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February 16, 2021

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

**Re: RM40-2020-01-M**  
**FC 1050**

Dear Ms. Westbrook-Sedgwick:

Enclosed please find Potomac Electric Power Company's Comments on the Second NOPR, in the above-referenced proceeding.

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

Sincerely,

*/s/ Andrea H. Harper*

Andrea H. Harper

Enclosures

cc: All Parties of Record

**BEFORE THE  
PUBLIC SERVICE COMMISSION  
OF THE DISTRICT OF COLUMBIA**

**IN THE MATTER OF 15 D.C.M.R.            )**  
**CHAPTER 40 – DISTRICT OF                )**  
**COLUMBIA SMALL GENERATOR            )**     **Rulemaking No. 40-2020-01**  
**INTERCONNECTION RULES                )**

**IN THE MATTER OF THE                    )**  
**INVESTIGATION OF                        )**  
**IMPLEMENTATION OF                     )**     **Formal Case No. 1050**  
**INTERCONNECTION STANDARDS IN        )**  
**THE DISTRICT OF COLUMBIA             )**

**COMMENTS OF POTOMAC ELECTRIC POWER COMPANY**

On December 25, 2020, the District of Columbia Register published a Second Notice of Proposed Rulemaking (“Second NOPR”) issued by the Public Service Commission of the District of Columbia (“Commission”) seeking comment on the Commission’s proposed amendments to the small generator interconnection rules in Chapter 40 of the District of Columbia Municipal Regulations (“D.C.M.R.”).<sup>1</sup> The Commission, Potomac Electric Power Company (“Pepco” or the “Company”) and stakeholders share a common interest in making the interconnection process as efficient as possible. Pepco continues to innovate and evolve its interconnection process to provide customers increased efficiency. In doing so, Pepco must balance the increase in efficiency with its obligation to provide safe and reliable service. Likewise, the interconnection regulations must balance efficiency with system impact. Because distribution system operations are complicated, seemingly small changes to the processes may have unanticipated impacts on operations. Pepco

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<sup>1</sup> The Commission extended the date for comments to February 16, 2021. *In the Matter of 15 DCMR Chapter 40 – District of Columbia Small Generator Interconnection Rules* and *In the Matter of the Investigation of Implementation of Interconnection Standards in the District of Columbia*, Rulemaking No. 40-2020-01 and Formal Case No. 1050, Public Notice (Jan. 29, 2021); *In the Matter of 15 DCMR Chapter 40 – District of Columbia Small Generator Interconnection Rules*, Rulemaking No. 40-2020-01, Order No. 20693 (Jan. 29, 2021).

has discussed some of the adverse system impacts against which the Company must protect when interconnecting distributed energy resources (“DER”) to the distribution system in prior documents.<sup>2</sup> With increased efficiency and protection against adverse system impacts in mind, Pepco provides herein its comments regarding the Second NOPR (“Comments”), including Attachment A containing suggested changes to the regulations.<sup>3</sup>

#### **I. A PUBLIC QUEUE IS UNLAWFUL, DUPLICATIVE, AND UNDULY COSTLY**

Subsection 4001.6 of the Second NOPR would require Pepco to maintain a public queue, sortable by feeder, that contains detailed information listed in Attachment A to the Second NOPR regarding every Level 2, 3 and 4 small generator interconnection facility that seeks interconnection with Pepco’s District of Columbia distribution system. District law constrains Pepco’s ability to publicly provide customer information. Under the Code of the District of Columbia (“DC Code”) §34-1507(a)(1), without written customer consent, Pepco cannot disclose customer information that the customer supplied to the utility. The only exemptions from this rule are (1) lawful disclosures by the utility for bill collection or credit reporting purposes<sup>4</sup> or (2) lawful disclosures by a building owner about the energy consumption of a non-residential tenant of the building.<sup>5</sup>

Further, pursuant to DC Code §34-1507(b)(1), without written customer consent, “a market participant or the electric company may not use information of the type specified in subsection (a)(1) of this section for any purpose other than the purpose for which the information was

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<sup>2</sup> *Interconnection of Distributed Energy Resources*, Formal Case No. 1119 (Jun. 21, 2017); *Comments of Potomac Electric Power Company*, Formal Case No. 1050 and Rulemaking 40-2020-1 (Jul. 15, 2020) (“First NOPR Comments”); *Reply Comments of Potomac Electric Power Company*, Formal Case No. 1050 and Rulemaking 40-2020-1 (Aug. 14, 2020) (“First NOPR Reply Comments”).

<sup>3</sup> Throughout Attachment A, Pepco has made certain non-substantive changes that provide, for example, consistent use of defined terms. The Company has not discussed each of these changes in the Comments, but all are provided in Attachment A.

<sup>4</sup> DC Code §34-1507(a)(2)(A).

<sup>5</sup> DC Code §34-1507(a)(2)(B).

originally acquired.” An Interconnection Request<sup>6</sup> relates to a particular interconnection project that Pepco is interconnecting to its distribution system for a particular Interconnection Customer with a unique customer account number, and the data that the Interconnection Customer provides in the Interconnection Request—or that a contractor submits on the Interconnection Customer’s behalf—is for the purpose of analyzing and interconnecting that specific Interconnection Customer’s project.<sup>7</sup> The information is not submitted for the purpose of informing other Interconnection Customers about the project. Thus, public disclosure of this information for the purpose of informing others about the project would violate DC Code §34-1507(b)(1) as well as DC Code §34-1507(a)(1).

Moreover, while the Commission may be able to direct Pepco to provide customer information, that information still cannot be provided publicly. The public queue proposed in the Second NOPR would force Pepco to choose between violating a District law and violating Commission regulations. Moreover, Pepco would be forced to choose between violating the new Subsection 4001.6 and violating 15 D.C.M.R. §308, which contains the same disclosure restrictions as the District law. The Commission does not explain how the public disclosure required in the Second NOPR is permissible under District law. Previously, the Commission has recognized that customer information, even when the Commission directs its disclosure, may only be disclosed confidentially. In Formal Case No. 1050, Order No. 18113 directed Pepco “to submit a list of the names, locations, fuel types, and kW capacities of the Level 2, Level 3 and 4 facilities approved during a reporting year.”<sup>8</sup> The Commission specifically directed that Pepco submit the

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<sup>6</sup> To the extent that a capitalized term is not defined herein, it has the meaning provided in Section 4099.

<sup>7</sup> CREFs have a customer relationship with Pepco and require the customer—in this case a developer—to submit similar data as a net energy metering (“NEM”) customer in its Interconnection Request.

<sup>8</sup> Order No. 18113 at ¶35.

information “as a confidential document.”<sup>9</sup> In Order No. 18575, the Commission directed Pepco to provide that same information for “all currently interconnected solar and non-solar facilities” and again required Pepco to “provide this information in a confidential filing.”<sup>10</sup> The Commission’s direction to now provide this same information in a public queue is inconsistent with the law and with Commission precedent.<sup>11</sup> The Commission has not explained how its requirement for a public queue is lawful.

Moreover, in the First NOPR Comments<sup>12</sup> Pepco discusses that such a queue is unnecessary in light of the information that Pepco currently provides publicly for customer and developer use, the detailed information provided confidentially to customers and developers regarding their specific projects, and the reporting that the Commission continues to require of Pepco on a monthly, quarterly and annual basis regarding Small Generator Facility interconnections. Pepco detailed the many disclosures that Pepco currently makes in its various maps on its website, the Connect The Grid project tracking system, and the extensive reporting that the Commission requires of Pepco. For example, Pepco’s publicly available tools—including the hosting capacity map and the solar heat map—already provide critical information necessary for determining the optimal location for projects. Rather than repeat those comments again, Pepco incorporates them by reference herein. As discussed therein, of the 20 items for the public queue listed in Attachment 1 to the First NOPR<sup>13</sup>—the same items as in Attachment A to the Second

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<sup>9</sup> Order No. 18113 at ¶35.

<sup>10</sup> Order No. 18575 at ¶46.

<sup>11</sup> Section 4008.5(b) directs Pepco to provide certain information to the Commission monthly. For the same reasons, Pepco can only provide a confidential document containing the identified information to the Commission. In addition, this is consistent with current practice of providing confidentially the information required in Section 4008.5(b).

<sup>12</sup> First NOPR Comments at 1-10.

<sup>13</sup> *In the Matter of 15 DCMR Chapter 40 – District of Columbia Small Generator Interconnection Rules*, Rulemaking No. 40-2020-01, Notice of Proposed Rulemaking (“First NOPR”).

NOPR—Pepco already provides that information in a form that complies with District law for almost all of them.<sup>14</sup> Thus, the public queue is a duplicative and an unnecessary cost to customers.

Because Pepco currently provides the public, the Commission and the development community so much information via the public maps and Connect The Grid and Pepco provides much of the information in Attachment A to the Second NOPR in requisite reporting, requiring customers to fund a new queue with duplicative information that cannot lawfully be made public is unduly costly and should be stricken from the Second NOPR. To demonstrate its changes, Pepco has deleted Attachment A to the Second NOPR altogether.

As discussed above, in its First NOPR Comments Pepco outlined the vast amount of reporting it is currently obligated to provide the Commission. To the extent that the Commission does require that Pepco create a public queue and explains how such public disclosure is lawful, the Commission should reduce the reporting requirements to which the Company is currently obligated.<sup>15</sup> In addition, the Commission should strike the reporting requirements in new Subsection 4005.8(c),<sup>16</sup> as they are directly duplicative of the information required in the public queue. Should the Commission determine that the public queue is not appropriate, the reporting in Subsection 4005.8(c) would be appropriate. Finally, should the Commission require Pepco to create a public queue and explain how such public disclosure is lawful, there is no need for Pepco to continue to update and evolve its publicly available maps—such as the hosting capacity map and the solar heat map—since much of this information would duplicate information in the public queue. Because the reporting, the public tools and maps and the public queue provide duplicative

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<sup>14</sup> Pepco First NOPR Comments at 7-10.

<sup>15</sup> The First NOPR Comments (at 7-10) provide the current reporting that overlaps with the proposed queue.

<sup>16</sup> Pepco also notes that 4005.8(c)(1), (2), and (3) do not make sense and, therefore, do not put Pepco on notice as to what its reporting obligations is. For example (c)(1), which merely says “Unmodified,” cites to Subsection 4005.4(c), which states “(c) When an Interconnection Request is complete, the EDC shall assign a Queue Position.” As written, Pepco cannot implement this reporting requirement.

information, customers should not be required to pay the cost of Pepco preparing the many reports and updating and evolving public tools and maps that provide the same information that will be publicly available in the new queue.

## **II. DELAY IN PROVIDING ELECTRICAL ROOM DRAWINGS SHOULD ADD TIME TO THE 25- AND 60-BUSINESS DAY REQUIREMENTS**

In the First NOPR, the Interconnection Customer was required to provide the electrical room drawings as part of the completeness review. As a result, the developer was required to provide those drawings before Pepco deemed the Interconnection Request complete and moved to the ATI review. The Second NOPR, in Subsection 4005.4(a)(1),<sup>17</sup> removes that requirement from the completeness review and instead requires that “[s]uch drawings may be omitted for the CREF initial application submission but could be required by the EDC upon confirmation of the CREF location by the Interconnection Customer and the EDC.” The electrical room drawings are an essential part of the CREF ATI review process because the Interconnection Facilities and/or Distribution System Upgrades should not be designed without this information. Pepco, however, has had difficulty obtaining this information from some developers in the past. In an extreme case, the developer did not provide the electrical room drawing for close to five (5) months. Under the First NOPR, the length of this delay would not cause Pepco to be in violation of the regulations because the developer’s inaction only impacted the developer’s ability to have its Interconnection Request deemed complete and moved to the next stage of the process. Under the Second NOPR, however, the developer’s inaction can cause Pepco to miss its required deadlines for ATI. Pepco

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<sup>17</sup> Pepco has also modified Subsection 4005.4(a)(1) language to reflect the purpose of 4005.4(a)(2), which is requesting and holding a Modified Level 1/2 Scoping Meeting.

should not be penalized for developer's delay in providing information necessary for Pepco to proceed with the Interconnection Review process.

CREF developers are on notice that the electrical drawing will be required for the design phase of the CREF (whether traditional CREF or virtual CREF ("VCREF")). As a result, Pepco has added language that provides 3 business days from Pepco's request for the electric room drawing for the developer to provide this information. Every business day thereafter would be added on to the 25- and/or 60-business day limits to ensure that Pepco is not unreasonably penalized for a delay caused by the developer and beyond Pepco's control.

Pepco's proposed revisions are reflected in Attachment A to the Comments.

### **III. CRITICAL LANGUAGE IN SUBSECTION 4005.6 WAS LOST IN THE REVISIONS AND SHOULD BE RE-INSERTED**

Subsection 4005.6 must provide the EDC the ability to perform a Facilities Study under Subsection 4007.2. The currently effective regulations provide for a Facilities Study under Subsection 4007.2 in Subsection 4005.6. In reworking Subsection 4005.6, that provision was dropped. The ability for Pepco to do a Facilities Study under Subsection 4007.2 is important because once an Interconnection Request exceeds the criteria for Level 2 screening, the studies and resulting upgrades for the safe and reliable interconnection become more extensive and complex and require additional time and resources. Reintroducing Subsection 4005.6(d) is consistent with Subsection 4005.7(b) and works in conjunction with that provision. Thus, Pepco has added back in the language from the current regulations allowing for this study in new Subsection 4005.6(d), as shown below.

(d) If the Interconnection Request requires more than the addition of Interconnection Facilities to the Electric Distribution System, the EDC may notify the Interconnection Customer that the EDC will need to complete a Facilities Study



under Subsection 4007.2, paragraphs (e)(3) (B), (C), (D) and (E) to determine the necessary Distribution System Upgrades and complete the construction.

Pepco's proposed revisions are reflected in Attachment A to the Comments.

#### **IV. THE UTILITY MUST OWN, OPERATE AND MAINTAIN GENERATION METERS FOR VCREFS**

In the First NOPR Comments, Pepco provided modifications and definitions that allowed for VCREFs.<sup>18</sup> For VCREFs to work, Pepco must own both the generation meter and the usage meter. This is different from NEM or even traditional CREFs in which Pepco owns the usage meter and the Interconnection Customer owns the generation meter. As currently written, the rules have removed the ability for Pepco to allow for VCREFs because the Second NOPR removes the utility-owned generation meter. Significantly, Pepco is not saying in these Comments that it must own all generation meters. Instead, in the case of a VCREF, Pepco must own both the VCREF generation meter (the Utility Generation Meter) and the usage meter to allow it to use those meters for the billing transaction that creates a VCREF. As shown in Attachment B, this is because the VCREF replaces a physical front-of-the-meter connection with a metering-and-billing-based behind-the-meter connection. A VCREF uses an additional utility-owned meter(s) (the Utility Generation Meter) to track generation behind the meter. For billing and subscription payment purposes, Pepco's billing system uses the usage and generation data from the two utility-owned meters to gross up building usage to the level it would have been if the CREF were directly connected to the system.

Pepco has modified the Second NOPR to make clear that the utility owns the generation meter associated with VCREF (the Utility Generation Meter), as distinguished from any other

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<sup>18</sup> First NOPR Comments at 14-15.

generation meter. Specifically, the Company has modified the definition of “Generation Meter” to relate to generation meters that are owned by the Interconnection Customer. These meters would be the generation meters used for traditional CREFs and NEM. Pepco has changed the “Production Meter” to “Utility Generation Meter” and modified the definition to show that this is the generation meter that specifically relates to VCREF. The Company has also adjusted the definition of “Interconnection Facilities” to exclude the Utility Generation Meter.

The Second NOPR cites to DC Code § 34-1518 in the definition of “Production Meter” in support of the need for the CREF generation meter to be owned by the Interconnection Customer or CREF. However, DC Section § 34-1518(5)(H) does not require that the Interconnection Customer own the generation meter in a CREF. Instead, it requires “a revenue quality production meter installed and paid for by the owner of the community renewable energy facility.” Under the DC Code, for the specific situation of VCREF, Pepco would be allowed to own a generation meter (the Utility Generation Meter) that the Interconnection Customer or CREF paid for and installed. This is no different than the contributions in aid of construction, or CIAC, that some customers pay on customer projects for the distribution assets that the Company owns.<sup>19</sup> In this case, the CIAC is the Utility Generation Meter costs necessary for a VCREF to operate. The Commission is able to allow Pepco to own the VCREF generation meter under DC Code § 34-1518.

Pepco’s proposed revisions are reflected in Attachment A to the Comments.

## **V. THE INTERCONNECTION FACILITIES COST MATRIX INCLUDES THE UTILITY GENERATION METER**

The purpose of the Interconnection Facilities Cost Matrix is to create an expedited process for obtaining final costs and Approval To Install for a defined set of simple projects. As suggested

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<sup>19</sup> See, e.g., DC General Terms and Conditions §§ 10(a), (e).

by the name, most of these opportunities to expedite will be projects that only require certain Interconnection Facilities. The Utility Generation Meter used for VCREF is another opportunity to expedite issuance of the final cost letter, but, as discussed above, the Utility Generation Meter is not an Interconnection Facility. As a result, the Utility Generation Meter must be added specifically to a provision to allow for it to be part of the Interconnection Facilities Cost Matrix. Currently, the Second NOPR Subsections 4005.6(a) and 4005.6(a)(1) only include Interconnection Facilities, which would exclude the Utility Generation Meter. Pepco modifies Subsections 4005.6(a) and 4005.6(a)(1) and the definition of “Interconnection Facilities Cost Matrix” to reflect that a Utility Generation Meter falls within the Interconnection Facilities Cost Matrix.

Moreover, the Second NOPR wisely rewrote Section 4004 “Level 1 Interconnection Reviews” to exclude CREFs, moving all projects that require construction to Levels 2, 3 and 4. In Subsection 4004.2(f), the Commission provides that “[n]o construction of facilities by the EDC on its own system other than metering is required in order to accommodate the Small Generator Facility.” Pepco has clarified this language to ensure that it is clear the VCREFs are not reviewed under Level 1. Specifically, Pepco has changed “metering” to specify “the Usage Meter” to make clear that the Utility Generation Meter is not encompassed in Level 1 but, instead, is provided for under the expedited process covered by inclusion in the Interconnection Facilities Cost Matrix. Pepco has also added “a Utility Generation Meter” alongside Interconnection Facilities or Distribution System Upgrades in Subsection 4004.2(f)(1) for the same purpose. A VCREF, while significantly simpler than most traditional CREFs, still requires time to design, test, and install the Utility Generation Meter and associated equipment and to make the necessary billing changes to allow the VCREF to function.<sup>20</sup>

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<sup>20</sup> Pepco continues working on the billing system upgrades necessary to allow for a fully automated billing process for VCREFs. Pepco Holdings currently only has one VCREF—in the District—in all of its jurisdictions, and

Pepco's proposed revisions are reflected in Attachment A to the Comments.

**VI. THE FINAL, EXECUTED INTERCONNECTION AGREEMENT SHOULD BE PROVIDED TO THE CUSTOMER WITH THE FINAL COST LETTER**

Sections 4005.4(d) and 4005.6(b)(7)<sup>21</sup> define when the EDC-executed Interconnection Agreement is provided to the Interconnection Customer. Currently, the section states that Pepco should provide the agreement within three business days of the Approval to Install. This works well for projects to which the Interconnection Facilities Cost Matrix applies because there are no design changes beyond the Approval to Install, and the final cost letter is issued with the Approval to Install. For projects that fall outside of the Interconnection Facilities Cost Matrix, however, the Approval to Install is issued with the cost estimate, in advance of the final cost letter. Until the final cost letter is issued, designs can change, and the agreement technically would not be final. Pepco has changed "Approval to Install" to "final cost letter" to ensure that the executed agreement is provided when the agreement is final. Pepco has also added the phrase "unless modified by mutual agreement of the EDC and Interconnection Customer" to allow for situations where a developer would need the agreement for financing or other purposes prior to the issuance of the final cost letter.

Pepco's proposed revisions are reflected in Attachment A to the Comments.

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the billing transactions for that one VCREF are being performed, in part, manually in order to accommodate the VCREF prior to the billing system upgrades.

<sup>21</sup> Because there is no construction included in Level 1, the additions discussed herein are unnecessary for Subsection 4004.3(b).

## **VII. PEPCO SUPPORTS THE ADVANCED INVERTER SECTION AND DEFINITION WITH TWO MODIFICATIONS**

The Second NOPR advances a section of the regulations, Section 4002.7, regarding advanced inverters. Pepco is supportive of the section but has two modifications. Section 4002.7(e)(1) currently states that the “primary objective is to incur no involuntary real power inverter curtailments incurred during normal operating conditions and minimal real power curtailments during abnormal operating conditions.” The objective should be focused differently. Instead, Pepco proposes that the primary objective is “to help support reliability of the system while optimizing the curtailment of real power when necessary to maintain normal operating conditions.” The emphasis on optimizing curtailment is consistent with the requirement of 4002.7(e), which requires that the default settings “optimize the safe and reliable operation of the Electric Distribution System.”

This focus balances the safe and reliable operation of the system with the need to increase DER penetration. Indeed, by changing the focus of this objective as Pepco suggests, more customers will be able to interconnect solar projects, and solar hosting capacity will be increased. The second objective, which Pepco leaves unchanged, is to “enhance the Electric Distribution System hosting capacity and to optimize the provision of grid support services.” Thus, Pepco’s refocusing of the first objective aligns the first objective with the second objective.

The way the first objective is currently written, it requires smart inverter functions only be used when the system is experiencing system violations (abnormal operating conditions). If the smart inverter functions can only be used when the system is experiencing violations, the system will be operating on the edge of stability and very close to voltage violations, not a robust scenario that can support greater hosting capacity. For example, as saturation increases there will be times when the feeder will approach its operating limits. Based on the variable conditions at that time,

there may be a need to control and/or limit smart inverter operations (via autonomous set points or remote communications) before reaching a point of instability to prevent cascading system impacts, such as over-voltages. Moreover, the use of smart inverter functions must also coordinate with existing utility programs. For example, as jurisdictions are requiring the implementation of Conservation Voltage Reduction (“CVR”), the feeder voltage will need to be maintained a few volts lower to achieve the energy-use reduction and reduction in losses. If employing smart inverter actions is delayed until an abnormal condition of 126V—the ANSI limit—then it will be difficult to implement CVR while increasing solar saturation.

Second, Section 4002.7(c) should be modified to include the sentence, “[n]otwithstanding the list of default settings, the EDC reserves the right to require specific settings at specific sites, if necessary, for the provision of safe and reliable service.” The reason for having advanced inverters is to give the utility the ability to define a system’s operating parameters to avoid violations. As DER penetrations increase, the system’s operations will be more dynamic and experience anomalies that result from DER behaviors. The utility’s ability to define how a system behaves during these evolutions can support higher levels of interconnection of solar generation while maintaining safety and reliability measures. As currently written, 4002.7(g) and (h) suggest that the utility will not have ability to curtail generation. Thus, explicit language is required that allows Pepco to employ smart inverter settings that may curtail generation as necessary to ensure the safe and reliable provision of service. Without the ability to curtail generation, the requirements in the Second NOPR will mean that the utility will have to reject Interconnection Requests due to violation concerns unless the Interconnection Customer is willing to pay for Distribution System Upgrades.

Relatedly, Pepco modifies the definition of “Advanced Inverters” to make clear that all of the listed functionalities are not yet uniformly available. First, Pepco added “capability” after communications because bidirectional communications in advanced inverters are not yet uniformly available and therefore the regulations should not direct that the advanced inverters be fully compliant now. Second, Pepco conformed the definition of Advanced Inverters with Section 4002.7 by adding the sentence directing that “[a]ll inverters must be fully compliant with 1547-2018 by January 2022.” Through these two additions, it is clear that the capability is available now but that all advanced inverters need not be fully compliant until January 2022.

Pepco’s proposed revisions are reflected in Attachment A to the Comments.

**VIII. CHANGES TO LARGE DER AND AGGREGATE DER LIMITS ARE REQUIRED TO ALIGN WITH TECHNICAL REQUIREMENTS**

Section 4005.2(a) of the Second NOPR shows a chart specifying the project size eligibility for review under Level 2. Pepco proposes to modify the chart in three ways, as shown in the table below.

Circuit Voltage	Level 2 Eligibility	
	Aggregate Limit	Large DER Size (after Aggregate Limit reached)
4 kV	1 MW	250 kW
12 – 13.8 kV	3 MW	250 kW
23 – 25 kV	6 MW	500 kW
33.25 – 34.5 kV	10 MW	1 MW

First, the current chart in the Second NOPR does not reflect the correct circuit voltages in the District. Pepco modifies each row to reflect the actual circuit voltage ranges that currently exist in the District.

Second, the Company changes the categories of limits. Instead of categorizing limits as “Regardless of location” and “On  $\geq$  600 amp line and  $\leq$  2.5 miles from substation,” as exists in the

Second NOPR, Pepco uses the headers “Aggregate Limit” and “Large DER Size (after Aggregate Limit reached).” These categories align with how Pepco’s technical feeder limits work for large generators. Pepco does not prescriptively assess the aggregate impact of DER based on its distance from the substation or its “location” on the system. Instead, Pepco defines a criterion for the maximum allowed level of generation on a feeder in aggregate before it becomes restricted to smaller size generators. This aligns with Pepco’s current technical interconnection requirements. Projects above these limits would need upgrades beyond what is considered in the scope of Level 2 Interconnection Request. Thus, when looking at eligibility for Level 2 review (versus Levels 3 or 4), it is more correct to show the aggregate limit for which any size project will be reviewed under Level 2. After that aggregate limit is reached, only those projects of the specified size or less will be reviewed under Level 2 review. All projects above that level would be reviewed under Level 4 review. For example, based on Pepco’s proposed table, on a 4 kV circuit, projects of any size can be reviewed under Level 2 until the aggregate limit of 1 MW is reached. After the 4 kV circuit has reached the 1 MW aggregate limit, however, only Interconnection Requests for projects 250 kW and less will be reviewed at Level 2. An Interconnection Request to interconnect, for example, a 500 kW project to the 4 kV circuit would be reviewed at Level 4 once the circuit reached the aggregate limit.

Third, Pepco has modified the limits by circuit voltage to correspond with each category. Having changed the categories to correspond with how Pepco actually assesses DER, Pepco included the associated limits that are documented in its Technical Interconnection Requirements, shared as an attachment to Pepco’s First NOPR Reply Comments. The aggregate AC limits apply to large DER and are intended to provide allowance to accommodate residential-scale or small-



system applicants while maintaining operation limits that can be quickly exceeded by larger systems.

Pepco's proposed revisions are reflected in Attachment A to the Comments.

#### **IX. A PER-PROJECT CAP ON SOCIALIZED DISTRIBUTION SYSTEM UPGRADE COSTS SHOULD BE EMPLOYED TO AVOID INEQUITABLE RESULTS**

Subsection 4005.6(c) provides a new cost structure for Distribution System Upgrades. The intent of the new cost structure is to remove a financial barrier to CREFs in order to encourage increased CREF construction and to try to avoid the situation where developers avoid building a project because the location is too expensive to construct the project. The Second NOPR increases the aggregate cap from \$200,000 to \$500,000. However, even with the increase in the cap, the language runs counter to the intent of the new provision. Specifically, the Second NOPR still places a cap on the aggregate amount of costs that can be socialized. By capping the aggregate amount of cost that can be socialized, the first movers receive the benefit of the socialized costs, leaving those who enter the queue later with no benefit of cost socialization (*i.e.*, they must pay for their entire project). Therefore, Pepco reiterates that the Commission should either remove the cap altogether or should have a per-project cap on the amount that would be socialized without limiting the aggregate amount that can be socialized.

While either of these options would be equitable, given the Commission's apparent desire to have a cap, Pepco has proposed language that will provide a per-project cap. The Company has used the Commission's current proposal as the basis for converting the subsection from an aggregate cap to a per-project cap. Specifically, Pepco has retained the distinction between projects that require Distribution System Upgrade of \$50,000 or less and those requiring Distribution System Upgrades over \$50,000. If the Commission were to keep the per-project cap

at \$25,000, there would be no need to distinguish between the two groups of projects (i.e., \$50,000 or less and above \$50,000). Instead, the language could be modified to be the lesser of the total cost or \$25,000 on a per-project basis. If the Commission would like to retain the distinction, it could provide a lower cap than \$25,000 for projects that require Distribution System Upgrades of \$50,000 or less and retain the \$25,000 cap for the larger projects. The per-project cap removes the first-mover problem and results in an equitable structure for all CREF developers.

Pepco's proposed revisions are reflected in Attachment A to the Comments.

#### **X. LIKE OTHER CUSTOMERS, CREFS SHOULD PAY A CUSTOMER CHARGE**

As reflected in the July 2019 meeting minutes of the RM9 Working Group, CREFs should pay a customer charge.<sup>22</sup> CREFs are a customer on the system, either by agreement with the CREF Owner or with the Subscriber Organization (if the CREF owner and the Subscriber Organization are separate entities). Currently, the bill for a CREF owner/Subscriber Organization in the District is generated and then is manually zeroed out so that District of Columbia CREFs do not pay a customer charge.<sup>23</sup> This is inconsistent with other Pepco Holdings jurisdictions—such as Pepco Maryland—where the community solar owner/Subscriber Organization pays a customer charge for use of the Pepco system and services. In addition to acting as small load on the system, CREFs require back-office administration on an ongoing basis. Currently, those costs are subsidized by all non-CREF Residential customers.<sup>24</sup> Removing subsidization of the customer charge is

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<sup>22</sup> The customer charge pays for meters and certain services performed on behalf of customers.

<sup>23</sup> Also manually zeroed out are any energy charges that CREFs would otherwise pay for energy consumed to power their monitoring systems.

<sup>24</sup> Currently, CREF customers (whether CREF owner or Subscriber Organization) are billed as Residential customers. By law, the generation from CREFs is required to be used in Standard Offer Service (“SOS”) to reduce the amount of generation that is bid in the SOS auction to supply SOS customers. DC Code 34-1518.5(F). The Residential class is currently the only class of customers that requires enough generation through SOS that CREF generation can be used to offset the generation bid into auction, which is why CREFs are currently billed as Residential

especially reasonable since Residential customers will be supporting up to \$500,000 in interconnection costs for CREFs.

Pepco's proposed revisions are reflected in Attachment A to the Comments.

## **XI. CONCLUSION**

Pepco appreciates the opportunity to submit these Comments on the Second NOPR and respectfully requests that its proposed amendments be incorporated into to the small generator interconnection rules.

Respectfully submitted,

**POTOMAC ELECTRIC POWER COMPANY**

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customers. By law (*e.g.*, 15 D.C.M.R. § 999, definition of "CREF Credit Rate"), subscribers are paid out based on SOS General Services Low Voltage Non-Demand customer class. However, that class does not purchase enough supply through the SOS auction to consistently support offset by CREF generation.

# **ATTACHMENT A**

**Chapter 40, DISTRICT OF COLUMBIA SMALL GENERATOR INTERCONNECTION RULES of Title 15 DCMR, PUBLIC UTILITIES AND CABLE TELEVISION, is amended to read as follows:**

**CHAPTER 40 DISTRICT OF COLUMBIA SMALL GENERATOR INTERCONNECTION RULES**

**Section**

4000	Purpose and Applicability
4001	Interconnection Requests, Fees, and Forms
4002	Applicable Standards
4003	Interconnection Review Levels
4004	Level 1 Interconnection Reviews
4005	Level 2 Interconnection Reviews
4006	Level 3 Interconnection Reviews
4007	Level 4 Interconnection Reviews
4008	Technical Requirements
4009	Disputes
4011	Supplemental Review
4012	Applicant Options Meeting
4013-4098	[Reserved]
4099	Definitions

**4000 PURPOSE AND APPLICABILITY**

4000.1 This chapter establishes the District of Columbia Small Generator Interconnection Rules (“DCSGIR”) which apply to facilities satisfying the following criteria:

- (a) The total Nameplate Capacity of the Small Generator Facility is equal to or less than twenty (20) megawatts (“MW”).
- (b) The Small Generator Facility is not subject to the interconnection requirements of PJM Interconnection.
- (c) The Small Generator Facility is designed to operate in parallel with the Electric Distribution System.

**4001 INTERCONNECTION REQUESTS, FEES, AND FORMS**

4001.1 Interconnection Customers seeking to interconnect a Small Generator Facility shall submit an Interconnection Request using a standard form approved by the Commission to the Electric Distribution Company (“EDC”) that owns the Electric Distribution System (“EDS”) to which interconnection is sought. The EDC shall establish processes for accepting Interconnection Requests electronically.

4001.2 The Commission shall determine the appropriate interconnection fees, and the fees shall be posted on the EDC’s website and listed in the EDC’s tariffs. There shall be no application fee for submitting a Level 1 Interconnection Request.

- 4001.3 In circumstances where standard forms and agreements are used as part of the interconnection process defined in this document, electronic versions of those forms shall be approved by the Commission and posted on the EDC’s website. The EDC’s Interconnection Request forms shall be provided in a format that allows for electronic entry of data.
- 4001.4 The EDC shall allow an Interconnection Request to be submitted through the EDC’s website. The EDC shall allow electronic signatures to be used for Interconnection Request.
- 4001.5 In accordance with Subsection 4003.2 herein, Interconnection Customers may request an optional Pre-Application Report from the EDC to get information about the Electric Distribution System conditions at their proposed Point of Common Coupling without submitting a completed Interconnection Request form.
- 4001.6 The EDC shall assign each complete Interconnection Requests a queue position based on when it is deemed complete. ~~The EDC shall maintain a single queue, which includes all Interconnection Requests which have been assigned a queue position. The queue information which pertains to Levels 2, 3, and 4 Interconnection Requests shall be available publicly, shall be sortable by feeder, and be updated at least monthly. Information to be included in the publicly available queue is shown in Attachment A.~~
- 4001.7 The EDC shall maintain on its website an Interconnection Facilities Cost Matrix (~~“Interconnection Facilities Cost Matrix”~~) as defined in Section 4099. The Interconnection Facilities Cost Matrix will be updated annually by April 1<sup>st</sup> of each year, and may be updated up to twice annually. The EDC shall file a Notice with the Commission of the Interconnection Facilities Cost Matrix it intends to post, not less than fourteen (14) days prior to its posting, on the EDC website. The Notice shall specify the intended effective date of the Interconnection Facilities Cost Matrix. Each proposed update should be publicly posted for a 10-day objection period. If no objections are filed with the Commission, the updated Interconnection Facilities Cost Matrix shall be made final. If two or more objections are received by the Commission pertaining to a certain cost item, the updated Interconnection Facilities Cost Matrix shall be postponed pending resolution of the objectionable cost data. In the event of any dispute or postponement, the filed and approved copy of the Interconnection Facilities Cost Matrix is controlling.

## **4002 APPLICABLE STANDARDS**

- 4002.1 Unless one or more of the following standards are waived by the EDC, a Small Generator Facility must comply with the following standards, as applicable:
- (a) Institute of Electrical and Electronics Engineers (“IEEE”) 1547 Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces;

- (b) IEEE 1547.1 - Standard Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces;
- (c) IEEE 1547.2 - Application Guide for IEEE Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems;
- (d) Underwriters Laboratories (“UL”) 6142 Standard for Small Wind Turbine Systems; and
- (e) UL 1741 Standard for Inverters, Converters and Controllers for Use in Independent Power Systems. UL 1741 compliance must be recognized or certified by a Nationally Recognized Testing Laboratory as designated by the U.S. Occupational Safety and Health Administration. Certification of a particular model or a specific piece of equipment is sufficient. It is also sufficient for an inverter built into a Generating Facility to be recognized as being UL 1741 compliant by a Nationally Recognized Testing Laboratory.

4002.2-4002.4 [RESERVED]

4002.5 The Interconnection Equipment shall meet the requirements of the most current approved version of each document listed in Subsection 4002.1, as amended and supplemented at the time the Interconnection Request is submitted.

4002.6 Nothing herein shall preclude the need for an on-site Witness Test or operational test by the Interconnection Customer.

4002.7 Advanced Inverters

To comply with IEEE 1547-2018:

- (a) After January 1, 2022, any Small Generator Facility requiring an inverter that submits an interconnection request shall use an Advanced Inverter with either a default or a site-specific EDC required inverter settings profile, as determined by the EDC.
- (b) Any Small Generator Facility may replace an existing inverter that was purchased prior to January 1, 2022, with an inverter of equal or greater ability than the original inverter, for use at the Small Generator Facility.
- (c) The EDC shall establish default EDC required inverter settings profiles for Advanced Inverters pursuant to Subsection 4002.7(e), and shall publish the default EDC required inverter settings profile on the EDC’s website prior to January 1, 2022. Notwithstanding the list of default settings, the EDC reserves the right to require specific settings at specific sites, if necessary, for the provision of safe and reliable service.

- (d) To the extent reasonable, pursuant to any modifications required by Subsection 4002.7(e), all EDC required inverter settings profiles shall be consistent with applicable Advanced Inverter recommendations from PJM Interconnection, LLC.
- (e) A default EDC required inverter settings profile shall be established by an EDC to optimize the safe and reliable operation of the Electric Distribution System, and shall serve the following objectives:
  - (1) The primary objective is to ~~incur no involuntary~~ help support reliability of the system while optimizing the curtailment of real power when necessary to maintain normal operating conditions ~~inverter curtailments incurred during normal operating conditions and minimal real power curtailments during abnormal operating conditions.~~
  - (2) The secondary objective is to enhance Electric Distribution System hosting capacity and to optimize the provision of grid support services.
- (f) A site-specific EDC required inverter settings profile may be established by an EDC as necessary to optimally meet objectives established in Subsection 4002.7(e).
- (g) All default EDC required inverter settings profiles will be documented in the interconnection agreements.
- (h) A list of acceptable Advanced Inverters shall be published on the EDC's website prior to January 1, 2022.

**4003 INTERCONNECTION REVIEW LEVELS**

4003.1 The EDC shall review Interconnection Requests using one (1) or more of the four (4) levels of review procedures established by this chapter. The EDC shall first use the level of agreement specified by the Interconnection Customer in the Interconnection Request form. If a Small Generator Facility fails a screen at any level, the EDC may elect to complete the evaluation at the current level, if safety and reliability are not adversely impacted, or at the next appropriate level. The EDC may not impose additional requirements not specifically authorized unless the EDC and the Interconnection Customer mutually agree to do so in writing.

4003.2 If an Interconnection Customer requests a Pre-Application Report from the EDC, the request shall include:

- (a) Contact information (name, address, phone and email).



- (b) A proposed Point of Common Coupling, including latitude and longitude, site map, street address, utility equipment number (*e.g.*, pole number), meter number, account number or some combination of the above sufficient to clearly identify the location of the Point of Common Coupling.
- (c) Generation technology and fuel source (if applicable).
- (d) A three hundred dollar (\$300) non-refundable processing fee.

4003.3

For each Pre-Application Report requested, which includes the requisite information and fee, the EDC shall furnish a report, within ten (10) business days of receipt of the completed Pre-Application Report request, which:

- (a) Advises the Interconnection Customer that the existence of “Available Capacity” in no way implies that an interconnection up to this level may be completed without impacts since there are many variables studied as part of the interconnection review procedures.
- (b) Informs the Interconnection Customer that the Electric Distribution System is dynamic and subject to change.
- (c) Informs the Interconnection Customer that data provided in the Pre-Application Report may become outdated and not useful at the time of submission of the complete Interconnection Request.
- (d) Includes the following information, if available:
  - (1) Total Capacity (MW) of substation/area bus or bank and distribution circuit likely to serve proposed Point of Common Coupling.
  - (2) Allocated Capacity (MW) of substation/area bus or bank and distribution circuit likely to serve proposed Point of Common Coupling.
  - (3) Queued Capacity (MW) of substation/area bus or bank and distribution circuit likely to serve proposed Point of Common Coupling.
  - (4) Available Capacity (MW) of substation/area bus or bank and distribution circuit most likely to serve proposed Point of Common Coupling.
  - (5) Whether the proposed Small Generator Facility is located on an area, spot or radial network.
  - (6) Substation nominal distribution voltage or transmission nominal voltage if applicable.

- (7) Nominal distribution circuit voltage at the proposed Point of Common Coupling.
  - (8) Approximate distribution circuit distance between the proposed Point of Common Coupling and the substation.
  - (9) Relevant Line Section(s) peak load estimate, and minimum load data, when available.
  - (10) Number of protective devices and number of voltage regulating devices between the proposed Point of Common Coupling and the substation/area.
  - (11) Whether or not three-phase power is available at the proposed Point of Common Coupling and/or distance from three-phase service.
  - (12) Limiting conductor rating from proposed Point of Common Coupling to the electrical distribution substation.
  - (13) Based on proposed Point of Common Coupling, existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks.
  - (14) The Pre-Application Report need only include pre-existing data. The EDC is not obligated in its preparation of a Pre-Application Report to conduct a study or other analysis of the proposed project in the event that data is not available. If the EDC cannot complete all or some of a Pre-Application Report due to lack of available data, the EDC will provide the potential Applicant with a Pre-Application Report that includes the information that is available and identify the information that is unavailable. Notwithstanding any of the provisions of this Section, the EDC shall, in good faith, provide Pre-Application Report data that represents the best available information at the time of reporting.
- (e) As an alternative to information required pursuant to § 4003.3(d), the EDC may elect to perform a power flow-based study providing the Interconnection Customer with the maximum size distributed energy resource (DER) that can be installed at a specified location without Distribution System Upgrades and the constraint encountered precluding installation of a larger system without upgrades. EDC shall make available, upon request, a copy of its power flow-based study for each Interconnection Customer to the Commission.

**4004****LEVEL 1 INTERCONNECTION REVIEWS**

- 4004.1 For Level 1 Interconnection Review, the EDC shall use Level 1 procedures for evaluation of all Interconnection Requests to connect inverter-based Small Generator Facilities.
- 4004.2 For Level 1 Adverse System Impact screens, the EDC shall evaluate the potential for Adverse System Impacts using the following screens, which must be satisfied:
- (a) The Small Generator Facility has a Nameplate Capacity of twenty (20) kW or less.
  - (b) For interconnection of a proposed Small Generator Facility to a Line Section on a Radial Distribution Circuit, the aggregated generation on the Line Section, including the proposed Small Generator Facility and all other generator facilities capable of coincidental export of energy on the Line Section, shall not exceed the anticipated minimum load on the Line Section, as determined by the results of a power flow-based study performed by the EDC to evaluate the impact of the proposed Small Generator Facility. If such results are unavailable, the aforementioned aggregate generating capacity shall not exceed fifteen percent (15%) of the Line Section's annual peak load as most recently measured at the substation or calculated for the Line Section. Should the EDC have previously identified the aforementioned Line Section as exceeding fifteen percent (15%) of the Line Section's annual peak load, the EDC shall use its best efforts to complete a power-flow based study to evaluate the impact of the proposed Small Generator Facility as described herein. The EDC shall not fail the Small Generator Facility based solely on the application of the fifteen percent (15%) peak load limitation if the EDC has valid power flow-based study results that can be used to evaluate the impact of the proposed Small Generator Facility.
  - (c) When a proposed Small Generator Facility is to be interconnected on a single-phase shared Secondary Line, the aggregate generation capacity on the shared Secondary Line, including the proposed Small Generator Facility, may not exceed twenty (20) kW.
  - (d) When a proposed Small Generator Facility is single-phase and is to be interconnected on a transformer center tap neutral of a two hundred forty (240) volt service, its addition may not create an imbalance between the two (2) sides of the two hundred forty (240) volt service of more than twenty percent (20%) of the nameplate rating of the service transformer.
  - (e) For interconnection of a Small Generator Facility within a Spot Network or Area Network, the aggregate generating capacity including the Small Generator Facility may exceed fifty percent (50%) of the network's anticipated minimum load if the EDC determines that safety and reliability

are not adversely impacted. If solar energy small generator facilities are used, only the anticipated daytime minimum load shall be considered. The EDC may select any of the following methods to determine anticipated minimum load:

- (1) The network's measured minimum load in the previous year, if available;
  - (2) Five percent (5%) of the network's maximum load in the previous year;
  - (3) The Interconnection Customer's good faith estimate, if provided; or
  - (4) The EDC's good faith estimate, if provided in writing to the Interconnection Customer, along with the reasons why the EDC considered the other methods to estimate minimum load inadequate.
- (f) No construction of facilities by the EDC on its own system other than the Usage Metering is required in order to accommodate the Small Generator Facility.
- (1) If the Interconnection Request requires the construction of Interconnection Facilities, a Utility Generation Meter or Distribution System Upgrades to accommodate the Small Generator Facility, the EDC shall continue its evaluation using Level 2 procedures, commencing at Subsection 4005.4 (a)(1), and the EDC shall notify the Interconnection Customer that it is continuing its evaluation using Level 2 procedures, with an extended timeline of twenty-five (25) business days to Approval to Install.
- (g) The EDC may use results from a valid power flow-based study performed to evaluate the impact of the proposed Small Generator Facility, provided such results are not used to fail any of the Subsections 4004.2 (c), (d), or (e) screens. EDC shall make available upon request a copy of its power flow-based study for each applicant to the Commission.
- (h) If a Small Generator Facility fails a Level 1 Adverse System Impact screen, the EDC may elect to complete the evaluation at Level 1, if safety and reliability are not adversely impacted, or at the next appropriate level.

4004.3

The Level 1 Interconnection Review shall be conducted in accordance with the following procedures:

- (a) The EDC shall, within five (5) business days after receipt of Part 1 of the Interconnection Request, notify the Interconnection Customer in writing or by electronic mail of the review results, which shall indicate that the Interconnection Request is complete or incomplete, and what materials, if any, are missing.

- (b) When an Interconnection Request is complete, the EDC shall assign the Interconnection Request a Queue Position.
- (c) Within five (5) business days after the EDC acknowledges receipt of a complete Interconnection Request, the EDC shall notify the Interconnection Customer of the Level 1 Adverse System Impact screening results. If the proposed interconnection meets all of the applicable Level 1 Adverse System Impact screens or the EDC determines that the Small Generator Facility can be interconnected safely and reliably to its system, the EDC shall provide the Interconnection Customer with an Approval to Install.
- (d) The EDC will provide an EDC-executed Interconnection Agreement within three (3) business days of issuing the Approval to Install.
- (e) Unless extended by mutual agreement of the Interconnection Customer and the EDC, within six (6) months of receiving an Approval to Install or six (6) months from the completion of any Distribution System Upgrades, whichever is later, the Interconnection Customer shall provide the EDC a completed Level 1 PART II - Small Generator Facility Interconnection Certificate of Completion Form, including the signed inspection certificate.
- (f) The EDC may, within ten (10) business days of receiving a completed Level 1 PART II – Small Generator Facility Interconnection Certificate of Completion Form and the inspection certificate from the Interconnection Customer, conduct a Witness Test at a time mutually agreeable to the Interconnection Customer and the EDC. If the Witness Test fails to reveal that all equipment has been appropriately installed and that all electrical connections have been made in accordance with applicable codes, the EDC shall offer to redo the Witness Test at the Interconnection Customer’s expense at a time mutually agreeable to the Interconnection Customer and the EDC. If the EDC determines that the Small Generator Facility fails the inspection it must provide a written explanation detailing the reasons and any standards violated. If the EDC does not perform the Witness Test within ten (10) business days or other time as is mutually agreed to by the Interconnection Customer and the EDC, the Witness Test is deemed waived.
- (g) The EDC shall provide the Interconnection Customer with the Authorization to Operate within twenty (20) business days of receiving a completed Level 1 PART II - Small Generator Facility Interconnection Certificate of Completion Form, including the signed inspection certificate. An Interconnection Customer may begin interconnected operation of a Small Generator Facility provided that there is an Interconnection Agreement in effect, the EDC has received proof of the electrical code official’s approval, the Small Generator Facility has passed any Witness Test by the EDC, and the EDC has issued the Authorization to Operate

- (h) The EDC may require photographs of the site, Small Generator Facility components, meters or any other aspect of the Interconnection Facilities as part of the Level 1 Interconnection Review process, provided that failure to provide a photo in a timely manner will not be a reason for the EDC to deem an Interconnection Request incomplete.

4004.4 [RESERVED]

4004.5 [RESERVED]

4004.6 The EDC, at its sole option, may approve the Interconnection Request provided that such approval is consistent with safety and reliability. If the EDC cannot determine that the Small Generator Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the EDC shall provide the Interconnection Customer with detailed information on the reason(s) for failure in writing. In addition, the EDC shall either:

- (a) Notify Interconnection Customer that the EDC is continuing to evaluate the Small Generator Facility under Supplemental Review if the EDC concludes that the Supplemental Review might determine that the Small Generator Facility could continue to qualify for interconnection pursuant to Level 2; or
- (b) Offer to continue evaluating the Interconnection Request under Level 4.

4004.7 If, on an annual basis, the EDC fails to issue at least ninety percent (90%) of all Authorizations to Operate and Approval to Install in the Level 1 interconnection process (as specified within the timeline(s) stipulated in Subsection 4004.3), it shall be required to develop a corrective action plan.

- (a) The corrective action plan shall describe the cause(s) of the EDC's non-compliance with Subsection 4004.7, describe the corrective measure(s) to be taken to ensure that the standard is met or exceeded in the future, and set a target date for completion of the corrective measure(s). To the extent automation is an element of the corrective measure(s), this should be described in the plan.
- (b) Progress on current corrective action plans shall be included in the EDC's Small Generator Interconnection Annual Report.
- (c) The EDC shall report the actual performance of compliance with Subsection 4004.7 during the reporting period in the Small Generator Interconnection Annual Report of the following year.

## **4005 LEVEL 2 INTERCONNECTION REVIEWS**

4005.1 For a Level 2 Interconnection Review, the EDC shall use the Level 2 procedures for an Interconnection Request.

4005.2

For Level 2 Adverse System Impact screens, the EDC shall evaluate the potential for Adverse System Impacts using the following screens, which must be satisfied:

- (a) The Small Generator Facility Nameplate Capacity rating does not exceed the limits identified in the table below, ~~which vary according to the voltage of the line at the proposed Point of Common Coupling. Small Generator Facilities located within two and a half (2.5) miles of a substation and on a main distribution line with minimum six hundred (600) amp capacity are eligible for Level 2 Interconnection Review under higher thresholds.~~

<u>Line Capacity</u>	<u>Level 2 Eligibility</u>	
	<u>Regardless of location</u>	<u>On <math>\geq</math> 600 amp line <math>\leq</math> 2.5 miles from substation</u>
<u><math>&lt; 4</math> kV</u>	<u><math>&lt; 1</math> MW</u>	<u><math>&lt; 2</math> MW</u>
<u>4.1 kV – 14 kV</u>	<u><math>&lt; 2</math> MW</u>	<u><math>&lt; 3</math> MW</u>
<u>15 kV – 30 kV</u>	<u><math>&lt; 3</math> MW</u>	<u><math>&lt; 4</math> MW</u>
<u>31 kV – 60 kV</u>	<u><math>\leq 4</math> MW</u>	<u><math>\leq 5</math> MW</u>

<u>Circuit Voltage</u>	<u>Level 2 Eligibility</u>	
	<u>Aggregate Limit</u>	<u>Large DER Size (after Aggregate Limit reached)</u>
<u>4 kV</u>	<u>1 MW</u>	<u>250 kW</u>
<u>12 – 13.8 kV</u>	<u>3 MW</u>	<u>250 kW</u>
<u>23 – 25 kV</u>	<u>6 MW</u>	<u>500 kW</u>
<u>33.25 – 34.5 kV</u>	<u>10 MW</u>	<u>1 MW</u>

- (b) For interconnection of a proposed Small Generator Facility to a Radial Distribution Circuit, the Small Generator Facility aggregated with all other generation capable of coincidental exporting energy on the Line Section may not exceed the anticipated minimum load on the Line Section, as determined by the results of a power flow-based study performed by the EDC to evaluate the impact of the proposed Small Generator Facility. If such results are unavailable, the aforementioned aggregate generating capacity shall not exceed fifteen percent (15%) of the Line Section annual peak load, as most recently measured at the substation or calculated for the Line Section. Should the EDC have previously identified the aforementioned Line Section as exceeding fifteen percent (15%) of the Line Section’s annual peak load, the EDC shall use its best efforts to complete a power-flow based study to evaluate the impact of the proposed Small Generator Facility as described herein. The EDC shall not fail the Small Generator Facility based solely on the application of the fifteen percent (15%) peak load limitation if the EDC has valid power flow-based study results that can be used to evaluate the impact of the proposed Small Generator Facility.

- (c) For interconnection of a proposed Small Generator Facility within a Spot or Area Network, the proposed Small Generator Facility shall utilize an inverter-based equipment package and use a minimum import relay or other protective scheme that will ensure power imported from the EDC to the network will, during normal EDC operations, remain above twenty percent (20%) of the minimum load on the network transformer based on historical data, or will remain above an import point reasonably set by the EDC in good faith. For interconnection of a proposed Small Generator Facility within an Area Network, the proposed Small Generator Facility shall utilize an inverter-based equipment package and adhere to a maximum aggregate export level of eighty percent (80%) of the generation level that would cause reverse flow on a network transformer, or will remain below an export point reasonably set by the EDC in good faith. At the EDC's discretion, the requirement for minimum import relays or other protective schemes may be waived.
- (d) The proposed Small Generator Facility, in aggregation with other generation on the distribution circuit, may not contribute more than ten percent (10%) to the distribution circuit's maximum Fault Current at the point on the high voltage (primary) level nearest the Point of Common Coupling.
- (e) The proposed Small Generator Facility, in aggregate with other generation on the distribution circuit, may not cause any distribution protective devices and equipment (including substation breakers, fuse cutouts, and line reclosers), or EDC customer equipment on the Electric Distribution System, to exceed ninety percent (90%) of the short circuit interrupting capability. The Interconnection Request may not receive approval for interconnection on a circuit that already exceeds ninety percent (90%) of the short circuit interrupting capability.
- (f) The proposed Small Generator Facility's Point of Common Coupling may not be on a transmission line.
- (g) The Small Generator Facility complies with the applicable type of interconnection, based on the table below. This screen includes a review of the type of electrical service provided to the Interconnecting Customer, including line configuration and the transformer connection to limit the potential for creating over-voltages on the EDC's Electric Distribution System due to a loss of ground during the operating time of any anti-islanding function. This screen does not apply to Small Generator Facilities with a gross rating of 11 kVA or less.



<b>Primary Distribution Line Configuration</b>	<b>Type of Interconnection to be Made to the Primary Circuit</b>	<b>Results/Criteria</b>
Three-phase, three-wire	Any type	Pass Screen
Three-phase, four-wire	Single-phase, line-to-neutral	Pass Screen
Three-phase, four-wire (For any line that has such a section, or mixed three wire and four wire)	All Others	To pass, aggregate Small Generator Facility Nameplate Capacity must be less than or equal to 10% of Line Section peak load

- (h) When the proposed Small Generator Facility is to be interconnected on single-phase shared Secondary Line, the aggregate generation capacity on the shared Secondary Line, including the proposed Small Generator Facility, shall not exceed sixty-five percent (65%) of the transformer nameplate power rating.
- (i) When a proposed Small Generator Facility is single-phase and is to be interconnected on a transformer center tap neutral of a 240 volt service, its addition may not create an imbalance between the two sides of the 240-volt service of more than twenty percent (20%) of the nameplate rating of the service transformer.
- (j) A Small Generator Facility, in aggregate with other generation interconnected to the distribution low-voltage side of a substation transformer feeding the electric distribution circuit where the Small Generator Facility proposes to interconnect, may not exceed 20MW in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (*e.g.* three (3) or four (4) transmission voltage level buses from the Point of Common Coupling), or the proposed Small Generator Facility shall not have interdependencies, known to the EDC, with earlier-queued Interconnection Requests.
- (k) Except as permitted by the modified Level 2 review process in Subsection 4005.6, no construction of facilities by the EDC on its own system other than metering shall be required to accommodate the Small Generator Facility.
- (l) The EDC may use results from a valid power flow-based study performed to evaluate the impact of the proposed Small Generator Facility, provided

such results are not used to fail any of the Subsection 4005.2 (c), (d), (e), (f), (g), (h), (i), or (j) screens.

- (m) If a power-flow analysis is performed based on Subsection 4005.2 (b) or (l), the EDC shall make available upon request a copy of its power flow-based study for each applicant to the Commission.

4005.3 [RESERVED]

4005.4 The Level 2 Interconnection Review shall be conducted in accordance with the following procedures:

(a) The EDC shall, within five (5) business days after receipt of Part 1 of the Interconnection Request, acknowledge, in writing or by electronic mail, receipt of the Interconnection Request, indicating whether it is complete or incomplete, and the appropriate application fee.

(1) If ~~If~~ the Interconnection Request requires the construction of Interconnection Facilities or Distribution System Upgrades, the following additional information will be required to be submitted with the application. Provision of the additional information does not preclude ~~challenging the findings~~ requesting a Modified Level 1/2 Scoping Meeting in accordance with 4005.4(a)(2).

(A) Electrical room drawings. Such drawings may be omitted for the CREF initial application submission, but could be required by the EDC upon confirmation of the CREF location by the Interconnection Customer and the EDC. The Interconnection Customer must provide the electrical room drawings within three (3) business days of the EDC request. To the extent that the EDC request is after the Interconnection Request is deemed complete and the Interconnection Customer provides the drawings after three business days, the additional business days will extend the 25-business day and 60-business day requirements by the same amount.

(B) Meter locations

(C) Initial proposed interconnection drawings

(2) If the EDC requires the construction of Distribution System Upgrades during the Interconnection Request process, the EDC shall provide a technical explanation that reviews the need for the identified Interconnection Facilities and/or Distribution System Upgrades. The EDC shall demonstrate that required functionalities are not satisfied by employing IEEE STD 1547 certified and UL 1741 SA listed equipment.

(A) If requested by the Interconnection Customer, and agreed to by the Interconnection Customer and the EDC, a Modified Level 1/2 Scoping Meeting shall be held within ten (10) business days, or other mutually agreed to time, after the EDC has notified the Interconnection Customer that Interconnection Facilities and/or a Distribution System Upgrade are being required by the EDC. The Modified Level 1/2 Scoping Meeting shall take place in person, by telephone, or electronically by a means mutually agreeable to the Interconnection Customer and the EDC. The purpose of this meeting shall be to review the Interconnection Request, existing studies relevant to the Interconnection Request, the conditions at the proposed location, the results of the Level 1 or Level 2 Adverse System Impact screening criteria, and a technical explanation in which the EDC reviews the need for the aforementioned Interconnection Facilities and/or Distribution System Upgrades.

(b) When the Interconnection Request is deemed incomplete, the EDC shall provide a written list detailing all information that must be provided to complete the request. The Interconnection Customer shall have ten (10) business days after receipt of the list to revise the Interconnection Request to include the requested information and resubmit the Interconnection Request or request an extension of time to provide such information. If the Interconnection Request is not resubmitted with the requested information within ten (10) days, the Interconnection Request shall be deemed withdrawn. The EDC shall notify the Interconnection Customer within three (3) business days of receipt of a revised Interconnection Request whether the request is complete or incomplete. The EDC may deem the request withdrawn if it remains incomplete.

(a)(c) When an Interconnection Request is complete, the EDC shall assign a Queue Position.

(b)(d) Unless Subsection 4005.6 applies, within fifteen (15) business days after the EDC notifies the Interconnection Customer that it has received a completed Interconnection Request, the EDC shall evaluate the Interconnection Request using the Level 2 screening criteria and notify the Interconnection Customer whether the Small Generator Facility meets all of the applicable Level 2 Adverse System Impact screens. If the proposed interconnection meets all of the applicable Level 2 Adverse System Impact screens and the EDC determines that the Small Generator Facility can be interconnected safely and reliably to the Electric Distribution System, the EDC shall provide the Interconnection Customer an Approval to Install. The EDC shall provide an EDC-executed Interconnection Agreement within three (3) business days after notification of Level 2 issuance of the Approval to Install final cost letter, unless modified by mutual agreement of the EDC and the Interconnection Customer.

(1) If Distribution System Upgrade(s) are required, the Interconnection Customer will be notified at this time that the modified process in 4005.6 has been triggered, with an extended timeline of twenty-five (25) business days to Approval to Install.

~~(e)~~(e) Unless extended by mutual agreement of the Interconnection Customer and the EDC, within twenty-four (24) months of receiving an Approval to Install or six (6) months of completion of any Distribution System Upgrades, whichever is later, the Interconnection Customer shall provide the EDC with the signed Level 2-4 Part II – Small Generator Interconnection Certificate of Completion, including the signed inspection certificate. An Interconnection Customer shall communicate with the EDC no less frequently than every six (6) months regarding the status of a proposed Small Generator Facility to which an Interconnection Agreement refers.

~~(d)~~(f) The EDC may conduct a Witness Test within ten (10) business days of receiving the completed Level 2-4 Part II – Small Generator Facility Interconnection Certificate of Completion and the signed inspection certificate from the Interconnection Customer, conduct a Witness Test at a time mutually agreeable to the Interconnection Customer and the EDC. If the Witness Test fails to reveal that all equipment has been appropriately installed and that all electrical connections have been made in accordance with applicable codes, the EDC shall offer to redo the Witness Test at the Interconnection Customer's expense at a time mutually agreeable to the Interconnection Customer and the EDC. If the EDC determines that the Small Generator Facility fails the inspection, it must provide a written explanation detailing the reasons and any standards violated. If the EDC does not perform the Witness Test within ten (10) business days or other such time as is mutually agreed to by the Interconnection Customer and the EDC, the Witness Test is deemed waived.

~~(e)~~(g) An Interconnection Customer may begin interconnected operation of a Small Generator Facility provided that there is an Interconnection Agreement in effect, the EDC has received proof of the electrical code official's approval, the Small Generator Facility has passed any Witness Test by the EDC, and the EDC has issued the Authorization to Operate. Evidence of approval by an electric code official includes a signed inspection certificate.

~~(f)~~(h) The EDC may require photographs of the site, Small Generator Facility components, meters or any other aspect of the Interconnection Facilities as part of the Level 2 Interconnection Review process, provided that failure to provide a photo in a timely manner will not be a reason for the EDC to deem an Interconnection Request incomplete.

## Modifications to Level 2 Interconnection Review Process:

- (a) If the Interconnection Request requires the addition of Interconnection Facilities or a Utility Generation Meter that fall within the Interconnection Facilities Cost Matrix, as described in Subsection 4001.7, the following process shall be followed for the Approval to Install. Subsection 4005.4(d) does not apply.
  - (1) If the only Interconnection Facilities required in the Interconnection Request are captured in one or more of the categories in the Interconnection Facilities Cost Matrix, the Interconnection Customer will be responsible only for the applicable Interconnection Facilities and Utility Generation Meter cost(s) from the Interconnection Facilities Cost Matrix.
  - (2) The cost(s) from the Interconnection Facilities Cost Matrix will be final costs.
  - (3) The EDC shall issue the final cost letter, which shall contain only the applicable cost(s) from the Interconnection Facility Cost Matrix and will be provided concurrently with the Approval to Install, and shall be provided within twenty-five (25) business days after the Interconnection Request is deemed complete.
- (b) If the Interconnection Request requires the addition of Interconnection Facilities and the Interconnection Facilities Cost Matrix is not applicable or requires the addition of Distribution System Upgrades, the following process shall be followed for the Approval to Install. Subsection 4005.4(d) does not apply.
  - (1) The estimated cost letter shall be provided within twenty-five (25) business days after the Interconnection Request is deemed complete.
  - (2) The EDC will provide a cost estimate based on a forty percent (40%) design that is accurate within +/- fifty percent (50%) concurrently with the Approval to Install.
  - (3) Unless extended by mutual agreement of the Interconnection Customer and the EDC, the Interconnection Customer must agree to the cost estimate and the operational requirements and execute the Interconnection Agreement within ten (10) business days of receiving the Approval to Install.
  - (4) Once the Interconnection Customer has approved the cost letter and operational requirements, the Interconnection Customer is responsible for the costs the EDC incurs designing or constructing Interconnection Facilities or Distribution System Upgrades if the Interconnection Customer decides not to move forward with the interconnection of the Small Generator Facility.

- (5) Within sixty (60) business days after the EDC notifies the Interconnection Customer that it has received a completed Interconnection Request, the EDC will issue a final cost letter based on one hundred percent 100% design. The final cost letter will include a detailed list of necessary Distribution System Upgrades and an itemized final cost, breaking out taxes, total materials cost, and total labor cost for completing such upgrades. The final cost letter will also indicate the milestones for completion of the Interconnection Customer's installation of its Small Generator Facility and the EDC's completion of any Distribution System Upgrade, and these milestones will be incorporated by reference into the Interconnection Agreement. Upon receipt of the Interconnection Customer's written approval of the final cost letter, the EDC shall provide to the Interconnection Customer an invoice for the final costs within ten (10) business days.
- (6) If the Interconnection Customer changes the design of the interconnection of the Small Generator Facility at any point, the estimated cost letter, Approval to Install, Interconnection Agreement, and final cost letter, as applicable, may be void. The Interconnection Customer shall notify the EDC of the requested design changes and if, in the reasonable judgement of the EDC, a re-evaluation of the estimated and/or final cost letter is required, EDC will provide Interconnection Customer within ten (10) business days of receipt of the Interconnection Customer's notice an estimate of the time required to re-evaluate the costs and a request for all required technical data related to the proposed changes. Interconnection Customer may either (i) accept the additional time and cost to complete the re-evaluation, (ii) withdraw the proposed changes, or (iii) proceed with a new Interconnection Request for such changes. The Interconnection Customer shall provide EDC written notice of its election within ten (10) business days following Interconnection Customer's receipt of EDC's estimated additional time.
- (7) The EDC will provide an EDC-executed Interconnection Agreement within three (3) business days of issuing the Approval to Install final cost letter, unless modified by mutual agreement of the EDC and the Interconnection Customer.

(c) The EDC shall design, procure, construct, install, and own any Distribution System Upgrades for a CREF. The Distribution System Upgrades costs shall be allocated as follows, ~~subject to availability of funding.~~

(e)

- (1) The ~~total~~ Distribution System Upgrade costs ~~for shared allocation as described above~~ shall be capped ~~at \$500,000 per calendar year on a per-project basis, as provided below~~. Costs paid by ~~the~~ EDC for ~~CREF~~ Distribution System Upgrades shall be tracked as a regulatory asset and recovered in ~~its~~ the EDC's next base rate case as distribution plant.
- (2) ~~If funding is available,~~ Distribution System Upgrade cost responsibility shall be assigned as follows:
  - (A) For Distribution System Upgrade costs of \$50,000 or less, ~~fifty percent (50%) of the costs shall be paid for by the CREF Interconnection Customer and fifty percent (50%) of the costs paid for by the EDC shall pay the lower of \$25,000 or the total cost of the Distribution System Upgrade. The CREF Interconnection Customer shall pay the balance of the Distribution System Upgrade costs after the EDC portion has been subtracted.~~
  - (B) For Distribution System Upgrade costs of over \$50,000, the portion paid by the EDC shall be capped at \$25,000. The CREF Interconnection Customer shall pay the balance of the Distribution System Upgrade costs after the EDC portion has been subtracted.
  - ~~(3) If the annual funding is exhausted and thus no longer available, the CREF shall pay 100% of costs.~~

(d) If the Interconnection Request requires more than the addition of Interconnection Facilities to the Electric Distribution System, the EDC may notify the Interconnection Customer that the EDC will need to complete a Facilities Study under Subsection 4007.2, paragraphs (e)(3) (B), (C), (D) and (E) to determine the necessary Distribution System Upgrades and complete the construction.

4005.7

When a Small Generator Facility is not approved under a Level 2 review, the EDC, at its sole option, may approve the Interconnection Request provided such approval is consistent with safety and reliability and shall provide the Interconnection Customer an Approval to Install after the determination. If the EDC cannot determine that the Small Generator Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the EDC shall provide the Interconnection Customer with detailed information on the reason(s) for failure in writing. In addition, the EDC shall either:

- (a) Notify Interconnection Customer that the EDC is continuing to evaluate the Interconnection Request under Supplemental Review if the EDC concludes that the Supplemental Review might determine that the Small Generator

Facility could continue to qualify for interconnection pursuant to Level 2;  
or

- (b) Offer to continue evaluating the Interconnection Request under Level 4.

4005.8

On an annual basis, if the EDC fails to issue at least ninety percent (90%) of all Authorizations to Operate and Approval to Install in the Level 2 interconnection process (as specified within the timeline(s) specified in Subsections 4005.4 and 4005.6), and it shall be required to develop a corrective action plan.

- (a) The corrective action plan shall describe the cause(s) of the EDC's non-compliance with Subsection 4005.8, describe the corrective measure(s) to be taken to ensure that the standard is met or exceeded in the future, and set a target date for completion of the corrective measure(s). To the extent automation is an element of the corrective measure(s), this should be described in the plan.
- (b) Progress on current corrective action plans shall be included in the EDC's Small Generator Interconnection Annual Report.
- (c) The EDC shall report the actual performance of compliance with Subsection 4005.8 during the reporting period in the Small Generator Interconnection Annual Report of the following year, including milestones for number of Interconnection Requests in total, number and percentage meeting timeline requirements for Approval to Install, estimated cost letter, final cost letter, and Authorization to Operate, as they pertain to certain sections of Level 2 procedures:
  - (1) Unmodified (Subsection 4005.4 (c)),
  - (2) Modified, Cost Matrix (Subsection 4005.6 (a), and
  - (3) Modified, Cost Matrix Not Applicable (Subsection 4005.6 (b)).

**4006**

### **LEVEL 3 INTERCONNECTION REVIEWS**

4006.1

The EDC shall use Level 2 Interconnection Review procedures for evaluating Level 3 Interconnection Requests provided the proposed Small Generator Facility has a Nameplate Capacity rating not greater than 20MW and uses reverse power relays, minimum import relays or other protective devices to assure that power may never be exported from the Small Generator Facility to the EDC's electrical distribution system. An Interconnection Customer proposing to interconnect a Small Generator Facility to a spot or Area Network is not permitted under the Level 3 review process.



**4007****LEVEL 4 INTERCONNECTION REVIEWS**

4007.1

The EDC shall use the Level 4 Interconnection Review procedures for evaluating Interconnection Requests when:

- (a) The Interconnection Request was not approved under a Level 1, Level 2, or Level 3 Interconnection Review and the Interconnection Customer has submitted a new Interconnection Request for consideration under a Level 4 Interconnection Review or requested that the rejected Interconnection Request be treated as a Level 4 Interconnection Request; and
- (b) The Interconnection Request does not meet the criteria for qualifying for a review under Level 1, Level 2 or Level 3 Interconnection Review procedures.

4007.2

The Level 4 Interconnection Review shall be conducted in accordance with the following process:

- (a) Within five (5) business days from receipt of Part I of an Interconnection Request or transfer of an existing request to a Level 4 Interconnection Request, the EDC shall notify the Interconnection Customer whether the request is complete.
  - (1) If the Interconnection Request requires the construction of Interconnection Facilities or Distribution System Upgrades, the following additional information could be required by the EDC for submission with the application.
    - (A) Electrical room drawings
    - (B) Meter locations
    - (C) Initial proposed interconnection drawings
  - (2) If the EDC requires the construction of Distribution System Upgrades during the Interconnection Request process, the EDC shall provide a technical explanation that justifies the need for the identified facilities and/or upgrades. The EDC shall demonstrate that required functionalities are not satisfied by employing IEEE STD 1547 certified and UL 1741 SA listed equipment.
- (b) When the Interconnection Request is deemed not complete, the EDC shall provide the Interconnection Customer with a written list detailing information required to complete the Interconnection Request. The Interconnection Customer shall have twenty (20) business days to revise the Interconnection Request to include the requested information and resubmit the Interconnection Request, or the Interconnection Request shall be considered withdrawn. The Interconnection Customer and the EDC may

agree to extend the time for receipt of the revised Interconnection Request. The EDC shall notify the Interconnection Customer within five (5) business days of receipt of the revised Interconnection Request whether the Interconnection Request is complete. The EDC may deem the Interconnection Request withdrawn if it remains incomplete.

- (c) When an Interconnection Request is complete, the EDC shall assign a Queue Position.
- (d) The following procedures shall be followed in performing a Level 4 Interconnection Review:
  - (1) By mutual agreement of the Interconnection Customer and the EDC, the Scoping Meeting, interconnection feasibility study, interconnection impact study, or Facilities Study provided for in a Level 4 Interconnection Review and discussed in this paragraph may be waived;
  - (2) If agreed to by the Interconnection Customer and the EDC, a Scoping Meeting shall be held within ten (10) business days, or other mutually agreed to time, after the EDC has notified the Interconnection Customer that the Interconnection Request is deemed complete, or the Interconnection Customer has requested that its Interconnection Request proceed after failing the requirements of a Level 2 Interconnection Review or Level 3 Interconnection Review. The Scoping Meeting shall take place in person, by telephone, or electronically by a means mutually agreeable to the Interconnection Customer and EDC. The purpose of the Scoping Meeting shall be to review the Interconnection Request; existing studies relevant to the Interconnection Request; the conditions at the proposed location including the available Fault Current at the proposed location, the existing peak loading on the lines in the general vicinity of the proposed Small Generator Facility, and the configuration of the distribution line at the proposed Point of Common Coupling; and the results of the Level 1, Level 2 or Level 3 Adverse System Impact screening criteria;
  - (3) When the Interconnection Customer and EDC agree at a Scoping Meeting that an interconnection feasibility study shall be performed, and if the Interconnection Customer and EDC do not waive the interconnection impact study, the EDC shall provide to the Interconnection Customer, no later than five (5) business days after the Scoping Meeting, an Interconnection System Feasibility Study Agreement, including an outline of the scope of the study and a nonbinding good faith estimate of the cost and time to perform the study;

- (4) When the Interconnection Customer and EDC agree at a Scoping Meeting that an interconnection feasibility study is not required, and if the Interconnection Customer and EDC agree that an interconnection system impact study shall be performed, the EDC shall provide to the Interconnection Customer, no later than five (5) business days after the Scoping Meeting, an Interconnection System Impact Study Agreement, including an outline of the scope of the study and a nonbinding good faith estimate of the cost to perform the study; and
  - (5) When the Interconnection Customer and EDC agree at the Scoping Meeting that an interconnection feasibility study and interconnection system impact study are not required, the EDC shall provide to the Interconnection Customer, no later than five (5) business days after the Scoping Meeting, an Interconnection Facilities Study Agreement including an outline of the scope of the study and a nonbinding good faith estimate of the cost to perform the study.
  - (6) The EDC may elect to perform one or more of these studies concurrently.
- (e) Any required Adverse System Impact studies shall be carried out using the following guidelines:
- (1) An interconnection feasibility study shall include the following analyses and conditions for the purpose of identifying and addressing potential Adverse System Impact to the EDC's Electric Distribution System that would result from the interconnection:
    - (A) Initial identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection;
    - (B) Initial identification of any thermal overload or voltage limit violations resulting from the interconnection;
    - (C) Initial review of grounding requirements and system protection;
    - (D) Description and nonbinding estimated cost of facilities required to interconnect the Small Generator Facility to the EDC's Electric Distribution System in a safe and reliable manner; and
    - (E) Additional evaluations, at the expense of the Interconnection Customer, when an Interconnection Customer requests that the interconnection feasibility study evaluate multiple potential Points of Common Coupling.

(2) An interconnection system impact study shall evaluate the impacts of the proposed interconnection on both the safety and reliability of the EDC's Electric Distribution System. The study shall identify and detail the Adverse System Impacts that result when a Small Generator Facility is interconnected without project modifications or Distribution System Upgrades, focusing on the Adverse System Impacts identified in the interconnection feasibility study or potential impacts including those identified in the Scoping Meeting. The interconnection system impact study shall consider all Small Generator Facilities that, on the date the interconnection system impact study is commenced, are directly interconnected with the EDC's Electric Distribution System, have a pending higher Queue Position to interconnect to the system, or have a signed Interconnection Agreement.

(A) A distribution interconnection system impact study shall be performed when a potential Electric Distribution System Adverse System Impact is identified in the interconnection feasibility study. The EDC shall send the Interconnection Customer an Interconnection System Impact Study Agreement within five (5) business days of transmittal of the interconnection feasibility study report. The agreement shall include an outline of the scope of the study and a good faith estimate of the cost to perform the study. The impact study shall include:

- (i) A load flow study;
- (ii) Identification of Affected Systems;
- (iii) An analysis of equipment interrupting ratings;
- (iv) A protection coordination study;
- (v) Voltage drop and flicker studies;
- (vi) Protection and set point coordination studies;
- (vii) Grounding reviews; and
- (viii) Impact on system operation.

(B) An interconnection system impact study shall consider the following criteria:

- (i) A short circuit analysis;
- (ii) A stability analysis;

- (iii) Alternatives for mitigating Adverse System Impacts on Affected Systems;
  - (iv) Voltage drop and flicker studies;
  - (v) Protection and set point coordination studies; and
  - (vi) Grounding reviews.
- (C) The final interconnection system impact study shall provide the following:
- (i) The underlying assumptions of the study;
  - (ii) The results of the analyses;
  - (iii) A list of any potential impediments to providing the requested interconnection service;
  - (iv) Required distribution upgrades; and
  - (v) A nonbinding good faith estimate of cost and time to construct any required Distribution System Upgrades.
- (D) The Interconnection Customer and EDC shall use an Interconnection System Impact Study Agreement approved by the Commission.
- (3) The Facilities Study shall be conducted as follows:
- (A) Within five (5) business days of completion of the interconnection system impact study, the EDC shall transmit a report to the Interconnection Customer with an Interconnection Facilities Study Agreement, which includes an outline of the scope of the study and a nonbinding good faith estimate of the cost and time to perform the study;
  - (B) The Facilities Study shall estimate the cost of the equipment, engineering, procurement and construction work including overheads needed to implement the conclusions of the interconnection feasibility study and the interconnection system impact study to interconnect the Small Generator Facility. The Facilities Study shall identify:
    - (i) The electrical switching configuration of the equipment, including transformer, switchgear, meters and other station equipment;

- (ii) The nature and estimated cost of the EDC's Interconnection Facilities and Distribution System Upgrades necessary to accomplish the interconnection; and
    - (iii) An estimate of the time required to complete the construction and installation of the facilities;
  - (C) The Interconnection Customer and EDC may agree to permit an Interconnection Customer to separately arrange for a third party to design and construct the required Interconnection Facilities. The EDC may review the design of the facilities under the Interconnection Facilities Study Agreement. When the Interconnection Customer and EDC agree to separately arrange for design and construction and to comply with security and confidentiality requirements, the EDC shall make all relevant information and required specifications available to the Interconnection Customer to permit the Interconnection Customer to obtain an independent design and cost estimate for the facilities, which shall be built in accordance with the specifications;
  - (D) Upon completion of the Facilities Study and with the agreement of the Interconnection Customer to pay for the Interconnection Facilities and Distribution System Upgrades identified in the Facilities Study, the EDC shall issue the Approval to Install; and
  - (E) The Interconnection Customer and EDC shall use an Interconnection Facilities Study Agreement approved by the Commission.
- (f) Upon completion or waiver of procedures defined in Subsection 4007.2 (c) as mutually agreed by the Interconnection Customer and EDC and the EDC determines that the Small Generator Facility can be interconnected safely and reliably to the Electric Distribution System, the EDC shall provide the Interconnection Customer with an Approval to Install. If the Interconnection Request is denied, the EDC shall provide a written explanation.
- (g) When Distribution System Upgrades are required, the interconnection of the Small Generator Facility shall proceed according to milestones agreed to by the Interconnection Customer and EDC in the Interconnection Agreement. The Authorization to Operate may not be issued until:
  - (1) The milestones agreed to in the Interconnection Agreement are satisfied;

- (2) The Small Generator Facility is approved by electric code officials with jurisdiction over the interconnection;
- (3) The Interconnection Customer provides a Certificate of Completion to the EDC. Completion of local inspections may be designated on inspection forms used by local inspecting authorities; and
- (4) There is a successful completion of the Witness Test per the terms and conditions found in the Standard Agreement for Interconnection of Small Generator Facilities, unless waived.

(h) The EDC may require photographs of the site, Small Generator Facility components, meters or any other aspect of the Interconnection Facilities as part of the Level 4 Interconnection Review process, provided that failure to provide a photo in a timely manner will not be a reason for the EDC to deem an Interconnection Request incomplete.

4007.3 An interconnection system impact study is not required when the interconnection feasibility study concludes there is no Adverse System Impact, or when the study identifies an Adverse System Impact, but the EDC is able to identify a remedy without the need for an interconnection system impact study.

4007.4 The Interconnection Customer and EDC shall use a form of Interconnection Feasibility Study Agreement approved by the Commission.

**4008 TECHNICAL REQUIREMENTS**

4008.1 Unless one or more of the listed standards are waived by the EDC, a Small Generator Facility must comply with the technical standards listed in Subsection 4002.1, as applicable.<sup>1</sup>

4008.2 When an Interconnection Request is for a Small Generator Facility that includes multiple energy production devices at a site for which the Interconnection Customer seeks a single Point of Common Coupling, the Interconnection Request shall be evaluated on the basis of the aggregate Nameplate Capacity of multiple devices.

4008.3 When an Interconnection Request is for an increase in capacity for an existing Small Generator Facility, the Interconnection Request shall be evaluated on the basis of the new total Nameplate Capacity of the Small Generator Facility.

4008.4 The EDC shall maintain records of the following for a minimum of three (3) years:

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<sup>1</sup> The PJM Manual, PJM Manual 14G, “Generation Interconnection Requests” Attachment C, which is available at: <https://www.pjm.com/-/media/documents/manuals/m14g.ashx>, shall be used as a guide (but not a requirement) to detail and illustrate the interconnection protection requirements that are provided in IEEE Standard 1547.

- (a) The total number of and the Nameplate Capacity of the Interconnection Requests received, approved and denied under Level 1, Level 2, Level 3 and Level 4 reviews;
- (b) The number of Interconnection Requests that were not processed within the timelines established in this rule;
- (c) The number of Scoping Meetings held and the number of feasibility studies, impact studies, and Facility Studies performed, and the fees charged for these studies;
- (d) The justifications for the actions taken to deny Interconnection Requests; and
- (e) Any special operating requirements required in Interconnection Agreements that are not part of the EDC's written and published operating procedures applicable to Small Generator Facilities.

4008.5 The EDC shall provide a report to the Commission containing the information required in Subsection 4008.4, paragraphs (a)-(c) within ninety (90) calendar days of the close of each year.

- (a) The EDC shall include the total amount of solar energy from solar energy systems meeting the requirements of D.C. Code § 34-1432(e)(1) for which ~~Interconnection R~~ requests have been submitted in the previous six (6) months in its Quarterly Interconnection Report filed in accordance with Commission Order No. 18575.
- (b) The EDC shall provide to the Commission a ~~public and~~ confidential list of final interconnection approvals for renewable generators (name, address, capacity (DC and AC), and system type) on the 15<sup>th</sup> of each month, for the previous month's interconnections.

4008.6 The EDC shall designate a contact person and contact information on its website and the Commission's website for submission of all Interconnection Requests and from whom information on the Interconnection Request process and the EDC's Electric Distribution System can be obtained regarding a proposed project. The information shall include studies and other materials useful to an understanding of the feasibility of interconnecting a Small Generator Facility at a particular point on the EDC's Electric Distribution System, except to the extent that providing the materials would violate security requirements or confidentiality agreements, or otherwise deemed contrary to District or federal law/regulations. In appropriate circumstances, the EDC may require a confidentiality agreement prior to release of information.

4008.7 When an Interconnection Request is deemed complete, a modification other than a minor equipment modification that is not agreed to in writing by the EDC, shall require submission of a new Interconnection Request, with the exception of a



change in design subject to EDC re-evaluation as specified in Subsection 4005.6(b)(7).

- 4008.8 When an Interconnection Customer is not currently a customer of the EDC at the proposed site, the Interconnection Customer, upon request from the EDC, shall provide proof of site control evidenced by a property tax bill, deed, lease agreement, or other legally binding contract.
- 4008.9 To minimize the cost of interconnecting multiple Small Generator Facilities, the EDC or the Interconnection Customer may propose a single Point of Common Coupling for multiple Small Generator Facilities located at a single site. If the Interconnection Customer rejects the EDC's proposal for a single Point of Common Coupling, the Interconnection Customer shall pay the additional cost, if any, of providing a separate Point of Common Coupling for each Small Generator Facility. If the EDC rejects the customer's proposal for a single Point of Common Coupling without providing a written technical explanation, the EDC shall pay the additional cost, if any, of providing a separate Point of Common Coupling for each Small Generator Facility.
- 4008.10 Small Generator Facilities shall be capable of being isolated from the EDC. For all Small Generator Facilities interconnecting to a Primary Line, the isolation shall be by means of a lockable, visible-break isolation device accessible by the EDC. For all Small Generator Facilities interconnecting to a Secondary Line, the isolation shall be by means of a lockable isolation device whose status is clearly indicated and is accessible by the EDC. The isolation device shall be installed, owned and maintained by the owner of the Small Generator Facility and located between the Small Generator Facility and the Point of Common Coupling. A Draw-out Type Circuit Breaker with a provision for padlocking at the draw-out position can be considered an isolation device for purposes of this requirement.
- 4008.11 The Interconnection Customer may elect to provide the EDC access to an isolation device that is contained in a building or area that may be unoccupied and locked or not otherwise readily accessible to the EDC, by installing a lockbox provided by the EDC that shall provide ready access to the isolation device. The Interconnection Customer shall install the lockbox in a location that is readily accessible by the EDC, and the Interconnection Customer shall permit the EDC to affix a placard in a location of its choosing that provides clear instructions to the EDC's operating personnel on access to the isolation device. In the event that the Interconnection Customer fails to comply with the terms of this subsection and the EDC needs to gain access to the isolation device, the EDC shall not be held liable for any damages resulting from any necessary EDC action to isolate the Interconnection Customer.
- 4008.12 Any metering necessitated by a Small Generator Facility interconnection shall be installed, operated and maintained in accordance with applicable tariffs. Any such metering requirements shall be clearly identified as part of the Interconnection

Agreement executed by the Interconnection Customer and the EDC. The EDC is not responsible for installing, operating, or maintaining customer-owned meters.

4008.13 [RESERVED]

4008.14 [RESERVED]

4008.15 The Interconnection Customer shall design its Small Generator Facility to maintain a composite power delivery at continuous rated power output at the Point of Common Coupling at a power factor within the power factor range required by the EDC's applicable tariff for a comparable load customer. The EDC may also require the Interconnection Customer to follow a voltage or VAR schedule if such schedules are applicable to similarly situated generators in the control area on a comparable basis and have been approved by the Commission. The specific requirements for meeting a voltage or VAR schedule shall be clearly specified in Attachment 3 of the "District of Columbia Small Generator Interconnection Rule Level 2-4 Standard Agreement for Interconnection of Small Generator Facilities". Under no circumstance shall these additional requirements for reactive power or voltage support exceed the normal operating capabilities of the Small Generator Facility.

4008.16 For retail interconnection non-exporting Energy Storage devices, the load aspects of the storage devices will be treated the same as other load from customers, based on incremental net load.

4008.17 Interconnection of Energy Storage facilities should comply with IEEE Standard 1547 technical & test specifications and requirements.

4008.18 The Energy Storage overcurrent protection (charge/discharge) ratings from inverter nameplate shall not exceed EDC capabilities.

4008.19 In front of the meter Energy Storage exporting systems will be subject to Level 4 review requirements.

4008.20 When a Microgrid reconnects to the EDC, the Microgrid must be synchronized to the grid, matching: (1) voltage, (2) frequency, and (3) phase angle. This should require an asynchronous interconnection.

4008.21 At all interconnection levels, the power conversion system performing energy conversion/control at the Point of Common Coupling must be equipped to communicate system characteristics over secured EDC protocol.

4008.22 Inverters shall meet the safety requirements of UL 1741 and 12 months after the publication of UL 1741 SA (Supplement A) utility-interactive inverters shall meet the specifications of UL 1741 SA.

**4009 DISPUTES**

- 4009.1 A party shall attempt to resolve all disputes regarding interconnection as provided in the DCSGIR promptly, equitably, and in a good faith manner.
- 4009.2 When a dispute arises, a party may seek immediate resolution through complaint procedures available through the Commission by providing written notice to the Commission and the other party stating the issues in dispute.
- 4009.3 When disputes relate to the technical application of the DCSGIR, the Commission may designate a technical consultant to resolve the dispute. Upon Commission designation, the Interconnection Customer and EDC shall use the technical consultant to resolve disputes related to interconnection. Costs for a dispute resolution conducted by the technical consultant shall be established by the technical consultant and subject to review by the Commission.
- 4009.4 Pursuit of dispute resolution shall not affect an Interconnection Customer with regard to consideration of an Interconnection Request or an Interconnection Customer's Queue Position.

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**4011 SUPPLEMENTAL REVIEW**

Within twenty (20) business days of determining that Supplemental Review is appropriate, the EDC shall perform Supplemental Review using the screens set forth below, notify the Interconnection Customer of the results, and include with the notification a written report of the analysis and data underlying the EDC's determinations under the screens.

- (a) Where twelve (12) months of Line Section minimum load data is available, can be calculated, can be estimated from existing data, or can be determined from a power flow model, the aggregate Small Generator Facility Nameplate Capacity on the Line Section is less than one hundred percent (100%) of the minimum load for all Line Sections bounded by automatic sectionalizing devices upstream of the proposed Small Generator Facility. If the minimum load data is not available, or cannot be calculated or estimated, the aggregate Small Generator Facility Nameplate Capacity on the Line Section is less than thirty percent (30%) of the peak load for all Line Sections bounded by automatic sectionalizing devices upstream of the proposed Small Generator Facility.
- (1) The type of generation used by the proposed Small Generator Facility will be taken into account when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen. Solar photovoltaic (PV) generation systems with no battery storage use daytime minimum load (*e.g.*,

8 a.m. to 6 p.m.), while all other generation uses absolute minimum load.

- (2) When this screen is being applied to a Small Generator Facility that serves some onsite electrical load, all generation will be considered as part of the aggregate generation. If a Small Generator Facility uses Energy Storage without energy production equipment, and incorporates controls which limit Energy Storage discharge schedule to periods that are fixed and known to the EDC, the EDC shall consider the Energy Storage discharge schedule when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen

(b) In aggregate with existing generation on the Line Section:

- (1) The voltage regulation on the Line Section can be maintained in compliance with relevant requirements under all system conditions;
- (2) The voltage fluctuation is within acceptable limits as defined by IEEE Standard 1453 or Good Utility Practice similar to IEEE Standard 1453; and
- (3) The harmonic levels meet IEEE 519 limits at the Point of Common Coupling.

(c) The locations of the proposed Small Generator Facility and the aggregate Small Generator Facility Nameplate Capacity on the Line Section do not create impacts to safety or reliability that cannot be adequately addressed without application of Level 4 Interconnection Review procedures. The EDC may consider the following factors and others in determining potential impacts to safety and reliability in applying this screen.

- (1) Whether the Line Section has significant minimum loading levels dominated by a small number of customers (*i.e.*, several large commercial customers).
- (2) If there is an even or uneven distribution of loading along the feeder.
- (3) If the proposed Small Generator Facility is located in close proximity to the substation (*i.e.*, < 2.5 electrical line miles), and if the distribution line from the substation to the Small Generator Facility is composed of large conductor/feeder section (*i.e.*, 600A class cable).
- (4) If the proposed Small Generator Facility incorporates a time delay function to prevent reconnection of the generator to the Electric Distribution System until system voltage and frequency are within normal limits for a prescribed time.

- (5) If operational flexibility is reduced by the proposed Small Generator Facility, such that transfer of the Line Section(s) of the Small Generator Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues.
  - (6) If the proposed Small Generator Facility utilizes certified anti-islanding functions and equipment.
- (d) Modifications to the Electric Distribution System required by interconnections based on the Supplemental Review shall be treated in the following manner:
- (1) If the Interconnection Request requires only Interconnection Facilities to the Electric Distribution System, a non-binding good faith cost estimate and construction schedule for the Interconnection Facilities to the Electric Distribution System, along with an Approval to Install, shall be provided within fifteen (15) business days after notification of the Supplemental Review results.
  - (2) If the Interconnection Request requires more than the addition of Interconnection Facilities, the EDC may elect to provide a non-binding good faith cost estimate and construction schedule for such Distribution System Upgrades within thirty (30) business days after notification of the Supplemental Review results, or the EDC may notify the Interconnection Customer that the EDC will need to complete a Facilities Study under Level 4 Interconnection Review to determine the cost estimate and construction schedule for necessary Distribution System Upgrades.
- (e) If the proposed interconnection meets all of the applicable Adverse System Impact screens and the EDC determines that the Small Generator Facility can be interconnected safely and reliably to the Electric Distribution System, the EDC shall provide the Interconnection Customer an Approval to Install
- (f) An Interconnection Customer that receives an Approval to Install shall provide the Small Generator Interconnection Part II – Certificate of Completion and signed inspection certificate in the following timeframes:
- (1) For Level 1 Interconnection Requests: Unless extended by mutual agreement of the Interconnection Customer and EDC, within six (6) months of receipt of the Approval to Install or six (6) months from the completion of any Distribution System Upgrades, whichever is later, the Interconnection Customer shall provide to the EDC the Level 1 Small Generator Interconnection Part II – Certificate of Completion, including the signed inspection certificate.

- (2) For Level 2 and 3 Interconnection Requests: Unless extended by mutual agreement of the Interconnection Customer and EDC, within twenty-four (24) months from an Interconnection Customer's receipt of the Approval to Install or six (6) months of completion of any Distribution System Upgrades, whichever is later, the Interconnection Customer shall provide to the EDC the Level 2-4 Small Generator Interconnection Part II – Certificate of Completion, including the signed certificate of inspection. An interconnection customer shall communicate with the EDC no less frequently than every six (6) months regarding the status of a proposed small generator facility to which an Interconnection Agreement refers.
- (g) The EDC may conduct a Witness Test within ten (10) business days' of issuing the Authorization to Operate at a time mutually agreeable to the Interconnection Customer and EDC. If a Small Generator Facility initially fails the test, the EDC shall offer to redo the Witness Test at the Interconnection Customer's expense at a time mutually agreeable to the Interconnection Customer and EDC. If the EDC determines that the Small Generator Facility fails the Witness Test it must provide a written explanation detailing the reasons and any standards violated.
- (h) Upon EDC's issuance of the Authorization to Operate, an Interconnection Customer may begin interconnected operation of a Small Generator Facility, provided that there is an Interconnection Agreement in effect, the Small Generator Facility has passed any Witness Test required by the EDC, and that the Small Generator Facility has passed any inspection required by the EDC. Evidence of approval by an electric code official includes a signed inspection certificate.
- (i) As an alternative to the Supplemental Review procedures prescribed in this section, the EDC may elect to perform a power flow-based study, providing the Interconnection Customer with the results and the required mitigation, if necessary. The EDC shall make available, upon request, a copy of its power flow-based study for each applicant to the Commission within thirty (30) days after analysis completion.
- (j) The EDC may require photographs of the site, Small Generator Facility components, meters or any other aspect of the Interconnection Facilities as part of the Supplemental Review process.

## 4012

### APPLICANT OPTIONS MEETING

If the EDC determines the Interconnection Request cannot be approved without evaluation under Level 4 Interconnection Review, at the time the EDC notifies the Interconnection Customer of either the Level 1, 2 or 3 Interconnection Review, or Supplemental Review, results, it shall provide the Interconnection Customer the option of proceeding to a Level 4 Interconnection Review or of participating in an

applicant options meeting with the EDC to review possible Small Generator Facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the Small Generator Facility to be connected safely and reliably. The Interconnection Customer shall notify the EDC that it requests an applicant options meeting or that it would like to proceed to Level 4 Interconnection Review in writing within fifteen (15) business days of the EDC's notification or the Interconnection Request shall be deemed withdrawn. If the Interconnection Customer requests an applicant options meeting, the EDC shall offer to convene a meeting at a mutually agreeable time within the next fifteen (15) business days.

#### 4013-4098 [RESERVED]

#### 4099 DEFINITIONS

4099.1 When used in this chapter, the following terms and phrases shall have the following meaning:

**“Adverse System Impact”** – means a negative effect, due to technical or operational limits on conductors or equipment being exceeded, that compromises the safety and reliability of the Electric Distribution System.

**“Advanced Inverter”** – means inverter(s) with a digital architecture, bidirectional communications capability, and software that enables functionalities providing autonomous grid support and enhanced system reliability, along with the capability to adjust their operational set points in response to the changing characteristics of the grid through dedicated communications protocols and standards. The advanced inverter must enable, at the minimum, the following functionalities, as defined in IEEE Standard 1547-2018: dynamic-volt/var and real power support, voltage ride-through, frequency ride-through, voltage support, frequency support, and ramp rates. All inverters must be fully compliant with 1547-2018 by January 2022.

**“Affected System”** – means an electric system not owned or operated by the Electric Distribution Company reviewing the Interconnection Request that may suffer an Adverse System Impact from the proposed interconnection.

**“Area Network”** – means a type of Electric Distribution System served by multiple transformers interconnected in an electrical network circuit, which is generally used in large metropolitan areas that are densely populated. Area networks are also known as grid networks. Area network has the same meaning as the term distribution secondary grid networks in Section 9.2 of IEEE Standard 1547.

**“Approval to Install”** – means written notification that the Small Generator Facility is conditionally approved for installation contingent upon the terms and conditions of the Interconnection Request, and the EDC may provide

such conditional approval by furnishing to Interconnection Customer an EDC-executed copy of the Interconnection Agreement.

**“Authorization to Operate”** – means written notification that the Small Generator Facility is approved for operation under the terms and conditions of the District of Columbia Small Generator Interconnection Rules.

**“Certificate of Completion”** – means a certificate in a completed form approved by the Commission containing information about the Interconnection Equipment to be used, its installation and local inspections.

**“Commission”** – means the Public Service Commission of the District of Columbia.

**“Commissioning Test”** – means the tests applied to a Small Generator Facility by the Interconnection Customer after construction is completed to verify that the facility does not create Adverse System Impacts. The scope of the Commissioning Tests performed shall include the Commissioning Test specified IEEE Standard 1547 Section 11.2.5 “Commissioning tests”.

**“Community Renewable Energy Facility”** or **“CREF”** – means an energy facility with a capacity no greater than five (5) megawatts that: (a) uses renewable resources defined as a Tier One Renewable Source in accordance with Section 3(15) of the Renewable Energy Portfolio Standard Act of 2004, effective April 12, 2005, (D.C. Law 15-340; D.C. Official Code § 34-1431(15) as amended); (b) is located within the District of Columbia; (c) has at least two (2) Subscribers; and (d) has executed an Interconnection Agreement and a CREF Rider with the Electric Company.

**“Distribution System Upgrade”** – means a required addition or modification to the EDC’s Electric Distribution System at or beyond the Point of Common Coupling to accommodate the interconnection of a Small Generator Facility. Distribution upgrades do not include interconnection facilities.

**“District of Columbia Small Generator Interconnection Rule (DCSGIR)”** – means the most current version of the procedures for interconnecting Small Generator Facilities adopted by the Public Service Commission of the District of Columbia.

**“Draw-out Type Circuit Breaker”** – means a switching device capable of making, carrying and breaking currents under normal and abnormal circuit conditions such as those of a short circuit. A draw-out circuit breaker can be physically removed from its enclosure, creating a visible break in the circuit. For the purposes of these regulations, the draw-out circuit breaker shall be capable of being locked in the open, draw-out position.



**“Electric Distribution Company” or “EDC”** – means an electric utility entity that distributes electricity to customers and is subject to the jurisdiction of the Commission.

**“Electric Distribution System” or “EDS”** – means the facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries from interchanges with higher voltage transmission networks that transport bulk power over longer distances. The voltage levels at which Electric Distribution Systems operate differ among areas but generally carry less than sixty-nine (69) kilovolts of electricity. Electric distribution system has the same meaning as the term Area EPS, as defined in IEEE Standard 1547.

**“Energy Storage”** – means a resource capable of absorbing electric energy from the grid, from a behind-the-meter generator, or other DER, storing it for a period of time and thereafter dispatching the energy for use on-site or back to the grid, regardless of where the resource is located on the electric distribution system. These resources include all types of energy storage technologies, regardless of their size, storage medium (*e.g.*, batteries, flywheels, electric vehicles, compressed air), or operational purpose.

**“Facilities Study”** – means an engineering study conducted by the EDC to determine the required modifications to the EDC’s Electric Distribution System, including the cost and the time required to build and install such modifications as necessary to accommodate an Interconnection Request.

**“Fault Current”** – means the electrical current that flows through a circuit during an electrical fault condition. A fault condition occurs when one or more electrical conductors contact ground or each other. Types of faults include phase to ground, double-phase to ground, three-phase to ground, phase-to-phase, and three-phase. Fault current is several times larger in magnitude than the current that normally flows through a circuit.

**“Generation Meter”** – means the meter used to capture the level of customer-generated electricity at an Interconnection Customer’s premise. The Generation Meter shall be owned, operated and maintained ~~as distribution plant by EDC, unless the Interconnection Customer is a CREF by the Interconnection Customer (see Production Meter).~~

**“Good Utility Practice”** – means any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result of the lowest reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method or act to the exclusion of all others,

but rather to be acceptable practices, methods, or acts generally accepted in the region.

**“Governmental Authority”** – means any federal, State, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other Governmental Authority having jurisdiction over the Interconnection Customer and EDC, respective facilities, or services provided, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Interconnection Customer, EDC or any affiliate thereof.

**“IEEE Standard 1547”** – refers to the Institute of Electrical and Electronics Engineers, Inc. (IEEE) Standard 1547 (2018) “Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces,” as amended and supplemented at the time the Interconnection Request is submitted.

**“IEEE Standard 1547.1”** – refers to the IEEE Standard 1547.1 (2015) “Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems,” as amended and supplemented at the time the Interconnection Request is submitted.

**“Interconnection Customer”** – means a person or entity that has submitted either an Interconnection Request to interconnect a Small Generator Facility to the EDC’s Electric Distribution System or a pre-application report to get information about EDC’s electrical distribution system at a proposed Point of Common Coupling.

**“Interconnection Equipment”** – means a group of equipment, components, or an integrated system connecting an electric generator with a Local Electric Power System or an Electric Distribution System that includes all interface equipment including switchgear, protective devices, inverters or other interface devices. Interconnection equipment may be installed as part of an integrated equipment package that includes a generator or other electric source.

**“Interconnection Facilities”** – means facilities and equipment required by the EDC to accommodate the interconnection of a Small Generator Facility. Collectively, Interconnection Facilities include all facilities and equipment between the Small Generator Facility and the Point of Common Coupling, including modification, additions, or upgrades that are necessary to physically and electrically interconnect the Small Generator Facility to the Electric Distribution System. Interconnection Facilities are sole use facilities and do not include Distribution System Upgrades, [Utility](#) Generation Meter(s), or Usage Meter(s).

**“Interconnection Facilities Cost Matrix”** – means the matrix maintained on the EDC’s website that contains fixed-cost Interconnection Facilities and the Utility Generation Meter projects associated with specific categories of facilities and lists the installation cost of such Small Generator Interconnection Facilities. Projects included in the matrix are limited in scope, and thus the matrix does not cover all possible types of Interconnection Facilities.

**“Interconnection Request”** – means an Interconnection Customer’s application and interconnection agreement, in a form approved by the Commission, requesting to interconnect a new Small Generator Facility, or to increase the capacity or modify operating characteristics of an existing approved Small Generator Facility that is interconnected with the EDC’s Electric Distribution System.

**“Interconnection System Impact Study”** – means a study performed by the EDC which evaluates the impacts of the proposed interconnection on both the safety and reliability of the EDC’s Electric Distribution System. The study seeks to identify and detail the Adverse System Impacts that result when a Small Generator Facility is interconnected without project modifications or Distribution System Upgrades, focusing on EDC-identified or potential Adverse System Impacts.

**“Line Section”** – means that portion of the EDC’s Electric Distribution System connected to an Interconnection Customer, bounded by automatic sectionalizing devices or the end of the distribution line.

**“Local Electric Power System” or “Local EPS”** – means facilities that deliver electric power to a load that are contained entirely within a single premises or group of premises. Local electric power system has the same meaning as the term Local Electric Power System defined in IEEE Standard 1547.

**“Microgrid”** – means 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.

**“Modified Level 1/2 Scoping Meeting”** – means a meeting between representatives of the Interconnection Customer and EDC conducted for the purpose to review the Interconnection Request, existing studies relevant to the Interconnection Request, the conditions at the proposed location, and the results of the Level 1 or Level 2 Adverse System Impact screening criteria, and a technical explanation in which the EDC describes the need

for Interconnection Facilities and/or Distribution System Upgrade to accommodate the Interconnection Request.

**“Nameplate Capacity”** – means the maximum rated output of a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer and is usually indicated on a nameplate physically attached to the power production equipment.

**“Nationally Recognized Testing Laboratory” or “NRTL”** – means a qualified private organization that meets the requirements of the Occupational Safety and Health Administration’s (OSHA) regulations. NRTLs perform independent safety testing and product certification. Each NRTL shall meet the requirements as set forth by OSHA in the NRTL program.

**“Parallel Operation” or “Parallel”** – means the sustained state of operation over one hundred (100) milliseconds, which occurs when a Small Generator Facility is connected electrically to the Electric Distribution System and thus has the ability for electricity to flow from the Small Generator Facility to the Electric Distribution System.

**“PJM Interconnection”** – means 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.

**“Point of Common Coupling”** – means the point where the Small Generator Facility is electrically connected to the Electric Distribution System. Point of common coupling has the same meaning as defined in IEEE Standard 1547.

**“Primary Line”** – means a distribution line rated at greater than six hundred (600) volts.

**“~~Utility Production-Generation Meter~~”** – means the Generation Meter used to capture the level of customer-generated electricity at an Interconnection Customer’s premise, when the Interconnection Customer is a virtual CREF or VCREF. The Production-Utility Generation Meter shall be owned, operated and maintained as distribution plant by EDC owned by the CREF and read by the EDC, D.C. Code § 34-1518.<sup>2</sup>

**“Production Test”** – is defined in IEEE Standard 1547.

**“Queue Position”** – means the order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests, that is established based

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<sup>2</sup> ~~D.C. Code § 34-1518 (Supp. 2013).~~

upon the date and time of receipt of the complete Interconnection Request by the EDC.

**“Radial Distribution Circuit”** – means a circuit configuration where independent feeders branch out radially from a common source of supply. From the standpoint of a utility system, the area described is between the generating source or intervening substations and the customer’s entrance equipment. A radial distribution system is the most common type of connection between a utility and load in which power flows in one direction from the utility to the load.

**“Scoping Meeting”** – means a meeting between representatives of the Interconnection Customer and EDC conducted for the purpose of discussing alternative interconnection options, exchanging information including any Electric Distribution System data and earlier study evaluations that would be reasonably expected to impact interconnection options, analyzing information, and determining the potential feasible points of interconnection.

**“Secondary Line”** – means a service line subsequent to the Primary Line that is rated for six hundred (600) volts or less, also referred to as the customer’s service line.

**“Shared Transformer”** – means a transformer that supplies secondary source voltage to more than one customer.

**“Small Generator Facility”** – means the equipment used by an Interconnection Customer to generate or store electricity that operates in parallel with the Electric Distribution System and, for the purposes of this standard, is rated at twenty (20) MW or less. A Small Generator Facility typically includes an electric generator, Energy Storage, prime mover, and the Interconnection Equipment required to safely interconnect with the Electric Distribution System or Local Electric Power System as mutually agreed between the Interconnection Customer and EDC of the Interconnection Request.

**“Spot Network”** – means a type of Electric Distribution System that uses two or more inter-tied transformers to supply an electrical network circuit. A Spot Network is generally used to supply power to a single customer or a small group of customers. Spot network has the same meaning as the term distribution secondary Spot Networks defined in Section 9.3 of IEEE Standard 1547.

**“Standard Agreement for Interconnection of Small Generator Facilities, Interconnection Agreement, or Agreement”** – means a set of standard forms of Interconnection Agreements approved by the Commission which are applicable to Interconnection Requests pertaining to small generating facilities. The agreement between the Interconnection Customer and the

EDC, which governs the connection of the Small Generator Facility to the EDC's Electric Distribution System, as well as the ongoing operation of the Small Generator Facility after it is connected to the EDC's Electric Distribution System.

**“UL Standard 1741”** – means Underwriters Laboratories’ standard titled “Inverters Converters, and Controllers for Use in Independent Power Systems,” as amended and supplemented at the time the Interconnection Request is submitted.

**“Usage Meter”** – means the meter furnished by the EDC used to capture the level of electricity consumption at an Interconnection Customer’s premise. The Usage Meter shall be owned, operated and maintained as distribution plant by the EDC.

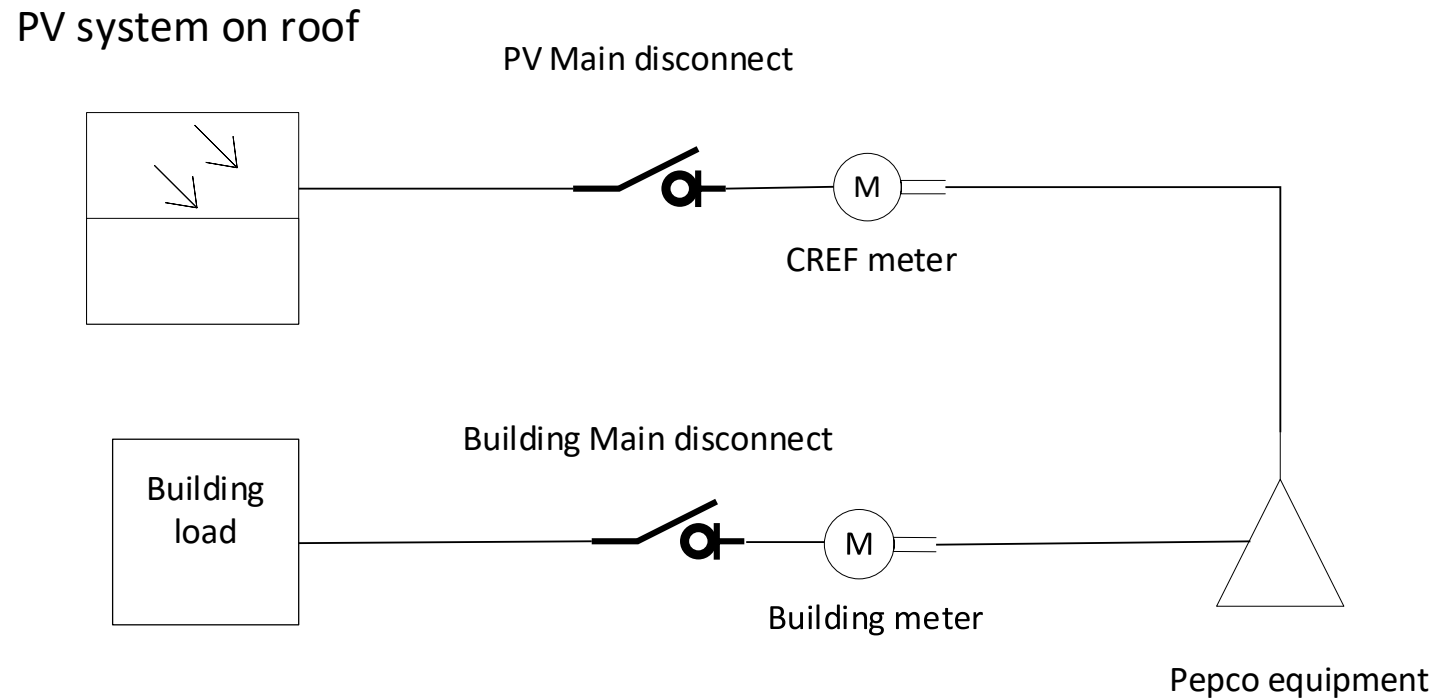
**“Witness Test”** – means verification (either by an on-site observation or review of documents) by the EDC that the installation evaluation required by IEEE Standard 1547 Section 11.2.4 and the Commissioning Test required by IEEE Standard 1547 Section 11.2.5 have been adequately performed. For Interconnection Equipment that has not been certified, the Witness Test shall also include the verification by the EDC of the on-site design tests as required by IEEE Standard 1547 Section 11.2.4 and verification by the EDC of Production Tests required by IEEE Standard 1547 Section 11.2.3. All tests verified by the EDC are to be performed in accordance with the applicable test procedures specified by IEEE Standard 1547.1.

# **ATTACHMENT B**

# ATTACHMENT B

## Traditional CREF Interconnection Design

- Solar facility connected directly to Pepco's distribution equipment
- CREF Generation Meter in front of the Building Usage Meter connection
- CREF developer pays for the interconnection facilities and upgrades



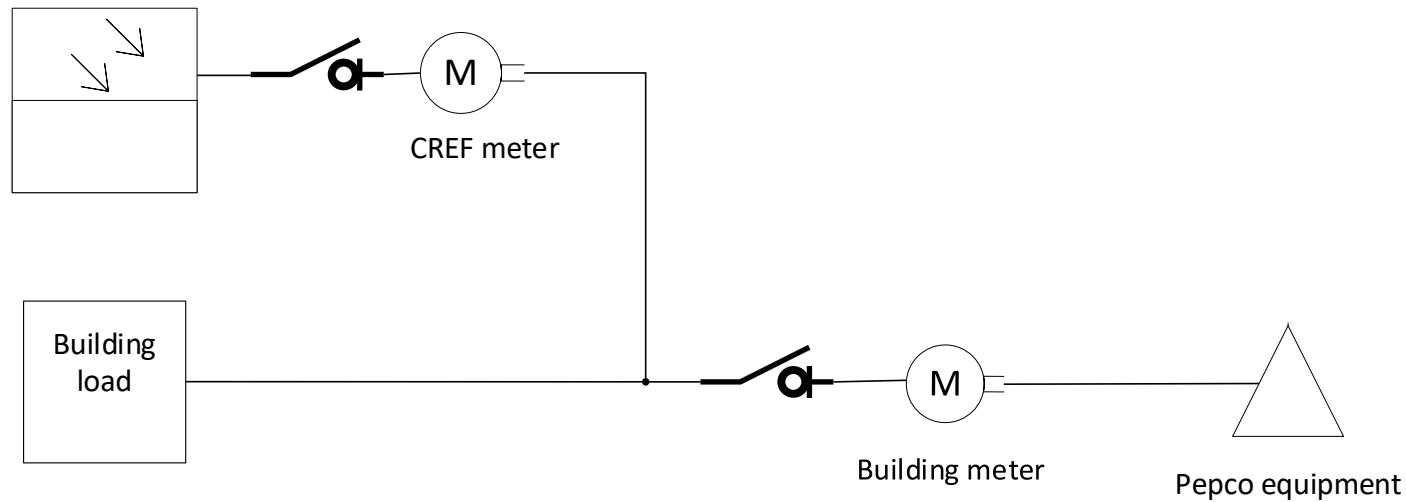


# ATTACHMENT B

## Virtual CREF (VCREF) Interconnection Design

- Solar facility connected directly to building electrical system
- CREF Generation Meter behind the Building Usage Meter connection
- No distribution system upgrades needed if existing equipment is adequate

PV system on roof



**CERTIFICATE OF SERVICE**

I hereby certify on behalf of Pepco that a copy of Pepco's Comments on Second NOPR was served this February 16, 2021 on all parties in RM40-2020-01- by electronic mail to:

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*/s/ Andrea H. Harper*  
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