

COMMONWEALTH OF PENNSYLVANIA



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July 22, 2025

Via Electronic Filing

Matthew L. Homsher, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

Re: Petition of PPL Electric Utilities
Corporation for Approval of its Second
Distributed Energy Resources
Management Plan;
Docket No. P-2024-3049223

Dear Secretary Homsher:

Please find enclosed a copy of the Office of Consumer Advocate's Replies to Exceptions in this proceeding. Copies have been served on the parties as indicated on the enclosed Certificate of Service.

Respectfully submitted,

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Enclosures

cc: Administrative Law Judge John M. Coogan (Via Email: jcoogan@pa.gov)
Office of Special Assistants (Via Email: ra-OSA@pa.gov)
Certificate of Service

CERTIFICATE OF SERVICE

Petition of PPL Electric Utilities Corporation :
for Approval of its Second Distributed Energy : Docket No. P-2024-3049223
Resources Management Plan :

I hereby certify that I have this day filed electronically on the Commission's electronic filing system and served a true copy of the following document, the Office of Consumer Advocate's Reply to Exceptions, upon parties of record in this proceeding in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant), in the manner and upon the persons listed below.

Dated this 22nd day of July 2025.

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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation :
for Approval of its Second Distributed : Docket No. P-2024-3049223
Energy Resources Management Plan :
:

REPLIES TO EXCEPTIONS
OF THE
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Dated: July 22, 2025

TABLE OF CONTENTS

I. Introduction..... 1

II. OCA Summary of Replies to PPL Exceptions: The Commission should deny PPL’s Exceptions because the ALJ correctly concluded that PPL failed to carry its burden of proof to merit approval of its original proposal or any modifications to it; however, the Commission should direct further proceedings..... 1

III. OCA Reply to PPL Exception No. 1: The Commission should deny PPL’s first Exception because the ALJ correctly concluded that PPL failed to carry its burden of proof in demonstrating that the scope of its proposed plan is reasonable or necessary, as based on the substantial evidence provided by the OCA, JSPs, and the OSBA in this proceeding. 5

A. PPL’s proposal contains an unprecedented and unnecessary scope..... 5

B. PPL’s proposed scope to actively manage and control *every* connected DER installment is not necessary for reliability and safety; however, there are nuances and more cost-effective solutions that should be explored in the interest of ratepayers. 7

IV. OCA Reply to PPL Exception No. 2: The Commission should deny PPL’s second Exception because the ALJ correctly concluded that PPL failed to carry its burden of proof in showing that the proposed standards of the plan would not result in harms to owners of inverter-based DER installments, as based on the substantial evidence provided by the JSPs in this proceeding 11

V. OCA Reply to PPL Exception No. 3: The Commission should deny PPL’s third Exception because the ALJ correctly concluded that PPL failed to carry its burden of proof because it failed to provide a reliable or positive cost-benefit analysis to support its proposal. 14

A. Given that the second cost-benefit analysis was drastically different from the initial cost-benefit analysis and was not introduced into the record until PPL’s rebuttal testimony, the only appropriate conclusion of law is that PPL failed to carry its burden in providing a reliable cost-benefit analysis to support its proposal..... 15

B. In the second cost-benefit analysis, PPL’s assigning of increased hosting capacity as the primary benefit to all ratepayers is fundamentally flawed given that this benefit accrues only to connecting DER customers, resulting in a cross subsidy where over 90% of ratepayers without DER are paying for most of the costs of the second DER plan..... 15

C. The second cost-benefit analysis fails to consider the costs of compensating net metering customers.	17
D. PPL failed to evaluate the costs and benefits of alternative strategies other than the proposed mandatory active management approach for all DERs; failure to provide a more comprehensive analysis supports the conclusion that PPL failed to carry its burden of providing a reliable or positive cost-benefit analysis to support its proposal.....	18
VI. OCA Reply to PPL Exception No. 4: The Commission should deny PPL’s fourth Exception because PPL did not carry its burden of proof as to any modifications of the plan. ...	20
VII. Conclusion	23

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Hurley v. Hurley</i> , 754 A.2d 1283 (Pa. Super. Ct. 2000) (<i>Hurley</i>)	2
<i>Pa. PUC v. Equitable Gas Co.</i> , 57 Pa. PUC 423 (1983)	2
Statutes	
71 P.S. § 309-4(a)	1
71 P.S. § 309-5(2)	1
73 P.S. § 1648.5	18
66 Pa. C.S. § 332(a)	2
66 Pa.C.S. § 1501	7, 14
Other Authorities	
52 Pa. Code Section 75.22	12

I. Introduction

The Pennsylvania Office of Consumer Advocate (OCA), as a party in the underlying proceeding, submits these Replies to Exceptions of the Exceptions filed by PPL Electric Utilities Corporation (PPL) on July 15, 2025, to the Recommended Decision (RD) of Administrative Law Judge John M. Coogan, issued on June 30, 2025, in this proceeding. The OCA submits these Replies to Exceptions to defend and protect the interests of consumers in PPL's service territory. 71 P.S. § 309-4(a). The Commission, in reaching a final determination in this matter, must take such action with due consideration to the interest of consumers, consistent with its other statutory responsibilities. 71 P.S. § 309-5(2).

II. OCA Summary of Replies to PPL Exceptions: The Commission should deny PPL's Exceptions because the ALJ correctly concluded that PPL failed to carry its burden of proof to merit approval of its original proposal or any modifications to it; however, the Commission should direct further proceedings.

Most installments of distributed energy resources (DER) in PPL's service territory are small; about 98 percent are under 25 kW. OCA St. 1 at 36. From a reliability and safety perspective, mandatory, active monitoring is not needed for small DERs but only for large DERs (200 kW and above) because large DERs represent a significant fraction of the demand on a distribution circuit, creating an acute risk to reliability and safety. While PPL should not simply ignore small DERs with no intention to monitor, manage, or influence their impacts on the distribution system, it is very important to ratepayer interests that more cost-effective methods be explored for small DERs. OCA St. 1 at 31-36; OCA St. 1SR at 33-36.

In its Exceptions, PPL assigns multiple errors to the RD of ALJ Coogan and asserts that its second DER proposal – which would require *every* DER in its service territory to be subjected to mandatory, active monitoring with use of EDC-owned/operated devices – is “reasonable and justified” to meet “unprecedented resource adequacy challenges facing the Commonwealth.” PPL

Exc. at 2-3. PPL asks the Commission to assign more weight to the “safety, resiliency, adequacy, and reliability benefits” and resource adequacy benefits of its proposal than its cost-benefit analysis. Exc. at 3. While not ignoring these heavy assertions made by PPL, in the interest of consumers, the Commission should adopt the ALJ’s RD, deny PPL’s Exceptions, and reject the second DER proposal filed by PPL in this proceeding.

The Commission should adopt the RD of ALJ Coogan because the determinations, reasoning, conclusions, and findings of fact are free from legal error and are well supported by substantial evidence of record. The ALJ correctly concluded that PPL failed to carry its burden of proof in demonstrating (1) why the scope of its proposed active monitoring and control of DER devices for all customer-owned and third-party-owned inverter-based DER installations is reasonable or necessary, (2) how the proposed standards of PPL’s proposal will not result in harms to participants in the DER program, and (3) that its proposal is supported by a reliable or positive cost-benefit analyses. RD at 42, 43, 44, 46. As a result, the Commission should deny PPL’s Exceptions 1 through 3 because, as discussed more fully below in the OCA’s specific replies, the ALJ correctly found that other parties’ evidence outweighed PPL’s evidence regarding (1) the scope of the plan, (2) the impact of its requirements, and (3) the cost-benefit analyses. RD at 42-46. PPL failed to carry its burden of production and persuasion for its original proposal, and as a result, the plan must be rejected outright. *See* 66 Pa. C.S. § 332(a); *Hurley v. Hurley*, 754 A.2d 1283, 1285-1286 (Pa. Super. Ct. 2000) (*Hurley*); *see also Pa. PUC v. Equitable Gas Co.*, 57 Pa. PUC 423, 471 (1983).

As an alternative to outright rejection, in its Exception 4, PPL requests that the Commission direct reasonable modifications to its plan. The problem with this request is that PPL failed to carry its burden of proof as to any modifications to its proposal. Indeed, notably absent from this record

is a submission of a revised plan by PPL or any meaningful commitment or assessments to support revisions to its original plan. Without a revised plan or any meaningful commitments or assessments to support revisions to its original plan, PPL failed to carry its burden of proof to merit approval of its original proposal with modifications to it. Given the limited record and lack of substantial record evidence as to appropriate modifications to the plan, it is simply premature for the Commission to direct modifications to PPL's original plan. If this is truly about, as PPL claims, the Commission leading "the vanguard of distributed energy advancement," it is not in the interest of consumers for the Commission to tinker with the plan based solely on this limited record.

However, in pursuit of a revised plan, the Commission could direct further proceedings. Any such proceedings should begin by PPL being required to submit a revised plan with new supporting assessments including a new cost-benefit analysis. In supporting a revised plan, PPL should be required to discuss how the revised plan avoids the shortcomings of the original plan, shows consideration of the alternatives and modifications, including those of the OCA, OSBA, and JSPs raised in this proceeding and any alternatives/modifications that PPL identifies that may not be in this record.

Procedurally, the Commission has several options. *See* OCA M.B. at 42-43 (citing OCA St. 1 at 54-55; OCA St. 1SR at 3). One option is that the Commission can remand the matter to the ALJ to hold further proceedings in this docket to more robustly address modifications to the plan.¹ The Commission has this authority, and it is not constrained by a statutory deadline. This approach

¹ For example, the ALJs can convene the parties for a prehearing conference on remand, set a new litigation schedule, and per that schedule, PPL can file direct testimony on remand that includes a revised plan as an exhibit to testimony. In the direct testimony on remand, PPL's witness can discuss how the revised plan avoids the shortcomings of the original plan, identify and explain the modifications/alternatives it selected and why, and if PPL decided not to adopt a modification/alternative proposed by the JSPs, OCA, or OSBA, discuss the reasons for not adopting it. After that submission, the parties can develop the record on the revised proposal through submission of rebuttal, surrebuttal, rejoinder, and hearings.

will serve judicial economy because significant resources have been spent by PPL, the statutory advocates, the other parties, and Commission staff in this matter. Remanding can further build upon the existing record as well as the understanding and knowledge gained to date by all involved government employees. While this option can result in further litigation, the parties will benefit from clear direction from the Commission through its adoption of the RD and direction for further record development, and such direction gives the parties better signals to examine more closely any alternatives and modifications and formulate more nuanced positions. With better information, the parties may become better situated to productively use time for collaborative settlement discussions to determine if they can reach agreement on compromises and solutions.

Another option is that the Commission can end these proceedings and simply permit PPL to re-file a revised DER management plan proposal. The concern with this approach is that it creates separation from this record to the next, which may hinder the opportunity to build upon existing knowledge and understanding gained to date.

A third option is that the Commission can open a generic docket for all electric distribution companies (EDCs) to address the transparency needed for future DER plans that could include the use of a collaborative working group. This third option is not mutually exclusive with the first or second options above and can operate on a parallel track. The transparency that is needed for PPL's DER plan is not unique to PPL. Many EDCs are planning DER investments. If the Commission wishes to more broadly evaluate Pennsylvania EDC DER plans, a generic docket may be appropriate. Conducting an evaluation across utilities could lead to many lessons learned that reduce costs for ratepayers. Regardless of the venue and number of EDCs, a collaborative working group process could further inform the scope, depth, and assumptions to be used. OCA M.B. at 43 (citing OCA St. 1 at 55).

III. OCA Reply to PPL Exception No. 1: The Commission should deny PPL's first Exception because the ALJ correctly concluded that PPL failed to carry its burden of proof in demonstrating that the scope of its proposed plan is reasonable or necessary, as based on the substantial evidence provided by the OCA, JSPs, and the OSBA in this proceeding.

A. PPL's proposal contains an unprecedented and unnecessary scope.

The Commission should deny PPL's Exception No. 1. From the very beginning of this Exception, PPL mischaracterizes the RD. PPL argues that the ALJ incorrectly denied the Petition merely for being "first-in-the-nation." PPL Exc. at 6 (citing RD at 43). After asserting this mischaracterization, PPL explains how it is a pioneer for making its second DER proposal and encourages the Commission to lead the vanguard of distributed energy advancement. PPL Exc. at 7, 7-10.

Contrary to the PPL's assertions, the ALJ did not recommend rejection of the plan simply for being a pioneer. Rather, as the ALJ correctly reasoned, the scope of PPL's proposal – that all inverter-based DER installations be equipped with EDC-owned, DER management devices so that PPL can actively monitor and manage the DERs – is not seen in other jurisdictions that have higher rates of DER success, as measured in terms of DER deployment and penetration levels. RD at 42, 43. The ALJ found that the JSPs and OCA established that the jurisdictions with higher DER deployment rates use other more cost effective and economical management tools without customers being subjected to a level of utility control that PPL proposes. RD at 43 (citing OCA MB at 13-19; JSPs MB at 23-24). The ALJ gave specific examples of these variety of other tools used in other jurisdictions: custom smart inverter setting profiles, grid modernization investments, voluntary flexibility interconnection options, and compensation for customers and non-utility service providers who both provide and receive grid services, without causing power quality or reliability issues. RD at 43 (citing JSPs M.B. at 20-22).

In further support of the ALJ's correct reasoning in the RD, PPL's second DER proposal is unlike its first DER plan and is unprecedented because it makes utility control of DERs mandatory for all inverter-based DER installment and requires the installation of an approximately \$1,000 device on every DER connected to PPL's system, paid for by ratepayers. OCA R.B. at 2; OCA St. 1SR at 4. PPL's proposal is the only program in the country that would mandate full monitoring and control of DERs through utility-owned devices. *See* OCA M.B. at 13-19, 41; OCA R.B. at 2.

In multiple jurisdictions, including San Diego and Hawaii, utilities are demonstrating today that DERs can be managed reliably, safely, and efficiently in the absence of dedicated controls used in PPL's DER Pilot. OCA R.B. at 3; OCA M.B. at 14-17; OCA St. 1SR at 5. OCA witness Nelson testified that "[b]oth San Diego and Hawaii have current DER penetrations that are a decade or more ahead of PPL's projected growth and they both continue to operate their grids safely and reliably." OCA M.B. at 15; OCA St. 1SR at 5.

States like Arizona, California, Hawaii, Massachusetts, and Rhode Island have five to ten times more DER per capita today than Pennsylvania and are likely to remain far ahead of PPL into the future. OCA St. 1 at 33. While PPL has cited to an analysis projecting that Pennsylvania will rank 6th out of all states in DER capacity by 2035 (PPL M.B. at 14), recent data shows that Pennsylvania ranks 14th in distributed solar capacity as of June 2024 and 28th in per capita distributed solar capacity. OCA St. 1 at 33. While PPL has approximately 150 MW of solar on its system, the following non-exhaustive list shows the utilities that far exceed this: PG&E has over 8,000 MWs, Southern California Edison has over 5,700 MWs, Eversource has approximately 2,600 MWs with over 1,000 MWs more in development in Massachusetts, Commonwealth Edison has over 1,000 MWs, Xcel Energy's upper Midwest territory has over 1,000 MWs, Hawaiian

Electric Company, Inc. (Hawaiian Electric) has over 1,000 MWs, and Nevada Power has approximately 950 MWs. OCA St. 1SR at 5-6 (internal citations omitted).

OCA witness Nelson testified that he is not aware of any of these utilities having DER reliability issues. OCA St. 1SR at 6. Mr. Nelson further testified that “there is no imperative to controlling small DER and that the means with which San Diego and Hawaii have been managing their grids are safe and reliable.” OCA St. 1SR at 6. None of the governing states of these utilities, or any state in the country, have DER management programs that require mandatory full monitoring and control of DERs through utility-owned devices. *See* OCA M.B. at 14-17; OCA R.B. at 3; OCA St. 1SR at 6, 13-14, 42.

Given the experienced success of other jurisdictions with larger quantities of DERs and the lack of utility monitoring and control of DER installments in these jurisdictions, PPL failed to demonstrate that its proposed scope is necessary to maintain safe, reliable, adequate, and resilient distribution service.

B. PPL’s proposed scope to actively manage and control *every* connected DER installment is not necessary for reliability and safety; however, there are nuances and more cost-effective solutions that should be explored in the interest of ratepayers.

An EDC must furnish and maintain adequate, efficient, safe, and reasonable service and facilities. 66 Pa.C.S. § 1501.

Regarding distribution system reliability and safety, and cost-effectiveness, the OCA presented credible witness testimony to show that PPL’s DER plan should distinguish between small and large DER installments and that mandatory, active monitoring is only needed for large DERs because they represent a significant fraction of the demand on a distribution circuit, creating an acute risk to reliability and safety, while more cost-effective methods should be explored for small DERs. OCA St. 1 at 31-36; OCA St. 1SR at 33-36.

As OCA witness Nelson testified, “[m]ost DERs in PPL’s territory are small (approximately 98 percent are under 25 kW).” OCA St. 1 at 36. OCA witness Nelson testified that “mandatory, active monitoring is only needed for large DERs.” OCA St. 1 at 44. Mr. Nelson recommended that in defining large DERs, “the initial threshold for mandatory control and monitoring to be set at 200 kW”, a standard which could be revised in the future based on PPL providing additional information. OCA St. 1 at 32.

OCA witness Nelson testified that large DER installments (200 kW and above) “represent a significant fraction of the demand on a distribution circuit, creating an acute risk to reliability and safety.” OCA St. 1 at 31. In contrast, small DER installments (below 200 kW) “are independently an insignificant portion of distribution demand” and therefore “should have the option for active monitoring and control to enable more cost-effective connections”; however, Mr. Nelson’s testimony was clear that “there is no reason to make this mandatory” for small DER installments. OCA St. 1 at 31.

However, as to PPL’s claim that it requires active monitoring and control of every connected DER installment, no matter the size, Mr. Nelson testified that PPL’s “claim that the minimum level of compliance necessary is 100% is exceptionally ridiculous, as to be insulting. By this logic, if even one DER is to be uncontrolled, PPL cannot effectively manage its system.” OCA St. 1SR at 33. However, PPL’s second DER Plan “cannot provide 100% compliance, as numerous devices appear to not have been under the Company’s control during the pilot, due to installation issues and other failures.” OCA St. 1SR at 33-34.

OCA witness Nelson was clear that his position was not that PPL “should simply ignore small DER, with no intention to monitor, manage, or influence their impacts on the system.” OCA St. 1SR at 34. However, the main issue for OCA witness Nelson was about cost-effective solutions

and that there are different cost-effective solutions for large DER and small DER installments. OCA St. 1 at 32, 26; OCA St. 1SR at 34-36. However, he further testified that permitting PPL to control and monitor small DERs “are likely to exponentially increase the cost” and “[i]f the Commission were to adopt a recommendation to only control large DER, it would reduce the cost of controlling DERs.” OCA St. 1 at 36.

As to PPL’s claim that small DER in the aggregate are no different from and potentially have the same impact as large DER, OCA witness Nelson was clear that the scope of the solution has not been justified and “the significant difference to the Company’s proposal is that the 1,000 small DER are 1,000x more costly to control than the single large DER. Thus, a solution that is cost effective for the single large DER, or even for the 1,001st DER including the 1,000 small and one large DER, may not be cost effective for the 1,000 small DER.” OCA St. 1SR at 34. Hence, “[i]f a solution is cost-effective for large DER, but not cost effective for small DER, then small DER should use a different management solution.” OCA St. 1SR at 34.

OCA witness Nelson testified that PPL’s own assessment did not prove the need for real time monitoring of all DERs through EDC-owned/operated device, as the benefit of doing so is in real time visibility while PPL’s assessment quantified the value of DER monitoring based on improving planning models for increased load and DER capacity. OCA St. 1 at 43. However, small DERs “do not require real time monitoring and could be served by much less frequent, and less costly, monitoring to inform, for example, monthly, quarterly, or annual planning updates.” *Id.* Indeed, for small DER, “active management provides minimal additional value.” OCA St. 1 at 43-44.

OCA witness Nelson testified that the “cost implications of DERs scaling is why evaluating cost-effective pathways (e.g. third-parties and manufacturers providing monitoring and control)

for managing small DERs is so important for ratepayers.” OCA St. 1 at 36; OCA M.B. at 36-37. Mr. Nelson testified that there are many examples of third-party aggregators providing control and communication services, and zero examples of utilities enacting the type of mandatory management strategy as proposed by PPL. OCA St. 1SR at 42. In dismissing the option of using third-party aggregators, PPL mischaracterized the role of aggregators in providing “distribution system reliability and power quality,” takes developmental challenges of new programs as evidence that they are imprudent, and mistakes a failure to seek such services as evidence that they do not exist. *Id.* However, these programs demonstrate a clear alternative to mandatory utility control of all eligible DERs that PPL did not adequately study as an alternative to its proposal. OCA St. 1SR at 13. Indeed, PPL witness Krevat describes, in detail, the alternative options taken by San Diego Gas & Electric Company (SDG&E) and Hawaiian Electric to manage DER, including Advanced Energy Storage, Phase Measurement Units, line capacitor upgrades, dynamic voltage control, CPUC’s Phase 3 advanced functions including Scheduled power values and modes, VAR inverters, and line sensors. OCA St. 1SR at 13; PPL St. 7R at 6-8.

OCA witness Nelson also identified other potentially more cost-effective solutions, including advanced DER modeling and cloud-based communications. OCA M.B. at 35-36; OCA St. 1 at 14, 25; OCA St. 1SR at 38, 40.

Even though OCA witness Nelson’s testimony supports mandatory, active monitoring of large DERs (200 kW and above) for system reliability and safety, the Commission should not simply modify PPL’s plan to apply only to large DER. Rather, it should adopt the ALJ’s RD because it correctly concluded that PPL failed to carry its burden of proof as the proposed scope of its plan. As discussed again in response to PPL Exception 4, PPL failed to carry its burden in demonstrating a revised plan that is reasonable for approval based on size and solution

differentiation. Indeed, OCA witness Nelson testified that “PPL’s pilot has not differentiated the costs and benefits by size of DER” and, “[f]or that reason, additional analysis is required to support mandatory management systems *on large DERs as well.*” OCA St. 1 at 32 (emphasis added). Thus, additional analysis is required to support EDC-owned/operated, mandatory management systems *even on large DERs. Id.* Accordingly, in the interest of ratepayers, the Commission should require PPL to submit a revised plan distinguishing small and large DER installments and presenting different solutions with supporting assessments and cost-benefit analysis for the parties to review on a formal record.

IV. OCA Reply to PPL Exception No. 2: The Commission should deny PPL’s second Exception because the ALJ correctly concluded that PPL failed to carry its burden of proof in showing that the proposed standards of the plan would not result in harms to owners of inverter-based DER installments, as based on the substantial evidence provided by the JSPs in this proceeding.

In its Exceptions, PPL argues that: (1) the Company rebutted the JSPs allegations regarding lost sales and interconnection delays; (2) the RD erroneously concluded that PPL has “blocked or limited market entry for Third-Party Aggregation” and “blocked or impeded competition from third-party grid services providers”; (3) the JSPs’ claims regarding the DER management device’s interface with the communications were “flawed and overstated”; (4) the Company fully rebutted claims related to voided warranties and thermal damage; and (5) the RD incorrectly agreed with the JSPs that PPL’s inverter testing requirements “erode uniformity and the market certainty that the standards are intended to provide” and incorrectly agreed with the arguments calling for a statewide proceeding. PPL Exc. at 18-29. PPL argues that the record evidence does not support these findings. PPL Exc. at 18.

PPL’s arguments do not fully address the Findings of Fact made by the ALJ. Contrary to PPL’s arguments, the weight of the evidence supports the ALJ’s conclusions regarding the harms

of the plan alleged by the JSPs. In his Recommended Decision, the ALJ made seventy-one (71) findings of fact related to the potential harmful impact of the Second DER Management Plan standards on the JSPs in this proceeding. R.D. at 14-24, FF. 43-114. In particular, the ALJ found that the JSPs had raised “a number of credible harms” resulting from the DER Management Plan standards. R.D. at 44.

The OCA notes, in particular, the flaws in PPL’s arguments related to the ALJ’s conclusions that the Company had “blocked or limited market entry for Third-Party Aggregation” and “blocked or impeded competition from third-party grid services providers.” R.D. at 45; PPL Exc. at 22. OCA witness Nelson testified PPL proceeded with a “flat-out dismissal of third-party aggregation as an alternative. This dismissal in spite of the fact that there are many examples of third-party aggregators providing such services, and zero examples of utilities enacting the type of mandatory management strategy proposed by PPL.” OCA St. 1SR at 41-42. OCA witness Nelson testified that PPL also incorrectly implied that DER aggregators would require operational insight or a larger management responsibility and misunderstood the communications role that DER third-party aggregators play. OCA St. 1SR at 42. Mr. Nelson raised similar concerns that PPL had overblown the challenges as to third-party aggregators when there were examples of other utilities successfully using them. Moreover, PPL acknowledged that they had failed to even solicit the services or issue an RFP to third-party aggregators. OCA St. 1SR at 43.

ALJ Coogan also identified a concern that the Commission already provides standards for certification of interconnecting DERs at 52 Pa. Code Section 75.22, but PPL requires additional requirements from interconnecting DERs. R.D. at 44, citing 52 Pa. Code § 75.22; JSP M.B. at 11-20. The ALJ found that “as a result of the standards imposed by PPL, the JSPs demonstrated harm to the JSPs, other solar customers and companies, and the public interest generally.” R.D. at 44. In

the 71 Findings of Fact, ALJ Coogan found that the JSPs had demonstrated the following categories of harm: Specifically, the JSPs demonstrated: (1) lost sales resulting from PPL's program restrictions; (2) failure to account for additional losses to Pennsylvania businesses and customers; (3) blocked or limited market entry; (4) failure to account for the interference with customers' communications and power generation; (5) blocked or impeded competition from third-party grid services providers; and (6) failure to account for its device installation voiding customers' warranties and causing thermal damage. R.D. at 45, citing JSPs M.B. at 36-60.

Moreover, similar to the OCA's concerns, the ALJ agreed with the JSPs that:

As averred by the JSPs, no other U.S. utility requires that DERs be tested for compatibility with a utility-owned DER Management Device in order to receive approval to interconnect. JSPs MB at 12. I agree with the JSPs that PPL's additional requirements erode uniformity and the market certainty that the standards are intended to provide. Id. at 15. SEF similarly argues that a piecemeal approach to DER rules and procedures may cause inconsistencies and confusion in the Pennsylvania DER market. SEF MB at 9. The JSPs note that in other settings the Commission has put interpretations of existing standards through notice and comment in a state-wide proceeding. JSPs MB at 16 (citing Standards for Electronic Data Transfer and Exchange Between Electric Distribution Companies And Electric Generation Suppliers, Docket No. M00960890F0015 (Tentative Order entered Jan. 13, 2012)). SEF explicitly advocates for a state-wide proceeding to develop comprehensive state-wide DER policies and regulations. SEF MB at 9.

R.D. at 44-45.

A key theme of the OCA's concerns in this case that the ALJ repeats in his Recommended Decision is that no other US utility requires the same restrictions or controls as PPL's proposal, and that PPL's proposal is not necessary for DER management. RD at 45. PPL's plan is not vanguard and "first of its kind" in a way that benefits Pennsylvanians as the Company claims in its Exceptions. Instead, the ALJ's Recommended Decision correctly concluded that PPL has failed to meet its burden in this case. The weight of evidence demonstrates that PPL does not apply lessons learned from other jurisdictions or even from its own pilot. As OCA witness Nelson

testified regarding PPL's all or nothing plan, "even PPL's 2nd DER Plan cannot provide 100% compliance, as numerous devices appear to not have been under the Company's control during the pilot, due to installation issues and other failures." OCA St. 1SR at 34 (see also, OCA St. 1SR at 34, fn. 34 citing the "numerous issues and complaints with various manufacturers raised by PPL and JSP").

The OCA agrees with the ALJ that the JSPs raised in their testimony in this case important concerns regarding the potential harms to owners of inverter-based DER installments which must be considered as a part of the Commission's determination in this proceeding and must be resolved prior to implementation of a Second DER Management Plan. The substantial evidence presented by the JSPs, and the ALJs' adoption of that evidence, underscores the OCA's overall concerns regarding how PPL has failed to meet its burden of proof under Section 1501 of the Public Utility Code. Under Section 1501, PPL must provide adequate, efficient, safe, reliable and reasonable service. 66 Pa.C.S. § 1501. PPL's proposal for both the interconnectivity standards and for the proposal itself goes beyond anything that has previously been proposed by a utility, and as such, PPL has a significant burden to demonstrate that harms will not be incurred by customers and owners of inverter-based installments. The Findings of Fact demonstrate that the Company has failed to meet its burden of proof regarding the interconnectivity standards, and the ALJ's decision should be affirmed.

V. OCA Reply to PPL Exception No. 3: The Commission should deny PPL's third Exception because the ALJ correctly concluded that PPL failed to carry its burden of proof because it failed to provide a reliable or positive cost-benefit analysis to support its proposal.

Despite PPL's claims to the contrary, the ALJ correctly concluded that PPL failed to carry its burden of proof because it failed to provide a reliable or positive cost-benefit analysis to support its proposal. RD at 44.

- A. Given that the second cost-benefit analysis was drastically different from the initial cost-benefit analysis and was not introduced into the record until PPL's rebuttal testimony, the only appropriate conclusion of law is that PPL failed to carry its burden in providing a reliable cost-benefit analysis to support its proposal.**

In support of the ALJ's correct reasoning and conclusions in the RD, PPL introduced a new cost-benefit analysis in rebuttal testimony that significantly deviated from PPL's analysis presented in direct testimony. The two cost-benefit analyses contradict each other. OCA M.B. at 19-34; OCA R.B. at 5-16. OCA witness Nelson testified that the second cost-benefit analysis was "unrecognizable when compared to the Company's initial filing," OCA St. 1SR at 17. OCA witness Nelson testified that PPL's initial cost-benefit analysis "suffered from an extremely poor methodology" and that PPL's second cost-benefit analysis was like "an implicit admission" that the first cost-benefit analysis "was, in short, wrong." OCA St. 1SR at 17. Given that PPL introduced a second cost-benefit analysis in the rebuttal stage that was drastically different from the Company's initial filing, the OCA and the other parties who addressed the cost-benefit analysis were deprived of a meaningful opportunity, as due process requires, to respond to PPL's rejoinder testimony on the topic. It also deprives the Commission of having the benefit of a full and complete record. For these reasons, the Commission must conclude that PPL did not carry its burden of proof in demonstrating a reliable or positive cost-benefit analysis to support its second DER plan proposal.

- B. In the second cost-benefit analysis, PPL's assigning of increased hosting capacity as the primary benefit to all ratepayers is fundamentally flawed given that this benefit accrues only to connecting DER customers, resulting in a cross subsidy where over 90% of ratepayers without DER are paying for most of the costs of the second DER plan.**

Substantively, OCA witness Nelson testified that “the most significant and fundamental flaw in the” second cost-benefit analysis is that PPL “assigned increased hosting capacity² as the primary benefit to ratepayers” when in actuality this is a benefit that accrues only to connecting DER customers and not to customers without DER and a resulting cross-subsidy funded by the super majority of ratepayers who are non-cost causers. OCA St. 1SR at 18, 26-27; OCA R.B. at 9-11; OCA M.B. at 27-34. He testified that PPL claims “\$27,393,149 of total benefits associated with increases in hosting capacity related to active management, and another \$98,615,335 in benefits associated with monitoring for a total benefit of \$126,008,484” which represent “57% and 86% of the total benefits the Company finds for active management and the active management plus monitoring cases, respectively.” OCA St. 1SR at 18. However, as Mr. Nelson testified, PPL is not obligated as an EDC to increase hosting capacity and the increase to hosting capacity under the second DER plan requires that non-DER customers pay for the increase in hosting capacity instead of DER owners/customers. OCA St. 1SR at 18-19 (internal citations omitted); OCA R.B. at 10-11.

As OCA witness Nelson testified, currently hosting capacity is assessed and paid for on a case-by-case basis for DERs seeking to interconnect to the grid. When a DER seeks to interconnect and insufficient hosting capacity is available, the DER is assessed the costs of expanding hosting capacity. Thus, as for DER hosting capacity, the second DER plan will not necessarily defer or eliminate future distribution capital investment that otherwise would have to be recovered from all customers. OCA St. 1SR at 26; OCA R.B. at 11. Because PPL proposes that these costs would be

² The Interstate Renewable Energy Council defines hosting capacity as follows:

[T]he amount of DERs that can be accommodated on the distribution system at a given time and at a given location under existing grid conditions and operations, without adversely impacting safety, power quality, reliability or other operational criteria, and without requiring significant infrastructure upgrades.

OCA St. 1SR at 18 (internal citations omitted).

included in base rates, customers with DER who are connecting with the EDC system would obtain the benefits of avoided capital costs from incremental hosting capacity improvements. OCA St. 1SR at 27. This is a cost shift, as most of the costs of the second DER plan related to improved hosting capacity would be paid for by the more than 90% of customers who do not have DER (*i.e.*, the non-cost causers). OCA St. 1SR at 27; OCA R.B. at 11.

OCA witness Nelson noted that, given that the majority of the hosting capacity improvements from the DER management device are from an increase in monitoring and visibility in the planning sphere, PPL should focus its efforts on improving its planning tools and interconnection process and rules, as opposed to mandating deployment of field devices. OCA St. 1SR at 23. Mr. Nelson testified that PPL witness Davis acknowledged, but did not contradict his position that “planning functions, such as this hosting capacity assessment, does not require real-time DER monitoring, which the Company is prescribing with the DER Management strategy. This amounts to the Company assigning a huge benefit to improving its planning processes, attributing that benefit to its” proposal to make it so-called cost effective “when it could improve its planning processes (as it should anyway), at much lower cost, as an alternative to the” second DER Plan strategy. OCA St. 1SR at 23-24; OCA R.B. at 13-14. Therefore, as Mr. Nelson testified, “the DER Management device is not the only credible way to achieve higher confidence in small DER output, and the Company should develop alternate plans for how to improve their analysis of hosting capacity that do not require real time data feeds from every DER to be installed in the future on its system.” OCA St. 1SR at 23-24; OCA R.B. at 13-14.

C. The second cost-benefit analysis fails to consider the costs of compensating net metering customers.

Additionally, OCA witness Nelson testified that another flaw of the second cost-benefit analysis is that it assigns benefit from future avoided wholesale energy purchase costs, which he

testified is not an appropriate standard to assess benefits for active management of DERs. OCA M.B. at 33-34; PPL M.B. at 30; OCA St. 1SR at 28. By statute, PPL must compensate net metering customers at the retail rate for any excess kWh. OCA M.B. at 34; 73 P.S. § 1648.5. Therefore, the kWh from additional DER generation would reduce wholesale energy costs but will also lead to additional expenses to compensate customers for their net-exports. OCA M.B. at 34.

D. PPL failed to evaluate the costs and benefits of alternative strategies other than the proposed mandatory active management approach for all DERs; failure to provide a more comprehensive analysis supports the conclusion that PPL failed to carry its burden of providing a reliable or positive cost-benefit analysis to support its proposal.

OCA witness Nelson testified that the new cost-benefit analysis raised “several new questions...that underscore the need to evaluate alternatives to the Company’s proposed mandatory active management approach to DER integration.” He testified that the second analysis “exaggerates benefits and obfuscates the incremental benefits” of its proposal “over other alternative management strategies, such as autonomous settings” and failed to “evaluate the costs and benefits of alternative strategies.” OCA St. 1SR at 17-18; OCA R.B. at 8. Mr. Nelson testified that autonomous controls can reduce potential impacts by the same magnitude, or greater, than PPL’s own analysis of its active use case. OCA St. 1SR at 25; OCA St. R.B. at 9.

PPL argued that it limited the scope of its cost-benefit analysis to not consider alternatives and that a separate analysis for autonomous inverter settings was not included because the Institute of Electrical and Electronic Engineers (IEEE) standard has been incorporated into the Commission’s regulations for DERs. PPL M.B. at 39-40. Smart inverters with voltage regulations, frequency support, and ride-through capabilities are required for all new DER interconnections. PPL M.B. at 40. “As such, Concentric concluded that it was unnecessary to conduct a separate analysis to account for autonomous functions that are already required by regulation.” PPL M.B. at 40.

PPL's claim that a separate analysis using a baseline of autonomous functions is unnecessary as smart inverters with voltage regulations, frequency support, and ride-through capabilities are required for all new DER interconnections is unreasonable. OCA R.B. at 16. Simply because all new DERs require smart inverters compliant with IEEE standards to permit autonomous functioning and active monitoring does not mean that evaluation of autonomous functioning as a baseline under the previous settlement is now irrelevant. The assumed 'baseline' of using nameplate DER capacity to calculate incremental hosting capacity is a worst-case scenario, skews the results of the CBA, and is an unreasonable assumption. OCA M.B. at 30; OCA R.B. at 16.

PPL decided that it did not need to comply with the settlement in the first PPL DER without any support, beyond the Commission's regulations' incorporation of IEEE smart inverter standards. OCA R.B. at 16. The OCA, as a signatory to the settlement of the first DER plan disagrees with PPL. OCA R.B. at 16. PPL's analysis devalues the potential that autonomous smart inverter controls have for improving hosting capacity without the additional cost of the DER management device and is contrary to settlement. OCA M.B. at 30; OCA R.B. at 16.

Under the settlement of PPL's first DER management program, PPL was required to evaluate "the costs and benefits to distribution system operation of active management of DERs as compared to the benefits available through the use of inverter autonomous grid support functions." *See* OCA M.B. at 28-29 (citation omitted). Contrary to the prior settlement of PPL's first DER, PPL's assessment of hosting capacity benefits were not properly assessed against the "base case" scenario of using autonomous advanced inverter settings. *See* OCA M.B. at 28-30; Tr. 226-27. Instead, PPL chose to use nameplate capacity as the assumed baseline of using nameplate

DER capacity, which skews the results of the second CBA and is an unreasonable assumption as a baseline. *See* OCA M.B. at 30-31; OCA R.B. at 15.

PPL did not provide a clear comparison of the value of autonomous smart inverter functions in comparison to the active management benefits in the DER Pilot. OCA M.B. at 28. PPL also did not consider whether autonomous function can maintain distribution system reliability in the face of substantial DER growth. OCA M.B. at 28; OCA R.B. at 15.

PPL was required under the first PPL DER Settlement to compare the cost and benefits of the distribution system operation of active management of DERs as compared to the benefits available through the use of inverter autonomous grid support functions. *See* OCA M.B. at 28-31 (citation omitted); OCA R.B. at 15. PPL's decision to not comply with the Settlement disadvantages all parties, including PPL, when evaluating PPL's Pilot. OCA M.B. at 30; OCA R.B. at 15.

VI. OCA Reply to PPL Exception No. 4: The Commission should deny PPL's fourth Exception because PPL did not carry its burden of proof as to any modifications of the plan.

As an alternative to outright rejection, in its Exception 4, PPL requests that the Commission direct reasonable modifications to its plan. The problem with this request is that PPL failed to carry its burden of proof as to any modifications to its proposal. Indeed, notably absent from this record is a submission of a revised plan by PPL or any meaningful commitments or assessments to support revisions to its original plan. Without a revised plan or any meaningful commitments or assessments to support revisions to its original plan, PPL failed to carry its burden of proof to merit approval of its original proposal with modifications to it. Given the limited record and lack of substantial record evidence as to appropriate modifications to the plan, it is simply premature to direct modifications to PPL's original plan.

In support thereof, regarding cloud-based communications, PPL merely “indicated its willingness to explore cloud-based communications in lieu of its DER Management devices, which would significantly reduce the largest driver of costs in the cost-benefit analysis and only increase the benefit-cost ratio projected by the Company in this proceeding.” PPL M.B. at 29 (citing PPL Electric St. No. 1-RJ at 4-5, 14-15; PPL Electric St. No. 10-R at 9, Table SWW-2); OCA R.B. at 17. As is evident from PPL’s citation, PPL only mentioned that it would be willing to explore cloud-based communication in Rejoinder Testimony. *See* PPL Electric St. No. 1-RJ at 4-5, 14-15; OCA R.B. at 17. PPL’s citation to Rebuttal Testimony does not contain any information regarding cloud-based communication and it is unclear why PPL provided this citation. *See* PPL Electric St. No. 10-R at 9, Table SWW-2. PPL’s willingness to explore cloud-based communications is not fully developed or supported in its filing. OCA R.B. at 17. PPL’s filings contain no plan or cost estimates for phasing in cloud-based communications. *Id.* Moreover, PPL’s filing does not contain any detail as to how it will explore and implement cloud-based communications. *Id.*

OCA witness Nelson testified that based on PPL’s voluminous rebuttal, he had to revise his Direct Testimony recommendation to recommend that the Commission reject PPL’s second DER plan. OCA St. 1SR at 2-3; OCA R.B. at 18. He testified: “It is not salvageable. Until a more suitable DER management plan and cost recovery is designed and re-evaluated, the Commission should not require the proposed mandatory active control and the associated devices for DER of any size.” OCA St. 1SR at 2-3; OCA R.B. at 18. He noted that his “constructive suggestions in Direct Testimony about necessary analysis of alternatives to the high costs of the” second DER Plan were not evaluated by the Company. OCA St. 1SR at 2-3; OCA R.B. at 18.

If this is truly about, as PPL claims, the Commission leading “the vanguard of distributed energy advancement,” it is not in the interest of consumers for the Commission to tinker with the

plan based solely on this limited record. However, in pursuit of a revised plan, the Commission could direct further proceedings. Such new proceedings should begin by PPL proposing a revised plan. The Commission has several options, which the OCA has presented more fully above in the “OCA Summary of Replies” section of this document. *See* OCA M.B. at 42-43 (citing OCA St. 1 at 54-55; OCA St. 1SR at 3).

Additionally, in this proceeding, the OCA recommended requiring PPL to file a DER “Orchestration Plan” that consists of, but is not limited to, the following:

- 1) PPL’s DER integration strategy, including a technology maturity and investment plan, for electric vehicles, energy storage systems, solar, thermostats, microgrids, and other controllable loads;
- 2) Alternatives analysis that considers the size and type of DER, third-party services and procurements (including third-party/aggregator DERMS integration), and the enabling costs for integration, and;
- 3) A cost-benefit or cost-effectiveness framework used to evaluate the alternatives analysis and selected approach.

Moreover, PPL should be required to provide an evaluation of three different flexible interconnection approaches that are applicable to both exporting and importing facilities including export (i.e., generation) and import (i.e., load) limitation schemes, scheduled interconnections, and actively managed interconnections. An evaluation of each approach includes the following:

- 1) A description;
- 2) Industry benchmarks and examples;
- 3) Benefits & Risks;
- 4) Current implementation status of approach; and,

5) Future state & next steps, including future rate and DER program offerings.

OCA M.B. at 42-43 (citing OCA St. 1 at 54-55; OCA St. 1SR at 3). The OCA's recommendations should be required to be addressed in any revised plan.

VII. Conclusion

In the interest of consumers, and for the reasons discussed herein, the Pennsylvania Office of Consumer Advocate respectfully requests that the Public Utility Commission adopt the Recommended Decision of Administrative Law Judge John M. Coogan, deny the Exceptions of PPL Electric Utilities Corporation, and reject the second distributed energy resources proposal filed by PPL Electric Utilities Corporation in this proceeding.

Respectfully submitted,

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