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April 27, 2018

***VIA ELECTRONIC FILING***

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

**Re: Alan V. Schmukler v. PPL Electric Utilities Corporation**  
**Docket No. C-2017-2621285**

Dear Secretary Chiavetta:

Enclosed for filing is the Main Brief of PPL Electric Utilities Corporation in the above-referenced proceeding. Copies will be provided as indicated on the Certificate of Service.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'DR', is written over a horizontal line.

Devin Ryan

DTR/jl  
Enclosures

cc: Honorable Elizabeth Barnes  
Certificate of Service

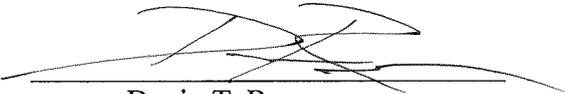
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I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

**VIA E-MAIL & FIRST CLASS MAIL**

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Date: April 27, 2018



Devin T. Ryan

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Alan V. Schmukler,	:	
	:	
Complainant,	:	
	:	
v.	:	Docket No. C-2017-2621285
	:	
PPL Electric Utilities Corporation,	:	
	:	
Respondent.	:	

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**MAIN BRIEF OF  
PPL ELECTRIC UTILITIES CORPORATION**

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Date: April 27, 2018

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## **I. INTRODUCTION**

On September 26, 2017, PPL Electric Utilities Corporation (“PPL Electric” or the “Company”) was served with the above-captioned Formal Complaint filed by Alan V. Schmukler (“Complainant”) with the Pennsylvania Public Utility Commission (“Commission”). In his Complaint, the Complainant contests PPL Electric’s planned installation of a new automated metering infrastructure (“AMI”) meter at his property, 199 Strawberry Street, Leola, Pennsylvania. The Complainant also requests that PPL Electric remove the new AMI meter installed on his neighbor’s property, 197 Strawberry Street, Leola, Pennsylvania.

As explained in this Main Brief, the Complainant failed to sustain his burden of proof that installing the new AMI meter on his property would constitute a violation of the Public Utility Code or any Commission regulation or order. Further, the Complainant cannot challenge the installation of his neighbor’s new AMI meter, as the neighbor never testified, spoke with the Complainant about the meter, or authorized the Complainant to represent her interests. Therefore, the Commission should dismiss the Complaint in its entirety and with prejudice.

## **II. STATEMENT OF THE CASE**

On September 26, 2017, PPL Electric was served with the above-captioned Formal Complaint filed by the Complainant.

On October 16, 2017, PPL Electric filed its Answer to the Complaint.

On October 26, 2017, a Notice was issued scheduling a telephonic hearing for February 2, 2018, before Administrative Law Judge Elizabeth H. Barnes (the “ALJ”).

On November 3, 2017, a Prehearing Order was issued by the ALJ setting forth certain rules and requirements for the proceeding.

On December 18, 2017, PPL Electric filed a Motion to admit Curtis S. Renner, Esquire, *pro hac vice* and represent the Company as additional counsel.

On December 21, 2017, PPL Electric filed a letter requesting that the hearing be rescheduled.

By Notice issued on January 3, 2018, the telephonic hearing was rescheduled for March 9, 2018.

On January 8, 2018, the ALJ issued an Interim Order admitting Curtis S. Renner, Esquire, *pro hac vice*.

On January 28, 2018, the Complainant sent his written statement and exhibits for use at the hearing to the Company.

On January 29, 2018, PPL Electric filed a letter requesting that all expert witnesses submit written direct testimony on or before February 15, 2018, which was the due date established by the ALJ for the parties to exchange their exhibits, reports, and statements.

On February 14, 2018, PPL Electric filed a Notice to enter the appearance of Garrett P. Lent, Esquire, and to withdraw the appearance of Christopher T. Wright, Esquire, as counsel on behalf of PPL Electric.

On February 15, 2018, PPL Electric served its potential hearing exhibits and its written direct expert testimony and exhibits.

On March 6, 2018, PPL Electric filed a Motion in Limine to exclude the Complainant's exhibits.

The parties engaged in discovery at various points in the proceeding before the evidentiary hearing.

In the mid-afternoon on March 8, 2018, the Complainant alerted PPL Electric and the ALJ, for the first time, that he would be calling an expert witness, Mr. William Bathgate, to testify at the evidentiary hearing.

On March 9, 2018, less than two hours before the evidentiary hearing, the Complainant sent the exhibits for his expert witness. The telephonic evidentiary hearing was held as scheduled at 10:00 AM.

On March 12, 2018, the ALJ issued a Briefing Order setting forth requirements for the briefs to be submitted in this proceeding.

### **III. QUESTIONS PRESENTED**

1. Whether the Complainant has failed to sustain his burden of proof that PPL Electric's installation of a new AMI meter at his premises would violate the Public Utility Code, a Commission order, or a Commission regulation.

Suggested answer: *in the affirmative.*

2. Whether the Complainant can challenge PPL Electric's installation of a new AMI meter at his neighbor's premises without violating the neighbor's due process rights, when the neighbor never testified, did not participate in the instant proceeding, never spoke with Complainant about the meter on her property, and never authorized the Complainant to represent her interests.

Suggested answer: *in the negative.*

#### **IV. LEGAL STANDARDS**

##### **A. BURDEN OF PROOF**

Under Section 332(a) of the Public Utility Code, 66 Pa. C.S. § 332(a), “the proponent of a rule or order has the burden of proof.” It is well-established that “[a] litigant’s burden of proof before administrative tribunals as well as before most civil proceedings is satisfied by establishing a preponderance of evidence which is substantial and legally credible.” *Samuel J. Lansberry, Inc. v. Pa. PUC*, 578 A.2d 600, 602 (Pa. Cmwlth. 1990). The preponderance of evidence standard requires proof by a greater weight of the evidence. *Commonwealth v. Williams*, 557 Pa. 207, 732 A.2d 1167 (1999). This standard is satisfied by presenting evidence more convincing, by even the smallest amount, than that presented by another party. *Brown v. Commonwealth*, 940 A.2d 610, 614 n.14 (Pa. Cmwlth. 2008).

If the party seeking a rule or order from the Commission sets forth a *prima facie* case, then the burden shifts to the opponent. *MacDonald v. Pa. R.R. Co.*, 348 Pa. 558, 36 A.2d 492 (1944). Establishing a *prima facie* case requires either evidence sufficient to make a finding of fact permissible or evidence to create a presumption against an opponent which, if not met, results in an obligatory decision for the proponent. Once a *prima facie* case has been established, if contrary evidence is not presented, there is no requirement that the party seeking a rule or order from the Commission must produce additional evidence to sustain its burden of proof. *See Replegle v. Pa. Elec. Co.*, 54 Pa. PUC 528, 1980 Pa. PUC LEXIS 20 (Order entered Oct. 9, 1980); *see also Dist. of Columbia’s Appeal*, 21 A.2d 883 (Pa. 1941); *Application of Pennsylvania-American Water Co. for Approval of the Right To Offer, Render, Furnish or*

*Supply Water Serv. to the Pub. in Additional Portions Of Mahoning Twp., Lawrence Cnty., Pa.*, Docket No. A-212285F0148, 2008 Pa. PUC LEXIS 874 (Order entered Oct. 29, 2008).<sup>1</sup>

In addition, a person does not sustain his or her burden of proof in an electric and magnetic field exposure case when the record evidence, “taken as a whole, leads to the ultimate finding and conclusion that the scientific studies at present are inconclusive.” *Letter of Notification of Phila. Elec. Co. Relative to the Reconstructing and Rebuilding of the Existing 138 kV Line to Operate as the Woodbourne-Heaton 230 kV Line in Montgomery and Bucks Cntys.*, 1992 Pa. PUC Lexis 160, at \*210-11 (June 29, 1992) (Initial Decision) (“*Woodbourne-Heaton*”). Rather, the person must demonstrate by a preponderance of the evidence that such exposure actually causes adverse health effects. *Id.* at \*211. Specifically, in AMI meter-related matters, the Commission has held that “[t]he Complainant will have the burden of proof during the proceeding to demonstrate, by a preponderance of the evidence, that [the utility] is responsible or accountable for the problem described in the Complaint.” *Kreider v. PECO Energy Co.*, Docket No. P-2015-2495064, p. 18 (Order entered Sept. 3, 2015); *see also Romeo v. Pa. PUC*, 154 A.3d 422, 429 (Pa. Cmwlth. 2017) (finding that the smart meter complainant should have a hearing to try to prove his claim through “the testimony of others as well as other evidence that goes to that issue”).

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<sup>1</sup> In addition, any finding of fact necessary to support an adjudication of the Commission must be based upon substantial evidence. *Met-Ed Indus. Users Grp. v. Pa. PUC*, 960 A.2d 189, 193 n.2 (Pa. Cmwlth. 2008) (citing 2 Pa.C.S. § 704). Substantial evidence is such relevant evidence as a reasonable mind might accept as adequate to support a conclusion. *Borough of E. McKeesport v. Special/Temporary Civil Serv. Comm’n*, 942 A.2d 274, 281 n.9 (Pa. Cmwlth. 2008) (citation omitted). Although substantial evidence must be “more than a scintilla and must do more than create a suspicion of the existence of the fact to be established,” *Kyu Son Yi v. State Bd. of Veterinary Med.*, 960 A.2d 864, 874 (Pa. Cmwlth. 2008) (citation omitted), the “presence of conflicting evidence in the record does not mean that substantial evidence is lacking.” *Allied Mech. and Elec., Inc. v. Pa. Prevailing Wage Appeals Bd.*, 923 A.2d 1220, 1228 (Pa. Cmwlth. 2007) (citation omitted).

## B. APPLICABLE LEGAL STANDARDS

Section 701 of the Public Utility Code provides that “any person . . . having an interest in the subject matter . . . may complain in writing, setting forth any act or thing done or omitted to be done by any public utility in violation, or claimed violation, of any law which the commission has jurisdiction to administer, or of any regulation or order of the commission.” 66 Pa. C.S. § 701. Therefore, a complainant must generally demonstrate that the public utility violated the Public Utility Code or a Commission regulation or order.

Section 1501 of the Public Utility Code states, in pertinent part, that:

Every public utility shall furnish and maintain adequate, efficient, safe, and reasonable service and facilities, and shall make all such repairs, changes, alterations, substitutions, extensions, and improvements in or to such service and facilities as shall be necessary or proper for the accommodation, convenience, and safety of its patrons, employees, and the public. Such service also shall be reasonably continuous and without unreasonable interruptions or delay. Such service and facilities shall be in conformity with the regulations and orders of the commission. Subject to the provisions of this part and the regulations or orders of the commission, every public utility may have reasonable rules and regulations governing the conditions under which it shall be required to render service. . . .

*Id.* § 1501. The Commission has exclusive jurisdiction to adjudicate “issues involving the reasonableness, adequacy, and sufficiency” of a public utility’s facilities and services. *See Elkin v. Bell of Pa.*, 420 A.2d 371, 374 (Pa. 1980) (citations omitted).

When presented with a challenge to an AMI meter installation, the Commission has pronounced that “[t]he ALJ’s role . . . will be to determine based on the record in this particular case, whether there is sufficient evidence to support a finding that the Complainant was adversely affected by the smart meter or whether [the utility’s] use of a smart meter will constitute unsafe or unreasonable service in violation of Section 1501 under the circumstances in

this case.” *Kreider v. PECO Energy Co.*, Docket No. P-2015-2495064, p. 23 (Order entered Jan. 28, 2016) (citing *Woodbourne-Heaton*, 1992 Pa. PUC Lexis 160, at \*12-13).

## V. SUMMARY OF ARGUMENT

The Complaint should be denied in its entirety and with prejudice because the Complainant has failed to sustain his burden of proof that installing the new AMI meter would violate the Public Utility Code or any Commission regulation or order.

PPL Electric is legally required to install new AMI meters for all of its customers in accordance with Act 129 and Commission orders. The type of meter currently installed on the Complainant’s property was declared by the Commission not to be compliant with Act 129 and the Commission’s *Smart Meter Implementation Order*. Further, nothing in Act 129, the Commission’s orders, or PPL Electric’s Commission-approved Smart Meter Plan allows a customer to “opt-out” of the new AMI meter.

In addition, installing the new AMI meter would not constitute unsafe and unreasonable service. First, the Complainant has failed to demonstrate that the new AMI meter causes, contributes to, or exacerbates an illness. The Complainant did not present any expert medical or scientific testimony to support his claim that the AMI meters present a risk to human health generally or to him specifically. The Complainant submitted a number of hearsay documents as exhibits to try to prove that the new AMI meters cause adverse health effects, but those documents are not credible evidence in support of his claims. None of them can support a finding of fact in this case because they were properly objected to by the Company as hearsay, they are unreliable, and they lack scientific merit.

Second, the Company’s expert witnesses offered thorough and persuasive testimony that: (1) there is no reliable scientific basis to support the Complainant’s claim that very low, non-

thermal levels of Radio Frequency (“RF”) fields from the Company’s meters can or will cause any biological effects; and (2) there is no reliable medical basis to conclude that RF fields from the AMI meters cause, contribute to, or exacerbate any disease, symptoms, or illness alleged by the Complainant. Indeed, the levels of RF fields from the AMI meters being used by PPL Electric are 98,000 times lower than the levels of RF fields the Federal Communications Commission (“FCC”) has designated as safe for long-term public exposures. Furthermore, the testimony of the Complainant’s electrical engineering witness, Mr. Bathgate, was unreliable and fatally flawed because his opinions are based on a fundamental misunderstanding of the basic physics of RF fields, as well as measurements he made on a different model and manufacturer of meter than the one being deployed by PPL Electric, and incorrect assumptions about the Company’s meter.

Third, the Complainant has failed to show that the new AMI meter is otherwise unsafe and would cause fires. The meter is composed of fire-resistant materials and has alarms designed to alert the Company if the meter’s temperature reaches a certain level. The Company also has established protocols to dispatch personnel if there is an issue with the meter’s temperature. Therefore, the new AMI meter can actually help prevent fires.

Fourth, the Complainant’s privacy concerns are unfounded. The Company collects total usage at the premises, and the usage of any individual appliance or device is indistinguishable from any other one. Through the new AMI meter, PPL Electric only collects the electric usage data required by Act 129 and the Commission’s orders and about significant events, such as outages, voltage, heat alarms, and meter tampering alerts.

Finally, the Complainant cannot contest the installation of his neighbor’s AMI meter in this proceeding without violating the neighbor’s due process rights. The neighbor never

testified, spoke with the Complainant about the meter, or authorized the Complainant to represent her interests. Moreover, the new AMI meter offers several benefits to customers, such as heat alarms and improved information about customer usage. Thus, it would violate the neighbor's due process rights if decisions were made about her AMI meter in this proceeding.

For these reasons, and as further explained in detail below, the Commission should deny the Complaint with prejudice.

## **VI. ARGUMENT**

### **A. BACKGROUND**

On November 14, 2008, Act 129 of 2008 became effective and required electric distribution companies ("EDCs"), such as PPL Electric, to file smart meter technology procurement and installation plans with the Commission within nine months. On June 24, 2009, the Commission issued its *Smart Meter Implementation Order*, which set forth requirements for the smart meter plans and procedures for the submission, review, and approval of the smart meter plans. *See Smart Meter Procurement and Installation*, Docket No. M-2009-2092655 (Order entered June 24, 2009) ("*Smart Meter Implementation Order*").

On August 14, 2009, PPL Electric filed its initial Smart Meter Plan in compliance with Act 129 and the Commission's *Smart Meter Implementation Order*. As explained in that proceeding, the Company previously deployed AMI meters and metering system between 2002 and 2004, which were a part of a power line carrier ("PLC") metering system. *See Petition of PPL Electric Utilities Corporation for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123945, p. 5 (Order entered June 24, 2010) ("*2010 Smart Meter Order*"). The Company contended that its existing PLC system met the requirements under Act 129 and the *Smart Meter Implementation Order*. However, the

Commission ultimately held that PPL Electric's existing PLC meters did not fully meet these requirements. *See 2010 Smart Meter Order*, p. 24. Accordingly, the Commission directed PPL Electric to develop a new Smart Meter Plan that would deploy a new AMI technology that fully meets these requirements. *See id.*

On June 30, 2014, PPL Electric filed its new Smart Meter Plan intended to comply with all the requirements of Act 129 and the Commission's *Smart Meter Implementation Order*. (See PPL Electric Exhibit No. 3) To meet those requirements, the Company proposed RF Mesh meters and metering system. PPL Electric selected this technology because the Company determined that the RF Mesh system would support the 15 capabilities required by Act 129 and the *Smart Meter Implementation Order*. (See PPL Electric Exhibit No. 3, pp. 5-6, 20-22; Tr. 232-33) The RF Mesh system allows the Company to receive data from the customer's meter wirelessly, unlike PPL Electric's previous powerline carrier ("PLC") system that used the customer's actual wires. (Tr. 234) The individual RF Mesh meters are used as relay points to transmit data back to PPL Electric. (Tr. 240-41) Under the Smart Meter Plan, the RF Mesh meters would be deployed between 2017 and 2019 for all of PPL Electric's 1.4 million customers. (PPL Electric Exhibit No. 3, pp. 3, 32; Tr. 233)

On September 3, 2015, the Commission entered its Opinion and Order approving the new Smart Meter Plan, as modified, finding that unlike the Company's existing PLC meters, the new RF Mesh meters meet the requirements of Act 129 and the Commission's *Smart Meter Implementation Order*. *See Petition of PPL Electric Utilities Corp. for Approval of Its Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2014-2430781 (Order Entered Sept. 3, 2015) ("*2015 Smart Meter Order*").

The instant proceeding concerns PPL Electric's installation of the new RF Mesh meter pursuant to Act 129, *Smart Meter Implementation Order*, and Commission-approved Smart Meter Plan. On July 31, 2017, PPL Electric sent the Complainant a letter notifying him that it intended to install the new RF Mesh meter on his property within approximately the next three weeks. (PPL Electric Exhibit No. 2) Specifically, the RF Mesh meter to be installed for the Complainant's residential account is the Landis+Gyr Focus AXR-SD meter. (Tr. 245) The Complainant then initiated the instant Formal Complaint proceeding to contest PPL Electric's planned installation of the new AMI meter for his account.<sup>2</sup>

**B. THE COMPLAINANT HAS FAILED TO SUSTAIN HIS BURDEN OF PROOF**

The Complainant has failed to sustain his burden of proof that PPL Electric would violate the Public Utility Code or any Commission regulation or order by installing the new AMI meter. PPL Electric is legally required to install the new AMI meter by Act 129 and several Commission orders, and the Complainant has failed to prove that installing the meter would constitute unsafe and unreasonable service in violation of 66 Pa. C.S. § 1501. Therefore, the Complaint should be denied in its entirety and with prejudice.

**1. PPL Electric's Installation of the New AMI Meter Is Required by Law**

PPL Electric is legally required to install the RF Mesh meter on the Complainant's property by Act 129 and Commission orders. Section 2807(f) of the Public Utility Code prescribes that EDCs, like PPL Electric, must file smart meter plans and "**shall** furnish smart meter technology" in any of the following situations: (1) "[u]pon request from a customer that

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<sup>2</sup> The Company also installed the new RF Mesh meter on his neighbor's property on or about August 14, 2017. (Tr. 13; Complainant's Introduction, p. 1) As explained in Section VI.C., *infra*, the Complainant cannot challenge the installation of the new AMI meter on his neighbor's property.

agrees to pay the cost of the smart meter at the time of the request”; (2) “[i]n new building construction”; and (3) “[i]n accordance with a depreciation schedule not to exceed 15 years.” 66 Pa. C.S. § 2807(f)(1)-(2) (emphasis added). In interpreting the smart meter provisions of Act 129, the Commission declared that EDCs must “deploy smart meters system-wide” because of the requirement that smart meters be deployed “in accordance with a depreciation schedule not to exceed 15 years.” *Smart Meter Implementation Order*, p. 14. The Commission also “recognize[d] that deployment of smart meters on a piecemeal or individual basis could involve greater costs than a systematic system-wide deployment.” *Id.*, pp. 9, 14.<sup>3</sup> Therefore, PPL Electric must install the new smart meters for every customer in its service territory, including the Complainant.

In addition, nothing in Act 129 permits a customer to “opt-out” of a smart meter installation. Indeed, the Commission previously has found in several cases that Act 129 contains no such opt-out language. *See, e.g., Starr v. PECO Energy Co.*, Docket No. C-2015-2516061, p. 11 (Order Entered Sept. 1, 2016) (footnote omitted). Specifically, in *Starr*, the Commission observed that it has “rejected similar claims that the installation of smart meters is not mandatory or that an opt-out is permissible under Act 129.” *Id.* Although bills have been proposed in the General Assembly to add such an opt-out (see, e.g., House Bill 1564 of 2017-2018 Session), they have not been enacted. Thus, a customer cannot opt-out of the AMI meter installation under Act 129.

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<sup>3</sup> *See also Springirth v. Nat'l Fuel Gas Distrib. Corp.*, 1991 Pa. PUC LEXIS 44, at \*1-3, 6, 16-17 (Order entered Apr. 12, 1991) (dismissing complaint of customer seeking to make installation of automated meter reading devices optional, noting that the Commission previously found in another case that “[t]he customer should not be given the option of refusing installation of equipment” because “[t]o permit customer discretion in this area would be inefficient and uneconomical”) (quoting *Stenker v. The York Water Co.*, Docket No. C-871318 (Order entered July 27, 1987)).

Moreover, PPL Electric must comply with the relevant Commission orders directing the Company to deploy the new AMI meters. As mentioned previously, the Commission determined that the Company's existing PLC meters are not compliant with Act 129 and the Commission's *Smart Meter Implementation Order*. See *2010 Smart Meter Order*, p. 24. Under the Company's Commission-approved Smart Meter Plan, PPL Electric must replace all of the PLC meters with the RF Mesh meters, which the Commission declared as meeting all of the requirements of Act 129 and the Commission's *Smart Meter Implementation Order*. See *2015 Smart Meter Order*, p. 24. PPL Electric is not permitted to install any other type of meter under its Smart Meter Plan and cannot leave the existing, non-compliant PLC meter in place. (Tr. 233) Therefore, if the Company does not install the new RF Mesh meter on the Complainant's residence in accordance with the Commission-approved deployment schedule,<sup>4</sup> PPL Electric may violate the Commission's *2010 Smart Meter Order*, *2015 Smart Meter Order*, and *Smart Meter Implementation Order*.

For these reasons, PPL Electric must install the new RF Mesh meter on the Complainant's residence or else the Company may violate Section 2807(f) of the Public Utility Code and the Commission's *2010 Smart Meter Order*, *2015 Smart Meter Order*, and *Smart Meter Implementation Order*.

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<sup>4</sup> Although Act 129 uses the language "not to exceed 15 years," the Commission encouraged EDCs "to expedite the deployment process if it will provide increased customer benefits in a cost effective manner." *Smart Meter Implementation Order*, p. 14. The Commission also recognized that system-wide deployment of smart meters would involve "more than just the meter hardware attached to the customer's premises." *Id.*, p. 6. EDCs would need time to select the technology, train personnel, and deploy the entire AMI network, including any associated hardware and software. *Id.* For PPL Electric, the Company's Commission-approved Smart Meter Plan states that the smart meters are to be deployed system-wide from 2017 through 2019 with additional actions beyond 2019 to get the full network up and running. (PPL Electric Exhibit No. 3, pp. 3, 32; Tr. 233) Notably, in approving the Company's Smart Meter Plan, the Commission found that the deployment of PPL Electric's new RF Mesh meters "should be done sooner rather than later." *2015 Smart Meter Order*, p. 36.

**2. Installing the New AMI Meter Would Not Constitute Unsafe or Unreasonable Service**

The Complainant has failed to meet his burden of proof that installing the new AMI meter would constitute unsafe or unreasonable service. In this proceeding, the Complainant generally has alleged that the new AMI meter causes adverse health effects, causes fires, and raises privacy concerns. In support of his various claims, the Complainant personally testified and presented several written exhibits. (*See* Complainant's Introduction; Complainant's Exhibits 1-3, 5-6, 8, 10, 12-18, 21-24; Tr. 109-212) The Complainant only called one witness, Mr. Bathgate, to testify on his behalf about the engineering aspects of the new AMI meter and the RF fields emitted by the meter. (*See* Tr. 42-109; Complainant's Exhibits 25-27)

As explained in more detail below, the Complainant's claims are unsubstantiated, unreliable, and almost entirely predicated on exhibits that are hearsay and wholly lack merit. In contrast, PPL Electric presented substantial, credible, and reliable evidence that wholly rebutted the Complainant's contentions. Therefore, the Complainant has failed to meet his burden of proof that installing PPL Electric's new AMI meter would be unsafe or unreasonable service in violation of Section 1501 of the Public Utility Code.

**a. The Complainant Has Failed to Demonstrate that the New AMI Meter Causes, Contributes to, or Exacerbates Any Adverse Health Effect**

The Complainant contends that PPL Electric should not install the new AMI meter because he has concerns that the new meter will affect his health, including his claimed symptoms of electro-hypersensitivity ("EHS"). (Complainant's Introduction, p. 1)

In support of his allegations, the Complainant has submitted documents from anti-smart meter and anti-EMF websites, articles, and other documents attempting to prove a link between adverse health effects and RF fields. (*See, e.g.*, Complainant's Exhibits 5-6, 8, 10, 13-18) The

Complainant also called Mr. Bathgate as a last-minute undisclosed expert to testify that AMI meters produce high frequency transients.<sup>5</sup> (Tr. 41-42, 55-74, 102) Mr. Bathgate's opinions were premised on measurements he claimed to have made on a model and brand of meters not being used by the Company. Significantly, Mr. Bathgate – who has no medical qualifications or expertise – did not (and could not) offer any opinion about transients and health effects, and there is no testimony to that effect from any medical or scientific expert in the case. As explained in more detail below, the Complainant's testimony and exhibits wholly fail to sustain his burden of proof that the new AMI meter causes, contributes to, or exacerbates any adverse health effects for several reasons.

**i. There Is No Reliable Scientific Basis to Support the Complainant's Allegations that the Very Low Non-Thermal RF from AMI Meters Cause Biological Effects**

There also is no reliable scientific basis to support the Complainant's claim that very low, non-thermal (non-heating) levels of RF fields from the Company's AMI meters can or will cause any biological effects.

Dr. Christopher Davis is a highly experienced scientific researcher and teacher in Physics, Electrical Engineering, Electromagnetics, and Radio Frequency Electromagnetics.<sup>6</sup> Dr. Davis has a Ph.D. in Physics and is a full Professor with an endowed Chair at the University of Maryland, where for over 30 years he has taught Physics, Electrical Engineering, Electromagnetics, and RF Electromagnetics to undergraduate and graduate students. In addition

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<sup>5</sup> Mr. Bathgate was identified less than 24 hours before the hearing, and his exhibits were only provided the morning of the hearing. (Tr. 21)

<sup>6</sup> Dr. Davis is the Minta Martin Endowed Professor of Engineering and Professor of Electrical and Computer Engineering at the University of Maryland in College Park, Maryland. (PPL Electric Statement No. 1, p. 1, lines 9-10) He earned a BA with Honors in Natural Sciences from Trinity College at Cambridge University and a Ph.D. in Physics at the University of Manchester. (PPL Electric Statement No. 1, p. 1, lines 12-18) In this proceeding, Dr. Davis was certified as an expert in physics, biophysics, chemistry, electrical engineering, electromagnetics, bioelectromagnetics, radiofrequency bioelectromagnetics, and dosimetry. (Tr. 254-55)

to his teaching, Dr. Davis is an active scientific researcher in the fields of Physics, Biophysics, Electrical Engineering, Bioelectromagnetics and RF Bioelectromagnetics. He has conducted many scientific studies in these fields and has published over 250 studies in peer-reviewed scientific journals. In particular, he has conducted a substantial amount of research on RF fields of the type produced by the AMI meters being used by the Company. (PPL Electric Statement No. 1, p. 1, line 12 to p. 3, line 6)

Dr. Davis has served on expert committees that have evaluated the scientific research on RF fields, including the Institute of Electrical and Electronic Engineers (“IEEE”) Committee on Man and Radiation (“COMAR”) and as chair of the Subcommittee on Radio Frequency Fields, which consists of experts who examine the scientific research on RF fields and evaluate the IEEE exposure guidelines. He has also provided expert advice on electromagnetic fields, including RF fields dosimetry and proposed mechanisms for biological effects other than heating, to the United Kingdom Health Protection Agency, the U.S. National Institutes of Health and the U.S. Food and Drug Administration's Center for Devices and Radiological Health. Dr. Davis is a Fellow of the IEEE and a Fellow of the Institute of Physics. (PPL Electric Statement No. 1, p. 3, line 7 to p. 4, line 22)

Dr. Davis explained that RF fields are part of the lower energy, non-ionizing portion of the electromagnetic spectrum, which consists of lower frequency signals that do not have enough energy to break chemical bonds in cells or DNA. (PPL Electric Statement No. 1, p. 5, line 15 to p. 6, line 6) RF fields come from many sources in our everyday environments, including AM/FM radio, television broadcast, cell phones and their communication networks, portable phones, garage door openers and wifi networks. (PPL Electric Statement No. 1, p. 5, line 22 to p. 6, line 6; p. 12, lines 13-16)

There is nothing unusual about the RF fields from the AMI meters being deployed by the Company. (PPL Electric Statement No. 1, p. 12, lines 12-13) Dr. Davis testified that the FCC has determined safe public exposure levels for RF fields from devices that transmit RF signals, such as the AMI meters. (PPL Electric Statement No. 1, p. 8, lines 14-16) The FCC safe public exposure limits are based on evaluations of the body of scientific research on RF fields and were adopted in consultation with other federal agencies, including the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA). (PPL Electric Statement No. 1, p. 8, line 16 to p. 9, line 4)

Based on the engineering specifications for the Landis & Gyr AMI meter being deployed by the Company, Dr. Davis calculated that the levels of RF fields from the AMI meters are **98,000 times lower** than the RF exposure safety limits established by the FCC. (PPL Electric Statement No. 1, p. 14, lines 1-4; *see* PPL Electric Exhibit CD2) As a result, Dr. Davis found that “the RF field levels from the AMI meters being used by PPL Electric more than comply with the applicable FCC RF exposure limit.” (PPL Electric Statement No. 1, p. 9, lines 15-16) Moreover, the RF signals from the AMI meter are of very short duration and will occur for only a total of 84 seconds over a 24-hour period. (PPL Electric Statement No. 1, p. 7, lines 21-23)

In addition, there are many sources of RF signals in the everyday environment, and the background levels of RF fields at Complainant’s residence are many times higher than the fields from the AMI meter. Dr. Davis testified that there are eight television broadcast towers with a 50 mile radius of Complainant’s location. (PPL Electric Statement No. 1, p. 13, lines 8-9) Based on the locations of each tower and their RF power outputs, the constant background level of RF fields at Complainant’s residence are **16.7 times higher** than the RF signals from the AMI meter. (PPL Electric Statement No. 1, p. 13, lines 8-15; Tr. 260-61; *see* PPL Electric Exhibit

CD-5) Therefore, the unrebutted expert testimony about RF field levels in this case is that the constant background level of RF fields at Complainant's residence is far higher than the very low and short duration RF signals from the AMI meter.

Dr. Davis also responded to the Complainant's unsupported assertion that smart meters "expose people to approximately 160 times the radiation of a cell phone." (Complainant's Introduction, p. 2) In actuality, "the RF exposure from a cell phone used at the head is 260,000 times higher than the average RF levels 1 meter" away from the Company's new smart meter. (PPL Electric Statement No. 1, p. 11, lines 5-8; PPL Electric Exhibit CD-4)

The Complainant also alleged that the new AMI meter produces "high frequency transients called 'dirty electricity,'" which "creates an electromagnetic field [that] radiates from the house wiring into the house and can affect the occupants negatively." (Complainant's Introduction, p. 3) Dr. Davis testified that the new smart meter does not generate electrical power, does not produce additional harmonics over and above what is already coming into the meter, and does not interfere with the operation of house wiring. (PPL Electric Statement No. 1, p. 11, lines 16-18) To the contrary, the filter on the Complainant's current meter is not different in function than that on the meter to be installed on his property (Tr. 237), and the very low level RF signals from power supplies in modern electronics are either filtered out and/or are heavily attenuated by resistance if they try to travel on household wiring. (PPL Electric Statement No. 1, p. 11, lines 20-22)

In this proceeding, Dr. Davis was recognized as an expert in Physics, Biophysics, Chemistry, Electrical Engineering, Electromagnetics, Bioelectromagnetics, and Radio Frequency Bioelectromagnetics and Dosimetry. Based on his education, training and experience in those fields of expertise, Dr. Davis concluded overall that:

1) The levels of RF fields from the AMI meters being used by PPL Electric are extremely low (98,000 times lower than the RF exposure safety limits established by the FCC). (PPL Electric Statement No. 1, p. 14, lines 1-3)

2) These extremely low level RF fields are many times lower than the RF fields people are commonly encounter from everyday sources, including the background levels of RF fields at Complainant's residence. (PPL Electric Statement No. 1, p. 14, lines 3-4)

3) There is no reliable scientific basis in physics, biophysics, bioelectromagnetics or RF bioelectromagnetics to conclude that the very low levels of RF fields from the AMI meters being deployed by the Company can or will cause any adverse thermal or non-thermal biological effects in people. (PPL Electric Statement No. 1, p. 14, lines 5-8)

**ii. There Is No Reliable Medical Basis to Support the Complainant's Allegations that the AMI Meters Cause Adverse Health Effects**

There is no reliable medical basis to conclude that the new smart meter causes, contributes to, or exacerbates any illness, disease, or symptoms alleged by the Complainant.

Dr. Mark Israel<sup>7</sup> is an eminent physician and medical researcher. He is Professor of Medicine, Pediatrics, and Molecular and Systems Biology at the Dartmouth Medical School and the Executive Director of the Israel Cancer Research Fund in New York, an international charitable fund for medical and scientific research programs. Previously, Dr. Israel was the Director of the Cancer Center at Dartmouth Medical School and the Dartmouth Hitchcock Medical Center. As Director of the Cancer Center, Dr. Israel oversaw a major medical health care facility providing care to more than 5,000 new patients each year and he managed research

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<sup>7</sup> Dr. Israel received his undergraduate degree from Hamilton College and his medical degree from the Albert Einstein College of Medicine. He completed his medical training at Harvard Medical School. (PPL Electric Statement No. 2, p. 1, lines 16-20) Dr. Israel was certified as an expert in medicine and medical research, in particular as related to RF fields and health. (Tr. 289-90)

programs with an annual budget of more than \$250 million. (PPL Electric Statement No. 2, p. 1, lines 5-14; p. 2, line 17 to p. 3, line 2)

Prior to becoming Director of the Cancer Center, Dr. Israel treated patients, taught medical students and directed a medical research laboratory at the University of California at San Francisco (“UCSF”), where he also directed the Preuss Laboratory of Molecular Neuro-oncology. Before joining UCSF, Dr. Israel spent 14 years conducting research and treating patients at the US National Institutes of Health (“NIH”), where he was the Head of the Molecular Genetics Section of the Pediatrics Branch at the National Cancer Institute and also worked in the National Institute of Allergy and Infectious Diseases. His research at the NIH identified specific genes responsible for the cause of certain childhood cancers and contributed to improvements in the diagnosis and treatment of childhood cancer, as well as early developments in the field of cancer gene therapy. (PPL Electric Statement No. 2, p. 1, line 20 to p. 2, line 16)

Dr. Israel is board certified and licensed to practice medicine. He has conducted medical research for 40 years in a wide variety of areas, including systems biology, biochemistry, cell biology, cancer, molecular biology, and molecular genetics. He has published over 245 medical research studies in leading peer-reviewed scientific journals. Dr. Israel also has taught medicine and science for more than 30 years to medical students, graduate students, interns, residents, and practicing physicians subjects in a number of fields, including endocrinology, immunology, hematology, neurology, cardiology, biochemistry, cell biology, genetics, molecular genetics, medical oncology, and radiation oncology. (PPL Electric Statement No. 2, p. 3, line 3 to p. 4, line 2)

Dr. Israel is an elected Fellow of the American Association for the Advancement of Science, an elected member of the Association of American Physicians, and an elected member

of the American Society for Clinical Investigation, each of which is based on peer recognition of the scientific merit of his work and commitment to advancing medical science. He has been asked to provide scientific advice and direction to a number of organizations by serving on their advisory boards, such as the Science Advisory Board for the Yale Cancer Center, which he chaired for almost a decade, and the External Advisory Boards for the Children's Cancer Research Institute at the University of Texas Health Science Center, the University of Nebraska Eppley Cancer Center, the Carbone Cancer Center at the University of Wisconsin, and the National Brain Tumor Society, among others. He also served on the Board of Scientific Counselors for the NCI. During his work at the NCI, he was awarded two U.S. Public Health Service commendation medals. In 1998, he received the Farber Award, which is awarded annually by the American Association of Neurological Surgeons for excellence in cancer research. In 2014, he received the C. Everett Koop Courage Award for the pursuit of evidence-based medicine. (PPL Electric Statement No. 2, p. 5, lines 3-18)

Dr. Israel testified that claimed symptoms related to EHS are more accurately described as "Idiopathic Environmental Intolerance" ("IEI"), in which "idiopathic" means "cause unknown," rather than electromagnetic hypersensitivity. (PPL Electric Statement No. 2, p. 8, lines 8-20) (emphasis added) He noted the lack of any actual medical records supporting the Complainant's claimed IEI symptoms. The Complainant submitted one letter from a family medicine practitioner and three letters from homeopathy (alternative medicine) practitioners in California and India, who mentioned that the Complainant was diagnosed previously as electromagnetically sensitive. (Complainant's Exhibit 1) Dr. Israel testified that "[n]one of these letters provide any useful diagnostic medical information." (PPL Electric Statement No. 2, p. 16, lines 12-13) Rather, "they have the appearance of reiterating information that likely was

provided by the patient.” (PPL Electric Statement No. 2, p. 16, lines 13-14) For example, the letter from the family medicine practitioner “does not say when the diagnosis was made, who made it, what medical examination and medical criteria were involved in the diagnosis, or what course of treatment, if any, has been provided by medical professionals since the diagnosis[,] including by the author of the letter.” (PPL Electric Statement No. 2, p. 16, lines 5-8). These are all important factors related to any diagnosis, because there are no established medical criteria for the diagnosis or treatment of IEI. (PPL Electric Statement No. 2, p. 16, lines 8-9)

Dr. Israel also evaluated the scientific research on IEI and found that “[r]eliable studies dating back to at least 2002 and also recent reviews of the studies by experts and reviews by expert panels of public health authorities have found IEI and the variety of symptoms attributed to it are not caused by exposure to RF fields.” (PPL Electric Statement No. 2, p. 9, lines 7-9) For example, a systematic review of 46 studies involving 1,175 individuals who claimed IEI symptoms found that people claiming IEI symptoms from RF fields could not replicate the claimed effect under controlled laboratory conditions. (PPL Electric Statement No. 2, p. 9, lines 18-22) Another recent study found that people who claimed IEI symptoms from RF fields reported lower levels of well-being when they knew they were exposed to RF fields, but when they did not know if they were being exposed, their reports of symptoms were not associated with RF fields. (PPL Electric Statement No. 2, p. 10, lines 2-7) That study concluded that “it is IEI-EMF individuals’ belief that exposure to RF EMFs will cause harm, rather than actual exposure itself, that results in the presence of symptoms in IEI-EMF individuals.” (PPL Electric Statement No. 2, p. 10, lines 7-10)

In addition, Dr. Israel testified that the research on IEI has been evaluated by credible public health entities and expert groups, including the United Kingdom Health Protection

Agency (2012), the Royal Society of Canada (2013), the New Zealand Ministry of Health (2015), and the European Commission's Scientific Committee on Emerging and Newly Identified Health Risks (2015). Based on their reviews of the scientific research, these entities concluded there is no reliable scientific evidence that exposure to RF fields causes claimed IEI symptoms. The World Health Organization has found that "There is little scientific evidence to support the idea of electromagnetic hypersensitivity." These findings from public health entities and expert panels show that the theory of IEI caused by exposure to RF fields has not been generally accepted in the medical community. (PPL Electric Statement No. 2, p. 10, line 11 to p. 11, line 8)

Dr. Israel also evaluated whether there is a credible scientific basis for Complainant's claim that RF fields caused him to have insomnia or aggravated his insomnia. There have been a number of studies on whether sleep quality is adversely affected by RF fields from everyday sources such as cell phone and radio towers. (PPL Electric Statement No. 2, p. 11, lines 11-13) Overall, this body of scientific research has found no adverse effects on sleep quality related to exposure to RF fields from cell phones or RF communications towers. (PPL Electric Statement No. 2, p. 11, lines 13-21) Similarly, laboratory studies with human volunteers exposed to RF fields have reported no consistent adverse effects on sleep quality due to RF exposures. (PPL Electric Statement No. 2, p. 11, lines 21-23)

Dr. Israel also evaluated scientific research on RF fields and adverse health effects generally. He examined controlled animal laboratory studies, which "provide a reliable basis for determining whether RF fields have the capability to cause or contribute to adverse health effects in animals," such as cancer or adverse effects on growth, development, or reproduction. (PPL Electric Statement No. 2, p. 12, line 3 to p. 13, line 21) These well-designed and well-conducted

studies found no such adverse health effects. (PPL Electric Statement No. 2, p. 12, line 3 to p. 13, line 21) Dr. Israel further reported that the World Health Organization and a number of other public health authorities have concluded that the scientific research on RF exposures from cell phone use, which are far higher than the RF from PPL Electric's smart meters, has not shown that RF fields cause adverse health effects. (PPL Electric Statement No. 2A, p. 11, lines 8-22; PPL Electric Statement No. 2B, p. 10, line 22 to p. 11, line 13) Several U.S. state public health authorities also have investigated claims about health effects from smart meters and have concluded that there is no credible scientific evidence that RF fields from smart meters will cause or contribute to any adverse health effects. (PPL Electric Statement No. 2A, p. 12, lines 1-7; PPL Electric Statement No. 2B, p. 11, lines 14-20)

Further, Dr. Israel reviewed all of the exhibits offered by Complainant. Dr. Israel found that none of Complainant's exhibits are actual scientific studies and most appeared to be taken from activist websites. He testified that these exhibits lack scientific objectivity, do not offer a balanced assessment of the scientific research on RF fields, and do not provide scientifically reliable or useful data for reaching conclusions about RF fields and the causation of any symptom or health effect. As a medical doctor and scientific researcher, Dr. Israel would not rely on any of the documents provided by Complainant. (PPL Electric Statement No. 2, p. 17, line 6 to p. 20, line 11)

Overall, as an expert in medicine and medical research, particularly as related to RF fields and health, Dr. Israel found, based on his medical education, training and experience, and his evaluation of the scientific research, and to a reasonable degree of medical certainty, that:

1) There is no reliable medical basis to conclude that RF fields from the AMI meters being used by PPL Electric will cause or contribute to the development of illness or disease. (PPL Electric Statement No. 2, p. 21, lines 16-19)

2) There is no reliable medical basis to conclude that RF fields from the AMI meter being used by PPL Electric would cause, contribute to, or exacerbate any of the symptoms claimed by the Complainant, or any other adverse health effects. (PPL Electric Statement No. 2, p. 22, lines 4-6)

**iii. The Testimony of the Complainant's Expert Witness Should Be Rejected Entirely Because It Is Unreliable and Fatally Flawed.**

The Complainant's electrical engineering expert, Mr. Bathgate, contended the AMI meters produce high frequency transients because they have insufficient filters. (*See* Tr. 42-109) Mr. Bathgate's testimony should be rejected entirely because it is unreliable and fatally flawed.<sup>8</sup>

As shown at the evidentiary hearing, Mr. Bathgate is ignorant of the most fundamental physical science of electromagnetic fields, including RF fields. As a result, he cannot offer a credible opinion about this subject. Mr. Bathgate testified that RF fields can be both non-ionizing and ionizing. To him, ionizing means that the field will produce a heating effect. (Tr. 106) Mr. Bathgate averred that he was as confident about this opinion as he was of all of the other opinions he offered at the hearing. (Tr. 90-92) However, Dr. Davis, who is a highly qualified expert in Physics, Electromagnetics and RF Electromagnetics, explained that Mr.

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<sup>8</sup> Further, Mr. Bathgate's testimony should be rejected due to the Complainant's last-minute disclosure that he would call Mr. Bathgate as a witness. PPL Electric and the ALJ were notified that Mr. Bathgate would be testifying less than 24 hours before the hearing and only were sent Mr. Bathgate's exhibits less than 2 hours before the hearing. (Tr. 17, 19, 21-22, 24-25) All of this occurred despite the Second Prehearing Order requiring the parties to exchange their exhibits, reports, and statements to be presented at the hearing by February 15, 2018, and to mail any exhibits to the ALJ "at least three days prior to the hearing." (Second Prehearing Order, pp. 1, 3) Therefore, PPL Electric was denied a full and fair opportunity to review the exhibits and to investigate Mr. Bathgate's claims and credentials, through discovery or otherwise. Thus, it would be prejudicial and a denial of due process for any of Mr. Bathgate's testimony and exhibits to be relied upon in this proceeding.

Bathgate's opinions about the basic nature and physical behavior of electromagnetic fields were completely wrong. RF fields are always non-ionizing because they do not have sufficient energy to break chemical bonds. (Tr. 256; *see also* PPL Electric Exhibit CD1; PPL Electric Statement No. 1, p. 5, line 22 to p. 6, line 6) Dr. Davis further explained that RF fields were not ever capable of being in the ionizing portion of the electromagnetic spectrum, and could not switch back and forth as claimed by Mr. Bathgate. (Tr. 258) Dr. Davis stated that this was a fundamental and preliminary concept of RF fields that undergraduates would learn "[p]robably in the freshman year" of college or "[m]aybe even in high school." (Tr. 258) Given Mr. Bathgate's lack of knowledge about the basic science of RF fields, as well as his utter confidence in his fundamental misunderstandings, his testimony about RF fields from the AMI meters cannot be considered reliable or credible and should be given no weight.

In addition, Mr. Bathgate's claims were misleading and based on incorrect assumptions about PPL Electric's AMI meter. First, Mr. Bathgate erroneously claimed that an AMI meter, allegedly like the one the Company plans to install, produces voltage transients even when "nothing in the house [is] on," such as lights or appliances, because the meters do not have sufficient filters. (Tr. 64) However, Mr. Bathgate's exhibit states that these measurements were performed "with few appliances running except a refrigerator and a few lights on," which contradicts his testimony that the measurements were made with "nothing in the house on." (Complainant's Exhibit 27, p. 2; Tr. 64)

Second, Mr. Bathgate performed his calculations using a completely different meter—an Itron meter that is attached to his house in Michigan. (Tr. 81-83). Mr. Bathgate never established that he would get the same results or even similar results from the Company's Landis+Gyr meter.

Third, Mr. Bathgate conducted his measurements when his Itron meter had the ZigBee radio inside of it turned on, which attempts to connect with smart appliances even if such appliances are not installed. (Tr. 96-97) When the ZigBee radio is on, the meter produces additional signals. (Tr. 97) However, Mr. Bathgate failed to understand that the ZigBee radios in PPL Electric's new AMI meters are always turned off unless a customer specifically requests that the ZigBee radio be activated. (Tr. 239) Mr. Bathgate even testified that he was not aware of any AMI meters being installed without the ZigBee radio turned on. (Tr. 96)

For these reasons, Mr. Bathgate's opinions were based on completely incorrect and irrelevant assumptions, and his testimony bears no consequence in this case. Therefore, his testimony is unreliable and fatally flawed and should be rejected in its entirety.

**iv. The Complainant's Exhibits Cannot Support Any Findings of Fact**

In support his allegations that the new AMI meters cause, contribute to, or exacerbate any illnesses, the Complainant submitted and relies on a number of exhibits, such as various documents, reports, articles, excerpts of articles, lists of studies, press releases, and letters. None of these documents can support any findings of fact because they are hearsay and lack scientific and evidentiary merit.

First, the documents should not be relied upon by the ALJ because they are hearsay and are not subject to a hearsay exception. Specifically, the Complainant has presented exhibits that were not written by him and were being offered to prove the truth of the matter asserted. (*See* Complainant's Exhibits 1-3, 5-6, 8, 10, 12-18, 21-24; PPL Electric Motion in Limine ¶¶ 14, 16-19) None of the authors of these statements were presented as witnesses to authenticate the veracity of their contents. Therefore, the documents are hearsay.

Under Pennsylvania’s “Walker Rule,” it is well-established that “[h]earsay evidence, properly objected to, is not competent evidence to support a finding.” *Walker v. Unemployment Comp. Bd. of Review*, 367 A.2d 366, 370 (Pa. Cmwlth. 1976) (citations omitted). Even if hearsay evidence is “admitted without objection,” the ALJ must give the evidence “its natural probative effect and may only support a finding . . . if it is corroborated by any competent evidence in the record;” as “a finding of fact based solely on hearsay will not stand.” *Id.* at 370 (citations omitted).<sup>9</sup>

Here, PPL Electric objected to these documents because they are hearsay and not subject to a hearsay exception. (See PPL Electric Motion in Limine ¶¶ 14, 16-19; Tr. 113-87). Although these exhibits were admitted into the record,<sup>10</sup> the exhibits should not be used to support any findings of fact. (Tr. 113-87) Indeed, PPL Electric has a statutory right to cross-examine persons “as may be required for a full and true disclosure of the facts.” 66 Pa. C.S. § 332(c). Because the authors of these hearsay statements did not testify, the Company was denied this right and unable to test the veracity of their statements. It is for this reason such hearsay is generally inadmissible and should not be relied upon in this proceeding.<sup>11</sup>

Moreover, even assuming *arguendo* that the evidence was not properly objected to, the Complainant has presented no “competent evidence” to corroborate those statements. *Walker* at

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<sup>9</sup> The “Walker Rule” has been affirmed by the Pennsylvania Supreme Court. *Rox Coal Co. v. Workers’ Comp. Appeal Bd. (Snizaski)*, 570 Pa. 60, 807 A.2d 906 (2002).

<sup>10</sup> PPL Electric continues to maintain that these exhibits should not have been admitted into the record because they are hearsay and not subject to a hearsay exception.

<sup>11</sup> The Company notes that expert witnesses can rely on hearsay in forming their opinions, where such material is of a type customarily relied on by experts in their profession. See *Lower Makefield Twp. v. Lands of Dalgewicz*, 4 A.3d 1114, 1122 (Pa. Cmwlth. 2010), *affirmed*, 67 A.3d 772 (Pa. 2013); *Collins v. Cooper*, 746 A.2d 615, 618 (Pa. Super. 2000); *Primavera v. Celotex Corp.*, 608 A.2d 515, 520-21 (Pa. Super. 1992); Pa.R.E. 703. However, the Complainant is not an expert witness, and his expert witness did not rely on these materials. Moreover, although hearsay statements, such as articles, studies, and treatises, can be relied upon by expert witnesses in forming their opinions, the substance of those hearsay statements is not permitted to be entered into the record to prove the truth of the matter asserted. See *Klein v. Aronchick*, 85 A.3d 487, 503-04 (Pa. Super. 2014) (citing *Aldridge v. Edmunds*, 750 A.2d 292, 297-98 (Pa. 2000)); *Nigro v. Remington Arms Co.*, 637 A.2d 983, 993 (Pa. Super. 1993) (citations omitted).

370. As explained in more detail below, the exhibits contain many flaws and mischaracterizations and cannot be used to form a reliable opinion. Therefore, as the Commission has previously held, “[w]hether the ALJ erred by initially admitting the hearsay evidence is an issue we need not address” because “[e]ven if such evidence can be admitted, it is clear that . . . such evidence may not be given any weight in an administrative proceeding.” *Anserphone, Inc. & Elite Answering Serv. v. The Belle Tele. Co. of Pa.*, 1993 Pa. PUC LEXIS 70, at \*29-30 (Order entered April 1, 1993). Thus, the Complainant’s hearsay documents cannot support a finding of fact that the new AMI meters cause, contribute to, or exacerbate any illnesses.

Second, the exhibits completely lack scientific and evidentiary merit and should be afforded no weight. Specifically, the exhibits contain the following flaws and mischaracterizations<sup>12</sup>:

- Exhibit 1 – Letter from one medical doctor and three letters from practitioners of homeopathy (alternative medicine).
  - These are conclusory one-page letters apparently obtained specifically for use in this case. There is very similar, sometimes nearly identical language in all of the letters, which calls into question the independence and veracity of the statements.
- Exhibit 1B – National Institutes of Health discharge papers from 1981 showing a final diagnosis of “Phase lag sleep disorder”.
  - “[T]he 1981 NIH discharge summary does not mention RF fields or any form of electromagnetic fields,” nor does it “include a diagnosis of electromagnetic sensitivity or mention it in any way.” (PPL Electric Statement No. 2, p. 15, lines 5-13)
- Exhibit 1C – A document entitled “Therapeutics for Circadian Rhythm Sleep Disorders” written by Ehren R. Dodson, Ph.D., and Phyllis C. Zee, Ph.D.
  - The exhibit is an incomplete copy of unpublished manuscript and is not the actual study from a peer-reviewed scientific journal. (PPL Electric Statement No. 2, p. 17, lines 8-11)

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<sup>12</sup> PPL Electric notes that Complainant’s Exhibits 4, 7, 9, 11, 19, and 20 were not admitted into the record. (Tr. 129, 146, 153, 160-61, 179, 181)

The exhibit also does not address RF fields from the AMI meters being used by PPL Electric.

- Exhibit 2 – A copy of Mr. Schumkler’s email correspondence in September 2007 with George Lechter, CEO of Technology Alternatives Corp, about the purchase of a new computer monitor, as well as a webpage print out about the location and contact information of “Safe Technologies Corporation”.
  - The exhibit is a composite of different documents and, therefore, lacks authenticity. Moreover, at most, the exhibit only establishes that the Complainant purchased a new computer monitor, not that he suffers from any diagnosed medical condition or that his alleged symptoms are caused by RF fields.
- Exhibit 2B – Written correspondence sent by the Complainant, his wife, and a Comcast representative about an October 23, 2011 work order.
  - The exhibit is a composite of multiple different documents and, therefore, lacks authenticity. Further, at most, the exhibit only indicates that the Complainant requested copies of work orders from Comcast about the hardwire Internet installed in his home.
- Exhibit 3 – Job performance reports about the Complainant from 1987 through 1991 related to his work at the Philadelphia Commission on Human Relations.
  - The exhibit details the Complainant’s job performance several decades ago. The exhibit has nothing to do with the RF fields from the AMI meters being used by PPL Electric.
- Exhibit 5 – An excerpt from a document entitled “EMR Reduces Melatonin in People” by Dr. Neil Cherry.
  - The exhibit contains medical opinions from a non-medical source (Dr. Cherry was a meteorologist). (Tr. 131-32, 134) Indeed, Dr. Cherry’s opinions about alleged health effects from RF fields were rejected as inadmissible by the U.S. District Court in Baltimore, *Newman v. Motorola*, 218 F. Supp.2d 769 (D. Md. 2002). The exhibit also simply lists studies without providing bibliographic citations.
- Exhibit 6 – A document which lists alleged examples of “[I]egal awards, cases, laws and recognition of/for ES and EHS.”
  - The exhibit does not address RF fields from AMI meters. It also is a compilation of unsubstantiated allegations taken from media reports, legal complaints and unidentified sources. (Tr. 138-39)
- Exhibit 8 – An excerpt from a document entitled “Electromagnetic Hypersensitivity.”
  - The exhibit does not address RF fields from AMI meters. The exhibit even states that it is an incomplete portion of a longer article and, therefore, lacks authenticity and reliability.

- Exhibit 10 – A letter written by Dr. David O. Carpenter to the New York State Public Service Commission dated August 12, 2016.
  - The exhibit is based on the incorrect assumption that “while the cell phone is used only intermittently a smart meter environment is continuous”, which is directly contradicted by the evidence of Dr. Davis that the AMI meters being used by PPL Electric use RF fields for a total of only 84 seconds per/day. The exhibit also does not address the RF fields from the AMI meters being used by PPL Electric.
- Exhibit 12 – A document titled “A Coming Storm For Wireless” by Gloria Vogel.
  - The exhibit is a media story about insurance coverage in the United Kingdom. The exhibit addresses the possibility of occupational injuries to communications antenna workers, not RF fields from the AMI meters being used by PPL Electric. The exhibit is reflective of neither the practices of insurers in the United States, nor of how the insurance industry approaches AMI meters. Further, PPL Electric notes that the Complainant conceded that he has no college degrees, graduate degrees, or work experience in insurance. (Tr. 199)
- Exhibit 13 – A document titled “International EMF Scientist Appeal”.
  - The exhibit does not addresses RF fields from the AMI meters being used by PPL Electric. Moreover, the exhibit is an online petition that represents opinions by anti-EMF/RF advocates, not scientific information. It is “not a scientific document” and “does not provide scientific data that can be used to reach a reliable conclusion about RF fields and health.” (PPL Electric Statement No. 2, p. 19, lines 3-10)
- Exhibit 14 – A letter/petition to the California Public Utilities Commission (CPUC) dated January 19, 2012.
  - The exhibit is an advocacy petition sent in 2012 to the then-Chairman of the CPUC, seeking a halt to the installation of Smart Meters in California. Importantly, the exhibit contains false statements about the FCC’s RF exposure standards, which are directly contradicted by the FCC’s own statements, as shown in the direct testimony of Dr. Davis in this case. (See PPL Electric Statement No. 1, p. 8, line 11 to p. 9, line 7)
- Exhibit 15 – Comments prepared by Daniel Hirsch.
  - The exhibit does not address the RF fields from the AMI meters being used by PPL Electric. Further, the conclusions in the proposed exhibit are based on significant mistakes about RF exposures from AMI meters, as described in the direct testimony of Dr. Davis in this case. (PPL Electric Statement No. 1, p. 11, lines 4-12)
- Exhibit 16 – A document titled “BioInitiative 2012”.
  - The exhibit contains selected portions of the actual report and, therefore, lacks authenticity and reliability. Moreover, the exhibit does not address the RF fields from the AMI meters being used by PPL Electric and actually addresses health conditions other

than those alleged by the Complainant. Finally, the BioInitiative Report is an advocacy document, is not a scientific study, and has been widely criticized for its lack of scientific objectivity and reliability, as addressed in Dr. Israel's direct testimony in this case. (PPL Electric Statement No. 2, p. 19, line 11 to p. 20, line 4) As a medical doctor and medical researcher, Dr. Israel would not rely on this document to reach a medical conclusion about RF fields and health. (PPL Electric Statement No. 2, p. 20, lines 5-11)

- Exhibit 17 – A World Health Organization press release entitled, “IARC Classifies Radiofrequency Electromagnetic Fields as Possibly Carcinogenic to Humans” dated May 31, 2011.
  - The exhibit does not address RF fields from the AMI meters used by PPL Electric. As explained by Dr. Israel, the “IARC convened a group of scientists to examine whether RF fields cause cancer.” (PPL Electric Statement No. 2, p. 20, line 18). Although “[t]he evaluation of this group found that RF fields from mobile phones were ‘possibly’ carcinogenic based on what it referred to as ‘limited evidence,’ the group did not conclude that “RF fields from mobile phones were either carcinogenic or even ‘probably’ carcinogenic.” “IARC did not refer to RF fields from smart meters as being carcinogenic or possibly carcinogenic.” Further, the exhibit addresses health conditions other than those alleged by Complainant.
- Exhibit 18 – A document characterizing the results of research.
  - The exhibit does not address RF fields from AMI meters used by PPL Electric. Moreover, the exhibit addresses health conditions other than those alleged by Complainant.
- Exhibit 22 – A document entitled, “Smart Meter Opt out status in some states and municipalities,” which lists and summarizes various webpages.
  - The exhibit addresses opt-out provisions in other states and, therefore, is not relevant to the installation of AMI meters in Pennsylvania. Further, the exhibit appears to be a selectively-compiled list of statements and websites about opt-out provisions in states other than Pennsylvania.
- Exhibit 23 – An article entitled, “Judge Rules Electric Utility’s Smart Meter Opt Out Fees Violate State Law; PSREC Refuses to Reconnect” by Josh Hart dated April 16, 2015.
  - The exhibit is a media article about a lawsuit over opt-out fees in California and does not address the installation of AMI meters in Pennsylvania. Therefore, the exhibit has no relevance to whether PPL Electric’s AMI deployment violates Pennsylvania law.
- Exhibit 24 – An excerpt from the article, “Fifty Years Later: The Significance of the Nuremberg Code” by Dr. Evelyne Shuster, published in the *New England Journal of Medicine*, November 13, 1997.

- The exhibit is a selective and incomplete extract from the original and, therefore, lacks reliability and authenticity. Moreover, the Nuremberg Code, which concerns the consent of experiment subjects, has no relevance to the issues in this case.

As noted above, Dr. Israel, who was the only medical doctor and medical researcher to testify in this case, reviewed all of Complainant's exhibits and testified that they lack scientific objectivity, do not offer a balanced assessment of the scientific research on RF fields, and do not provide scientifically reliable or useful data for reaching conclusions about RF fields and the causation of any symptom or health effect. As a medical doctor and medical researcher, Dr. Israel would not rely on any of the documents provided by Complainant. (PPL Electric Statement No. 2, p. 17, line 6 to p. 20, line 11)

For these reasons, the Complainant's exhibits lack merit should be afforded no weight. Therefore, these exhibits cannot support any findings of fact in this proceeding.

Based on the foregoing, the Complainant has failed to sustain his burden of proof that PPL Electric's new AMI meter causes, contributes to, or exacerbates any disease, symptom or illness.

**b. The Complainant Has Failed to Prove that the New AMI Meter Is Unsafe and Would Cause Fires**

The Complainant also alleges that the new AMI meter is unsafe and would cause fires because, according to him, there have been other incidents where electric arcing in AMI meters have caused fires, the meter has inadequate surge protection, and the meter has not been certified by Underwriters Laboratories ("UL") (Complainant's Introduction, p. 4) Mr. Bathgate, the Complainant's sole witness, also claimed that his neighbor's Itron meter in Michigan caught on fire in May 2016. (Tr. 78, 101) The Complainant's allegations that the new AMI meter is unsafe and would cause fires lack merit for several reasons.

First, the new AMI meters actually are equipped with software and mechanisms that better alert the Company if there is an issue with overheating. Specifically, there is a heat alarm set within the meter software program, so when the temperature of the meter hits an established level, the Company is alerted of the issue. (Tr. 247) Further, PPL Electric takes 15-minute interval temperature readings from the meter, so it can track the meter's temperature and identify any current issues or problematic trends. (Tr. 247) If the Company detects an issue with the meter's temperature, PPL Electric will dispatch a technician to investigate. (Tr. 247-48) Thus, as PPL Electric's expert witness Dr. Davis stated, "the smart meters can actually help people from having a fire" because of the temperature alarms. (Tr. 283-84)

Second, PPL Electric has conducted substantial research and taken many steps to prevent fire incidents similar to the ones alleged by the Complainant.<sup>13</sup> From the Company's research, "the root cause of the vast majority" of any fires involving new meters is the customer-owned meter bases wearing out and producing loose connections between the "blade" of the meter and the "jaw" of the meter base.<sup>14</sup> (Tr. 235) Based on that research, PPL Electric has taken several steps to mitigate the risk of these worn out meter bases. The Company analyzed the materials utilized for meter bases and enhanced its inspection criteria so that its service technicians are better able to "identify loose jaws in the field." (Tr. 236) PPL Electric also ensures that the new

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<sup>13</sup> PPL Electric notes that the Complainant relies upon Complainant's Exhibit 21 as evidence that "[s]mart meters are a fire hazard because they can produce electric arcing during a power surge." (Complainant's Exhibit 21, p. 1) As explained in the Company's Motion in Limine, this document is hearsay and not subject to a hearsay exception. (PPL Electric Motion in Limine ¶¶ 14, 16-20) Moreover, the exhibit appears to be a selectively compiled list of statements and websites about alleged fire hazards. Therefore, the exhibit is unreliable and should not be used as the basis for a finding of fact in this case. See Section VI.B.2.a.iv., *supra*.

<sup>14</sup> The "blade" of the new meter fits into the "jaw" of the meter base. (Tr. 235) Over time, the jaw of the meter base could spread out too much, in which case there would be "arcing" between the blade of the new meter and the jaw of the meter base. Such arcing, depending on its severity, could increase the meter's temperature and lead to a fire. (Tr. 235)

AMI meters meet the American National Standards Institute (“ANSI”) and Institute of Electrical and Electronics Engineers (“IEEE”) requirements. (Tr. 238)

Third, the alleged meter fire cited by Mr. Bathgate is irrelevant. The purported incident involved an Itron AMI meter installed by a different electric utility, not the Landis+Gyr AMI meter that PPL Electric is installing. (Tr. 101) Nothing presented by Mr. Bathgate establishes: (1) the cause of the alleged fire on his neighbor’s meter; (2) that the Itron AMI meter has the same composition, mechanics, and software as the Landis+Gyr AMI meter; or (3) that the Michigan electric utility implemented the same mechanisms and protocols as PPL Electric to prevent any such incidents. Thus, the alleged incident bears no consequence on whether the Company’s actual AMI meter would cause a fire.

Fourth, PPL Electric’s expert witness Dr. Davis testified that the new meter is not a fire risk due to any alleged inadequate surge protection. (Tr. 283) His opinion was bolstered by PPL Electric witness Larson, who testified that the “new digital meter, as compared to the analog meter,” can better withstand damage from a surge “because of the padding materials that are utilized when building transformers.” (Tr. 245) In fact, these “padding materials are tested to withstand up to 6,000 volts.” (Tr. 245) Moreover, the surge protection on the new AMI meter is no different in function than the Complainant’s current meter. (Tr. 236-37)

Finally, the Complainant’s expert witness, Mr. Bathgate, acknowledged that the new AMI meter to be installed by PPL Electric is in fact certified by UL. (Tr. 78) As explained by Mr. Bathgate, the meter has a specific safety certification “called UL 2735.” (Tr. 78-79) Therefore, the Complainant’s claim that the new meter is not certified by UL was rebutted by his own expert witness.

For these reasons, the Complainant has failed to prove that the new AMI meter is unsafe and would cause fires.

**c. The Complainant Has Failed to Prove that the New AMI Meter Is a Privacy Risk**

The Complainant also has raised privacy issues with the new AMI meter, specifically whether the meter can tell if certain appliances are being used by a person, such as a hair dryer or TV. (Tr. 225-26) The Company's testimony demonstrated that the Complainant's privacy concerns are without merit.

PPL Electric witness Hennegan testified that he knew "for certain that the meter cannot detect" such use by a customer and that he "possess[es] the technical knowledge and qualifications to answer that with full certainty." (Tr. 225-26, 228) Moreover, as a part of its Smart Meter Plan proceeding, PPL Electric filed a detailed AMI Customer Privacy Policy, which sets forth the data PPL Electric will collect through the new smart meter, the steps the Company will take to protect the data, and the ways in which PPL Electric will use the data. (Tr. 221; PPL Electric Exhibit No. 5) Consistent with that policy, the Company will collect data on the total amount of electricity used at the premises as well as significant event information, such as outages, voltage, heat alarms, and meter tampering alerts. (Tr. 221-22; PPL Electric Exhibit No. 5, Section 1.2)

In addition, if the Complainant is concerned about the AMI meter's connection to smart appliances in his home, such functionality would require the ZigBee radio in the meter to be activated. (Tr. 94-97, 238-39) However, Mr. Larson explained that the ZigBee radio only will ever be turned on if requested by the customer. (Tr. 239) Thus, the Complainant can simply never request to turn on the ZigBee radio if he has this concern.

For these reasons, the Complainant has failed to prove that the new AMI meter is a privacy risk.

### 3. Conclusion

Based on the foregoing, the Complainant has failed to sustain his burden of proof that installing the new AMI meter would constitute a violation of the Public Utility Code or any Commission regulation or order. Accordingly, the Complaint should be denied in its entirety and with prejudice.

#### C. THE COMPLAINANT CANNOT CONTEST THE INSTALLATION OF THE AMI METER ON HIS NEIGHBOR'S PROPERTY WITHOUT VIOLATING THE NEIGHBOR'S DUE PROCESS RIGHTS

The Complainant has requested that the new AMI meter on his neighbor's property, located at 197 Strawberry Street, be removed as well. (Tr. 192) As explained previously, the new AMI meter was installed on the neighbor's property on or about August 14, 2017. For the reasons explained below, the Complainant cannot contest the installation of the new AMI meter on his neighbor's property.

The neighbor has rights and is entitled to due process before this Commission about decisions made that directly affect the meter for her account. *See Schneider v. Pa. PUC*, 479 A.2d 10, 15 (Pa. Cmwlth. 1984) (citation omitted). Due process is satisfied when a party is "afforded notice and the opportunity to appear and be heard." *Id.* Here, nothing in the record indicates that the neighbor wants the meter removed. In fact, the Complainant has not even spoken with his neighbor about the meter installed on her residence, nor does the Complainant believe that she is even aware of these issues. (Tr. 192, 212) The Complainant also conceded that he is not authorized to appear on his neighbor's behalf. (Tr. 212) Therefore, it is clear that the neighbor has not been afforded any notice or the opportunity to be heard on this matter.

Thus, the Complainant cannot, without any notice to his neighbor whatsoever, request that her AMI meter removed.

In addition, the new AMI meter provides several benefits to customers. The General Assembly and this Commission directed that the new AMI meters: (1) provide customers with direct access to and use of price and consumption information; (2) provide customers with information on their hourly consumption; (3) provide 15-minute or shorter interval data to customers; (4) monitor voltage at each meter and report data in a manner that allows an EDC to react to the information; and (5) communicate outages and restorations. *See* 66 Pa. C.S. § 2807(g); *Smart Meter Implementation Order*, p. 30. The Commission approved PPL Electric's selection of the RF Mesh technology because it possesses all of the required capabilities. *2015 Smart Meter Order*, p. 24. Moreover, Mr. Larson testified that the new smart meter is more resistant to fires and power surges. (Tr. 245, 247-48) There also are heat alarms in the new meter that will alert the Company if the meter's temperature exceeds a certain level, so that PPL Electric can dispatch a technician to investigate if there are current issues or problematic trends. (Tr. 247-48) Furthermore, the new smart meter can alert the Company if a person were trying to tamper with the meter. (Tr. 221-22) Therefore, if the neighbor's new smart meter were removed, all of these benefits would be taken away as well.

For these reasons, the Complainant cannot contest the installation of the AMI meter on his neighbor's property because it would violate the neighbor's due process rights.

**VII. CONCLUSION**

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that Administrative Law Judge Elizabeth H. Barnes recommend and the Pennsylvania Public Utility Commission deny the Formal Complaint of Alan V. Schmukler with prejudice.

Respectfully submitted,



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Date: April 27, 2018

Attorneys for PPL Electric Utilities Corporation

## Appendix A – Proposed Findings of Fact

1. On June 30, 2014, PPL Electric Utilities Corporation (“PPL Electric” or the “Company”) filed its new Smart Meter Plan intended to comply with all the requirements of Act 129 and the Pennsylvania Public Utility Commission’s (“Commission”) *Smart Meter Implementation Order*. (See PPL Electric Exhibit No. 3)

2. To meet those requirements, the Company selected Radio Frequency (“RF”) Mesh meters and metering system because the Company determined that the RF Mesh system would support the 15 capabilities required by Act 129 and the *Smart Meter Implementation Order*. (See PPL Electric Exhibit No. 3, pp. 5-6, 20-22; Tr. 232-33)

3. The RF Mesh system allows the Company to receive data from the customer’s meter wirelessly, unlike PPL Electric’s previous powerline carrier (“PLC”) system that used the customer’s actual wires. (Tr. 234)

4. The individual RF Mesh meters are used as relay points to transmit data back to PPL Electric. (Tr. 240-41)

5. Under the Smart Meter Plan, the RF Mesh meters are to be deployed between 2017 and 2019 for all of PPL Electric’s 1.4 million customers. (PPL Electric Exhibit No. 3, pp. 3, 32; Tr. 233)

6. The Company currently is in the process of deploying the RF Mesh meters for all of its 1.4 million customers pursuant to its Commission-approved Smart Meter Plan. (Tr. 232-33; PPL Electric Exhibit No. 3)

7. On July 31, 2017, PPL Electric sent Alan V. Schmukler (“Complainant”) a letter notifying him that it intended to install the new automated metering infrastructure (“AMI”)

meter, *i.e.*, the RF Mesh meter, on his property within approximately the next three weeks. (PPL Electric Exhibit No. 2)

8. The Company installed the new RF Mesh meter on his neighbor's property on or about August 14, 2017. (Tr. 13; Complainant's Introduction, p. 1)

9. The RF Mesh meter to be installed for the Complainant's residential account is the Landis+Gyr Focus AXR-SD meter. (Tr. 245)

10. The Complainant contests PPL Electric's planned installation of the new AMI meter at his property, 199 Strawberry Street, Leola, Pennsylvania. (Complainant's Introduction)

11. The Complainant generally has alleged that the new AMI meter causes adverse health effects, causes fires, and raises privacy concerns. In support of his various claims, the Complainant personally testified and presented several written exhibits. (*See* Complainant's Introduction; Complainant's Exhibits 1-3, 5-6, 8, 10, 12-18, 21-24; Tr. 109-212)

12. The Complainant contends that PPL Electric should not install the new AMI meter because he has concerns that the new meter will affect his health, including his claimed symptoms of electro-hypersensitivity ("EHS"). (Complainant's Introduction, p. 1)

13. The Complainant has submitted documents from anti-smart meter and anti-EMF websites, articles, and other documents attempting to prove a link between adverse health effects and RF fields. (*See, e.g.*, Complainant's Exhibits 5-6, 8, 10, 13-18)

14. The Complainant also has alleged that the new AMI meter produces "high frequency transients called 'dirty electricity,'" which "creates an electromagnetic field [that] radiates from the house wiring into the house and can affect the occupants negatively." (Complainant's Introduction, p. 3)

15. The Complainant also called Mr. Bathgate as an electrical engineering expert to testify that AMI meters produce high frequency transients. (Tr. 41-42, 55-74, 102)

16. Mr. Bathgate was identified less than 24 hours before the hearing, and his exhibits were only provided the morning of the hearing. (Tr. 21)

17. Mr. Bathgate performed his measurements using a different AMI meter than that being deployed by PPL Electric — an Itron meter that is attached to his house in Michigan—and conducted his measurements when his Itron meter had the ZigBee radio inside of it turned on, which attempts to connect with smart appliances even if such appliances are not installed. (Tr. 81-83, 96-97)

18. When the ZigBee radio is on, the meter produces additional signals. (Tr. 97)

19. Mr. Bathgate also testified that RF fields can be both non-ionizing and ionizing. To him, ionizing means that the field will produce a heating effect. (Tr. 106)

20. Mr. Bathgate averred that he was as confident about this opinion as he was of all of the other opinions he offered at the hearing. (Tr. 90-92)

21. Dr. Christopher Davis is a highly experienced scientific researcher and teacher in Physics, Electrical Engineering, Electromagnetics, and RF Electromagnetics. (PPL Electric Statement No. 1, p. 1, line 12 to p. 3, line 6)

22. Dr. Davis has a Ph.D. in Physics and is a full Professor with an endowed Chair at the University of Maryland, where for over 30 years he has taught Physics, Electrical Engineering, Electromagnetics, and RF Electromagnetics to undergraduate and graduate students. (PPL Electric Statement No. 1, p. 1, line 9 to p. 2, line 8)

23. In addition to his teaching, Dr. Davis is an active scientific researcher in the fields of Physics, Biophysics, Electrical Engineering, Bioelectromagnetics and RF

Bioelectromagnetics, conducting many scientific studies in these fields and publishing over 250 studies in peer-reviewed scientific journals. (PPL Electric Statement No. 1, p. 2, lines 10-19)

24. In particular, Dr. Davis has conducted a substantial amount of research on RF fields of the type produced by the AMI meters being used by the Company. (PPL Electric Statement No. 1, p. 3, lines 5-6)

25. Dr. Davis explained that RF fields are part of the lower energy, non-ionizing portion of the electromagnetic spectrum which consists of lower frequency signals that do not have enough energy to break chemical bonds in cells or DNA. (PPL Electric Statement No. 1, p. 5, line 15 to p. 6, line 6)

26. There is nothing unusual about the RF fields from the AMI meters being deployed by the Company. (PPL Electric Statement No. 1, p. 12, lines 12-13)

27. RF fields come from many sources in our everyday environments, including AM/FM radio, television broadcast, cell phones and their communication networks, portable phones, garage door openers and wifi networks. (PPL Electric Statement No. 1, p. 5, line 22 to p. 6, line 6; p. 12, lines 13-16)

28. Dr. Davis testified that the FCC has determined safe public exposure levels for RF fields from devices that transmit RF signals, such as the AMI meters. (PPL Electric Statement No. 1, p. 8, lines 14-16)

29. The FCC safe public exposure limits are based on evaluations of the body of scientific research on RF fields and were adopted in consultation with other federal agencies, including the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA). (PPL Electric Statement No. 1, p. 8, line 16 to p. 9, line 4)

30. Based on the engineering specifications for the Landis & Gyr AMI meter being deployed by the Company, Dr. Davis calculated that the levels of RF fields from the AMI meters are 98,000 times lower than the RF exposure safety limits established by the FCC. (PPL Electric Statement No. 1, p. 14, lines 1-4; *see* PPL Electric Exhibit CD2)

31. As a result, Dr. Davis found that “the RF field levels from the AMI meters being used by PPL Electric more than comply with the applicable FCC RF exposure limit.” (PPL Electric Statement No. 1, p. 9, lines 15-16)

32. Moreover, the RF signals from the AMI meter are of very short duration and will occur for only a total of 84 seconds over a 24-hour period. (PPL Electric Statement No. 1, p. 7, lines 21-23)

33. Dr. Davis also testified that there are eight television broadcast towers with a 50 mile radius of Complainant’s location. (PPL Electric Statement No. 1, p. 13, lines 8-9)

34. Based on the locations of each tower and their RF power outputs, the constant background level of RF fields at Complainant’s residence are 16.7 times higher than the RF signals from the AMI meter. (PPL Electric Statement No. 1, p. 13, lines 8-15; Tr. 260-61; *see* PPL Electric Exhibit CD-5)

35. Dr. Davis also responded to the Complainant’s assertion that smart meters “expose people to approximately 160 times the radiation of a cell phone,” (Complainant’s Introduction, p. 2) and stated that, in actuality, “the RF exposure from a cell phone used at the head is 260,000 times higher than the average RF levels 1 meter” away from the Company’s new smart meter. (PPL Electric Statement No. 1, p. 11, lines 5-8; PPL Electric Exhibit CD-4)

36. In response to the Complainant’s allegation that the new AMI meter produces high frequency transients, Dr. Davis testified that the new smart meter does not generate

electrical power, does not produce additional harmonics over and above what is already coming into the meter, and does not interfere with the operation of house wiring. (PPL Electric Statement No. 1, p. 11, lines 16-18)

37. The very low level RF signals from power supplies in modern electronics are either filtered out and/or are heavily attenuated by resistance if they try to travel on household wiring. (PPL Electric Statement No. 1, p. 11, lines 20-22)

38. Additionally, PPL Electric witness Scott Larson, who is a Senior Engineer with the Company, explained that the filter on the Complainant's current meter is not different in function than that on the meter to be installed on his property (Tr. 229-30, 237).

39. Dr. Davis, who is a highly qualified expert in Physics, Electromagnetics and RF Electromagnetics, also responded to Mr. Bathgate's assertions about RF fields and explained that Mr. Bathgate's opinions about the basic nature and physical behavior of electromagnetic fields were completely wrong. RF fields are always non-ionizing because they do not have sufficient energy to break chemical bonds. (Tr. 256; *see also* PPL Electric Exhibit CD1; PPL Electric Statement No. 1, p. 5, line 22 to p. 6, line 6)

40. Dr. Davis further explained that RF fields were not ever capable of being in the ionizing portion of the electromagnetic spectrum, and could not switch back and forth as claimed by Mr. Bathgate. (Tr. 258)

41. Dr. Davis stated that this was a fundamental and preliminary concept of RF fields that undergraduates would learn "[p]robably in the freshman year" of college or "[m]aybe even in high school." (Tr. 258)

42. There is no reliable scientific basis in physics, biophysics, bioelectromagnetics or RF bioelectromagnetics to conclude that the very low levels of RF fields from the AMI meters

being deployed by the Company can or will cause any adverse thermal or non-thermal biological effects in people. (PPL Electric Statement No. 1, p. 14, lines 5-8)

43. Dr. Mark Israel is an eminent physician and medical researcher. (PPL Electric Statement No. 2, p. 1, lines 5-14; p. 2, line 17 to p. 3, line 2)

44. Dr. Israel received his undergraduate degree from Hamilton College and his medical degree from the Albert Einstein College of Medicine, and he completed his medical training at Harvard Medical School. (PPL Electric Statement No. 2, p. 1, lines 16-20)

45. Dr. Israel is Professor of Medicine, Pediatrics, and Molecular and Systems Biology at the Dartmouth Medical School and the Executive Director of the Israel Cancer Research Fund in New York, an international charitable fund for medical and scientific research programs. (PPL Electric Statement No. 2, p. 1, lines 11-14)

46. Dr. Israel is board certified and licensed to practice medicine. (PPL Electric Statement No. 2, p. 3, lines 3-6)

47. Dr. Israel has conducted medical research for 40 years in a wide variety of areas, including systems biology, biochemistry, cell biology, cancer, molecular biology, and molecular genetics and has published over 245 medical research studies in leading peer-reviewed scientific journals. (PPL Electric Statement No. 2, p. 3, line 9 to p. 4, line 2)

48. Dr. Israel also has taught medicine and science for more than 30 years to medical students, graduate students, interns, residents, and practicing physicians subjects in a number of fields, including endocrinology, immunology, hematology, neurology, cardiology, biochemistry, cell biology, genetics, molecular genetics, medical oncology, and radiation oncology. (PPL Electric Statement No. 2, p. 3, lines 14-17)

49. Dr. Israel testified that claimed symptoms related to EHS are more accurately described as “Idiopathic Environmental Intolerance” (“IEI”), in which “idiopathic” means “cause unknown,” rather than electromagnetic hypersensitivity. (PPL Electric Statement No. 2, p. 8, lines 8-20) (emphasis added)

50. Dr. Israel noted the lack of any actual medical records supporting the Complainant’s claimed IEI symptoms. (PPL Electric Statement No. 2, p. 15, lines 1-20)

51. There are no established medical criteria for the diagnosis or treatment of IEI. (PPL Electric Statement No. 2, p. 16, lines 8-9)

52. Dr. Israel evaluated the scientific research on IEI and testified that “[r]eliable studies dating back to at least 2002 and also recent reviews of the studies by experts and reviews by expert panels of public health authorities have found IEI and the variety of symptoms attributed to it are not caused by exposure to RF fields.” (PPL Electric Statement No. 2, p. 9, lines 7-9)

53. In addition, Dr. Israel testified that the research on IEI has been evaluated by credible public health entities and expert groups, including the United Kingdom Health Protection Agency (2012), the Royal Society of Canada (2013), the New Zealand Ministry of Health (2015), and the European Commission’s Scientific Committee on Emerging and Newly Identified Health Risks (2015). Based on their reviews of the scientific research, these entities concluded there is no reliable scientific evidence that exposure to RF fields causes claimed IEI symptoms. (PPL Electric Statement No. 2, p. 10, line 11 to p. 11, line 8)

54. There have been a number of studies on whether sleep quality is adversely affected by RF fields from everyday sources such as cell phone and radio towers. Overall, this body of scientific research has found no adverse effects on sleep quality related to exposure to

RF fields from cell phones or RF communications towers. (PPL Electric Statement No. 2, p. 11, lines 11-21)

55. Dr. Israel also evaluated scientific research on RF fields and adverse health effects generally and examined controlled animal laboratory studies, which “provide a reliable basis for determining whether RF fields have the capability to cause or contribute to adverse health effects in animals,” such as cancer or adverse effects on growth, development, or reproduction. (PPL Electric Statement No. 2, p. 12, line 3 to p. 13, line 21)

56. These well-designed and well-conducted studies found no such adverse health effects. (PPL Electric Statement No. 2, p. 12, line 3 to p. 13, line 21)

57. Dr. Israel further reported that the World Health Organization and a number of other public health authorities have concluded that the scientific research on RF exposures from cell phone use, which are far higher than the RF from PPL Electric’s smart meters, has not shown that RF fields cause adverse health effects. (PPL Electric Statement No. 2A, p. 11, lines 8-22; PPL Electric Statement No. 2B, p. 10, line 22 to p. 11, line 13)

58. Several U.S. state public health authorities also have investigated claims about health effects from smart meters and have concluded that there is no credible scientific evidence that RF fields from smart meters will cause or contribute to any adverse health effects. (PPL Electric Statement No. 2A, p. 12, lines 1-7; PPL Electric Statement No. 2B, p. 11, lines 14-20)

59. Dr. Israel also reviewed all of the exhibits offered by Complainant and found that none of Complainant’s exhibits are actual scientific studies and most appeared to be taken from activist websites. (PPL Electric Statement No. 2, p. 17, line 6 to p. 20, line 4)

60. Dr. Israel testified that these exhibits lack scientific objectivity, do not offer a balanced assessment of the scientific research on RF fields, and do not provide scientifically

reliable or useful data for reaching conclusions about RF fields and the causation of any symptom or health effect. (PPL Electric Statement No. 2, p. 20, lines 8-11)

61. As a medical doctor and scientific researcher, Dr. Israel would not rely on any of the documents provided by Complainant. (PPL Electric Statement No. 2, p. 20, lines 5-8)

62. There is no reliable medical basis to conclude that RF fields from the AMI meters being used by PPL Electric will cause or contribute to the development of illness or disease. (PPL Electric Statement No. 2, p. 21, lines 16-19)

63. There is no reliable medical basis to conclude that RF fields from the AMI meter being used by PPL Electric would cause, contribute to, or exacerbate any of the symptoms claimed by the Complainant, or any other adverse health effects. (PPL Electric Statement No. 2, p. 22, lines 4-6)

64. The Complainant also has claimed that the new AMI meter is otherwise unsafe and would cause fires. (Complainant's Introduction, p. 4)

65. Further, Mr. Bathgate claimed that his neighbor's meter in Michigan caught on fire in May 2016. (Tr. 78, 101)

66. PPL Electric's new AMI meters are equipped with software and mechanisms that better alert the Company if there is an issue with overheating. Specifically, there is a heat alarm set within the meter software program, so when the temperature of the meter hits an established level, the Company is alerted of the issue. (Tr. 247)

67. PPL Electric takes 15-minute interval temperature readings from the meter, so it can track the meter's temperature and identify any current issues or problematic trends. (Tr. 247)

68. If the Company detects an issue with the meter's temperature, PPL Electric will dispatch a technician to investigate. (Tr. 247-48)

69. PPL Electric's expert witness Dr. Davis testified that "the smart meters can actually help people from having a fire" because of the temperature alarms. (Tr. 283-84)

70. PPL Electric has conducted substantial research and taken many steps to prevent fire incidents similar to the ones alleged by the Complainant. From the Company's research, "the root cause of the vast majority" of any fires involving new meters is the customer-owned meter bases wearing out and producing loose connections between the "blade" of the meter and the "jaw" of the meter base. (Tr. 235)

71. PPL Electric has taken several steps to mitigate the risk of these worn out meter bases, including analyzing the materials utilized for meter bases, enhancing its inspection criteria so that its service technicians are better able to "identify loose jaws in the field," and ensuring the new AMI meters meet the American National Standards Institute ("ANSI") and Institute of Electrical and Electronics Engineers ("IEEE") requirements (Tr. 236, 238)

72. PPL Electric's expert witness Dr. Davis testified that the new meter is not a fire risk due to any alleged inadequate surge protection. (Tr. 283)

73. PPL Electric witness Larson also testified that the "new digital meter, as compared to the analog meter," can better withstand damage from a surge "because of the padding materials that are utilized when building transformers." (Tr. 245)

74. These "padding materials are tested to withstand up to 6,000 volts." (Tr. 245)

75. The surge protection on the new AMI meter also is no different in function than the Complainant's current meter. (Tr. 236-37)

76. The new AMI meter to be installed by PPL Electric is in fact certified by UL, with a specific safety certification “called UL 2735.” (Tr. 78-79)

77. Moreover, the purported incident cited by Mr. Bathgate involved an Itron AMI meter installed by a different electric utility, not the Landis+Gyr AMI meter that PPL Electric is installing. (Tr. 101)

78. The new AMI meter to be installed by the Company is not a fire or safety hazard. (Tr. 235-36, 238, 247-48, 283-84)

79. The Complainant also has alleged that the meter can tell if certain appliances are being used by a person, such as a hair dryer or TV. (Tr. 225-26)

80. PPL Electric’s witness William Hennegan, who is the Manager of AMI Business Integration with the Company, testified that he knew “for certain that the meter cannot detect” such use by a customer and that he “possess[es] the technical knowledge and qualifications to answer that with full certainty.” (Tr. 213, 225-26, 228)

81. As a part of its Smart Meter Plan proceeding, PPL Electric filed a detailed AMI Customer Privacy Policy, which sets forth the data PPL Electric will collect through the new smart meter, the steps the Company will take to protect the data, and the ways in which PPL Electric will use the data. (Tr. 221; PPL Electric Exhibit No. 5)

82. Consistent with that policy, the Company will collect data on the amount of electricity used and significant event information, such as outages, voltage, heat alarms, and meter tampering alerts. (Tr. 221-22; PPL Electric Exhibit No. 5, Section 1.2)

83. If the Complainant is concerned about the AMI meter’s connection to smart appliances in his home, such functionality would require the ZigBee radio in the meter to be activated. (Tr. 94-97, 238-39)

84. PPL Electric witness Larson explained that the ZigBee radio only will ever be turned on if requested by the customer. (Tr. 239)

85. The Complainant has requested that the new AMI meter on his neighbor's property, located at 197 Strawberry Street, be removed as well. (Tr. 192)

86. Nothing in the record indicates that the neighbor wants the meter removed. The Complainant has not even spoken with his neighbor about the meter installed on her residence, nor does the Complainant believe that she is even aware of these issues. (Tr. 192, 212)

87. The Complainant also stated that he is not authorized to appear on his neighbor's behalf. (Tr. 212)

## Appendix B – Proposed Conclusions of Law

1. Under Section 332(a) of the Pennsylvania Public Utility Code, the proponent of a rule or order has the burden of proof. 66 Pa. C.S. § 332(a). It is well established that “[a] litigant’s burden of proof before administrative tribunals as well as before most civil proceedings is satisfied by establishing a preponderance of evidence which is substantial and legally credible.” *Samuel J. Lansberry, Inc. v. Pa. PUC*, 578 A.2d 600, 602 (Pa. Cmwlth. 1990).

2. The preponderance of evidence standard requires proof by a greater weight of the evidence. *Commonwealth v. Williams*, 557 Pa. 207, 732 A.2d 1167 (1999). This standard is satisfied by presenting evidence that makes the existence of a contested fact is more likely than its nonexistence. *Brown v. Commonwealth*, 940 A.2d 610, 614 n.14 (Pa. Cmwlth. 2008) (citation omitted).

3. A person does not sustain his or her burden of proof in an electric and magnetic field exposure case when the record evidence, “taken as a whole, leads to the ultimate finding and conclusion that the scientific studies at present are inconclusive”; rather, the person must demonstrate by a preponderance of the evidence that such exposure actually causes adverse health effects. *Letter of Notification of Phila. Elec. Co. Relative to the Reconstructing and Rebuilding of the Existing 138 kV Line to Operate as the Woodbourne-Heaton 230 kV Line in Montgomery and Bucks Cntys.*, 1992 Pa. PUC Lexis 160, at \*210-11 (June 29, 1992) (Initial Decision) (“*Woodbourne-Heaton*”).

4. In AMI meter-related matters, the Commission has held that “[t]he Complainant will have the burden of proof during the proceeding to demonstrate, by a preponderance of the evidence, that [the utility] is responsible or accountable for the problem described in the Complaint.” *Kreider v. PECO Energy Co.*, Docket No. P-2015-2495064, p. 18 (Order entered Sept. 3, 2015).

5. Section 701 of the Public Utility Code provides that “any person . . . having an interest in the subject matter . . . may complain in writing, setting forth any act or thing done or omitted to be done by any public utility in violation, or claimed violation, of any law which the commission has jurisdiction to administer, or of any regulation or order of the commission.” 66 Pa. C.S. § 701.

6. Section 1501 of the Public Utility Code states, in pertinent part, that:

Every public utility shall furnish and maintain adequate, efficient, safe, and reasonable service and facilities, and shall make all such repairs, changes, alterations, substitutions, extensions, and improvements in or to such service and facilities as shall be necessary or proper for the accommodation, convenience, and safety of its patrons, employees, and the public. Such service also shall be reasonably continuous and without unreasonable interruptions or delay. Such service and facilities shall be in conformity with the regulations and orders of the commission. Subject to the provisions of this part and the regulations or orders of the commission, every public utility may have reasonable rules and regulations governing the conditions under which it shall be required to render service. . . .

*Id.* § 1501.

7. The Commission has exclusive jurisdiction to adjudicate “issues involving the reasonableness, adequacy, and sufficiency” of a public utility’s facilities and services. *See Elkin v. Bell of Pa.*, 420 A.2d 371, 374 (Pa. 1980) (citations omitted).

8. When presented with a challenge to an AMI meter installation, the Commission has pronounced that “[t]he ALJ’s role . . . will be to determine based on the record in this particular case, whether there is sufficient evidence to support a finding that the Complainant was adversely affected by the smart meter or whether [the utility’s] use of a smart meter will constitute unsafe or unreasonable service in violation of Section 1501 under the circumstances in this case.” *Kreider v. PECO Energy Co.*, Docket No. P-2015-2495064, p. 23 (Order entered Jan. 28, 2016) (citing *Woodbourne-Heaton*, 1992 Pa. PUC Lexis 160, at \*12-13).

9. Under Pennsylvania’s “Walker Rule,” it is well-established that “[h]earsay evidence, properly objected to, is not competent evidence to support a finding.” *Walker v. Unemployment Comp. Bd. of Review*, 367 A.2d 366, 370 (Pa. Cmwlth. 1976) (citations omitted).

10. Even if hearsay evidence is “admitted without objection,” the ALJ must give the evidence “its natural probative effect and may only support a finding . . . if it is corroborated by any competent evidence in the record;” as “a finding of fact based solely on hearsay will not stand.” *Id.* at 370 (citations omitted).

11. The Complainant has failed to sustain his burden of proof that installing the new AMI meter would violate the Public Utility Code or any Commission regulation or order. *See* 66 Pa. C.S. § 332(a), 701.

12. PPL Electric is legally required to install the RF Mesh meter on the Complainant’s property by Act 129 and Commission orders. *See* 66 Pa. C.S. § 2807(f); *Smart Meter Procurement and Installation*, Docket No. M-2009-2092655, pp. 9, 14 (Order entered June 24, 2009) (“*Smart Meter Implementation Order*”).

13. Nothing in Act 129 permits a customer to “opt-out” of a smart meter installation. *See, e.g., Starr v. PECO Energy Co.*, Docket No. C-2015-2516061, p. 11 (Order Entered Sept. 1, 2016).

14. The Commission previously determined that the Company’s existing PLC meters are not compliant with Act 129 and the Commission’s *Smart Meter Implementation Order*. *See Petition of PPL Electric Utilities Corporation for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123945, p. 24 (Order entered June 24, 2010) (“*2010 Smart Meter Order*”).

15. Under the Company's Commission-approved Smart Meter Plan, PPL Electric must replace all of the PLC meters with the RF Mesh meters, which the Commission declared as meeting all of the requirements of Act 129 and the Commission's *Smart Meter Implementation Order*. See *Petition of PPL Electric Utilities Corp. for Approval of Its Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2014-2430781, p. 24 (Order Entered Sept. 3, 2015) ("2015 Smart Meter Order").

16. If the Company does not install the new RF Mesh meter on the Complainant's residence in accordance with the Commission-approved deployment schedule, PPL Electric may violate the Commission's *2010 Smart Meter Order*, *2015 Smart Meter Order*, and *Smart Meter Implementation Order*.

17. The Complainant has failed to demonstrate that the new AMI meter causes, contributes to, or exacerbates any adverse health effect.

18. The Complainant has failed to sustain his burden of proof that installing the new AMI meter would constitute unsafe or unreasonable service in violation of 66 Pa. C.S. § 1501.

19. Persons are entitled to due process before the Commission. See *Schneider v. Pa. PUC*, 479 A.2d 10, 15 (Pa. Cmwlth. 1984) (citation omitted).

20. Due process is satisfied when a party is "afforded notice and the opportunity to appear and be heard." *Id.*

21. The Complainant cannot contest the installation of the AMI meter on his neighbor's property without violating the neighbor's due process rights because the neighbor has not been afforded any notice or the opportunity to be heard on this matter.

### **Appendix C – Proposed Ordering Paragraphs**

1. That the Formal Complaint filed by Alan V. Schumker against PPL Electric Utilities Corporation at Docket No. C-2017-2621285 is hereby dismissed in its entirety with prejudice.
2. That this matter is marked closed.