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March 6, 2017

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, Second Floor
Harrisburg, PA 17120

**RE: Mary Paul v. PECO Energy Company
Docket No. C-2015-2475355**

Dear Ms. Chiavetta:

Enclosed for filing is the Main Brief of PECO Energy Company.

Very truly yours,



Ward L. Smith
Counsel for PECO Energy Company

WS/ab
Enclosure

cc: Christopher P. Pell, ALJ
Darlene D. Heep, ALJ
Certificate of Service

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Mary Paul

v.

PECO Energy Company

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Docket No. C-2015-2475355

CERTIFICATE OF SERVICE

I, Ward L. Smith, hereby certify that I have this day served a copy of the Main Brief of PECO Energy Company in the above matter upon all interested parties via e-mail

to:

Mary Paul
239 Honey Locust Drive
Avondale, PA 19311
mpaul15@verizon.net

Dated at Philadelphia, Pennsylvania, March 6, 2017



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Main Brief of PECO Energy Company

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A. Ms. Paul has the burden of proving that PECO’s AMI meter will cause her to suffer from adverse health conditions. 21

B. Ms. Paul’s testimony did not provide substantial evidence in support of her health claim. 22

C. Dr. Talmor’s testimony is not persuasive evidence in support of Ms. Paul’s health claim. 23

II. PECO presented substantial, persuasive expert testimony that demonstrates that its AMI meters will not cause, contribute to, or exacerbate Ms. Paul’s adverse health effects. 26

A. Dr. Christopher Davis is a physicist and engineer and is an expert in physics, biophysics, electrical engineering, electromagnetics and radio frequency exposure and dosimetry. 26

1. Dr. Davis demonstrated that the radiofrequency fields from PECO’s AMI meter are well below the radiofrequency exposure guidelines of the U.S. Federal Communications Commission and the International Commission on Non-Ionizing Radiation Protection. 27

2. Dr. Davis demonstrated that PECO’s legacy AMR meters, which have been in place since the early 2000s, have radiofrequency fields that are substantially higher than AMI meters. 28

3. Dr. Davis demonstrated that radiofrequency exposure from PECO’s AMI meter is far less than people experience from other sources in everyday life. 28

4. Dr. Davis and Mr. Pritchard established that PECO’s AMI meters do not create “dirty” electricity or use pulsed communication. 29

B. Dr. Mark Israel is a medical doctor and is an expert in whether there is a relationship between electromagnetic fields, and particularly radiofrequency fields, and health effects. 30

1. Dr. Israel reviewed the scientific literature on radiofrequency fields and health and concluded that there is no reliable medical basis to conclude that radiofrequency fields associated with AMI devices could cause, contribute to or aggravate any health effects. 31

C. Glenn Pritchard is an electrical engineer and an expert in the design, operation, and technology of advanced grid installations. 33

1. Mr. Pritchard testified that PECO’s AMI Landis + Gyr meters have not caused fires. 33

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Introduction

This case was remanded for an evidentiary hearing so that the Complainant, Ms. Mary Paul, could have the opportunity to present evidence regarding her claims that PECO's AMI meter will cause her to have adverse health effects, and other claims related to installation of the AMI meter. The Commission described the issues on which Ms. Paul was allowed to proceed in its March 17, 2016 Opinion and Order that remanded this matter for hearing (pp. 13-14):

The Complainant has raised some issues involving potential customer service violations. Specifically, in her Formal Complaint the Complainant stated that she did not receive reasonable notice from the Company in regard to the replacement of her electric meter, that she has experienced physical symptoms that correspond to biological effects associated with "this kind of technology," and requested that PECO provide written answers to fifteen specific questions regarding her concerns for health and safety with respect to smart meters. In her Answer to PECO's New Matter and Preliminary Objection, the Complainant asserted that she had not received any information from PECO regarding the installation of smart meters, had not received a phone call prior to PECO's attempt to install her smart meter, and was not familiar with the contractor PECO utilized to install smart meters. Answer at 2.

The Complainant has also raised specific factual averments regarding the health effects she experienced after a smart meter manufactured by Sensus was installed on her property and that she suffers from EHS symptoms. The Complainant averred that when she previously had a Sensus meter installed on her HVAC units, she began feeling sick. The Complainant stated that she asked PECO to remove the Sensus smart meter, and the Company complied. Answer at 3. The Complainant further averred in her Answer that she suffers symptoms related to EHS and, as such, she "cannot use iPhones, satellite car radios, wireless laptops, cordless phones, etc. without feeling unwell."

Based upon our review of the Complainant's allegations in this case, we conclude that the Complainant has alleged material facts relating to a potential violation under Section 1501 of the Code for unsafe and/or unreasonable service to which she can personally testify. Holding a hearing to address the Complainant's factual averments will enable us to closely evaluate her claims based on a fully developed record.

At the hearing Ms. Paul presented the testimony of herself and her treating physician with respect to health claims. For its part, PECO presented extensive testimony demonstrating that its AMI meter will not cause Ms. Paul to suffer adverse health effects. PECO presented the testimony of two eminent experts, Dr. Christopher Davis and Dr. Mark Israel. That testimony provides a preponderance of the evidence showing that PECO's AMI meter cannot cause the harm complained of by Ms. Paul.

As to Mr. Paul's other claims, the evidence demonstrates that PECO provided reasonable utility service in its program to install the AMI meter at the Paul residence.

Background and Procedural History

The Commission's March 17, 2016 Opinion and Order (pp. 2-5) contains a detailed procedural history of this proceeding through the date of that Opinion and Order. PECO adopts the Commission's discussion, and will not repeat it here.

Since March 17, 2016, the only procedural developments of consequence have been a two-day evidentiary hearing on November 15-16, 2016, and the exchange of main briefs today, March 6, 2017.

Proposed Findings of Fact

1. The Complainant is Mary Paul, a retired corporate trainer. Tr. 4, 33, 35.
2. The Respondent is PECO Energy Company. Tr. 4.
3. Complainant is currently a PECO electric customer receiving service at 239 Honey Locust Drive, Avondale, PA 19311. Tr. 4.
4. The Complainant lives in a single-family home. Complainant estimated that her home is separated from the homes on either side by approximately 10-15 feet. Tr. 6. She estimated that the AMI meters installed on her neighbors' homes are about 25 feet from her residence. Tr. 21-22.
5. Complainant's residence has an AMR installed on the front of the house. Tr. 6-7.
6. To date, PECO has not installed an AMI meter at the Complainant's home. Tr. 6, 18-19.
7. Complainant states that, prior to a technician appearing at her home on August 20, 2014, she did not receive any information from PECO regarding installation of AMI meters and was unaware of any pending installation. Tr. 8-10, 16, 25-26.
8. Ms. Paul's husband pays their PECO bills online. Tr. 9-10.
9. A few days before the hearing, Ms. Paul checked the online site where her husband pays the PECO bills, and was unable to find any information about AMI meter installation. Tr. 9-10.

10. On August 28, 2014, a Corix technician came to Ms. Paul's house to install an AMI meter. Tr. 16.

11. Ms. Paul told the Corix technician that she did not want an AMI meter installed and instructed him to leave without installing the AMI meter; the technician complied and left without installing the AMI meter. Tr. 18.

12. PECO proceeded with installation of AMI meters at other locations in Ms. Paul's subdivision at about that same time. Tr. 22.

13. Within days after PECO installed AMI meters at other residences in Ms. Paul's neighborhood, she began to suffer abdominal cramps, interrupted sleep, and intense nervousness. Tr. 22-24. She suffered similar effects when shopping in Kennett Square, which she attributes to the presence of AMI meters in town. Tr. 23. She continues to suffer similar symptoms whenever she leaves her home. Tr. 36-37.

14. Ms. Paul did not see a doctor about the symptoms that she experienced after the AMI meters were installed. Tr. 23-24.

15. By mail, Complainant received a termination notice dated March 20, 2015, stating that service would be terminated for failure to provide access to PECO's meter. Tr. 8.

16. Ms. Paul filed her complaint (on April 1, 2015) in order to stop PECO from shutting off her power. Tr. 19.

17. In her complaint, Ms. Paul asked a series of questions regarding AMI meters that she wants PECO to answer. She did not ask those questions prior to the filing of her complaint or in any manner other than stating them in her complaint. Tr. 19-20.

18. As of the hearing date, PECO continued to provide electric service to the Complainant. Tr. 19.

19. Ms. Paul believes that she has electrohypersensitivity, or “EHS.” Tr. 25-26. She discussed her belief that she has EHS with her regular physician, but he “didn’t believe me. . . . He did not believe I had it.” Tr. 54. She went to a second doctor to discuss EHS but the second doctor “wasn’t really interested.” Tr. 54. Ultimately, Dr. Talmor diagnosed her with EHS on or about July 20, 2016. Tr. 49.

20. Ms. Paul once felt ill after walking between two houses that had AMI meters installed. She attributes feeling ill to the presence of the AMI meters. Tr. 30.

21. Ms. Paul has no medical records to support her claims that her symptoms were caused by exposure to AMI meters. Tr. 36.

22. From 2002, when she moved to the area, until recently, Ms. Paul felt that she was mentally acute. Tr. 33-34. More recently, however, she feels as though she has “brain fog.” Tr. 33-34. She attributes the change to the installation of AMI meters in her neighborhood. Tr. 33-34.

23. PECO offered Ms. Paul the accommodation of moving the AMI meter to a new location at a cost of approximately \$4,000. Tr. 40, 42. The new location would have been about 40 feet from her home. Tr. 55. Ms. Paul does not believe relocation would resolve her issues and therefore she refused the offer. Tr. 40-41. Ms. Paul also testified that she refused the accommodation of moving her meter to a new location due to aesthetic concerns and because she believes that doing so would devalue her property. Tr. 41-42, 55-56.

24. The only accommodation that Ms. Paul will accept is a non-transmitting analog meter. Tr. 44-45.

25. Ms. Paul took measurements with a Cornet meter and believes that PECO’s AMR meter on her home is transmitting at a periodicity of every five minutes. Tr. 44-45.

26. Ms. Paul has not experienced any health effects from her existing AMR meter, or from the AMR meters in her neighborhood. Tr. 45-46.

27. Ms. Paul is aware that Dr. Talmor sells certain products that he claims mitigate against radiofrequency exposure such as the "Blue Egg"; she did not purchase any because they are too expensive. Tr. 51-52.

28. Ms. Paul did purchase several other mitigation products, including a "shungite" ball and a couple of devices that go on a belt. Tr. 51.

29. Ms. Paul, her husband, and her nephew all continue to use cell phones. Tr. 57-58; PECO Cross Exh. No. 2. In the six months' usage reflected in her discovery answers, Ms. Paul used her cell phone for 109 minutes. Tr. 58.

30. Dr. Hanoch Talmor is a medical doctor who has a private practice in holistic medicine in Gainesville, Florida. Tr. 67-68.

31. Dr. Talmor believes that EHS is a "real" condition and that he has treated many patients with it. Tr. 68.

32. Dr. Talmor believes that water in the body acts as a hard drive to store information that it receives from external radiofrequency fields; manmade sources of radiofrequency fields give the body misinformation "just like the corrupted files of viruses in your computer." Tr. 73-74. Dr. Talmor believes that, for the same reason, refrigerators and deep freezers are dangerous. Tr. 96-98. Even food that has been frozen and then thawed will have misinformation and is not optimal. Tr. 99.

33. All of Dr. Talmor's consultations with Ms. Paul have been by phone. Tr. 80.

34. Dr. Talmor diagnosed Ms. Paul as having EHS. Tr. 81.

35. Dr. Talmor's diagnosis of Ms. Paul as having EHS was materially based upon two reports by her: (1) that, seven years earlier, she got sick when PECO installed controllers on her air conditioners and got well when PECO took the controllers off. His understanding is that the controllers transmitted using radiofrequencies, and (2) that she got sick after PECO began to install AMI meters in her neighborhood in 2014. Tr. 103-106.

36. Although the symptoms that Ms. Paul reported to him, such as insomnia and heart palpitations, can have many causes, Dr. Talmor did not do any tests to rule out alternative causes before he rendered his diagnosis of EHS. Tr. 104-05.

37. Dr. Talmor recommends that Ms. Paul should not have any meter that transmits radiofrequency fields – either AMI or AMR – and that transmitting meters should be removed from the houses near her. Tr. 83-84.

38. Dr. Talmor is of the opinion that “pulsed” transmissions are more dangerous than non-pulsed fields. Tr. 85.

39. Dr. Talmor believes that exposure to radiofrequency transmissions at 0.1 microwatts per square meter is a safe level of exposure for most persons. Tr. 88, 100.

40. There is no place to go in America where exposure will be below 0.1 microwatts per square meter, unless you go out in a boat or in the forest. Tr. 100.

41. Dr. Talmor sells products, including the “Blue Egg,” the “Wall Protect” discs, and “shungite” pyramids and balls, that he believes mitigate the effects of exposure to radiofrequency fields. Tr. 106-111.

42. Dr. Talmor testified that, if the transmitting meters cannot be removed, relocating the meter to a distance is helpful, stating: “usually further away, the better it is.” Tr. 111.

43. Dr. Talmor is concerned about meters transmitting feedback frequencies into the grid, a phenomenon sometimes referred to as “dirty electricity.” Tr. 111, 120.

44. Brenda Eison is a Customer Service Manager for PECO, currently working with the AMI Project to install AMI meters. Tr. 198.

45. Ms. Eison is responsible for answering questions that customers may have related to AMI installation. Tr. 198.

46. If a customer refuses an AMI meter, the customer is referred to Ms. Eison for consultation. Tr. 198, 200.

47. Ms. Eison provides these customers with information related to AMI meters, including radiofrequency levels, the safety of the meter, and meter privacy. Tr. 198.

48. On May 18, 2014, PECO sent a 45-day letter to the Paul residence advising that its vendor would be in the neighborhood to install an AMI meter at the Paul home. Tr. 203-4, PECO Exh. BE-1 and BE-2.

49. On August 28 or 29, a Corix technician went to the Paul residence to install an AMI meter but was turned away by Ms. Paul. Tr. 204.

50. On September 22, 2014, PECO received a letter from Ms. Paul informing it that Ms. Paul objected to installation of an AMI meter. Tr. 204; PECO Exh. BE-3. That same day, PECO placed the account on hold for installation or termination. Tr. 207-08.

51. On September 23, 2014, PECO sent a letter confirming receipt of Ms. Paul's letter. Tr. 206-07; PECO Exh. BE-4.

52. On February 21, 2015, PECO reached out to Ms. Paul to again attempt to schedule installation of the AMI meter. Tr. 208-09; PECO Exh. BE-5.

53. PECO did not receive a reply to its February 21, 2015 letter. Tr. 209. On March 23, 2015, it therefore sent a 10-day notice of termination for failure to provide access to allow the AMI installation. Tr. 209-10, PECO Exh. BE-6.

54. On April 2, 2015, Ms. Paul called PECO to state that she had filed a formal complaint at the PUC. Tr. 210. The account was placed back on hold. Tr. 212.

55. After the filing of the formal complaint, Ms. Eison and Ms. Paul did not have further communication. Tr. 212.

56. On June 20, 2016, PECO sent a field technician to the Paul residence to determine whether meter relocation was an available option. Tr. 213-14.

57. The website that Mr. Paul uses to pay utility bills is not a PECO website and has no information regarding AMI meters. Tr. 214.

58. Information regarding AMI meters can be found on PECO's website. Tr. 214-15.

59. Glenn Pritchard is the manager of PECO's Advanced Grid Operations & Technology Group. Tr. 128.

60. The term "AMR" stands for Automatic Meter Reading. Tr. 131.

61. The AMR System, also known as the Legacy System, is the system that is used by PECO to read AMR based meters. Tr. 131, PECO Exh. GP-1.

62. PECO began installing the AMR system in 2000. Tr. 130; PECO Exh. GP-1.

63. Under the AMR system, an electric meter transmits data once every five minutes throughout the day to a device called a MicroCell Controller. Tr. 132, PECO Exh. GP-1.

64. The AMR transmission is one-way and there is no way to communicate to the meter. Tr. 132, PECO Exh. GP-1.

65. Once the customer's data is received by PECO's internal applications, the information is integrated with PECO's Meter Data Management System (MDMS), which data is then ultimately used to produce customer bills. PECO Exh. GP-1.

66. All PECO customers, including the Complainant, had an AMR meter. Tr. 133.

67. The AMR system operates at a frequency of 902 to 927 megahertz, and the power output during transmission is one watt. Tr. 132.

68. AMI stands for Advanced Metering Infrastructure. Tr. 133.

69. PECO is currently using an AMI Advanced Meter Platform to read meters. PECO Exh. GP-2.

70. AMI meters are two-way communication meters. Tr. 134.

71. The AMI meters use a component known as the “FlexNet” module to communicate with a Tower Gateway Base Station, which is a collector that PECO has typically located in substations. Tr. 133-34, PECO Exh. GP-2.

72. On average, the FlexNet module in the AMI meters transmit ten times a day, but can also be configured or “tuned” to transmit at a maximum of 96 times per day, or once every 15 minutes. Tr. 133.

73. The FlexNet modules on AMI meters in Ms. Paul’s neighborhood are configured to transmit eight times per day. Tr. 135.

74. The FlexNet modules on AMI meters transmit at a power of 2 watts for a duration of 70 milliseconds. Tr. 135.

75. PECO’s AMI meters are designed so that the FlexNet communication module transmits away from the house, not towards it. Tr. 174.

76. The FlexNet communication module, which communicates from the AMI meter to the Tower Gateway Basestation, operates at a licensed frequency of 901.1 MHz. In its service territory, PECO is the sole user of its licensed spectrum. Tr. 136-37.

77. Most other utilities have not chosen to use a licensed spectrum approach to smart meter technology. Instead, they operate in the Industrial, Scientific, and Medical (“ISM”) band, meaning that they must compete with other users to have their signals heard. Tr. 135-36.

78. PECO’s use of a licensed spectrum eliminates signal competition and allows it to transmit signals far less frequently than technologies that use the ISM band. Tr. 137.

79. PECO’s use of a licensed spectrum allows it to use a non-mesh technology. Tr. 136-37.

80. The Zigbee radio, which communicates from the AMI meter to devices in the residence, operates at 2.4 GHz. Tr. 138.

81. The Zigbee radio transmits every 30 seconds at a power of 1/10th of a watt. Tr. 138.

82. PECO's AMI meters do not transmit using pulsed or spiked fields. Tr. 139, 261-262.

83. PECO began installing the AMI system in 2010 in direct response to Pennsylvania Act 129 of 2008. Tr. 139.

84. Act 129 requires that AMI meters have functionalities that do not exist with the AMR system, including bidirectional communications, sampling energy usage every hour, and being able to transmit information into the home (which PECO has implemented through the Zigbee radio). Tr. 139-40.

85. PECO's AMI meters have been tested for compliance and comply with UL standards. Tr. 140-41.

86. PECO used Corix technicians to install AMI meters. The Corix technicians are not licensed electricians. Tr. 17, 142. However, the technicians have the appropriate level of skills and training to perform the task of meter installation. Tr. 142-43.

87. When PECO first began to install AMI meters, the question was raised as to whether a particular brand of meter was associated with fires. PECO recognized this issue, investigated, and concluded it would no longer use that brand of meter. PECO removed all such meters and replaced them with Landis + Gyr meters in 2012. Tr. 143.

88. Since the Landis + Gyr meters were installed in 2012, there have been no reports of any fires caused by the Landis + Gyr meters. Tr. 143-44, 163.

89. AMI meters do not create feedback of dirty electricity back to the grid.
Tr. 145-46.

90. In 2014, when Ms. Paul first became sick after seeing AMI meters being installed in her neighborhood, AMI meters had already been installed on a widespread basis throughout the PECO service territory; 80% of customers system-wide had AMI meters; 67% of Chester Country, and 63% of Avondale. The nearest Tower Gateway Basestation had been energized and transmitting since 2011. Tr. 147-148.

91. The devices that were placed on Ms. Paul's air conditioning units seven years ago were not radio transmitters. Her radiofrequency exposure was exactly the same while the controllers were on her air conditioners and after they were removed. Tr. 149-150.

92. The customer decides where to put the meter socket, as long as that location meets the guidelines established in PECO's Electric Service Tariff. Tr. 150-51, PECO Exh. GP-3.

93. PECO would install an AMI meter in a relocated meter socket if the Complainant chose to relocate her meter socket. Tr. 150.

94. An Advanced Meter Service Provider (AMSP) is a third party permitted by Section 14.1 of PECO's Electric Service Tariff to read its electric meters. Tr. 150, PECO Exh. GP-3.

95. AMSPs must be licensed by the Commission. PECO Exh. GP-3.

96. Currently, there are not any licensed AMSP's on PECO's system. Tr. 150.

97. When the AMR system is retired in April 2017, the AMR meters will no longer transmit usage data to PECO. Tr. 151-52, 159-161.

98. As to the questions that were posed in Ms. Paul's complaint, PECO provided on-the-record answers to all of those questions. Tr. 152-158.

99. Of all the various types of AMI systems available on the market, the Sensus system chosen by PECO has the lowest amount of radiofrequency transmissions. Tr. 173.

100. Dr. Christopher Davis is a professor of electrical and computer engineering at the University of Maryland in College Park and he studies physics, biophysics, electrical engineering, electromagnetics, radiofrequency exposure and dosimetry. Tr. 246-51.

101. Dr. Davis has studied the types of radiofrequency fields that are periodically emitted from PECO's AMR and AMI meters. Tr. 249.

102. The Federal Communications Commission (FCC) has indicated that maximum permissible exposure to radiofrequency fields emitted by a Smart Meter is 0.6 mW/cm^2 , calculated as an average exposure over time. Tr. 263-269, PECO Exh. CD-2.

103. The average exposure from PECO's AMI meters is millions of times less than the FCC maximum permissible exposure levels. Tr. 269.

104. The peak exposure from PECO's AMI meters is almost 40 times less than the FCC average-exposure standards. Tr. 270.

105. The exposure from PECO's AMI meters is also millions of times less than the guidelines published by the International Commission on Non-Ionizing Radiation Protection. Tr. 270-21; PECO Exh. CD-4.

106. In everyday life, people are exposed to radiofrequency field levels from many sources that are much higher than the radiofrequency fields associated with PECO's AMR or AMI meters. Tr. 272-76; PECO Exh. CD-5.

107. The level that Dr. Talmor designated as "safe" is 100 million times smaller than the FCC's maximum permissible exposures. Tr. 274.

108. In Dr. Davis's opinion, there is no scientific basis to support Dr. Talmor's position that safe exposure to radiofrequency fields is 100 million times less than the FCC's maximum permissible exposure. Tr. 274.

109. Fields higher than Dr. Talmor's designated safe level would be encountered everywhere, unless a person got on a boat and went far away from land. Tr. 274.

110. In the six months prior to the evidentiary hearing, Ms. Paul used her cell phone for 109 minutes. It would take over 1480 years of AMI exposure to equal the exposure that Ms. Paul received from her cell phone during those 109 minutes. Tr. 276.

111. Background exposure from UHF TV stations near Ms. Paul's home is at least 115 times greater than exposure from a PECO AMI meter. Tr. 277-278.

112. If an AMI meter was located 30 feet from Ms. Paul's house, the radiofrequency fields from that meter, measured at Ms. Paul's house, would be approximately ten times smaller than the level designated by Dr. Talmor as safe. Tr. 278.

113. Using satellite photographs, Dr. Davis determined that the distance from Ms. Paul's house to closest corner of a neighboring house is greater than 48 feet. At that distance, the radiofrequency exposure from the neighboring AMI meters is 25 times less than the level designated by Dr. Talmor as safe. Tr. 279-80.

114. As a biophysicist, Dr. Davis does not agree with Dr. Talmor's opinion that water in the body stores information that it receives from radiofrequency fields. Tr. 281.

115. Radiofrequency fields from smart meters do not interfere with metal stents that are placed in arteries around the heart; the fields just reflect off the metal. Tr. 275.

116. Radiofrequency fields from smart meters do not interfere with pacemakers. Tr. 275.

117. The AMI meter will emit 83% less radiofrequency fields than does the existing AMR meter at Ms. Paul's residence. Tr. 283; PECO Exh. CD-7.

118. Dr. Davis testified, to a reasonable degree of scientific certainty, that there is "no reliable scientific basis to conclude that these [AMI meter] exposures produces any effects whatsoever. They certainly are not harmful." Tr. 284-85.

119. Dr. Mark Israel attended the Albert Einstein College of Medicine, had an Internship and Residency at Harvard Medical School and has studied radiofrequency fields and health effects. Tr. 323-29.

120. Dr. Israel began to examine the research on electromagnetic fields, including radiofrequency fields, and health effects during his tenure at the National Cancer Institute more than more than 25 years ago. He has continued to follow the research literature on this subject since that time. Tr. 327-28.

121. Dr. Israel concluded that it is not generally accepted that exposure radiofrequency fields from AMR and AMI meters can cause, contribute to or exacerbate conditions or symptoms associated with the claim of Idiopathic Environmental Intolerance, which is also referred to as electro-hypersensitivity. Tr. 341-50, 355-56.

122. When a person reports that an exposure caused her to experience symptoms, and removal of the exposure caused the cessation of symptoms – but in fact the exposure did not change – the claimed effect is known in medicine as a “nacebo” effect. Ms. Paul’s experience with the air conditioner controllers, where her symptoms changed even though her exposure did not change, is an example of the nacebo effect. Tr. 351.

123. As a medical doctor, Dr. Isreal does not agree with Dr. Talmor’s opinion that water in the body stores information that it receives from radiofrequency fields. Tr. 352.

124. Dr. Israel concluded that the scientific literature as a whole does not provide a basis for concluding that exposure to radiofrequency fields from AMR and AMI meters would cause, contribute to, or exacerbate any of the symptoms being experienced by Ms. Paul. Tr. 353.

125. In Dr. Israel’s opinion, it is not possible to make a diagnosis the cause of Ms. Paul’s symptoms on the basis of phone calls, without doing diagnostic tests to rule out important potential causes of her reported symptoms. Tr 354-55.

126. Dr. Israel’s overall medical opinion, which he holds to a reasonable degree of medical certainty, is that there is no scientific or medical basis on which to conclude that exposure to PECO’s AMR meters or AMI meters could cause, contribute to, or exacerbate any adverse health effects. Tr. 358.

Summary of Argument

As the Complainant, Ms. Paul has the burden of proving her claim that PECO's AMI will cause her to have adverse health effects. She did not meet that burden. The testimony from her and her treating physician did not support her claims. Her own testimony established that she believes that the AMI will harm her, but did not present substantial evidence in support of that belief. PECO, however, presented expert testimony that demonstrates:

- **Radiofrequency fields from PECO's AMI meters are millions of times lower than the FCC's Maximum Permissible Exposure Limit (and also to international exposure guidelines)**
- **Radiofrequency fields from the new AMI meters are substantially less than the radiofrequency fields associated with the AMR meter that has been in place at Ms. Paul's residence for many years**
- **Radiofrequency fields from the new AMI meters are substantially less than those regularly encountered in everyday life**
- **The scientific literature does not provide a reliable medical basis to conclude that radiofrequency fields associated with AMI meters could cause, contribute to, or aggravate *any* health effects or conditions, including those being experienced by Ms. Paul**

PECO' tariff allows a customer to choose the location of their meter board and socket; this provides a reasonable alternative for meter relocation. Ms. Paul rejected this alternative, in part because it would devalue her property. PECO also has a tariff provision that allows third party Advanced Meter Service Providers to offer competitive metering services, although none have currently obtained Commission licenses to do so.

Numerous other state utility commissions have reviewed the science on smart meters and health and concluded that AMI meters are safe and their use in the provision of utility service is reasonable.

Given the above, the use of AMI meters constitutes “reasonable utility service” for purposes of 66 Pa. C.S. §1501.

PECO provided appropriate notice before attempting to install the AMI meter, and then acted appropriately once Ms. Paul stated that she did not want an AMI meter installed.

The questions that Ms. Paul posed were first posed in her Complaint, and this hearing was thus the first opportunity for PECO to answer those questions. PECO provided on-the-record answers to all of the questions raised by Ms. Paul.

The Corix installers were properly trained.

Argument

I. Ms. Paul did not meet her burden of proving, by a preponderance of the evidence, that PECO's AMI meter will cause her to suffer any adverse health conditions.

A. Ms. Paul has the burden of proving that PECO's AMI meter will cause her to suffer from adverse health conditions.

It is axiomatic in all Commission formal complaint proceedings that the Complainant has the burden of proof. *Samuel J. Lansberry, Inc. v. Pa. PUC*, 578 A.2d 600 (Pa. Cmwlth. 1990), *alloc. denied*, 529 Pa. 654, 602 A.2d 863 (1992).

In the seminal Commission case allowing an AMI/health hearing – *Kreider v PECO* – the Commission made clear that this general rule applies to AMI/health proceedings, stating (Jan. 28, 2016 Order, pp. 21-23, emphasis added) that:

Holding a hearing in this case, to address Ms. Kreider's factual averments regarding the specific health effects she experienced after the smart meter was installed outside of her bedroom, will enable us to closely evaluate these claims based on a fully developed evidentiary record.

[A]s we expressed in the *September 2015 Order*, while we find that the Complainant should have the opportunity to be heard on her averments *regarding the "deleterious health symptoms" related to the smart meter, the Complainant will have the burden of proof during the proceeding to demonstrate, by a preponderance of the evidence, that PECO is responsible or accountable for the problem described in the Complaint.* 66 Pa. C.S. § 332(a); *Samuel J. Lansberry, Inc. v. Pa. PUC*, 578 A.2d 600 (Pa. Cmwlth. 1990), *alloc. denied*, 529 Pa. 654, 602 A.2d 863 (1992). *In order to carry this burden of proof, the Complainant may be required to present evidence in the form of medical documentation and/or expert testimony.* The ALJ's role in the proceeding 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 PECO's use of a smart meter to measure this Complainant's usage will constitute unsafe or unreasonable service in violation of Section 1501 under the circumstances in this case. (emphasis added).

In its March 17, 2016 Opinion and Order remanding the *Paul* complaint for hearing (p.15), the Commission established the same rule for the instant proceeding, stating: “The Complainant will have the burden of proof during the proceeding to demonstrate, by a preponderance of the evidence, that PECO is responsible or accountable for the problems described in the Complaint.”

In sum, Ms. Paul has the burden of proof in this proceeding.

PECO understands that Ms. Paul sincerely believes that, if an AMI meter is installed at her residence, it will cause her to suffer adverse health effects. Her belief, however, is not the issue under examination in this remand. She must prove more than her own belief - she must prove, by a preponderance of the evidence, that PECO’s AMI meter will cause the health effects of which she complains.

B. Ms. Paul’s testimony did not provide substantial evidence in support of her health claim.

Ms. Paul presented the testimony of her current treating physician, Dr. Hanoch Talmor. His testimony will be addressed in the next section of this brief.

First focusing solely on Ms. Paul’s testimony with respect to illness and health and her claim of electrohypersensitivity or EHS, we find the following information:

- She became ill after PECO began to install AMI meters in her neighborhood, and has suffered numerous symptoms since that time that she believes are caused by EHS.

Tr. 21-23, 34-40.

- She did not present any medical records regarding her claim. Tr. 36.

- The first doctor with whom she consulted regarding EHS “didn’t believe me . . . He did not believe I had it.” Tr. 54.
- The second doctor with whom she consulted regarding EHS “wasn’t really interested.” Tr. 54.
- When asked how she determined that she suffers from EHS, she stated: “Just doing research, Your Honor. I mean, I found a lot of research from scientists all over the world and they were talking about this” Tr. 26.

PECO respectfully submits that it is not enough simply to say that Ms. Paul got sick about the same time that PECO began to install AMI meters in her neighborhood, and that is the primary import of Ms. Paul’s testimony. This testimony, taken as a whole, does not constitute substantial evidence that PECO’s AMI meter will cause harm to Ms. Paul. It is obvious that Ms. Paul sincerely believes that her health will be harmed by an AMI – but her subjective belief is not proof. Her testimony, even if taken as true and given full weight, only establishes that *she believes* that the AMI meter will cause her harm. That is simply insufficient evidence for the Commission to conclude that the AMI meter in fact *will* cause her harm.

C. Dr. Talmor’s testimony is not persuasive evidence in support of Ms. Paul’s health claim.

Dr. Talmor is a holistic physician who takes a decidedly non-mainstream approach. Dr. Talmor believes that water in the body acts as a hard drive to store information that it receives from external radiofrequency fields; manmade sources of radiofrequency fields give the body misinformation “just like the corrupted files of viruses in your computer.” Tr. 73-74. Dr. Talmor believes that, for the same reason, refrigerators and deep freezes are dangerous. Tr. 96-

98. Even food that has been frozen and then thawed will have misinformation and is not optimal. Tr. 99.

Both Dr. Davis (a biophysicist) and Dr. Israel (a medical doctor) stated that is not a plausible way of viewing human physiology. Tr. 281, 352.

Dr. Talmor diagnosed Ms. Paul with electrohypersensitivity, or EHS. Tr. 81. He did so on the basis of telephone conversations, without ever having performed any diagnostic tests to rule out other potential causes of her symptoms. Tr. 80, 103-05. According to Dr. Israel, in the absence of such diagnostic tests, one cannot reach a valid conclusion regarding the cause of the symptoms. Tr. 354-55.

Moreover, Dr. Talmor primarily based his EHS diagnosis on two events that, on closer examination, do not logically support that diagnosis. First, he was partially convinced that Ms. Paul has EHS because, seven years ago, devices were placed on Ms. Paul's air conditioners that she believed were radio transmitters -- she developed EHS symptoms (brain fog, etc.) when the devices were installed, and the symptoms went away after the devices were removed. This was the first step in convincing Dr. Talmor that Ms. Paul has EHS. Tr. 103-06.

Mr. Pritchard established, however, that the air conditioner devices *were not radio transmitters*. Ms. Paul's level of radiofrequency exposure was the same whether the devices were in place, or not! Tr. 149-50. Dr. Israel explained that this phenomenon is known as the "nacebo" effect, and it occurs when a person's symptoms change when they believe that their exposure is changing, even when the exposure is not changing. Tr. 351. In the case of the air conditioner devices, Ms. Paul cannot have been experiencing EHS, because the devices did not

transmit radiofrequency fields and the fields were the same with the devices installed and removed. This does not support a diagnosis of EHS.

The second event was quite similar – Ms. Paul began to get symptoms after PECO began installing AMI meters in her neighborhood. But she had undoubtedly been exposed to PECO AMI meters well before the AMI deployment in her neighborhood. In 2014, when Ms. Paul first became sick after seeing AMI meters being installed in her neighborhood, AMI meters had already been installed on a widespread basis throughout the PECO service territory; 80% of customers system-wide had AMI meters, as did 67% of Chester County and 63% of Avondale. The nearest Tower Gateway Basestation had been energized and transmitting since 2011. Tr. 147-148. It is not plausible to believe that Ms. Paul lived in and travelled through the service territory without being exposed to AMI meters prior to 2014. If AMI meters trigger EHS, as Dr. Talmor claims, it would have been triggered long before 2014.

As with the air conditioners, it was not the AMI meters that made Ms. Paul sick. When she saw AMI meters being installed in her immediate neighborhood, her belief that she has EHS may have made her sick, or she may have gotten her symptoms due to some unrelated cause – but the sequence of events, with widespread AMI deployment years before she experienced symptoms, does not support Dr. Talmor’s conclusion that her illness was caused by the installation of meters in her neighborhood.

This conclusion is underscored by the fact that Ms. Paul, and Dr. Talmor, are specifically claiming that she was made ill by the AMI meters that were installed at her neighbor’s homes. Dr. Davis demonstrated that those meters were over 45 feet from her house, and at that distance, the radiofrequency exposure from the AMI meters is well below a level that *even Dr. Talmor*

considers to be safe. Tr. 278. It is simply not plausible to believe that her ongoing exposure to fields from many sources, including exposure to AMI meters installed throughout the service territory for several years, did not trigger EHS – but the very low fields from her neighbors AMI meters did trigger EHS.

In short, the two events that convinced Dr. Talmor that Ms. Paul has EHS that is triggered by PECO AMI meters do not, on closer examination, support that conclusion.

II. PECO presented substantial, persuasive expert testimony that demonstrates that its AMI meters will not cause, contribute to, or exacerbate Ms. Paul's adverse health effects.

As noted above, the Commission has already ruled in this proceeding that Ms. Paul has the burden of proof. When the limited testimony of Ms. Paul and Dr. Talmor is viewed in the context of the evidence adduced by PECO, it is absolutely clear that Ms. Paul failed to demonstrate, by a preponderance of the evidence, that PECO's AMI meter will cause, contribute to, or exacerbate any adverse health effects.

On these issues, PECO sponsored the testimony of two eminent scientists – Dr. Christopher Davis, and Dr. Mark Israel – and of a PECO engineer with expertise in the design and operation of the advanced meter system, Mr. Glenn Pritchard.

A. Dr. Christopher Davis is a physicist and engineer and is an expert in physics, biophysics, electrical engineering, electromagnetics and radio frequency exposure and dosimetry.

Dr. Christopher Davis is a Professor of Electrical and Computer Engineering at the University of Maryland. He has a PhD in physics from the University of Manchester (England). He regularly teaches electromagnetics, including issues to do with radiofrequency waves. He

has conducted research on electromagnetics, including radio frequency phenomena and devices, and has published hundreds of papers and presentations presenting the results of his research. He has been elected as a fellow of the Institute of Electrical & Electronics Engineers (“IEEE”), and as a fellow of the Institute of Physics. In his work with IEEE, he served as a member of the Committee on Man and Radiation (“COMAR”), and was chair of the COMAR subcommittee on radio frequency fields. He regularly acts as a peer reviewer for journals on issues related to electromagnetics. He has served as a consultant on radiofrequency fields to the United States Institutes of Health, the U.S. Food and Drug Administration, and United Kingdom Health Protection Agency. At the hearing, he was recognized, without objection, as an expert in physics, biophysics, electrical engineering, electromagnetics and radiofrequency exposure and dosimetry. Tr. 246-251.

- 1. Dr. Davis demonstrated that the radiofrequency fields from PECO’s AMI meter are well below the radiofrequency exposure guidelines of the U.S. Federal Communications Commission and the International Commission on Non-Ionizing Radiation Protection.**

Dr. Davis testified that the Federal Communications Commission (“FCC”) has established a “Maximum Permissible Exposure,” or “MPE,” for radiofrequency fields from AMI meters. The limit is 0.6 mW/cm^2 , or “milliwatts per square centimeter.” The FCC standard was set on the following basis: there is one generally accepted mechanism by which radiofrequency fields can cause harm to humans – by being high enough to heat tissues. The FCC determined the lowest level of radiofrequency exposure at which animals have been observed to detect that they are feeling a little bit warm in a radiofrequency field. The FCC then set the radiofrequency exposure standard at a level 50 times below that thermal threshold. In establishing and maintaining these standards, the FCC consults closely with the Food and Drug Administration,

the Occupational Safety and Health Administration, and the National Institutes of Occupational Safety and Health. Tr. 263-269, PECO Exh. CD-2.

Dr. Davis testified that the average exposure from an AMI meter is many millions of times less, compared to the FCC standards. Tr. 269. Even at *peak* exposure, the radiofrequency fields from an AMI meter are nearly 40 times smaller than the FCC *average-exposure* standards. Tr. 270.

Dr. Davis also testified that, internationally, the radiofrequency exposure guideline are set at levels somewhat lower than the FCC Maximum Permissible Exposure levels. These guidelines were issued by the International Committee on Non-Ionizing Radiation Protection, or "ICNIRP." Dr. Davis testified that radiofrequency exposure from an average PECO AMI meter are millions of times smaller than allowed under the international standards. Tr. 270-71; PECO Exh. CD-4.

- 2. Dr. Davis demonstrated that PECO's legacy AMR meters, which have been in place since the early 2000s, have radiofrequency fields that are substantially higher than AMI meters.**

PECO's existing meter system, which uses AMR meters, also communicates using radiofrequency transmissions. Dr. Davis compared the radiofrequency exposure from the existing AMR meters to the radiofrequency exposure from the new AMI meters. He concluded that the AMI meter will provide 83% less radiofrequency exposure than the AMR meter that is currently installed at the Paul residence. Tr. 283; PECO Exh. CD-7.

- 3. Dr. Davis demonstrated that radiofrequency exposure from PECO's AMI meter is far less than people experience from other sources in everyday life.**

Dr. Davis also compared the radiofrequency exposures from PECO's AMI meters to the radiofrequency exposures that people experience in their everyday life. Allowable leakage from a microwave oven ($5\text{mW}/\text{cm}^2$) are nearly 300,000 times the exposure from a PECO AMI meter. Exposure when using a cell phone is millions of times higher than from an AMI meter. Typical exposure from standing 30 feet away from someone else using a cell phone results in exposure that is 5,700 times greater than from an AMI meter. Television broadcasters continue to broadcast using radiofrequency fields, and at Ms. Paul's home, the background radiofrequency fields from UHF television broadcasting are 115 times larger than the average exposure from an AMI meter. Although Ms. Paul has reduced her cell phone usage to only about 109 minutes over the six months preceding hearing, her usage over the last six months exposed her to more radiofrequency fields than she will be exposed to from an AMI meter in over 1480 years. Tr. 272-78, PECO Exh. CD-5.

Based on all of his testimony, Dr. Davis concluded, to a reasonable degree of scientific certainty, that there is "no reliable scientific basis to conclude that these [AMI meter] exposures produces any effects whatsoever. They certainly are not harmful." Tr. 284-85.

4. Dr. Davis and Mr. Pritchard established that PECO's AMI meters do not create "dirty" electricity or use pulsed communication.

Dr. Talmor expressed concern that PECO's AMI meters will create "dirty" electricity. He expressed a similar concern that the system uses "pulses" to communicate.

Both Dr. Davis and Mr. Pritchard¹ addressed these concerns. They explained that PECO's AMI meters will not create "dirty" electricity, nor do they use pulsed transmissions. Tr. 139, 145-46, 261-62.

¹ Mr. Pritchard's qualifications are discussed in a later section of this Brief.

B. Dr. Mark Israel is a medical doctor and is an expert in whether there is a relationship between electromagnetic fields, and particularly radiofrequency fields, and health effects.

Dr. Mark Israel is a medical doctor who was educated at Albert Einstein College of Medicine and trained at Harvard Medical School. He is licensed to practice medicine and treat patients. He has taught medical students, interns, and medical residents for more than 25 years. He has worked over the years at the National Institutes of Health (at both the National Institute of Allergy and Infectious Disease and the Molecular Genetics Section of the National Cancer Institute) and at the University of California Medical School in San Francisco. Tr. 323-29.

He has held positions as Professor of Genetics and Pediatrics at Dartmouth Medical School. He also has been the Director of the Dartmouth Cancer Center, teaches medical school at Dartmouth, has a research laboratory at Dartmouth, and has been the chief administrator of the cancer center. He has published more than 200 scientific papers reporting the results of his research. Dr. Israel is an elected member of the American Association for the Advancement of Science and American Society of Clinical Investigation. He has received the C. Everett Koop Medal of Courage for work in evidence-based medicine, and has been awarded the United States Public Health Service Commendation Medal. Tr. 323-39.

He first became interested in studies regarding exposure to electromagnetic fields and health more than 25 years ago when, as a practicing pediatric oncologist, parents raised questions regarding exposure of their children to electromagnetic fields from power lines. He has remained interested in, and followed, the field since that time. Tr. 327-28.

Dr. Israel was recognized, over Ms. Paul's objection, as an expert in the fields of medicine and medical research, including cancer, and the possible health effects of electromagnetic fields including power frequency fields and radiofrequency fields. Tr. 334.

- 1. Dr. Israel reviewed the scientific literature on radiofrequency fields and health and concluded that there is no reliable medical basis to conclude that radiofrequency fields associated with AMI devices could cause, contribute to or aggravate any health effects.**

Dr. Israel stated that he conducted a medical evaluation of whether radiofrequency fields cause, contribute to, or could exacerbate the conditions that Ms. Paul identified in this case. Dr. Israel conducted that evaluation in the same manner as he would routinely do an evaluation in his medical practice – that is, he searched databases to identify the relevant studies and then examined those studies; and also considered reviews of the research by public health agencies. In doing that review, he considered both the studies that showed an effect and the studies that did not show an effect, because a reliable medical evaluation requires review of all the studies. He also identified and reviewed reports by various public health agencies, primarily to determine whether he had missed any key research and to determine whether there a consensus opinion that contradicted his own views. Tr. 334-41.

His review included studies that have much higher exposure than one would expect from smart meters because if one does not see a response at a high exposure, one would not expect to see it at a lower exposure, which is known as dose-response. He reviewed epidemiological studies (reviews of human populations), cellular or “in vitro” studies, and animal or “in vivo” studies. He reviewed the studies both for effects and consistency of reported effects, because it is important that an effect be reproducible in multiple studies in order to accept its validity. Tr. 336-41.

Dr. Israel also reviewed the research on claims of electromagnetic hypersensitivity (“EHS”), which is also known as “Idiopathic Environmental Intolerance” (“IEI”). Tr. 341-48. He reviewed studies known as “provocation” studies, in which a subject is asked to determine, in

a controlled laboratory setting, whether they are being exposed to radiofrequency fields – and researchers consistently find that the subjects cannot determine whether they are in a radiofrequency field, or not. He then reviewed the findings of numerous public health agencies, including the World Health Organization, the United Kingdom Health Protection Agency, the Royal Society of Canada, the New Zealand Ministry of Health, and the European Community’s Scientific Committee on Emerging and Newly Identified Health Risks, all of which concluded that exposure to radiofrequency fields does not cause EHS or IEI. Tr. 348-50. Based on this review, he concluded that it is not generally accepted that exposure radiofrequency fields from AMR and AMI meters can cause, contribute to or exacerbate conditions or symptoms associated with the claim of Idiopathic Environmental Intolerance, which is also referred to as electro-hypersensitivity or EHS. Tr. 341-50, 355-56.

Dr. Israel then briefly reviewed reports from various public health agencies, all of which concluded that radiofrequency fields from smart meters do not cause, contribute to, or exacerbate adverse health effects, including reports by the Arizona Department of Health, the Maine Center for Disease Control, the North Carolina Department of Health and Human Services, the Vermont Department of Health, the World Health Organization, the Royal Society of Canada Expert Panel, the Independent Advisory Group of the United Kingdom Health Protection Agency, the Norwegian Institute of Public Health, and the New Zealand Ministry of Health. Tr. 356-58.

Based on his overall review, including both the public health agency publications and the research on specific health outcomes, Dr. Israel stated his overall opinion, which he holds to a reasonable degree of medical certainty, that there is no scientific or medical basis on which to conclude that exposure to PECO’s AMR meters or AMI meters could cause, contribute to, or exacerbate any adverse health effects. Tr. 358.

C. Glenn Pritchard is an electrical engineer and an expert in the design, operation, and technology of advanced grid installations.

Glenn Pritchard is PECO's Manager of Advanced Grid Operations and Technology Group. Before that he was the principal engineer of PECO's Smart Grid Project. For the past eight years, he has focused on AMI technology, and he selected the technology that was ultimately deployed by PECO. He has a degree in electrical engineering, and is a licensed professional engineer. He has been invited to make presentations about AMI meters by the Institute of Electrical & Electronics Engineers, the Edison Electric Institute, and the Electric Power Research Institute. He has spoken about AMI meters on behalf of the United States Trade & Development Agency, giving invited presentations in South Africa, Vietnam, and Turkey, amongst others. He was recognized, without objection, as an expert in the design, operation, and technology of advanced grid installations. Tr. 128-130.

1. Mr. Pritchard testified that PECO's AMI Landis + Gyr meters have not caused fires.

Ms. Paul expressed concern that she had read reports that AMI meters had caused fires, and expressed concern that this would happen at her home. This was addressed by Mr. Pritchard. He stated that when PECO first began to install AMI meters, the question was raised as to whether a particular brand of meter was associated with fires. PECO recognized this issue, investigated, and concluded that it would no longer use that brand of meters. PECO removed all such meters and replaced them with Landis + Gyr meters in 2012. There have been no reports of fires caused by the Landis + Gyr meters. Tr. 143

Mr. Pritchard also described the method that PECO used to ensure that its AMI meters comply with Underwriters' Laboratory standards. Tr.140-41.

III. PECO offers its customers, including Ms. Paul, reasonable alternatives regarding AMI meter installation.

In remanding these AMI/health cases for hearings, the Commission has raised the question of whether PECO can offer some accommodation or alternative to customers, such as Ms. Paul, who have concerns about AMI meters. In its January 28, 2016 *Kreider* Order, the Commission elaborated on the kinds of accommodations or alternatives that might be possible, stating (p. 23) that: "It may be possible, for example, for the Respondent to install the smart meter in a different location other than outside of the Complainant's bedroom or to use a different type of smart meter at this Complainant's home."

As to installation of the smart meter in a different location, Mr. Pritchard testified that under PECO's Tariff, Rules 3.2 and 3.4, PECO Exh. GP-3, Tr. 150-51, the customer has the option of relocating the meter to a different location. This is because, while PECO chooses the type of meter, the customer chooses the location of the meter board and socket. Tr. 150, PECO Exh. GP-3. If the customer would like a different location for the AMI meter, they can hire an electrician to move the meter board/socket to a new location on their property. This will, in some situations, require work on the PECO system as well to extend its conductors to the new meter board location. PECO would view such changes to its system to be "for the accommodation of the customer" and thus, under PECO's Tariff Rule 6.2, the customer would be responsible for the cost of the changes to the PECO system. But those changes are all within the control of the customer and, once they are made, PECO would install the AMI meter at the new, customer-chosen, location.

Prior to hearing, PECO sent a field technician to the Paul property to review this option, and identified a new location approximately 40 feet from the home where the meter could be relocated. Tr. 55. Ms. Paul rejected this option, in material part because she believes that it would devalue her property. Tr. Tr. 41-42, 55-56.

PECO notes that the identified location – 40 feet from the home – would result in fields below the levels that even Dr. Talmor considers to be safe. Tr. 279-80.

PECO notes that this option remains open and, if Ms. Paul wishes to explore this option, PECO will work with her to relocate the meter.

As to installing a “different type of smart meter,” PECO’s Tariff has a provision that allows third parties to come onto its system and provide such technology, on a competitive basis. Rule 14.1 allows for an Advanced Meter Services Provider (“AMSP”) to provide Advanced Metering Services, which presumably may, in the future, include “different types of smart meters.” Tr. 150, PECO Exh. GP-3. Currently, no AMSPs are licensed by the Commission to do business. Tr. 150. However, if the market develops and makes such meters available, then PECO’s Tariff already contains a provision that allows for such meters to be deployed, subject to the third party being licensed by the Commission, the meters meeting the requirements of Act 129, and the AMSP’s services being properly integrated into PECO’s computer systems.

At the end of the day, however, it is clear that the only accommodation that will satisfy Ms. Paul is to not have a smart meter at all. And that option is not available. As Your Honors wrote in your April 5, 2016 *Order Granting in Part and Denying in Part Respondent’s Preliminary Objections in Tucker v. PECO*, C-2015-2515592 (p. 5):

Relief sought by the [Complainants] includes an “opt out” of installation of a smart meter. The Commission has stated that there is no provision in the Code, the Commission’s Regulations or

Orders that allow a PECO customer to “opt out” of smart meter installation.

In sum, PECO has offered reasonable alternatives for location and alternative providers of metering technology.

IV. State public utility commissions that have examined whether AMI meters cause or contribute to health effects have concluded that AMI meters are safe and that their use is reasonable.

This is one of a series of seminal cases in Pennsylvania that allow an evidentiary examination of whether radio frequency fields from AMI meters cause or contribute to adverse health effects. PECO notes, however, that there have been numerous evidentiary investigations into that or similar issues conducted by state utility commissions in the United States. Those other state commission investigations variously concluded that radiofrequency fields from smart meters fall well under established guidelines, are not a threat to human health, and do not warrant additional state utility commission regulation – in other words, that the use of such meters is reasonable. Specifically, PECO is aware of the following investigations and conclusions from other state commissions:

- **California Public Utilities Commission, Application of EMF Safety Network for Modification of D.06-07-027 and D.09-03-026, December 6, 2010: “In summary, the RF emissions produced by Smart Meters is extremely small in comparison to the RF emissions from many other commonly used devices and far below emission standards set by the FCC, which licenses or certifies the Smart Meters used by PG&E. Since the Commission generally does not delve into technical matters which fall within the expertise of another agency, in this case we defer to the FCC, which possesses extensive expertise on its staff for evaluating and licensing or certifying Smart Meter devices that operate via the use of wireless technology.”**
- **District of Columbia Public Service Commission, Investigation Into PEPCO's Smart Meters. September 20, 2013: “... the Commission has found no credible,**

scientific evidence to show that the level of RF emissions from the Pepco smart meters is a threat to human health."

- **Florida Public Service Commission, Smart Meter Briefing Sheet (undated):** "The Commission concluded that health standards for smart meter RF emissions are set by the FCC, that smart meters operate within established authorized standards, and that the State would not implement any additional standards for smart meter RF emissions.
- **Maine Public Utilities Commission, Request for Commission Investigation into Smart Meters and Smart Meter Opt-Out, Docket No. 2011-00262, March 25, 2014:** "For the reasons discussed in this Order, we conclude that Advanced Metering Infrastructure (AMI), including the use of "smart meters," as implemented and operated by Central Maine Power Company (CMP or the Company), is a safe, reasonable, and adequate utility service as required by statute." [The reasons discussed in the Order include the following.]
 - i. "There are no credible, peer-reviewed scientific studies in the record that demonstrate, or even purport to demonstrate, a direct human health risk specifically from smart meter RF emissions;"
 - ii. "CMP's installation and operation of its smart meter system is consistent with federal and state energy policy and is a generally accepted utility practice throughout the country."
- **Maine Public Utilities Commission, Request for Investigation Into Smart Meters and Smart Meter Opt-Out; Request for Commission Investigation into Central Maine Power Company and Smart Meters, December 19, 2014:** "As discussed in this Order, we find that Advanced Metering Infrastructure (AMI), including the use of "smart meters," as implemented and operated by Central Maine Power Company (CMP or the Company), does not present a credible threat to the health and safety of CM P's customers and, based on the record of this proceeding is, therefore, safe."
- **Massachusetts Department of Public Utilities, Investigation by the Department of Public Utilities on its Own Motion into Modernization of the Electric Grid, June 12, 2014:** "[A]fter thorough review and consideration of the issue, the Department is unaware of any credible, peer-reviewed scientific studies that demonstrate a direct human health risk from exposure to the low-level RF signals from advanced meters."
- **Michigan Public Service Commission, U-17000 Report to the Commission, June 29, 2012:** "After careful review of the available literature and studies, the Staff has determined that the health risk from the installation and operation of metering systems using radio transmitters is insignificant. In addition, the appropriate

federal health and safety regulations provide assurance that smart meters represent a safe technology"

- **Nevada Public Utilities Commission, February 9, 2012: "Smart meters meet the FCC emission standards and the RF emissions from smart meters are far lower than the FCC guidelines The FCC has taken a very conservative approach to RF exposure compliance for low-power network devices such as smart meters. The FCC 'is continually monitoring the issue of RF exposure and related health and safety concerns, both in general terms of the continuing propriety of its regulations, and in individual cases where substantive concerns are raised."**
- **New Hampshire Public Utilities Commission, Joan Wirth Request for Hearing on Installation of Smart Meters, Order Denying Hearing Request, September 6, 2012. "Based on this product information, we find that the NHEC basic, or standard, smart meters meet applicable FCC RF exposure limits. Having determined that the NHEC basic, or standard, smart meters meet FCC limits for exposure to RF radiation, we must consider whether we need to accept the FCC limits on exposure to RF radiation or seek other guidance on the health and safety of the Elster Type R2S meters."**

"Having determined that NHEC's meters meet the FCC RF emissions limits, we will not explore a separate state standard for RF emissions because we find that the FCC limits pre-empt a separate and potentially conflicting state standard."

- **Public Utility Commission of Texas, Report on Health and Radiofrequency Electromagnetic Fields from Advanced Meters: September 6, 2012: "Staff has determined that the large body of scientific research reveals no definite or proven biological effects from exposure to low-level RF signals. Further, Staff found no credible evidence to suggest that advanced meters emit harmful amounts of EMF."**
- **Vermont Department of Public Service, An Evaluation of Radio Frequency Fields Produced by Smart Meters Deployed in Vermont, January 14, 2013: "The FCC MPE values were derived with the inclusion of a safety factor of 50 below the actual threshold of hazard from prolonged exposure. When the above estimated RF field exposures for GMP and BED meters at the closest distance of one foot are considered in this light, this means that the most conservative estimates of potential exposure range between approximately 75,000 and 156,000 times less than the hazard threshold respectively."**

"Using the highest indicated results from the measurements performed in this study, potential exposure of individuals to the RF fields associated with the currently deployed smart meters in the GMP and BED service territories is small when compared to the limits set by the FCC. It is concluded that any potential exposure to the investigated smart meters will comply with the FCC exposure rules by a wide margin."

V. Ms. Paul did not meet her burden of proving her non-health claims.

A. PECO gave notice before deploying its vendor for installation, and then acted reasonably when Ms. Paul objected to installation.

In addition to her health concerns, Ms. Paul also raised a question as to whether PECO gave her proper notice before coming to install an AMI meter at her home. PECO witness Brenda Eison testified that PECO's vendor, Corix, mailed a notice to all affected customers, including the Pauls, giving them 45 days' notice prior to deploying the installation crew. This letter was mailed on May 18, 2014. Tr. 203-04, PECO Exhs. BE-1 and BE-2.

Ms. Paul states that she did not receive this notice, but that does not undercut the reasonableness of PECO's behavior in mailing it. (PECO is entitled to rely upon the U.S. Postal Service to deliver its letters.) Moreover, when the Corix installer went to the Paul home and was instructed by her not to install an AMI meter, he acceded to that demand. Tr. 16-18. And to this day PECO has not turned off service or installed an AMI meter. Tr. 6, 18-19.

B. The questions that Ms. Paul posed were originally posed in the Complaint, and PECO answered all of them at the appropriate time – this hearing.

Ms. Paul also expressed concern that she had a number of questions for PECO regarding AMI meters that had never been answered. During the hearing, it became clear that the first time that Ms. Paul posed those questions was in her Complaint, and not before. Tr. 19-20. PECO answered all of the questions during its testimony in this proceeding. Tr. 152-58. PECO respectfully suggests that this is a reasonable method of responding to questions posed in a formal complaint.

C. The Corix installers were properly trained.

The Commission remanded this proceeding in part because Ms. Paul stated in her complaint that she was not familiar with the contractor PECO utilized to install smart meters. At hearing, Ms. Paul expanded that issue to state that her concern is that Corix installers are not licensed electricians. Tr. 17.

Mr. Pritchard confirmed that the Corix installers are not licensed electricians, Tr. 142, and explained that the tasks involved in AMI meter installation do not require a licensed electrician. However, the Corix technicians were properly trained for the installation that they performed. Tr. 142-43.

VI. Conclusion

PECO respectfully submits that, on the record evidence in this proceeding, the Commission should follow the lead of the other state commissions and find that there is no reliable medical basis to conclude that radio frequency fields associated with AMI devices could cause, contribute to any health effects or exacerbate any symptoms, including Ms. Paul's symptoms. PECO therefore submits that the Commission should conclude that the use of an AMI meter to provide service to Ms. Paul is reasonable utility service for purposes of 66 Pa. C.S. §1501.

Proposed Conclusions of Law

1. The Commission has jurisdiction over the parties and the subject matter of this proceeding. 66 Pa.C.S. § 701.

2. The Complainant must establish her case by a preponderance of the evidence. *Samuel J. Lansberry, Inc. v. Pa. Pub. Util. Comm'n*, 578 A.2d 600 (Pa. Cmwlth. 1990), alloc. den., 602 A.2d 863 (Pa. 1992).

3. The complainant has not met her burden of proof of establishing an offense in violation of the Public Utility Code, the Commission's regulations or an outstanding order of the Commission. 66 Pa.C.S. § 701.

4. PECO did not provide unsafe or unreasonable service in violation of 66 Pa.C.S. § 1501.

5. A utility may issue written notification of termination to a customer if a customer does not permit access to meters, service connections or other property of the public utility for the purpose of replacement, maintenance, repair or meter reading, including the installation of AMI meter. 52 Pa.Code § 56.81(3).

Conclusion and Proposed Ordering Paragraphs

For the reasons set forth above, PECO respectfully requests that the Commission issue an Order in this proceeding that states:

1. That the Complaint is dismissed;
2. That PECO may install an AMI meter at the Paul residence; and
3. That if Ms. Paul denies access for the purpose of installing an AMI meter, or subsequently removes or modifies the AMI meter, PECO may after appropriate notice terminate electric service to her residence.

Respectfully submitted,



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