POST & SCHELL PC
ATTORNEYS AT LAW

17 North Second Street
12th Floor
Harrisburg, PA 17101-1601
717-731-1970 Main
717-731-1985 Main Fax
www.postschell.com

Devin Ryan

dryan@postschell.com
717-612-6052 Direct
717-731-1981 Direct Fax
File #: 175564

September 30, 2019

VIA ELECTRONIC FILING

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
P.O. Box 3265
Harrisburg, PA 17105-3265

Re: Petition of PPL Electric Utilities Corporation for Approval of Tariff Modifications and Waivers of Regulations Necessary to Implement its Distributed Energy Resources Management Plan
Docket No. P-2019-3010128

Dear Secretary Chiavetta:

Enclosed for filing is PPL Electric Utilities Corporation's Brief in Opposition to Sunrun, Inc.'s Petition for Interlocutory Review and Answer to Material Questions in the above-referenced proceeding. Copies will be provided as indicated on the Certificate of Service.

Respectfully submitted,

Devin Ryan

DTR/jl
Enclosures

cc: Honorable Emily I. DeVoe
Certificate of Service

CERTIFICATE OF SERVICE

(Docket No. P-2019-3010128)

I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

VIA E-MAIL & FIRST CLASS MAIL

Darryl A. Lawrence, Esquire
Phillip D. Demanchick, Esquire
David T. Evrard, Esquire
Office of Consumer Advocate
555 Walnut Street
Forum Place, 5th Floor
Harrisburg, PA 17101-1923

Mark C. Szybist, Esquire
1152 15th Street, NW, Suite 300
Washington, DC 20005
Natural Resources Defense Council

Andrew J. Karas, Esquire
Emily A. Collins, Esquire
Fair Shake Environmental Legal Services
647 E. Market Street
Akron, OH 44302
Natural Resources Defense Council

James M. Van Nostrand, Esquire
Keyes & Fox LLP
275 Orchard Drive
Pittsburgh, PA 15228
Sunrun Inc.

Ed Merrick, VP of Regulatory Affairs
Trinity Solar
2211 Allenwood Road
Wall, NJ 07719

Kenneth L. Mickens, Esquire
316 Yorkshire Drive
Harrisburg, PA 17111
Sustainable Energy Fund

Sharon Pillar, Policy Director
Solar Unified Network of Western PA
c/o Energy Innovation Center
1435 Bedford Ave., Suite 140
Pittsburgh, PA 15219

Joseph Morinville
Energy Independent Solutions, LLC
2121 Noblestown Road, Suite 222
Pittsburgh, PA 15205

Mark Bortman
Exact Solar
1655 Fairfield Road
Yardley, PA 19067

Sara Baldwin, VP
Interstate Renewable Energy Council
125 Wolf Road, Suite 207
Albany, NY 12204

Ron Celentano, President
Pennsylvania Solar Energy Industries Association
7821 Flourtown Avenue
Wyndmoor, PA 19038

VIA FIRST CLASS MAIL

Beren Argetsinger, Esquire
Keyes & Fox LLP
PO Box 166
Burdett, NY 14818

Ric O'Connell
Gridlab
20120 University Avenue
Berkeley, CA 94704

John Costlow, President
Sustainable Energy Fund
4110 Independence Drive, Suite 100
Schnecksville, PA 18078

Date: September 30, 2019

Devin Ryan

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation for Approval of Tariff Modifications and Waivers of Regulations Necessary to Implement its Distributed Energy Resources Management Plan	: : : : : :	Docket No. P-2019-3010128

PPL ELECTRIC UTILITIES CORPORATION'S BRIEF IN OPPOSITION TO SUNRUN, INC.'S PETITION FOR INTERLOCUTORY REVIEW AND ANSWER TO MATERIAL QUESTIONS

Kimberly A. Klock (ID # 89716)
Michael J. Shafer (ID # 205681)
PPL Services Corporation
Two North Ninth Street
Allentown, PA 18101
Phone: 610-774-5696
Fax: 610-774-4102
E-mail: kklock@pplweb.com
E-mail: mjshafer@pplweb.com

David B. MacGregor (ID # 28804)
Devin T. Ryan (ID # 316602)
Post & Schell, P.C.
17 North Second Street
12th Floor
Harrisburg, PA 17101-1601
Phone: 717-731-1970
Fax: 717-731-1985
E-mail: dmacgregor@postschell.com
E-mail: dryan@postschell.com

Date: September 30, 2019

Counsel for PPL Electric Utilities Corporation

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I. INTRODUCTION

On May 24, 2019, PPL Electric Utilities Corporation ("PPL Electric" or the "Company") filed its Petition for Approval of Tariff Modifications and Waivers of Regulations Necessary to Implement its Distributed Energy Resources Management Plan ("DER Management Plan") with the Commission. The DER Management Plan will govern the interconnection and operation of new Distributed Energy Resources ("DERs") deployed in the Company's service territory. After the case was assigned to Administrative Law Judge Emily I. DeVoe, the Natural Resources Defense Council ("NRDC") and Sunrun, Inc. ("Sunrun") filed separate Petitions for Interlocutory Review and Answer to Material Questions. Both of these Petitions generally request the Pennsylvania Public Utility Commission ("Commission") to summarily dismiss PPL Electric's DER Management Petition without a hearing and, instead, address the issues raised by the Company's DER Management Petition in a statewide proceeding. Their "material questions" also are substantially the same. However, because NRDC and Sunrun filed separate Petitions for Interlocutory Review, PPL Electric is submitting separate Briefs in Opposition to each of the Petitions. This Brief addresses the Petition filed by Sunrun.

As explained herein, Sunrun's Petition fails to meet the high standard for Commission interlocutory review. PPL Electric filed its DER Management Petition so that the Company can proactively prepare for the deployment of DERS on its distribution system. As the entity with a statutory duty to provide safe, reliable, and affordable service, it is critical for PPL Electric to be able to monitor and manage DERs on its distribution system.

Now, before PPL Electric even has the opportunity to present evidence in support of its Petition, Sunrun asks this Commission to dismiss the Company's Petition outright and then hold a statewide proceeding to receive stakeholder input on whether the issues, at this time, should be

addressed on a statewide basis. Effectively, Sunrun wants the Commission to initiate a statewide proceeding to decide if another statewide, presumably rulemaking, proceeding is needed.

Sunrun's Petition is nothing more than a blatant and anti-competitive attempt to delay and stifle PPL Electric's efforts to proactively manage DERs and provide safe and reliable service to its customers. Deferring these issues to one (possibly two) statewide proceedings would only serve to substantially delay the resolution of the issues. The simple fact is that the longer that the Company waits, the more DERs will be deployed with non-smart inverters. Utilities in other states have failed to be proactive on this issue and are now experiencing significant issues due to the substantial number of DER deployments with non-smart inverters. PPL Electric wants to avoid the mistakes made by these other utilities and get ahead of these issues. Furthermore, even low levels of DER deployments with non-smart inverters can create significant problems in service reliability and quality. In fact, the Company is already experiencing measurable impacts on voltage power quality at various locations on its distribution system. These are precisely the reasons why PPL Electric needs to take action now. Sunrun may disagree with the need for the Company's DER Management Petition, believing that the Petition is premature and that the issues are more appropriately addressed on a statewide basis. However, PPL Electric should have the opportunity, at the very least, to present its case on these issues of material fact before the ALJ so that the Commission has a full and complete record upon which to base its final decision.

For these reasons, Sunrun's Petition for Interlocutory Review and Answer to Material Questions is completely without merit and should be denied.

II. BACKGROUND

On May 24, 2019, PPL Electric filed its DER Management Petition.

On July 29, 2019, Trinity Solar filed Comments on the Company's Petition.

On July 30, 2019, the Office of Consumer Advocate ("OCA"), NRDC, and Sunrun filed Answers to the Petition. NRDC and Sunrun also filed Petitions to Intervene. Further, Comments were filed by Sustainable Energy Fund ("SEF"), GridLab, the Solar Unified Network of Western Pennsylvania ("SUNWPA"), Energy Independent Solutions, LLC ("EIS"), the Interstate Renewable Energy Council, Inc. ("IREC"), the Pennsylvania Solar Energy Industries Association ("PASEIA"), and Exact Solar.

On August 22, 2019, PPL Electric filed a letter inquiring about the procedural status of the proceeding and requesting that the matter being assigned to an administrative law judge for hearings. An Interim Order also was issued granting NRDC and Sunrun's Petitions to Intervene.

On August 28, 2019, the ALJ issued the Prehearing Conference Order, which established procedural rules and required prehearing memoranda to be filed by Noon on September 9, 2019. A Notice also was issued scheduling the prehearing conference for September 11, 2019.

On August 30, 2019, NRDC and Sunrun filed: (1) a Preliminary Objection to PPL Electric's August 22, 2019 letter; and (2) a Motion for Leave to Reply & Reply to PPL Electric's August 22, 2019 letter.

On September 3, 2019, SEF filed a Petition to Intervene.

On September 9, 2019, PPL Electric filed an Answer to NRDC and Sunrun's Preliminary Objection as well as an Answer to NRDC and Sunrun's Motion for Leave to Reply & Reply. Also, prehearing memoranda were filed by PPL Electric, OCA, NRDC, and Sunrun.

On September 11, 2019, the prehearing conference was held as scheduled. At the prehearing conference, the ALJ established a deadline of September 20, 2019, for parties to file petitions for interlocutory review and answers to material questions. Further, the parties were directed to confer about a procedural schedule and propose a schedule by September 27, 2019.

On September 20, 2019, NRDC and Sunrun separately filed Petitions for Interlocutory Review and Answer to Material Questions.

On September 25, 2019, the ALJ issued an Interim Order: (1) holding NRDC and Sunrun's Preliminary Objection to the August 22, 2019 letter and their Motion for Leave to Reply & Reply in abeyance; and (2) extending the due date for parties to submit a proposed procedural schedule from September 27, 2019, to November 6, 2019.

For the reasons explained below, Sunrun fails to meet the high standard for the Commission to grant interlocutory review. Therefore, Sunrun's Petition for Interlocutory Review and Answer to Material Questions should be denied.

III. STANDARD OF REVIEW

Under Section 5.302 of the Commission's regulations, a party may file a petition requesting interlocutory "review and answer to a material question which has arisen or is likely to arise." 52 Pa. Code § 5.302(a). Such a petition must present "the question to be answered" and provide "the compelling reasons why interlocutory review will prevent substantial prejudice or expedite the conduct of the proceeding." *Id.* (emphasis added). A stay of the proceedings during interlocutory review only can be granted when it is "required to protect the substantial rights of a party." *Id.* § 5.302(b).

Moreover, it is well-established that the Commission generally disfavors petitions for interlocutory review because "the preferred approach is to permit proceedings to move forward in the normal course in order to provide all parties, the presiding officer, and the Commission with a full opportunity to develop the record, brief issues, and present arguments at each stage."[1] As a result, in determining "substantial prejudice," the Commission considers whether the

[1] *City of Reading & Centre Park Historic District v. UGI Utilities, Inc.*, Docket Nos. C-2015-2516051, *et al.*, p. 7 (Order entered Feb. 9, 2017) ("*City of Reading*") (citing *Re: Philadelphia Gas Works Universal Service and Energy Conservation Plan*, Docket No. M-00072021, p. 3 (Order entered Oct. 23, 2009).

alleged error, and any prejudice flowing from that issue, could not be satisfactorily cured during the normal Commission review process.[2] Further, and at a minimum, if the Commission is going to resolve factual disputes at this stage of the proceeding, all facts pled by PPL Electric must be accepted as true. Failure to do so would be inconsistent with all relevant precedent and result in a denial of due process of law.

IV. ARGUMENT

A. THE PETITION FOR INTERLOCUTORY REVIEW SHOULD BE DENIED BECAUSE IT FAILS TO MEET THE HIGH STANDARD FOR INTERLOCUTORY REVIEW

In its Petition for Interlocutory Review, Sunrun asks the Commission to answer all of the following questions in the affirmative:

> A. Does PPL's Petition implicate technical and public policy questions of statewide concern?
>
> B. Should PPL's Petition be denied in favor of addressing such issues on a statewide basis at a time deemed appropriate by the Commission?
>
> C. Should the Commission initiate a separate statewide proceeding now to allow all interested stakeholders to provide input on whether current circumstances warrant addressing any or all of the issues raised in PPL's Petition?

(Sunrun Petition, pp. 2-3.)

The Commission should deny Sunrun's Petition for Interlocutory Review and answer these allegedly material questions in the negative. Before this proceeding even has a chance to begin in earnest, Sunrun has asked this Commission to dismiss PPL Electric's DER Management Petition in its entirety and, potentially, initiate a statewide proceeding to see if any of the issues raised by the Company need to be addressed at all. (Sunrun Petition, pp. 1-3.) In general,

[2] *City of Reading*, p. 7 (Order entered Feb. 9, 2017) (citing *Joint Application of Bell Atlantic Corp. & GTE Corp.*, Docket No. A-310200F0002, *et al.* (Order entered June 10, 1999); *Pa. PUC v. Frontier Communications of Pa. Inc.*, Docket No. R-00984411 (Order entered Feb. 11, 1999); *In re: Knights Limousine Service, Inc.*, 59 Pa. P.U.C. 538 (1985)).

Sunrun claims that PPL Electric's DER Management Petition is premature and that the issues would be better addressed, if at all, in a statewide proceeding. (Sunrun Petition, pp. 1-3.) None of Sunrun's arguments has any merit.

As a preliminary matter, interlocutory review should be denied because the issues before the Commission are issues of material fact, not "questions of law, policy or discretion" as alleged by Sunrun. (Sunrun Petition, p. 2.) The Commission has consistently declined to grant interlocutory review when the issues presented are factual in nature.[3] In fact, even when the party seeking interlocutory review raises a legal question, the Commission has declined to grant interlocutory review when that legal question depends on factual findings.[4] Only pure legal questions, such as jurisdictional issues, are appropriate for interlocutory review.[5] Moreover, even when a party claims that the requested relief would result in *de facto* revisions to the Commission's regulations and that such revisions should be addressed in a statewide proceeding, the Commission has denied interlocutory review and permitted the case to proceed to hearings so that a complete record could be developed.[6]

Here, the issues presented are entirely factual in nature. Sunrun argues that PPL Electric's DER Management Petition is premature, while the Company argues that it is not. Sunrun also alleges that the issues raised by the Company's Petition should be addressed on a

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[3] *Compare Petition of Energy Cooperative Association of Pennsylvania to Enforce Settlement Order*, 2003 Pa. PUC LEXIS 43, at *5-6 (Order entered Aug. 7, 2003) (declining to answer the Energy Cooperative's second material question because it "cannot be reviewed at this time as it assumes facts not in evidence," the PUC "would expect both Parties to make substantial arguments relating to the issues presented by that Material Question," and "[t]he current state of the record makes fact-based argument impossible at this stage of the proceeding"), *and, Objection of Gary Arndt, t/a A Limousine Service to its General Assessment for Fiscal Year 2001-2002*, 2003 Pa. PUC LEXIS 22, at *5-6 (Order entered June 12, 2003) (declining to answer the material question because although the petitioner tried to frame the timeliness of a party's objection to the assessment as a legal one, "there is nothing in the record at this time that will support a finding on that issue"; rather, "the timeliness of Ardnt's objection is a factual issue which, under the circumstances of this case, requires a hearing"), *with Core Communications, Inc.*, 2010 Pa. PUC LEXIS 1703, at *7-8 (Order entered Sept. 8, 2010) (granting interlocutory review because the parties raised a "fundamental jurisdictional issue," which "would divest the Commission of its jurisdiction in this matter").

[4] *See Objection of Gary Arndt*, 2003 Pa. PUC LEXIS 22, at *5-6.

[5] *See Core Communications*, 2010 Pa. PUC LEXIS 1703, at *7-8.

[6] *See City of Reading*, pp. 13, 17-19.

statewide basis, whereas PPL Electric maintains that these issues need to be addressed in a utility-specific fashion. These are clear disagreements on the basic factual issues in this case.

Indeed, attached to this Brief as Appendices A through C are sworn Affidavits from Dr. Karen Miu,[7] Stephen Whitley,[8] and Wanda Reder,[9] respectively, who will be testifying in this proceeding in support of PPL Electric's DER Management Petition. As set forth in those Affidavits, PPL Electric needs to take action now to be prepared for the impacts of increased amounts of DERs deployed on its distribution system. In fact, as explained by Dr. Miu, the Company's DER Management Petition is not premature—it is late. Appx. A, p. 1. Based on her research, Dr. Miu states that "[w]ith respect to PPL Electric, based upon [her] research findings on actual PPL Electric circuits, it has been shown that even with existing levels of photovoltaic DER penetration, bi-directional power flows are experienced" and that even "existing levels of DER penetration consistently result in quantifiable changes in operating characteristics such as nodal voltage levels and phase imbalance levels within the system." Appx. A, p. 3. Ms. Reder also outlines substantial issues with load masking experienced by Dominion Energy in North Carolina due to the significant deployment of DERs. *See* Appx. C, p. 5. These issues could have been avoided "[i]f real time monitoring of DERs were available to Dominion Energy." Appx. C, p. 5. Thus, "there is an urgent need for PPL Electric to have the ability to monitor and manage DER deployments in order to preserve power quality, reliability, and safety." Appx. A, p. 3.

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[7] Dr. Karen Miu is a Professor at Drexel University with a PhD in Electrical Engineering from Cornell University. In her position, she conducts extensive research in the areas on the planning and operation of electric distribution systems, including the impact of DERs on those distribution systems. Appx. A, p. 1.

[8] Stephen Whitley served as the President and CEO of the New York Independent System Operator ("NYISO") from 2008 to 2015. Currently, he is self-employed as a Consultant at Stephen Whitley LLC, where he provides expertise to clients on electric system planning, operations, and wholesale electricity markets regulated by the Federal Energy Regulatory Commission ("FERC") and statewide commissions. Appx. B, p. 1.

[9] Wanda Reder is the President & CEO of Grid-X Partners, LLC ("Grid-X") and previously served as Chief Strategy Officer and Vice President of Power Systems Services for S&C Electric Company from 2004 – 2018. She also is an Institute of Electrical and Electronics Engineers ("IEEE") Fellow, was the President of the IEEE Power & Energy Society ("PES") from 2008 – 2009, was appointed to the U.S. Department of Energy ("DOE") Electricity Advisory Committee from 2011 – 2017 and again starting in 2018 by the U.S. Secretary of Energy, and was invited to become a member of the National Academy of Engineers in 2016. Appx. C, p. 1.

Furthermore, Sunrun has argued that the Company's DER Management Petition is premature because some of the Institute of Electrical and Electronics Engineers ("IEEE") and Underwriters Laboratories ("UL") standards applicable to smart inverters, namely IEEE Standard 1547 and the revisions to UL Standard 1741, have not been finalized and implemented yet. (Sunrun Answer to DER Petition, pp. 6-8.) However, Ms. Reder explains that PPL Electric's "timing is impeccable" because those standards should be finalized in the near future and well before this proceeding concludes. Appx. C, pp. 3-4. Moreover, until the revisions to UL Standard 1741 are published, PPL Electric will use UL Standard 1741 SA and the communication technical requirements specified in section 10.7 of IEEE 1547-2018 as an interim approach. Appx. C, p. 4.

Moreover, the statewide proceedings requested by Sunrun are the wrong approach. Mr. Whitley states that "[t]ime is the enemy on an issue such as this." Appx. B, p. 5. Similarly, Dr. Miu explains that the longer PPL Electric delays in addressing these issues, the more DER inverters lacking communications with distribution system operators will be deployed. Appx. A, p. 4. During that time, the problems outlined by Dr. Miu "would compound with each new DER that is deployed on PPL Electric's distribution system." Appx. A, p. 5. This is critical because statewide proceedings on these issues in other states have taken a substantially long time. New York actually "has been working on this since 2013 with several statewide proceedings and hearings with delays constantly being sought by special interest groups." Appx. B, p. 5. Additionally, a statewide proceeding is inappropriate given the different characteristics of each EDC in Pennsylvania. As Mr. Whitley states, "the issues regarding how DERs should be monitored and managed on an electric distribution company's ("EDC") system are fact-specific," so it would be more efficient to "follow a utility-specific proceeding as opposed to a slow

statewide proceeding." Appx. B, p. 5. "Every utility may have different information technology ("IT") systems, automated metering infrastructure ("AMI") meters, and other electric distribution facilities and infrastructure" that make a statewide proceeding the wrong approach. Appx. B, pp. 5-6. As an example, "the Company has deployed a distributed energy resources management system ("DERMS"), but other EDCs in Pennsylvania have not." Appx. B, p. 6.

Importantly, these Affidavits need to be accepted as true at this stage in the proceeding. Additionally, at the very least, these affidavits irrefutably demonstrate that there are clear disagreements on the basic factual issues in this case. Therefore, no matter how Sunrun may try to reframe the issues as "questions of law, policy or discretion," Sunrun cannot reasonably contend that these questions necessarily depend on factual findings. Thus, Sunrun's issues should not be addressed through interlocutory review. Moreover, even if the Commission were to erroneously seek to resolve these factual issues at this stage of the proceeding, as explained below, the Commission must accept all of the facts pled by PPL Electric as true, and on that basis, deny the Petition. Dismissing the Petition without assuming PPL Electric's factual allegations as true would be contrary to law and would deny PPL Electric due process.

Further, Sunrun has utterly failed to provide "compelling reasons" why granting interlocutory review and answering their "material questions" would "prevent substantial prejudice or expedite the conduct of the proceeding." 52 Pa. Code § 5.302(a). To the contrary, granting interlocutory review would substantially prejudice PPL Electric and would unreasonably prevent the Company from addressing the issues presented by DERs on its distribution system for several years. If Sunrun's material questions are answered, PPL Electric's DER Management Petition will be dismissed before the Company ever presents its testimony and exhibits or even responds to a single interrogatory. Then, per Sunrun's request,

the issues will be addressed, if ever, in two statewide proceedings, with no guarantee as to when those proceedings will take place or conclude.

At this stage of the proceeding, however, Sunrun is not entitled to any dispositive ruling on PPL Electric's DER Management Petition. Because this is an adversarial proceeding, the only permissible pleadings that may result in the dismissal of the Company's Petition without an evidentiary hearing are: (1) preliminary objections; (2) motions for judgment on the pleadings; and (3) motions for summary judgment. *See* 52 Pa. Code §§ 5.101, 5.102. Sunrun never filed a preliminary objection to PPL Electric's Petition,[10] nor did it file a motion for judgment on the pleadings or motion for summary judgment. Instead, Sunrun has argued in the instant Petition for Interlocutory Review and other pleadings that it is entitled to a preliminary ruling that dismisses PPL Electric's Petition. Sunrun cannot sidestep the Commission's established procedures for summary disposition or cure its failure to file a preliminary objection to PPL Electric's DER Management Petition by seeking interlocutory review.

Sunrun also fails to demonstrate that the matter is even ripe for preliminary disposition. The standards of review for preliminary objections and dispositive motions are well-established. In ruling on preliminary objections, the Commission must accept as true all well-pled allegations of material facts as well as all inferences reasonably deducible therefrom. *Stilp v. Cmwlth.*, 910 A.2d 775, 781 (Pa. Cmwlth. 2006) (citing *Dep't of Gen. Servs. v. Bd. of Claims*, 881 A.2d 14 (Pa. Cmwlth. 2005). Moreover, any doubt must be resolved in favor of the non-moving party. *Stilp*, at 781. For motions for judgment on the pleadings and motions for summary judgment, the moving party must establish that "there is no genuine issue as to a material fact and that the moving party is entitled to a judgment as a matter of law." 52 Pa. Code § 5.102.

[10] Because Sunrun failed to file a preliminary objection within 20 days of service of the DER Management Petition, it cannot do so now. *See* 52 Pa. Code § 5.101(d) (stating that preliminary objections must be served within 20 days of service of a petition).

Contrary to these well-established principles, Sunrun: (1) fails to establish that there is no genuine issue of material fact and that it is entitled to judgment as a matter of law; and (2) inexplicably believes that the Commission should assume that Sunrun's averments, not PPL Electric's averments, are true for purposes of its inappropriate request for summary disposition. In fact, as explained previously, Sunrun readily admits that it disagrees with PPL Electric regarding several critical facts in this proceeding, including the need for PPL Electric's Petition, whether the proposed tariff modifications and waivers of regulations necessary to implement the DER Management Plan are reasonable and in the public interest, whether the Company's Petition is premature, whether the issues are best resolved in a statewide proceeding, and several other technical and policy issues. (PPL Electric DER Petition, pp. 1-26; Sunrun Petition, pp. 1-3.) To the extent that Sunrun disagrees with PPL Electric on these points, it is free to present evidence and arguments on these issues in its testimony and briefs. Obviously, however, there can be no summary disposition of the Company's Petition when there are issues of material fact.

Moreover, the statewide proceedings advocated by Sunrun would be an unreasonable and cumbersome process that would unnecessarily prevent PPL Electric from addressing these issues for several years. Indeed, if Material Question 3 is answered affirmatively, a statewide proceeding would be created to determine whether the issues presented by PPL Electric's DER Management Petition need to be addressed at all. If those issues do need to be addressed, then another statewide proceeding, presumably a rulemaking proceeding, would need to be held to decide how those issues should be addressed. As the Commission readily knows, a single statewide proceeding, let alone two, can take years to complete.[11] Thus, under the process

[11] *See, e.g., Rulemaking to Amend the Provisions of 52 Pa. Code, Chapter 56 to Comply with Amended Provisions of 66 Pa. C.S. Chapter 14*, Docket No. L-2015-2508421 (Order entered Feb. 28, 2019) (adopting revised final regulations in rulemaking proceeding initiated by the Notice of Proposed Rulemaking Order issued on July 21, 2016); *Implementation of the Alternative Energy Portfolio Standards Act of 2004*, Docket No. L-2014-2404361

envisioned by Sunrun, the Company would be substantially delayed in addressing these issues. During that time, the problems experienced by PPL Electric due to the inability to monitor and manage DERs would compound with each non-smart inverter that is installed. PPL Electric must be able to present its case on these factual issues and demonstrate that the Company's DER Management Petition is reasonable and in the public interest.

Additionally, Sunrun incorrectly asserts that it would be unduly burdensome and inefficient to litigate separate proceedings for each EDC in Pennsylvania on these issues, rather than addressing the issues in statewide proceedings. (Sunrun Petition, pp. 2-3.) Nothing in the record supports Sunrun's claim that any other EDCs will follow PPL Electric's approach and file a similar DER Management Petition. Besides its pure speculation on this point, Sunrun also fails to realize that there effectively are only four major EDCs in Pennsylvania: (1) PPL Electric; (2) PECO Energy Company; (3) the FirstEnergy Companies[12]; and (4) Duquesne Light Company. Even assuming that each of those EDCs files a petition similar to PPL Electric's DER Management Petition, it is completely unclear how litigating four separate proceedings would be so burdensome and inefficient that a statewide proceeding is absolutely necessary, especially given the different characteristics of each EDC and their distribution systems. The Commission also has taken utility-by-utility approaches in many other proceedings, including for electric and gas restructuring,[13] default service,[14] Energy Efficiency and Conservation ("EE&C") Plans,[15] and

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(Order entered Oct. 27, 2016) (amending the Commission's AEPS Act regulations after the rulemaking proceeding was initiated by the Notice of Proposed Rulemaking Order issued on February 20, 2014); *Final Rulemaking Re Steam Heat Distribution System Safety Regulations, 52 Pa. Code Chapters 61 and 67*, 2017 Pa. PUC LEXIS 25 (Order entered Aug. 3, 2017) (adopting final revised regulations after proceeding was initiated by the Proposed Rulemaking Order issued on November 5, 2015).

[12] The FirstEnergy Companies are Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company, and West Penn Power Company.

[13] *See, e.g., Application of Pa. Power & Light Co. for Approval of its Restructuring Plan under Section 2806 of the Public Utility Code, et al.*, Docket No. R-00973954 (Order entered Aug. 27, 1998).

time of use rates.[16] Another proceeding solely focused on PPL Electric makes sense here as well, given the specific circumstances and characteristics of the Company's distribution system and facilities.

Sunrun also mistakenly claims that the Commission's Alternative Energy Portfolio Standards ("AEPS") Act regulations can only be adopted through a statewide stakeholder process, so PPL Electric's Petition seeking a waiver of some of those regulations cannot be granted. (Sunrun Petition, p. 2.) Every Commission regulation is legally required to be promulgated through a statewide rulemaking process.[17] Therefore, based on Sunrun's logic, the Commission would never be able to grant waivers of its regulations despite the obvious authority to do so. *See* 66 Pa. C.S. § 501(a)-(b); 52 Pa. Code § 5.43.[18] Moreover, the Commission's AEPS Act regulations contemplate an individual EDC requesting that the Commission issue an "order" requiring customer-generators to install "additional equipment" or "impose any other requirement," as PPL Electric has done here. 52 Pa. Code § 75.13(k). Furthermore, to the extent that Sunrun argues the PPL Electric's DER Management Petition would result in *de facto* revisions to the Commission's AEPS Act regulations and that a statewide proceeding is more

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[14] *See, e.g., Petition of PPL Elec. Utils. Corp. for Approval of a Default Serv. Program and Procurement Plan for the Period June 1, 2017 Through May 31, 2021*, 2017 Pa. PUC LEXIS 127 (Order entered July 12, 2017), *clarified*, 2017 Pa. PUC LEXIS 16 (Order entered Aug. 3, 2017).

[15] *See, e.g., Petition of PPL Elec. Utils. Corp. for Approval of its Act 129 Phase III Energy Efficiency and Conservation Plan*, Docket No. M-2015-2515642 (Order entered Mar. 17, 2016).

[16] *See, e.g., Proceeding Initiated to Comply with Directives Arising from the Commonwealth Court Order in DCIDA v. PUC, 123 A3d 1124 (Pa.Cmwlth 2015) Reversing and Remanding the Order of the Commission Entered September 22, 2014 at Docket Number P-2013-2389572 in which the Commission had Approval PPL's Time of Use Plan*, Docket Nos. M-2016-2578051, *et al.* (Apr. 2, 2018) (Recommended Decision), *adopted*, 2018 Pa. PUC LEXIS 196 (Order entered May 17, 2018).

[17] "[W]hen promulgating a regulation, an agency must comply with the requirements set forth in," among other things, "the Commonwealth Documents Law." *Germantown Cab Co. v. Phila. Parking Auth.*, 993 A.2d 933, 938 (Pa. Cmwlth. 2010) (citations omitted). Section 1202 of the Commonwealth Documents Law requires the agency to "invite, accept, review and consider written comments from the public regarding the proposed regulation." *Id.* (citing 45 P.S. § 1202). "A regulation not promulgated in accordance with the statutory requirements will be declared a nullity." *Id.* (citation omitted).

[18] The total number of waivers of regulations is inconsequential as well. Whether the Company is requesting one waiver or 9 waivers of regulations does not affect whether the Commission has the authority to grant the waivers or whether the Commission should grant the waivers. What matters is whether those waivers are warranted based upon the evidence presented by PPL Electric.

appropriate, the Commission held in *City of Reading* that those arguments are insufficient for the Commission to grant a petition for interlocutory review. *See* note 6, *supra*.

In addition, PPL Electric would be denied due process if its DER Management Petition were dismissed or referred to a statewide proceeding, as requested in Sunrun's Petition for Interlocutory Review. "The Commission, as an administrative body, is bound by the due process provisions of constitutional law and by the principles of common fairness." *Hess v. Pa. PUC*, 107 A.3d 246, 266 (Pa. Cmwlth. 2014) (citations omitted). "Among the requirements of due process are notice and an opportunity to be heard on the issues, to be apprised of the evidence submitted, to cross-examine witnesses, to inspect documents, and to offer evidence in explanation or rebuttal." *Id.* (citations omitted); *see also* 66 Pa. C.S. § 332(c) (stating that every party is entitled to, among other things, "submit rebuttal evidence" and "conduct such cross-examination as may be required for a full and true disclosure of the facts).

Here, Sunrun's request for summary disposition would foreclose the Company's opportunity to present its case and properly respond to the issues and allegations raised by the other parties and commenters. PPL Electric has tried to respond to these factual issues through this Brief and the accompanying Affidavits. However, there still has been no actual evidentiary record developed. PPL Electric has a right to present its case on these issues of material fact before there is any ruling on the merits of its DER Management Petition. Thus, PPL Electric must have its opportunity to do so through the submission of testimony and the cross-examination of the other parties' witnesses, or else the Company will be denied due process.

Finally, Sunrun never requested a stay in its Petition for Interlocutory Review. However, to the extent that Sunrun requests a stay of the proceeding in its Brief,[19] no stay is necessary. As explained previously, this case needs to progress without delay so that PPL Electric can begin

[19] *See* 52 Pa. Code § 5.302(b).

monitoring and managing DERs on its distribution system. Moreover, on September 25, 2019, the ALJ issued an Interim Order: (1) holding NRDC and Sunrun's Preliminary Objection to PPL Electric's August 22, 2019 letter and their Motion for Leave to Reply & Reply in abeyance; and (2) extending the deadline for parties to submit a proposed procedural schedule from September 27, 2019, to November 6, 2019. Under the Commission's regulations, the Commission will rule on Sunrun's Petition for Interlocutory Review 30 days after receiving that Petition, *i.e.*, by Monday, October 21, 2019. Therefore, any procedural schedule adopted in this proceeding will have due dates well after the Commission rules on Sunrun's Petition for Interlocutory Review. Thus, the Commission should deny any request for a stay.

V. CONCLUSION

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that the Pennsylvania Public Utility Commission deny the Petition for Interlocutory Review and Answer to Material Questions filed by Sunrun, Inc.

Respectfully submitted,

Kimberly A. Klock (ID # 89716)
Michael J. Shafer (ID # 205681)
PPL Services Corporation
Two North Ninth Street
Allentown, PA 18101
Phone: 610-774-5696
Fax: 610-774-4102
E-mail: kklock@pplweb.com
E-mail: mjshafer@pplweb.com

David B. MacGregor (ID # 28804)
Devin T. Ryan (ID # 316602)
Post & Schell, P.C.
17 North Second Street
12th Floor
Harrisburg, PA 17101-1601
Phone: 717-731-1970
Fax: 717-731-1985
E-mail: dmacgregor@postschell.com
E-mail: dryan@postschell.com

Date: September 30, 2019

Counsel for PPL Electric Utilities Corporation

APPENDIX "A"

AFFIDAVIT OF DR. KAREN MIU

PROFESSOR AT DREXEL UNIVERSITY

COMMONWEALTH OF PENNSYLVANIA)
) ss:
COUNTY OF PHILADELPHIA)

DR. KAREN MIU, being duly sworn according to law, deposes and states that she is a Professor at Drexel University and has agreed to testify in this proceeding on behalf of PPL Electric Utilities Corporation ("PPL Electric" or the "Company") and that in this capacity, she is authorized to and does make this affidavit for the Company in support of PPL Electric's opposition to the Petitions for Interlocutory Review filed by the Natural Resources Defense Council ("NRDC") and Sunrun, Inc. ("Sunrun").

I am a Professor at Drexel University with a PhD in Electrical Engineering from Cornell University. In my position, I conduct extensive research in the areas on the planning and operation of electric distribution systems, including the impact of distributed energy resources ("DERs") on those distribution systems. From my review of other parties' filings in this case, they maintain that PPL Electric's DER Management Petition is premature and that the issues should be addressed in a statewide proceeding. Both of these claims are categorically wrong.

First, PPL Electric's DER Management Petition is not premature—it is late. Based on my experience, education, and research, I have determined that it is critically important for PPL Electric to take steps now to monitor and manage the deployment of DERs on its electric distribution system. Modern DERs interconnect to distribution systems via power electronic inverters which locally sense and control DER characteristics such as voltage levels and power characteristics. PPL Electric's distribution systems already include DER deployments. State of

the art planning, operation, and maintenance efforts in distribution systems include active voltage management for energy efficiency and power quality preservation, and coordination and management of distribution protection and switchgear to support electric service restoration efforts in times of faults. The lack of monitoring and management of DER deployments introduces uncertainty into these efforts and challenges the efficacy of existing control schemes that support an electric utility's duty to provide safe and reliable electric service. Furthermore, this uncertainty increases with the amount of DER installments.

The steady adoption of DERs has physically changed net electric power flows and, in particular, power flow directions. Historically, under normal operating conditions, individual customers (residential, commercial, industrial) interconnected directly to power distribution system nodes and solely consumed net energy. Power was drawn from bulk high voltage transmission system (three phase) substations, disaggregated by the distribution system, and delivered to individual customers (single and multi-phase) – in a one-way flow of power. Moreover, for several reasons primarily related to safety, the majority of distribution systems are operated in a physically, radial manner – i.e., no electrical loops exist, and there is only one electrically active path for electricity to travel from the substation, through the distribution system, to the customer. This is especially the case in above-ground, power distribution systems that are open-air and accessible to the public.

With DERs installed, the one-way flow of power has physically and dynamically changed to a two-way power flow depending on power system conditions. In addition, the frequency and the magnitude of these changes will increase with increased DER adoption. Several examples of such changes in power flows can be seen in distribution systems and have been documented in California, Hawaii and, more locally, recognized by PJM Interconnection LLC, which is

Pennsylvania's regional transmission operator. With respect to PPL Electric, based upon my research findings on actual PPL Electric circuits, it has been shown that even with existing levels of photovoltaic DER penetration, bi-directional power flows are experienced. In addition, existing levels of DER penetration consistently result in quantifiable changes in operating characteristics such as nodal voltage levels and phase imbalance levels within the system.

Thus, there is an urgent need for PPL Electric to have the ability to monitor and manage DER deployments in order to preserve power quality, reliability, and safety. All power delivery systems (transmission and distribution) are operated with some reserve generation and varying levels of spare power flow capacity in order to factor in historical power injection fluctuations. However, as more DERs are deployed, it is the distribution system and its distribution energy management system that bear the brunt of non-aggregated, physically differentiated (single and multi-phase) DER power injections.

Through detailed simulations of several actual PPL Electric distribution circuits, my research has shown that even current DER levels measurably impact voltage power quality at various individual nodes throughout the distribution system itself. In particular, DER injections are non-uniform across electrical phases; thus, core assumptions on balanced behavior of injections made at bulk power and transmission systems and their energy management systems cannot accurately capture the physical reality of DER installations at the distribution level. Yet, capturing this physical reality is fundamental to determining safe control actions, especially in the case of electric service restoration in emergency circumstances to the public and to distribution personnel.

In the case of faults, distribution operators must be able to remotely sense the power injection level of individual DERs. IEEE interconnection standards for distributed sources currently require disconnection in the presence of an electrical fault in the system. Lack of

communication between DER inverters and system operators create uncertainty in whether a DER is actually disconnected from the grid in faulted, emergency conditions. Thus, while historical fault isolation in one-way flow direction systems should have de-energized a faulted, affected area, with no knowledge of DER inverter status, it is possible the affected areas are still energized. This poses safety risks to PPL Electric's personnel and the public. Furthermore, distribution operators who are unable to monitor and manage the deployment of DERs on their systems cannot dispatch distribution personnel as rapidly to repair the faults.

Moving forward, it is imperative that PPL Electric monitor and manage the incoming DERs before even more significant levels of DER inverters lacking communications with distribution system operators are deployed. For example, deployment of large numbers of photovoltaic DERs without strong coordination to the underlying electric distribution systems has strained California power systems, resulted in two-way power flows, and cases of too much power generation. Subsequently, for example in southern California, significant grid modernization efforts have been identified in order to accommodate DERs. PPL Electric's DER Management Petition is proactively trying to address the inevitable increase of DERs within the Company's distribution systems in order to maintain power quality and system reliability levels. The issues are technically and economically important because the sooner they can be addressed, the clearer the requirements for electric utility investments and customer investments in DER deployments.

Second, PPL Electric's DER Management Petition is best addressed in a utility-specific proceeding such as the current one. Each utility owns, operates, maintains, and plans its multiple distribution systems and safeguards electrical system and customer usage data to fulfil its duty to provide safe and reliable electric service. Each utility serves different types of consumers and different physical environments. Consequently, each utility adopts and adopted different

components, control capabilities, and configurations depending on locally forecasted electrical characteristics and physical terrain. These performance characteristics change over time with power demand changes and with the integration new technologies such as DER into the distribution systems. As such, the technical issues related to the monitoring and management of the deployment of DERS is dependent upon the underlying utility-specific distribution system itself. Each utility needs to monitor and manage DER inverters in a manner congruent to its corresponding distribution systems.

Electrical location and phasing of DERs within distribution systems vary. Simulations on existing PPL Electric circuits demonstrate that even modest numbers of existing DER installations measurably impact power quality at locations where no DER is installed. Management of DERs without visibility to the underlying distribution system interconnecting them could negatively impact power quality and increase risks, especially during emergencies, in a manner that knowingly ignores available system data and state-of-the-art distribution planning and operating tools. PPL Electric has been an industry leader in the adoption state-of-the-art distribution energy management systems and, as DER installations are increasing, it is more than an appropriate time for PPL Electric to develop and implement utility-specific solutions.

Moreover, I fear that if these issues were deferred to a statewide proceeding, then we would simply be delaying the resolution of these problems for several years as we have seen in other states such as New York and California. During that time, the problems I have outlined above would compound with each new DER that is deployed on PPL Electric's distribution system. Rather than stifling PPL Electric's proactive efforts to address these issues, I believe that the Company should be given the opportunity to have its case heard on why its DER Management Petition is reasonable and should be approved by the Pennsylvania Public Utility Commission.

Based on the foregoing, I agree with PPL Electric that the Petition for Interlocutory Review should be denied and that this proceeding should proceed to litigation before Administrative Law Judge Emily I. DeVoe.

Karen Miu, PhD
Professor
Drexel University
3100 Market Street, Bossone 413a
Philadelphia, PA 19104

Signed and sworn to before me on

September 27, 2019, by

Dr. Karen Miu making statement.

Ann E Acri

Notary Public

My commission expires 03/29/2021.

(SEAL)

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
ANN E. ACRI, Notary Public
City of Philadelphia, Phila. County
My Commission Expires March 29, 2021

APPENDIX "B"

AFFIDAVIT OF STEPHEN WHITLEY

CONSULTANT AT STEPHEN WHITLEY LLC

STATE OF CALIFORNIA)
) ss:
COUNTY OF ORANGE)

STEPHEN WHITLEY, being duly sworn according to law, deposes and states that he is a Consultant at Stephen Whitley LLC and has agreed to testify in this proceeding on behalf of PPL Electric Utilities Corporation ("PPL Electric" or the "Company") and that in this capacity, he is authorized to and does make this affidavit for the Company in support of PPL Electric's opposition to the Petitions for Interlocutory Review filed by the Natural Resources Defense Council ("NRDC") and Sunrun, Inc. ("Sunrun").

From 2008 to 2015, I served as the President and CEO of the New York Independent System Operator ("NYISO"). Prior to that I served as the COO of ISO New England ("ISO-NE") (2000 to 2008), and in various executive capacities at the Tennessee Valley Authority ("TVA") (1970 to 2000). I also served as Trustee to the SPP Registered Entity (2016 to 2018), and I retired as a Colonel in the U.S. Army Reserve after 30 years of service. Currently, I am self-employed as a Consultant at Stephen Whitley LLC, where I provide expertise to clients on electric system planning, operations, and wholesale electricity markets regulated by the Federal Energy Regulatory Commission ("FERC") and statewide commissions. I have significant experience with the operation and benefits of distributed energy resource ("DER") assets on the electric system and to electric consumers based on my roles in the operation of electric systems

in three different footprints — TVA, New England, and New York. In addition, I live in southern California with Time-of-Day rates, have residential solar generation on my home, and drive an electric vehicle, which also makes me familiar with the subject discussed here from a consumer perspective. I am very familiar with the benefits of DER assets to all consumers and have read the other parties' pleadings and comments, in which they generally argue that PPL Electric's DER Management Petition is premature and that the issues should be addressed in a statewide proceeding. In my opinion, neither of these claims are correct.

In my experience, the nature of the grid is changing, in large part because generation that has traditionally come from centralized plants is increasingly coming from DERs connected on the distribution system. These are often called "behind the meter" resources. In grid operations, they have often been included in programs called "Demand Response (DR)" or "Demand-side Management (DSM)". With these programs, grid operators can call on these resources to reduce regional or local demand during times of emergencies as a tool to maintain system reliability. To comply with the operator's request, DSM providers could either actually reduce consumption, turn on behind the meter generation (often backup generators), or both.

Today many more options are available with the rapidly growing number of behind the meter resources available. Examples include solar panels, storage batteries, electric vehicles, and many wi-fi controlled devices at individual homes such as swimming pool pumps, backup generators, etc. The potential impact of this growing category of resources is very significant. Now is the time to get out ahead of this impact and prepare the system for the most effective method of DER management. Very significant savings to consumers and the environment can be achieved if this is done properly with better transparency, visibility, and operational control by

both the distribution system operator (in this case PPL Electric), and the grid operator (in this case PJM Interconnection LLC ("PJM"). I also am familiar with Pennsylvania's recent announcement to significantly increase renewable energy that is made in the State and connected to the Pennsylvania utilities' electric transmission and distribution systems.

It is important for electric utilities to plan and prepare for the deployment of DERs well in advance of their widespread deployment. On the transmission side, the Regional Transmission Operators/Independent System Operators ("RTO/ISOs"), such as NYISO, ISO-NE, and PJM must be able to monitor and balance electric generation and load. This is vitally important for maintaining the safety, reliability, and stability of the transmission system. The RTO/ISOs must be able to accurately forecast the system and locational demand for the next 15 minutes, next hour, next day, next season, and next several years to ensure sufficient transmission and generating resources are available under their control to: (a) balance supply and demand in real time; (b) position the system to be prepared to meet severe weather conditions and sudden contingency events (loss of network components such as lines, towers, or generating units); (c) meet all applicable national and regional reliability standards, and (d) dispatch all available resources in the most efficient manner for the benefit all consumers.

My significant experience with the operation of DR resources in New York provides an apt comparison to the challenges presented by DERs. Our staff at NYISO always knew the amount of DR that had previously signed up with a commitment to reduce demand upon request, but we never knew how much we would actually get in real time. Sometimes the response was good, but much of the time the program under performed. As a result, our operators had to constantly overcommit other generation (normally gas-fired generation) to maintain system

reliability. This is very costly to consumers and the environment. If the operators had better transparency, visibility, and operational control of behind the meter resources through the distribution system operators (e.g., Consolidated Edison, Inc., New York State Electric and Gas Corporation, Central Hudson Gas & Electric Corp., Long Island Power Authority, New York Power Authority, Niagara Mohawk Power Corp. d/b/a National Grid, municipalities, etc.), this could have been avoided. This is actually one of the major goals of New York's Reforming the Energy Vision ("REV") procedure aimed at expanding the effective use of DERs in New York.

Transmission system operators must have the real-time visibility and accurate information to plan and operate the systems with many market participants. In the case of DERs, aggregators have entered the market by bundling small distributed generators to participate in the transmission markets. In this case, their participation is accepted based upon claims without transparency or ability to measure DER contributions. When there is a mismatch of actual DER generation compared to what has been committed, the imbalance of generation and load can cause serious problems for the transmission system. When the RTO/ISOs do not have accurate and verifiable information, they have to guess and over commit other generation that is under their control as mentioned above. Aggregators actually benefit by this lack of visibility and transparency since it is very difficult to verify if they did or did not perform properly. This could be easily corrected by adoption and implementation of PPL Electric's DER Management proposal. This would be a major step forward in the evolution of grid management and would be implemented the right way.

Today, however, DERs are being deployed on the electric distribution system with no adequate measures to ensure that those systems are kept in balance, and their availability,

operation, and performance are not visible or transparent to the distribution operator or the grid operator. As this expands, the cost to consumers and the threat to reliability will become overwhelming and unsustainable. I strongly believe that now is the time to get out ahead of this issue. The Company's proposal is sound and puts the correct infrastructure in place to allow proper implementation to occur. As the entity that owns the electric distribution system has a responsibility to provide safe, reliable, and affordable service, PPL Electric is best positioned to be the party in charge of monitoring and managing the DERs interconnected with its distribution system. Thus, PPL Electric's DER Management Petition is ripe and should not be delayed.

In addition, the other parties' push for a statewide proceeding is not the correct approach. As I mentioned previously, PPL Electric needs to get ahead of these issues before DERs that have inverters that lack communications become more widespread. A statewide proceeding, however, would unnecessarily delay resolving these issues. Time is the enemy on an issue such as this. These resources are growing rapidly. New York has been working on this since 2013 with several statewide proceedings and hearings with delays constantly being sought by special interest groups. Pennsylvania should show leadership and get ahead of the issue with a fundamentally sound approach. Consumer interest and reliability should have priority over any market sector's financial interest.

Furthermore, the issues regarding how DERs should be monitored and managed on an electric distribution company's ("EDCs") system are fact-specific. I believe it will be much more efficient for the Pennsylvania Public Utility Commission to follow a utility-specific proceeding as opposed to a slow statewide proceeding. Every utility may have different information technology ("IT") systems, automated metering infrastructure ("AMI") meters, and

other electric distribution facilities and infrastructure. For example, the Company has deployed a distributed energy resources management system ("DERMS"), but other EDCs in Pennsylvania have not. Given these differences in each EDC's characteristics and systems, the best approach is a utility-specific proceeding, such as the one initiated by PPL Electric's DER Management Petition.

Based on the foregoing, it is my opinion that the Petitions for Interlocutory Review should be denied and that this proceeding should proceed to litigation before Administrative Law Judge Emily I. DeVoe.

Stephen Whitley
Consultant
Stephen Whitley LLC
33 Emerald Gln
Laguna, Niguel CA 92677

Signed and sworn to before me on

September 27, 2019, by

Stephen Whitley making statement.

Notary Public

My commission expires September 28, 2022

(SEAL)

MONICA KOLBADI
COMM.# 2260224
NOTARY PUBLIC - CALIFORNIA
ORANGE COUNTY
My Comm. Expires Sept. 28, 2022

APPENDIX "C"

AFFIDAVIT OF WANDA REDER

PRESIDENT & CEO OF GRID-X PARTNERS, LLC

STATE OF ILLINOIS)
) ss:
COUNTY OF KANE)

WANDA REDER, being duly sworn according to law, deposes and states that she is President & CEO of Grid-X Partners, LLC ("Grid-X") and has agreed to testify in this proceeding on behalf of PPL Electric Utilities Corporation ("PPL Electric" or the "Company") and that in this capacity, she is authorized to and does make this affidavit for the Company in support of PPL Electric's opposition to the Petitions for Interlocutory Review filed by the Natural Resources Defense Council ("NRDC") and Sunrun, Inc. ("Sunrun").

I am the President & CEO of Grid-X and previously served as Chief Strategy Officer and Vice President of Power Systems Services for S&C Electric Company from 2004 – 2018. Prior to S&C, I was a Vice President for Exelon Energy Delivery responsible for several areas such Asset Management, Engineering and Planning. I am also an Institute of Electrical and Electronics Engineers ("IEEE") Fellow, was the President of the IEEE Power & Energy Society ("PES") from 2008 – 2009, was appointed to the U.S. Department of Energy ("DOE") Electricity Advisory Committee from 2011 – 2017 and again as vice chair starting in 2018 by the U.S. Secretary of Energy, and was invited to become a member of the National Academy of Engineers in 2016. Therefore, I am qualified to testify as I have provided leadership for IEEE PES, the organization responsible for the IEEE 1547 standard development, have participated in this arena from the perspective as an advisor to DOE and have applied the standard in former utility roles. I have reviewed the pleadings and comments submitted by parties and commenters in this proceeding. In

this Affidavit, I would like to respond to the claim that the Company's DER Management Petition is premature because the revisions to UL Standard 1741 have not yet been published.

As explained in PPL Electric's DER Management Petition, UL Standard 1741 governs the physical testing procedures that manufacturers must perform to certify that a distributed energy resource ("DER") inverter meets the technical requirements in the recent 2018 update of IEEE Standard 1547. The IEEE 1547 series of standards has helped shape the way utilities and other businesses have worked together to realize increasing amounts of DERs interconnected with the distribution grid. The IEEE 1547 family of standards provides the critical foundation for interconnecting DERs to electric utility distribution grids by establishing mandatory functional technical requirements and specifications, as well as flexibility and choices, about equipment and operating details. It has been the de-facto standard for DER interconnections in the United States since it was originally published in 2003.

Since the first publication of IEEE 1547 in 2003, a lot has changed in the distributed generation area; increasing technological and economic advances have elevated the levels of penetration the grid experiences, resulting in a continual evolution of IEEE 1547. IEEE Standard 1547 was revised in 2018 so that it includes interoperability and communication requirements and requires the capability to actively regulate voltage, ride through abnormal voltage/frequency conditions, and provide frequency response. This sharply contrasts the technical requirements in the original IEEE 1547 standard, which prohibited active voltage regulation and mandated a trip during abnormal voltage/frequency conditions.

IEEE 1547 provides specifications and requirements for the interconnect tests; however, it does not provide test procedures. IEEE 1547.1 defines the type, production and commissioning tests that shall be performed to demonstrate conformance with the technical requirements in IEEE

1547. IEEE 1547.1 is currently under revision, has gone to ballot, and is expected to be approved early in 2020. In the meantime, UL 1741 SA is being used as an interim standard until the IEEE 1547.1 revisions are completed and adopted.

In the United States, UL 1741 certifies performance, ensuring that every inverter is manufactured, programmed, and tested to adhere to the interconnection standard and is the standard to which all inverters and must be listed. UL 1741 is harmonized with IEEE 1547 and IEEE 1547.1 (the testing standard). UL 1741 SA refers to Supplement A of the UL 1741 standard, which, in addition to UL 1741, allows for limited testing of advanced inverter functions and implemented before the IEEE 1547.1 revision is available. The requirements for functionality under UL 1741 SA are set in a "Source Requirements Document," e.g., California Rule 21 or HECO Rule 14H requirements, published in September 2016. PPL Electric already requires inverters to be compliant with UL 1741 SA, which provides testing and certification of limited autonomous inverter functions.

Although the revisions to IEEE 1547.1 and the harmonized UL 1741 Standard have not been released, the Company's DER Management Petition to proactively implement IEEE 1547-2018 is not premature. IEEE 1547-2018, which define technical requirements, was approved in 2018. Approval of IEEE 1547.1, which will provide the complete testing provisions for IEEE 1547-2018, is expected to occur by the end of the first quarter of 2020. The IEEE 1547.1 standard has been balloted and is in review. In all likelihood, publication will occur well before the end of this proceeding. When UL 1547.1 is published the harmonized UL 1741 provisions will be made available.

There is some uncertainty on exactly when the IEEE 1547.1 standard will be published and certified products will be available, so PPL has a contingency plan in place to be used as needed.

IEEE is a volunteer-based organization having over 400,000 members in 160 countries. One of its functions is to develop global standards for a broad range of industries using a process that is balanced, open, and fair and is based upon consensus. Because of the IEEE construct, there are schedule uncertainties in the IEEE standards approval process. Additionally, even though manufacturers have had insight and input to the standards throughout the development process, they will likely need a few months to make design and supply chain changes before compliant products are available for purchase in the marketplace. Because of these uncertainties, PPL Electric has developed an interim plan that can be used for testing, if it is needed, to bridge the gap between when the Petition may be approved and when certified IEEE 1541.1 / UL 1741 equipment is available in the marketplace. Specifically, the interim approach would require compliance with UL 1741 SA and would also require compliance with the communication technical requirements specified in section 10.7 of IEEE 1547-2018.

For the reasons stated, PPL Electric's DER Management Petition is not premature. Rather, PPL Electric's timing is impeccable. PPL Electric is proactively moving forward to utilize newly available standards and technology to monitor and manage interconnected DERs to satisfy its obligation to serve reliably, affordably, and safely. By proceeding with the PPL Electric's DER Management Petition at this juncture, before there are significant DER installations, PPL Electric will be placed in the best position possible to act responsibly, thereby avoiding many of the grid problems that other utilities who lack appropriate visibility and management of DERs have realized after encountering significant DER penetration.

An example of grid challenges close to home that could have been mitigated with increased visibility is on the Dominion Energy system, headquartered in Virginia. Following the normal afternoon "fall off" of solar generation at approximately 6 PM one spring afternoon in North

Carolina, *Real Time* contingency analysis identified a post contingency thermal overload, where the emergency rating on a 115 kV Transmission Line would be exceeded. The contingency event studied the loss of another 115 kV Transmission Line in the area, and the post contingency overload was not identified in the *Next Day* contingency analysis. The reason this was not identified was the solar generation in question that was on-line at the time the *Next Day* study was performed *masked the gross load* that was being served by the 115 kV Transmission Line. During this event, the system operators identified and performed a real time switching solution to mitigate the post contingency overload. Had a switching solution not been available, load curtailment would have been performed. This event highlights the importance of knowing the physical location of distributed generation, the real time & forecasted total gross load, and the total gross generation at the transmission bus. Additionally, the understanding of net load is not sufficient, and DERs cannot simply be treated as a "load reducer". If real time monitoring of DERs were available to Dominion Energy, it would have provided the utility with the visibility needed to operate reliably and safely because real time gross load and generation would have been available. Without specific real-time information that comes from monitoring DERs, the load can be masked causing operational actions to be taken that can have unintended consequences.

An example of savings that could have resulted from the availability to manage DERS comes from Germany, where highly penetrated PV installations led to generation exceeding the annual peak load on parts of the distribution system. A region was separated from the main power grid, causing the frequency to increasing above 50.2 Hz; over-frequency settings in the DER inverters caused them to disconnect from the grid simultaneously. Subsequent analysis simulating similar effects across the country indicated a stability risk for Germany and its interconnections if they would have a sudden loss of capacity during peak feed-in times because there was not enough

frequency control reserve available in the continental European control area to balance the system. To solve this, Germany manually retrofitted 300,000 DER systems with different ride-through settings which cost approximately $175 million Euros (~$190 million USD) for ratepayers. This expense could have been avoided if autonomous smart inverter settings could have been changed remotely with communication-equipped inverters. This is one utility story of many, that are occurring domestically and abroad, where system challenges are occurring because utilities cannot monitor and manage DERs. As DER penetration increases, so does the utility's operational risk if it does not have the capability to monitor and manage. PPL Electric should be allowed to act, with all due haste, so the Company can move forward before DER penetration builds and the system challenges develop.

Smart inverter technology is available, IEEE 1547-2018 has been approved and the remaining testing standard IEEE 1547.1 will be published imminently. As the installation rate of DER installations are rapidly increasing, PPL Electric seeks to enable the movement. The Company's customers deserve the opportunity to fully benefit from the technology that is unleashed by acceptance and adoption of the new IEEE 1547 and UL 1741 standards. For these reasons, PPL Electric's DER Management Petition should not be delayed and by acting now, it will affirmatively promote DER adoption.

Based on the foregoing, I agree with PPL Electric that the Petition for Interlocutory Review should be denied and that this proceeding should proceed to litigation before Administrative Law Judge Emily I. DeVoe.

Wanda Reder
President & CEO
Grid-X Partners, LLC

34W676 Country Club Road
Wayne, IL 60184

Signed and sworn to before me on

September 27, 2019, by

Wanda Reder making statement.

Notary Public

My commission expires June 14, 2020.

(SEAL)

Official Seal
Daniel J Daly
Notary Public State of Illinois
My Commission Expires 06/14/2020

DuPage, IL.