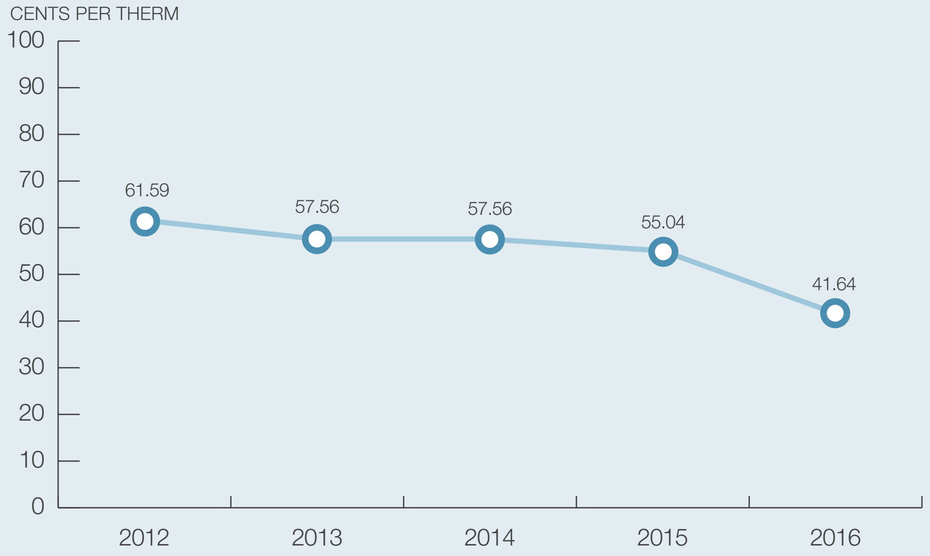


WGL's **Rights-of-Way (ROW)** fee has two parts, a Current Factor and a Reconciliation Factor. The Reconciliation Factor recovers any over or under collection resulting from the application of the Current Factor to customers' bills in the previous year. WGL's fee appears as a separate line item on customers' bills. WGL files revised Current and Reconciliation Factors annually in GT 00-2. The DCPSC audits the fees to verify the costs. The graph shows an upward trend in the current factor and a decrease in the reconciliation factor between December 2014 and December 2016. WGL files its Rights-of-Way fees in compliance with the Company's tariff, DCPSC of D.C. No. 3, Third Revised Page No. 56.

Source: DCPSC

INFORM INV

25. WGL'S NET PURCHASED GAS CHARGE (PGC) IN CY 2012–CY 2016 (CENTS PER THERM)



WGL's commodity gas cost for default service is called the **Purchased Gas Charge (PGC)** and it appears as a separate line on the bills of customers who have not chosen another commodity gas supplier.

The Company files a report in a PGC docket each time the PGC changes. The DCPSC audits WGL's PGC bi-annually to verify the costs.

The average net PGC continued to decline from a five year high of 61.59 cents per therm in CY 2012 to 41.64 cents per therm in CY 2016.

Source: DCPSC

26. ENFORCEMENT ACTIVITIES REGARDING NATURAL GAS CONSTRUCTION PROJECTS IN D.C. IN CY 2012–CY 2016

	2012	2013	2014	2015	2016
Number of Notices of Probable Violations	0	4	2	4	163
Number of Notices Concluded	0	3	0	2	0
Number of Penalties Assessed	0	4	2	4	65
Amounts of Assessments	$0	$140,000	$60,000	$140,000	$491,000
Amounts Collected	$0	$100,000	$0	$25,000	$125,000

The amount collected in 2016 was from a June 14, 2016, combined action settlement in which WGL paid $125,000 out of the $491,000 assessed for previous (2013, 2014 and 2015) violations. In addition, as part of the settlement agreement, and in lieu of paying the full civil penalty amount; WGL was directed to prepare and implement a Damage Prevention Enforcement Improvement Plan to reduce the District's Damage Ratio to levels comparable to the Ratios in WGL's Maryland and Virginia jurisdictions.

27. DEFAULT AND ACTIVE COMPETITIVE GAS SUPPLIERS (CGS) SERVING THE DISTRICT IN CY 2016

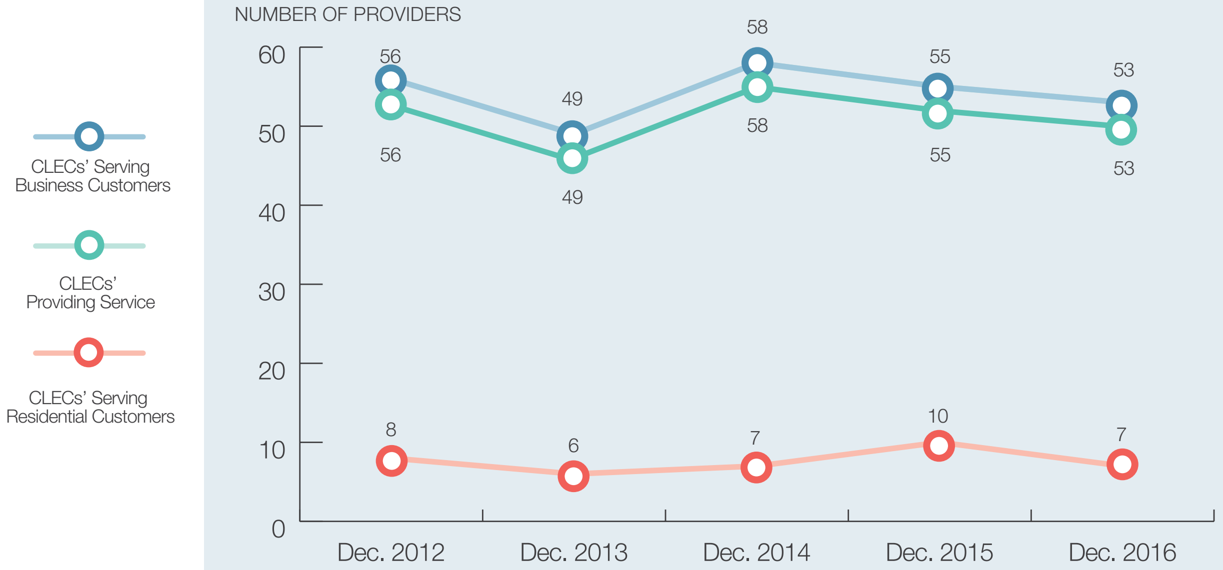
#	Company	Customer Service Telephone No.	Residential	Commercial
1	Agera Energy	844-692-4372	●	●
2	Ambit Energy	877-282-6248	●	●
3	Bollinger Energy Corporation	800-260-0505		●
4	Constellation NewEnergy/ Energy Gas Choice	800-785-4373	●	●
5	Deca Energy	202-670-5558	●	
6	Direct Energy	800-437-7265	●	●
7	Gateway Energy Services	800-805-8586	●	●
8	Constellation Energy Services	800-350-9594		●
9	NOVEC Energy Solutions	888-627-7283	●	●
10	Sprague Energy	866-477-7248	●	●
11	Tiger Natural Gas	888-875-6122		●
12	UGI Energy Services/Gasmark	800-797-0712		●
13	Viridian Energy	866-663-2508	●	●
14	Washington Gas Light Energy Services	888-884-9437	●	●
15	Washington Gas	703-750-1000	●	●
	Total CGS and WGL		**11**	**14**

Note: Default and 13 Licensed Competitive Gas Suppliers (CGS) serving the District as of December 31, 2016. 13 CGS provided non-residential service and 10 provided residential service as of December 31,2016.

INFORM INV

TELECOMMUNICATIONS

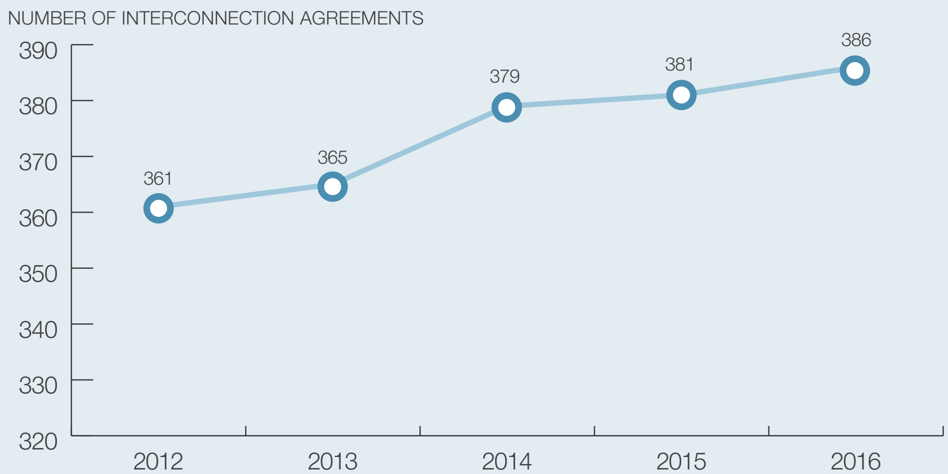
28. ACTIVE RESIDENTIAL AND BUSINESS COMPETITIVE LOCAL EXCHANGE CARRIERS (CLECS) LICENSED TO SERVE IN D.C. IN CY 2012–CY 2016



The number of Competitive Local Exchange Carriers (CLECs) serving business customers decreased by two, from 55 in 2015 to 53 in 2016. The number of CLECs serving residential customers decreased by three from ten in 2015 to seven in 2016.

Source: DCPSC and CLECs and Verizon Annual Survey (2015)

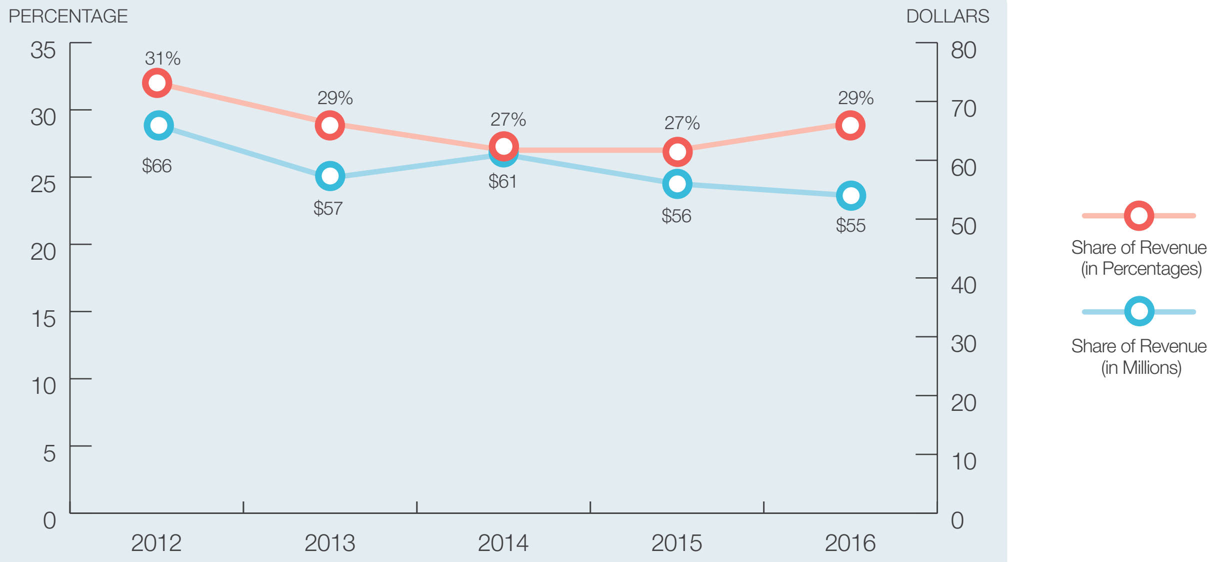
29. CUMULATIVE NUMBER OF TELECOMMUNICATIONS INTERCONNECTION AGREEMENTS (TIA) APPROVED IN CY 2012–CY 2016



The DCPSC has 90 days to approve each Telecommunication Interconnection Agreement (TIA) that were processed. In CY 2016 five Interconnection Agreements were processed by Commission orders. All five orders were issued on a timely basis bringing the total approved as of the end of 2016 to 386.

Source: DCPSC

30. COMPETITIVE LOCAL EXCHANGE CARRIERS' (CLECs) REVENUES (IN PERCENTAGE OF TOTAL TELECOM REVENUE AND IN MILLION DOLLARS) IN CY 2012–CY 2016

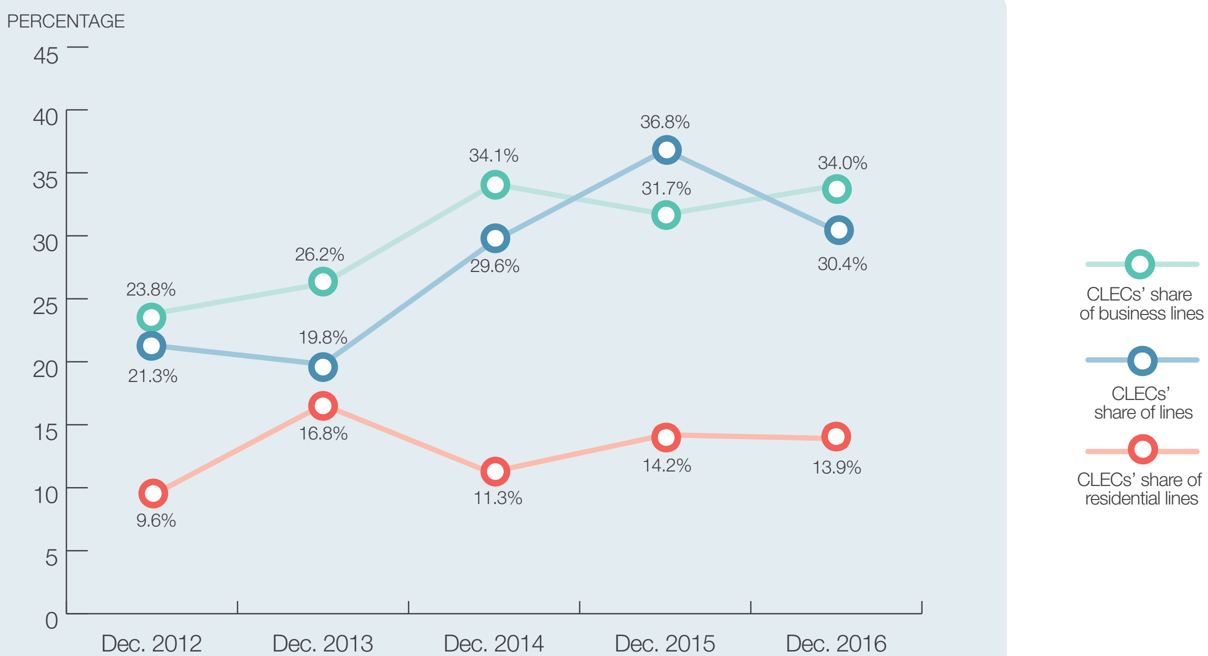


CLECs revenue decreased by approximately 1.8% from $56M in 2015 to $55M in 2016*. In 2016 the CLECs percentage of total telecom revenue increased by 2%.

**The 2016 data is preliminary based on the 2016 CLECs survey responses.*

Source: DCPSC and CLECs and Verizon Annual Survey (2016)

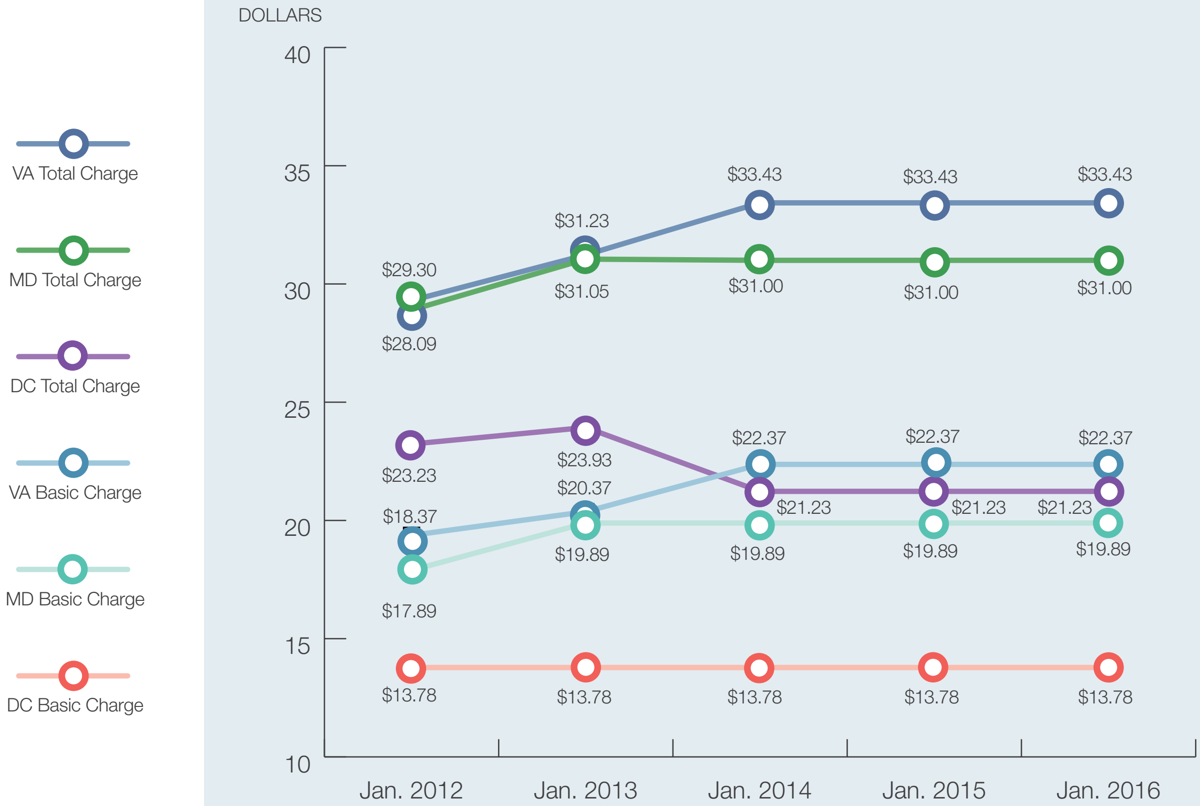
31. COMPETITIVE LOCAL EXCHANGE PROVIDERS' (CLECs) SHARE OF LINES IN D.C. IN CY 2012–CY 2016



In 2016, CLECs share of residential lines decreased by 0.3% from 14.2% to 13.9%. CLEC share of business lines increased from 31.7% to 34.0%.

Source: DCPSC of the District of Columbia and CLECs and Verizon Annual Survey (2016)

32. VERIZON AVERAGE RESIDENTIAL TELEPHONE BILLS IN D.C., MD AND VA (FLAT RATE SERVICE) IN CY 2012–CY 2016

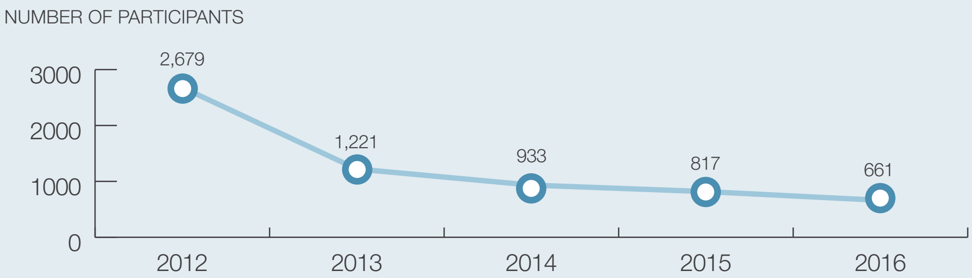


The District of Columbia has the lowest basic charge for flat rate service in the region.

MD and VA rates are estimated based upon available tariffs for flat rate service.

Source: DCPSC and CLECs and Verizon Annual Survey (2016)

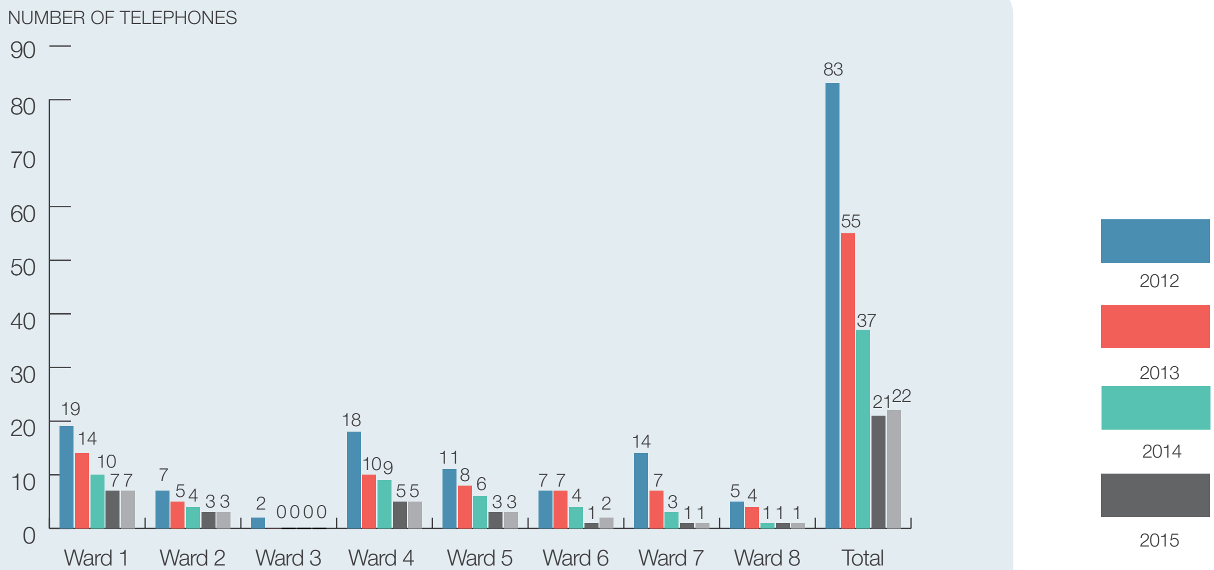
33. ENROLLMENT IN VERIZON'S LOW-INCOME ECONOMY II SERVICE PROGRAM IN CY 2012–CY 2016



Enrollment in Verizon's low-income Economy II service program (also known as Lifeline) has been decreasing every year since 2011. In 2013, it decreased by 55%, which could be explained by changes in the **Federal Communications Commission's (FCC)** eligibility verification process. Enrollment continued to decrease in CY 2016 with 661 validated customers, i.e. a 19% reduction from 817 in CY 2015.

Source: Verizon

34. NUMBER OF ACTIVE PAY TELEPHONES BY WARD IN CY 2012–CY 2016



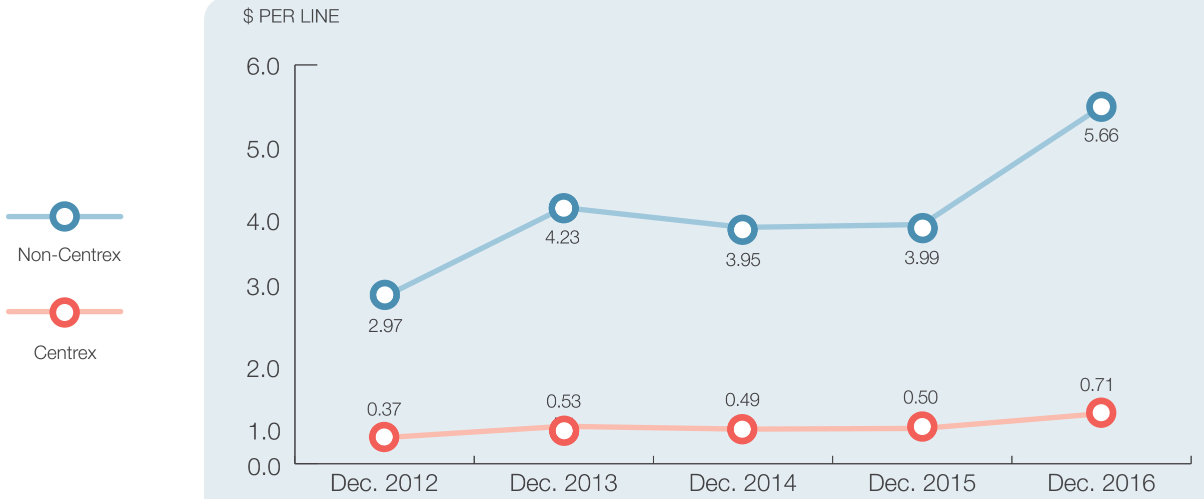
The number of active pay telephones decreased from 37 in CY 2014 to 21 in CY 2015. In 2016 pay telephone numbered 22 (an increase of 1).

Ward 3 remained without an active pay telephone for a fourth year. Ward 1 has the most with seven pay telephones, which remains the same as the previous year.

Source: Verizon

INFORM INV

35. VERIZON'S RIGHTS-OF-WAY FEES (ROW) CY 2012–CY 2016 ($ PER LINE)

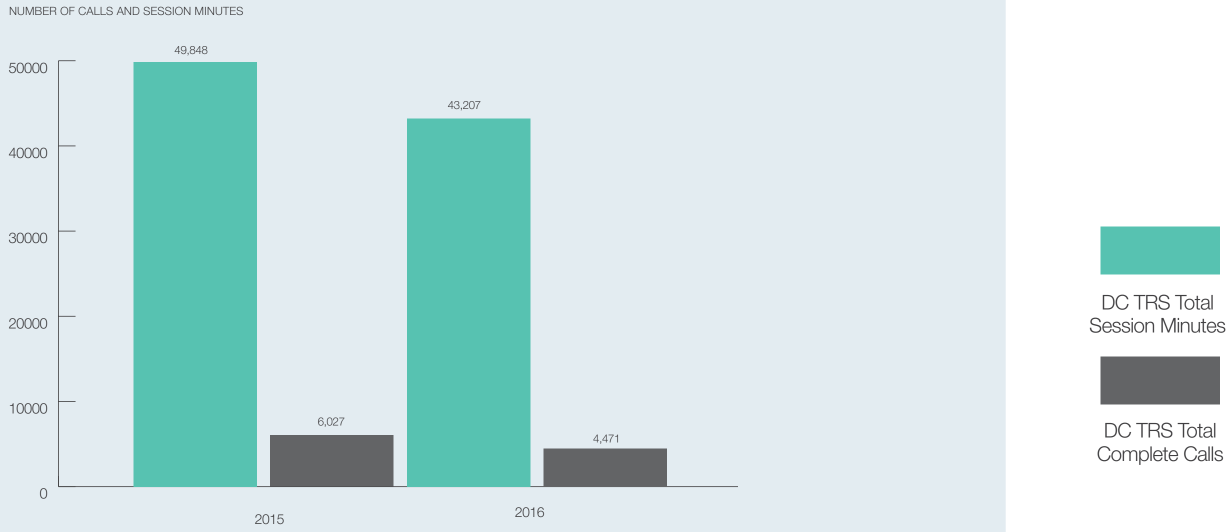


Verizon files its **Rights-of-Way (ROW)** fees in accordance with the Company's General Regulations Tariff, DCPSC of D.C. No. 201, Section 1A, Page No. 2. The fee appears as a separate line item on customers' bills. The DCPSC audits the fees to verify the costs. The graph shows Verizon's ROW fees have trended upward in both Centrex and non-Centrex line rates between the years 2012 and 2016. The Centrex rate is for business customers (two or more lines) and the non-Centrex rate is for residential customers (single lines).

Centrex line is an equivalent of eight non-Centrex lines. For this reason, ROW per line is eight times lower for Centrex than for non-Centrex.

Source: DCPSC of the District of Columbia

36. D.C. TELECOMMUNICATIONS RELAY SERVICE (TRS) TOTAL SESSION MINUTES AND TOTAL COMPLETE CALLS IN CY 2015–2016

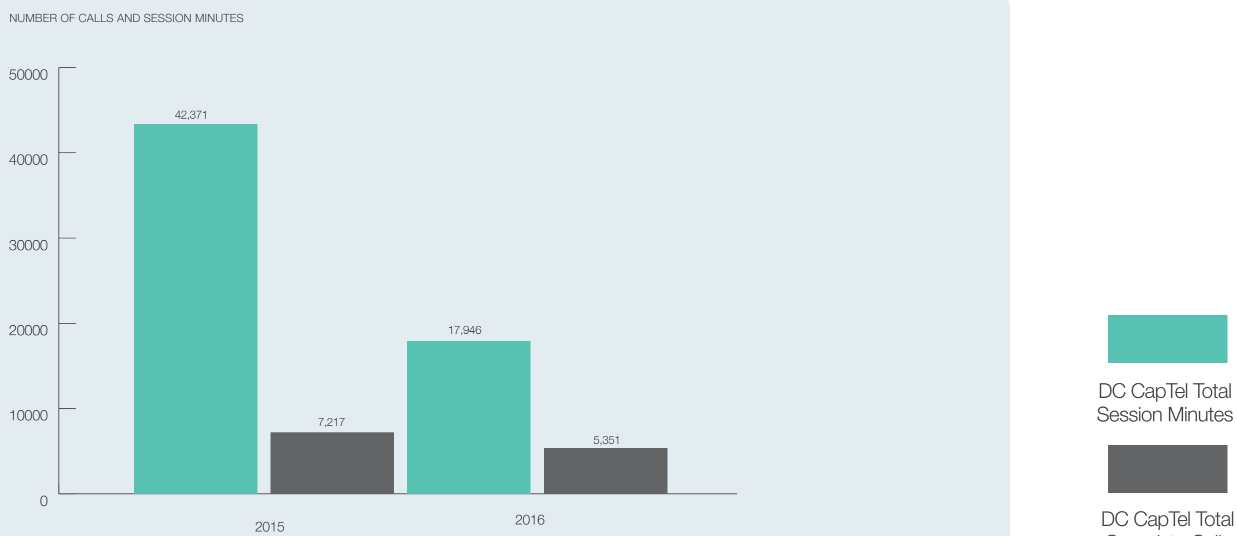


Telecommunications Relay Service (TRS) Phone Number: 711 Telecommunications Relay Service (TRS) is a telephone service that allows persons with hearing or speech disabilities to place and receive telephone calls. TRS is available in all 50 states, the District of Columbia, Puerto Rico and the U.S. territories for local and/or long distance calls. Hamilton Relay is the D.C. TRS provider in the District.

A completed call is when a call hits the relay switch, is answered by a Communications Assistant (CA) and then performs an outbound call (through relay) to an end user. For most of the 2015-2016 contract year, total complete calls and total session minutes remained steady.

Source: Hamilton Relay

37. D.C. CAPTIONED TELEPHONE (CAPTEL) SERVICE TOTAL SESSION MINUTES AND TOTAL COMPLETE CALLS IN CY 2015–2016



D.C. Captioned Telephone (CAPTEL) Service is used by District residents who use a Captioned Telephone (CAPTEL) phone. A CapTel phone allows people to receive word-for-word captions of their telephone conversations.

The captions are displayed on the phone's built-in screen so the user can read the words while listening to the voice of the other party. Session minutes accumulate from when the CA (Communication Assistant) answers the call into relay switch to when they disconnect with the originating caller. This includes set up and wrap up with the originating caller into relay, along with conversation minutes. For most of the 2015-2016 contract year, total D.C. CapTel total complete calls and total session minutes remained steady.

Source: Hamilton Relay

INFORM INV

38. DEFAULT AND ACTIVE COMPETITIVE LOCAL EXCHANGE CARRIERS (CLECS) SERVING THE DISTRICT IN CY 2016

#	Company Name	Residential	Commercial	Customer Service Telephone No.
1	Access One, Inc		●	800-804-8333
2	Access Point, Inc.	●	●	800-957-6468
3	ACN Communication Services, Inc.	●	●	877-226-1010
4	Airespring, Inc.		●	888-389-2899
5	AT&T Corp. f/k/a/ AT&T Communications of Washington D.C., LLC		●	202-457-2267
6	Atlantech Online, Inc.		●	301-589-3060
7	BCM One, Inc. f/k/a/ McGraw Communications, Inc.		●	888-543-2000
8	BCN Telecom, Inc.	●	●	908-367-5600
9	Birch Communications of the Northeast, Inc. d/b/a Birch Communications		●	877-772-4724
10	Block Line Systems, LLC		●	610-355-9733
11	Broadband Dynamics, LLC		●	888-801-1034
12	Broadview Networks, Inc.	●	●	800-276-2384
13	Broadwing Communications LLC f/k/a Focal Communications		●	877-2LEVEL3
14	BullsEye Telecom Inc.		●	248-784-2500
15	Business Telecom, Inc. d/b/a EarthLink Business III		●	888-832-5802
16	CenturyLink Communications, LLC f/k/a/ Qwest Communications Company, LLC		●	800- 238-3095
17	CTC Communications Corp. d/b/a EarthLink Business II		●	800-374-2350
18	Dynalink Communications, Inc.		●	212-352-7307
19	EnTelegent Solutions, Inc.		●	877-396-2546
20	France Telecom Corporate Solutions L.L.C.		●	866-280-3726
21	GC Pivotal, LLC d/b/a Global Capacity	●	●	866-226-4244
22	Global Crossing Local Services f/k/a Global Crossing Telemanagement, Inc.		●	877-2LEVEL3
23	Granite Telecommunications, LLC		●	866-847-5500
24	inContact, Inc. f/k/a UCN, Inc.		●	866-541-0000
25	Level 3 Communications, LLC		●	877-2LEVEL3
26	Level 3 Telecom of D.C. f/k/a TW Telecom of D.C. LLC., f/k/a Time Warner Telecom of D.C. LLC., f/k/a Xspedius Management Co.		●	877-2LEVEL3
27	Lightower Fiber Networks I, LLC		●	703-434-8533
28	Lightower Fiber Networks II, LLC f/k/a Sidera Networks, LLC f/k/a RCN New York Communications, LLC		●	703-434-8533
29	MassComm, Inc. d/b/a MASS Communications		●	212-201-8000
30	Matrix Telecom, Inc. d/b/a Trinsic Communications	●	●	800-827-3374

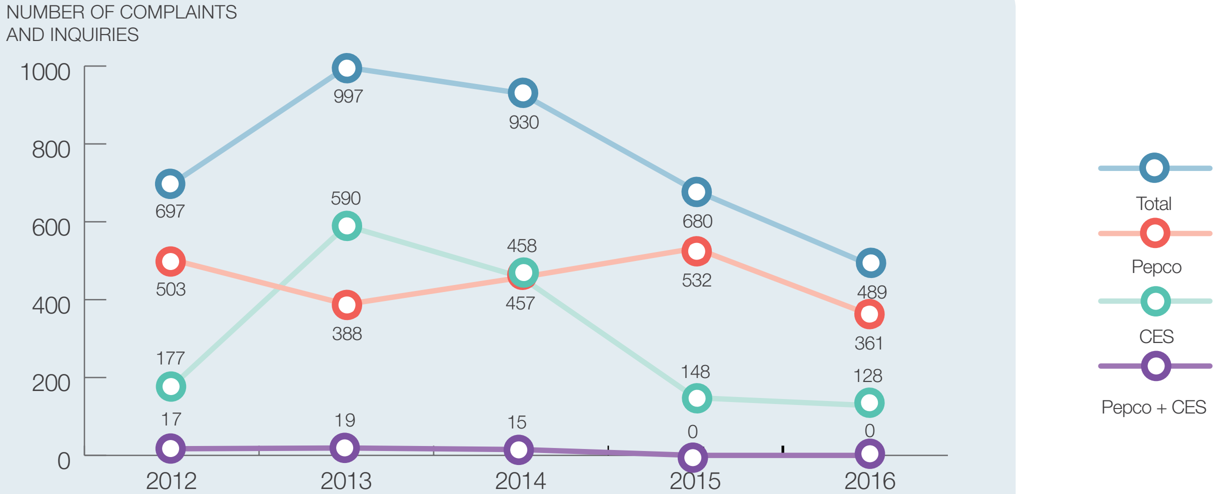
VOLVE INSPIRE

#	Company Name	Residential	Commerical	Customer Service Telephone No.
31	MCImetro Access Transmission Services LLC d/b/a Verizon Access Transmission Services		●	888-624-9266
32	McLeod USA Telecommunications Services, L.L.C.		●	1-888-MCI-LOCAL
33	Metropolitan Telecommunications of D.C. d/b/a MetTEL		●	800-876-9823
34	Mitel Cloud Services f/k/a Mitel NetSolutions, Inc. f/k/a Inter-Tel Netsolutions, Inc.		●	866-594-9493
35	Mobilitie Management LLC		●	949-999-5790
36	Netwolves Network Services, LLC		●	800-676-8870
37	New Horizons Communications Corp.		●	866-241-9423
38	NOS Communications, Inc.		●	702-569-4667
39	One Voice Communications, Inc.		●	877-363-3133
40	Paetec Communications, LLC		●	319-790-6702
41	Peerless Network of the District of Columbia, LLC		●	312-506-0920
42	Quantum Shift Communications, Inc. d/b/a VCOM Solutions		●	800-804-8266
43	Securus Technologies, Inc.		●	972-277-0472
44	Spectrotel, Inc.		●	732-345-7834
45	Talk America, Inc.	●	●	804-422-4729
46	Telco Experts, LLC		●	800-787-5050
47	TelCove Operations, LLC		●	877-2LEVEL3
48	TelePacific Corp. f/k/a/ DSCI, LLC		●	877-344-7441
49	Teleport Communications America, LLC f/k/a Teleport Communi-cations of Washington, D.C., Inc.		●	202-457-2267
50	TNCI Operating Company, LLC		●	1-800-600-5050
51	US LEC of Virginia LLC d/b/a PAETEC Business Services		●	1-800-600-5050
52	VDL, Inc. d/b/a Global Telecom Brokers		●	410-581-4833 x125
53	XO Communications Services, Inc.		●	877-912-4829
	Total CLECs and Verizon	**7**	**53**	**53**

Default and 52 Competitive Local Exchange Carriers (CLECs)
Serving the District as of December 31, 2016.
52 CLECs provided non-residential service and 7 provided residential service as of December 31, 2016.

INFORM INV

39. CONSUMER COMPLAINTS AND INQUIRIES—ELECTRIC INDUSTRY FOR CY 2012–CY 2016



Total Complaints and Inquiries for the electric industry decreased 28.1% from 680 in 2015 to 489 in 2016, which is the lowest in four years.

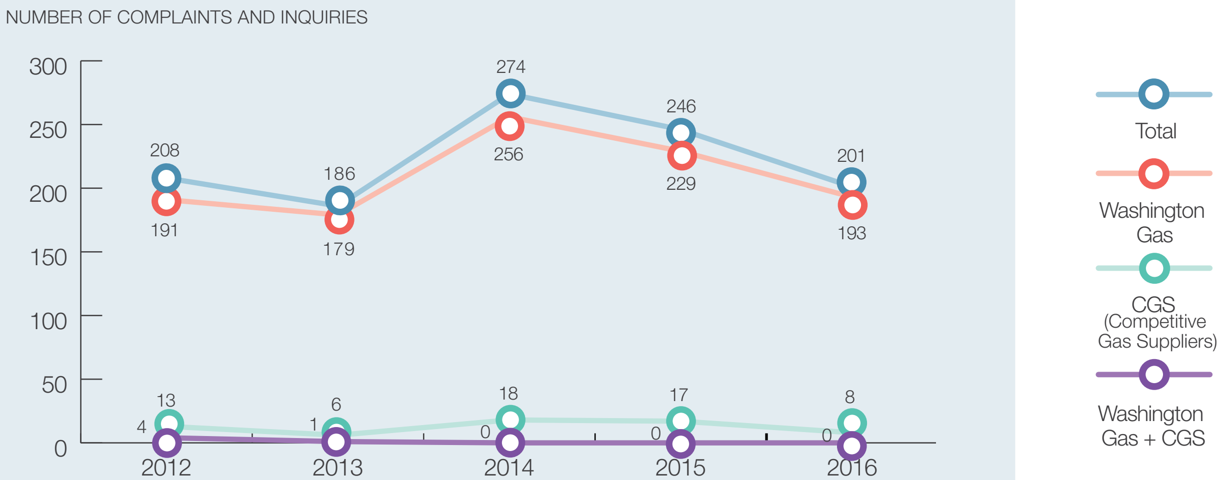
Complaints and Inquiries for Pepco decreased 32.1% from 532 in 2015 to 361 in 2016.

Complaints and Inquiries for Competitive Energy Suppliers (CES) decreased by 13.5% from 148 in 2015 to 128 in 2016.

CES—Competitive Energy Suppliers
Pepco + CES—A consumer complaint that involves Pepco and CES

Source: DCPSC

40. CONSUMER COMPLAINTS AND INQUIRIES—NATURAL GAS INDUSTRY FOR CY 2012–CY 2016

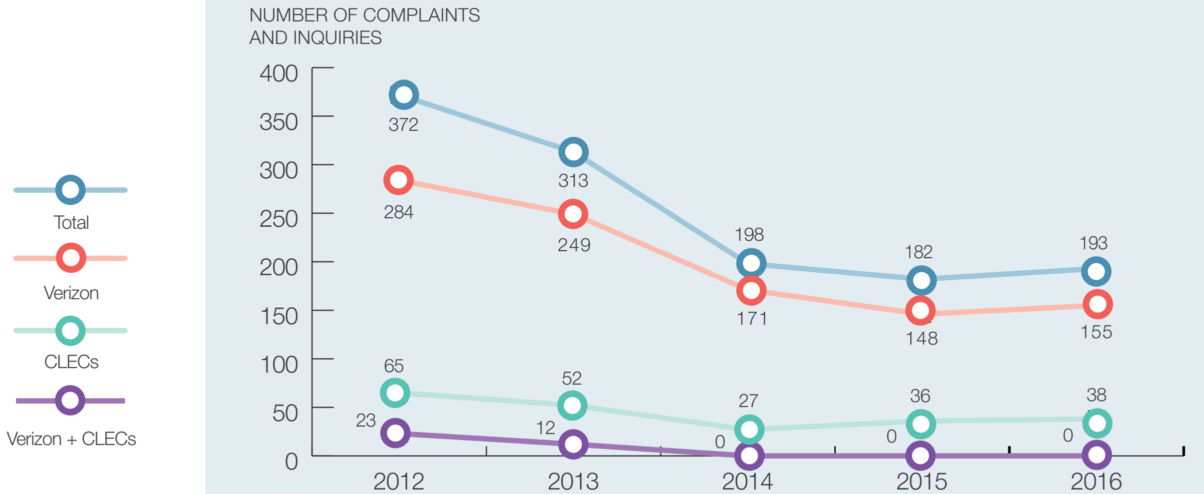


Total Complaints and Inquiries for the natural gas industry decreased 18.2% from 246 in 2015 to 201 in 2016. Complaints and Inquiries for Washington Gas decreased 15.7% from 229 in 2015 to 193 in 2016. Complaints and Inquiries for Competitive Gas Suppliers (CGS) decreased 53.0% from 17 in 2015 to 8 in 2016.

CGS—Competitive Gas Suppliers
WGL + CGS— A consumer complaint that involves WGL and CGS

Source: DCPSC

41. CONSUMER COMPLAINTS AND INQUIRIES—TELECOM INDUSTRY FOR CY 2012–CY 2016

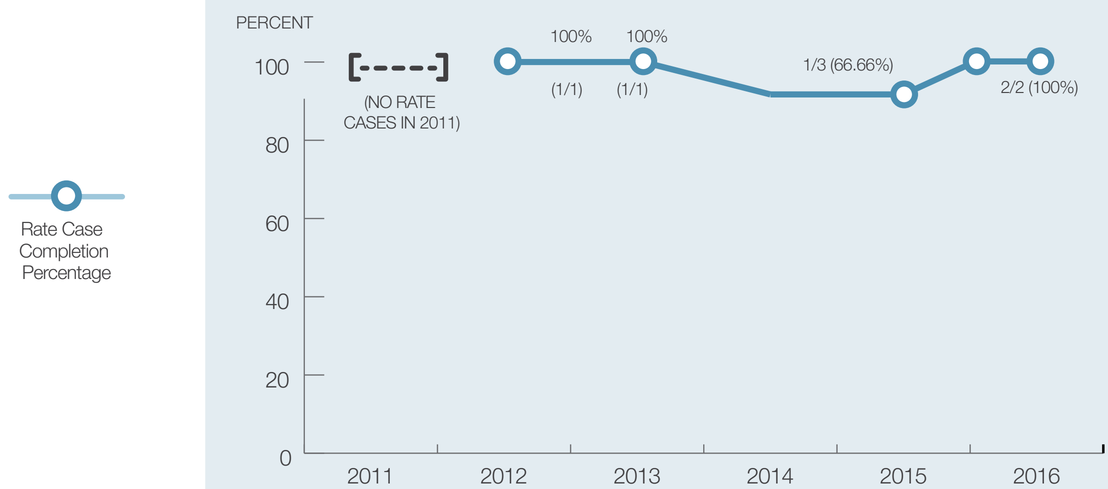


Total Complaints and Inquiries for the telecommunications industry increased 6.0% from 182 in 2015 to 193 in 2016. Complaints and Inquiries for Verizon increased 4.7% from 148 in 2015 to 155 in 2016. Complaints and Inquiries for CLECs increased 5.5% from 36 in 2015 to 38 in 2016.

CES—Competitive Energy Suppliers
A consumer complaint that involves Verizon and a CLEC.

Source: DCPSC of the District of Columbia

42. NUMBER AND PERCENTAGE OF ADJUDICATIVE CASES PROCESSED ON A TIMELY BASIS IN CY 2012–CY 2016

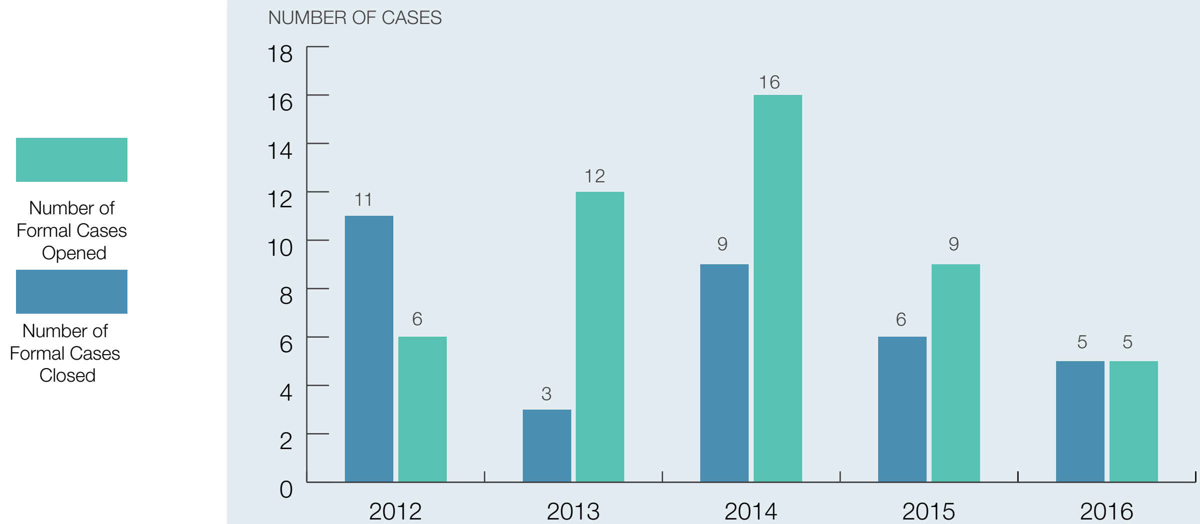


Target: Issue decisional orders within 90 days of the close of the record.

Performance: In one instance, in 2014,the DCPSC did not meet its target. The DCPSC rendered its decision in Pepco's Formal Case 1103 97 days from the close of record.

Source: DCPSC of the District of Columbia

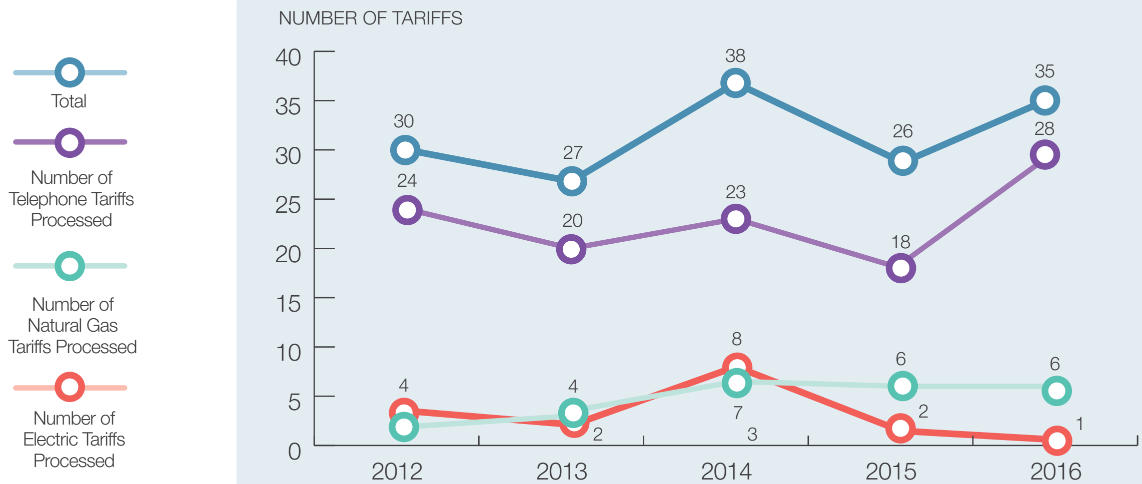
43. TOTAL NUMBER OF FORMAL CASES CLOSED AND OPENED IN CY 2012–CY 2016



In CY 2016, the DCPSC opened five formal cases and closed five formal cases.

Source: DCPSC of the District of Columbia

44. TOTAL NUMBER OF ELECTRIC, NATURAL GAS, & TELEPHONE TARIFFS PROCESSED* IN CY 2012–CY 2016



The DCPSC fully regulates electric and natural gas tariffs. Such tariffs require a formal filing and result in the Commission Order to Approve or to Deny or a Notice of Final Tariff (if the tariff is approved). For telecom, DCPSC reviews the incumbent telephone service provider tariffs. CLECs tariffs are deemed approved upon filing, therefore they are not reviewed, approved, or denied by the Commission in the normal course of tariff process.

On October 1, 2008, Price Cap Plan ("Plan") 2008 became effective per Order No. 15071, issued September 28, 2008. In accordance with the Plan, Verizon is allowed to make changes to its discretionary and competitive services, without formal approval of the DCPSC, by filing a description of the changes and relevant cost support information on five-days notice. The DCPSC does not set rates for competitive services. Rate increases for discretionary services are capped at no more than 15%.

* Tariffs processed means tariffs reviewed, approved, withdrawn, or denied. Telecom promotions are not included in the tariff count.

Source: DCPSC of the District of Columbia