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July 15, 2025

VIA ELECTRONIC FILING

Matthew Homsher, Secretary
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Harrisburg, PA 17105-3265

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

Dear Secretary Homsher:

Attached for filing are the Exceptions of PPL Electric Utilities Corporation to the Recommended Decision issued on June 30, 2025, in the above-referenced proceeding. Copies will be provided as indicated on the Certificate of Service.

Respectfully submitted,



Devin Ryan

DR/dmc
Attachment

cc: The Honorable John M. Coogan (*via email; w/attachments*)
Office of Special of Assistants (*via email; w/attachment*)
Certificate of Service

CERTIFICATE OF SERVICE

(Docket No. P-2024-3049223)

I hereby certify that a true and correct copy of this filing 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).

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**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

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

**EXCEPTIONS OF PPL ELECTRIC UTILITIES CORPORATION TO THE
RECOMMENDED DECISION**

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I. INTRODUCTION

Pending before the Pennsylvania Public Utility Commission (“Commission”) is PPL Electric’s Petition for Approval of its Second Distributed Energy Resources (“DER”) Management Plan (“Second DER Management Plan” or the “Plan”). Under the Company’s proposal, PPL Electric would continue actively managing and monitoring DERs in its service territory, as the Company has done for over the past 3 years under its First DER Management Plan. Specifically, pursuant to the Commission-approved Settlement at Docket No. P-2019-3010128, PPL Electric has operated a pilot program (“DER Management Pilot Program” or “Pilot Program”) where the Company uses DER Management devices to actively manage and monitor the DERs to which they are connected. When that Settlement was approved unanimously, former Chairman Brown Dutrieuille “commend[ed] PPL for being in the vanguard of distributed energy advancement” and declared that “[t]aking this next step in managing distributed energy has the potential to permit PPL to better control power quality, reliability, and safety throughout the grid while further fostering investment in resources such as rooftop solar and combined heat and power.”¹

Building on the foundation of its Pilot Program, PPL Electric has proposed a Second DER Management Plan so that it can continue actively monitoring and managing DERs on its system. Through several expert witnesses, PPL Electric proved that its Plan would improve the safety, reliability, adequacy, and resiliency of its electric service. In fact, under the Pilot Program, the Company has mitigated over 680,000 voltage violations through active management of DERs and saw that DERs in the Pilot Program’s control and grandfathered groups, which cannot be actively managed, caused approximately 604,000 voltage violations. Also, even though benefits to safety, reliability, adequacy, and resiliency should not solely turn on a cost-benefit analysis, PPL Electric

¹ Statement of Chairman Brown Dutrieuille, Docket No. P-2019-3010128 (Dec. 17, 2020) (emphasis added).

retained an outside expert to perform a complete cost-benefit analysis of the Plan. That analysis shows the Plan producing net benefits of approximately \$65.5 million over the 2025-2030 period, putting downward pressure on customers' distribution rates.

In addition, PPL Electric's proposal will help address the daunting resource adequacy challenges facing the Commonwealth. With the Plan, the Company gains situational awareness and system-wide connectivity that could help de-stress the transmission system and better focus and enhance investments in transmission and generation infrastructure to meet the increased electric demand. The Company's proposal also helps address climate change and sustainability objectives by increasing the hosting capacity on distribution circuits, which enables customers to interconnect more DERs and larger-sized DERs on distribution circuits without requiring distribution system upgrades. Unless the Plan is approved, the Commonwealth, Commission, and PPL Electric will lose a vital tool in responding to these challenges.

Nevertheless, on June 30, 2025, the Commission issued Administrative Law Judge John M. Coogan's ("ALJ") Recommended Decision ("RD"), which recommends that the Commission deny the Petition because of the Company's purported "failure to meet its burden of proof in this proceeding." (RD at 1, 42-46.) According to the RD, other parties' evidence on the scope of the Second DER Management Plan, the impact of the Plan's requirements, and the Company's cost-benefit analyses outweighed PPL Electric's evidence. (*Id.* at 42-46.) Therefore, the RD believes that the Commission should deny the Company's entire proposal. (*Id.* at 42, 46, 49.)

The Commission should grant these Exceptions, approve the Company's Plan, and modify the RD accordingly. PPL Electric's proposal is reasonable and justified,² especially given the

² The Commission recently showed interest in electric vehicle ("EV") managed charging to address increases in electric demand. See *Energy Efficiency and Conservation Program*, Docket No. M-2025-3052826, at 40-41 (Order entered June 18, 2025). Notably, EVs are exempt from the proposed Plan (PPL MB at 39), so the proposed Plan could work alongside a managed EV charging measure in Phase V of Act 129 Energy Efficiency and Conservation.

unprecedented resource adequacy challenges facing the Commonwealth. Further, the Company thoroughly rebutted the other parties' evidence regarding the impact of the Plan's requirements on solar installers, customers, and inverter manufacturers. For example, while the Joint Solar Parties ("JSPs")³ claim that the DER Management devices have interfered with inverter communications, only 0.51% of customers enrolled in the Pilot Program ever experienced a communication interruption (i.e., 46 out of 9,038 customers as of December 2, 2024). The JSPs even attribute an inverter's alleged "thermal event" to the Company's DER Management device for a service address where no device was installed. Also, at least 12% of the alleged "lost sales" were for services addresses outside of PPL Electric's service territory. Despite these and other fatal errors with the JSPs' evidence, the RD relies upon it as grounds for denying the Plan. Additionally, even though the proposal's fate should not turn solely on cost-benefit analyses due to its safety, resiliency, adequacy, and reliability benefits, PPL Electric presented robust cost-benefit analyses supporting the Plan and refuted criticisms of those analyses. Lastly, the RD errs by denying the Plan outright without considering changes to the Company's proposal, such as parties' alternative proposals to impose a DER size requirement for participation or setting a term of years for the Plan. By denying the Plan entirely, the RD is unreasonable and contravenes the public interest.

For these reasons, and as explained in more detail below, the Commission should grant these Exceptions and approve the Company's proposal in its entirety. Nevertheless, if the Commission gives any credence to other parties' arguments, the Commission should, at the very least, approve the Company's Petition with reasonable modifications that address parties' concerns about the proposal's scope instead of denying the Petition outright.

³ The JSPs consist of American Home Contractors, Inc. ("AHC"), Enphase Energy, Inc. ("Enphase"), the Solar Energy Industries Association ("SEIA"), SolarEdge Technologies, Inc. ("SolarEdge"), Sun Directed, Tesla, Inc. ("Tesla"), and Trinity Solar, LLC ("Trinity Solar").

II. EXCEPTIONS

A. BACKGROUND ON THE DER MANAGEMENT PILOT PROGRAM AND THE PROPOSED SECOND DER MANAGEMENT PLAN

1. The First DER Management Plan Settlement and Pilot Program

In 2019, the Company took a proactive step requesting Commission approval to implement its First DER Management Plan, under which customers applying to interconnect new DERs to PPL Electric's distribution system would be required to: (1) use Company-approved smart inverters that are compliant with Institute of Electrical and Electronics Engineers ("IEEE") 1547-2018 and then-forthcoming revisions to Underwriters Laboratories ("UL") Standard 1741; and (2) install DER Management devices that enable PPL Electric to monitor and actively manage DERs. (PPL MB at 8-9.) On December 17, 2020, the Commission approved a Settlement in the First DER Management Plan proceeding, which, among other things: (1) required the use of smart inverters in PPL Electric's service territory effective January 1, 2021; and (2) set the terms and conditions for PPL Electric's Pilot Program, including the submission of a detailed Pilot Implementation Plan. (*Id.* at 9-10.) As such, effective January 1, 2021, new DERs interconnecting with the Company's distribution system were required to have smart inverters installed that meet: (1) UL 1741 SA; and (2) the Company's testing for the communications requirements under IEEE 1547-2018. (*Id.* at 10.) Effective January 1, 2023, the Company transitioned from the interim requirements to requiring new DERs to have smart inverters that meet IEEE 1547-2018 and have been certified with IEEE 1547.1 / UL 1741 SB. (*Id.*)

Since the Pilot Program began on January 1, 2021, the Company has been authorized to purchase and install DER Management devices on all new DERs with inverters up to an annual limit of 3,000 DER Management devices, with such cap not limiting the number of DERs that can be interconnected. (PPL MB at 10-11.) DERs installed above the annual limit are not part of the

Pilot Program. (*Id.* at 10.) All DER Management devices are owned, operated, and maintained by the Company at no direct cost to interconnecting customers. (*Id.*)

2. The Second DER Management Plan

The Company's proposed Second DER Management Plan builds upon the successes achieved through its Commission-approved First DER Management Plan and Pilot Program. (PPL MB at 11.) PPL Electric's Second DER Management Plan will enable the Company to continue to integrate, monitor, and manage DER resources throughout PPL Electric's service territory. (*Id.*)

As proposed, PPL Electric's Second DER Management Plan will require that all customer-owned and third party-owned, inverter-based DER system installations be equipped with DER Management devices so that the Company can monitor and manage the DERs. (PPL MB at 11.) In addition, the Plan would expand on the Pilot Program by authorizing PPL Electric to: (1) actively monitor and manage the smart inverter settings on all DERs that are in the Pilot Program's control groups; (2) utilize the Volt/Watt functionality, with customer consent, when the interconnecting DER could create a localized high voltage issue on the distribution system at the time of interconnection, which would not be resolved by the Volt/VAR or Constant Power Factor grid support functions⁴; and (3) make the Pilot Program permanent. (*Id.* at 11-12.) Therefore, provisions in the Settlement that limit the scope of the Pilot Program's requirements, such as the annual cap of 3,000 DER Management devices, would be removed. (*Id.* at 12.) The Company also proposes to install DER Management devices on: (1) solar photovoltaic systems interconnected before the Pilot Program started on January 1, 2021; and (2) inverter-based DERs interconnected after the Pilot Program started without those devices installed on them.⁵ (*Id.*)

⁴ Such customer consent will be required because the Volt/Watt functionality will affect the generating facility's production. (PPL MB at 12 n.8.)

⁵ As proposed in PPL Electric Exhibit SS-2, customer-generators with these systems must submit a new interconnection application when they upgrade their system, install a new inverter on their system, or by March 22,

These proposals are necessary and appropriate because they will help PPL Electric fully realize the benefits of actively monitoring and managing DERs. (PPL MB at 13.) As proven by the Pilot Program, the Company can leverage the smart inverters' grid support functions to improve safety, reliability and resiliency, reduce interconnection costs for DER interconnection applicants (e.g., avoidance of paying for distribution system upgrades), mitigate the impact of DERs on the distribution system, and increase the distribution circuits' hosting capacity by monitoring and actively managing DERs in the service territory. (*Id.*)

B. EXCEPTION NO. 1: THE RD INCORRECTLY DETERMINES THAT THE SCOPE OF PPL ELECTRIC'S SECOND DER MANAGEMENT PLAN IS NOT REASONABLE OR NECESSARY (RD AT 1, 11, 42-46, 49; FINDINGS OF FACT NOS. 33-39; CONCLUSION OF LAW NO. 12)

The RD errs in finding that "PPL has not demonstrated why the scope of its proposed active monitoring and control of DER devices is reasonable or necessary." (RD at 43.) As alleged support, the RD predominantly relies on other parties' arguments that PPL Electric is the first electric utility to make a DER management proposal of this scale and that other jurisdictions have higher levels of DER penetration. (*Id.*) The RD also concludes that "if PPL's proposal is approved as designed, customers will be subject to a level of utility control they may not have envisioned." (*Id.*) The Commission should reject these findings and approve the Company's proposal.

1. PPL Electric's "First-in-the-Nation" Proposal Is Consistent with the Company's Charge to Lead the "Vanguard of Distributed Energy Advancement" and with the Commission's Long History of Spearheading Innovation in the Utility Sphere

The fact that the PPL Electric's Second DER Management Plan is a "first-in-the-nation" proposal is not a credible reason to deny the Petition. (RD at 43.) If that were the measure by

2040, whichever is earlier. (PPL MB at 12 n.9.) The DER Management devices will be installed on those systems after their new interconnection applications are approved as compliant with the Company's current requirements for DERs and inverters and after their systems are installed and inspected. (*Id.*)

which utilities' proposals were adjudicated, there would be no innovation in the utility sector. However, this Commission has long fostered and encouraged innovative proposals by public utilities. The Commission was the first to ever approve a Distribution System Improvement Charge⁶ ("DSIC") and, by approving the First DER Management Plan Settlement, the first ever to approve a program that enables an electric utility to actively manage and monitor the DERs on its distribution system.⁷ The Commission should build on its past successes and continue to lead the "vanguard of distributed energy advancement," much like former Chairman Brown Dutrieuille commended PPL Electric for doing in the First DER Management Plan proceeding,⁸ especially when the Pilot Program has provided so many benefits to the grid and customers.

Additionally, the Company's pioneering of a "first-in-the-nation" DER management model "reflects PPL Electric's forward-thinking approach to address the DERs currently on the system and be prepared for future DER growth." (PPL RB at 5) (emphasis in original). Dr. Elizabeth Cook,⁹ one of PPL Electric's expert witnesses, explained how JSP witness White drew the wrong

⁶ See *Petition of Phila. Suburban Water Co. for Approval to Implement a Tariff Supplement Establishing a Distrib. Sys. Improvement Charge*, Docket No. P-00961036, 1996 Pa. PUC LEXIS 211, at *9-10, 21-22 (Order entered Aug. 22, 1996) ("*Philadelphia Suburban DSIC*") (approving in part and denying in part the petition and "applaud[ing] companies who present this Commission with innovative ideas to address recurring problems for their respective industries"); *Petition of Pennsylvania-American Water Co. for Approval to Implement a Tariff Supplement Establishing a Distrib. Sys. Improvement Charge*, Docket No. P-009661031, 1996 Pa. PUC LEXIS 182, at *9-10, 21-22 (Order entered Aug. 26, 1996) ("*PAWC DSIC*") (approving in part and denying in part the petition and stating the same).

⁷ See *Petition of PPL Elec. Utils. Corp. for Approval of Tariff Modifications and Waivers of Regulations Necessary to Implement its Distributed Energy Res. Mgmt. Plan*, 2020 Pa. PUC LEXIS 663 (Order entered Dec. 17, 2020).

⁸ Statement of Chairman Brown Dutrieuille, Docket No. P-2019-3010128 (Dec. 17, 2020).

⁹ Dr. Cook received a B.S. degree in Electrical Engineering from the University of Pittsburgh in May 2004, an M.S. degree in Electrical Engineering from Kansas State University in May 2011, and Ph.D. in Electrical Engineering from the University of Pittsburgh in October 2020. (PPL Electric St. No. 6 at 1.) In her role as the Vice President of Technical Strategy at the Association of Edison Illumination Companies ("AEIC"), she drives initiatives in electric energy innovation and operational excellence by working closely with technical committees and member companies and by directing projects at AEIC's Center for Operational Excellence. (*Id.*) As the Founder of EMC² Collective Power, she independently advises clients on the impacts and integration of new technologies in the electric industry and on the processes and leadership required to ensure the safe, reliable, and affordable electrical service when integrating those new technologies. (*Id.*) During her 20-year career in the energy industry, she has held many positions, including Senior System Studies Engineer at Mitsubishi Electric Power Products ("Mitsubishi"), Power System Stability Studies Section Manager at Mitsubishi Electric Power Products, Transmission & Distribution System

conclusion from the Company being the first to implement a DER management proposal of this scale:

Erroneously, she assumes that being first necessarily means that the Second DER Management Plan is not necessary or justified based on conditions that actually exist on PPL Electric's distribution system. In fact, being the first to adopt a model of this kind highlights PPL Electric's commitment to proactively addressing the complexities and demands of a rapidly evolving energy landscape. By spearheading this initiative, PPL Electric is preparing for today's needs and positioning itself to effectively manage the anticipated increase in DERs and the associated operational challenges.

(*Id.*) By following this flawed logic, the RD essentially repeats that error. (RD at 43.)

Dr. Cook gave another basic reason why PPL Electric is the first to propose active management and monitoring of DERs—unlike other electric utilities, PPL Electric has invested the time and resources “over the last 10 plus years to prepare [itself] to have the capability” to implement the Second DER Management Plan. (PPL RB at 6.) So, when the RD and other parties reference other utilities' actions or inactions, it is critical “to understand where [those utilities] are in a maturity scale, grid modernization, and having even the capability to be able to request and have the due diligence and the processes and the people in place” and then take the “data and use it.” (*Id.*) Further, although other electric utilities with higher DER penetration levels have not required active management and monitoring of DERs yet, “the awareness and feasibility of the technology and the capabilities that now exist” were not available to those utilities back then. (*Id.*) As such, it is unfair “to compare those that have more DER[s]” to PPL Electric and say those other utilities “are in a better position and/or creating policy that may or may not be effective.” (*Id.*)

Planning Senior Manager at Duquesne Light Company (“Duquesne Light”), General Manager of Advanced Grid Solutions at Duquesne Light, and Director of Grid Modernization and Advanced Grid Solutions at Duquesne Light. (*Id.* at 2-3.)

Moreover, the Company’s proactive approach aligns with past statements made by one of the JSPs’ own expert witnesses, Mr. Brian Lydic. (PPL RB at 6-9.) As seen in PPL Electric Exhibit SS-6R, Mr. Lydic has averred repeatedly that states and utilities could implement IEEE 1547-2018 even before UL 1741-SB was finalized by using UL 1741-SA, which is exactly what the Company did under its First DER Management Plan, and could “clarify which voltage regulation function DERs should use” and “adjust from Standard defaults accordingly,” including on a “state-wide or case-by-case” basis. (PPL RB at 6-7.) Also, in the publication “Making the Grid Smarter,” which Mr. Lydic co-authored and was published over six years ago in January 2019, it states, “Even though the full implementation of the updated [IEEE 1547-2018] Standard will take a few more years, it is not too soon for states, utility regulators, utilities and stakeholders to begin the process to adopt and integrate it into interconnection rules.” (PPL Electric Exhibit SS-6R at 122) (emphasis added). The publication further claims that “[t]o make the most of the standard and prepare for higher DER penetration in the future, regulators and utilities should consider the opportunity to utilize certain functions before achieving higher penetration of DERs, so as to optimize future DER growth and avoid negative impacts as penetration increases.” (*Id.* at 121-22) (emphasis added). Indeed, as further noted in the publication:

Implementing voltage regulation only for new DERs after higher DER penetration has been achieved may dramatically reduce the effectiveness of this function. In addition, such late-stage adoption of voltage regulation functions may disproportionately affect new DER customers seeking to connect to the grid after a significant amount of non-voltage regulating DER projects are connected. Hawaii, for example, learned that the grid would have been able to host higher penetration of DERs if they had been able to deploy these functions early on.

(*Id.* at 131) (footnote omitted) (emphasis added). Yet, in this case, Mr. Lydic has opposed the Company’s proposal on the grounds that it “seems premature from a policy perspective” and “technical standpoint.” (PPL RB at 8.) Although Mr. Lydic tries to distinguish these past

proclamations by pointing to the mandatory nature of PPL Electric’s proposal and the Company’s use of a utility-owned device to monitor DERs,¹⁰ those elements have nothing to do with whether the Company must act now to leverage the capabilities of IEEE 1547-2018 and get ahead of the issues caused by DERs before DER penetration increases significantly. (PPL RB at 8.) Therefore, even one of the JSPs’ own expert witnesses’ past positions support the Commission’s need to act now and approve PPL Electric’s Second DER Management Plan. (*Id.*)

2. PPL Electric’s Proposal Will Help Improve the Safety, Reliability, Adequacy, and Resiliency of the Company’s Electric Service

PPL Electric established that its proposal will improve the safety, reliability, adequacy, and resiliency of the Company’s electric service. (PPL MB at 13.) Under Section 1501 of the Public Utility Code, the Company must provide safe, reliable, adequate, and reasonable electric service to all its customers, including those who have not installed DERs. (*Id.* at 14.) However, the deployment of DERs that cannot be monitored and actively managed continues to present challenges to the “safe and reliable operation of electric distribution systems and to the electrical grid at large.” (*Id.* at 13.) These challenges include:

1. “[C]reating voltage changes that can result in voltage exceeding regulatory limits” (i.e., voltage violations);
2. “[E]xcessively low voltage provided to some customers, as well as high voltage to other customers”;
3. ”[D]isrupt[ed] conservation voltage reduction schemes,” which “lead[s] to excess energy consumption by consumers”;
4. “[I]ncreasing wear-and-tear of” the “mechanical devices intended for voltage management (e.g., regulators and switched capacitor banks),” thereby “leading to premature failure or increased maintenance requirements”;
5. “[O]verload[ing] circuits and equipment, leading to failure or accelerated loss of life”;

¹⁰ (*See* JSP St. No. 9-SR at 5, 13-14, 16-17, 19.)

6. The potential for “[c]ontinued energization of an ‘islanded’ distribution feeder or system by DERs,” which can “pose a significant risk to utility workers and to the public”;
7. Damaging “other customers’ equipment” when “transient and temporary overvoltages” reach certain “magnitudes”; and
8. Issues due to “load masking,” where the “DER output inherently masks, or cancels, actual load demand,” which can cause problems, such as “lead[in]g to faulty switching decisions when a distribution system is reconfigured following an outage” and making the “determination of minimum load conditions difficult.”

(*Id.* at 13-14.)

None of these problems depend on significant increases in the number of DER deployments in PPL Electric’s service territory. (PPL MB at 15.) Even with existing levels of DER penetration, PPL Electric’s distribution system can experience safety, reliability, adequacy, and resiliency issues due to DERs. (*Id.*) In fact, Dr. Karen Miu, a Professor of Electric and Computer Engineering at Drexel University,¹¹ conducted multiple studies of PPL Electric’s distribution circuits to evaluate the impacts of DERs on the Company’s distribution system. (PPL MB at 15-16.) “Throughout all of this research,” Dr. Miu “found that even the then-existing DER levels measurably impacted voltage power quality at various individual nodes throughout the distribution system itself” and that “DER injections are non-uniform across electrical phases.” (*Id.* at 16.) For example, Dr. Miu’s simulations on the Company’s distribution system in 2024 “consistently demonstrate[d] that DER impacts on a distribution system change with the type of DER

¹¹ Dr. Karen Miu’s educational background is in the field of electrical engineering. (PPL Electric St. No. 8 at 1.) Her MS thesis and Ph.D. dissertation focused on electric power distribution systems. (*Id.*) Her degrees received include: B.S. in Electrical Engineering from Cornell University, Ithaca NY, 1992; M.S. in Electrical Engineering from Cornell University, Ithaca NY, 1995; and Ph.D. in Electrical Engineering from Cornell University, Ithaca NY, 1998. (*Id.*) Since 1998, her professional experience has primarily been at Drexel University, although she also has been a visiting professor at Northeastern University and the University of Hong Kong. (*Id.*) Her research related to DER impacts on distribution systems has addressed aspects of the modeling, analysis, planning and control of the impacted distribution system. (*Id.* at 3.) Her approach is based on fundamental electric circuit theory and subsequent power system foundations. (*Id.*) Her research studies were conducted using advanced mathematics and engineering principles to create new, multi-phase models for capturing distributed energy generation flows and to integrate and implement them into large-scale distribution system models. (*Id.* at 3-4.)

installations, their locations, and the system operating conditions.” (*Id.* at 16-17.) Critically, Dr. Miu’s analysis revealed that this is not a localized problem, as “[t]he installation of individually owned and operated DERs directly impacts voltages at other customer locations.” (*Id.* at 17.)

PPL Electric’s Second DER Management Plan is the optimal solution to resolving these issues. To date, PPL Electric’s DER Management Pilot Program, under which the Company is capped at installing 3,000 DER Management devices annually, has mitigated over 680,000 voltage violations through active management of DERs. (PPL Electric St. No. 1-R at 12.) Meanwhile, the Company lost out on the opportunity to mitigate or resolve approximately 604,000 voltage violations that were caused by interconnected DERs in the control and grandfathered groups. (*Id.*)

Moreover, active management and monitoring of DERs far outperforms the autonomous inverter settings advocated by other parties. (*Id.* at 18.) As Dr. Miu found, “[a]utonomous power factor control stops when its local voltage is satisfied,” whereas active management of DERs “can enact a potentially larger amount of power management than autonomous functions.” (*Id.* at 18) As a result, active management removed a much larger number of overvoltages than autonomous settings . . . and, in fact, removed all system overvoltage violations in the scenario” (*Id.*) Thus, Dr. Miu’s studies have shown that “active management of the DERs allows for targeted actions, such as appropriate phase and location selection, to fix the problems that the DERs themselves have created.” (*Id.*)

Aside from fully resolving voltage violations, PPL Electric’s active management of DER power factors can significantly reduce the frequency, duration, and severity of customer voltage violations. (PPL MB at 18.) In turn, the Company’s active management can decrease the number of customers who contact PPL Electric about voltage violations and, subsequently, decrease the number of investigations performed by the reliability engineering team and the number of visits to

customer locations by PPL Electric (commonly referred to as “truck rolls”). (*Id.* at 18-19.) Even under conservative assumptions, PPL Electric can significantly reduce its O&M expenditures by resolving those voltage violations without performing truck rolls.¹² (*Id.* at 19.)

In addition, the Company’s proposed Second DER Management Plan will provide other benefits to safety, reliability, and resiliency. (PPL MB at 19-20.) As an example, Reigh Walling,¹³ one of the Company’s expert witnesses, noted that “there is a substantial uncertainty regarding the reliability of many DER island detection schemes when applied in practical circumstances,” despite DERs being “required by IEEE 1547 to cease energization of disconnected distribution circuits (islanding).” (*Id.* at 16.) Such “[c]ontinued energization of an ‘islanded’ distribution feeder or system by DER can pose a significant risk to utility workers and the public.” (*Id.*) Mr. Walling even highlighted “an incident in Ontario, Canada” that “serve[s] as an example where the on/off functionality” provided by the Second DER Management Plan “could be an important safety feature,” as “utility management of DER operating status can be applied as a backup to DER island detection capabilities, increasing worker and public safety.” (*Id.* at 20.) Mr. Walling also noted

¹² Also, reducing the frequency, duration, and severity of voltage violations can help reduce the need to make system modifications or investments in voltage support equipment, further demonstrating how active management and monitoring of DERs can help maintain and improve the safety, reliability, adequacy, and resiliency of the Company’s electric service in an effective and efficient manner. (PPL MB at 19.)

¹³ For approximately 13 years, Mr. Walling has provided independent electric power system consulting services to electric utilities, DER developers, DER equipment manufacturers, and research institutions. (PPL Electric St. No. 4 at 1.) Most of his work in this consultancy has involved DERs and renewable energy systems, specifically about standards, interconnection requirements, and system performance. (*Id.*) He has been a major contributor to the development of the IEEE Std 1547 series of standards, including the original version and the 2018 revision, and the current working group developing the next revision of this standard. (*Id.*) Mr. Walling participated in numerous DER-related research projects for the Electric Power Research Institute (“EPRI”). (*Id.* at 2.) One of these projects was specifically focused on the subject of “smart inverter” settings (parameters) and how these affect system performance and stability. (*Id.*) For one of his clients, a major utility in the Northeast, he has developed DER interconnection technical requirements, including comprehensive screening criteria. (*Id.*) Other consulting work he performs involves large-scale transmission-connected renewable resource interconnection (e.g., wind and solar farms), High-Voltage Direct Current (“HVDC”) transmission systems, and the impacts of geomagnetic disturbances on electric power systems. (*Id.*) Mr. Walling was elected a Fellow of IEEE in 2005, an honor limited to one-tenth of one percent of the IEEE membership in any one year. (*Id.* at 2-3.) In 2009, he was awarded the IEEE Excellence in Power Distribution Award. (*Id.* at 3.) He has participated in many IEEE working groups, including leadership roles, including as the founding chair of the IEEE’s Distributed Generation Integration working group. (*Id.*)

that the “continuous monitoring and archiving of DER output data avoids load masking,” which “leads to more reliable circuit reconfiguration to restore service following outages and to more accurate forecasting of both DER output and customer load demand.” (*Id.*) With more accurate forecasts, PPL Electric can better plan and reliably operate its distribution system. (*Id.*) Consequently, the Plan can produce several safety, reliability, adequacy, and resiliency benefits, but all of them will be lost if the Commission adopts the RD and rejects the Plan in its entirety.

3. The Second DER Management Plan Will Help Address the Significant Resource Adequacy Challenges Facing the Commonwealth

The Second DER Management Plan will help address the significant resource adequacy challenges facing the Commonwealth due to substantial increases in electric demand. (PPL MB at 24.) After over two decades of declining or stagnant growth in electric demand, electric utilities across the country, including PPL Electric, are now dealing with surging growth in electric demand, fueled principally by data centers, electric vehicles, and electrification. (*Id.*) As noted by the U.S. Department of Energy (“DOE”), “in response to transformations in technologies like artificial intelligence (‘AI’), data center expansion, new domestic manufacturing, and electrification in different sectors, the United States is returning to a period of rising electricity demand, with total energy demand potentially growing ~15-20% in the next decade.” (*Id.* at 24-25.) Regulators, electric generators, electric transmission companies, and electric distribution utilities all face serious challenges due to this significant growth in electric demand. (*Id.* at 25.) Chief among those challenges is ensuring that there is enough transmission and generation capacity to meet that demand now and in the future. (*Id.*) As the regulator of EDCs’ electric service and facilities, the Commission has rightly recognized the role it must play in this area. (*Id.* at 25-26.)

PPL Electric’s proposal can help address these resource adequacy issues facing the Commonwealth. (*Id.*) As Dr. Elizabeth Cook explained, “PPL Electric’s Second DER

Management Plan can increase the hosting capacity on distribution circuits,” which “enables customers to interconnect more DERs and larger-sized DERs on distribution circuits without requiring distribution system upgrades.” (*Id.*) By bringing those additional and larger DERs online, PPL Electric can reduce the demand on its distribution circuits and, by extension, the demand they are pulling from the transmission system. (*Id.*) Furthermore, “the situational awareness and system-wide connectivity provided by the Second DER Management Plan would help de-stress the transmission system and better focus and enhance investments in transmission and generation infrastructure to meet the increased electric demand.” (*Id.*) No party submitted testimony rebutting Dr. Cook’s testimony on these points.

Without active DER management and monitoring, however, the Commonwealth, Commission, and PPL Electric will lose a vital tool in addressing these resource adequacy challenges. Although other parties have suggested various forms of data collection instead of the Company’s proposal,¹⁴ such data collection alone cannot provide the situational awareness and system-wide connectivity needed to meet these resource adequacy challenges and help de-stress the transmission system. (PPL Electric St. No. 6-R at 9.) Achieving the necessary level of situational awareness and system-wide connectivity requires “a robust data strategy and a cohesive framework that integrates, and responds to, insights from across the utility’s operations.” (*Id.*) “The process of developing this framework begins at the edge of the grid”¹⁵ and then “flows through every layer of the distribution system.” (*Id.*)

¹⁴ (*See, e.g.*, OCA St. 1SR at 36-44; SEF St. No. 1 at 21; JSP St. No. 1-SR at 15-19.)

¹⁵ The “edge of the grid” is “where DERs, smart meters, and other customer-side technologies reside” and “can provide real-time, granular insights that enable better distribution grid performance.” (PPL Electric St. No. 6-R at 5.) “When connected and coordinated, these edge resources become not just isolated energy assets but part of a larger intelligence network that strengthens both operational planning and real-time management.” (PPL Electric St. No. 6-R at 5.)

As a result, the Company's Second DER Management Plan is a part of a larger strategy that must be executed. (*Id.*) The Company's capital and O&M planning can become far more strategic with data from the edge because knowing where non-wires alternatives (such as energy storage or demand response) can defer infrastructure upgrades in certain locations will give the Company the flexibility to allocate resources more efficiently and effectively. (*Id.*) The ultimate goal is to prioritize investments and allocate resources to areas of highest need, not to defer capital investments merely for the sake of deferral. (*Id.*) PPL Electric and other utilities can achieve that goal by using interconnectivity and a strong data strategy to glean added knowledge and insight from what, in the past, were disparate and unconnected datasets. (*Id.*) Therefore, the Commission should approve the Second DER Management Plan so that the Company can help address the resource adequacy challenges facing PPL Electric, its customers, and the Commonwealth.

4. The Second DER Management Plan Will Help Address Climate Change and Sustainability Objectives by Facilitating and Encouraging Increased Deployments of DERs

PPL Electric's proposal should also be approved because it will help address climate change and sustainability objectives. (PPL MB at 21.) As PPL Electric's expert witness on this subject, Lee Krevat¹⁶ testified that electric power generation emits approximately 25% of total greenhouse gases ("GHG") and combined with the transportation sector, accounts for over 50%. (*Id.*) Given the imperative to reduce GHG, the carbon intensity of electric power generation and

¹⁶ Mr. Krevat has a Bachelor of Science with University Honors from Carnegie Mellon University in Mathematics/Computer Science. (PPL Electric St. No. 7 at 2.) He has almost four decades of experience in the energy and technology industries. (*Id.*) While working at San Diego Gas & Electric Company ("SDG&E"), a subsidiary of Sempra Energy, he founded and served as director of smart grid and led SDG&E's smart grid and electric vehicle initiatives, advocating Grid Modernization and Electric Vehicle grid integration. (*Id.*) He was twice named one of the top 100 movers and shakers influencing the smart grid market by GreenTech Media and twice recognized as a Top 12 Utility Mover and Shaker and Utility Champion by Intelligent Utility Magazine. (*Id.*) Mr. Krevat also has served serving on the Board of Directors or as an active member of the GridWise Alliance since 2011, where he led the development of the GridWise Alliance Grid Modernization Index ("GMI"). (*Id.* at 2-3.) The GMI has been used since 2013 to evaluate the status of electric grid modernization in the United States, to identify and promote best practices, and to provide insights to state policymakers, regulators, and other stakeholders regarding the progress of their grid modernization. (*Id.* at 3.)

the availability of reasonably priced renewable energy make power production a low hanging fruit that also has the potential to make an impact in the transportation sector as the electric vehicle movement gains momentum. (*Id.* at 21-22.) Also, increased customer investment in solar and energy storage solutions “has the potential to significantly reduce the evening peak, further extending the benefits of solar.” (*Id.* at 22.)

PPL Electric’s First DER Management Plan has helped encourage and facilitate renewable energy development, which helps address climate change and sustainability objectives. (PPL MB at 22.) Over the course of the DER Management Pilot Program, PPL Electric has seen large increases in the number of DERs deployed, growing from 3,493 in 2021 to 6,799 in 2023. (*Id.*) Relatedly, by deferring capital investments, generating and non-generating customers will see lower bill increases, and by avoiding bill increases for distribution system upgrades that are needed to accommodate DERs, financial-driven pushbacks against solar can be kept at bay. (*Id.*)

The Second DER Management Plan will further address climate change and sustainability objectives by building upon these foundations and continuing to encourage and facilitate the development of DERs in multiple ways. (PPL MB at 23.) The Second DER Management Plan makes the requirements permanent, thereby cementing the continued benefits of active management and monitoring of DERs, which will continue to grow as more customers install DERs. (*Id.*) Moreover, by removing the 3,000 DER Management device cap, the Plan can ensure that opportunities to help customers avoid distribution system upgrades and encourage renewable energy development are not lost. (*Id.*) Additionally, PPL Electric’s Second DER Management Plan would increase the potential DER hosting capacity on its distribution circuits more significantly. (*Id.* at 23-24.) By actively managing DERs’ real power output with customer consent, PPL Electric can reduce customers’ upfront interconnection costs in exchange for the

ability to curtail the generation output for a few hours each year. (*Id.* at 24.) Such reduction in upfront costs will help encourage new solar installations. (*Id.*)

C. EXCEPTION NO. 2: THE RD ERRS IN FINDING THAT PPL ELECTRIC’S REQUIREMENTS FOR INTERCONNECTING DERS HAVE RESULTED IN “CREDIBLE HARMS” (RD AT 1, 42, 44-46, 49, FINDINGS OF FACT NOS. 43-114; CONCLUSION OF LAW NO. 12)

The RD inappropriately credits the JSPs’ evidence purportedly showing harms to solar installers, inverter manufacturers, and customers and fails to properly consider the Company’s overwhelming evidence offered in rebuttal, which fully demonstrated that the harms alleged by the JSPs were overstated, flawed, and speculative. (RD at 13-24, 44-45.) Specifically, the RD errs in determining that “[t]he JSPs in particular also raised a number of credible harms resulting from Second DER Management Plan standards” and that “[a]s 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.” (*Id.* at 44.) Here, the RD fails to conduct a complete analysis of PPL Electric’s evidence and concludes that the JSPs “demonstrated” the following harms: “lost sales resulting from PPL’s program restrictions”; “failure to account for additional losses to Pennsylvania businesses and customers”; “blocked or limited market entry”; “failure to account for the interference with customers’ communications and power generation”; “blocked or impeded competition from third-party grid services providers”; and “failure to account for its device installation voiding customers’ warranties and causing thermal damage.” (*Id.* at 44-45.) However, the record evidence does not support these conclusory findings. As explained below, PPL Electric has fully rebutted each of these claims, and the RD’s findings on these points should be reversed.

1. PPL Electric Fully Rebutted the JSPs’ Unsupported and Flawed Allegations Regarding Lost Sales and Interconnection Delays

The RD erroneously concludes that “the JSPs demonstrated . . . lost sales resulting from PPL’s program restrictions” and that PPL Electric “fail[ed] to account for additional losses to

Pennsylvania businesses and customers.” (RD at 44-45.) In support of these conclusions, the RD incorrectly credits certain JSP arguments related to lost sales and interconnection delays that PPL Electric has demonstrated are unsupported and flawed. (*Id.* at 13-17.)

PPL Electric presented overwhelming evidence rebutting the JSPs’ claims concerning adverse effects of the DER Management Pilot Program and Second DER Management Plan on solar and inverter companies’ sales and interconnections. The RD overlooks this evidence. For example, PPL Electric demonstrated that:

- Of the 52 alleged lost sales by AHC, at least 6 of the potential sales were for addresses located outside PPL Electric’s service territory, meaning AHC overstated its losses by at least 12% and calling into question the reliability of the data used by AHC to generate those figures. (FoF Nos. 43-46, PPL MB at 43.)¹⁷
- Sun Directed’s claims that it had to deny larger-sized single phase commercial projects because it could not use inverters that were “best value” were based on a flawed cost analysis that failed to accurately compare similar inverter system setups. (FoF No. 47; *see* PPL Electric St. No. 2-R at 21-22.)
- Sun Directed’s claims that the Pilot Program has limited a third of its business were not based on any actual data about Sun Directed’s operations showing that its business is split evenly between three main utilities in Central Pennsylvania or any analysis of Sun Directed’s actual revenues or number of projects in those service territories. (FoF Nos. 48-49; PPL Electric St. No. 2-R at 49.)
- Trinity Solar’s alleged increased labor costs it attributed to the Pilot Program were grossly exaggerated, and the coordination needed between Trinity Solar and PPL Electric related to SolarEdge inverters was due to inverter issues that were unrelated to the Company’s DER Management devices. Indeed, in the vast majority of the instances where Trinity Solar conducted inverter failure investigations in the Company’s service territory, there was no DER Management device installed at all. (FoF Nos. 51-53; PPL Electric St. No. 2-R at 29-31.)
- For at least 3 of Greenway Solar’s installations where it was asserted that the timeline took longer than 14 calendar days, those installations were delayed because there were missing signatures from the customer on the certificate of electrical inspection, which is required for all interconnections, regardless of whether the Company must install a

¹⁷ At a minimum, the RD’s finding that 52 sales were lost should be modified to reflect only potential sales locations within the Company’s service territory. (PPL MB at 43.) AHC’s inaccurate data also calls into question the reliability of the information it obtained from the prospective customers, how far along in the process the customers decided not to go forward with the sales, and the role in which PPL Electric’s DER Management Pilot Program played in the sales being purportedly “lost.” (PPL MB 43.)

DER Management device. (FoF Nos. 54-58; PPL MB at 44; PPL Electric St. No. 2-RJ at 40.)

- Enphase’s claim that PPL Electric excluded Enphase from the solar market in the Company’s service territory for four months in early 2021 is unfounded; rather, Enphase failed to provide all of the required documentation when it originally submitted its inverters for review on January 5, 2021. After Enphase provided the outstanding documentation on February 23, 2021, PPL Electric approved the inverters and added them to the Approved Inverter List only two days later, on February 25, 2021. (FoF Nos. 59-63; PPL MB at 43.)
- SolarEdge’s claims regarding increased employee labor costs were not based on actual salary data, and PPL Electric demonstrated that the increased labor costs were largely due to SolarEdge’s preferred method for enabling its inverters to be connected to a DER Management device, which required inverters to be enabled individually and upon request. (FoF Nos. 65-67; PPL Electric St. No. 2 at 34-36.)

Despite PPL Electric’s evidence in rebuttal on each of these issues, the part of the RD’s “Recommendation” section on these matters contains no citations to PPL Electric’s testimony or briefs, no acknowledgement that evidence was presented in opposition to these claims, and no explanation as to why the JSPs’ flawed arguments were credited while the Company’s well-supported evidence in rebuttal was rejected. (RD at 44-45.) Instead, the RD simply concludes that “the JSPs demonstrated harm to the JSPs, other solar customers and companies, and the public interest generally.” (*Id.* at 44.) The Commission should reject the RD’s findings that are based on the JSPs’ flawed claims and should properly rely on the Company’s evidence in rebuttal.

In addition, the RD’s finding that the Pilot Program caused a \$116,000 loss to a single customer is not supported by the record evidence in this case. Specifically, Finding of Fact No. 56 states that “[a] 38-day delay in obtaining PTO cost one Green Way customer \$116,000.00, because his ability to obtain financing was pegged to his showing that his system was successfully operating for 30 days.” (FoF No. 56.) This finding misstates the evidence presented by the JSPs, which never alleged that the customer did not receive the grant payment at issue but rather that the payment was delayed. As JSP witness Stahlman stated, “[i]n the case of this farmer, that meant

that the farmer was set to receive \$116,000 in the form of a REAP grant, which would allow the farmer to repay half of his loan. However, the farmer would not be awarded the grant until the system was operational for 30 days, which means that any delay to PTO would cost this farmer in the form of additional interest payments on his loan.” (JSP St. No. 10 at 5-6.) At no point did the JSPs claim that this customer did not receive this grant payment at all, as the RD finds. (*Id.*) As such, the RD’s Finding of Fact No. 56 contradicts the evidentiary record and should be reversed.

2. The RD Erroneously Concludes that PPL Electric Has Blocked or Limited Market Entry for Third-Party Aggregation and Blocked or Impeded Competition from Third-Party Grid Service Providers

The RD incorrectly finds that PPL Electric has “blocked or limited market entry” for third-party aggregators and “blocked or impeded competition from third-party grid service providers.” (RD at 45.) In support of these conclusions, the RD states that “PPL’s hegemony over DER control presents a high degree of uncertainty for prospective third-party aggregators, interfering with their ability to be able to confidently deliver grid services, particularly wholesale electricity market reliability services.” (*Id.* at 21.) The RD’s conclusions regarding third-party aggregation rely on speculative allegations from the JSPs—none of which engage in third-party aggregation or provide grid services in Pennsylvania—which claim that the Plan could, at some point in the future, create uncertainty or risk for prospective aggregators. (PPL RB at 38; RD at 21-22.).

The Commission should reject the RD’s reliance on these speculative claims as grounds for denying PPL Electric’s Petition. As explained in the Company’s Reply Brief, nothing in the Second DER Management Plan inhibits or precludes DERs from contracting with aggregators or participating in third-party aggregation. (PPL RB at 36-37.) While Federal Energy Regulatory Commission (“FERC”) Order 2222 would allow DERs to monetize active (real) power, PPL Electric’s active DER management does not materially affect the production of active (real) power. (*Id.* at 37.) Rather, active DER management will address other aspects of DER operations, voltage

regulation principally through reactive power production or absorption, for which no market currently exists. (*Id.*) As such, the Company’s active management of DERs cannot be considered as materially affecting DERs’ ability to contract with aggregators or participating in third-party aggregation. (*Id.*)

Importantly, PPL Electric has explained that forms of DER aggregation that are capable of being monetized at the bulk power level will not be available in the PPL control zone until 2028, which is the earliest point at which PJM Interconnection LLC’s FERC Order 2222 tariff is expected to be implemented. (PPL RB at 37.) Nor has the Commission completed its FERC Order 2222 rulemaking. (*Id.*) Until both of those processes are completed, PPL Electric’s proposed Second DER Management Plan cannot truly affect the aggregation of DERs that participate in the PJM wholesale markets. (*Id.*) Considering the lack of a defined market for third-party aggregators in Pennsylvania, the JSPs’ speculative concerns about the impact of PPL Electric’s proposal on the market for third-party aggregation are not ripe for consideration. (*Id.* at 38.) It is also unclear how PPL Electric’s Pilot Program or the proposed Second DER Management Plan can impede competition in a market that does not exist yet in its service territory. (RD at 45.) PPL Electric has stated on the record its willingness to conduct an RFP for the procurement of grid services from third-party aggregators and original equipment manufacturers, which weighs against the claim that PPL Electric is attempting to bar or limit market entry by third-party aggregators’ grid services. (PPL RB at 38.) Accordingly, the RD errs by relying on the JSPs’ speculative claims regarding third-party aggregators as support for the denial of the Company’s Petition.

3. PPL Electric Demonstrated that the JSPs’ Claims Related to the DER Management Device’s Interference with Communications Were Overstated and Flawed

The RD also errs in agreeing with the JSPs that PPL Electric “fail[ed] to account for the interference [of PPL Electric’s DER Management device] with customers’ communications and

power generation.” (RD at 45.) In reaching this conclusion, the RD relies on the JSPs’ allegations that PPL Electric’s DER Management device disrupted communications at certain Tesla, Enphase, SolarEdge, and Sun Directed installations. (*Id.* at 19-20.)

The RD disregards the Company’s evidence establishing that the JSPs’ claims of disrupted communications were flawed and overstated, that the underlying causes were not solely attributable to PPL Electric, or that the Company has since resolved or developed solutions for the issues. (PPL RB at 38-41.) Only 0.51% of customers enrolled in the DER Management Pilot Program have experienced a communication interruption (i.e., 46 out of 9,038 customers as of December 2, 2024). (*Id.* at 38.) Only 8 of those 46 customer locations (i.e., 28 Tesla locations and 18 Enphase locations) that experienced interruptions still had communications issues as of December 2, 2024, and they were all Tesla locations where the Company had been waiting months for Tesla to respond to PPL Electric’s proposal for rolling out the solutions needed to resolve those communications issues. (*Id.* at 38-39.) Also, in the select situations when customers experienced communications issues, nearly all the issues were caused by problems with the inverters or DER systems themselves, not the DER Management devices, and any communications issues stemming from the DER Management devices’ installation have been resolved. (*Id.* at 39.) Even assuming *arguendo* that the DER Management devices were causing or contributing to all those communications issues, customers have other means by which to monitor their DERs. (*Id.*) As an example, customers with SolarEdge and Enphase inverters can access information about their DER systems through the SolarEdge and Enphase apps, respectively. (*Id.*)

Importantly, no customer had the use of their DER intentionally disrupted due to the DER Management Pilot Program. (PPL RB at 39.) For 8 of the Enphase communications incidents, Enphase provided PPL Electric with the incorrect programming value format, and the Company

resolved the issue for each of the customers' systems once the Company was given the proper format by Enphase. (*Id.*) Nor did the DER Management Pilot Program interfere with the production of Solar Renewable Energy Credits ("SRECs"). (*Id.*) At all times, the customer-generators could still pull the revenue-grade meter data required for the SRECs. (*Id.*) In fact, PPL Electric worked diligently with solar installers and inverters to resolve communications issues and troubleshoot solutions that would work for the JSPs and their customers alike. (See PPL MB at 42-43; PPL RB at 38-41.) For these reasons, the Commission should reject the RD's reliance on allegations that PPL Electric's DER Management device disrupted DER communications as a basis to deny the Petition.

4. PPL Electric Fully Rebutted the JSPs' Claims Related to Voided Warranties and Thermal Damage

The RD erroneously concludes that the Company "fail[ed] to account for its device installation voiding customers' warranties and causing thermal damage." (RD at 45.) The RD incorrectly credits the JSPs' safety-related allegations concerning the installation of PPL Electric's DER Management devices. (*See id.* at 23-24.) However, the RD fails to give weight to the Company's extensive evidence and expert testimony rebutting these claims.

The RD's finding that the JSPs identified 8 instances of thermal damage on inverters with a DER Management device installed contradicts the JSPs' own testimony and fails to consider the serious credibility issues with the JSPs' "evidence." (RD at 23-24.) The JSPs' direct case was founded on the unreliable and uncredible testimony of JSP witness Bobruk. (PPL MB at 46.)¹⁸ Mr. Bobruk's testimony about the 8 alleged incidents depended on SolarEdge's "PPL Case Review," a PowerPoint presentation where each of the purported incidents was listed on a slide

¹⁸ As explained in PPL Electric's Main Brief, JSP witness Dinh also lacked credibility when he testified about his knowledge of how PPL Electric installed its DER Management device. (*See* PPL MB at 50.)

and accompanied by photographs and information about the site. (*Id.*) However, Mr. Bobruk admitted on cross-examination that he did not know who took the photographs or when those photographs were taken and that he does not handle SolarEdge’s “return merchant authorization” process, where a SolarEdge employee actually reviews the damaged inverter and determines whether the damaged inverter is covered by the warranty. (*Id.* at 46-47.)¹⁹

The JSPs attempted to bolster the unreliable testimony of Mr. Bobruk in surrebuttal by introducing the testimony of JSP witness Geller. (PPL MB at 49.) However, Mr. Geller conceded that there was no conclusive evidence to determine that PPL Electric’s DER Management device caused or contributed to 3 of the 8 alleged thermal events.²⁰ (JSP St. No. 13-SR at 8.) In one of these cases, Mr. Geller even admitted that he could only “speculate that PPL caused the thermal damage.” (*Id.*) (emphasis added). However, bald assertions, personal opinions, or perceptions, when unsubstantiated by facts, do not constitute evidence.²¹ Given Mr. Geller’s own admissions that he could not determine that PPL Electric’s DER Management device caused 3 of the 8 alleged thermal events, the RD should have rejected the JSPs’ evidence of alleged thermal events.

The RD also overlooks PPL Electric’s detailed evidence refuting the JSPs’ contentions that the Company’s DER Management devices caused or contributed to the alleged thermal events. (PPL MB at 51.) After the JSPs made these claims for the first time in their direct testimony, PPL Electric engaged H. Landis Floyd, PE as an outside expert to investigate and address the JSPs’ allegations. Mr. Floyd holds a Bachelor of Science degree in Electrical Engineering from Virginia

¹⁹ PPL Electric also rebutted Mr. Bobruk’s testimony claiming that SolarEdge first became aware of PPL Electric’s method for installing its DER Management devices on SolarEdge inverters in August 2024, detailing numerous instances before that time when PPL Electric provided actual or constructive notice to SolarEdge about its installation method. (PPL MB at 47.)

²⁰ Specifically, Mr. Geller states that for Case 3884887 he “could not form an opinion to this case, as the photo from the field service tech . . . was too far out” and he “cannot attribute [the damage] to PPL’s work,” for Case 4141508 he states that he “could not draw a conclusion with regard to this case,” and for Case 3456467 he “could not tie PPL’s device to physical or thermal damage.” (JSP St. No. 13-SR at 8.)

²¹ *Pa. Bureau of Corrections v. City of Pittsburgh*, 532 A.2d 12, 14 (Pa. 1987).

Polytechnic Institute and State University, and his professional experience with electrical safety is extensive. (PPL MB at 51.)²² Mr. Floyd reviewed all the JSPs' testimony and exhibits regarding their electric safety-related claims. In his expert opinion, "PPL Electric's devices, including the way in which they are installed, are well-designed and well-engineered and are consistent with electric industry best practices." (PPL Electric St. No. 12-R at 13.) Mr. Floyd further testified that the device installations do not need to comply the NEC because they are considered "approved" by virtue of the Commission's approval of the Pilot Program, and even if device installations were required to comply, they do not violate any of the NEC provisions cited by the JSPs. (*Id.* at 6-9.) He also stated "there is no credible evidence to support that PPL Electric's DER Management devices are creating an electric arc within the inverters" and that "PPL Electric is, in actuality, maintaining consistent spacing when it installs its DER Management device." (*Id.* at 15, 17.)

Moreover, Mr. Floyd established that the JSPs' "PPL Case Review" is not a properly conducted root cause analysis. (PPL MB at 52.)²³ As Mr. Floyd explained, "[a] properly conducted root cause analysis identifies all possible causes of failure and, using scientific and engineering methods, rules out possible causes that could not have caused the failure being investigated." (PPL Electric St. No. 12-R at 7-8.) "The root cause analysis, as described by Mr. Geller, did not follow this protocol." (*Id.* at 8.)

²² Mr. Floyd worked for the DuPont Company for over 45 years, with assignments in the design, construction, commissioning, operation, maintenance, and safety of industrial electrical systems. (PPL Electric St. No. 12-R at 1.) He also provided technical and leadership contributions in the technical activities of IEEE since 1984. (*Id.*) Mr. Floyd was elected to IEEE Fellow in 2000 and served on the National Fire Protection Association ("NFPA") and the National Electrical Code ("NEC") technical committee from 1990 to 2014. (*Id.*) Since 2014, he has been an adjunct faculty member of the Advanced Safety Engineering and Management graduate engineering program at the University of Alabama at Birmingham. (*Id.* at 1-2.) In this capacity, he has developed and taught the course Electrical Systems Safety. (*Id.* at 2.) Mr. Floyd also has provided consulting and expert witness services with Electrical Safety Group Inc. since 2005. (*Id.*) Mr. Floyd also is a professional engineer in several states, including the Commonwealth of Pennsylvania. (*Id.*)

²³ Mr. Floyd has performed "[m]ore than 100" root cause analyses in his career. (*Id.* at 7.)

In addition, Mr. Floyd and Ms. Dombrowski-Diamond went through, in detail, the allegations in SolarEdge’s “PPL Case Review.” (PPL MB at 52.) Both witnesses identified critical flaws with that document and the allegations based thereon. (*Id.* at 52.) For example, Ms. Dombrowski-Diamond explained how the inverter involved with Case 3456467 “did not have the DER Management device connected, so any failure could not be caused by the DER Management device.” (*Id.*) (emphasis added). Mr. Floyd and Ms. Dombrowski-Diamond also testified about how PPL Electric’s connections cannot reduce the space between the AC terminals and the board, as alleged by JSP witness Geller. (*Id.*)

Further, the RD ignores PPL Electric’s evidence demonstrating the steps that the Company has taken to ensure the safety of its DER Management devices. (PPL MB at 44-46.) The Company’s DER Management devices undergo a series of internal and manufacturer tests to confirm they are safe for use. (*Id.* at 45.) All the DER Management devices have passed safety tests including tampering, voltage checks, amperage checks, and weatherproof checks and the DER Lab team also performs a series of steps to confirm the DER Management device properly connects and communicates with the DER system. (*Id.*) The Company’s DER Management device installations are all performed by thoroughly trained and tested PPL Electric meter technicians, who follow specific steps to install the DER Management device based on the type of inverter, with only qualified and trained personnel are installing DER Management devices in the field. (*Id.*) The RD errs in failing to take any of these safety measures into account.

Finally, the RD disregards the evidence presented by PPL Electric demonstrating that it would be inappropriate to void any customer warranties due to the Company’s installation of the DER Management devices. (PPL MB at 44.) PPL Electric explained that the voiding of customers’ warranties, particularly after multiple instances where SolarEdge personnel were

advised of the installation method and did not raise any issues, is inappropriate. (PPL MB at 44; PPL RB at 49, n.24.)²⁴ Thus, the Commission should reject the RD’s findings on this subject.

5. The RD Incorrectly Finds that PPL Electric’s Inverter Testing Requirements Erode Uniformity and Market Certainty

The RD errs by agreeing with the JSPs that PPL Electric’s inverter testing requirements “erode uniformity and the market certainty that the standards are intended to provide.” (RD at 45.) Relatedly, the RD agrees with the JSPs’ and Sustainable Energy Fund’s (“SEF”) arguments calling for a statewide proceeding to address the requirements of IEEE 1547-2018 and UL 1741-SB. (*Id.*)

The RD fails to account for the Company’s need to test inverters for compatibility with the DER Management device before installation and disregards the evidence showing that the Company’s requirements align with the applicable standards. (PPL RB at 41-43.) Regarding compatibility testing, PPL Electric must provide safe, adequate, efficient, and reasonable service. *See* 66 Pa. C.S. § 1501. Therefore, before the Company deploys its DER Management devices in the field, it must ensure that the inverters and its devices are safe to use together. (PPL RB at 42.)

As explained in PPL Electric’s Reply Brief, the Company instituted inverter testing requirements, with Commission approval, that align with the requirements under IEEE 1547-2018 and UL 1741-SB, with which every inverter used in Pennsylvania today should already comply. (PPL RB at 41.) While certain entities may have interpreted those communications protocols incorrectly, which led to the creation of interoperability gaps, those gaps have been closed. (*Id.*) Indeed, the Pilot Program helped identify and close those gaps. (*Id.* at 8, 40-42.) Contrary to the RD’s findings, the Company is not creating additional requirements for inverter manufacturers,

²⁴ PPL Electric questions the Commission’s authority to declare whether these contractual provisions, i.e., the warranties, were breached, given well-established case law providing that the Commission lacks subject matter jurisdiction over breach of contract questions. *See Adams v. Pa. PUC*, 819 A.2d 631, (Pa. Cmwlth. 2003) (citing *Allport Water Auth. v. Winburne Water Co.*, 393 A.2d 673 (Pa. Super. 1978)) (“The PUC lacks jurisdiction over private contractual disputes.”).

but merely requiring that the inverters interconnected to its distribution system adhere to fundamental industry standards.

D. EXCEPTION NO. 3: THE RD ERRONEOUSLY CONCLUDES THAT PPL ELECTRIC'S COST-BENEFIT ANALYSES DO NOT SUPPORT THE COMPANY'S PROPOSAL (RD AT 1, 42-46, 49; FINDINGS OF FACT NOS. 19, 42; CONCLUSION OF LAW NO. 12)

The RD incorrectly determines that the Company's cost-benefit analyses do not support the Second DER Management Plan. (RD at 44, 46.) In particular, the RD "find[s] merit in the parties' criticisms that PPL failed to provide reliable or positive cost-benefit analyses to support its proposal." (*Id.* at 46.) The RD further accepts the JSPs' claim that PPL Electric's cost-benefit analyses "overstat[ed] the amount of benefits PPL's program would provide from incremental hosting capacity." (*Id.*) Also, the RD agrees with the JSPs and Office of Consumer Advocate ("OCA") that the Company's cost-benefit analyses failed to adequately compare the value of active management versus autonomous smart inverter functions. (*Id.* at 44.) The RD states that "[s]uch analyses were one of the stated purposes of the Pilot Program" and that "[w]ithout such analysis, it is not possible to fully evaluate whether PPL's proposed Second DER Management Plan is either reasonable or necessary." (*Id.*) Moreover, according to the RD, the Company's cost benefit analyses were undermined by PPL Electric presenting a new cost-benefit analysis in rebuttal testimony and by the Company's point that "even without benefits the rate impact is 'minimal.'" (*Id.*) The Commission should reject all these findings by the RD.

1. The Company's Overly Conservative and Reliable Cost-Benefit Analysis Shows that the Second DER Management Plan Will Produce Net Benefits of \$65.5 Million over the 2025-2030 Period

The Company thoroughly demonstrated that its proposal will produce significant benefits for PPL Electric's ratepayers, interconnecting customer-generators, and electric distribution system well in excess of its costs, with a projected \$65.5 million in net benefits over the 2025-

2030 period. (PPL MB at 28-31.) In fact, after parties criticized the scope and methodology of the Company's historical cost-benefit analysis of the Pilot Program, PPL Electric retained Concentric Energy Advisors, Inc. ("Concentric") to conduct a cost-benefit analysis for the Second DER Management Plan. (*Id.* at 29; PPL RB at 14-15.) That cost-benefit analysis demonstrates that the Plan's benefits will exceed its cost significantly. (PPL MB at 29.)

Specifically, based solely on the active management of DERs under the proposed Plan, Concentric determined that between 2025 and 2030, active management would produce \$21.4 in net benefits, achieving a cost-benefit ratio of 1.8. (PPL MB at 30.) Concentric projected that the total costs related to active management in that period will total \$26.5 million, with active management producing more than \$48 million in benefits, including approximately \$7.9 million in reduced O&M expense, \$13.4 million in avoided distribution infrastructure investments, \$18.7 million in energy reduction, and \$7.8 million in conservation voltage reduction. (*Id.*) In addition to examining the benefits associated exclusively with active management, Concentric's modeling further projected the benefits attributable to the detailed monitoring of the Company's distribution system enabled by DER Management devices. (*Id.* at 30-31.) Accounting for the monitoring capabilities created by the installation of DER Management devices results in net benefits that are even greater, growing to approximately \$65.5 million on a net present value basis, with the monitoring capabilities alone producing an additional \$98.6 million in total benefits. (*Id.* at 31.)

These results are overly conservative and reliable. (PPL MB at 37.) In preparing the analysis, Concentric intentionally used moderated assumptions related to the number of truck rolls related to voltage violations and capacitor bank switching, the cost of distribution investments, and the cost of wholesale energy that can be saved through the Plan. (*Id.* at 38-39.) The analysis also conservatively specified that the cost of DER Management devices would only increase over time

and did not allow for the possibility that technological advancements could reduce device costs in the future. (*Id.* at 39.) Furthermore, the cost-benefit analysis included approximately \$1 million per year in “other costs” to account for costs that may not have been otherwise recognized. (*Id.*)

The Company also produced a sensitivity analysis that stress-tested the findings of the cost-benefit analysis under various scenarios, including eliminating all benefits except incremental hosting capacity, eliminating half of the incremental hosting capacity, increasing the costs associated with DER Management devices, their maintenance, and the administration of the Plan, as well as a lower DER interconnection forecast. (PPL MB at 31.) Crucially, none of the sensitivities conducted resulted in overall negative net benefits for the proposal, proving that even under unfavorable conditions, the Plan remains projected to achieve net benefits. (*Id.*)

By producing these net benefits, the Company’s DER Management Pilot Program and Second DER Management Plan will directly benefit ratepayers through decreased revenue requirements in base rate proceedings. (PPL MB at 35.) Specifically, after accounting for the reduced capital costs and expenses from the Company’s DER Management Pilot Program and Second DER Management Plan, the estimated revenue requirement impact in a hypothetical 2025 base rate case would be approximately \$4,497,918 lower than without them, which would put a downward pressure on the base rates ultimately adopted in that proceeding. (*Id.*) In fact, all else being equal, the amount of that decrease in the revenue requirement would equal a decrease in the estimated average residential bill of \$2.62 per year. (*Id.*) The bottom line is that customers’ distribution rates are estimated to be lower with the Company’s proposal in place. (*Id.* at 36.)

2. The Cost-Benefit Analysis Does Not Overstate the Benefits of Incremental Hosting Capacity

Contrary to the RD’s findings, the cost-benefit analyses do not overstate the benefits of incremental hosting capacity. (RD at 46.) The RD bases this flawed finding on the JSPs’

allegation that PPL Electric witness Wishart double-counted the incremental hosting capacity benefits of “Avoided Distribution Infrastructure Investments” and “Avoided Energy from Incremental Hosting Capacity,” on the premise that an interconnecting customer-generator can produce only one of those benefits but not both. (PPL RB at 12.) However, the RD overlooks how the JSPs overstated and mischaracterized Mr. Wishart’s testimony at the evidentiary hearing. (*See* Tr. 213-15; PPL RB at 12.)

When asked about this issue at the hearing, Mr. Wishart testified that he was not double counting these benefits. (PPL RB at 12.) “The Company’s DER program, based on the achievements of the pilot, is projected to create 256 megawatts of incremental hosting capacity for new DERs, [and] those new DERs will avoid market purchases.” (*Id.*) In conducting his cost-benefit analysis, Mr. Wishart “was trying to show the comprehensive impact of all incremental DERs that will be welcomed into the system as a result of the DER management plan.” (*Id.*) Indeed, Mr. Wishart “took a total resource cost approach, which is consistent with the way the Pennsylvania Commission has run their [demand-side] management cost benefit analyses.” (*Id.*) Using that approach, Mr. Wishart “quantif[ied] all cost and benefits associated with the program, whether they accrue to individual customers or whether they accrue to the system” as a whole. (*Id.* at 12-13.) Thus, Mr. Wishart’s analysis was consistent with a Total Resource Cost (“TRC”) Test approach, which the Commission has utilized pursuant to Act 129 of 2008 for well over a decade. *See* 66 Pa. C.S. § 2806.1(a)(3); (PPL RB at 13).

Mr. Wishart also never stated, as alleged in the JSPs’ Main Brief, that “it is inappropriate to count avoided energy costs” when an interconnection applicant would have paid for the “avoided infrastructure investments,” nor did he acknowledge that “a specific DER cannot produce both benefits.” (JSP MB at 28-29; PPL RB at 13.) The two passages from the transcript that the

JSPs cite about Mr. Wishart’s treatment of avoided energy costs are taken out of context and actually do not support the JSPs’ claims.²⁵ (PPL RB at 13.)

As for the avoided distribution infrastructure investments, Mr. Wishart only stated that it is a “fair statement” that there “would be no grid upgrades for a DER that didn’t interconnect.” (PPL RB at 13.) Additionally, the JSPs’ scenario only contemplates a single interconnection applicant that would be unwilling to pay for the distribution system upgrades. (*Id.*) However, the Commission employs a first come, first served interconnection queue process, where multiple projects could be seeking to interconnect.²⁶ (*Id.* at 13-14.) Therefore, the JSPs fail to account for situations where projects behind that interconnection applicant would have been willing to pay for the distribution system upgrades but avoided those costs because the Second DER Management Plan increased the distribution circuit’s hosting capacity. (*Id.* at 14.)

²⁵ Below are full quotations of the exchanges referenced by the JSPs (i.e., page 214, line 15 and page 216, lines 5-8):

Q. If, on the other hand, some of these DERs would have been interconnected regardless of PPL’s plan, then wouldn’t those DERs provide the same avoided energy costs as you’re claiming as a benefit attributable to PPL’s plan?

A. Yes, but I was trying to show the comprehensive impact of all the incremental DERs that will be welcomed into the system as a result of the DER management plan.

...

Q. So it [is] not accounted for in your analysis. Correct?

A. Correct. I did not account for any lost sales in my analysis. But again, going back to the TRC approach that I took, if you look at DSM program evaluation using the TRC construct, they don’t include the due [sic] sales associated with DSM and [sic] those analysis either.

(Tr. 214, lines 1018; Tr. 216, lines 5-12.)

²⁶ 52 Pa. Code §§ 75.13(a) (stating that net metering is offered a “first come, first served” basis), 75.22 (defining “queue position”), 75.37(c)(5) (setting forth the provisions for assignment and retention of interconnection applicant’s queue position after a project is not approved under the Level 1 review procedures), 75.38(c)(3), (g) (providing the Level 2 review procedures’ assignment and retention of queue position provisions), 75.39(b)(3) (setting forth the Level 3 review procedures’ provision for assignment of queue position), 75.39(d) (stating that an “interconnection system impact study” must “consider all generating facilities that, on the date the interconnection system impact study is commenced, are directly interconnected with the EDC’s system, have a pending higher queue position to interconnect to the system, or have a signed interconnection agreement”), 75.40(b), (c)(7)(ii), (f) (providing the Level 4 review procedures’ provisions governing assignment and retention of queue position).

3. The RD Fails to Recognize Why PPL Electric’s Cost-Benefit Analyses Utilized Different Methodologies

In attempting to criticize the Company’s cost-benefit analyses for the DER Management Pilot Program and the Second DER Management Plan, other parties observe that there were different methodologies and assumptions used in those two cost-benefit analyses. (*See* OCA MB at 26; JSP MB at 26-27; OSBA MB at 7.) Other parties argued that those differences raise concerns about the cost-benefit analyses’ reliability. (OCA MB at 26; JSP MB at 26-27.) The RD errs in agreeing with those parties. (RD at 46.)

PPL Electric explained in detail why its cost-benefit analyses utilized different methodologies. (PPL RB at 14-15.) PPL Electric’s initial cost-benefit analysis was prepared as part of its Program Year 2 Annual Report for the DER Management Pilot Program. (*Id.* at 14.) That historical cost-benefit analysis relied upon the data that was available at that time and was solely focused on the costs and benefits of the DER Management Pilot Program to date. (*Id.*)

Conversely, after the Company reviewed the other parties’ direct testimony about that initial cost-benefit analysis, PPL Electric retained Concentric to conduct a complete and detailed cost-benefit analysis of the Second DER Management Plan. (PPL RB at 14.) In so doing, PPL Electric tried to respond to the other parties’ criticisms about the initial cost-benefit analysis. (*Id.* at 15.) For example, PPL Electric witness Wishart noted how his cost-benefit analysis “addresses those concerns and features detailed calculations that provide intervenors an increased opportunity for review,” like how Office of Small Business Advocate (“OSBA”) witness Farr was able to “us[e] the Company’s [cost-benefit analysis] model to run his own sensitivity scenarios.” (*Id.*)

In addition, the fact that Mr. Wishart’s cost-benefit analysis used different, more conservative assumptions than the initial cost-benefit analysis does not mean that the initial cost-benefit analysis was flawed. (PPL RB at 15.) As Mr. Wishart explained, “While it is true that my

independent analysis of the benefit of avoided truck rolls differed from that of the DER Management Pilot Program, my more conservative assumptions, which decrease the calculated benefit, lower the overall [cost-benefit analysis] results compared to what those results would have been absent this conservative approach.” (*Id.*) Therefore, “the difference in methodologies in isolation should not be the focus”; rather, the “[f]ocus should be placed on evaluating the reasonableness of an assumption and its impact on the analysis.” (*Id.*) Here, “the methodology and assumptions used in the [cost-benefit analysis] are both robust and reasonable.” (*Id.*)

4. PPL Electric Explained Why the Company Did Not Present a Separate Cost-Benefit Analysis for Autonomous Smart Inverter Functions

Although PPL Electric witness Wishart did not analyze autonomous settings separately in his cost-benefit analysis, the reason was that IEEE Standard 1547-2018 had been incorporated into the Commission’s regulations for DERs after the Commission approved the Settlement in the First DER Management Plan proceeding. (PPL RB at 19.) This means that smart inverters with their voltage regulations, frequency support, and ride-through capabilities are required for all new DER interconnections. (*Id.*) Given that autonomous settings became the baseline since the Settlement was approved, there was no value in conducting an analysis on smart inverters with autonomous operation that are already required by the Commission’s regulations. (*Id.*; PPL MB at 40.)

Also, the RD’s position creates a false competition between already-required autonomous smart inverter functionality and the Company’s proposed active management of DERs. (PPL RB at 19.) The reality is that active management is complementary to the autonomous operation of smart inverters. (*Id.*) Active management enhances autonomous operation by updating settings such as Volt/VAR curves and in certain circumstances temporarily overriding the autonomous setting based on system conditions. (*Id.*) Commission approval of PPL Electric’s Second DER Management Plan would not eliminate or diminish the benefits of autonomous operation but would

add to the total net benefits that can be realized through IEEE 1547-2018. (*Id.*) Thus, the Commission can fully evaluate the Plan's merits without a separate cost-benefit analysis about the autonomous smart inverter functions that are already required by the Commission's regulations.

5. The Company's Evidence Showing a Minimal Impact on Customers' Bills Even After Excluding All Benefits Does Not Undermine the Cost-Benefit Analyses

The RD errs in stating that the cost-benefit analyses are undermined by PPL Electric's statement that its proposal would have a minimal rate impact even after excluding all benefits. (RD at 46.) PPL Electric presented evidence that "[s]etting aside the reduced capital costs and expenses from the Company's DER Management Pilot Program and Second DER Management Plan, the estimated revenue requirement impact is approximately \$6,382,157, resulting in an estimated average residential bill increase of \$4.83 per year" based on a hypothetical 2025 base rate case. (PPL MB at 36.) The Company did not present this evidence due to a lack of confidence in the cost-benefit analyses. Rather, it was important to show the proposal's absolute costs and the impact on customers' rates because not all benefits of the proposal were quantifiable (e.g., safety benefits). Therefore, PPL Electric properly pointed out that the rate impact is minimal when solely looking at the costs of the Second DER Management Plan. (*Id.*)

E. EXCEPTION NO. 4: AT THE VERY LEAST, THE COMMISSION SHOULD APPROVE THE SECOND DER MANAGEMENT PLAN WITH REASONABLE MODIFICATIONS TO ADDRESS CONCERNS ABOUT THE SCOPE OF THE COMPANY'S PROPOSAL (RD AT 1, 42-46, 49; CONCLUSION OF LAW NO. 12)

Even if the Commission gives credence to other parties' concerns with PPL Electric's proposal, the Commission should not deny the Second DER Management Plan wholesale like the RD. (RD at 42, 46, 49; PPL MB at 55.) The significant issues that the Company's proposal can address, such as safety, reliability, and resource adequacy, are too immediate and dire to warrant

denying the whole proposal. Instead, the Commission should approve the proposal with reasonable modifications to address concerns about the proposal's scope.²⁷ (PPL MB at 55.)

PPL Electric and other parties presented several alternatives to complete approval of the Second DER Management Plan. (PPL MB at 53-59.) In the Company's Main Brief, PPL Electric explained that, at the very least, the Second DER Management Plan should not be denied outright if the Commission agrees with the OCA's criticisms about the Plan's scope. (*Id.* at 55.) Rather, the Commission should approve the Second DER Management Plan and direct the Company to modify the Plan such that an appropriate threshold for determining when DERs must participate in active management or have the option to participate in active management. (*Id.*) Indeed, PPL Electric noted how JSP witness White stated: (1) "DER management and flexible interconnection only become necessary when the distribution grid is highly saturated with DER"; and (2) the circuit would be highly saturated with solar DERs if they equaled 100% of the "minimum daytime load." (*Id.* at 55 n.26.) Thus, even one of the staunchest critics of PPL Electric's proposal recognizes there is a threshold when management of DERs becomes necessary.

Moreover, PPL Electric fully rebutted the JSPs' meritless claims that the Company's DER Management devices have caused or contributed to alleged thermal events. *See* Section II.C, *supra*. However, to the extent that the RD factored those allegations into its recommendation to reject the Second DER Management Plan, the remedy is not to deny the Plan or cease the installation of DER Management devices on SolarEdge inverters. (PPL MB at 59.) Instead, PPL Electric should be directed to use a different device, method of installation, or mode of communication (such as cloud-based communications), similar to how PECO Energy Company

²⁷ The Commission took a similar approach with the DSIC when it first approved in part and denied in part the petitions and set forth parameters for the tariff supplements to establish DSIC mechanisms, including various customer protections. *Philadelphia Suburban DSIC*, 1996 Pa. PUC LEXIS 211, at 17-28; *PAWC DSIC*, 1996 Pa. PUC LEXIS 182, at *17-30.

changed the type of smart meters it was deploying under its Commission-approved Smart Meter Plan after certain issues arose with the ones it was using.²⁸ (*Id.*)

Likewise, the Company indicated in its rejoinder testimony that it is willing to investigate cloud-based communications as an alternative to the DER Management devices. (PPL MB at 36.) The Company believes that based on its prior work setting up servers with JSP member Enphase, it could seamlessly incorporate cloud-based communications through the Enphase modems into its ADMS/DERMS. (*Id.*) Because cloud-based communications would not require the procurement, installation, and maintenance of a DER Management device, the largest driver of cost identified in the cost-benefit analysis could be reduced (the capital cost and maintenance of DER Management devices account for \$69.8 million of the \$81 million in projected total costs under the cost-benefit analysis of active management and monitoring). (*Id.*)

In addition, the OCA recommended in its direct testimony that the Commission approve the Second DER Management Plan with certain modifications, namely that the Commission exempt all DERs with a capacity of 200 kW or less from mandatory participation in active management and provide those DERs with the option to participate in active management.²⁹ (PPL MB at 53.) The OCA also made recommendations for the Company to file a DER Orchestration Plan and provide an evaluation of three different flexible interconnection approaches within 12 months of the Commission's Order in this proceeding. (*Id.*) However, despite PPL Electric making no programmatic changes to its proposal in its rebuttal testimony and expressing its

²⁸ See *Frompovich v. PECO Energy Co.*, Docket No. C-2015-2474602 (Order entered May 3, 2018) (citing *Petition of PECO Energy Company for Approval of its Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123944 (Recommended Decision issued July 12, 2013)).

²⁹ As alleged support, OCA witness Nelson testified that “[c]onsidering the lower cost and potential benefits of enabling DER management through the 2nd DER plan, compared to the costs of traditional utility-controlled switching, it may be reasonable to control DER smaller than 500 kW within PPL’s system”; however, he “recommend[ed] that the initial threshold for mandatory control and monitoring be set at 200 kW.” (OCA St. 1 at 31-32) (emphasis added).

willingness to file a DER Orchestration Plan, the OCA changed its recommendation at the surrebuttal stage and recommended that the Second DER Management Plan be denied. (*Id.*) Nonetheless, the RD could have explored setting a nameplate capacity threshold for determining which DERs must participate or have the option to participate in the Plan. (*See* RD at 42-46.)

Furthermore, OSBA recommended that the Pilot Program be extended or paused until a cost benefit framework to analyze the costs and benefits of the Second DER Management Plan is established and approved by the Commission. (PPL MB at 55.) Alternatively, OSBA proposed that the term of the DER Management Plan be limited to three years and for PPL Electric to be required to file reports on the costs and benefits of the Second DER Management Plan annually with the Commission. (*Id.*) Similarly, SEF recommended that the Commission deny the Second DER Management Plan but continue the Pilot Program “with the goal of gathering and analyzing more data” related to the costs and benefits of DER management. (*Id.* at 56.) Although OSBA’s and SEF’s recommendations were opposed by PPL Electric, they certainly are preferable to the RD’s complete rejection of the Second DER Management Plan. At a minimum, those recommendations would enable the Company to continue monitoring and actively managing the DERs that already have DER Management devices installed.

For these reasons, the Commission should, at the very least, approve the Plan with reasonable modifications that address concerns with the Company’s proposal.

III. CONCLUSION

WHEREFORE, the Pennsylvania Public Utility Commission should grant PPL Electric Utilities Corporation's Exceptions and enter a Final Order consistent with these Exceptions that approves the Company's Second DER Management Plan, approves the Company's proposed tariff modifications, and grants any other approvals or authorizations that are necessary to implement PPL Electric's Second DER Management Plan.

Respectfully submitted,



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