Received 11/23/2020 5:20:03 PM Supreme Court Middle District

IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT

Nos. 619-621 MAL 2020, 622-624 MAL 2020

MARIA POVACZ, LAURA SUNSTEIN MURPHY, CYNTHIA RANDALL and PAUL ALBRECHT,	:	**Commonwealth Court Docket**
v.	:	**No. 492 C.D. 2019**
	:	**No. 606 C.D. 2019**
PENNSYLVANIA PUBLIC UTILITIES COMMISSION,	:	**No. 607 C.D. 2019**
and	:	
PECO ENERGY COMPANY	:	

CROSS-PETITION FOR ALLOWANCE OF APPEAL OF LAURA SUNSTEIN MURPHY, CYNTHIA RANDALL, AND PAUL ALBRECHT

Cross-Petition for Allowance of Appeal from the Order of the Commonwealth Court of Pennsylvania Entered October 8, 2020, at Docket Nos. 492, 606, and 607 C.D. 2019 Affirming in Part, Reversing in Part and Remanding the Orders of the Pennsylvania Public Utility Commission Orders Entered March 28, 2019 and May 9, 2019 at Docket Nos. C-2015-2475023, C-2015-2475726, and C-2016-2537666

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Dated: November 23, 2020

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INTRODUCTION

This case asks whether the government can force Petitioners Laura Sunstein Murphy, Cynthia Randall, and Paul Albrecht ("Petitioners")[1]to allow into their homes, against their stated wishes and the advice of their doctors, an electronic device that emits a physical force known as radio frequency electromagnetic energy ("RF"). The Pennsylvania Public Utility Commission (the "PUC") had ruled that Act 129 of 2008, 66 Pa. C.S. § 2807(f) ("Act 129"), mandates that all Pennsylvania customers must accept an RF-emitting smart meter installed on their property (on or near their homes) *without any possibility of an opt out or exception for any reason*, and that the PUC therefore lacked authority to grant Petitioners the relief they sought, i.e., no RF-emitting smart meters installed on their properties.

The Commonwealth Court rejected the PUC's reading of Act 129 as a matter of law and held that Act 129 does not mandate that every customer must receive a smart meter even if they object, and that the PUC does not lack the authority to accommodate requests like those made by Petitioners under Section 1501 of the Public Utility Code, 66 Pa. C.S. § 1501, on the grounds that it is either unreasonable

[1] Petitioner Maria Povacz, due to the protracted nature of this litigation and her health concerns, recently moved into a new home that is "off the grid" and therefore does not require receipt of electricity from PECO or another electric service provider. However, because the remaining Petitioners, Laura Sunstein Murphy, Cynthia Randall, and Paul Albrecht, still reside in houses served by PECO, this case continues to present a live and justiciable controversy as to them, and is therefore not moot.

or unsafe to force them to accept RF exposure in their own homes by means of an RF-emitting device installed on their property.

Whether the Commonwealth Court was correct in its interpretation of Act 129 is an important issue affecting numerous citizens of this Commonwealth and should be decided by this Court. Petitioners therefore do not oppose the Petitions for Allowance of Appeal filed by the PUC and PECO seeking review of the Commonwealth Court's decision on this issue. However, respectfully, this Court should at the same time consider and decide other issues that were *incorrectly* decided by the Commonwealth Court. Complete consideration of the issues raised in the PUC's and PECO's petitions must, as a matter of fairness, as well as finality and clarity, include *all* of the issues decided by the Commonwealth Court, not just the ones that the PUC and PECO have determined were decided adversely to them.

The PUC and PECO are large, powerful entities with, collectively, vast resources and an army of lawyers, not to mention the assistance of numerous potential *amici*. Petitioners, conversely, are individual Pennsylvania citizens who have fought this multi-year battle, including protracted evidentiary hearings, without public and corporate funds to pay their attorneys or their expert witnesses. They initiated and participated in these proceedings—with a history of the PUC *never* granting electric consumers the relief sought herein—because they hoped that their claims would be fairly considered, and that they would ultimately obtain the only

relief they ever sought—to not be forced to endure a device on their properties that emits a physical force that they sincerely and reasonably believe, in light of their medical conditions, including consultation with their doctors, could cause them harm. They did not seek to prove below that RF exposure from smart meters did or would cause them harm, specifically, because the state of the science is such that trying to prove that would be practically impossible, and they should not be required to prove the impossible in order to be protected as a matter of law from forced RF exposure.

The Commonwealth Court's opinion represents only a partial victory for Petitioners. While the court held that Act 129 does not mandate RF-emitting smart meters for all Pennsylvania customers without exception, it nevertheless did not grant Petitioners the *eminently* reasonable accommodation that they have sought from the inception of these proceedings—that they be exempted from forced installation of RF-emitting wireless smart meters on their properties (on or near their homes). Instead, the lower court remanded Petitioners' cases to the PUC to allow the PUC to decide *whether*, and how, to accommodate Petitioners—a remand back to a *party* to these cases that has dismissed every single consumer smart meter case, and which is, even now, lobbying through its petition for allowance of appeal to deny all relief to Petitioners. This remand is entirely unwarranted because, if the legislature in Act 129 did not mandate that there be no opt outs or exceptions from

RF-emitting smart meters, the grounds for granting Petitioners' requests to be excepted from having such smart meters installed at their properties under Section 1501 is overwhelming, without even needing to address the unsettled scientific question of potential harm from RF exposure. The Petitioners are people with complicated medical histories including recurrent cancer who have thrown open to public scrutiny their very private information supporting their concern about risks to their health from RF exposure. This included testimony from themselves and their doctors about those concerns and the doctors' recommendations that they avoid the risk. It also included testimony about Petitioners' extensive efforts to eliminate RF in their lives, including refraining from use of cell phones and wireless devices in their homes. Simply stated, it is unreasonable to force these Petitioners to accept exposure to RF in their own homes. Based on the record before the Commonwealth Court, judgment should have been granted in favor of Petitioners on the grounds that it is at the very least unreasonable under Section 1501 to force Petitioners to accept RF exposure in their own homes by means of an RF-emitting device installed on their properties.

The Commonwealth Court further erred in affirming the onerous, unprecedented burden imposed on Petitioners to prevail in any proceeding before the PUC involving safety under Section 1501—to prove a "conclusive causal connection" between RF and exposure to RF and adverse human health effects. As

noted above, Petitioners believe that this case should be decided on grounds of reasonableness under Section 1501 alone, without any need to tackle the unsettled scientific question of harm from RF exposure, i.e., safety of RF from smart meters. But if the Court decides that safety of RF exposure must be considered, apart from reasonableness, then it should correct the lower court on the standard of proof for the PUC. The lower court ruling imposed a requirement of at least tort-like proof of medical causation of harm on Petitioners, which is a burden so high it would eviscerate PECO's duty to provide, and the PUC's duty to oversee, safe and reasonable electric service and facilities. This burden is unheard of in the law; it goes *well* beyond the preponderance of the evidence standard applicable to nearly all other civil and administrative proceedings. If left standing, this standard could, by imposing a burden on consumers that is practically impossible to *ever* meet, entirely eviscerate the Commonwealth Court's ruling that Act 129 does not, and should not, prevent electric consumers who object to RF from receiving reasonable accommodations. This Court should therefore consider this issue and reverse the lower court's ruling, so as to not render proceedings before the PUC futile and unwinnable for electric consumers seeking accommodations for unreasonable electric service, not to mention the possibility of improper application of the standard by other agencies.

Finally, the Commonwealth Court erred by ruling that the PUC's "no exceptions" interpretation of Act 129 does not present serious constitutional issues. Initially, it was unnecessary for the lower court to even *reach* this issue, because it in the same opinion ruled that the PUC's statutory interpretation of Act 129 is *wrong*, and that Act 129 does *not* mandate that all households within its purview must have an RF-emitting wireless smart meter installed on their properties, with no exceptions. Having ruled that Act 129 is *not* mandatory, it was entirely unnecessary for the lower court to reach out and decide that forced installation of wireless smart meters presents no constitutional issues.

On the merits of this issue, the lower court was simply wrong. The lower court based its ruling on a federal district court case from Illinois that is distinguishable from this matter in several ways, including that Illinois residents had the right to opt out of smart meter deployment on their properties, which Pennsylvania residents do not, according to the PUC. It is clear that, under the federal and Pennsylvania constitutions, the right to bodily integrity is fundamental. Act 129 interpreted as mandating smart meter deployment to all is therefore subject to a "strict scrutiny" analysis, and is constitutional only if it is narrowly tailored to a compelling state interest. Here, there is no compelling state interest at play, only the administrative interest of PECO—a private entity—in not allowing exceptions to its wireless smart meter program. Moreover, the PUC's maximally broad interpretation of Act 129 as

allowing *no* exceptions under *any* circumstances is the opposite of narrowly tailored. Therefore, to the extent that this Court grants review of the lower court's correct interpretation of Act 129 as not mandating the forced installation of wireless smart meters, it should give serious consideration to the clear constitutional issues that would be raised by accepting the PUC's and PECO's "no exceptions" interpretation of the statute.

The PUC and PECO, though its petitions, seek this Court's consideration of only select issues of importance to those entities. Because the issues raised by Petitioners are of equal public importance as those raised by the PUC and PECO, and because considering only PUC and PECO-selected issues would be fundamentally unfair to Petitioners, Petitioners respectfully request that the Court grant allowance of appeal as to their issues set forth below.

OPINIONS BELOW

An *en banc* panel of the Commonwealth Court in Pennsylvania issued its opinion in the consolidated action, *Maria Povacz v. Pennsylvania Public Utility Commission, et al.*, No. 492 C.D. 2019 (Pa. Commw. June 10, 2019). The court's opinion is attached as Appendix A. It is available at Westlaw at *Povacz v. Pennsylvania Pub. Util. Comm'n*, __ A.3d __, 2020 WL 5949866 (Pa. Commw. Ct. Oct. 8, 2020).

The three underlying administrative decisions, *Laura Sunstein Murphy v. PECO Energy Company*, No. C-2015-2475726 (Pennsylvania Public Utility Commission, May 9, 2019); *Maria Povacz v. PECO Energy Company*, No. C-2015-2475023 (Pennsylvania Public Utility Commission, March 28, 2019); and *Cynthia Randall and Paul Albrecht v. PECO Energy Company*, No. C-2016-2537666 (Pennsylvania Public Utility Commission, May 9, 2019), are attached hereto as Appendices B, C, and D, respectively.

ORDER IN QUESTION

On October 8, 2020, the Commonwealth Court ordered as follows:

ORDER

AND NOW, this 8th day of October, 2020, the orders of the Pennsylvania Public Utility Commission (PUC) are AFFIRMED in part, REVERSED in part, and VACATED in part, as follows:

> 1. The PUC's rejection of the constitutional challenge of Maria Povacz, Laura Sunstein Murphy, Cynthia Randall, and Paul Albrecht (jointly, Consumers) is AFFIRMED.
>
> 2. The PUC's conclusion that it lacks authority to accommodate Consumers' desire to avoid radiofrequency (RF) emissions from smart meters is REVERSED. This matter is REMANDED to the PUC for consideration of Consumers' requests for accommodations and determinations of what, if any, accommodations are appropriate for each individual Consumer. The PUC on remand may consider all reasonable accommodations, including deactivation of the RF emitting functions of smart meters at Consumers' homes; or installation of wired rather than wireless smart meters, if (as Consumers contend) such technology is available.
>
> 3. The PUC's determination that Consumers' requested accommodations would not be reasonable is VACATED, and this matter is

REMANDED for application of the correct burden of proof. On remand, Consumers need not prove that mandatory installation of smart meters is both unsafe and unreasonable; rather, Consumers need only prove that mandatory installation of smart meters is either unsafe or unreasonable.

4. The PUC's determination that Consumers failed to meet their burden to prove unreasonableness is VACATED. Because the PUC's determination was based on its conclusion that the 2008 amendment to the Public Utility Code, known as Act 129, Act of October 15, 2008, P.L. 1592, 66 Pa. C.S. § 2807, does not allow accommodations, this issue is REMANDED for further consideration. Further, on remand, the PUC should balance the parties' interests and consider whether refusal of accommodations was unreasonable without proof of actual harm to Consumers.

5. The PUC's determination that in order to prove lack of safety of the smart meters (as opposed to lack of reasonableness in refusal of accommodations by PECO Energy Company (formerly the Philadelphia Electric Company)), Consumers had to show a conclusive causal connection between RF exposure and adverse health effects is AFFIRMED.

6. The PUC's findings of fact on the safety of smart meters are AFFIRMED.

Consumers' applications for relief in the form of motions to strike the PUC's letter notice of the Federal Communications Commission's November 27, 2019 order declining to propose amendment of its RF emission standards are DENIED as moot.

Jurisdiction is relinquished.

QUESTIONS PRESENTED FOR REVIEW

1. Did the Commonwealth Court err in not granting judgment in favor of Petitioners, and instead ordering their cases to be remanded to the PUC when, pursuant to the court's legal ruling that Act 129 does not mandate wireless smart meters, as well as the evidence, including as to the extensive efforts Petitioners have made to avoid RF exposure based on their health concerns and doctors'

recommendations, Petitioners already proved that it would be unreasonable to force them to have wireless smart meters installed on their properties?

2. Did the lower court err as a matter of law by upholding the PUC's interpretation of Section 1501 of the Public Utility Code as requiring as to issues of safety proof of a "conclusive causal connection" between RF exposure from smart meters and harm to Petitioners, when this heavy and unprecedented burden is not compelled by the language of the statute, where the statutory and dictionary definition of the word "safe" includes protection from the possibility of harm, not just the conclusively proven certainty of harm, and where imposition of this burden would render it impossible for Petitioners to prove their cases?

3. Did the Commonwealth Court err in finding that the forced installation of RF-emitting smart meters on Petitioners' properties would not violate Petitioners' fundamental constitutional right to bodily integrity where, prior to the court's ruling, the PUC mandated the installation of RF-emitting smart meters in all homes with no possible exceptions, thereby requiring Petitioners to accept exposure to a measurable physical force in their homes, and against their wishes and the recommendations of their treating physicians, and where the PUC's interpretation of Act 129 is not narrowly tailored to serve a compelling state interest?

CONCISE STATEMENT OF THE CASE

The Petitioners are electric customers of PECO. Petitioners claim that the installation by PECO of RF-emitting smart meters on their homes is, as to them, neither "reasonable" nor "safe," and is therefore a violation of Section 1501 of the Public Utility Code, 66 Pa. C.S. § 1501. Petitioners brought their cases against PECO in response to PECO's insistence that they acquiesce to PECO's demand to install an RF-emitting smart meter at their homes or be subject to imminent cutoff of all electrical service. The filing of a formal complaint with the PUC was the sole method by which Petitioners could retain electrical service while refusing to be exposed to RF emitted by PECO's installation of smart meters.

Prior to the hearing on these matters, the PUC issued rulings that narrowed the scope of the hearing to issues regarding the alleged harmful health effects of RF exposure. The Commission also ruled prior to the hearing that the presiding Administrative Law Judge ("ALJ") lacked the authority to award the principal relief sought by Petitioners: an order that precluded PECO from installing smart meters in Petitioners' homes. At the hearing, Petitioners all presented individualized evidence, including as to their health conditions and histories, their dealings with PECO, and their efforts to avoid RF exposure in their everyday lives. By stipulation of the parties, common evidence, including expert testimony, relevant to the three matters also was introduced, and a Joint Appendix of all the evidence submitted to the ALJ.

Following the hearing, ALJ Darlene Heep issued separate decisions that largely denied relief to Petitioners, and Petitioners filed Exceptions to the ALJ decisions with the PUC, which, in three separate decisions, denied relief to Petitioners. The combined appeal before Commonwealth Court followed.

The Commonwealth Court issued its decision on October 8, 2020. The PUC filed its Petition for Allowance of Appeal on November 9, 2020, and PECO filed its own petition on that same date. Also on that date the Energy Association of Pennsylvania sought leave to file an amicus brief in support of the PUC's and PECO's petitions. In accordance with Pa. R.A. 1113(b), Petitioners file the instant Cross-Petition for Allowance of Appeal.

REASONS FOR ALLOWANCE OF APPEAL

A. THIS COURT SHOUD ALLOW APPEAL TO REVERSE THE LOWER COURT'S REMAND TO THE PUC, AND TO INSTEAD GRANT JUDGMENT IN FAVOR OF PETITIONERS ON THEIR PROVEN CLAIMS THAT FORCED INSTALLATION OF WIRELESS SMART METERS CONSTITUTES UNREASONABLE SERVICE AS TO THEM IN VIOLATION OF SECTION 1501.

The Commonwealth Court's holding that Act 129 does not mandate universal installation of wireless smart meters without any possibility of opt-outs is clearly correct. As the lower court found, nothing in the clear language of Act 129 leads to the conclusion that the legislature intended that every single household within the purview of Act 129 *must* agree to "endure involuntary exposure to RF emissions from a smart meter." Op. at 13. "Rather, the language of Act 129 seems calculated

to support customer ***choice*** in the use of smart meter technology." *Id.* (emphasis in original).

Despite this explicit—and correct—holding that the PUC does not "lack[] authority for accommodations of customers' requests to avoid RF emissions[,]" *id.*, the lower court nevertheless did not rule that Petitioners are entitled to the accommodations that they have sought throughout these proceedings—to not have RF-emitting smart meters installed on their properties—but instead remanded the cases to the PUC "to allow consideration of Consumers' requests for accommodations, and determination of what, *if any*, accommodations are appropriate, in light of this Court's conclusion that Act 129 does not forbid such accommodations." *Id.* (emphasis added). The lower court's decision to remand these cases for further proceedings before the PUC, rather than entering judgment in their favor, is entirely incorrect, and will lead to nothing but confusion and uncertainty with regards to the court's ruling on Act 129.

Pa. R.A.P. 1114(b) provides that considerations for this Court's granting allowance of appeal are: "(3) the question presented is one of first impression; [or] (4) the question presented is one of such substantial public importance as to require prompt and definitive resolution by the Pennsylvania Supreme Court…." Both considerations apply here, and favor this Court's granting allowance of appeal on

this issue, especially if it grants allowance of appeal on the issues raised by the PUC and PECO.

As the Commonwealth Court correctly found (Op. at 15), the PUC erred as a matter of law in failing to recognize that Section 1501 is violated by unreasonable public utility service as well as unsafe service. Applying the correct analysis, the PUC should have concluded that mandatory RF exposure would be unreasonable as to Petitioners, for multiple compelling reasons, regardless whether it could also be proven "unsafe." The first is because RF is a physical force and it is simply unreasonable for the Commission to force Petitioners to accept exposure to such a force, in their homes, over their objections for fear of the risk to their health based on their medical histories including recurrent cancer and also based on the recommendations of their doctors, *absent some compelling reason for forcing them to accept exposure.* In fact, however, neither the PUC nor PECO ever identified *any* reason for imposing RF exposure on every single PECO customer, with no exceptions for health or safety considerations. Petitioners raised this issue explicitly, as the PUC recognized. *See, e.g.*, *Povacz* Comm. Dec. at 91 (noting the argument that "it would be unreasonable to subject the Complainant to RF exposure from an AMI meter absent some compelling justification."). The only response offered by the PUC was that, in its view, Act 129 mandated installation of a smart meter in every home within the purview of the statute. *Id*. at 94-95. But as the lower court

correctly ruled, Act 129 does *not* so mandate, so the PUC's circular reasoning cannot withstand scrutiny.

Moreover, the lower court explicitly found that the "record does not contain evidence from PECO that it would incur any extreme costs by accommodating Consumers' desires to avoid RF emissions in three homes in PECO's service area." Op. at 18. The court also found that "even though the actual risk to consumers' health is uncertain, their suggestion that the burden to them of forced exposure to additional RF emissions outweighs any minimal burden to PECO is well taken." *Id.* Because RF exposure is *not* statutorily mandated for all, with no exceptions, and there is no other possible justification for mandating RF exposure in these cases (including any theoretical administrative inconvenience to PECO in having to install alternatives to wireless smart meters in *three homes*), it was clearly unnecessary and in error for the lower court to remand these cases to the PUC "to allow consideration of Consumers' requests for accommodations and determination of what, *if any*, accommodations are appropriate…." Op. at 13 (emphasis added). The court's use of the phrase "if any" clearly dangles the possibility before the PUC and PECO that, even after the court's finding that Act 129 is not mandatory, and that Petitioners have demonstrated the unreasonableness of wireless smart meters *as to them*, they could still be denied all relief, or granted only inadequate relief at which point they could be forced to join other Pennsylvanians concerned about RF health risks who, incredible as it may

seem, have been forced (at great expense) to live off of the electric grid, or else move of out Pennsylvania.

This Court should conclude that it is unreasonable *as a matter of law under these circumstances* to force Petitioners to accept RF exposure over their objections and doctors' recommendations, whether or not they can prove to the PUC that forced exposure will definitely cause them harm. In matters affecting Petitioners' health, the *reasonable* thing is to defer to the decisions and judgment of Petitioners and their doctors, not to force them to accept RF exposure in their own homes, and against their wills and medical advice. This Court should therefore reverse the lower court's remand of these cases back to the PUC, enter judgment in favor of Petitioners, and order that Petitioners are entitled to receive electric service from PECO without forced installation of a smart meter.

B. THIS COURT SHOULD ALLOW APPEAL TO CORRECT THE LOWER COURT'S IMPOSITION OF A LEGALLY UNJUSTIFIED "CONCLUSIVE CAUSAL CONNECTION" BURDEN OF PROOF TO PROVE THEIR CLAIMS ON REMAND, WHICH IS AN IMPOSSIBLE BURDEN THAT WILL PREVENT PETITIONERS AND FUTURE CONSUMERS FROM PREVAILING BEFORE THE PUC.

The Commonwealth Court, besides erring by remanding these matters back to the PUC rather than granting judgment on the evidence presented, compounded that error by imposing on Petitioners, and all future smart meter litigants before the PUC, an impossible burden of proof to establish their claims that forced RF exposure is unsafe under Section 1501. The Commonwealth Court upheld the PUC's decision

imposing on Petitioners the burden to prove a "conclusive causal connection" between their health problems and PECO's smart meters. This is an impossible burden utterly unknown in the law, and certainly never imposed or even discussed in any previous appellate decision in this Commonwealth, and would, if imposed upon any remand, entirely eviscerate any real ability for Petitioners to obtain relief before the PUC on issues of safety. This Court should therefore grant allowance of appeal pursuant to Pa. R.A.P. 1114(b)(3) ("the question presented is one of first impression") and (b)(4) ("the question presented is one of such substantial public importance as to require prompt and definitive resolution by the Pennsylvania Supreme Court").

The lower court affirmed the PUC's ruling that, to prove that wireless smart meters are "unsafe," Petitioners were required to establish a "conclusive causal connection" between exposure to RF and adverse human health effects. *See, e.g.*, *Povacz* Comm. Dec. at 28. This ruling essentially imposed, at the least, a requirement of tort-like proof of medical causation, which is a burden so high it eviscerates PECO's duty to provide, and the Commission's duty to oversee, safe (as well as reasonable) service.[2] In determining the "safety" of wireless smart meters

[2] Indeed, the lower court's burden of proof on causation is even more onerous than the substantial factor test widely used under Pennsylvania law in tort cases. Petitioners are aware of no other instances where causation of harm must be proven "conclusive[ly]," as opposed to by a preponderance of the evidence. A Westlaw

under Section 1501 (as well as the reasonableness of their forced installation in these cases), the Commission properly should have considered the *potential for harm*, rather than requiring Petitioners to prove causation under a uniquely—and unworkably—stringent standard that has no basis anywhere in Pennsylvania law.

Pennsylvania Law as set forth in the Statutory Construction Act of 1972 is clear that "[t]he object of all interpretation and construction of statutes is to ascertain and effectuate the intention of the General Assembly." 1 Pa. C.S.A. § 1921(a). "When the words of a statute are clear and free from all ambiguity, the letter of it is not to be disregarded under the pretext of pursuing its spirit." *Id.* § 1921(b). Consistent with this statutory guidance, courts have recognized that "the best indication of the General Assembly's intent may be found in its plain language." *Branton v. Nicholas Meat, LLC,* 159 A.3d, 540, 548 (Pa. Super. 2017) (citation omitted). "One way to ascertain the plain meaning and ordinary usage of terms is by reference to a dictionary definition." *Id.* (citation omitted).

Merriam-Webster defines "safe" as "free from harm or risk." *See* www.merriam-webster.com/dictionary/safe. "Harm" is defined as "physical or mental damage." https://www.merriam-webster.com/dictionary/harm. "Risk" is defined as "possibility of loss or injury." https://www.merriam-

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search of all Pennsylvania cases reveals that *not a single previous case* has even *used* the phrase "conclusive causal connection," much less imposed such an unworkable causation burden on *any* litigant, in *any* court.

webster.com/dictionary/risk. Numerous other dictionaries also define "safe" to include "*the absence of risk including the possibility of harm*" as well as actual harm.[3]

Nothing in the plain language of Section 1501 supports the PUC's and the lower court's legal conclusion that the Petitioners, to prove that mandatory RF exposure is unsafe (much less unreasonable), must "conclusive[ly]" prove that medical harm *was or will* be caused to the Petitioners. This interpretation should also be rejected because it violates the principle that statutory construction or interpretation must be reasonable and not absurd. *See* 1 Pa. C.S.A. § 1922(1) (the General Assembly "does not intend a result that is absurd, impossible of execution, or unreasonable"). The lower court's burden of proof is all three, as it is impossible to, even with expert testimony presented at great expense, "conclusively" prove the connection between Petitioner's health conditions and RF from smart meters, as opposed to proving that RF could have harmed Petitioners, or harm them in the future following continuing exposure.

Even if the lower court's "conclusive causal connection" standard had any basis in law—it does not—there is nevertheless not a single suggestion or even a

[3] Webster's Third New International Dictionary Unabridged defines "safe" as "[f]reed from harm, injury, or risk: no longer threatened by danger or injury" (first definition) and "[s]ecure from threat of danger, harm, or loss" (second definition). It defines "danger" as "[t]he state of being exposed to harm: liability to injury, pain, or loss" (third definition, the first after archaic and obsolete definitions). It defines "risk" as "[t]he possibility of loss, injury, disadvantage, or destruction (first definition). Many other dictionaries could be consulted, and they all include the concept of being free from the possibility of harm as well as free from actual harm.

hint in the language of Section 1501 (or elsewhere) that a customer must prove causation of harm as required in a tort claim for damages. *See, e.g., Brandon v. Ryder Truck Rental, Inc.*, 34 A.3d 104, 110 (Pa. Super. 2011) ("The evidentiary requirements of negligence law demand proof that injury is proximately caused by a specific defect in design or construction ...."); *Viguers v. Philip Morris USA, Inc.*, 837 A.2d 534, 540 (Pa. Super. Ct. 2003) (proximate causation of damages is a required element for a finding of fraud); *Spino v. John S. Tilley Ladder Co.*, 696 A.2d 1169, 1172 (Pa. 1997) ("Pennsylvania law requires that a plaintiff prove two elements in a product liability action: that the product was defective, and that the defect was a substantial factor in causing the injury."). This is unsurprising, as Section 1501 does not allow an electric consumer to obtain monetary damages, as opposed to mere administrative relief from unreasonable or unsafe service, so a tort-like burden of proof would be highly inappropriate given the modest relief sought.

An administrative agency charged with ensuring safety and reasonableness should not require even tort law proof of causation, much less the lower court's enhanced burden of proof. Persuasive authority recognizes that the standard of proof required by an agency charged with ensuring safety "is reasonably lower than that appropriate in tort law, which traditionally makes more particularized inquiries into cause and effect and requires a plaintiff to prove that it is more likely than not that another individual has caused him or her harm." *Allen v. Pennsylvania Engin. Corp*,

102 F.3d 194, 198 (5th Cir. 1996) (citing *Wright v. Willamette Indus. Inc.*, 91 F.3d 1105, 1107 (5th Cir. 1996)).

The lower court clearly erred as a matter of law in its interpretation of Section 1501 as requiring *greater than* tort law proof of causation of harm, as opposed to proof by a preponderance of the evidence of the *risk* of harm. The Court should allow appeal to decide the correct standard of proof of a claim before the PUC under Section 1501 alleging that electric utility service is unsafe.

C. THIS COURT SHOULD ALLOW APPEAL TO CORRECT THE LOWER COURT'S ENTIRELY UNNECESSARY AND ERRONEOUS RULING THAT THE MANDATORY FORCED INSTALLATION OF WIRELESS SMART METERS ON PETITIONERS' HOMES AND PROPERTIES WOULD NOT VIOLATE THEIR RIGHT TO BODILY INTEGRITY UNDER THE UNITED STATES CONSTITUTION.

The first issue that the lower court decided was that the PUC correctly found that Petitioners' right to bodily integrity under the Fourteenth Amendment to the United States Constitution was not violated by the PUC's reading of Act 129. However, this was not even directly raised as an issue on appeal and it was entirely unnecessary for the lower court to reach out and decide any such issue when it found on independent grounds that Act 129 does not mandate the forced installation of RF-emitting smart meters. Even if properly considered, the lower court was clearly incorrect on the merits of this important constitutional issue. This Court should, therefore, grant allowance of appeal in order to correct this clear and consequential

error by the lower court. At the very least, the Court should take into account the constitutional implications when and if it considers the issue raised by the PUC and PECO in their petitions, i.e., whether the Commonwealth Court correctly held that Act 129 does not mandate the installation of wireless smart meters in all cases, without exception.

Rule 1114 of the Pennsylvania Rules of Appellate Procedure provides that a petition for allowance of appeal may be granted where, "(4) the question presented is one of such substantial public importance as to require prompt and definitive resolution by the Pennsylvania Supreme Court" or "(5) the issue involves the constitutionality of a statute of the Commonwealth…." Pa. R.A.P. 1114(b)(4), (5). Both standards are implicated here.

It was entirely unnecessary for the lower court to reach out to decide this issue, because its next ruling, and the primary issue raised in PUC's and PECO's petitions—that Act 129, by its terms, does not, in fact, mandate, forced installation of wireless smart meters on Petitioners' homes and properties—renders any constitutional issue moot. Before the lower court, Petitioners did not directly raise a challenge to the constitutionality of Act 129; rather, they raised the issue only as a matter of statutory construction in aid of the lower court's *interpretation* of Act 129. Petitioners clearly and narrowly argued that the court should *construe* Act 129 so as to *avoid* the constitutional issue raised if PUC's no opt-outs interpretation of Act 129

was accepted. Indeed, the lower court specifically noted this in its decision, Op. at 7 ("Consumers assert that this Court should interpret Act 129 so as to avoid the constitutional issue they claim is raised by the PUC's interpretation."). Petitioners' argument was clearly that constitutional issues could be "avoided" if the lower court interpreted Act 129 as non-mandatory, in contrast to the PUC's interpretation. With the lower court doing just that, rejecting the PUC's interpretation of Act 129 based on its clear language, then Petitioners' interpretive argument based on avoiding potential constitutional issues became moot. The lower court therefor erred in reaching out to decide this issue at all.

The Commonwealth Court was also wrong on the merits of this issue, and the Court should reconsider the lower court's analysis, especially if, as PUC and PECO assert, the lower court's statutory interpretation of Act 129 should be reviewed by this Court. The PUC argued below that under Act 129 all customers served by electric utilities with more than 100,000 customers must accept mandatory RF exposure from a device installed on their properties, with no exceptions whatsoever, including for safety or reasonableness concerns under Section 1501. Petitioners asserted that such governmentally-mandated exposure to RF violates their substantive due process rights to bodily integrity and self-determination with respect to accepting RF exposure, because RF is indisputably a physical force that comes into contact with the human body, with the force at its greatest at the point of the

device, which in these cases is on Petitioners' own properties. On their face, these facts, when considered in light of the PUC's prior interpretation of Act 129, state a valid claim of unconstitutional infringement of Petitioners' right to bodily integrity and self-determination (as well as a violation of the right to be free of unreasonable searches and seizures of their properties).

The first step in the Court's due process analysis should be whether mandatory RF exposure under the circumstances implicates a liberty interest or a fundamental right. There is no federal or Pennsylvania precedent that addresses forced RF exposure, other than one inapposite decision upon which the lower court uncritically premised its entire consideration of his issue, *Naperville Smart Meter Awareness v. City of Naperville*, 69 F. Supp.3d 830 (N.D. Ill. 2014), which is discussed *infra*. In determining whether a liberty interest is implicated, courts first define the asserted right with precision, and ask if the right as framed is "deeply rooted in this Nation's history and tradition." *Washington v. Glucksberg*, 521 U.S. 702, 721 (1997). The asserted right here is the right to be free from bodily exposure to RF from a device installed by government mandate on Petitioners' properties, i.e., in or near their homes. Petitioners seek to be free not of all manmade RF, but only that which occurs from a device installed on their properties by order of the government. Space constraints prohibit an extended discussion of this issue, but Petitioners assert that it is self-evident that, under both federal and Pennsylvania law, this implicates a liberty

or privacy interest that is deeply rooted in our nation's and Commonwealth's traditions.[4] This is so because the government RF mandate directly infringes the Petitioners' cherished right to be let alone on their properties and in their homes. *See, e.g.*, *Commonwealth v. Shaw*, 383 A.2d 496, 499 (Pa. 1978) ("Upon closing the door of one's home to the outside world, a person may legitimately expect the highest degree of privacy known to our society.").[5] Because the RF from a smart meter on Petitioners' properties will contact Petitioners' bodies, the government RF mandate (as previously interpreted by the PUC) also clearly implicates Petitioners' right to bodily integrity. *See, e.g.*, *Union Pac. R. Co. v. Botsford*, 141 U.S. 250, 251 (1891) ("No right is held more sacred, or is more carefully guarded by the common law, than the right of every individual to the possession and control of his own

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[4] That wireless communication devices were unknown when the United States and Pennsylvania Constitutions were adopted is irrelevant. *See, e.g.*, *United States v. Jones*, 565 U.S. 400, 404–05 (2012) (placement of GPS tracking device on car was unconstitutional search: "We have no doubt that such a physical intrusion would have been considered a "search" within the meaning of the Fourth Amendment when it was adopted") (citations omitted).

[5] *See also Pennsylvania State Educ. Ass'n v. Commonwealth*, 148 A.3d 142, 150-51 (Pa. 2016) (containing extensive discussion of right to privacy under Pennsylvania constitution, and noting that, compared to the "'golden, diamond-studded right to be let alone . . . [e]verything else . . . is dross and sawdust'") (quoting *Commonwealth v. Murray*, 223 A.2d 102, 109-10 (Pa. 1966)); *Commonwealth v. Brion*, 652 A.2d 287, 287 (Pa. 1995) ("the right to privacy in one's domain is sacrosanct"); *Commonwealth v. Schaeffer*, 688 A.2d 1143, 1146 (Pa. 1993) ("For the right to privacy to mean anything, it must guarantee privacy to an individual in his own home.").

person, free from all restraint or interference of others, unless by clear and unquestionable authority of law.”). Ultimately, like forced medical treatment, the forced government smart meter mandate implicates Petitioners’ right to choose to make their own determinations about whether to accept bodily interference, in this case, RF exposure, rather than the government making that choice for them. “Although many different grounds for the existence of a right to self-determination may be asserted, there can be no doubt that such a right exists.” *In re Fiori*, 652 A.2d 1350, 1353 (Pa. Super. 1995). This right of self-determination, which includes the right to reject medical treatment, “flows from decisions involving the state’s invasion into our body.” *Rideout v. Hershey Medical Center*, 1995 WL 924561 at *14, Pa. D & C. 4th 57 (Pa. Com. Pl., Dauphin County 1995) (the concept of bodily integrity encompasses “the right of every individual to be let alone, free from unwanted restraint, interference, or touching”) (citing *Cruzan v. Director, Missouri Dep’t of Health*, 497 U.S. 261, 269 (1990)).

Petitioners have a fundamental interest in deciding whether to accept unwanted exposure to RF radiation from a wireless device in their homes or elsewhere on their properties. There is no question that, in today’s world, Petitioners will necessarily be exposed to RF from a variety of sources when they are in public places. Petitioners understand that there may be little they can do to avoid such public RF exposure, but the one place where they should be able to exercise

maximum control over RF exposure is with respect to wireless communications devices *on their own properties by government fiat*. Indeed, Petitioners' lack of control over public exposure to RF makes maintaining such control on their own properties that much more vital and worthy of protection. Petitioners' interest in making autonomous decisions about RF exposure on their own properties should therefore be recognized as fundamental.

Thus, Act 129 is subject to a "strict scrutiny" analysis, and is constitutional only if it is narrowly tailored to a compelling state interest. *Glucksberg*, 521 U.S. at 721 ("the Fourteenth Amendment 'forbids the government to infringe...fundamental liberty interests at all, no matter what process is provided, unless the infringement is narrowly tailored to serve a compelling state interest"); *Nixon v. Commonwealth*, 839 A.2d 277, 286-87 (Pa. 2003); *Office of Lieutenant Governor v. Mohn*, 67 A.3d 123, 128 (Pa. Commw. 2013) (government's intrusion into person's privacy may be constitutionally justified only where the government interest "'is significant and there is no alternate reasonable method of lesser intrusiveness to accomplish the governmental purpose'") (quoting *Denencourt v. Commonwealth State Ethics Comm'n*, 470 A.2d 945, 949 (Pa. 1983)); *In re Fiori*, 652 A.2d 1350, 1354 n.3 (Pa. 1995) ("Under the law of this Commonwealth only a compelling state interest will override one's privacy rights.").

There is no "compelling state interest" to justify the PUC and PECO's no opt-out interpretation of Act 129. Whatever the state's interest in generally upgrading the electrical system through smart meters, there can be no "compelling" need to force a small minority of electrical customers who object to wireless smart meters in their own homes to accept them. This is made clear by the law's, on its face, exempting from its reach, utilities which have fewer than 100,000 customers. If large numbers of electricity customers in Pennsylvania (i.e., all of those served by electric utilities with less than 100,000 customers) can be exempted under the terms of the law without damage to the underlying aims of Act 129, there can be no "compelling" reason that small numbers of customers of larger utilities (i.e., those serving over 100,000 households) cannot be similarly exempted. Further, the lack of an opt-out primarily benefits not the Commonwealth, or its citizens, but instead private utility companies for whom the inability of customers to opt out of coerced wireless smart meter installation may arguably result in administrative inconvenience to the utility. Such administrative convenience to select private utilities cannot conceivably outweigh the fundamental constitutional rights of customers, including Petitioners, to exclude from their own properties a force-emitting device that they and their doctors believe can cause them harm. Indeed, the lower court recognized that any arguable administrative inconvenience or costs associated with allowing consumers relief from forced installation of wireless smart meters would likely be minimal:

"Even if Consumers obtain the relief they seek, it is difficult to imagine that large numbers of other PECO customers will then flood the utility with requests to avoid RF emissions at increased cost." Op. at 18.

Indeed, any arguable "state interest" in not allowing Petitioners to be exempt from forced installation of wireless smart meters on their homes and properties could not conceivably be sufficiently "compelling" as to outweigh the multiple violation of Petitioners' fundamental rights, and the rights of similarly-situated persons who object to the governmentally-mandated installation of such devices in or near their homes.

Moreover, Act 129 (if the PUC's interpretation is accepted) is not "narrowly tailored," as it imposes forced installation of smart meters on *all* customers of large utilities when there are clearly less intrusive options available, including electromechanical analog meters; and smart meters where the data collected by the smart meter is transmitted to the utility through means other than RF. The PUC's "one size fits all" blunt instrument interpretation of Act 129, which makes no allowances for individual customer circumstances, is by definition not "narrowly tailored."

The lower court relied exclusively on the decision in *Naperville* to argue that forced RF in Petitioners' own homes does not even implicate, much less violate, Petitioners' fundamental constitutional right to bodily integrity. This is wrong, for

multiple reasons. First, the *Naperville* decision (which is not authoritative before this Court, or under the Pennsylvania constitution) did not undertake the required analysis of identifying the asserted interest and then determining whether it qualifies as fundamental, thus triggering strict or heightened scrutiny. The *Naperville* court instead used the highly deferential rational basis test without considering whether it even applied under controlling legal principles. 69 F. Supp. 2d at 839. For this reason alone, the Court should not follow *Naperville*.

Second, there is no constitutional requirement that the government's infringement of the fundamental right must be proven to cause harm to health. Under that logic, the government could claim that a warrantless government intrusion into one's home did not offend due process if no physical harm was done during the intrusion. That is obviously wrong. The right at issue here is the right to make one's own decisions about whether to allow RF-emitting devices on one's own property without being forced to accept the government's conclusion that it will cause no harm and is not unreasonable. The government's infringement of this right is in itself a constitutional harm.

Third, the smart meter program at issue in Naperville *allowed for opt-outs*, and much of the *Naperville* decision discussed the legality of additional opt-out fees. 69 F. Supp.3d at 831-34. Yet, while the lower court ruled for the first time that Act 129 allows for opt-outs, it did not discuss this fact in finding Act 129 constitutional.

Finally, the *Naperville* court's decision further fails to address the fact that the risk exposure at issue took place in citizen's *own homes*, which clearly distinguishes this matter from the cases cited and relied upon by the *Naperville* court where the government is said to merely negligently "increase a risk of injury" in a government-owned building. 69 F. Supp.3d at 839 (citing cases where the government was alleged to have increased the potential for bodily harm in *public school buildings*).

It is clear that the PUC's and PECO's arguments that the Commonwealth Court incorrectly interpreted Act 129 have clear constitutional implications that, if this Court grants allowance of appeal on that issue, should be thoroughly considered by this Court in aid of that interpretation. The lower court's dismissive treatment of Petitioners' constitutional claims based on the wholesale, uncritical adoption of a non-authoritative, distinguishable decision from another jurisdiction should be considered, and rejected, by this Court.

CONCLUSION

For the foregoing reasons, Petitioners respectfully request that the Court grant allowance of appeal on the above issues; that the Court reverse the lower court's rulings on these issues and affirm the lower court's decision regarding Act 129; and that judgment be entered in favor of Petitioners.

Respectfully submitted,

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Dated: November 23, 2020

CERTIFICATE OF COMPLIANCE
PURSUANT TO PA. R.A.P. 127 AND 1115(f).

I, Stephen G. Harvey, Esq., hereby certify as follows:

1. In compliance with Pa. R.A.P. 127, the foregoing Petition for Allowance of Appeal complies with the provisions of the *Case Records Public Access Policy of the Unified Judicial System of Pennsylvania* that require filing confidential information and documents differently than non-confidential information and documents.

2. The foregoing Petition for Allowance of Appeal complies with the word-count limits of Pa. R.A.P. 1115(f). Based on the word-count feature of the word processing system used to prepare it, the Petition for Allowance of Appeal, excluding the material set forth in Pa. R.A.P. 1115(g), consists of 7,265 words.

/s/ Stephen G. Harvey

Appendix A

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

Maria Povacz, Petitioner	:	
v.	:	No. 492 C.D. 2019
Pennsylvania Public Utility Commission, Respondent	:	
Laura Sunstein Murphy, Petitioner	:	
v.	:	No. 606 C.D. 2019
Pennsylvania Public Utility Commission, Respondent	:	
Cynthia Randall and Paul Albrecht, Petitioners	:	
v.	:	No. 607 C.D. 2019
Pennsylvania Public Utility Commission, Respondent	:	ARGUED: June 10, 2020

BEFORE: HONORABLE MARY HANNAH LEAVITT, President Judge
HONORABLE PATRICIA A. McCULLOUGH, Judge
HONORABLE MICHAEL H. WOJCIK, Judge
HONORABLE CHRISTINE FIZZANO CANNON, Judge
HONORABLE ELLEN CEISLER, Judge
HONORABLE J. ANDREW CROMPTON, Judge

OPINION BY JUDGE CEISLER FILED: October 8, 2020

Petitioners, Maria Povacz, Laura Sunstein Murphy, and Cynthia Randall and Paul Albrecht (collectively, Consumers) are individual electricity consumers

receiving electricity distribution services from PECO Energy Company, formerly the Philadelphia Electric Company (PECO). In these consolidated petitions for review, Consumers seek review of denials by Respondent, the Pennsylvania Public Utility Commission (PUC), of Consumers' requests to be exempted from installation by PECO of wireless smart electric meters in or on their homes. PECO has intervened in the action. After thorough review, we affirm the PUC's decisions in part, reverse and remand in part, and vacate and remand in part.

I. Background

Consumers are customers in PECO's electricity service area. They claim they are hypersensitive to emissions of radiofrequency electromagnetic energy (RF).[1,2] They have health issues they contend are or may be worsened by RF exposure. They have taken extraordinary measures to eliminate RF in their home environments and to minimize their RF exposure elsewhere. They provided expert medical evidence from their treating physicians that their exposure to RF should be minimized in order to avoid risks of harm to their health. They also offered expert testimony that emerging research indicates health risks at much lower levels of RF exposure than current federal regulations allow.

Consumers currently have automatic meter reading (AMR) meters at their homes. Consumers received notices from PECO that wireless smart meters[3] would be installed in or on their homes to replace their current electric meters. They

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[1] The Federal Communications Commission has a radiofrequency electromagnetic energy (RF) Safety FAQ web page here: https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety#Q5 (last visited October 7, 2020). The web page contains information about potential effects of RF exposure.

[2] As the Public Utility Commission (PUC) explained in its decisions, the term "electromagnetic field" (EMF), which also appears in the record, is synonymous with RF.

[3] Wireless smart meters are also known as advanced metering infrastructure (AMI) meters.

informed PECO that they would not allow installation of the replacement meters because of the RF emitted by wireless smart meters. PECO notified them that their electricity would be cut off entirely unless they allowed installation of wireless smart meters. Consumers then filed complaints with the PUC seeking to avoid forced installation of wireless smart meters in or on their homes.

An administrative law judge (ALJ) sustained, in part, PECO's preliminary objections to the complaints. The ALJ found that opting out of smart meter installation was not an available remedy under the law. However, the ALJ allowed the complaints to go forward for determinations of whether the individual Consumers were entitled to accommodations in light of their health issues.

After several omnibus hearings, the ALJ found one of the Consumers, Maria Povacz, had demonstrated a *prima facie* case that attaching a smart meter to her home would exacerbate her health condition. The ALJ ordered PECO to move Ms. Povacz's meter socket away from her house[4] and absorb the cost of moving it. The ALJ otherwise denied relief to Ms. Povacz. The ALJ denied all relief to the other Consumers.

Consumers filed exceptions with the PUC. PECO filed exceptions to the portion of the ALJ's decision regarding Ms. Povacz that required relocation of her

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[4] PECO has, albeit reluctantly, accommodated at least one other customer with health concerns by moving his smart meter away from his home. *See, e.g.*, *Benlian v. PECO Energy Corp.* (E.D. Pa., No. 15-1218, filed July 20, 2016), slip op. at __, 2016 U.S. Dist. LEXIS 95082, at *10. In *Benlian*, a disabled veteran, after prior notice to PECO, removed a smart meter from his home and replaced it with an analog meter because he claimed he began suffering from additional health issues after installation of the smart meter. Although PECO allegedly agreed to install a smart meter on a pole away from the house, it did not do so. Instead, PECO shut off the electricity to the home, notwithstanding the plaintiff's known, medically documented dependence on breathing equipment that required electricity, because he would not allow reinstallation of the smart meter on the house. Following the intervention of a Veterans' Administration social worker and a township supervisor, PECO eventually installed a smart meter on a pole away from the house, after leaving the home without power for several weeks.

meter. The PUC overruled Consumers' exceptions, granted PECO's exception, and denied all relief to Consumers. Consumers then filed petitions for review in this Court.

II. Issues

Consumers raise six interrelated issues on appeal,[5] all of which relate to Consumers' desire to avoid RF emissions that would result from having wireless smart meters installed in or on their homes. Their arguments on appeal are summarized as follows:

A. The PUC's interpretation of the 2008 amendment to the PUC Code, known as Act 129,[6] as precluding opt-outs from installation of wireless smart meters violates Consumers' constitutional liberty interest in their personal bodily integrity.

B. Contrary to the PUC's interpretation, Act 129 does not mandate installation of wireless smart meters in all homes and does not preclude the PUC from granting Consumers appropriate relief.

C. Because electrical service must, by law, be both reasonable and safe, the PUC erred by requiring Consumers to prove wireless smart meters would be both unreasonable and unsafe, in that proving either in the disjunctive would entitle Consumers to relief.

D. Regarding reasonableness, Consumers proved mandatory installations of wireless smart meters in their homes would be unreasonable in light of their sincere and medically supported concerns and in the absence of any

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[5] This Court's review is limited to determining whether the Commission violated constitutional rights, committed an error of law, rendered a decision not supported by substantial evidence, or violated its rules of practice. *Romeo v. Pa. Pub. Util. Comm'n*, 154 A.3d 422 (Pa. Cmwlth. 2017).

[6] Act of October 15, 2008, P.L. 1592, No. 129, 66 Pa. C.S. § 2807.

compelling reason to impose the wireless meter requirement without exceptions.

E. Regarding safety, the PUC applied an incorrect burden of proof by requiring Consumers to show a conclusive causal connection between RF exposure and adverse health effects, rather than simply showing a risk of harm.

F. Had the PUC applied the correct burden of proof, it would have been compelled to find the installation of wireless smart meters would be unsafe for Consumers.

III. Discussion

Act 129

Act 129 was enacted to reduce energy consumption and demand. *Romeo v. Pa. Pub. Util. Comm'n*, 154 A.3d 422 (Pa. Cmwlth. 2017). Act 129 addresses electric distribution and default service provider responsibilities, including smart meter technology. 66 Pa. C.S. § 2807(f); *Romeo*, 154 A.3d at 424. PECO is a privately owned utility and functions as a distribution and default service provider in its service area. Thus, Act 129 applies to PECO.

In pertinent part, Act 129 imposes the following requirements concerning an electric distribution company's obligations to furnish smart meter technology to its customers:

> (f) Smart meter technology and time of use rates.
>
> (1) Within nine months after the effective date of this paragraph, electric distribution companies shall file a smart meter technology procurement and installation plan with the commission for approval. The plan shall describe the smart meter technologies the electric distribution company proposes to install in accordance with paragraph (2).
>
> (2) ***Electric distribution companies shall furnish smart meter technology*** as follows:

(i) Upon request from a customer that agrees to pay the cost of the smart meter at the time of the request.

(ii) In new building construction.

(iii) In accordance with a depreciation schedule not to exceed 15 years.

66 Pa.C.S. § 2807(f) (emphasis added).

Act 129 defines "smart meter technology" as follows:

(g) *Definition.*--As used in this section, the term "smart meter technology" means technology, including metering technology and network communications technology capable of bidirectional communication, that records electricity usage on at least an hourly basis, including related electric distribution system upgrades to enable the technology. The technology shall provide customers with direct access to and use of price and consumption information. The technology shall also:

(1) Directly provide customers with information on their hourly consumption.

(2) Enable time-of-use rates and real-time price programs.

66 Pa.C.S. § 2807(g).

A. Constitutional Interest in Bodily Integrity

The Fourteenth Amendment provides, in pertinent part: "No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any state deprive any person of life, liberty, or property, without due process of law. . . ." U.S. CONST. amend. XIV, § 1. Consumers contend they have a constitutional liberty interest in their personal bodily integrity under the Fourteenth Amendment's due process clause. They argue this is a fundamental right which the government violates when its own actions create the violative condition.

RF is a measurable physical force. Consumers reason that forcing them to endure involuntary exposure to such a force implicates their fundamental liberty interest in personal bodily integrity. Forgoing electricity service completely is not a

feasible option.[7] Also, very few states other than Pennsylvania have precluded opt-outs from smart meter installation.[8] Therefore, Consumers assert that this Court should interpret Act 129 so as to avoid the constitutional issue they claim is raised by the PUC's interpretation.[9]

The PUC's decision gave comparatively little attention to this issue. It observed that Fourteenth Amendment due process requires only notice and an opportunity to be heard. Then, based on its conclusion that Consumers failed to prove they would suffer adverse health effects from installation of wireless smart meters in their homes, the PUC found Consumers failed to show that forced RF exposure from the meters would violate "basic principles of respect for bodily integrity." *Povacz v. PECO Energy Co.* (Pa. P.U.C., No. C-2015-2475023, filed Mar. 28, 2019), slip op. at 99-100.

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[7] Nonetheless, it is notable that along with Consumers' complaints to the PUC, a fourth complaint was initially filed by Stephen and Diane Van Schoyck. However, the Van Schoycks later removed their home completely from the electric grid and withdrew their complaint against PECO.

[8] Exhibit F to the *amicus* brief of Friends of Merrymeeting Bay* (Merrymeeting) contained a listing, with citations of authority, of the 40 states that have so far approved consumer opt-outs from wireless smart meter requirements. PECO moved to exclude portions of the *amicus* brief that relied on information not part of the agency record. This Court granted PECO's request with regard to issues raised by Merrymeeting that were not preserved before the PUC, including the information in Exhibit F to its *amicus* brief.

* Merrymeeting is a conservation organization with a mission "[t]o preserve, protect, and improve the unique ecosystems of Merrymeeting Bay," a "[m]id-coast Maine riverine delta consisting of the Kennebec, Androscoggin, Cathance, Muddy, Eastern and Abagadasset Rivers and surrounding towns." *See* http://www.friendsofmerrymeetingbay.org/ (last visited October 7, 2020). What, if any, interest this organization has in this litigation is not clear.

[9] Constitutional protections apply against state actors. PECO is not a state actor in relation to its installation of smart meters and provision of electricity to its customers. *Benlian*, slip op. at __, 2016 U.S. Dist. LEXIS 95082, at *16-*19. Hence, Consumers assert their constitutional argument only against the PUC.

In *Naperville Smart Meter Awareness v. City of Naperville*, 69 F. Supp. 3d 830 (N.D. Ill. 2014) (*Naperville II*), a federal court addressed the same issue Consumers raise here. The federal court explained the right at issue as follows:

> The Fourteenth Amendment provides that the government shall not "deprive any person of life, liberty, or property without due process of law." U.S. [CONST.] [a]mend. XIV. But "there can be no claim of a denial of due process, either substantive or procedural, absent deprivation of either a liberty or a property right." *Eichman v. Ind. State Univ. Bd. of Tr[ustee]s[]*, 597 F.2d 1104, 1109 (7th Cir. 1979). Furthermore, the right to "substantive due process is 'very limited,'" *Viehweg v. City of Mount Olive*, 559 F. App'x 550, 552 (7th Cir. 2014) (quoting *Tun v. Whitticker*, 398 F.3d 899, 900 (7th Cir. 2005)), and the Due Process Clause "does not purport to supplant traditional tort law in laying down rules of conduct to regulate liability for injuries that attend living together in society." *Collins v. City of Harker Heights, Tex.*, 503 U.S. 115 . . . (1992) (internal citations omitted). Furthermore, to survive a motion to dismiss a claim for deprivation of substantive due process, a plaintiff must allege facts tending to suggest that the government's action was arbitrary. *See Jeffries v. Turkey Run Consol. Sch. Dist.*, 492 F.2d 1, 3-4 (7th Cir. 1974).

Id. at 839.

The *Naperville II* court rejected the plaintiffs' Fourteenth Amendment bodily integrity argument because their complaint failed to "identify an arbitrary deprivation of a recognized liberty or property interest." *Id.*

First, the court found: "even assuming as true that [RF] waves emitted by smart meters are capable of causing harm, [plaintiffs'] allegations suggest only that the [c]ity negligently increased a risk of injury. Allegations of such risk exposure are insufficient to state a claim for deprivation of bodily integrity under the Fourteenth Amendment." *Id.* (citing *Upsher v. Grosse Pointe Pub. Sch. Sys.*, 285 F.3d 448, 453-54 (6th Cir. 2002) (asbestos under carpeting did not violate rights of bodily integrity); *Hood v. Suffolk City Sch. Bd.*, 469 F. App'x 154, 159 (4th Cir. 2012) (liberty interest in bodily integrity not violated by dangerous conditions in

school caused by excessive mold and bacteria); *Lewellen v. Metro. Gov't of Nashville & Davidson Cty., Tenn.*, 34 F.3d 345 (6th Cir. 1994) (construction of school beneath dangerous high-voltage conductor line was not a constitutional violation of bodily integrity); *Goss ex rel. Goss v. Alloway Twp. Sch.*, 790 F. Supp. 2d 221, 227-28 (D.N.J. 2011) (design of cement playground, rather than safer non-cement playground, was not a deprivation of the liberty interest in bodily integrity)).

Second, the *Naperville II* court found that even assuming the plaintiffs' complaint had identified a cognizable liberty interest in their bodily integrity, their constitutional claim still was not viable, because they also failed to plead facts showing that the decision to implement the installation of smart meters was arbitrary. Rather, the court found, the plan was "part of a nationwide effort to modernize the electrical power grid, and the program's goals include increasing energy efficiency, reducing emissions, and lowering electricity consumption costs." *Id.* at 839-40. As such, it was not arbitrary, but rather, was "rationally and appropriately based on energy policy decisions within the purview of local government. . . ." *Id.* at 840.

The *Naperville II* court's analysis is persuasive, and we follow it here. We decline to recognize a viable claim by Consumers regarding a violation of their Fourteenth Amendment liberty interests in bodily integrity. We therefore affirm the PUC's decision on this issue.

B. Act 129's Requirements

Consumers next challenge the PUC's conclusion that Act 129 mandates installation of wireless smart meters in all customers' homes. Consumers assert that the language of Act 129 does not require universal installation of wireless smart meters regardless of consumers' wishes. Therefore, the PUC is also incorrect in its

conclusion that it lacks authority to grant the appropriate relief Consumers seek.[10] This argument by Consumers is persuasive.

Act 129 mandates that an electric distribution company, such as PECO, "shall furnish smart meter technology . . . in accordance with a depreciation schedule not to exceed 15 years." 66 Pa.C.S. §2807(f)(2)(iii). However, nothing in the statutory language affirmatively mandates that customers must allow installation of wireless smart meters.[11]

To "furnish" means "to provide with what is needed; . . . supply, give." Webster's Ninth New Collegiate Dictionary 499 (1985). The definition does not imply that the recipient is forced to accept that which is offered. Therefore, we find the PUC is incorrect in concluding that Act 129 facially precludes any customer refusal of installation of smart meters.

Act 129 requires an electric distribution company to "furnish smart meter technology," 66 Pa.C.S. § 2807(f)(2)(iii), but does not require every customer to avail himself of every aspect of that technology. Notably, several provisions of Act 129 seem to contemplate customer choice in the degree to which the smart meter technology is used.

For example, Act 129 requires the ***customer's consent*** in order for the electric distribution company to allow either direct meter access or electronic access to the customer's meter data by third parties such as electric generation suppliers or providers of conservation and load management services. 66 Pa.C.S. § 2807(f)(3).

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[10] In *Benlian*, a federal district court stated, without elaboration, that "Act 129 does not permit customers to opt out of the installation of smart meters and mandates that '[e]lectric distribution companies shall furnish smart meter technology.'" Slip op. at __, 2016 U.S. Dist. LEXIS 95082, at *3-*4. This Court, however, is not bound by a federal district court's interpretation of a Pennsylvania statute. *In re Stevenson*, 40 A.3d 1212 (Pa. 2012).

[11] Notably, "wireless" meters are not mentioned at all in the statute.

Accommodation of a customer's request to deactivate the meter's RF emissions would not be inconsistent with this provision, since information could not be shared with third parties without the customer's consent in any event.

Similarly, Act 129 requires an electric distribution company to develop time-of-use rates and real-time price plans and to "***offer*** the time-of-use rates and real-time price plan to all customers that have been provided with smart meter technology under paragraph (2)(iii)." 66 Pa.C.S. § 2807(f)(5) (emphasis added). "Residential or commercial customers ***may*** elect to participate in time-of-use rates or real-time pricing." *Id.* (emphasis added). ***They are not required to do so.*** Again, accommodating a customer's request to avoid RF emissions would not violate the requirement to offer time-of-use rates and real-time price plans, since customers are not required to participate in such plans.

In addition, as Consumers correctly argue, Act 129's definition of "smart meter technology" leaves the door open for accommodations of customer requests to avoid RF emissions from smart meters. The language of the definition is consistently couched in permissive terms, as it relates to customers' use of the available smart meter technology:

> [T]he term "smart meter technology" means technology, ***including*** [(not necessarily limited to)] metering technology and network communications technology ***capable of*** [(not "requiring")] bidirectional communication, that ***records*** [(not "transmits")] electricity usage on at least an hourly basis, including related electric distribution system upgrades to enable the technology. The technology shall provide customers with direct ***access to and use of*** [(not mandatory use of)] price and consumption information. The technology shall also:
>
> > (1) Directly provide customers with information on their hourly consumption.

> (2) ***Enable*** time-of-use rates and real-time price programs. [(As discussed above, customer is not required to participate.)]
>
> (3) Effectively ***support*** [(not require)] the automatic control of the customer's electricity consumption by one or more of the following ***as selected by the customer***:
>
> (i) the customer [(the customer retains control)];
>
> (ii) the customer's utility; or
>
> (iii) a third party engaged by the customer or the customer's utility.

66 Pa.C.S. § 2807(g) (emphasis added).

Notably, the PUC's own internet consumer information page concerning Act 129 repeatedly speaks in permissive language. For example, it provides: "Act 129 of 2008 provides Pennsylvania electric utility consumers ***opportunities*** to take energy efficiency and conservation to the next level." "Energy Efficiency & Conservation Information for your Home," http://www.puc.state.pa.us/General/consumer_ed/pdf/EEC_Home-FS.pdf (last visited October 7, 2020) (emphasis added). "In creating [energy efficiency and conservation programs (EE&C)], the [PUC] recognized ***a 'one-size-fits-all' approach would not be the best*** approach. The [PUC] ***balances the needs of consumers*** with those of the [electric distribution companies (EDCs)]. . . ." *Id.* (emphasis added). "The PUC's program standards provided each EDC with the ability to tailor its energy efficiency and conservation plan to its service territory and consumers." *Id.* The EDCs' plans include "***incentive programs***" to "***encourage***" residential consumers to purchase energy-efficient products. *Id.* (emphasis added). EDCs must provide consumers with specific information "on the money-saving EE&C programs ***available*** to them because of Act 129. *Id.* (emphasis added). These programs are ***designed to help consumers*** use electricity efficiently, curb

consumption and reduce overall demand for electricity. Many of these programs include subsidies from the EDC to ***encourage*** the use and employment of energy efficiency measures." *Id.* (emphasis added).

Moreover, nothing in the language of Act 129 appears to preclude either PECO or the PUC from granting an accommodation to a customer who desires to avoid RF emissions from a wireless smart meter. In *Benlian v. PECO Energy Corp.* (E.D. Pa., No. 15-1218, filed July 20, 2016), 2016 U.S. Dist. LEXIS 95082, for example, PECO installed a smart meter on a pole some distance from the plaintiff's home in accommodation of his claim that the prior installation of the meter on his home had caused new or exacerbated health problems. *Id.*, slip op. at __, 2016 U.S. Dist. LEXIS 95082, at *10.

Thus, although Act 129 does appear to anticipate installation of smart meters on customers' premises, nothing in the language of Act 129 facially ***requires*** every customer to endure involuntary exposure to RF emissions from a smart meter. Rather, the language of Act 129 seems calculated to support customer ***choice*** in the use of smart meter technology. Therefore, we conclude that Act 129 does not preclude either PECO or the PUC from accommodating a customer's request to have RF emissions from that customer's meter turned off, to have a smart meter relocated to a point remote from the customer's house, or some other reasonable accommodation. We reverse that portion of the PUC's decisions finding it lacked authority for accommodations of customers' requests to avoid RF emissions. We remand to the PUC to allow consideration of Consumers' requests for accommodations, and determination of what, if any, accommodations are appropriate, in light of this Court's conclusion that Act 129 does not forbid such accommodations.

C. Burden of Proof – Conjunctive vs. Disjunctive

Consumers argue they are not seeking relief in the form of a system-wide "opt-out" provision based merely on their "preference," but rather, an administrative remedy for a proven violation of the safety and reasonableness requirement of Section 1501 of the Public Utility Code, 66 Pa. C.S. § 1501 (Section 1501),[12] in their individual cases. They insist that nothing in Act 129 limits the Commission's authority to grant such relief.

Consumers assert that because the law requires electricity service to be both reasonable and safe, the PUC erred in requiring Consumers to prove that requiring wireless meters in their homes would be both unreasonable and unsafe in order to establish a violation of Section 1501. That is, because the statute requires, in the conjunctive, both safety and reasonableness, Consumers could disprove either, in the disjunctive, to prove a violation. Therefore, the PUC erred in requiring Consumers to prove "conclusively" that wireless smart meters would cause medical harm, *i.e.*, lack of safety, while ignoring whether requiring wireless smart meters would be unreasonable under all the circumstances, regardless of whether medical harm was shown. Consumers assert that requiring wireless smart meters in their homes is unsafe and unreasonable, but those are alternative arguments.

The PUC's position on the burden of proof issue is inconsistent. At one point, the PUC appears to concede the correctness of Consumers' position. The PUC states the ALJ's role is to determine whether "'use of a smart meter . . . will constitute unsafe ***or*** unreasonable service . . . .'" *Povacz* (Pa. P.U.C., No. C-2015-2475023,

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[12] "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 . . . ." 66 Pa. C.S. § 1501 (emphasis added).

filed Mar. 28, 2019), slip op. at 15 (quoting *Kreider v. PECO Energy Co.* (Pa. P.U.C., No. P-2015-2495064, filed Jan. 28, 2016), slip op. at 21-23) (emphasis added).

Elsewhere in its opinion, however, the PUC posits that Consumers "must prove, by a preponderance of the evidence, that [their] exposure to the RF fields from the wireless smart meter that PECO plans to install . . . will 'exacerbate' or 'adversely affect' [their] health and, therefore, constitute unsafe ***and*** unreasonable service . . . ." *Povacz* (Pa. P.U.C., No. C-2015-2475023, filed Mar. 28, 2019), slip op. at 27 (emphasis added).

We infer from its inconsistent language that the PUC did not recognize this distinction in the context of Consumers' claims. In fact, a review of the PUC's decision does not indicate whether the distinction was significant to the PUC's reasoning. The PUC's decision does not clearly purport to require Consumers to prove the meter installation is both unsafe and unreasonable as applied to them. However, Consumers are logically correct that because PECO has a mandate to provide safe ***and*** reasonable service, Consumers may establish a violation of that mandate by showing the wireless smart meter requirement is either unsafe ***or*** unreasonable.

To the extent, if any, that the PUC applied a conjunctive burden of proof, we vacate and remand its decision for reconsideration expressly applying the correct disjunctive burden of proof.

D. Reasonableness of Mandatory Installations

Next, Consumers contend they established that mandatory installations of wireless smart meters in their homes would be unreasonable under the circumstances as to all of the individual Consumers. They contend RF is unquestionably a physical

force, and mandating exposure is unreasonable in light of Consumers' sincere concerns, supported by their medical experts and an expert witness concerning RF, and in the absence of some compelling reason to mandate their exposure.

Consumers assert that neither the PUC nor PECO identified any compelling reason to impose wireless smart meters on every customer without exceptions for health or safety considerations. PECO and the PUC simply assert – incorrectly, according to Consumers – that Act 129 compels it.

Moreover, Consumers insist their concerns are reasonable in light of their health conditions and their doctors' recommendations, and demonstrably sincere in light of the comprehensive, lengthy, and expensive actions they have undertaken in order to minimize their RF exposure. Finally, they contend that scientific studies, including comprehensive government studies, even if not yet universally accepted, support the reasonableness of Consumers' concerns about the health risks of RF exposure, as well as the safety hazards of installing wireless smart meters that create such exposure.[13]

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[13] Evidence presented before the ALJ indicated the RF emissions from wireless smart meters are less than 1% of the level adjudged safe by the Federal Communications Commission (FCC), and moving a wireless smart meter 20 feet from a home would reduce even that minute level of emission by an additional 99%. Consumers respond that the FCC relies on outdated studies and that a safe level of exposure to RF emissions is actually exponentially lower than the level approved decades ago by the FCC.

In that regard, we note that on January 9, 2020, the PUC filed a letter notice, pursuant to Pa. R.A.P. 2501(b), of an order entered by the FCC on November 27, 2019, declining to propose amendments to its existing limits on RF emissions. The FCC's order is available on its website: https://www.fcc.gov/document/fcc-maintains-current-rf-exposure-safety-standards (last visited October 7, 2020).

Consumers filed applications for relief pursuant to Pa. R.A.P. 123 in the form of motions to strike the PUC's letter notice. Consumers asserted the notice did not relate to new legal authority, as contemplated by Rule 2501(b), because the FCC's RF emission limits were referenced only as part of the background facts of this case. The PUC responded that the FCC standards have the force of law and that Rule 2501(b) mandated the letter notice by the PUC.

As discussed above, the PUC's position that Act 129 requires installation of wireless smart meters in all consumer residences is incorrect. Accordingly, the PUC is also incorrect in finding that PECO may not or need not offer any accommodation to Consumers.

Because this portion of the PUC's decision is dependent on its erroneous conclusion that Act 129 does not allow accommodations, we vacate this portion of the PUC's decision and remand for further consideration.

However, as discussed in the next section, we affirm the PUC's application of the correct burden of proof concerning the risk of harm from RF emissions. Therefore, in considering accommodations to Consumers on remand, the PUC should consider whether accommodations are appropriate ***without*** proof of harm, so that Consumers may choose to avoid RF emissions from wireless smart meters, while allowing PECO to comply with Act 129's mandate concerning availability of smart meter technology.

The question here is much murkier than simply stating the correct burden of proof. What is the proper course when RF emissions ***do have known dangers***, but research has not yet determined the extent of those dangers? Should Consumers bear the risk that RF emissions are more harmful to them than to others because of their sensitivity and underlying health conditions? Conversely, should PECO be required to accommodate Consumers' fears even though medical research has not yet definitively determined the degree of risk posed by the level of RF exposure at issue?

This Court directed submission of the applications for relief and any responses thereto along with the merits of Consumers' petitions for review. In our disposition of the petitions for review, we have not relied on either the FCC standards or the FCC's recent order declining to propose amendments to those standards. We therefore dismiss the applications for relief as moot.

Logic, safety concerns, and fairness require some balancing of the parties' interests. Consumers argue the burden to PECO of accommodating their desire to avoid RF emissions is minimal, and they claim they are willing to pay any additional cost of the accommodations.

The record does not contain evidence from PECO that it would incur any extreme costs by accommodating Consumers' desires to avoid RF emissions in three homes in PECO's service area. Even if Consumers obtain the relief they seek, it is difficult to imagine that large numbers of other PECO customers will then flood the utility with requests to avoid RF emissions at increased cost. Thus, even though the actual risk to Consumers' health is uncertain, their suggestion that the burden to them of forced exposure to additional RF emissions outweighs any minimal burden to PECO is well taken.

Consumers argue that wired smart meters exist. They also suggest that if wireless meters must be installed, turning off the emissions upon a customer's request should be allowed. Notably, in *Naperville Smart Meter Awareness v. City of Naperville* (N.D. Ill., No. 11 C 9299, filed Mar. 22, 2013), U.S. Dist. LEXIS 40432 (*Naperville I*), a city ordinance concerning installation of smart meters allowed customers with health concerns to have the meters' RF emissions turned off. Here, the PUC and PECO offer no such option. Further, the parties' briefs do not offer any substantial discussion of the viability of the option of allowing RF emissions to be turned off.

The PUC should consider all these issues on remand.

E. Burden of Proof – Conclusive vs. Potential Harm

Consumers' next theory of recovery asserts that the PUC erred in requiring them to prove a "conclusive causal connection" between RF exposure and adverse

human health effects. They argue the PUC should have considered the *potential* for harm, rather than imposing a tort-like burden of proving causation. They insist safety includes freedom from *risk* of harm, not merely freedom from the harm itself. They suggest the plain language of Section 1501 requires neither proof of actual harm nor proof of proximate causation in order to show lack of safety.

PECO argues Consumers had to prove by a preponderance of the evidence that exposing them to RF from smart meters would cause, contribute to, or exacerbate their health conditions. Consumers failed to meet this standard of proof. Consumers' proposed standard of proof would essentially shift the burden of proof to PECO to show the smart meters could not harm Consumers. PECO has spent $750 million to install the smart meter system throughout its territory as required by Act 129 and the PUC, and Consumers' standard of proof would effectively convey veto power over the system to any customer with a sincere belief that there was any risk of harm. Moreover, the PUC already articulated the standard of proof, *i.e.*, that a customer complainant alleging adverse health effects must prove "a conclusive causal connection" between RF exposure and those adverse health effects – a burden that cannot be satisfied by research and studies that are inconclusive.[14]

The PUC found the ALJ correctly imposed a burden of proof requiring Consumers to demonstrate adverse health effects by a preponderance of the

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[14] PECO cites: *Kreider*; *Letter of Notification of Philadelphia Electric Company 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 Counties* (Pa. P.U.C., No. A-110550F0055, filed Mar. 26, 1993), slip op. at __, 1992 Pa. P.U.C., Lexis 160, at *7-*8; *Letter of Notification of Philadelphia Electric Company 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 Counties* (Pa. P.U.C., No. 110550F0055, filed Nov. 12, 1993), 1993 WL 855896. ***Notably, these authorities are at least 27 years old, and any research on which they relied is necessarily even older***, a fact which tends to lend support to Consumers' point that PECO and its expert witness relied on outdated information concerning the danger from RF emissions.

evidence. This required Consumers to prove that there was a "conclusive causal connection" between RF exposure from smart meters and adverse human health effects.

The PUC concedes Consumers were not required to prove harm had actually occurred; the PUC's authority extends to claims seeking to prevent harm. However, where prevention of harm was Consumers' aim, the burden of proof still required demonstration by a preponderance of the evidence that the utility's proposed conduct would create a "proven exposure to harm." *Povacz* (Pa. P.U.C., No. C-2015-2475023, filed Mar. 28, 2019), slip op. at 29. The PUC argues that although the occurrence of harm need not be certain, or even probable, Consumers incorrectly equated any hazard, however slight, with exposure to harm. The *Naperville I* court considered this issue and found that even without an option to deactivate the radio transmitters in the smart meters, the plaintiffs' claim would not have been viable. Like Consumers here, the *Naperville I* plaintiffs based their claim on "a theory that the radio waves emitted from the smart meters, together with other RF-wave-emitting devices in the environment, have the ***potential*** to be harmful." *Id.*, slip op. at __, 2013 U.S. Dist. LEXIS 40432, at *28-*29 (emphasis added). The court in *Naperville I* acknowledged the plaintiffs' contention that "certain doctors believe that over time the public's cumulative exposure to low-level RF from devices such as cell phones, radio towers, and smart meters ***may*** pose health risks, such that more accurate guidelines and standards regarding the safety of RF exposure are necessary." *Id.*, slip op. at __, 2013 U.S. Dist. LEXIS 40432, at *29 (emphasis added). Nonetheless, the court concluded "[t]he bare allegation that it is unknown whether [p]laintiffs are actually being harmed by the level of RF waves emitted from one smart meter is insufficient" to raise a claim for relief that is more than

speculative. *Id.*, slip op. at __, 2013 U.S. Dist. LEXIS 40432, at *29 (citing *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 570 (2007)).

The reasoning of *Naperville I* concerning the applicable burden of proof is persuasive. We therefore affirm the burden applied by the PUC concerning proof of harm from RF emissions.

However, as discussed above, the PUC appears to have based its decision largely on its conclusion that Act 129 mandated installation of wireless smart meters on every residence and did not permit the PUC to grant ***any*** form of relief to Consumers to accommodate their desire to avoid RF emissions. On remand, the PUC should consider whether reasonable accommodations should be provided in light of the conclusion that Act 129 does not preclude such accommodations of customers' health concerns, regardless of proof of harm.

F. Risk of Harm – Sufficiency of Evidence

Finally, Consumers insist the correct burden of proof would compel the PUC to find the use of wireless smart meters would be unsafe for the individual Consumers. They also argue their evidence demonstrated a risk of harm, and the PUC should not have disregarded that evidence, including the testimony of Consumers' expert witness and the federal government study on which that witness relied. Consumers further contend the PUC should not have relied on the testimony of PECO's expert that "conclusive" proof of harm is impossible; rather, the correct standard was whether there was proof of a *risk* of harm. Further, Consumers assert PECO's expert relied on outdated FCC findings from 1986;[15] the study cited by Consumers' expert is the most recent study and should not have been disregarded by either PECO or the PUC.

[15] *See* discussion in note 13 above.

This argument is closely related to the previous argument. To the extent Consumers are arguing there was not substantial evidence to support the PUC's decision, this Court will not revisit the PUC's findings of fact. To the extent Consumers contend the burden of proof should have been different, that issue is addressed in the previous section. We affirm the PUC's findings of fact as based on substantial evidence.

IV. Conclusion

Based on the foregoing discussion, we affirm the PUC's rejection of Consumers' constitutional challenge. We reverse the PUC's conclusion that it lacks authority to accommodate Consumers' desire to avoid RF emissions from smart meters and vacate the PUC's determination that such accommodation would not be reasonable. We affirm the PUC's determination of the burden of proving harm. We affirm the PUC's findings of fact. We remand this matter to the PUC for determinations of whether accommodations are appropriate for each of the Consumers, and if so, what those accommodations should be. On remand, the PUC should consider all reasonable accommodations, including, but not limited to, deactivation of the RF emitting functions of the smart meters; installation of the smart meters at locations remote from Consumers' homes; and installation of wired rather than wireless smart meters, if (as Consumers contend) such technology is available.

ELLEN CEISLER, Judge

Judge Covey did not participate in the decision of this case.

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

Maria Povacz, Petitioner	:	
v.	:	No. 492 C.D. 2019
Pennsylvania Public Utility Commission, Respondent	:	
Laura Sunstein Murphy, Petitioner	:	
v.	:	No. 606 C.D. 2019
Pennsylvania Public Utility Commission, Respondent	:	
Cynthia Randall and Paul Albrecht, Petitioners	:	
v.	:	No. 607 C.D. 2019
Pennsylvania Public Utility Commission, Respondent	:	

ORDER

AND NOW, this 8th day of October, 2020, the orders of the Pennsylvania Public Utility Commission (PUC) are AFFIRMED in part, REVERSED in part, and VACATED in part, as follows:

1. The PUC's rejection of the constitutional challenge of Maria Povacz, Laura Sunstein Murphy, Cynthia Randall, and Paul Albrecht (jointly, Consumers) is AFFIRMED.

2. The PUC's conclusion that it lacks authority to accommodate Consumers' desire to avoid radiofrequency (RF) emissions from smart meters is REVERSED. This matter is REMANDED to the PUC for consideration of Consumers' requests for accommodations and determinations of what, if any, accommodations are appropriate for each individual Consumer. The PUC on remand may consider all reasonable accommodations, including deactivation of the RF emitting functions of smart meters at Consumers' homes; installation of the smart meters at locations remote from Consumers' homes; or installation of wired rather than wireless smart meters, if (as Consumers contend) such technology is available.

3. The PUC's determination that Consumers' requested accommodations would not be reasonable is VACATED, and this matter is REMANDED for application of the correct burden of proof. On remand, Consumers need not prove that mandatory installation of smart meters is both unsafe and unreasonable; rather, Consumers need only prove that mandatory installation of smart meters is either unsafe or unreasonable.

4. The PUC's determination that Consumers failed to meet their burden to prove unreasonableness is VACATED. Because the PUC's determination was based on its conclusion that the 2008 amendment to the Public Utility Code, known as Act 129, Act of October 15, 2008, P.L. 1592, 66 Pa. C.S. § 2807, does not allow accommodations, this issue is REMANDED for further consideration. Further, on remand, the PUC should balance the parties' interests and

consider whether refusal of accommodations was unreasonable without proof of actual harm to Consumers.

5. The PUC's determination that in order to prove lack of safety of the smart meters (as opposed to lack of reasonableness in refusal of accommodations by PECO Energy Company (formerly the Philadelphia Electric Company)), Consumers had to show a conclusive causal connection between RF exposure and adverse health effects is AFFIRMED.

6. The PUC's findings of fact on the safety of smart meters are AFFIRMED.

Consumers' applications for relief in the form of motions to strike the PUC's letter notice of the Federal Communications Commission's November 27, 2019 order declining to propose amendment of its RF emission standards are DENIED as moot.

Jurisdiction is relinquished.

ELLEN CEISLER, Judge

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

Maria Povacz, Petitioner	:	
v.	:	No. 492 C.D. 2019
Pennsylvania Public Utility Commission, Respondent	:	
Laura Sunstein Murphy, Petitioner	:	
v.	:	No. 606 C.D. 2019
Pennsylvania Public Utility Commission, Respondent	:	
Cynthia Randall and Paul Albrecht, Petitioners	:	
v.	:	No. 607 C.D. 2019 Argued: June 10, 2020
Pennsylvania Public Utility Commission, Respondent	:	

BEFORE: HONORABLE MARY HANNAH LEAVITT, President Judge
HONORABLE PATRICIA A. McCULLOUGH, Judge
HONORABLE MICHAEL H. WOJCIK, Judge
HONORABLE CHRISTINE FIZZANO CANNON, Judge
HONORABLE ELLEN CEISLER, Judge
HONORABLE J. ANDREW CROMPTON, Judge

CONCURRING AND
DISSENTING OPINION
BY JUDGE CROMPTON

FILED: October 8, 2020

Respectfully, I concur in part and dissent in part. I concur in the result to the extent the majority has determined (1) the Consumers'[1] constitutional rights were not violated, (2) the Public Utility Commission's (PUC) findings of fact regarding the safety of smart meters were based on the substantial competent evidence of record, (3) the PUC properly concluded the Consumers were required to show a conclusive causal connection between radio frequency (RF) exposure and adverse health effects, and (4) that the matter should be remanded to the PUC, albeit for a limited purpose as described herein. I do, however, diverge from the majority in its view that Act 129 (Act)[2] requires an electric distribution company to "furnish smart meter technology," per 66 Pa.C.S. §2807(f)(2)(iii), but does not necessarily require every customer to accept same.

Section 2807(f) of the Public Utility Code reads, in pertinent part, as follows:

> **(f) Smart meter technology and time of use rates.--**
> (1) Within nine months after the effective date of this paragraph, electric distribution companies shall file a smart meter technology procurement and installation plan with the commission for approval. The plan shall describe the smart meter technologies the electric distribution company proposes to install in accordance with paragraph (2).
> **(2) Electric distribution companies shall furnish smart meter technology as follows:**
> **(i) Upon request from a customer that agrees to pay the cost of the smart meter at the time of the request.**
> **(ii) In new building construction.**

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[1] The Consumers in this matter are Petitioners Maria Povacz, Laura Sunstein Murphy, and Cynthia Randall and Paul Albrecht.

[2] 66 Pa.C.S. §2807.

> **(iii) In accordance with a depreciation schedule not to exceed 15 years.**
> (3) Electric distribution companies shall, with customer consent, make available direct meter access and electronic access to customer meter data to third parties, including electric generation suppliers and providers of conservation and load management services.
> . . . .
>
> (5) By January 1, 2010, or at the end of the applicable generation rate cap period, whichever is later, a default service provider shall submit to the [PUC] one or more proposed time-of-use rates and real-time price plans. The [PUC] shall approve or modify the time-of-use rates and real-time price plan within six months of submittal. The default service provider shall offer the time-of-use rates and real-time price plan to all customers that have been provided with smart meter technology under paragraph (2)(iii). Residential or commercial customers may elect to participate in time-of-use rates or real-time pricing.
> . . . .

66 Pa.C.S. §2807(f) (emphasis added).

The majority interprets 66 Pa.C.S. §2807(f)(3) and (f)(5) to suggest an overall reading of the Act that does not comport with its plain meaning or well-established intent. Simply because customers are provided pricing options and control over the use of their meter data does not mean the installation of smart meters may be interpreted to be optional. If it was, the General Assembly would have said as much. Instead, the General Assembly chose the word "shall" in requiring electric distribution companies to furnish smart meter technology. At no point did the General Assembly add in the words "which the consumer may or may not choose to

accept," or other words to that effect, and it is not our role to read in such language now.[3]

The intent of the General Assembly was not ambiguous. Smart meters are mandatory in the Commonwealth. There is no opt-out provision. In the 12 years since the passage of Act 129, several utilities, including PECO (Intervenor), have invested substantial resources and relied on the certainty of the meaning of the Act to fulfill the State mandate. If the General Assembly had wished to provide an exception to the mandate, it could have done so in 2008, or in any year since that

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[3] If the plain reading of the Act is not enough, I note here that, in 2008, when Governor Rendell announced the signing of the legislation into law, the following was reported:

> *Governor Edward G. Rendell*, Harrisburg, PA, U.S.A. — (METERING.COM) — October 16, 2008 – Pennsylvania's Energy Conservation Bill, including provisions for smart metering, was signed into law yesterday by state governor Edward G. Rendell.
>
> In terms of the bill, **state electric distributors are required to file their smart meter technology procurement and installation plan with the Public Utility Commission (PUC) within nine months. Within 15 years all homes and businesses in the state are to be equipped with smart meters.**
>
> Energy saving targets that have been set includes cuts of 1 percent by 2011 and 3 percent by 2013, as well as a 4.5 percent reduction of peak demand by 2013. **Utilities that fail to meet these requirements will face steep penalties**.

(Emphasis added.) *See* https://www.smart-energy.com/regional-news/north-america/pennsylvania-energy-bill-signed/ (last visited on October 7, 2020).

time. However, it has not, and it is not this Court's role to create an opt-out provision where none exists statutorily.[4]

This does not mean, however, that the Consumers should not have an opportunity to request accommodation. Section 1501 states, in pertinent part, that "[e]very public utility shall furnish and maintain adequate, efficient, ***safe, and reasonable service*** and facilities." 66 Pa.C.S. §1501 (emphasis added). I agree with the majority's position that the Consumers were not required to prove that the use of smart meters is both unreasonable *and* unsafe. In other words, it is an either-or proposition. The Consumers would have to demonstrate only that the smart meter was either unsafe *or* unreasonable as provided to them to show a violation of the mandate, not that the smart meter is both unsafe *and* unreasonable. The majority writes:

> The PUC states the [Administrative Law Judge (ALJ)] ALJ's role is to determine whether "'use of a smart meter . . . will constitute unsafe ***or*** unreasonable service . . . .'" *Povacz v. PECO Energy Co.*, (Pa. P.U.C. No. C-2015-2475023, filed Mar. 28, 2019), slip op. at 15 (quoting *Kreider v. PECO Energy Co.*, (Pa. P.U.C. No. P-2015-2495064, filed Jan. 28, 2019), slip op. at 21-23 (emphasis added). Elsewhere in its opinion, however, the PUC posits that [the] Consumers "must prove, by a

[4] In an August 20, 2019 article from the National Conference of State Legislatures (NCSL) titled "Smart Meter Opt-Out Policies," NCSL provides an overview of state laws governing the use of smart meters. In each of the states that had smart meter laws as of August 20, 2019, many had some kind of opt-out or opt-in provision. However, in each state where options were offered, they were offered through statute or regulation, at the option of the utility, or as required by the state's public utility commission or similar entity. I have seen no evidence that the options were imposed by the courts, and I do not believe we should do so here in Pennsylvania. Daniel Shea and Kate Bell, *Smart Meter Opt-Out Policies*, https://www.ncsl.org/research/energy/smart-meter-opt-out-policies.aspx (last visited on October 7, 2020).

> preponderance of the evidence, that [their] exposure to the RF fields from the wireless smart meter that PECO plans to install. . . will 'exacerbate' or 'adversely affect' [their] health and, therefore, constitute unsafe ***and*** unreasonable service . . . ." *Povacz*, slip op. at 27 (emphasis added). We infer from its inconsistent language that the PUC did not recognize this distinction in the context of [the] Consumers' claims. In fact, a review of the PUC's decision does not indicate whether the distinction was significant to the PUC's reasoning. The PUC's decision does not clearly purport to require [the] Consumers to prove the meter installation is both unsafe and unreasonable as applied to them. However, [the] Consumers are logically correct that because PECO has a mandate to provide safe ***and*** reasonable service, [the] Consumers may establish a violation of that mandate by showing the wireless smart meter requirement is either unsafe ***or*** unreasonable.

Povacz v. Pa. Pub. Util. Comm'n (Pa. Cmwlth. No. 492 C.D. 2019, filed October 8, 2020), slip op. at 14.

The majority focuses on the PUC's *Povacz* opinion to suggest that the PUC may have incorrectly applied "a conjunctive burden of proof," rather than a "disjunctive burden of proof." It is, however, unclear in this matter whether the PUC applied the correct standard and merely stated it incorrectly in its opinion or whether the wrong standard was in fact applied. Interestingly, the PUC's Administrative Law Judge's (ALJ) decisions in the two companion cases (*i.e.*, *Murphy v. Public Utility Commission* and *Randall and Albrecht v. Public Utility Commission*, as identified in the caption above), clearly enunciated, as conclusions of law, that utility companies are required to furnish safe and reasonable service and that, in the case of *Murphy*, there was "no evidence that a PECO smart meter was unsafe *or* unreasonable." Reproduced Record (R.R.) at 87a-120a; *Murphy v. PECO Energy Co.* (Pa. P.U.C. No. C-2015-2475726, filed Feb. 21, 2018) (emphasis added). In the *Randall and Albrecht* matter, the ALJ determined that the consumers had not met

their burden of showing a violation of the Public Utility Code,[5] which includes the requirement to demonstrate the smart meter was unsafe *or* unreasonable. R.R. at 121a-45a; *Randall and Albrecht v. PECO Energy Co.* (Pa. P.U.C. No. C-2016-2537666, filed Feb. 21, 2018) (emphasis added). Further, in the very *Povacz* opinion referenced by the majority, and as noted above, the PUC stated:

> In reaching our conclusion in *Kreider[, Kreider v. PECO Energy Co.*, (Pa. P.U.C. No. P-2015-2495064, filed Jan. 28, 2019] that we could hear and adjudicate a complainant's allegation(s) of unsafe service and facilities related to a . . . smart meter, we did not modify the standard or burden of proof that applies to a complainant in a formal complaint proceeding under Section 1501 before the [PUC] . . . .
>
> Because the complainant in that case had alleged that her health was "adversely affected" by the smart meter installed outside of her bedroom and that PECO's use of a smart meter would violate Code § 1501, **we explained that it would be the role of the ALJ to determine** whether there is sufficient evidence to support a finding that **the [c]omplainant was adversely affected by the smart meter or whether PECO's use of a smart meter** to measure this [c]omplainant's usage **would constitute unsafe *or* unreasonable service in violation of Section 1501 under the circumstances in that case. Those statements appearing in *Kreider*, in our opinion, are an accurate summary of applicable law . . . .**

Povacz v. PECO Energy Co. (Pa. P.U.C. No. C-2015-2475023, filed Mar. 28, 2019) (2019 *Povacz* Order), slip op., at 26-27 (emphasis added).

This statement suggests that perhaps the PUC was not confused about the standard by which it should measure whether the smart meter fulfills the requirement of Section 1501. Nonetheless, because it is unclear in the instant matter,

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[5] 66 Pa.C.S. §§101-3316.

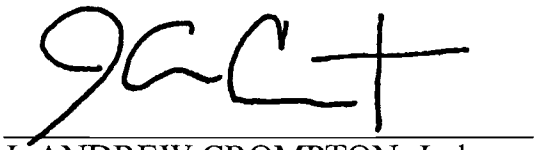
and the PUC may have utilized a conjunctive burden of proof, improperly requiring the Consumers to prove that the smart meters are both unsafe *and* unreasonable, I would remand for the PUC to re-examine the existing record to ensure application of the correct standard without taking additional evidence.

While I maintain that Section 1501 must be given its due weight and the *utility*, in this case PECO, is mandated by the Act to provide a smart meter to each of its customers, there is no language in the Act that precludes the PUC from directing the utility to explore a reasonable alternative where a customer successfully demonstrates the smart meter is unsafe or unreasonable.

I disagree with the majority's suggestion that the PUC determined the Consumers failed to meet their burden of proving unreasonableness based on the erroneous conclusion that Act 129 does not allow accommodations. While the statute does not provide an opt-out provision, and the utility is required to provide smart meters thereunder, there is nothing in the statute that suggests an accommodation cannot be provided when the provision to the individual is either unsafe or unreasonable. The Consumers here properly sought relief under Section 1501 of the Public Utility Code, 66 Pa.C.S. §1501, arguing for an alternative to smart meters on the grounds that the meters were either unsafe or unreasonable in their particular circumstances. Here, the Consumers, in light of their respective medical conditions, rightly focused on the safety of the meters. While I do not think that the Consumers should be permitted to re-litigate the issue of safety and reasonableness, I believe the Consumers are entitled to have the PUC review the existing record to

determine whether it reflects that the installation of a smart meter is, or would be, unsafe *or* unreasonable, per Section 1501.

For the foregoing reasons, I would affirm the PUC's order, in part, but remand solely for the PUC to review the existing record to determine whether it applied the correct standard, as addressed above, and to issue a new decision and order accordingly.



J. ANDREW CROMPTON, Judge

Judge Fizzano Cannon joins in this concurring and dissenting opinion.

Appendix B

PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17105-3265

Public Meeting held March 28, 2019

Commissioners Present:

Gladys M. Brown, Chairman
David W. Sweet, Vice Chairman
Norman J. Kennard
Andrew G. Place
John F. Coleman, Jr.

Maria Povacz C-2015-2475023

v.

PECO Energy Company

OPINION AND ORDER

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BY THE COMMISSION:

Before the Pennsylvania Public Utility Commission (Commission) for consideration and disposition are the Exceptions filed by Maria Povacz (the Complainant or Ms. Povacz) and the Exception filed by PECO Energy Company (PECO or the Company) on May 14, 2018, in response to the Initial Decision of Administrative Law Judge (ALJ) Darlene D. Heep, served on the Parties on March 20, 2018, in the above-captioned proceeding (Povacz Initial Decision or Povacz I.D.). Replies to Exceptions were filed by Ms. Povacz on May 24, 2018, and by PECO on June 4, 2018. The Povacz Initial Decision granted, in part, and denied, in part, the Formal Complaint (Complaint) filed by Ms. Povacz on March 28, 2015, as later amended on April 8, 2016 (Amended Complaint). For the reasons discussed below, we shall deny the Complainant's Exceptions, grant PECO's Exception, reverse, in part, and modify, in part, the Initial Decision of ALJ Heep, and dismiss the Amended Complaint, consistent with this Opinion and Order.

I. Background

This case involves an inquiry concerning the safety of the Complainant's exposure to the level of radio frequency (RF) fields, or electromagnetic energy,[1] from the advanced metering infrastructure (AMI) meter, or smart meter, that PECO proposes to

[1] As the ALJ noted in the Povacz Initial Decision, the expert witnesses in this proceeding used the terms "electromagnetic fields" or "EMFs" and RF fields interchangeably to address the emissions or exposure levels concerns of the Complainant in their testimonies. Povacz I.D. at 5, n.2. The ALJ used the abbreviation "EF" to refer to these emissions. *Id*. We do not use herein the "EF" abbreviation utilized by the ALJ in the Povacz Initial Decision. For disposition purposes herein, we will refer to the emissions of concern as RF emissions or RF field exposure.

install at the Complainant's residence and use regularly to measure the Complainant's electricity consumption.

PECO is an electric distribution company (EDC) subject to the jurisdiction of the Commission. PECO furnishes, owns and maintains the meters in its distribution system. *See* PECO's Tariff Electric Pa. P.U.C. No. 5, Section 6.4 at 14; *see also* Section 14.1 at 22.

Act 129 of 2008 (Act 129 or Act), *inter alia*, amended Chapter 28 of the Public Utility Code (Code) and required EDCs with more than 100,000 customers to file smart meter technology procurement and installation plans for Commission approval and to furnish smart meter technology within its service territory in accordance with the provisions of the Act. Section 2807(f) of the Code provides as follows:

> (f) *Smart Meter technology and time of use rates.*
>
> (1) Within nine months after the effective date of this paragraph, electric distribution companies shall file a Smart Meter technology procurement and installation plan with the commission for approval. The plan shall describe the Smart Meter technologies the electric distribution company proposes to install in accordance with paragraph (2).
>
> (2) Electric distribution companies shall furnish Smart Meter technology as follows:
>
> (i) Upon request from a customer that agrees to pay the cost of the Smart Meter at the time of the request.
>
> (ii) In new building construction.
>
> (iii) In accordance with a depreciation schedule not to exceed 15 years.

66 Pa. C.S. § 2807(f). The General Assembly found that it was "in the public interest" to implement the measures set forth in Act 129 and that the universal installation of smart meters would enhance the "health, safety and prosperity" of Pennsylvania's citizens through the "availability of adequate, reliable, affordable, efficient and environmentally sustainable electric service at the least cost." *See* H.B. 2200, 192d Gen. Assemb., Reg. Sess. (Pa. 2008)).

By Order entered in 2009, the Commission directed all EDCs subject to Act 129's smart meter requirements, including PECO, to universally deploy smart meter technology within their respective service territories in the Commonwealth in accordance with a depreciation schedule not to exceed fifteen years and in accordance with other guidelines established therein. *See Smart Meter Procurement and Installation*, Docket No. M-2009-2092655 (Implementation Order entered June 24, 2009) (*Smart Meter Procurement and Installation Order*). PECO sought and obtained the Commission's approval to complete the installation of AMI meters for substantially all customers within its service territory by the end of 2014. *See Petition of PECO Energy Company for Approval of its Smart Meter Universal Deployment Plan*, Docket No. M-2009-2123944 (Order entered August 15, 2013)); *see also Petition of PECO Energy Company for Approval of its Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123944 (Order entered May 6, 2010).

PECO, in carrying out its obligations under Act 129 and the relevant Commission's Orders implementing Act 129, sent a letter to Ms. Povacz on June 4, 2012, announcing its plans to install a smart meter on her property. On June 14, 2012, Ms. Povacz called PECO and explained that she did not want a smart meter installed on her property. On June 18, 2012, Ms. Povacz sent a letter to PECO's President, Craig Adams, stating that she refuses to have a smart meter installed on her property, and that

she was concerned about the smart meter's safety regarding human health. The next day Ms. Povacz received a letter from Linda Lamberson, a PECO employee working with the smart meter installation group, regarding the PECO smart meter installation team. PECO sent a letter from Brenda Eison, a PECO Customer Care Manager addressing smart meter deployment matters, to Ms. Povacz on June 29, 2012, stating that installation of the smart meter is required, in addition to claiming that the radio frequency levels emitted by smart meters are safe. *See* Povacz I.D. at 9-10, FOF Nos. 4-8 (citations omitted).

On March 26, 2015, Ms. Povacz received a notice from PECO informing her that PECO was planning to terminate her electricity if she did not allow installation of the smart meter. In response to the ten-day shut off notice, Ms. Povacz filed the instant Complaint with the Commission on March 28, 2015, as discussed further below. In response, PECO halted the termination of the Complainant's account pending the outcome of this Complaint proceeding. On April 9, 2015, PECO sent Ms. Povacz a letter informing her that PECO must install a smart meter on her property to comply with Act 129. Currently, an automatic meter reading (AMR) meter is installed at the Complainant's residence. *See* Povacz I.D. at 9-10, FOF Nos. 3; 9-11 (citations omitted).

II. History of the Proceeding

On March 28, 2015, the Complainant filed the Complaint with the Commission against PECO in which she alleged that PECO was going to shut off her service after she refused installation of an AMI meter or smart meter, at her home.

On April 8, 2016, the Complainant filed a second Amended Formal Complaint (Amended Complaint). The Amended Complaint alleged, *inter alia*, that the Complainant suffers from severe sensitivity to electromagnetic fields and experiences several symptoms when exposed to EMFs. The Amended Complaint also stated that

Complainant's electromagnetic sensitivity makes her uniquely susceptible to EMFs and RF emissions, and that exposure to EMF and RF emissions is known to exacerbate a number of medical conditions, including her severe electromagnetic sensitivity. In her Amended Complaint, the Complainant alleged that her exposure to the EMF and RF emissions from PECO's proposed smart meter will "exacerbate" or "adversely affect" her existing health condition of severe electromagnetic sensitivity and, therefore, the installation of a wireless smart meter at the Complainant's home would create an unsafe and unhealthy condition at the premises. *See* Amended Complaint at ¶¶ 10-13, 15, 17.

In the Amended Complaint, the Complainant alleged that the installation of a wireless smart meter in the Complainant's home would constitute a violation of Section 1501 of the Code and Section 57.194 of the Commission's Regulations because (1) it would create unsafe and unreasonable service for the Complainant, who is a PECO customer; and (2) change or alteration of PECO's AMR meter is not necessary or proper for the accommodation, convenience and safety of the Complainant. *See* Amended Complaint at ¶¶ 20, 21. As relief, the Complainant sought an order that compels PECO to abide by the requirements of Section 1501 of the Code to provide safe and reasonable service to the Complainant and compels PECO to cease and desist efforts to install a smart meter at the Complainant's home and that PECO install only an analog meter or a similar device that does not produce EMF or RF emissions, at or near the Complainant's residence. Amended Complaint at ¶¶ 30-34. In the alternative, and pursuant to 52 Pa. Code § 1.91, Complainant respectfully requested that the Commission order the waiver of any rule, regulation or Commission Order that requires PECO to install a smart meter on the Complainant's premises. Amended Complaint at ¶ 35.

On April 29, 2016, PECO filed its Answer to the Amended Complaint. In its Answer, PECO generally denied all material averments in the Amended Complaint. PECO

specifically denied that its AMI meter will cause or contribute to adverse health effects to the Complainant, and therefore demanded proof of the allegations made and conclusions reached. Answer to Amended Complaint at 2. PECO also denied the allegations that the installation of an AMI meter at the Complainant's residence would be unsafe or unreasonable. PECO also denied the allegation that the safe installation of a smart meter would require "repairs, changes, alterations, substitutions, extensions, and improvements in or to" its facilities.

PECO further answered the Amended Complaint by stating that the General Assembly, through Act 129, and the Commission, through its Orders, have effectively determined that universal installation of AMI meters is necessary and proper for the accommodation, convenience, and safety of PECO's customers. PECO denied the implied allegation that installation of an AMI meter at the Complainant's residence would be unnecessary or improper for the accommodation, convenience and safety of its customers, including the Complainant. PECO denied the allegation that installation of an AMI meter would prevent the Complainant from having access to safe and reasonable electric services. Answer to Amended Complaint at 3-4. PECO stated that the requested relief is essentially a request to "opt out" of receiving an AMI meter and that there is no provision in Pennsylvania law to allow a customer to opt out from the installation of an AMI meter, and therefore this requested relief is outside of the Commission's jurisdiction and authority. Answer to Amended Complaint at 6.

Two days of hearing were held June 7-8, 2016, as scheduled.

On August 26, 2016, the Parties' Joint Motion for An Omnibus Schedule Revision was granted,[2] and a revised Pre-Hearing Order was issued which stated that unless there is reference to a specific complainant, expert testimony is considered common testimony between and among all Complainants and admitted in accordance with 52 Pa. Code § 5.407.

Further Omnibus Hearings were held September 14-16, 2016, September 27, 2016, December 5-8, 2016, and January 25, 2017. The final Omnibus transcript was filed with the Commission on February 14, 2017. The record closed on November 13, 2017, upon receipt of the Parties' Reply Briefs. The record in this proceeding consists of 1,910 pages of transcript and 173 exhibits (the Complainants 132 exhibits, PECO 41).[3]

During the hearing, the ALJ granted the unopposed oral request by the counsel for the Omnibus Complainants that all medical information and testimony be marked and kept confidential. A Protective Order regarding medical information of the Complainant was issued on March 13, 2018.

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[2] The Joint Motion combined the schedules for the following proceedings: *Maria Povacz v. PECO Energy Company*, Docket No. C-2015-2475023; *Cynthia Randall and Paul Albrecht v. PECO Energy Company*, Docket No. C-2016-2537666; *Stephen and Diane Van Schoyk v. PECO Energy Company*, Docket No. C-2015-2478239; and *Laura Sunstein Murphy v. PECO Energy Company*, Docket No. C-2015-2475726. On October 25, 2016, the Complainants Stephen and Diane Van Schoyck filed an unopposed Petition to Withdraw, stating that they were removing their home from the electric grid, and therefore the Van Schoycks did not participate in the Omnibus hearings. Thus, the Omnibus Complainants that participated in the hearings are Ms. Povacz, Ms. Randall and Mr. Albrecht, and Ms. Murphy.

[3] Briefing outlines, testimony and exhibits are contained in an eighteen volume Joint Appendix for the Omnibus cases agreed to by the parties and filed in *Murphy v. PECO Energy Company* at Docket No. C-2015-2475726.

On March 20, 2018, the Commission served ALJ Heep's Initial Decision in *Maria Povacz v. PECO Energy Company*, Docket No. C-2015-2475023. The Commission issued both a confidential "proprietary" version and a non-confidential "non-proprietary" version of the Povacz Initial Decision. For the purposes of this Opinion and Order, all references to the Povacz Initial Decision below will be to the non-proprietary version.

As noted above, on May 14, 2018, PECO and Ms. Povacz filed Exceptions to the Povacz Initial Decision.[4] Replies to Exceptions were timely filed by Ms. Povacz on May 24, 2018, and PECO on June 4, 2018.

III. Discussion

A. Legal Standards

As a matter of law, to establish a legally sufficient claim, a complainant must show that the named utility is responsible or accountable for the problem described in the complaint in order to prevail. *Patterson v. The Bell Telephone Company of Pennsylvania*, 72 Pa. P.U.C. 196 (1990) ("*Patterson*"). The offense must be a violation of the Public Utility Code (Code), a Commission Regulation or Order or a violation of a Commission-approved tariff. 66 Pa. C.S. § 701.

[4] On March 23, 2018, the Complainant's counsel filed a Petition for Additional Time to File Exceptions due to personal and professional commitments. The request was granted by Secretarial Letter dated March 26, 2018. On April 19, 2018, Complainant's counsel filed a second request for a two-week extension, indicating of the untimely passing of a member of counsel's law firm and advising that opposing counsel for PECO did not object to a ten-day extension. By Secretarial Letter dated April 17, 2018, the deadline to file Exceptions was extended until May 14, 2018, with Replies due twenty days thereafter.

While Act 129 does not provide customers a general "opt-out" right from smart meter installation at a customer's residence, a customer's formal complaint that raises a claim under Section 1501 of the Code, 66 Pa. C.S. § 1501, related to the safety of a utility's installation and use of a smart meter at the customer's residence is legally sufficient to proceed to an evidentiary hearing before an ALJ. *See Maria Povacz v. PECO Energy Company*, Docket No. C-2012-2317176 (Order entered January 24, 2013) (*January 2013 Povacz Order*); *see also Susan Kreider v. PECO Energy Company*, P-2015-2495064 (Order entered January 28, 2016) (*Kreider*).

As the party seeking affirmative relief from the Commission, the complainant in a formal complaint proceeding has the burden of proof. 66 Pa. C.S. § 332(a). The burden of proof is the "preponderance of the evidence" standard. *Suber v. Pennsylvania Com'n on Crime and Deliquency*, 885 A. 2d 678, 682 (Pa. Cmwlth. 2005) (*Suber*); *Samuel J. Lansberry, Inc. v. Pa. PUC*, 578 A.2d 600 (Pa. Cmwlth. 1990), *alloc. denied*, 529 Pa. 654, 602 A.2d 863 (1992) (*Lansberry*); *see also North American Coal Corp. v. Air Pollution Commission*, 279 A.2d 356 (Pa. Cmwlth. 1971). To establish a fact or claim by a preponderance of the evidence means to offer the greater weight of the evidence, or evidence that outweighs, or is more convincing than, by even the smallest amount, the probative value of the evidence presented by the other party. *See Se-Ling Hosiery, Inc. v. Margulies*, 364 Pa. 45, 48-49, 70 A.2d 854, 855 (1950).

The burden of proof is comprised of two distinct burdens: the burden of production and the burden of persuasion. *Hurley v. Hurley*, 2000 Pa. Super. 178, 754 A.2d 1283 (2000). The burden of production, also called the burden of going forward with the evidence, determines which party must come forward with evidence to support a particular claim or defense. *Scott and Linda Moore v. National Fuel Gas Distribution*, Docket No. C-2014-2458555 (Initial Decision issued May 11, 2015) (*Moore*). The burden of production goes to the legal sufficiency of a party's claim or affirmative defense. *See Id.* It may shift between the parties during a hearing. A complainant may

establish a *prima facie* case with circumstantial evidence. *See Milkie v. Pa. Pub. Util. Comm'n*, 768 A.2d 1217, 1220 (Pa. Cmwlth. 2001) (*Milkie*). If a complainant introduces sufficient evidence to establish legal sufficiency of the claim, also called a *prima facie* case, the burden of production shifts to the utility to rebut the complainant's evidence. *See Moore*.

If the utility introduces evidence sufficient to balance the evidence introduced by the complainant, that is, evidence of co-equal value or weight, the complainant's burden of proof has not been satisfied and the burden of going forward with the evidence shifts back to the complainant, who must provide some additional evidence favorable to the complainant's claim. *See Milkie*, 768 A.2d at 1220.*; see also Burleson v. Pa. PUC*, 443 A.2d 1373 (Pa. Cmwlth. 1982), *aff'd*, 501 Pa. 433, 461 A.2d 1234 (1983).

Having produced sufficient evidence to establish legal sufficiency of a claim, the party with the burden of proof must also carry the burden of persuasion to be entitled to a favorable ruling. *See Moore*. While the burden of production may shift back and forth during a proceeding, the burden of persuasion never shifts; it always remains on a complainant as the party seeking affirmative relief from the Commission. *See Milkie*, 768 A.2d at 1220; *see also, Riedel v. County of Allegheny*, 633 A.2d 1325, 1328, n.11 (Pa. Cmwlth. 1993); *see also, Burleson*, 443 A.2d at 1375. It is entirely possible for a party to carry the burden of production but not be entitled to a favorable ruling because the party did not carry the burden of persuasion. *See Moore.* In determining whether a complainant has met the burden of persuasion, the ultimate fact-finder[5] may engage in

[5] In formal complaint proceedings, the Commission, not the ALJ, is the ultimate fact-finder; it weighs the evidence and resolves conflicts in testimony. When reviewing the initial decision of an ALJ, the Commission has all the powers that it would have had in making the initial decision except as to any limits that it may impose by notice or by rule. *Milkie*, 768 A.2d at 1220, n. 7 (citing, *inter alia*, 66 Pa. C.S. § 335(a)).

determinations of credibility, may accept or reject testimony of any witness in whole or in part, and may accept or reject inferences from the evidence. *See Moore*, citing *Suber*.

Adjudications by the Commission must be supported by substantial evidence in the record. 2 Pa. C.S. § 704; *Lansberry*, 578 A.2d at 602. Substantial evidence is such relevant evidence that a reasonable mind might accept as adequate to support a conclusion. *Consolidated Edison Company of New York v. National Labor Relations Board*, 305 U.S. 197, 229, 59 S.Ct. 206, 217. More is required than a mere trace of evidence or a suspicion of the existence of a fact sought to be established. *Norfolk & Western Ry. Co. v. Pa. PUC,* 489 Pa. 109, 413 A.2d 1037 (1980) (*Norfolk*); *Erie Resistor Corp. v. Unemployment Comp. Bd. of Review*, 166 A.2d 96 (Pa. Super. 1961); *Murphy v. Comm. Dept. of Public Welfare, White Haven Center,* 480 A.2d 382 (Pa. Cmwlth. 1984).

Pursuant to Section 1501 of the Code, a public utility has a duty to maintain "adequate, efficient, safe, and reasonable service and facilities" and to make repairs, changes, and improvements that are necessary or proper for the accommodation, convenience, and safety of its patrons, employees, and the public. *See* 66 Pa. C.S. § 1501. Section 1501 of the Code, 66 Pa. C.S. § 1501, provides, in pertinent part, as follows:

> 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 and facilities shall be in conformity with the regulations and orders of the commission.

The term "service" is defined broadly under Section 102 of the Code, 66 Pa. C.S. § 102, in relevant part, as follows:

> **"Service."** Used in its broadest and most inclusive sense, includes all acts done, rendered, or performed, and all things furnished or supplied, and any and all facilities used, furnished, or supplied by public utilities. . .in the performance of their duties under this part to their patrons, employees, other public utilities, and the public, as well as the interchange of facilities between two or more of them . . .

Section 1505(a) of the Code, 66 Pa. C.S. § 1505(a), provides that:

> Whenever the commission, after reasonable notice and hearing, upon its own motion or upon complaint, finds that the service or facilities of any public utility are unreasonable, unsafe, inadequate, insufficient, or unreasonably discriminatory, or otherwise in violation of this part, the commission shall determine and prescribe, by regulation or order, the reasonable, safe, adequate, sufficient, service or facilities to be observed, furnished, enforced, or employed, including all such repairs, changes, alterations, extensions, substitutions, or improvements in facilities as shall be reasonably necessary and proper for the safety, accommodation, and convenience of the public.

Pursuant to Section 57.28(a)(1) of our Regulations,[6] 52 Pa. Code § 57.28(a)(1), an EDC must use reasonable efforts to properly warn and protect the public from danger and to exercise reasonable care to reduce the hazards to which customers may be subjected to by reason of the EDC's provision of electric utility service and its

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[6] *See Final Rulemaking Order, Rulemaking Re: Electric Safety Regulations, 52 Pa. Code Chapter 57*, Docket No. L-2015-2500632 (Order entered April 20, 2017) (*Electric Safety Final Rulemaking Order*).

associated equipment and facilities. Section 57.28(a)(1), 52 Pa. Code § 57.28(a)(1), provides specifically:

> An electric utility shall use reasonable effort to properly warn and protect the public from danger, and shall exercise reasonable care to reduce the hazards to which employees, customers, the public and others may be subjected to by reason of its provision of electric utility service and its associated equipment and facilities.

An EDC that violates the Code or a Commission Order or Regulation may be subjected to a civil penalty of up to $1,000 per violation for every day of that violation's continuing offense. *See* 66 Pa. C.S. § 3301(a)-(b). The Commission's policy statement at 52 Pa. Code § 69.1201 establishes specific factors and standards the Commission will consider in evaluating litigated cases involving violations and in determining whether a fine is appropriate.

In the Initial Decision, ALJ Heep made forty-nine Findings of Fact and reached nine Conclusions of Law. *See* Povacz I.D. at 8-15, 31-32. The Findings of Fact and Conclusions of Law are incorporated herein by reference and are adopted without comment unless they are either expressly or by necessary implication rejected or modified by this Opinion and Order.

As we proceed in our review of the various positions of the Parties in this proceeding, we are reminded that the Commission is not required to consider expressly or at length each contention or argument raised by the parties. *Consolidated Rail Corp. v. Pa. PUC,* 625 A.2d 741 (Pa. Cmwlth. 1993); *also see, generally, University of Pennsylvania v. Pa. PUC*, 485 A.2d 1217 (Pa. Cmwlth. 1984). Thus, any issue or

Exception that we do not specifically address shall be deemed to have been duly considered and denied without further discussion.[7]

B. Litigated Issues

1. Whether the Complainant was Required under Applicable Law to Prove that RF Exposure from a PECO Smart Meter Will Cause the Adverse Health Effects Alleged in the Amended Complaint

a. Positions of the Parties

The Parties each assert that the seminal Commission decision that applies in this proceeding is *Kreider*, *supra*. *See* Povacz M.B. at 73; PECO M.B. at 13. However, the Parties disagree over what it is exactly the Complainant must prove in this proceeding based on the Commission's decision in *Kreider* in order for the Complainant to prevail in her Complaint under Section 1501 of the Code. *See* Povacz M.B. at 73-75, Povacz R.B. at 5-18; PECO's M.B. at 12-24, PECO R.B. at 4-19. We stated as follows in *Kreider*:

[7] The Complainant's Exceptions include an "Introduction" section, which contains arguments not found elsewhere in the numbered Exceptions including: (1) a citation to *Murray v. Motorola*; (2) an argument that the Commission should refrain from deciding this case; and (3) a request for notice and comment rulemaking. PECO R. Exc. at 1. Pursuant to our Regulations, each exception must be numbered and identify the finding of fact or conclusion of law to which exception is taken and cite relevant pages of the decision. 52 Pa. Code § 5.533(b). Because the arguments contained in the Introduction section are non-conforming to the requirements of 52 Pa. Code § 5.533(b), we will not dispose of those arguments appearing in the Complainant's Introduction to Exceptions that do not appear elsewhere in her numbered Exceptions.

> 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.
>
> * * *
>
> [T]he 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. *See*, [*Woodbourne-Heaton Remand Order*, slip op., at] 12-13 (stating that the ALJ's role was to determine whether there was sufficient record evidence to support a finding that the petitioners would be adversely affected by the reconductoring of the transmission line at issue).

Kreider, slip op., at 21-23 (citing *Letter of Notification of Philadelphia Electric Company 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 Counties*, 78 Pa.P.U.C. 486, 1993 WL 383052 (Pa.P.U.C.), 1992 Pa. PUC Lexis 160, Docket No. A-110550F0055 (Remand Order entered March 26, 1993) (*Woodbourne-Heaton Remand Order*), slip op., at 12-13) (quoted in PECO's Main Brief at 13).

The Complainant argues that the Commission's decision in *Kreider* does not require proof of medical causation, *i.e*., that PECO's AMI smart meter caused or will cause health conditions for the Complainant or will interfere with her health. According to the Complainant, in a Section 1501 complaint alleging human health hazards from the utility's service and facilities, requiring proof of medical causation is so high a burden that it eviscerates PECO's duty to provide safe and reasonable service. The Complainant submits that the Commission, in enforcing Section 1501, must be concerned not just with actual proven harm, but also with the potential for harm, because the role of the Commission includes consideration of policy. Povacz M.B. at 73-75; R.B. at 10-12, 17. According to the Complainant, if something is potentially harmful to the Complainant, it is both unsafe and unreasonable as to the Complainant. Povacz M.B. at 73; R.B. at 10-11. For the Complainant, this means that proving PECO's use of smart meters adversely affects them and that it is unsafe and unreasonable under the circumstances for PECO to deploy a smart meter at her residence. Povacz M.B. at 73.

The Complainant argues that the *potential for harm* is the standard the Commission must consider under Section 1501, because safety regulation cannot wait to act until the possibility of harm is conclusively proven. Povacz M.B. at 57 (emphasis added). The Complainant argues that even PECO's witness Dr. Davis admitted that experiments must be conducted on animals and not humans, for obvious reasons, and that because of that necessary limitation, the most an animal study will ever support is a conclusion about the potential for harm to humans. Povacz M.B. at 56.

The Complainant argues that PECO tries to put the burden on the Complainant to prove RF has conclusively been proven to cause harm, but the Complainant states that PECO should shoulder the burden of proving safety. *Id*. at 58. The Complainant argues that PECO cannot meet that burden, which, according to the Complainant, is the reason why PECO relies so heavily on the Federal Communications Commission (FCC) limits, which the Complainant characterizes as being outdated.

According to the Complainant, the most that PECO could hope to prove in these proceedings regarding the safety of smart meters is that the answer to this important question is currently undecided – neither proved nor disproved, with evidence on both sides of the issue. *Id*. at 59.

The Complainant submits that if the Commission requires the Complainant to prove that harm was or will be caused, then:

> Taking PECO's position to its logical but absurd conclusion, it does not matter how much of a risk of harm is presented, no customer could establish a violation of Section 1501 unless they could prove by a preponderance of the evidence (51%) that they have been or will be harmed. Under that reasoning, a 25% risk of electrocution of an electricity customer through the action of a Pennsylvania utility would be deemed to be safe and not a violation of Section 1501.

Povacz R.B. at 8. The Complainant argues that such result cannot be right, that the General Assembly could not have intended this, and the plain meaning of "safe" does not permit it.[8] Povacz R.B. at 9.

Relying upon its statutory interpretation under the Statutory Construction Act, the Complainant argues that there is nothing in the plain language of Section 1501 to support the argument that the Complainant must prove that harm was or will be caused. Povacz R.B. at 6-8.[9] In other words, the Complainant submits, a customer is not required

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[8] The Complainant cites to the definitions contained in the Merriam-Webster dictionary of "safe" as "free from harm or risk" and "harm" as defined as "physical or mental damage" and "risk" as "possibility of loss or injury." Povacz R.B. at 7 (citations omitted). The Complainant also provides numerous other definitions of these and similar terms. *See* Povacz R.B. at 7, n.2.

[9] Even though the Complainant describes in her Reply Brief, pp. 6-7, that the Commission's statutory interpretation of the word "safe" in Section 1501 is a "threshold issue," it does not mention this argument in its Main Brief or its Exceptions. We note

to prove causation of harm as is required in a tort or toxic tort claim for damages. *See* Povacz R.B. at 8-10.[10] The Complainant argues that the standard applicable to an administrative agency charged with ensuring safety and reasonableness, "is reasonably lower than that appropriate in tort law, which traditionally makes more particularized inquiries into cause and effect and requires a plaintiff to prove that it is more likely than not that another individual has caused him or her harm." Povacz R.B. at 10 (quoting *Allen v. Pennsylvania Engin.* Corp, 102 F.3d 194, 198 (5th Cir. 1996)). The Complainant states that there is no requirement under Section 1501 that she prove that, more likely than not, she has been or will be harmed. Povacz R.B. at 17.

The Complainant argues that the Commission did not explain in *Kreider* what it meant to be "adversely affected," and it did not state that Ms. Kreider had to provide proof of tort law causation. In any event, the Complainant argues that the Commission in *Kreider* used the disjunctive *or* to mean that, in addition to proving that she was adversely affected by PECO's use of a smart meter, Ms. Kreider could prevail by proving that service was unsafe or unreasonable. Povacz R.B. at 13. The Complainant argues that *Kreider* did not address the specific issue presented here, *i.e*., whether Complainants must prove causation as if this were a tort case or whether she may instead prevail by proving lack of safety (risk of harm) or the unreasonable nature of PECO's conduct. Povacz R.B. at 13. The Complainant argues, however, that *Kreider* does indeed

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that PECO did take the opportunity to respond to the Complainant's statutory construction argument in its Reply Brief at pages 18-19, submitting that "since the Commission has a well-developed body of law regarding burden of proof that is specific to this kind of medical/scientific controversy, it would not be appropriate to supplant that precedent with the Merriam-Webster dictionary." PECO R.B. at 19.

[10] The Complainant cites to three cases to emphasize its point through contrast. Povacz R.B. at 10 (citing *e.g. Brandon v. Ryder Truck Rental, Inc*., 34 A. 3d 104, 110 (Pa. Super. Ct. 2011), *Viguers v. Phillip Morris USA, Inc*., 837 A.2d 534, 540 (Pa. Super. Ct. 2003), *Spino v. John S. Tilley Ladder Co*., 696 A. 2d 1169, 1172 (Pa. 1997). The Complainant quotes these opinions, which indicate that proving causation is a required element of the cause of action under the applicable law.

suggest that the relevant inquiry is the potential for harm by referring to *Renney Thomas v. PECO Energy Company*, Docket No. C-2012-2336225 (Order entered December 31, 2013) (*Renney Thomas*). Povacz R.B. at 13 *(citing Kreider*, slip op., at 21). The Complainant submits that the Commission recognized in *Kreider* that the complainant in the *Renney Thomas* case did not need to prove his pregnant wife had already been harmed, but that the proper inquiry was the potential for harm. Povacz R.B. at 14. Thus, the Complainant argues that the Commission must consider the potential for harm as well as the reasonableness of PECO's conduct in insisting that Complainants suffer exposure to RF at their homes or properties in order to retain electric service. Povacz R.B. at 14.

The Complainant also submits that the Commonwealth Court in *Romeo v. PaPUC*, 154 A.3d 422 (Pa. Cmwlth. 2017) (*Romeo*), "did not discuss the meaning in Section 1501 of the words 'safe' and 'reasonable'" and "nowhere did the court state that Romeo had the burden of proving causation of harm, in the tort law sense." Povacz R.B. at 14, 15.

PECO, on the other hand, argues that the Complainant can prevail only if she proves by a preponderance of the evidence that her exposure to the RF emissions from PECO smart meters has caused or will cause, contribute, or exacerbate her adverse health conditions. PECO M.B. at 1, 10; PECO R.B. at 11. PECO submits that the Complainant relied exclusively on the testimony of the Complainant's expert witness in this proceeding, Dr. Andrew Marino, who testified that while he believes that there is potential, or possible, risk from exposure to smart meters – that is, that they "could" cause harm – he also testified that there is "no evidence to warrant the statement" that a PECO smart meter "will," "would," or "did" harm the Complainants. PECO Main Brief at 10.

PECO argues that the Complainant seeks to reverse the normal burden of proof by placing it on PECO and that such reversal would violate PECO's due process

rights because, in response to the legislative mandate and Commission Orders, PECO has invested over $750 million to install an AMI system within its service territory – and under the reversed burden of proof proposed by Complainants, they would be allowed to disrupt that investment and deployment without proving that PECO's system causes any harm. PECO submits that this is no way to run a utility system because it effectively gives veto power over any utility initiative to any customer who sincerely believes that the utility system has "potential for harm." PECO M.B. at 14.

Moreover, PECO asserts that the Complainant seeks to have the Commission apply a standard of proof that would normally be used only in a legislative or quasi-legislative function proceeding, such as a rulemaking, even though this instant proceeding is an exercise of the Commission's quasi-judicial function. PECO M.B. at 14-15.

PECO further argues that the Commonwealth Court's decision in *Romeo* used causation language when remanding the case, which provides support to the view that these cases are about causation. PECO M.B. at 15; PECO R.B. at 15. As quoted by PECO in its Briefs, the *Romeo* court stated (emphasis added by PECO):

> Romeo claimed that the smart meters *cause* safety and fire hazards and have a negative health impact. Just because he cannot personally testify as to the health and safety effects does not mean that his complaint is legally insufficient. He could make out his claim through the testimony of others as well as evidence that goes to that issue.

PECO M.B. at 15; PECO R.B. at 13 (citing *Romeo*, 154 A.3d at 430). PECO submits that the Commonwealth Court did state that the remand in *Romeo* was for the purpose of allowing Mr. Romeo to prove causation. The court did not say that the case was remanded to allow a discussion of "potential" or "risk." PECO R.B. at 13. PECO

submits, therefore, that the court's decision in *Romeo* is more consistent with PECO's view of the burden of proof than with the Complainant's view. PECO R.B. at 14.

Moreover, PECO argues that the Commission's decision in *Kreider* provided clear guidance on the standard of proof to be used in a Section 1501 complaint proceeding involving conflicting scientific claims regarding adverse health effects by directing the parties to the early 1990s *Letter of Notification* proceeding involving PECO's reconstruction of its Woodburne-Heaton 230 kV transmission line. PECO M.B. 15-16; PECO R.B. at 11 (citing *Woodbourne-Heaton Remand Order*, slip op., at 7-8); (citing also *Letter of Notification of Philadelphia Electric Company 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 Counties*, 1993 WL 855896 (Pa. P.U.C. 1993), Docket No. 110550F0055 (Final Order entered November 12, 1993) (*Woodbourne-Heaton Final Order*). As PECO explains, the protestants to the Woodbourne-Heaton transmission line, similar to the Complainant in this proceeding, made the claim that the utility facility can be unreasonable even without conclusive evidence that exposure causes harm, which the Commission rejected. The Commission approved the transmission line, stating:

> That by reason of the fact that the additional scientific research and studies presented of record at the hearing in the remanded proceedings do not support a finding or conclusion that there is a conclusive casual connection between exposure to EMFs and adverse human health effects because of the inconclusive nature of said research and studies, when viewed in totality, the Commission's February 9, 1990 Order approving the Letter of Notification . . . is, hereby, affirmed; AND provided that the Woodbourne-Heaton Line must be operated and maintained in compliance with the National Electric Safety Code and with all applicable statutes,

> regulations and codes for the protection of the public and the natural resources of the Commonwealth of Pennsylvania.

PECO R.B. at 10 (citing *Woodbourne-Heaton Final Order*, slip op., at 11).

PECO submits that the Commission's *Woodbourne-Heaton Final Order* provides a dispositive framework for the burden and standard of proof in the instant proceeding – that is, if the Complainants prove that there is a body of conflicting and inconclusive science, or that the science is "undecided," then the Complainants have failed to meet their burden of proof, and cannot prevail. And PECO asserts that is exactly what the Complainants claim to have demonstrated. PECO M.B. at 18. PECO submits that the rule established in *Woodbourne-Heaton* has been utilized by the Commission to decide transmission line siting cases for a quarter of a century, and it is an appropriate approach to resolving claims that exposure to a utility facility is unsafe. PECO R.B. at 10.

Moving on from the implications of *Woodbourne-Heaton*, PECO argues that *Kreider* provides a separate, independent basis for concluding that that applicable standard in this case requires the Complainant to prove that PECO's AMI meters will cause, contribute to, or exacerbate their adverse health conditions. PECO emphasizes that *Kreider* states that the Complainants "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*." PECO M.B. at 18 (citing *Kreider*, slip op., at 23.) (emphasis added by PECO). Here, argues PECO, each of the Omnibus Complainants alleged in their respective Complaints that PECO's AMI would cause, contribute to, or exacerbate their specific health conditions. PECO M.B. at 18.

PECO argues that *Kreider* does not speak of proving the "potential" or "possibility" of harm. PECO M.B. at 19. PECO submits that *Kreider* does not say that

the Complainant must prove that "PECO is responsible or accountable for the possibility that the problem described in the Complaint will actually exist," or that they must prove that "PECO is responsible for or accountable for the potential that such a problem may exist," or any other wording. According to PECO, that additional wording is being written in, *post hoc*, by the Complainant's Briefs. PECO M.B. at 19.

PECO does not believe that the scope of the hearing in *Renney Thomas* offers any support for the Complainants' view on burden of proof. The complainant in that proceeding claimed in his formal complaint that "electromagnetic fields pose a threat to fetal brain development" and other body functions. PECO filed preliminary objections claiming that a hearing was not allowed. The ALJ convened oral argument on PECO's preliminary objections to allow the complainant to be heard on the alleged safety issue. Citing *Renney Thomas*, slip op., at 3. Because the complainant in that case provided no evidence that smart meters constitute a danger to health or physical safety, the ALJ granted PECO's preliminary objections as a matter of law and dismissed the case without a full evidentiary hearing. PECO submits that there is nothing in *Renney Thomas* to suggest the use of a lower standard of proof based on "potential" risk. PECO R.B. at 12-14.

PECO recognizes that the burden of proof that is set forth in *Woodbourne-Heaton*, *Kreider* and *Romeo* have a great deal in common with causation theories that are used in toxic tort litigation. But labelling the argument as being similar to toxic tort causation does not provide any insights into whether it is the proper burden of proof for use in this proceeding. PECO R.B. at 14. To that point, PECO notes that while the Complainants cite to numerous cases that describe what one must prove in a toxic tort case, not a single one of those of cases discusses what standard the Commission should use in this case. PECO R.B. at 14-15 (citations omitted).

Regarding the Complainant's analogy to electrocution, PECO responds:

> [The Complainant is] mixing apples and elephants. Electrocution is a known phenomenon that is known to cause adverse health effects. If a grounded person touches an energized facility without protective gear, the electric current will seek ground through the person's body. Depending upon the voltage and amperage of the energized facility, the person might experience a shock, injury or even death. That general proposition certainly can be demonstrated by a preponderance of the evidence. And, if it was demonstrated by a preponderance of the evidence that a piece of utility equipment had a 25% chance of causing electrocution, it would of course be deemed unsafe.

PECO R.B. at 15. PECO states that for RF emissions, the Complainant admits that she has not demonstrated, by a preponderance of the evidence, that exposure causes injury or death. And, in that critical way, PECO submits that the Complainant's electrocution analogy is not analogous to exposure to RF emissions. PECO R.B. at 15-16.

b. ALJ's Initial Decision

The ALJ stated if the Complainant has established a *prima facie* case and the utility rebuts the Complainant's evidence with evidence of co-equal weight, the burden is then upon the Complainant to rebut the utility's evidence by a preponderance of the evidence. Povacz I.D. at 26 (citation omitted). To prevail, the ALJ stated that the Complainant must "demonstrate adverse health effects by a preponderance of the evidence." Povacz I.D. at 26 (citing *Woodbourne-Heaton Remand Order*, slip op., at 7-8).

c. Complainant's Exception No. 5 and PECO's Reply

In the Complainant's fifth Exception, the Complainant states that the ALJ erred by implicitly concluding that the Complainant was required to prove that RF exposure from PECO's meter would cause, contribute to, or exacerbate her conditions and symptoms. The Complainant notes that the ALJ did not explicitly address the issue, but ultimately decided against the Complainant on this issue by noting that Dr. Marino did not testify that RF exposure from PECO's meter would cause harm to Complainant and that Dr. Davis and Dr. Israel testified that it would not cause harm. Povacz Exc. at 22. The Complainant states that there is no requirement to prove causation of harm to prove that electric service is not safe or reasonable to the Complainant. The Complainant avers that service that could cause harm to Complainant would violate Section 1501. Povacz Exc. at 22-23.

In its Replies to the Complainant's fifth Exception, PECO submits that the Complainants reiterate their ongoing position that they do not have to prove that exposure to RF fields from AMI meters will cause them harm, only that it might cause them harm. PECO notes that this issue was fully briefed by both parties. PECO R. Exc. at 18 (citing Complainants' M.B. at 75-77, PECO's M.B. at 12-24, Complainant's R.B. at 5-18, PECO R.B. at 4-19). PECO contends that the Complainant's summary overview of their burden of proof argument does not provide any reason to reject the Initial Decision. PECO R. Exc. at 20.

d. Disposition

The ALJ stated the correct burden of proof that applies to the Complainant in this proceeding is the preponderance of evidence standard, which is fully explained in the "Legal Standards" section of this Order and will not be repeated in this section of the Order. The ALJ also succinctly identified the correct standard in this proceeding: "To

prevail, the Complainant must demonstrate adverse health effects . . ." Povacz I.D. at 26 (citing *Woodbourne-Heaton Remand Order*, slip op., at 7-8). Although we believe the ALJ correctly decided the issue, we will provide further clarification on this legal question given the extensive briefing by the Parties on their positions and in an effort to minimize potential future re-litigation of this question in applicable proceedings.

In reaching our conclusion in *Kreider*[11] that we could hear and adjudicate a complainant's allegation(s) of unsafe service and facilities related to an EDC's smart meter, we did not modify the standard or burden of proof that applies to a complainant in a formal complaint proceeding under Section 1501 before the Commission. In *Kreider*, we correctly stated that the complainant in that case must prove, by a preponderance of the evidence, that the EDC is responsible or accountable for the problem described in the complaint. *Kreider*, slip op., at 23. Because the complainant in that case had alleged that her health was "adversely affected" by the smart meter installed outside of her bedroom and that PECO's use of a smart meter would violate Code § 1501, we explained that it would be the role of the ALJ to determine 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 would constitute unsafe or unreasonable service in violation of Section 1501 under the circumstances in that case. Those statements appearing in *Kreider*, in our opinion, are an accurate

[11] In *Kreider*, PECO's petition for reconsideration came before us after we had already denied PECO's preliminary objections requesting that we dismiss the complaint as legally insufficient as a matter of law. The main issue before us on reconsideration was whether anything in Act 129, the Commission's Regulations or Commission's Orders prohibited us from holding a hearing when a customer raises safety allegations under Code § 1501 concerning smart meter use and installation. We concluded in the negative and denied PECO's petition. Moreover, we stated that to ignore claims relating to the safety of smart meters would be an abdication of our duties and responsibilities under Section 1501 of the Code. *Kreider*, slip op., at 20.

summary of applicable law, which is discussed extensively above in the "Legal Standards" section of this Order.

Here, Ms. Povacz must show that PECO is responsible or accountable for the problem described in the Amended Complaint and that the offense is a violation of the Code, a Commission Regulation or Order or a violation of a Commission-approved tariff. 66 Pa. C.S. § 701; *Patterson*, *supra*. Upon a careful review of the statements contained in the Complainant's Amended Complaint, this means Ms. Povacz must prove, by a preponderance of the evidence, that her exposure to the RF fields from the wireless smart meter that PECO plans to install and use at the Complainant's residence to measure her usage will "exacerbate" or "adversely affect" her health and, therefore, constitute unsafe and unreasonable service in violation of Section 1501 of the Code. *See* Amended Complaint at ¶¶ 10-13, 15, 17.

The Complainant has argued that in order to prevail under Section 1501, she need not demonstrate by a preponderance of the evidence that exposure to the RF emissions from PECO's smart meter, once it is installed at her residence and used for the purpose of measuring her electricity consumption, will cause adverse effects, or harm, to her health. However, this is exactly the allegation made in her Amended Complaint to support her claim that PECO's proposed smart meter constitutes unsafe service under Section 1501 of the Code. As discussed above, the Complainant is required to demonstrate the allegations in her Amended Complaint by a preponderance of the evidence. Moreover, the Complainant has argued that if she proves the "potential for harm" from the RF exposure from a PECO smart meter, it is sufficient to prevail under Section 1501, and to require proof of causation in this proceeding would be akin to a tort claim for damages, which is too high a standard. Therefore, for the reasons discussed immediately below, we respectfully reject the Complainant's position.

We agree with PECO's position that the standard of review under Section 1501 that we articulated in the *Woodbourne-Heaton Final Order* applies here. The issue on review for our consideration in that case was related to EMF exposure from an EDC transmission facility and adverse human health effects. We articulated that it must be demonstrated by a preponderance of the evidence that there is a "conclusive causal connection" between exposure to EMFs and adverse human health effects; when the record evidence demonstrates a body of inconclusive scientific research and studies as to the causal connection, the burden of proof is not satisfied. *Woodbourne-Heaton Final Order*, slip op., at 11. Applying that standard here, the Complainant must demonstrate by a preponderance of the evidence a "conclusive causal connection" between the low-level RF exposure from a PECO smart meter and the alleged adverse human health effects.

To otherwise address the Complainant's tort law comparison, unlike tort law which includes as a required element proof of harm or injury already occurred, it is important to recognize that our enforcement authority under Sections 1501 and 1505 is not limited to review of claims only involving harm or injury already occurred. Our broad authority under Sections 1501 and 1505 also clearly includes our ability to hear and adjudicate claims that seek to prevent harm. *See, e.g., Woodbourne-Heaton Final Order; see also, e.g., Renney Thomas v. PECO Energy Company*, Docket No. C-2012-2336225 (Order entered December 31, 2013); *see also e.g. Robert M Mattu v. West Penn Power Company*, Docket No. C-2016-2547322 (Order entered October 25, 2018) (finding that the complainant satisfied his burden in showing that a utility's proposed use of herbicide in implementing its vegetation management practices constituted unreasonable service). Indeed, this proceeding is a good case in point as multiple days of evidentiary hearings have been held before an ALJ notwithstanding the fact that an AMI meter has yet to be

installed at the Complainant's residence.[12] FOF Nos. 3, 9-11. Nevertheless, the question of causation is still relevant. When the prevention of harm is involved, the question becomes whether the preponderance of the evidence demonstrates that a utility's service or facilities will cause harm.

To illustrate the point, we wish to highlight the Complainant's hypothetical example of electrocution and PECO's response thereto. In its response to the Complainant's example, PECO acknowledged in its Reply Brief that if a showing by a preponderance of the evidence was made that an electric facility presented even a 25% risk of causing harm from electrocution, the facility would be deemed unsafe. We agree with PECO's response, and we add further that, in such a hypothetical example, our oversight authority does not require that we wait for the perfect or foreseeable exposure condition to materialize, such as, for example, a customer not wearing protective gear to walk up to and touch the uninsulated energized facility; instead, *the proven exposure to harm* would be sufficient to deem the facility unsafe in violation of Section 1501 and to direct the utility under Section 1505 to remove the unsafe facility and to furnish a safe facility.

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[12] The Complainant filed this case as a formal complaint proceeding and included the prayer for relief that the Commission stop PECO from terminating her service and direct PECO to install an analog meter at her residence and not an AMI smart meter. The record demonstrates that the Complainant is a customer of PECO's, that PECO sent written notice to the Complainant of its plans to install an AMI meter at her residence and that PECO sent written notice of its plan to terminate service to her residence as a result of the Complainant's refusal to allow PECO access to her property to install the AMI meter. After the Complaint was filed by Ms. Povacz, PECO ceased its termination efforts as required by our Regulations, at 52 Pa. Code § 56.92, and continued to stay its efforts to install the proposed AMI meter at the Complainant's residence, keeping its existing AMR meter in place. The Parties have fully litigated this case as a formal complaint proceeding and at no point in this proceeding has PECO argued that the Complainant's claims are not ripe or otherwise appropriate for a Commission decision under Section 1501 or 1505 based on the procedural vehicle of the case (*i.e.*, this being a formal complaint as opposed to a petition for relief) or the fact that PECO has not yet installed or begun using the AMI meter at her residence.

After careful review of the Parties' positions, our concern with the Complainant's "potential for harm" or "capable of causing harm" standard under Section 1501, which we reject, is that it allows the mere demonstration by a preponderance of the evidence that a hazard[13] exists in utility service to be sufficient to prevail under Section 1501. Continuing with the Complainant's hypothetical example, under the Complainant's standard, the mere showing that an energized facility is by its very nature hazardous because it is a source of potential electrocution, or, in the Complainant's words, is a source of "potential for harm" or is "capable of causing harm," would be sufficient for a finding of a violation of Section 1501. Under the Complainant's standard, it would not matter how the utility designs, installs, operates, uses or maintains the energized line to reduce exposure to the hazard and to otherwise warn of and protect from danger. The Complainant's standard rests upon a logical fallacy that equates any hazard with exposure to harm,[14] and, on that basis, according to the Complainant, all hazards must be removed from utility services or facilities in order to be safe. However, even a layperson knows that public utility operations are not, as a general matter, hazard-free. As part of ensuring the safe operation of facilities and the safe provision of service, public utilities are, on a near continual basis, tasked with properly identifying, handling and reducing physical and health hazards to avoid danger to its employees, its customers and the general public. Indeed, the provisions of our Regulations at 52 Pa. Code § 57.28(a)(1), *supra*, recognize that it is the statutory duty of an EDC under Section 1501

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[13] Merriam-Webster online dictionary defines "hazard" as a "source of danger." https://www.merriam-webster.com/dictionary/hazard. The term "danger" is defined as "exposure or liability to injury, pain, harm or loss." https://www.merriam-webster.com/dictionary/danger.

[14] The following simple example helps explain the difference between the two: If there was a spill of water in a room, then that water would present a hazard to persons passing through it. If access to that room was open and no warning was given, then the persons passing through it would be exposed to harm resulting from a slip and fall. If access to that area was prevented by a physical barrier and a warning was posted, then the hazard would remain, but the exposure to harm would be abated.

to use reasonable efforts to properly warn and protect the public from danger and to exercise reasonable care to reduce the hazards to which customers may be subjected by reason of the EDC's provision of electric utility service and its associated equipment and facilities. In our opinion, application of the Complainant's standard, which we reject, is an overreach and would have dire consequences to the daily functioning and operation of public utilities and the provision of utility services within the Commonwealth as well as to our execution of our safety oversight authority over public utility operations. Consequently, we conclude that the Complainant's interpretation of 66 Pa. C.S. § 1501 is not supported by the rules of statutory construction set forth under the Statutory Construction Act. *See* 1 Pa. C.S. § 1921 ("The object of all interpretation and construction of statutes is to ascertain and effectuate the intention of the General Assembly"); *see also* 1 Pa. C.S. § 1922(1) (it is presumed "That the General Assembly does not intend a result that is absurd, impossible of execution or unreasonable").

Based on the foregoing discussion, we shall deny the Complainant's Exception No. 5.

2. Whether the Complainant Has Demonstrated by a Preponderance of the Evidence that RF Exposure from a PECO Smart Meter Will Adversely Affect Her Health

a. Positions of the Parties

On the one hand, the Complainant argues that she has met the burden of proof in this proceeding in demonstrating the potential for harm to the Complainant from PECO's smart meter. Povacz M.B. at 73-75, 77-79. The Complainant submits that PECO's presentation of evidence did not effectively rebut the evidence presented by the Complainant in this proceeding. Povacz M.B. at 39-69. On the other hand, PECO argues that the Complainant did not satisfy her burden of proof in this proceeding in demonstrating that that exposure to RF fields from AMI meters has caused or will cause,

contribute to, or exacerbate any adverse health effects. Indeed, PECO submits that the Complainant concedes she has not proven causation – meaning, she has not proved that PECO's proposed smart meter did, will or would harm the Complainant's health. PECO M.B. at 26; PECO R.B. at 1-3. Regardless, PECO submits that it effectively rebutted the Complainant's evidence presented in this proceeding through the substantial, persuasive expert testimony that it presented. PECO M.B. at 44-49; PECO R.B. at 2.

We begin our more detailed review of the Parties' positions with a summary of the Complainant's presentation of the evidence and PECO's challenges related thereto.

The Complainant's presentation of the evidence included, in relevant part,[15] the testimony of Ms. Povacz herself, the expert testimony of Ms. Povacz's treating physician, Dr. Hanoch Talmor, M.D., and the expert testimony of Dr. Andrew Marino, PhD. Povacz I.D. at 22. Dr. Talmor is one of Ms. Povacz's treating physician, who specializes in treating individuals with exceptional sensitivities. Povacz I.D. at 10, 11; FOF 13, 25.

As for Dr. Marino's qualifications, Dr. Marino was a professor at the Louisiana State University Medical School for approximately thirty-three years. At the time of the hearing, he was retired from the medical school and worked developing software intended to diagnose neurological and neuropsychiatric diseases. During his career, he focused on the biological effects of electromagnetic energy and the electrical

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[15] The Complainant also presented the testimony of Martin Pall, Ph.D.; however, the Complainant decided to forego discussion of the testimony of Dr. Pall in its Briefs and therefore PECO followed suit. Povacz M.B. at 25, n. 1; PECO M.B. at 5. According to the Parties, Dr. Pall testified primarily regarding the mechanism for harm from EF exposure and that his testimony is not relevant to the burden of proof here. Accordingly, Dr. Pall's testimony is not discussed in the Povacz Initial Decision or this Order. *See* Povacz I.D. at 23, n.7.

properties of tissue as they are influenced by that energy. He has a B.S. in physics from Saint Joseph's University and a Ph.D. in biophysics from Syracuse University. Povacz I.D. at 23-24 (citing *Testimony of Dr. Andrew Marino Hearing Transcript* at 565-566); Povacz M.B. at 38-39.

The Complainant argues that Dr. Marino's background of scientific education, experience and authorship "uniquely" qualifies him to testify credibly on the issues before the Commission. Povacz M.B. at 38-39. The Complainant states, "Dr. Marino's long career (more than 45 years) focused on the biological effects of [electromagnetic energy] including more than 100 published papers, testimony in 20 cases, and three books – all dealing with the biological effects of [electromagnetic energy]." Povacz R.B. at 31; *see also* Povacz M.B. at 39. The Complainant submits that "Dr. Marino is far more qualified than either of PECO's experts." Povacz R.B. at 31.

In response, PECO states that it accepted the proffer of Dr. Marino as an expert without objection or *voir dire*, and it continues to accept that Dr. Marino has sufficient background and training to meet the definition of an expert, but PECO sees nothing in those qualifications that makes him "uniquely" qualified to testify in this proceeding. PECO M.B. at 38.

The Complainant submits that Ms. Povacz self-reports electromagnetic hypersensitivity syndrome or "EHS," and that Ms. Povacz's treating physician, Dr. Talmor, has confirmed her self-report of EHS with a diagnosis. Povacz M.B. at 34 (citing September 15, 2016 Transcript at 641-42). The Complainant submits that Ms. Povacz testified that she has taken responsible steps to avoid exposure to RF emissions or electromagnetic energy. Povacz M.B. at 34 (citing Direct Testimony of Maria Povacz at 20). The Complainant explains that the role of a treating physician is not to make determinations about causation but rather to diagnose disease, give advice about avoiding worsening the disease and treat the disease. Povacz M.B. at 35 (citing

September 15, 2016 Transcript at 645). The Complainant further submits that there is no consensus clinical diagnosis for EHS, and that in the absence of consensus clinical diagnosis, physicians do the best they can to address EHS based on what is available in peer-reviewed literature. Povacz M.B. at 35 (citing September 15, 2016 Transcript at 645, 647-48). As Dr. Marino testified, without conducting a test that would cost $500,000, as in the case of his published paper on EHS, it is "impossible" to prove causation for any particular person and thus he could not say that RF emissions from a PECO smart meter did or will cause the symptoms reported by Ms. Povacz. Povacz M.B. at 34 (citing September 15, 2016 Transcript at 643-44); Povacz R.B. at 18-19.

PECO challenges the testimonies of Ms. Povacz and her treating physician by submitting that the Complainant's own expert witness in this case, Dr. Marino, testified that "a person's subjective self-diagnosis of [EHS] is not sufficient to establish that the person has [EHS]." PECO M.B. at 34 (citing September 16, 2016 Transcript at 787). Based on this conflicting testimony by the Complainant's own expert, PECO asserts that no weight should be given to the Complainant's self-diagnosis that she has EHS. Moreover, Ms. Povacz's treating physician, Dr. Talmor, testified that he did no independent diagnostic testing to confirm the self-diagnosis of EHS. PECO M.B. at 34 (citing June 7, 2016 Transcript at 105). Thus, PECO argues that the only testimony that the Complainant even has EHS is based upon information that, according to Dr. Marino, is "not sufficient to establish that the person has" EHS. Additionally, PECO argues that the testimony of Dr. Talmor does not meet the burden of proof in this proceeding as he simply explained that he accepted Ms. Povacz's self-diagnosis of EHS without doing additional diagnostic tests. PECO M.B. at 35-36 (citing June 7, 2016 Transcript at 105).

The Complainant submits that Dr. Marino offered two overall expert opinions in this proceeding. Povacz M.B. at 26. His first opinion is "that there is a basis in established science to conclude that the Complainants could be exposed to harm from the radiation emitted by PECO AMI or AMR smart meters." Povacz M.B. at 26. The

bases for Dr. Marino's first opinion included experimental animal studies, epidemiological studies, his published study on EHS, studies about possible mechanism and studies about pulse structure (as he defined it). Povacz M.B. at 29 (citing September 15, 2016 Transcript at 594); Povacz R.B. at 26. He also relied upon the May 2016 Report of the National Toxicology Program (NTP). Povacz M.B. at 62 (citing January 25, 2017 Hearing Transcript at 1854). The Complainant goes on to summarize specific details of these individual studies upon which Dr. Marino relied in forming his opinion. *See* Povacz M.B. at 29-33 (citing September 15, 2016 Transcript at 723-32, 596-97, 601-23, 625, 628-29); Povacz M.B. at 62-64 (citing January 25, 2017 Hearing Transcript at 1854-56, 1860-61). The Complainant described such details of the bases of his opinion, in relevant part, as follows:

- Dr. Marino presented a chart, Marino Direct 3, showing recent studies on animals exposed to electromagnetic energy at high frequencies, such as smart meters and cellphones, and at low frequencies such as powerlines and household appliances. All the studies show biological effects. Dr. Marino's opinion is that it is unreasonable to dispute the fact that the studies shown in his chart, as well as other studies not listed, show that energy levels comparable to those produced by PECO's smart meters produce biological changes in humans and animals.

- Dr. Marino presented another chart, Marino Direct 4, of peer reviewed epidemiological studies at both high and low frequencies with energy comparable to PECO's smart meters and they show a range of associations. In Dr. Marino's opinion, these epidemiological studies give reason to believe that there is a potential for harm associated with being exposed to RF emissions like that from the PECO smart meter. According to Dr. Marino, that opinion is accepted by

those who are independent from industry and not accepted by those who are not independent, which Dr. Marino refers to as being "bonded to industry."[16]

- Dr. Marino performed a research study on EHS and published the results of that research in peer-reviewed literature in 2011, which was coauthored with colleagues at LSU. The purpose of the study was to test whether there is a *bona fide* neurological condition called EHS. The study was performed on one subject, and to a statistical certainty, *i.e*., 95% probability, the subject was able to detect the presence of electromagnetic energy; the physicians who worked on the study conducted appropriate tests to rule out other causes for the subject's symptoms when exposed to electromagnetic energy. The study cost more than $500,000 to conduct.

- Dr. Marino has published and co-published various scientific studies and papers espousing different theories regarding the "non-thermal" mechanism by which RF energy can get into the human body and lead to adverse health effects. However, the Complainant submits in her Main Brief that it is not necessary for her to prove mechanism in this proceeding and admits that while the mechanism Dr. Marino's papers describe is a sufficient mechanism there could be better explanations that come along as science advances. The Complainant further submits that this explanation of mechanism is unnecessary to the cause and effect relationship that is demonstrated by the empirical evidence presented by the Complainant in this proceeding.

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[16] By referring to individuals who are "bonded to industry," Dr. Marino testified that he means "they were consultants to industry or had some financial relationship or at a minimum an undisclosed conflict of interest with regard to industry. That was summed up in the term bonded." September 16, 2016 Transcript at 835.

- Dr. Marino relied upon the May 2016 Report of the NTP, a government agency that studies toxicological effects in the general public due to environmental factors. According to Dr. Marino, the draft NTP report concluded that RF energy that was studied caused cancer in rats, even at RF levels which were below the FCC limits. Dr. Marino testified that the report is still in draft because it has not yet been published in an archival scientific journal, but that the report has been intensively peer-reviewed more than any other report in the history of experimental biology that Dr. Marino knows about. Dr. Marino testified that the report is crucially important because it is a federal government agency that provides the evidence that the recognized basis of the present federal safety regulatory scheme at the FCC is not protective of health. Dr. Marino also testified that the report has direct bearing on the International Agency for Research on Cancer's ("IARC's") classification of low levels of RF energy as a possible carcinogen.

In response to Dr. Marino's first expert opinion, PECO raises a few challenges. First, PECO submits that Dr. Marino actually testified that there is a basis in established science that the Complainants could be "exposed to danger" not "exposed to harm." PECO M.B. at 25 (citing September 15, 2016 Transcript at 578). According to PECO, this is not a trivial difference. Elsewhere in Dr. Marino's testimony, he repeatedly used "risk" and "danger" as synonyms. Indeed, he testified that his definition of "health risks" is "actual or potential danger to human health from manmade electromagnetic energy." Citing September 15, 2016 Transcript at 671. Therefore, whenever Dr. Marino discussed health "risks" or "dangers," his testimony included the "potential" that the smart meters would cause harm. According to PECO, this is not a hypothetical difference, and it goes directly to whether the Complainant met her burden of proof. On direct testimony, Dr. Marino was directly asked to distinguish whether his opinion is that exposure to RF fields from PECO's smart meter "could" – that is, has the potential to – cause harm to the Complainant or that exposure "would" – that is, actually

– cause harm to the Complainant. PECO submits that Dr. Marino was absolutely clear that he was speaking only about the potential "could," not the actual "would" and quotes his testimony from the transcript as follows:

> Q: Now, do you have an opinion about whether electromagnetic energy from smart meters could cause the symptoms that were reported by Maria [Povacz] and Laura [Murphy]?
>
> A: Yes.
>
> Q: What is that opinion?
>
> A: It could happen. It could be responsible. It could be a causal relationship. The evidence I think is clear about that. It could.
>
> Q: Do you have an opinion about whether it did cause those symptoms?
>
> A: I have an opinion that I can't say whether it did or not. That's my opinion about "did."
>
> Q: Okay. So why – why – what is the basis for that?
>
> A: Well because in order to answer that, we would have to do a $500,000 study. That's the only way you can normalize a cause and effect relationship in a given human being. You got to bring them in and do an experiment.
>
> Q: You're talking about with respect to electromagnetic energy?
>
> A: Yes.
>
> Q: Now, do you have an opinion about whether electromagnetic energy from smart meters could cause harm to the health of Cynthia Randall?
>
> A: Yes.
>
> Q: What is that opinion?
>
> A: It could.
>
> Q: Are you saying it will cause harm to her health?
>
> A: No.

> Q: And why are you not saying that it will cause harm to her health?
>
> A: Because I have no basis to say that.
>
> Q: Why not?
>
> A: Why not? Why don't I have a basis? I just don't have it. There's no evidence that could warrant that statement.

PECO M.B. at 25-26 (citing to September 15, 2016 Transcript at 643-44).

According to PECO, when taken at face value and accepted as true, Dr. Marino's first opinion does not establish that exposure to PECO's smart meter will cause, contribute to, or exacerbate any of the Complainant's health conditions. According to PECO, his testimony does not meet the standard and burden of proof in this proceeding. PECO M.B. at 27.

Next, PECO contends there is little value in addressing each of the individual studies upon which Dr. Marino relied in forming his first opinion given PECO's argument that Dr. Marino's first opinion does not meet the standard or burden of proof in this proceeding. PECO M.B. at 31. However, PECO goes on to highlight a few issues because, in PECO's opinion, they call into question whether even Dr. Marino's expressed opinion should be accepted as stated, and certainly call into question whether his opinion should be the basis of a Commission action. PECO M.B. at 31-33. PECO identified the following issues with the bases for Dr. Marino's first opinion:

- The first issue is Dr. Marino's EHS study. PECO asserts that Dr. Marino candidly testified that, prior to his EHS study, there were no published studies that any person is able to detect the presence or absence of electromagnetic energy, and that he believes all of the studies other than his were poorly designed. PECO M.B. at 31 (citing September 15, 2016 Transcript at 614). He further testified that taking into consideration his own study, his opinion is that PECO's smart meter

has the potential to "trigger EHS, not cause it, trigger it," but that "I believe my speculation is that's the case, but I don't have direct evidence to say that." Citing September 15, 2016 Transcript at 779. PECO submits his testimony does not provide evidentiary basis to remove AMI meters from the Complainant's residence. PECO M.B. at 31.

- The second issue is Dr. Marino's view of "negative" studies.[17] In forming his opinion, Dr. Marino testified that he believes that a negative study has "no probative value" and consequently gave no weight to any published research in which the investigator sought, but was not successful, at showing that exposure to RF fields caused a change in a measured endpoint. PECO M.B. at 32. PECO submits that its expert, Dr. Israel, testified that it is not scientifically valid to ignore negative studies, and it is very important to consider negative studies in determining whether a reported effect is reproducible. Dr. Israel stated that the practice of ignoring negative studies is not a generally accepted scientific practice, and that scientists routinely consider negative studies in making their evaluations. PECO M.B. at 32 (citing December 8, 2016 Transcript at 1552-53). PECO argues that Dr. Marino's approach will result in a "very stilted" view of the body of research that skews towards only seeing positive studies and thus will lead the reviewer to artificially conclude that effects may exist, even if many negative studies have been done that failed to reproduce or replicate such an outcome.

- The third and final issue is that Dr. Marino's belief about individuals being "bonded to industry" is jaded; that Dr. Marino's testimony reveals that whenever a

[17] The Parties each explain that, in scientific research, a "positive" study is short for a study in which the investigator finds that exposure to an agent of interest results in a change in a measured endpoint, while a "negative" study refers to a scientific study in which the investigator finds that exposure does not result in change to a measured endpoint. PECO M.B. at 32; Povacz M.B. at 49.

person or organization disagrees with Dr. Marino as to whether non-thermal effects exist, he does not grapple with the substance of their opinion; he simply concludes that they are "bonded to industry" and dismisses their opinion outright. PECO M.B. at 32-33 (citing September 16, 2016 Transcript at 858-59). PECO asserts that, notably, Dr. Marino placed the European Commission's Scientific Committee on Emerging and Newly Identified Health Risks and an arm of the World Health Organization into the "bonded to industry" category without further evidence that they are being paid by industry simply because they disagree with him. PECO M.B. at 33 (citing September 15, 2016 Transcript at 837-841, 849). PECO argues that testimony based on such an approach cannot and should not be the basis of a Commission determination. PECO M.B. at 33.

In connection with Dr. Marino's first opinion, the Complainant explained that Dr. Marino presented his views on the issues of the background levels of electromagnetic energy and pulsing. PECO presented challenges to Dr. Marino's views on each issue, as discussed further below.

As for the issue of background levels of electromagnetic energy, Dr. Marino testified that in order for PECO's smart meter to present risk, it would have to produce an RF field that is greater than the background or ambient field levels. Dr. Marino recognized that there is some electromagnetic energy in the background virtually everywhere. Dr. Marino assumed that the Complainant lives in a house that is electromagnetically quiet, meaning no Wi-Fi, cell phones, or smart meters and only lights and electric appliances, which, based on Dr. Marino's typical experience, would mean the background level is between 0.01 and 0.001 microwatts per square centimeter. Povacz M.B. at 26-27 (citing September 15, 2016 Transcript at 637, 582-84).

PECO submits that Dr. Marino's testimony on background levels of RF fields should be doubted because Dr. Marino did not do any measurement or calculations

of the background or ambient fields at the Complainant's residence or place of work. He simply accepted the representations of the Complainant's counsel that she had made efforts to reduce fields at her home, and he thus assumed that the fields would be similar to "quiet homes" at which he has made measurements in the past. PECO M.B. at 28 (citing September 15, 2016 Transcript at 582-84, 687, 692-93). Therefore, Dr. Marino has no data or baseline for the ambient level at the Complainant's household upon which to base his comparison – only what counsel told him to assume.

As for the issue of pulsing, Dr. Marino testified that in his opinion the term means any source of electromagnetic energy that is turned on and then sometime later is turned off. Povacz M.B. at 28 (citing September 15, 2016 Transcript at 590). In Dr. Marino's opinion, there is no more efficient way to get the body to react to RF energy than to put in a "pulse," as Dr. Marino has used the term. Povacz M.B. at 28 (citing September 15, 2016 Transcript at 630). Dr. Marino testified that PECO smart meters are pulsed based on his definition of the term. Povacz M.B. at 28 (citing September 15, 2016 Transcript at 592).

In response, PECO's witness Dr. Christopher Davis testified in rebuttal that Dr. Marino's use of the term pulse is the same as a layperson's use of the term, but it is not the description used by communications physicists and engineers. Dr. Davis stated that when the term is used in the scientific sense, PECO's smart meters do not pulse. Dr. Davis stated:

> [I]n communications physics and engineering, "pulsed" means using 1. amplitude modulation and 2. doing so in a way that produces a signal that has abrupt changes in the amplitude of the sine wave. PECO's AMI meter radios are not amplitude modulated so they do not produce "pulsed" fields. PECO's AMI meter radios are frequency modulated, specifically "frequency shift keyed," and send out a collection of regular non-pulsed sine waves around the frequencies they

> use . . . In sum, the fields from PECO's AMI meters are not amplitude modulated and thus are not "pulsed" and therefore do not create "pulsed" fields. If [one] is using the term "pulsed" to suggest that during the time PECO AMIs transmit, they are sending pulses of radio frequency energy then he is incorrect.

PECO M.B. at 30 (quoting Povacz Rebuttal Testimony of Christopher Davis at 21-23).

The Complainant explains that Dr. Marino's second expert opinion is that "because the PECO smart meters have not been proved safe it is unreasonable to force the Complainants to accept the exposure to the radiation emitted by the smart meters on their residences." Povacz M.B. at 26 (citing September 15, 2016 Transcript at 579). The Complainant submits that the basis for Dr. Marino's second opinion is that it would be unreasonable to expose the Complainant to RF emissions because it would be tantamount to involuntary testing. Povacz M.B. at 37 (citing September 15, 2016 Transcript at 663-665).

PECO asserts that Dr. Marino's second opinion is even more problematic than his first opinion because, according to PECO, such opinion is simply an argument that the Commission should act upon the lower evidentiary standard proposed by the Complainant. PECO M.B. at 27. PECO submits that, in his direct testimony, Dr. Marino candidly admitted that this issue is not a "purely scientific" opinion, stating that, upon viewing the research data, "you can see that different minds may make different associations. Certain minds may require – certain minds may accept a level very high. Others not so high. Others may be too low. All depending on their attitude . . . That's why it's not a purely scientific question and never can be. Anybody who styles it that way isn't thinking right." PECO M.B. at 27 (citing September 15, 2016 Transcript at 636). PECO argues that since this is not a "purely scientific" issue, there is no reason to give any particular weight or deference to Dr. Marino's opinion on it. Indeed, PECO

submits that in the context of this litigation, there is significant reason to devalue Dr. Marino's second opinion because his position reverses the burden of proof completely – according to Dr. Marino, PECO must prove that smart meters are safe, and if it has not done so, then it is "unreasonable" to deploy them to the Complainant's home. According to PECO, this is the same as the claim that PECO has the burden of proof in this proceeding, which is not the standard used by the Commission in complaint proceedings. PECO M.B. at 27-28.

This now concludes our summary of the Complainant's presentation of the evidence and PECO's challenges related thereto. Next, we turn to PECO's presentation of the evidence and the Complainant's challenges thereto.

PECO's rebuttal case, or presentation of the evidence, included the expert testimonies of two scientists – Christopher Davis, PhD, and Mark Israel, M.D – and a PECO engineer, Mr. Glenn Pritchard, with expertise in the design and operation of PECO's AMI system. PECO M.B. at 44.

As for Dr. Davis' qualifications, Dr. Davis is a professor of electrical and computer engineering at the University of Maryland in College Park who studies, researches, teaches, and serves on national and international panels related to physics, biophysics, electrical engineering, electromagnetics, radiofrequency exposure and dosimetry. Povacz I.D. at 24 (citing Povacz Rebuttal Testimony of Christopher Davis at 1-7). Dr. Davis has a PhD in physics from the University of Manchester (England). 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 RF fields. He has served as a consultant on RF fields to the U.S. Institute of Health, the U.S. Food and Drug Administration, and United Kingdom

Health Protection Agency. PECO M.B. at 44-45 (citing Povacz Rebuttal Testimony of Christopher Davis at 1-7).

The Complainant argues that Dr. Davis' knowledge and experience is limited regarding the specific issues that are the focus of these proceedings and pale in comparison to Dr. Marino's. The Complainant submits that Dr. Davis is an electrical engineer, not a biologist, and that his core expertise is electrical engineering and physics. The Complainant asserts that while he worked on a number of studies on electromagnetic energy, his primary role in all those studies was to design the exposure system and set up the experiment. The Complainant submits that Dr. Davis even admits that he might have said at a taped presentation that this is a subject on which he has been "peripherally involved." Povacz M.B. at 66-67 (citing December 7, 2016 Transcript at 1138-39, 1143; December 6, 2016 Transcript at 1089).

Dr. Davis testified that the FCC has established a "Maximum Permissible Exposure" or "MPE" for RF fields from AMI meters. The limit is 0.6 mW/cm^2 or 60 milliwatts per square centimeter. Dr. Davis testified that the FCC standard was set on the following basis: there is one generally accepted mechanism by which RF fields can cause harm to humans – by being high enough to heat tissues. The FCC determined that the lowest level of RF exposure at which animals have been observed to detect that they are feeling a little bit warm in a RF field. The FCC then set the RF emission standard for humans at a level 50 times below that thermal threshold. Dr. Davis testified that in establishing and maintaining these standards, the FCC consults closely with the Food and Drug Administration (FDA), the Occupational Safety and Health Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH). PECO M.B. at 45 (citing Povacz Rebuttal Testimony of Christopher Davis at 13-14). Dr. Davis explained that in setting its standards, the FCC considered claims of both thermal and non-thermal effects; however, it set the standards to avoid thermal effects because the scientific studies did not show any non-thermal effects. Dr. Davis testified that the FCC

continues to consider whether there are adverse biological effects from non-thermal exposure levels, but it considers the scientific evidence for such effects to be "ambiguous and unproven." PECO M.B. at 46 (citing Povacz Rebuttal Testimony of Christopher Davis at 14-16). Dr. Davis explained that the FCC keeps current on claims that RF fields can cause non-thermal effects; it does not believe that they have been demonstrated sufficiently to warrant change to the FCC standards. *Id*. Dr. Davis explained that the FCC's ongoing review is done in coordination with other government agencies that oversee health and safety, as named above. PECO R.B. at 22-24. Dr. Davis testified that he himself has worked with FCC scientists in their labs on research projects involving cell phone testing in recent years. PECO R.B. at 24.

The Complainant challenges Dr. Davis' testimony regarding the FCC limits. Specifically, the Complainant asserts that while the FCC sets emissions limits for devices like smart meters that emit RF energy, the FCC limits do not reflect a level that is safe for humans and, therefore, PECO errs in placing reliance on them, especially for the medically vulnerable Complainant. Povacz M.B. at 64-65. The Complainant claims that the FCC limit is outdated and infers that the FCC has not kept current with studies of biological effects from exposure to RF at powers and frequencies comparable to smart meters. The Complainant submits that the FCC set the limits in 1986 based on a report of the National Council of Radiation Protection (NCRP) that demonstrated that effects can occur to humans through the heating of tissues. However, the Complainant claims the FCC has only consulted with other government agencies in *establishing* the limits in 1986, with no reference to *maintaining* the limits. The Complainant argues that Dr. Davis' testimony on the FCC's ongoing review of the limits in not credible and that it is impossible for the Commission to believe Dr. Davis regarding the FCC's ongoing review. Additionally, the Complainant submits that the FCC's use of averages is not a rule of science and Dr. Marino testified that the potential for harm results from the instantaneous or peak value and pulse pattern. Povacz M.B. at 64-65, 35-36 (citing

September 15, 2016 Transcript at 653-57), 45-46 (citing Direct Testimony of Dr. Andrew Marino, September 15, 2016 Transcript at 598-599); Povacz R.B. at 35-36.

Dr. Davis testified that the average exposure from an AMI meter[18] is many millions of times less than the FCC standards. For average exposure for a FlexNet meter, Dr. Davis' Exhibit CD-2 shows average exposure at 7.8×10^{-8} mW/cm^2 over a 24-hour period compared to the FCC maximum permissible limit of 0.6 mW/cm^2 over 30 minutes. Dr. Davis also testified that the peak exposure levels of RF fields from a FlexNet meter are 40 times smaller than the FCC average-exposure standards. PECO M.B. at 46 (citing Povacz Rebuttal Testimony of Christopher Davis at 16-17; PECO Exh. CD-2, CD-3). For peak exposure, Dr. Davis' Exhibit CD-3 shows a single emission of 0.016 mW/cm^2 at two watts of power at a distance of one meter.

In response, the Complainant submits that its theory of the case is based on instantaneous or peak RF exposure levels from smart maters, not average values; therefore, the Complainant argues Dr. Davis' calculated average exposure is irrelevant to this proceeding. Moreover, the Complainant explains that the FCC exposure limit is calculated as an average over 30 minutes while Dr. Davis calculated the average over a whole day; therefore, the Complainant asserts that Dr. Davis' average numbers are misleading. Povacz M.B. at 40-41. The Complainant argues that Dr. Davis admitted that the human body can be affected by RF only when exposed and that to use averages is to

[18] To calculate RF exposures associated with an AMI meter that PECO proposes to install and use at Ms. Povacz's residence, Dr. Davis relied upon the data and other technical information that PECO witness Glenn Pritchard provided. Mr. Pritchard testified that in Ms. Povacz's neighborhood, the existing meters have been tuned to six or seven transmissions per day for a 70-millisecond duration at a maximum of two watts of power. The AMI meters also include a ZigBee radio that allows the meter to communicate with devices within the home. When first installed, the ZigBee radio will transmit every thirty seconds at approximately 1/10th of a watt for a duration of less than one microsecond. PECO Energy Company St. 2R at 5-6, December 6, 2016 Transcript at 942.

consider more than 99% of the time when the human body is not exposed. For example, Dr. Davis admitted that 1,000 watts of radiation in the eye could do very serious harm but if the 1,000 watts was averaged over 30 minutes, it would be less than the power from a PECO smart meter. Povacz M.B. at 46 (citing December 7, 2016 Transcript at 1230, 1347-48). Moreover, the Complainant submits that Dr. Marino and Dr. Davis agree on the power density calculations for peak exposure levels. The Complainant states that these peak exposure levels show that the RF fields from a smart meter is relatively close to the FCC limit – the FCC limit is 60 and the exposure at a distance of one meter is 16. Povacz M.B. at 42 (citations omitted).

Dr. Davis also testified that PECO's existing meter system uses AMR meters and also communicates using RF transmissions. Dr. Davis compared the average RF exposure from existing AMR meters to the average RF exposure from the new AMI meters and concluded that the AMI meter will provide 83% less RF exposure than the electric AMR meter that is currently installed at the Complainant's residences. PECO M.B. at 46-47 (citing Povacz Rebuttal Testimony of Christopher Davis at 18-19, PECO Exh. CD-8).

The Complainant challenges Dr. Davis's testimony regarding RF emissions form PECO's existing AMR smart meter, explaining that Dr. Davis' assertion is based on average exposure while Dr. Marino's theory is based on peak exposure and pulse patterns (as Dr. Marino defines pulse). The Complainant submits that Dr. Davis even admitted that comparison of peak values shows that the RF exposure from AMI meters is twice as high as exposure from AMR meters. Povacz M.B. at 45 (citing December 7, 2016 Transcript at 1387-88).

Dr. Davis also testified that people's exposure to RF fields from everyday sources, including nearby ultra-high frequency (UHF) radio and television broadcasting stations, are hundreds of times larger than the average exposure from a PECO smart

meter. PECO M.B. at 28-29, 47 (citing Povacz Rebuttal Testimony of Christopher Davis at 17-18; PECO Exh. CD-5 and CD-6). For example, exposure when using a cell phone is millions of times higher than from an AMI meter and typical exposure from standing 30 feet away from someone else using a cell phone results in exposure that is 300 times greater than being simultaneously exposed to peak emissions from an electric AMI meter. *Id*.

The Complainant challenges Dr. Davis's testimony of RF exposure in everyday life, arguing that all are meaningless figures and calculations because Dr. Davis admits they are all comparisons of averages. The Complainant argues that, when examining RF exposure from a PECO AMI meter at peak levels, such does not seem small at all in comparison to other sources of exposure. Povacz M.B. at 43 (December 7, 2016 Transcript at 1229-1238). Dr. Marino's testimony regarding significant increases in electromagnetic energy exposure to the Complainant if PECO were permitted to deploy a smart meter at her "electromagnetically quiet" home negates this testimony as well as the testimony of PECO's engineer, Mr. Pritchard, who testified in this proceeding, that the addition of smart meter at Ms. Povacz's residence would not materially add to the RF in her residence and that it would be useless for the Complainant to resist a smart meter on her home because all of the homes in the neighborhood have been fitted with smart meters. Povacz M.B. at 44 (citing December 7, 2016 Transcript at 1245-1252; citing also Pritchard Povacz Rebuttal Testimony at 17).

PECO submits that based on his testimony, Dr. Davis concluded, to a reasonable degree of scientific certainty, that there is no reliable scientific basis to conclude that exposure to RF fields from PECO's AMI meters is capable of causing any adverse biological effects in people, including the Complainant. PECO M.B. at 47 (citing Povacz Rebuttal Testimony of Christopher Davis at 24-25).

The Complainant submits that Dr. Davis's opinion cannot be relied upon by the Commission because he ignored the May 2016 NTP report and the IARC classification in formulating such opinion. Povacz M.B. at 68 (citing January 25, 2017 Transcript at 1882-83; December 7, 2016 Transcript at 1334). The Complainant submits that there is "stark disagreement" between the Parties' experts as what weight to give this report because it is still in draft, but that Dr. Marino said the report is crucially important because it is a federal government agency that provides the evidence that the recognized basis of the present regulatory scheme of the FCC is not protective of health and has direct bearing on the IARC classification on low levels of RF exposure as a possible carcinogen. Povacz M.B. at 63 (citing December 9, 2016 Transcript at 1856-57, 1859-60). Additionally, the Complainant argues that Dr. Davis's opinion cannot be relied upon because he took the unreasonable position of saying he was "absolutely certain" that RF exposure cannot cause harm and as a result, "kids can hold cell phones against their heads all day long and there is absolutely nothing to worry about." Povacz M.B. at 68 (December 7, 2016 Hearing Transcript at 1217-18).

PECO responds to the Complainant's challenge by recognizing that Dr. Marino believes the draft, unpublished May 2016 NTP report should be given a great deal of weight because he is convinced that it was a well-done study. PECO submits, however, that Dr. Davis takes the view that one should wait for the review and publication process to be completed before deciding how much weight to give the study; in the interim, he gives it little or no weight. PECO argues that only when it is finalized and published, is when the results will need to be analyzed and integrated in the context of all other existing research on RF exposure and cancer endpoints. And only then will the experts know what weight to give this research. Until then, PECO respectfully requests that the Commission treat the May 2016 NTP report as what it is: a draft, unpublished report. PECO M.B. at 43.

As noted above, PECO also presented the expert opinion testimony of Dr. Israel. As for Dr. Israel's qualifications, PECO submits that he attended the Albert Einstein College of Medicine, completed an internship and residency at Harvard Medical School, has worked at the National Institute of Health and has been a professor of medicine and medical research at numerous medical schools, including Dartmouth. He has been the Director of the Dartmouth Cancer Center, had a research laboratory at Dartmouth, and had been the chief administrator of the Cancer Center. He has studied RF fields and health effects. Dr. Israel began to examine the research on EMFs, including RF fields, and health effects during his tenure at the National Cancer Institute more than 25 years ago. He has continued to follow the research literature on this subject since that time. Povacz I.D. at 25; PECO M.B. at 48-49 (citing Povacz Rebuttal Testimony of Mark Israel at 5-6). PECO submits that Dr. Israel's training and experience make him eminently qualified to appear as an expert in this proceeding. PECO M.B. at 49, n.15.

The Complainant argues that Dr. Israel's knowledge and experience is limited regarding the specific issues that are the focus of these proceedings. The Complainant submits that Dr. Israel has never published any research and has never done any research on the effects of electromagnetic energy. Moreover, the Complainant asserts that Dr. Israel showed unfamiliarity with the May 2016 NTP report and the IARC classification, which, according to the Complainant, demonstrate that his knowledge and understanding of the issues before the Commission are limited and, therefore, he is not a reliable source of scientific information about any of the issues before the Commission in this case. Povacz M.B. at 66-67 (citing December 9, 2016 Transcript at 1580).

Dr. Israel testified that he conducted an evaluation of whether exposure to RF fields from PECO's AMI meters can cause, contribute to or exacerbate the conditions described by the Complainant. Based on his evaluation, Dr. Israel concluded that for each of the symptoms or conditions identified by the Complainant, that there is no

reliable medical basis to conclude that RF fields from PECO's electric AMI meter caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by the Complainant. PECO M.B. at 49-50 (Povacz Rebuttal Testimony of Mark Israel at 11-26). Dr. Israel's overall medical opinion is that exposure to electromagnetic fields from PECO's smart meters have not been and will not be harmful to the Complainant's health. He holds both his symptom-specific and overall medical opinions to a reasonable degree of medical certainty. PECO M.B. at 50 (Povacz Rebuttal Testimony of Mark Israel at 26).

The bases for Dr. Israel's evaluation included the same methodology that he uses in the usual course of his medical work, which included searching medical and scientific databases, analyzing studies identified through that research, evaluating as a whole all of the studies that he determined were relevant to the claimed symptoms, including both positive and negative studies, and review of the findings of public health agencies and organizations to see if they provided any insights Dr. Israel missed and to see if their conclusions were inconsistent with Dr. Israel's initial determinations. PECO M.B. at 49 (citing Povacz Rebuttal Testimony of Mark Israel at 6-7).

The Complainant challenges the bases for Dr. Israel's opinion testimony because he did not cite to one single positive study that he relied upon. Povacz M.B. at 49 (citing December 8, 2016 Transcript at 1641-42). The Complainant argues that Dr. Israel "cherry-picked studies" to only account for negative studies and submits that "almost any study can be designed to show no effect" and submits that Dr. Israel was unaware whether the studies he cited were funded by industry. Povacz M.B. at 49-50 (citations omitted). The Complainant claims that Dr. Israel relied upon and simply quoted learned treatise and reports of public health agencies in violation of the hearsay rule, citing *Majdic v. Cincinnati Machine Company*, 537 A. 2d 334 (Pa. Super. 1988). Povacz M.B. at 59-62. The Complainant also submits that the bases for Dr. Israel's opinion is troubling because he did not take into consideration the results of the May

2016 NTP report and because he did not give proper weight to the IARC classification. Povacz M.B. at 69 (citing December 9, 2016 Hearing Transcript at 1601, 1632-37).

PECO responds to the Complainant's challenges by stating that Dr. Israel's testimony was not based exclusively on negative studies, noting that he testified to the methodology that he used and that he explicitly stated that: "For each [symptom or condition], I considered the studies that (1) report an effect and (2) studies that report no effect because that is necessary for a reliable medical evaluation." PECO M.B. at 39 (citing Povacz Rebuttal Testimony of Mark Israel at 3-5). PECO responds to the Complainant's hearsay argument that twelve years after the Superior Court issued the *Majdic* ruling, the Pennsylvania Supreme Court issued its Opinion in *Aldridge v. Edmonds*, 750 A.2d 292 (Pa. 2000), in which the Court describe the allowable uses of learned treatises in expert testimony. PECO M.B. at 41 (quotation omitted). PECO submits that Dr. Israel testified that he first forms a preliminary opinion based on research and analysis of primary research, then he reviews the reports of public health agencies and similar organizations to see if they provide any insights Dr. Israel missed and to see if their conclusions are inconsistent with Dr. Israel's initial determinations. He then makes his final medical evaluation. PECO submits his use of these reports is proper under *Aldridge* because the findings of the reports are used by Dr. Israel as the basis for his opinion and are not admitted in this proceeding as evidence of the truth of the matters asserted therein. PECO M.B. at 42.

Regarding the IARC classification of electromagnetic energy as a "possible" carcinogen, PECO submits that Dr. Israel provided context for understanding this classification:

> IARC said that there was limited evidence that radio frequency fields could contribute to cancer and there was limited evidence in animals and those criteria that there's not sufficient evidence to identify it as a probable cause, because

> there's limited evidence in humans and limited evidence in animals, it gets designated as a category 2B which stands for "possible." I've always been uncomfortable with "possible" because "possible" to me is misleading to the population that I have to take care of because I think what IARC means is that there's limited evidence in humans and limited evidence in animals. "Possible" in the lay language of the people I have to take care of, means my God it might be possible or oh, well anything is possible, so I should pay attention to this. So, I really always focus when I talk to people about the fact they're [*sic*] just isn't evidence to identify this as even a probable carcinogen.

PECO M.B. at 37 (citing December 9, 2016 Transcript at 1630-31).

No further evidence was offered into the record by the Complainant to rebut the evidence presented by PECO.

b. ALJ's Initial Decision

The ALJ noted that the Complainant avers in her Amended Complaint that she has severe electromagnetic sensitivity that makes her uniquely susceptible to EMF and RF fields and that the Complainant asserts that the RF fields that emanate from smart meters will exacerbate her condition. Povacz I.D. at 22. The ALJ determined that the Complainant met her initial burden of proof, Povacz I.D. at 2, based on the following evidence presented by the Complainant:

- Ms. Povacz's testimony, in which she stated that until 2012, she slept soundly and was in good health and rarely ill. Ms. Povacz testified that she undertook efforts to reduce exposure to RF emissions in her house including purchasing window films, eliminating cordless phones and purchasing hardwire internet routers

instead of using Wi-Fi. She has also purchased and uses various shields to protect against exposure to RF emissions. Povacz I.D. at 23.

- Dr. Talmor's testimony, in which he explained he had sent a letter to PECO stating that a smart meter should not be installed at the Complainant's home because it would worsen her condition. Dr. Talmor also testified that Ms. Povacz's symptoms are fully consistent with electromagnetic hypersensitivity syndrome and that her symptoms are worse when she is exposed to electromagnetic and RF wave emissions. Povacz I.D. at 23 (citing Direct Testimony of Hanoch Talmor, M.D. at 3-4). Dr. Talmor testified that he recommended that Ms. Povacz avoid all sources of RF emissions that she can, and that PECO abstain from installing a smart meter at her home because of the negative health effects such a device would have on Ms. Povacz. Povacz I.D. at 23 (citing Direct Testimony of Hanoch Talmor, M.D. at 5).

- Dr. Marino's testimony, which included his opinion that there is a clear basis in established science for the conclusion that Ms. Povacz could be in danger if exposed to the emissions emitted by the PECO AMI meter. Povacz I.D. at 24 (citing Testimony of Dr. Andrew Marino Hearing Transcript at 578).

Povacz I.D. at 24.

The ALJ then turned to a review of PECO's rebuttal presentation of evidence and concluded that PECO presented an "effective rebuttal." Povacz I.D. at 24, 26. The ALJ relied upon the following testimony from Dr. Davis:

- Dr. Davis testified that, based on his calculations, the average exposure from PECO's electric AMI meters is millions of times less than the FCC maximum permissible exposure levels. Povacz I.D. at 24.

- Based on his calculations, the peak exposure from PECO's electric AMI meters is approximately 40 times smaller than the FCC limit for 30-minute average exposure. Povacz I.D. at 24 (citing Murphy Rebuttal Testimony of Christopher Davis at 15-16; Povacz Rebuttal Testimony of Christopher Davis at 16; PECO Exh CD-2).

- Dr. Davis also testified that 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. Povacz I.D. at 24 (citing Murphy Rebuttal Testimony of Christopher Davis at 16-17; Povacz Rebuttal Testimony of Christopher Davis at 17; PECO Exh. CD-4).

- Dr. Davis testified, to a reasonable degree of scientific certainty, that there is no reliable scientific basis upon which to conclude that exposure to EFs from PECO's AMI meters is capable of causing any adverse biological effects in people, including the Complainant. Povacz I.D. 25 (citing Tr. at 24-25).

The ALJ also relied upon the following testimony from Dr. Israel:

- Dr. Israel conducted an evaluation of whether exposure to RF fields from PECO's AMI meters can cause, contribute to, or exacerbate the conditions described by Ms. Povacz. In that evaluation, he used the same methodology that he uses in the usual course of his medical work, which included searching medical and scientific databases, analyzing studies identified through that research, evaluating as a whole all of the studies that he determined were relevant to the claimed symptoms, including both studies that showed an effect and studies that did not show an

effect, and reviewing the findings of public health agencies and organizations to see if they provided any insights Dr. Israel missed and to see if their conclusions were inconsistent with his initial determinations. He then made his final medical evaluation. Povacz I.D. at 25 (citing Povacz Rebuttal Testimony of Mark Israel Hearing Transcript at 6-7).

- Dr. Israel conducted the above-described evaluation for each of the symptoms or conditions identified by the Complainant and concluded, for each such symptom, that there is no reliable medical basis to conclude that RF fields from PECO's electric AMI meters caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by Complainant. Povacz I.D. at 26 (citing Povacz Rebuttal Testimony of Mark Israel Hearing Transcript at 11-26; December 8, 2016 Povacz Hearing Transcript at 1470-1516).

- Dr. Israel offered his overall medical opinion that exposure to EMFs from PECO's smart meters has not been and will not be harmful to the Complainant's health, holding both his symptom-specific and overall medical opinions to a reasonable degree of medical certainty. Povacz I.D. at 26 (citing Povacz Rebuttal Testimony of Mark Israel Hearing Transcript at 26).

The ALJ recognized that the Complainant offered a challenge to PECO's reliance on its smart meter meeting FCC limits. The ALJ explained that the Complainant argues that "PECO places far too much reliance on meeting FCC limits for safety as to everyone, even the medically vulnerable Complainants; the FCC limits reflect badly out of date irrelevant science in the context of these cases." Povacz I.D. at 26 (citing Povacz Main Brief at 65). The ALJ stated that PECO meters meet the FCC limits, and in fact emit RF fields less than that limit. The ALJ stated that PECO's reliance on limits set by

this federal agency that regulates radio communications was not unreasonable. It was reasonable of PECO to conclude that emissions that comply with or are less than FCC limits are safe for the public and begin to install such meters. While these proceedings provide an opportunity for the Complainant to establish that she is an exception, it does not negate the reasonableness of PECO's selection of its meters given the FCC standards and the emissions of the meters selected. Povacz I.D. at 26.

The ALJ also recognized that the Complainant offered another challenge to the testimony of Dr. Davis through Dr. Marino, who testified that Dr. Davis' calculations were in error because he compared a daily average of PECO smart meter emissions to a 30-minute average FCC standard. Povacz I.D. at 27 (citing January 25, 2017 Hearing Transcript at 1876-77). The ALJ noted, however, that Dr. Davis testified that the RF fields from an electric AMI meter even at peak exposure are 40 times smaller than the FCC average-exposure standards and are not a safety risk. Povacz I.D. at 27 (citing *Povacz Rebuttal Testimony of Christopher Davis* at 17; PECO Exh. CD-3).

The ALJ found most pertinent the comparison made by Dr. Davis between the RFs from an AMR meter and the RFs from an AMI meter. The ALJ noted that Ms. Povacz currently has an AMR meter and she testified that she was in good health prior to the installation of the smart meters in her area in 2012. The ALJ noted that there was no evidence rebutting the testimony of Dr. Davis that the AMI meter will provide 83% less RF exposure than the AMR meter that is currently in place at the Complainant's residence. The ALJ reasoned that if EMF and RF emissions were the source of Ms. Povacz's travails, they should have manifested themselves prior to 2012, with the AMR meters. Povacz I.D. at 27 (citing *Murphy Rebuttal Testimony of Christopher Davis* at 18, *Povacz Rebuttal Testimony of Christopher Davis* at 18-19, PECO Exh. CD-8).

The ALJ concluded that the Complainant has not established that RF exposure that may emanate from the smart meters are unsafe to her. I.D. at 27 (citing 66 Pa. C.S. § 332(a)). The ALJ also concluded that there is no showing that RF emissions from smart meters are causing Ms. Povacz's health problems, and PECO successfully rebutted any such claim. Povacz I.D. at 28.

c. Exceptions and Replies

In her first, second, third, fourth and eighth Exceptions, the Complainant takes exception to the ALJ's conclusion that the Complainant has not met her burden of proof in this proceeding with respect to showing that a PECO smart meter is unsafe because of its RF exposure levels to customers. We discuss the Complainant's first, second, third, fourth and eighth Exceptions, and PECO's Replies thereto, in more depth in our disposition in the next section below.

d. Disposition

Upon review of the evidentiary record and the positions of the Parties, we shall deny the first, second, third, fourth and eighth Exceptions of the Complainant. We agree with the ALJ's conclusion that the Complainant failed to meet her burden of proof in this proceeding, but respectfully for different reasons, as explained below.

To begin, in our opinion it would be improper to give any weight to the Complainant's testimony regarding her self-diagnosis of EHS given the conflicting testimony of Dr. Marino, in which he clearly states that a person's subjective self-diagnosis of EHS is not sufficient to establish that the person has EHS. September 16,

2016 Transcript at 787. We also are forced to give little weight to the testimony of the Complainant's treating physician, Dr. Talmor. The Complainant submitted that she did not offer Dr. Talmor's testimony on the issue of causation.[19] Dr. Talmor testified that he did not conduct any independent diagnostic tests to confirm the Complainant's self-diagnosis but rather that he relied on the information provided by the Complainant. June 7, 2016 Transcript at 105. Thus, his diagnosis of EHS for the Complainant was based upon information that Dr. Marino testified is "not sufficient to establish that the person has" EHS. September 16, 2016 Transcript at 787. The Complainant seeks to rehabilitate this fact with Dr. Marino's testimony, in which he explained that there is no consensus clinical diagnosis in the medical community for EHS and that the only certain test would cost $500,000 to conduct.[20] While we would be able to accept that there is no consensus clinical diagnosis in the medical community for EHS, it does not overcome the fact that there is a complete lack of any independent diagnostic testing to corroborate the Complainant's self-diagnosis. Thus, based on the conflicting testimony by Dr. Marino and the lack of corroboration as to the Complainant's EHS diagnosis, we would be on a shaky foundation to find the Complainant has proven by a preponderance of the evidence the allegation in her Amended Complaint that she currently suffers from EHS and is, therefore, a medically sensitive customer of PECO's.

Next, while Dr. Marino is clearly qualified as an expert on the issue of causation in this case based on his specialized knowledge, skill, experience in this area of

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[19] In her Reply Brief, the Complainant states:

> The Complainants and their doctors are not experts in the effects of RF exposure (although Dr. Marino is) and they concede, as they must, that their testimony and that of their doctors would not meet the high burden of providing causation if these proceedings required . . . proof of specific causation of harm.

Povacz R.B. at 18.

science and his education in biophysics,[21] Dr. Marino's first opinion does not, in our view, constitute an unequivocal opinion to support a finding that the exposure levels to the RF energy from a PECO smart meter installed and used at her residence will cause adverse health effects for the Complainant. The Complainant concedes in argument that its expert has not proven a conclusive causal connection between the RF emissions from a PECO smart meter and adverse health effects for the Complainant. Povacz R.B. at 18.[22] In our view, Dr. Marino's testimony, at best, supports the conclusion that the Complainant's *alleged* condition of EHS *might* be exacerbated if subjected to the low-level RF fields from a PECO smart meter installed at her residence. However, Dr. Marino admits that he has no basis to state the opinion that it will cause adverse health effects for the Complainant. September 15, 2016 Transcript at 643-44. Recognizing that Dr. Marino was not required to testify to an absolute certainty as to causation and eliminate all other possible causes, Dr. Marino's opinion does not constitute unequivocal opinion to a reasonable degree of certainty that the low-level RF

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[20] The Complainant states:

> Complainants accept that they cannot prove to a medical certainty that they suffer from EHS because, as Dr. Marino testified, there is no consensus clinical diagnosis and it would cost hundreds of thousands of dollars to conduct that kind of test he conducted for his published study with EHS.

Povacz R.B. at 30.

[21] "An otherwise qualified non-medical expert may give a medical opinion so long as the expert witness has sufficient specialized knowledge to aid the [trier of fact] in its factual quest." *McClain ex rel. Thomas v. Welker*, 761 A.2d 155, 157 (Pa. Super. 2000) (citing *Miller v. Brass Rail Tavern*, 541 Pa. 474, 664 A.2d 525 (1995) (holding coroner with years of experience had specialized knowledge regarding time of death and qualified as expert to testify regarding same)).

[22] The Complainant states, "Dr. Marino also testified that, because there is no consensus clinical diagnosis, he could not testify whether RF exposure did cause or will cause adverse health consequences for the Complainants." Povacz R.B. at 18.

fields from a PECO smart meter will adversely affect the Complainant's health. *See Halaski v. Hilton Hotel*, 487 Pa. 313, 409 A.2d 367, 369, n.2 (Pa. 1979) (*Halaski*) (quoting *Menarde v. Philadelphia Transportation Co.*, 376 Pa. 497, 501, 103 A.2d 681, 684 (1954) ("[T]he expert has to testify, not that the condition of claimant might have, or even probably did, come from the cause alleged, but that in his professional opinion the result in question came from the cause alleged. A less direct expression of opinion falls below the required standard of proof and does not constitute legally competent evidence."). Accordingly, his opinion falls below the required standard and burden of proof and does not constitute legally competent evidence to support a finding of fact on the issue of a conclusive causal connection between RF fields from an AMI meter and adverse human health effects.

Based on the foregoing analysis and discussion, we believe the Complainant's evidence is not sufficient to establish a *prima facie* case under 66 Pa. C.S. § 332(a) in demonstrating that the RF exposure levels from a PECO smart meter will cause adverse health effects for the Complainant. Accordingly, we respectfully disagree with the ALJ on this point and we shall modify the ALJ's Initial Decision consistent with the discussion above. However, for the sake of providing a full analysis and discussion of the record, assuming the Complainant's evidence is sufficient to carry the burden of proof initially, we agree with the ALJ that PECO credibly carried its burden of production in rebuttal for the reasons discussed below.

PECO's rebuttal evidence included the expert testimony of Dr. Davis and Dr. Israel. Dr. Davis is a qualified expert[23] to testify on the issues in this proceeding,

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[23] In addition to the description of Dr. Davis' qualifications as presented in PECO's Brief and the Povacz Initial Decision, we further note that Dr. Davis has education, training and experience in physics, biophysics, chemistry, electrical engineering, electromagnetics, bioelectromagnetics, and radio frequency bioelectromagnetics and dosimetry (defined as "the measurement and calculation of the level of electromagnetic fields produced from a source"). *Murphy Rebuttal Testimony of*

including, *inter alia*, on the scientific or technical principles relevant to the case, the RF field levels emitted from the AMI meter at issue in this case, the FCC's process in establishing and maintaining current RF exposure limits, and the dosimetry utilized in relevant scientific studies.[24] In our opinion, Dr. Davis's testimony sufficiently demonstrated that the limits on RF emissions that are established and maintained by the FCC are both relevant and persuasive to our review of the issue of whether low-level RF exposure is harmful to human health and therefore unsafe. Dr. Davis explained that the FCC sets exposure limits for devices like smart meters that emit RF energy. Dr. Davis's testimony, as discussed *supra*, sufficiently explained how the FCC limits were established and explained the FCC's process for establishing and maintaining these limits. Specifically, Dr. Davis testified that the FCC has consulted and continues to consult closely with other federal agencies that have authority in the areas of health and safety, including the FDA, OSHA and NIOSH. Dr. Davis explained that in setting its standards, the FCC considered claims of both thermal and non-thermal effects; however, it set the standards to avoid thermal effects because the scientific studies did not show

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Dr. Christopher Davis at 11. *Murphy Rebuttal Testimony of Dr. Christopher Davis* at 24. Dr. Davis explained that he conducted a wide variety of scientific studies in the fields of physics, biophysics, and electrical engineering, and particularly studies on electromagnetics, bioelectromagnetics, and RF electromagnetics and dosimetry. *Id.* at 4-5. Related to the topic of RF, Dr. Davis authored scientific publications including two book chapters on radio frequency fields, twenty-four articles published in peer-reviewed scientific journals on RF fields and presented fifty-five papers at scientific conferences on RF fields. *Id.* at 5. Dr. Davis explained that he has conducted research on RF fields of the type periodically produced by PECO's AMI meters. Dr. Davis stated that he has served as a consultant and provided expert advice on both power frequency and RF fields, including 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. *Id.* at 7.

[24] Pa. R.E. 702 permits an expert witness to testify "in the form of an opinion or otherwise . . ." The Comment to Pa. R.E. 702 provides: "Much of the literature assumes that experts testify only in the form of an opinion. The language 'or otherwise' reflects the fact that experts frequently are called upon to educate the trier of fact about the scientific or technical principles relevant to the case."

any non-thermal effects. Dr. Davis further explained that while the FCC continues to consider whether there are adverse biological effects from non-thermal exposure levels, *i.e.*, low-level RF exposure, the FCC considers the scientific evidence for such effects to be "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." Dr. Davis also explained that the FCC keeps current on claims that RF fields can cause non-thermal effects; however, it does not believe that such claims have been demonstrated sufficiently to warrant change to the FCC standards. *Id.* Dr. Davis explained that the FCC's ongoing review is done in coordination with the government agencies that oversee health and safety. PECO M.B. at 45-46 (citing Povacz Rebuttal Testimony of Christopher Davis at 13-16).

Dr. Davis's testimony, including his calculations that were attached to his testimony as exhibits,[25] sufficiently demonstrated that the RF field exposure from a PECO smart meter, when considered either at an average or a peak level, is significantly lower than the FCC's limit. Rebuttal Testimony of Christopher Davis at 15-16; PECO Exh CD-2, CD-3; Povacz I.D. at 24.

Dr. Israel also is a qualified expert on the issues in this proceeding.[26] He offered his expert opinion on the issue of the causal connection between low-level RF

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[25] We note that the ALJ overruled the Complainant's request at the hearing to admit Dr. Davis's Exhibits CD-2 through CD-8 into the record purely as demonstrative exhibits, stating that such exhibits "will be admitted as calculations made by the expert, and given the weight according how we weigh the testimony in general." *See* December 8, 2016 Hearing Transcript at 1462-63, 1465-67.

[26] In addition to the description of Dr. Israel's qualifications as presented in PECO's Brief and the Povacz Initial Decision, Dr. Israel provided that he has been conducting medical research for 40 years on topics including systems biology, biochemistry, cell biology, cancer, molecular biology and molecular genetics and has published over 200 papers reporting on his research in medical or scientific journals. Dr. Israel stated that after completing his residency, he pursued medical research at the

exposure from a PECO smart meter and adverse human health effects. Dr. Israel's opinion was offered to a reasonable degree of medical certainty based upon his review of available scientific studies, research and reports. His expert opinion stated unequivocally that exposure to the low-level RF fields from a PECO smart meter will not be harmful to the Complainant's health. Dr. Israel's unequivocal opinion meets PECO's required burden of production and constitutes legally competent evidence to support a finding of fact on the issue of a causal connection between RF fields from an AMI meter and adverse human health effects.

In Briefs and in Exceptions, the Complainant challenged the qualifications of PECO's experts, the bases of their opinions and certain specific areas of their testimonies. After careful review of those challenges, however, we agree with the ALJ that the Complainant did not successfully impugn PECO's rebuttal evidence. We discuss below our specific reasons for this conclusion when we specifically address the Complainant's first, second, third, fourth and eighth Exceptions below. Accordingly, we affirm the ALJ's conclusion that PECO met its burden of production in this proceeding.

Because PECO met its burden of evidence production, the burden of production shifted back to the Complainant. The Complainant did not introduce further evidence into the record to demonstrate a conclusive causal connection between the low-

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National institutes of Health, and then the Pediatric Branch of the National Cancer Institute. Dr. Israel noted his interest in RF fields and health began with parents of his patients concerned with exposure to these fields from power lines and cell phones. Dr. Israel stated he began examining the research to inform those parents of patients and has been following the research on those topics for more than 25 years. Dr. Israel noted that he has been teaching for more than 25 years in a number of fields including endocrinology, immunology, hematology, neurology, cardiology, biochemistry, cell biology, genetics, molecular genetics, medical oncology, and radiation oncology. *Murphy Rebuttal Testimony of Dr. Mark Israel* at 3-6.

level RF fields from a PECO smart meter and adverse health effects for the Complainant. Thus, we affirm the ALJ's conclusion that the Complainant did not meet her burden of proof in this proceeding.

We now turn to address more specifically the Complainant's first, second, third, fourth and eighth Exceptions.

e. Complainant's Exception No. 1 and Disposition

In the first Exception, the Complainant states that the ALJ "erred in placing weight on the testimony of Dr. Israel and Dr. Davis on numerous important points where they disagreed with Dr. Marino." The Complainant provides that "this was arbitrary and capricious because Dr. Marino has far deeper and stronger qualifications on the issue of the health risk from smart meter RF exposure than Dr. Israel and Dr. Davis." The Complainant describes Dr. Marino's qualifications and argues that the credentials of PECO's expert witnesses in this field were much more limited or nonexistent. Povacz Exc. at 7-8 (citing Povacz M.B. at 36-37, 66-67, 69). For this reason, the Complainant asserts that the ALJ should have accepted Dr. Marino's testimony and rejected the testimony of Dr. Davis and Dr. Israel where the testimonies conflicted. Povacz Exc. at 8.

In Replies to the Complainant's first Exception, PECO reiterates the relevant qualifications of its witnesses as summarized above. PECO R. Exc. at 6 (citing Povacz I.D. at 24-25). PECO also notes that the Complainants did not identify any specific instance in which they claim that Dr. Marino's testimony should have been given greater weight but claimed there were "numerous important points" about which the expert witnesses disagreed and on which they assert the ALJ was required to believe Dr. Marino. PECO R. Exc. at 6.

Upon review, we disagree with the Complainant's assertion that Dr. Marino is uniquely qualified to testify on the issues in this proceeding. As the ultimate fact-finder, we accept the qualifications of the three expert witnesses and determine that all three witnesses have the scientific, technical, or other specialized knowledge to allow them to provide expert testimony on the issues in this proceeding in accordance with Pa.R.E. 702, as discussed in more detail above. Furthermore, we note that the Complainant did not identify any specific "important points" where Dr. Marino's testimony should have been more persuasive to the ALJ. Because the Complainant did not identify any specific instances where Dr. Marino's testimony should have prevailed, we can only surmise that the ALJ found Dr. Davis' and Dr. Israel's testimony to be persuasive in some instances where the Complainant does not agree. Accordingly, we shall deny the Complainant's Exception No. 1.

f. Complainant's Exception No. 2 and Disposition

In the second Exception, the Complainant contends that it was "arbitrary and capricious" for the ALJ to not accept the evidence presented by the Complainant that forced exposure to RF presents a risk of harm to her. The Complainant explained that this evidence included the testimony of Dr. Andrew Marino based on many years of research, including animal studies, epidemiological studies, the EHS study, and other relevant research, as well as his reliance on the draft 2016 NTP Report. Povacz Exc. at 8. In her second Exception, the Complainant walks the Commission through the testimony of Dr. Marino citing to relevant portions of its Main Brief, at 26-29, 31-35, as summarized above under the Position of the Parties. Povacz Exc. at 8-10.

The Complainant contends that ALJ Heep failed to recognize that PECO did not rebut Dr. Marino's testimony about the potential to cause harm based on the peer-reviewed animal and epidemiological studies he relied upon. Povacz Exc. at 10 (citing Povacz M.B. at 29-30). Likewise, the Complainant submits that PECO did not rebut

Dr. Marino's testimony about the potential to cause harm based on the peer-reviewed EHS study he conducted which proved that EHS is a real syndrome. All of this evidence, submits the Complainant, presented substantial grounds for the conclusion that RF exposure is capable of causing harm. Povacz Exc. at 10-11.

The Complainant further submits that the ALJ erred in rejecting the NTP report based on the testimony of Dr. Davis, that the NTP study was a draft and at a high-power density that is not relevant. Povacz Exc. at 11-12 (citing *Murphy I.D.* at 28). The Complainant requests the Commission to take "judicial notice" of not only what the draft May 2016 NTP report said, but also what the final NTP report has said since. The Complainant submits:

> Specifically, according to its publicly available website, the findings of the 2016 draft report "were reviewed by an expert panel in March 2018 . . . The final NTP reports are expected in fall 2018.". . . The NTP website also discloses that the external science experts who met in March 2018 "recommended that some [NTP] conclusions be changed to indicate stronger levels of evidence that cell phone radiofrequency (RFR) caused tumors in rats."

Povacz Exc. at 12 (citations omitted).

According to the Complainant, the May 2016 NTP report shows that RF exposure caused cancer in rats under the test conditions, meaning there is a potential for harm to rats from RF exposure below FCC limits, from which potential for harm to humans could be inferred. The Complainant argues further "[t]hat same potential for harm is present for RF exposure from smart meters." Povacz Exc. at 13. The Complainant states that there is no way to compare the potential exposure from a cell phone to that of a smart meter "because there have been no studies on the safety of smart meters." The Complainant further states that "the potential for harm from these RF-

emitting devices is completely unknown." Povacz Exc. at 14. The Complainant avers that the Commission should "accept that RF exposure from smart meters is a possible cause of harm to humans, meaning that some scientific evidence supports the point, but it is not yet accepted as conclusively proven." Povacz Exc. at 15.

In Replies to the Complainant's second Exception, PECO maintains that Dr. Marino's testimony does not prove that "forced exposure to RF presents a risk of harm;" to the contrary, it proves that in Dr. Marino's view, it was too costly to collect evidence and consequently he was not able to present any evidence that "forced exposure to RF presents a risk of harm." PECO R. Exc. at 7-8. PECO submits that ALJ correctly accepted, not rejected, this testimony. PECO submits that it should be underscored that the Complainant has frankly admitted throughout this proceeding that she did not meet the burden of proof with respect to causation. PECO R. Exc. at 8. PECO argues that the Complainant misspeaks when it says PECO offered no response at all to Dr. Marino's testimony. *Id*. Given that Dr. Marino and the Complainant admitted that they had not met burden of proof on causation, PECO did not find it necessary in its briefs to analyze every study that was discussed in the evidentiary hearings. *Id*. PECO maintains, however, that the record contains an extensive, point-by-point, response on the scientific research in the form of the testimony of Drs. Davis and Israel – testimony that the ALJ found to be persuasive and credible. PECO R. Exc. at 8-9.

Regarding the single EHS study, PECO submits that there was no reason that the Initial Decision needed to isolate and discuss this specific study and referred the Commission to its Main Brief at 31, in which PECO explained that Dr. Marino candidly testified that before his EHS study, there were no published studies that any person is able to detect the presence or absence of electromagnetic energy, that his study involved only one subject and that, even taking into consideration his own study, his opinion is that the AMI meter has the potential to "trigger EHS, not cause it, trigger it" but that "I believe my speculation is that's the case, but I don't have direct evidence to say that."

PECO R. Exc. at 9 (citing PECO M.B. at 31 (citing September 15, 2016 Transcript at 609, 614 and September 17, 2016 Transcript at 779)).

Regarding the May 2016 NTP report, PECO explains that Dr. Israel testified regarding that report. PECO notes that Dr. Israel had reviewed and analyzed the May 2016 NTP report, found that it had not yet gone through normal peer review process and that it was a draft study of partial results. PECO provides that Dr. Israel placed the NTP results into context with other research and stated that it did not alter his overall conclusions that RF fields from PECO's AMI meters have not been shown to cause, contribute to, or exacerbate health effects. PECO R. Exc. at 10 (citing Tr. at 1527-29, 1603-17). PECO notes that in his testimony, Dr. Davis concluded that the May 2016 NTP report was not applicable to review of AMI meters because it is at "a relatively high-power density that's not relevant." According to PECO, the power densities used in the NTP research were approximately 300 million times greater than the "incredibly low exposures that you get from PECO's AMI and AMR meters." PECO R. Exc. at 12-13 (citing Tr. 1090-91).

Upon review, we shall deny the Complainant's second Exception for the reasons that follow. We disagree with the Complainant's characterization that the ALJ did not accept the Complainant's evidence, specifically the expert opinion testimony of Dr. Marino, in this proceeding. To the contrary, the ALJ accepted the expert testimony of Dr. Marino into evidence. As discussed above, after reviewing all of the admitted evidence, including Dr. Marino's opinions, we conclude that the Complainant did not sustain her initial burden of proof in demonstrating that RF exposure from a PECO smart meter will cause harm to the Complainant's health. We also reject the Complainant's argument that the ALJ erred by finding PECO's rebuttal evidence sufficient. As discussed above, PECO satisfied its burden of production in this proceeding, which shifted the burden of production back to the Complainant. However, the Complainant failed to submit any additional evidence to demonstrate that the RF exposure from a

PECO smart meter will adversely affect her health and therefore failed to carry her ultimate burden of proof.

Next, we turn to the Complainant's arguments in her second Exception related to the various studies and reports upon which the experts relied in forming their opinions. To simplify, the Complainant argues we should give greater weight to Dr. Marino's expert opinion because he considered the correct studies and reports in forming it, specifically Dr. Marino's EHS study and the May 2016 NTP report. Likewise, the Complainant asserts that we should give little to no weight to the opinion testimony of PECO's experts because, according to the Complainant, PECO's experts failed to consider the EHS study and the May 2016 NTP report. The Complainant emphasizes in her Exception No. 2 that the EHS study and the May 2016 NTP report, in particular, are crucially important on the issue of whether the RF exposure from a smart meter is capable of causing harm to human health and that there is no scientific study relied upon by the experts to demonstrate the safety of RF exposure from smart meters.

Before we address the Complainant's arguments regarding the EHS study and the May 2016 NTP report as the bases for the experts' opinions in this proceeding, we feel it necessary to provide the proper evidentiary context. The various studies and reports relied upon by the Parties' experts in forming their opinions and testimonies were disclosed in this proceeding because Pa. R.E. 705[27] requires such disclosure. However, none of these studies and reports, including the EHS study and the May 2016 NTP report, were admitted into the record as legally competent evidence to support a finding of fact in this proceeding. Rather, it was acknowledged at the hearing that all of the referenced studies and reports are simple hearsay because the statements contained therein were

[27] Pa. R.E. 705 states "If an expert states an opinion the expert must state the facts or data on which the opinion is based."

produced by third persons outside of the hearing room not subject to cross-examination.[28] Accordingly, the ALJ admitted the various exhibits on direct or cross, not for the truth of the matters asserted therein, but rather for the limited purpose of establishing whether the expert relied upon such study/report in reaching his opinion pursuant to Pa. R.E. 703[29] or otherwise for cross-examination. *See e.*g. December 8, 2016 Hearing Transcript at 1467-1469. Rule 703 clearly permits an expert's opinion to be admitted even if it is based on inadmissible hearsay facts or data, so long as experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject. [30]

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[28] *See Walker v. Unemployment Compensation Board of Review*, 367 A. 2d 366, 370 (Pa. Cmwlth. 1976) (*Walker*) (citations omitted); *see also Chapman v. Unemployment Compensation Board of Review*, 20 A. 3d 603, fn. 8 (Pa. Cmwlth. 2011) (*Chapman*) (simple hearsay evidence may support an agency's finding of fact so long as the hearsay is admitted into the record without objection and is corroborated by competent evidence in the record).

[29] Pa. R.E. 703 provides:

> An expert may base an opinion on facts or data in the case that the expert has been made aware of or personally observed. If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted.

[30] Another permitted purpose of limited evidentiary treatment of an underlying study, report or research is to permit parties to establish that the expert's methodology is, or is not, "generally accepted in the relevant field" in accordance with Pa. R.E. 702. The Comment to Pa. R.E. 702(c) provides as follows:

> Pa.R.E. 702(c) differs from F.R.E. 702 in that it reflects Pennsylvania's adoption of the standard in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). The rule applies the "general acceptance" test for the admissibility of scientific, technical, or other specialized knowledge testimony. This is consistent with prior Pennsylvania law. *See Grady v. Frito-Lay, Inc.*, 576 Pa. 546, 839 A.2d 1038 (2003). The rule rejects the federal test derived from *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

Pa. R.E. 703; *see also*, *supra*, *Aldridge v. Edmonds*, 561 Pa. 323, 750 A.2d 292 (Pa. 2000).

With that context, it is clear from the record that Dr. Marino considered, *inter alia*, the EHS study and the May 2016 NTP report in forming his opinion that there is a basis in established science to conclude that the Complainants could be "exposed to danger"[31] from the RF exposure levels from a PECO AMI meter. Nevertheless, even after considering the aforementioned study and report, as discussed above, Dr. Marino did not provide an unequivocal opinion, provided to a reasonable degree of scientific certainty, that if PECO proceeds with its plan to install and use an AMI smart meter at the Complainant's residence to measure her usage, the RF exposure from the smart meter will cause harm to the Complainant's health. Thus, as stated above, Dr. Marino's first opinion does not meet the standard or burden of proof in this proceeding.

Moreover, the Complainant's arguments in the second Exception does little to help the Complainant's case. In discussing the importance of the results of the May 2016 NTP report, the Complainant states with respect to PECO's smart meters "the potential for harm from these RF-emitting devices is completely unknown" and it offers that this is the case "because there have been no studies on the safety of smart meters." Povacz Exc. at 14. There are two problems with the Complainant's argument. First, the Complainant's assertion that there have been no studies on the safety of smart meters contradicts the record before us. Dr. Davis formed his opinion based on review of expert panel reports, at least one of which, the New Zealand Expert Ministry report, dealt with

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Pa. R.E. 702 is applicable to administrative agency proceedings. *Gibson v. WCAB*, 580 Pa. 470, 485-86, 861 A.2d 939, 947 (Pa. 2004) (*Gibson*) (holding, in part, that notwithstanding the statutory maxim of 2 Pa. C.S. § 505, which mandates a relaxation of the strict rules of evidence in agency hearings and proceedings, the "evidentiary Rules 602, 701, and 702 are applicable to agency proceedings in general…").

[31] September 15, 2016 Hearing Transcript at 578.

smart meters. December 7, 2016 Hearing Transcript at 1459; see also PECO Cross-Examination Exhibit 17. As Dr. Davis explained, this report concluded that "Thermal effects are the only ones for which there is clear evidence." Dr. Davis testified that the findings of the New Zealand Ministry of Health should be taken into account in evaluating the question of whether RF from PECO's AMR and AMI meters can cause adverse health effects. December 7, 2016 Hearing Transcript at 1546. Second, the Complainant essentially repeats her argument from her Briefs that because the science is unproven regarding the effects of low-level RF exposure from a smart meter, that it is PECO and this Commission's statutory duty to deem the smart meter as capable of causing harm. The Complainant continues to advocate for a standard and burden that, as discussed above, is not the standard or burden in this case. Before us is an extensively-developed record by the Parties to demonstrate by a preponderance of the evidence whether or not, based on all the available scientific data, research and studies considered by the experts as of the evidentiary hearing dates, the RF exposure from a PECO smart meter will cause adverse health effects to the Complainant. The evidence submitted by the Complainant in this proceeding – specifically, the expert opinion of Dr. Marino, which was formed based on all available scientific data, research and studies that he considered as of the hearing dates, including, *inter alia*, the EHS study and the draft May 2016 NTP report – simply fell short of the applicable standard and burden in this proceeding because Dr. Marino did not opine that the RF exposure from an AMI meter will cause harm to the Complainant's health.

Furthermore, contrary to the Complainant's characterization, our review of the record demonstrates that PECO's experts did, in fact, consider the EHS study and the May 2016 NTP report in providing their opinions and testimony. As to Dr. Marino's EHS study, Dr. Davis testified that the types of signals Dr. Marino used were not the same as what comes out of PECO's AMR and AMI meters, but were much more intense pulses that repeated on/off periods more frequently than a PECO AMR or AMI meter. Dr. Davis stated that the signal pattern used by Dr. Marino was totally different from that

emitted by an AMI meter. Dr. Davis testified that because of the differences in intensity and types of signals, Dr. Marino's study has no relevance to PECO's AMI meters. December 6, 2016 Hearing Transcript at 1107-1108. Meanwhile, Dr. Israel testified that is was not possible to assign some level of significance to the results of a study conducted on only one person. Dr. Israel stated that, "We actually identify such studies as case reports, or we talk about them as anecdotes. I think it can be an interesting story, but it has to be given appropriate weight, which is very little, in thinking about medicine and medical issues, because a study of one person doesn't really allow you not only to have much confidence in the findings, but also how to extrapolate a population." December 8, 2016 Hearing Transcript at 1547 – 1548.

Regarding the May 2016 NTP report, at the time of the hearing, the NTP Report was in draft form. Dr. Davis testified that the methodology of the May 2016 NTP report was not relevant to the RF exposure from a smart meter because the power densities used in the NTP study were extraordinarily high in comparison to the potential exposure from a PECO AMI meter. Dr. Davis testified as follows:

> "[T]he interesting thing that I noticed about it is that it exposed mice and rats to radiation in the 900 megahertz range, and the lowest exposure that he used was nearly 20 times greater than the FCC whole body average. So it may well be that it's a study that's been done at a relatively high power density that's not relevant, certainly not relevant to the incredibly low exposures that you get from PECO's AMI and AMR meter."

December 6, 2016 Hearing Transcript at 1090. When asked how that exposure compares to the exposure from a PECO AMI meter at a distance of one meter, Dr. Davis testified that "[I]t comes out to be about 300 million times smaller." December 6, 2016 Hearing Transcript at 1091. As Dr. Davis testified, the NTP studies were done on rats and mice at

a higher energy density than the FCC limits. Dr. Davis also noted several potential problems with the May 2016 NTP study as follows:

> First of all, the species of rat chosen in the study are a species that is designed to get cancer normally. My understanding of the study is that the percentage of rats that got cancer in the study that were RF exposed is the same you would get in a normal population of these rats that were not exposed. In the study, the rats that were exposed, lived longer than the controlled animals and 40 percent of the controlled animals died.

December 7, 2016 Hearing Transcript at 1282. Dr. Davis also testified that it was not possible to prove conclusively that any biological effect would be adverse in humans based solely on animal studies. December 7, 2016 Hearing Transcript at 1208.

Dr. Israel, meanwhile, testified that he took the May 2016 NTP report into consideration, but it did not change his opinion and noted that he did not give it the weight he would give a final, peer-reviewed report. December 8, 2016 Hearing Transcript at 1527-28; December 9, 2016 Hearing Transcript at 1614. When he was asked to ignore, for argument's sake, that the May 2016 NTP report was in draft form and to consider if one study like the May 2016 NTP report could decide the question of whether RF fields cause cancer, Dr. Israel stated that: "One study of an exposure and measurement of some outcome I don't think could ever show, at least in terms of what scientists and physicians ask about causation, no one study could show causation." December 8, 2016 Hearing Transcript at 1528. Moreover, Dr. Israel testified that he took possible issue with the characterization of the May 2016 NTP report as having been "peer-reviewed." It was explained during cross-examination by Complainant's counsel that the May 2016 NTP report was reviewed by experts selected by the National Institute of Health, but Dr. Israel explained that "peer review in our world has a very special meaning. This would not qualify as peer review in the world that I live in as a scientist.

Peer review is done by experts that are anonymously chosen by either an editor, or a department head, or a chairman of a granting agency, and the anonymity is considered a key part of the peer review process." December 9, 2016 Hearing Transcript at 1614-15.

Thus, our review of the record indicates that PECO's experts did, in fact, consider Dr. Marino's EHS study and the May 2016 NTP report in forming their expert opinions and testimony in this proceeding, along with all the other studies and reports that were disclosed in this proceeding as having been relied upon by PECO's experts. While PECO's experts did not weigh the EHS study and May 2016 NTP report the same as the Complainant's expert, they sufficiently explained their reasons for giving less weight to this information in forming their opinions. As discussed more extensively above, the evidence offered by PECO through its experts satisfied PECO's burden of production in this proceeding. Accordingly, we reject the Complainant's argument in her second Exception that PECO failed to meet its burden of production.

Finally, we acknowledge that the Complainant requests in the second Exception that we take "judicial notice" of the fact that, subsequent to the close of the record, the final NTP report was expected to be released in the fall of 2018 and that the NTP website expected some of the conclusions to be changed to indicate stronger levels of evidence that cell phone RF fields caused tumors in rats. We take official notice that a final NTP report was released in November 2018, but it is not an appropriate use of the

"official notice" doctrine[32] to do as the Complainant requests because the record demonstrates that the substance of what the final NTP report says and the weight it should be given by an expert are not obvious and notorious to an expert in this agency's field. With that said, we recognize that it is possible for the science related to the question of low-level RF exposure and human health to evolve and for new studies and reports to be published following the close of the record in this proceeding. It has been nearly three years since the Amended Complaint was filed by the Complainant in April 2016 and multiple days of evidentiary hearings have been held. We cannot forever hold in abeyance a decision on this matter in recognition that the next piece of scientific evidence or study may bring to light information that was not considered by the experts as of the close of the evidentiary record. Should either Party determine that there is a material change in the underlying science that would change the facts in this proceeding, the procedural and substantive rights of the Parties appearing before this Commission are protected under our Regulations, at 52 Pa. Code § 5.571 (allowing parties to petition to reopen a record prior to a final decision for the purpose of taking additional evidence because material changes of fact have occurred since the conclusion of the hearing) and 52 Pa. Code § 5.572 (allowing parties to petition for rehearing after a final decision). We note that since the final NTP report was released in November 2018, as of the entry date of this Order, which is shown on the last page of this Order, the Complainant has not filed a petition under 52 Pa. Code § 5.571 seeking to reopen the record for the purpose of

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[32] *See Ramos v. Pennsylvania Board of Probation and Parole*, 954 A.2d 107, 110 (Pa. Cmwlth. Ct. 2008) (quoting *Falasco v. Pennsylvania Board of Probation and Parole*, 521 A.2d 991, 995, n.6 (Pa. Cmwlth. Ct. 1987) (""Official notice" is the administrative counterpart of judicial notice and is the most significant exception to the exclusiveness of the record principle, allowing an agency to take official notice of facts which are obvious and notorious to an expert in the agency's field and those facts contained in reports and records in the agency's files, in addition to those facts which are obvious and notorious to the average person; thus, official notice is a broader doctrine than is judicial notice and recognizes the special competence of the administrative agency in its particular field and also recognizes that the agency is a storehouse of information on that field consisting of reports, case files, statistics and other data relevant to its work.")

taking new or additional evidence in light of the conclusions stated in the final NTP report.

Based on our review of the record and the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 2.

g. Complainant's Exception No. 3 and Disposition

In her third Exception, the Complainant argues that the ALJ erred by: (1) not accepting Dr. Marino's testimony regarding background electromagnetic exposure at the Complainant's residence; (2) relying upon Dr. Davis's calculations because they compare peak to average exposures; (3) relying upon Dr. Davis's calculations of average exposure from an AMR or AMI smart meter over the course of 24 hours; and (4) by relying upon the FCC's limits because they have not been updated in decades. Povacz Exc. at 15-19 (citing Povacz I.D. at 27 and Povacz M.B. at 45).

In Reply, PECO submits that all of these arguments can be dismissed based on responses provided in PECO's Main Brief. First, PECO counters that Dr. Marino's testimony regarding background electromagnetic exposure should be doubted because Dr. Marino did not do any measurements or calculations of background or ambient fields at the Complainants' residences or places of work, and Dr. Davis testified that people's exposure to fields from everyday sources, including UHF radio stations, is much higher than fields from PECO's AMI meters. PECO R. Exc. at 13 (citing M.B. at 28-30). Second, PECO explains that Dr. Davis' testimony regarding exposure was based on the average exposure to allow for comparison with the FCC limit that is also based on average exposure over time. PECO explains further that Dr. Davis also compared the peak emissions from the AMI meters to the FCC limit and demonstrated that even the peak emissions are 37.5 times smaller than the exposure that is allowed on an average basis. PECO R. Exc. at 14 (citing PECO M.B. at 28-20, Murphy St. 3 (Davis), Exh.

CD-3). Third, PECO argues that the record demonstrates that the FCC continues to re-evaluate the science impacting its limit but has found the scientific evidence regarding adverse biological effects from non-thermal exposure levels as "ambiguous and unproven." PECO R. Exc. at 14 (citing PECO M.B. at 45-46).

Upon review, we shall deny the Complainant's third Exception for the reasons discussed below. As an initial matter, we are not persuaded by Complainant's argument that the FCC standard is outdated and therefore not protective of human health. The record demonstrates, through Dr. Davis's testimony, as discussed above, that the FCC, in establishing and maintaining its current standard, has worked and continues to work with other federal agencies that have authority in health and safety in evaluating scientific research on low-level RF exposure and human health. The FCC has concluded that the scientific evidence regarding adverse biological effects from non-thermal exposure levels is "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." Thus, we find that the FCC's limits on RF fields from AMI meters are relevant to our review of whether the RF exposure levels from PECO's smart meter are safe.

Moreover, because the FCC's limits are established based on average exposure, Dr. Davis's calculations of average exposure from a PECO smart meter are relevant. PECO must present its data in the same format to provide for an "apples to apples" comparison in order to determine if the PECO AMI meters are in compliance with the FCC limit.

We reject the Complainant's argument that Dr. Davis' calculated average exposure levels from a smart meter are misleading given that FCC exposure limit is calculated as an average over 30 minutes while Dr. Davis calculated the average over a 24-hour period. Dr. Davis explained his reasoning for averaging the meter emissions over 24 hours: "Well since these meters only transmit perhaps six times a day, you

would have to say well what 30 minutes are you going to average over. Because you could average over 30 minutes when the meter is not transmitting and then the average would be zero. I'm just looking at the chronic overall time exposure from these meters." December 7, 2016 Hearing Transcript at 1246. We find that Dr. Davis' averaging time to be reasonable. A thirty-minute average could be zero as Dr. Davis explained. In our opinion, averaging over twenty-four hours provides a realistic data point for comparison with the FCC limit.

Dr. Davis also provided a calculation of the peak transmission from the AMI meter. As we can see from Table 1 below, Dr. Davis' peak calculation agrees closely with Dr. Marino's calculation of peak RF emissions. Dr. Davis' peak value was also below the FCC limit. We note that as Mr. Pritchard testified, the meter transmits six or seven times per day in Ms. Povacz's neighborhood for a 70-millisecond duration each time.[33] Thus, even if the AMI meter transmitted continuously at its peak level for the entire 30 minutes, rather than at its actual length of time of less than one second/day, it would be in compliance with the FCC limit.

Table 1

Comparison of FCC Limit and PECO AMI Meter Transmission Levels

	FCC Maximum Permissible Exposure Limit for General Population – 30 min average 47 C.F.R. § 1.1310 (2013)	**Peak Transmission Level – Davis CD-3**	**Peak Transmission Level - Marino Direct 1**	**Average Transmission Level – Davis CD-2**
FlexNet Meter only (ZigBee transmissions are negligible)	0.6 mW/cm^2	0.016 mW/cm^2	0.18 mW/cm^2	7.8×10^{-8} mW/cm^2

[33] *See*, *supra*, note 18.

Moreover, Dr. Davis testified that PECO's AMR meter provides 83% more RF exposure at average levels than an AMI meter. PECO St. 2 at 5, PEO Exh. CD-8. Dr. Davis also testified that the peak values of AMI exposure, which is the basis of the Complainant's theory in this case, is twice as high as peak value of AMR exposure, and as shown above, AMI peak exposure is below the FCC's limit.

Based on the foregoing discussion, we shall deny the Complainant's Exception No. 3.

h. Complainant's Exception No. 4 and Disposition

In her fourth Exception, the Complainant states that the ALJ erred in accepting PECO's position that there is no reliable scientific basis for concluding that RF exposure is capable of causing any adverse biological effects in humans. Povacz Exc. at 18 (citing Povacz I.D. at 28). The Complainant submits that Dr. Davis took an unusually stark position that he is "absolutely certain" that low-level RF exposure cannot cause harm even if children are chronically exposed to it. Povacz Exc. at 18-19. The Complainant argues that Dr. Davis incorrectly ignored the May 2016 NTP report, which, according to Complainant, shows that there is reliable scientific evidence of possible biological effects on humans from RF exposure at levels below the FCC limit. Povacz Exc. at 20. The Complainant notes that both Dr. Davis and Dr. Israel were incorrect in their assessments of the IARC classification of RF as a possible carcinogen. The Complainant notes that Dr. Davis disagreed with the IARC classification. The Complainant states that the ALJ erred in accepting Dr. Israel's reading of the IARC classification to mean no evidence of cancer risk. Povacz Exc. at 20-21 (citing Povacz M.B. at 68-69).

In Replies, PECO provides further explanation of Dr. Davis' conclusion that the FCC deems the science ambiguous and unproven regarding potential adverse

health effects from low levels of exposure to RF emissions. PECO explains that the FCC states that proof of harmful biological effects is ambiguous and unproven because the FCC makes it clear that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." PECO R. Exc. at 15 (citing FCC's online FAQ). Regarding the IARC classification that radio frequency fields are a "possible" carcinogen, PECO explains that Dr. Israel provided context for understanding, referring back to its Main Brief, p. 37, as discussed above.

Upon review, we shall deny the Complainant's fourth Exception for the reasons that follow. As discussed above, Dr. Davis testified that the FCC's stated conclusion that proof of harmful biological effects from low-level RF exposure is "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." Moreover, Dr. Davis provided testimony about the scientific and technical principles relevant to this case, including his analysis of the power densities and pulse patterns used in certain underlying scientific studies, such as the EHS study and May 2016 NTP report, as compared to the actual exposure from a PECO AMI meter.

Additionally, regarding the IARC classification that RF fields are a "possible" carcinogen, the record reflects that Dr. Israel provided context for his understanding of this classification. Having considered the IARC classification, among other information, Dr. Israel still provided his unequivocal opinion that there is no reliable medical basis to conclude that RF fields from PECO's electric AMI meter caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by the Complainant. Povacz Rebuttal Testimony of Mark Israel at 11-26. Dr. Israel's overall medical opinion is that exposure to RF fields from PECO's smart meters have not been and will not be harmful to the Complainant's health. He held both his symptom-specific and overall medical opinions to a reasonable degree of medical certainty. Povacz Rebuttal Testimony of Mark Israel at 26. Dr. Davis'

testimony and Dr. Israel's opinion constitute legally competent evidence that satisfied PECO's burden of production in this proceeding. Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 4.

i. Complainant's Exception No. 8 and Disposition

In her eighth Exception, the Complainant avers that ALJ Heep failed to give any weight to the Complainant's testimony about her extreme sensitivity to RF exposure or to Dr. Talmor's diagnosis of the Complainant with the EHS disorder. The Complainant states the Commission lacks the authority to override the decision of the Complainant and her doctor about her health risks from smart meter exposure. Povacz Exc. at 27 (citing Povacz I.D. at 11-12, 27-28). The Complainant explains that there is no precedent for the Commission to override the judgement of medical professionals. According to the Complainant, neither the utility nor the Commission's attempt to second guess the medical judgment of physicians who treat non-paying utility customers when they submit medical certificates in order to prevent the utility from shutting off their power. The Complainant asserts that the Commission should not permit the second guessing of medical judgement here. Povacz Exc. at 27 (citing 66 Pa. C.S. 1406(f)).

In Replies, PECO asserts that the Povacz I.D. does not override the judgement of medical professionals. PECO provides that the testimony from the treating physicians does not support the Complainant's burden of proving that they were or will be harmed by PECO's smart meters. PECO R. Exc. at 24.

Upon review, we shall deny the Complainant's eighth Exception. As discussed above, the Complainant had the burden of proving the allegations in her Amended Complaint and that the utility is responsible for the problem. Specifically, the Complainant was required to demonstrate by a preponderance of the evidence that she suffers from EHS, as she alleged in her Amended Complaint, and that PECO's use of an

AMI meter at her residence to measure her usage will cause harm to her health, also as she alleged in her Amended Complaint. While we accepted the testimony of Ms. Povacz and her treating physician, Dr. Talmor, the Complainant nevertheless did not meet her burden of demonstrating that she is a medically sensitive customer of PECO, as explained above. Moreover, as discussed extensively above, the Complainant's expert witness on causation, Dr. Marino, would not state unequivocally that a PECO AMI meter would cause harm to the Complainant's health.

Finally, we wish to address the Complainant's argument regarding medical certificates permitted under 66 Pa. C.S. § 1406(f), 52 Pa. Code § 56.11. The use of a medical certificate to avoid shut-off is a protection afforded by statute and Regulation for a utility customer or a member of the customer's household who is seriously ill or afflicted with a medical condition that will be aggravated by cessation of service. There has been no fact established in this proceeding to demonstrate that a cessation of electric utility service by PECO would aggravate the Complainant's alleged health condition of EHS. To the contrary, the Complainant has unsuccessfully tried to establish the fact that a continuation of her electric utility service that would include the installation and use of an AMI meter at her residence to measure her consumption would aggravate the Complainant's health. Thus, the Complainant's argument regarding medical certificates used by customers in billing disputes to avoid service shut-off is irrelevant to the issues in this case.

Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 8.

3. Whether Substantial Record Evidence Supports the ALJ's Finding that Some Aspect other than RF Exposure from a PECO Smart Meter Will Cause Harm to the Complainant's Health

a. Positions of the Parties

The Parties did not present positions on this issue in their Main or Reply Briefs.

b. ALJ's Initial Decision

According to the ALJ, while there is no showing that RF exposure from a PECO smart meter will cause or is causing Ms. Povacz's health problems, and that PECO successfully rebutted any such claim, the preponderance of the evidence does suggest that "some other aspect of the PECO smart meters is inimitably perceptible by and contrary to the health and well-being of the individual Ms. Povacz." Povacz I.D. at 28. The ALJ concluded that while Ms. Povacz will inevitably otherwise be exposed to smart meters when leaving her residence, attaching such a device to her home at the current location of her meter socket would exacerbate her problems with them. *Id.* at 29. The ALJ provided that the meter socket could be moved away from the Complainant's home structure under PECO's tariff if the Complainant chooses to move it. Povacz I.D. at 29-30. The ALJ ordered that if the Complainant decides to move her meter at her cost, "PECO shall absorb the costs to PECO, if any, of connecting to the new location." Povacz I.D. at 30.

c. PECO's Exception No. 1 and Complainant's Reply

In its first Exception, PECO avers that the record evidence does not support a conclusion that "some other aspect" of PECO's AMI meter has harmed or will harm Ms. Povacz. PECO provides that: (1) the Complainant's expert, Dr. Talmor focused exclusively on EF exposure; (2) Ms. Povacz's testimony focuses solely on EF exposure;

(3) self-diagnosis of EHS is not sufficient to establish that the person has EHS; (4) Ms. Povacz's testimony regarding her variability of symptoms with changing proximity to AMI meters should not be accepted; (5) the conclusion of "some other aspect" causing harm violates PECO's due process rights; and (6) adopting the Initial Decision on this issue would be bad public policy. PECO Exc. at 2-14.

First, PECO contends that Dr. Talmor's testimony as cited in the Initial Decision relates only to EFs as Dr. Talmor's source of concern and does not relate to "some other aspect" of PECO's AMI meters. The sentence in question reads as follows: "Specifically, with regard to a smart meter, I have recommended that the utility company abstain from installing a smart meter in her home because of the negative health effects such a device would have on my patient." Direct Testimony of Hanoch Talmor at 4. Regarding this statement, the Initial Decision stated: "Although not EFs, Dr. Talmor recognized that some aspect of the smart meters causes Ms. Povacz health problems and recommended that she not install a meter in her home." Povacz I.D. at 28. PECO provides that Dr. Talmor's full testimony makes it abundantly clear that Dr. Talmor's sole concern was EF. PECO Exc. at 3.

PECO states that the ALJ should not have relied on Ms. Povacz's testimony that "her ill health is worse when in her yard near the smart meters of her neighbors." PECO contends that Ms. Povacz's testimony does not support the conclusion that "some other aspect" of PECO's AMI meters is harmful. PECO explains that Ms. Povacz's testimony relates only to EF transmissions as she testified. PECO Exc. at 5-6 (citing Povacz I.D. at 28, June 6, 2016 Tr. at 77).

PECO provides that Dr. Marino testified that "a person's subjective self-diagnosis of electromagnetic hypersensitivity is not sufficient to establish that the person has electromagnetic hypersensitivity." PECO Exc. at 8 (citing September 16, 2016 Tr. at 786-87). PECO also noted that Dr. Talmor did not perform any diagnostic testing before

reaching his diagnosis of EHS for Ms. Povacz. PECO Exc. at 9 (citing June 7, 2016 Tr. at 101-108). PECO concludes that the Initial Decision should not have accepted Ms. Povacz's testimony that she felt worse when near meters, even though her own expert said such self-diagnosis is not sufficient to establish EHS. PECO Exc. at 8 (citing September 16, 2016 Tr. at 786-87).

According to PECO, Dr. Davis' testimony indicates that Ms. Povacz's exposure to EF from an AMI meter is quite small in relation to background sources of EF and it is not plausible to conclude that EF is "inimitably perceptible by" Ms. Povacz as the Initial Decision concluded. PECO Exc. at 9-10 (citing PECO St. 3 at 17-19).

PECO claims that Dr. Israel's testimony persuasively explains that even though Ms. Povacz believed that her symptoms were worse near AMI meters and better when away from AMI meters, that does not prove that the AMI meters were the cause of the variation in her symptoms. Dr. Israel stated "I do not know what caused Ms. Povacz's symptoms. But based on the medical and scientific studies and my education, training and experience, I [am] confident they were not caused by radio frequency fields from the AMI meters." PECO Exc. at 11-13 (citing PECO St. 4 at 17).

Regarding due process, PECO provides that it was not given notice and the opportunity to be heard with respect to claims that "some other aspect" of its AMI meters is harmful. PECO notes that the Complaint did not raise the issue of "some other aspect;" there was no testimony on "some other aspect;" and the Complainant did not raise the argument in her brief. PECO notes that the first time that phrase or argument was raised was in the Initial Decision itself. PECO avers that it was not given the opportunity to present an evidentiary response to the claim that "some other aspect" of its AMI meters is harmful. PECO Exc. at 13.

Finally, PECO contends that Ms. Povacz's case was focused on, and limited to, a claim that exposure to EF from PECO's AMI meters would cause her harm. PECO states that the Initial Decision correctly concluded that Ms. Povacz failed to meet her burden of proving that claim. PECO notes that the Initial Decision concluded Ms. Povacz proved, by a preponderance of the evidence, that "some other aspect" of PECO's AMI meters – an "aspect" that was not claimed, not talked about in testimony, or briefs, which is not named anywhere, and which is not known – will cause her harm. PECO alleges that if the Commission were to adopt this decision, the Complainants would be allowed to prevail if they truly believe that they feel sick when they are near a utility's facility and feel better when they are away from it – even if they never scientifically or medically prove that the utility facility is causing their illness. PECO Exc. at 14-16.

In its Replies to PECO's Exception, the Complainant notes that she agrees with PECO in so far as her evidence did not prove that some aspect of PECO's smart meters other than RF emissions caused harm to her health. According to the Complainant, her evidence proved that RF emissions from PECO's smart meters are capable of causing her harm. Povacz R. Exc. at 2-3. The Complainant provides that there is no need for the Commission to address PECO's procedural due process argument. The Complainant states that she does not wish to have a PECO smart meter installed anywhere on her property following medical advice and her own experiences with smart meter exposure and other RF exposure. Povacz R. Exc. at 6. The Complainant explains that PECO's argument that ALJ Heep's decision is bad public policy is right, but for reasons different from those listed by PECO as stated in her Exceptions. Povacz R.Exc. at 6-7.

d. Disposition

Based on PECO's Exception No. 1 and the Complainant's Reply thereto, the Parties appear to agree that there is a lack of record evidence to support the finding.

Based on our extensive review of the record, as discussed *supra*, we agree with the Parties. Therefore, we shall grant PECO's Exception No. 1. Accordingly, we shall reverse the ALJ's finding that some aspect other than RF exposure from the PECO AMI meter is "contrary to [the Complainant's] health and well-being" and the related conclusion of law that "The Complainant has established that installation of a smart meter attached to her home would exacerbate ill health effects." Povacz I.D. at 28, 31; COL No. 7. We shall also reverse the ALJ's related conclusion and directive that PECO is required to absorb costs to PECO related to the Complainant's potential future decision to relocate the meter in accordance with PECO's tariff provisions. Povacz I.D. at 30, 33; COL No. 8.

4. Whether "Reasonable" Service under Section 1501 Requires PECO to Make an Exception to the Installation and Use of a Smart Meter at the Complainant's Residence

a. Positions of the Parties

The Complainant asserts that Dr. Marino explained in his testimony that there is a reliable scientific basis to conclude that RF exposure can cause harm to the Complainant but at present it would cost many tens of thousands of dollars to set up the experiment to test the theory on the Complainant. Povacz M.B. at 77 (citing September 15, 2016 Hearing Transcript at 643-44). The Complainant argues that in the absence of a consensus diagnosis, the Commission should defer to the judgment and recommendation of the Complainant's treating physician. The Complainant consulted with her treating physician who recommended that she avoid RF exposure. Povacz M.B. at 77 (citing Direct Testimony of Dr. Hanoch Talmor, M.D. at 5). The Complainant argues that it does not matter whether the treating physician had read up on RF exposure or was plainly exercising common sense clinical judgment – according to the Complainant, the Commission has no authority or special competence (under Section 1501 of the Code or otherwise) to second-guess the medical judgment of a treating physician. Povacz M.B.

at 78. Ms. Povacz is concerned about chronic RF exposure and is extremely sensitive to RF exposure. She testified that she suffers immediate effects from RF exposure and consulted with a doctor who recommended reduced exposure to RF. Povacz M.B. 78-79 (citations omitted). Given the amount of money already spent by the Complainant to retain legal counsel and expert witnesses, it would be unreasonable to subject the Complainant to RF exposure from an AMI meter absent some compelling justification. Povacz M.B. at 79. According to the Complainant, there is no compelling justification under Act 129. Povacz M.B. at 81. Conceding that the General Assembly may have approved the concept of a smart meter roll out that would encompass all customers with no generalized opt out, the Complainant argues that the General Assembly did not indicate its intent to force exposure on persons like the Complainant. Povacz M.B. at 81. The Complainant argues that Act 129 and Section 1501 of the Code are completely consistent and authorize, if not require, PECO to accommodate customers with legitimate concerns based on their physician's medical recommendation. Povacz M.B. at 81-82.

In response, PECO asserts that it offers its customers, including the Complainant, reasonable alternatives regarding AMI meter installation. PECO M.B. at 50. As to installation of the smart meter in a different location, PECO's witness Mr. Pritchard testified that under PECO's Tariff, Rules 3.2 and 3.4, the customer has the option of relocating the meter to a different location because the customer has the right under the tariff to choose the location of the meter board and socket (while PECO chooses the type of meter). If the customer would like a different location for the AMI meter, they can hire an electrician at the customer's cost to move the meter board/socket to a new location on their property. To the extent such relocation would require work on the PECO system to extend its conductors to the new meter board location, PECO's tariff Rule 6.2 requires the customer to be responsible for the costs 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. PECO M.B. at 50-51 (citing Povacz Rebuttal Testimony of Glenn Pritchard at 16; PECO Exh.

GP-3). PECO notes that this option remains open, and, if the Complainant wises to explore this option, PECO will work with them to relocate their meter. PECO M.B. at 51.

b. ALJ's Initial Decision

In her Initial Decision, the ALJ recognized that the Commission has previously determined that there is no general "opt out" right of smart meter installation for electric utility customers. Povacz I.D. at 29 (citing *January 2013 Povacz Orde*r). The ALJ indicated, however, that the Complainant's claims regarding her health can be resolved by moving the meter elsewhere on the Complainant's property away from her home. Povacz I.D. at 29.

As noted above, the ALJ ordered that if the Complainant opts to move her meter board location at her cost, "PECO shall absorb the costs to PECO, if any, of connecting to the new location." Povacz I.D. at 30. Such directive was based on the ALJ's finding that "some other aspect" of the smart meter was "contrary to [the Complainant's] health and well-being" and related conclusion that "The Complainant has established that installation of a smart meter attached to her home would exacerbate ill health effects."

c. Complainant's Exceptions Nos. 6, 9 and PECO's Replies

In her sixth Exception, the Complainant states that the ALJ erred in concluding that PECO acted reasonably in accordance with the Act 129 Installation Plan approved by the Commission. Povacz Exc. at 23 (citing Murphy I.D. at 31-32). The Complainant explains that nowhere in Act 129, the Orders of the Commission, or PECO's tariff is there any requirement that every single customer, including medically vulnerable customers, must accept an RF-emitting smart meter. According to the

Complainant, the General Assembly in Act 129 may have approved the concept of a smart meter rollout that would encompass all customers, with no generalized opt-out, but nothing suggests that the General Assembly intended to permit utilities to force customers to accept exposure where they object on a doctor's recommendation, as is the case here. The Complainant explains that there is nothing in the law that mandates this result, and that Section 1501 also prohibits it. Povacz Exc. at 23-24.

PECO asserts that the Complainant's sixth Exception is an "opt out" argument. PECO provides that the Commission's most recent order on an opt out claim is *Frompovich v. PECO*, C-2017-2474602 (Opinion and Order entered May 3, 2018) (*Frompovich)*. According to PECO, the *Frompovich* decision states that the General Assembly intended for every single customer to accept a smart meter, even if they object based on health concerns. PECO R. Exc. at 20-21.

In her ninth Exception, the Complainant contends that there is no evidence in the record that relocating the meter somewhere else on the Complainant's property can resolve the problems associated with PECO's plan for installation of a smart meter at the Complainant's home. Povacz Exc. at 29. The Complainant states there is no evidence in the record that this can be achieved in such a way as to eliminate the material contribution of RF exposure testified about by Dr. Marino. Povacz Exc. at 29. The Complainant contends that the ALJ seized on the idea of moving the meter because the Commission has already decided that there is no opt-out right under Act 129. Povacz Exc. at 29-30. The Complainant asserts that the correct resolution mandated by Section 1501 is to require PECO to accommodate the medical needs of this customer by not installing an RF-emitting device on her property. Povacz Exc. at 30.

PECO did not file Replies to the Complainant's ninth Exception.

d. Disposition

As the ALJ correctly concluded, we have previously determined that that Act 129 does not allow an EDC customer to "opt out" of smart meter installation generally. Povacz I.D. at 29 (citing *January 2013 Povacz Order)*. However, we also previously concluded, as discussed above, that it is our duty under Section 1501 of the Code, 66 Pa. C.S. § 1501, to hear and adjudicate individual formal complaints raising physical or health safety issues regarding a utility's smart meter installation and use. *Kreider*. Here, the Complainant alleged in her Amended Complainant that she is a medically sensitive customer of PECO's due to her existing health condition of EHS and that the RF exposure from a PECO smart meter that PECO proposes to install at the Complainant's residence and use to measure her usage will adversely affect her health. Based on our review of the record, as discussed extensively above, we have concluded that the Complainant did not meet her burden of proof in demonstrating that she is in fact a medically sensitive customer of PECO or that RF exposure from a PECO smart meter will adversely affect her health. Therefore, the Complainant has failed to demonstrate that the RF exposure from a PECO smart meter is unsafe.

The Complainant essentially argues it would be absurd for the Commission to allow PECO to install and use an AMI meter on the Complainant's property given her medical needs as testified to by the Complainant and her treating physician; that the General Assembly did not intend an absurd result; and that Section 1501 requires PECO to accommodate the medical needs of this customer by not installing only an analog metering device on her property. However, we reiterate that the Complainant has failed to demonstrate that the RF exposure from a PECO smart meter is unsafe. Accordingly, her request to not receive an AMI meter as part of receiving electric service from PECO is essentially the same as any other opt out request based on customer preference. As we previously indicated in the *January 2013 Povacz Order*, Section 2807(f)(2) of the Code, *supra*, is controlling here, and the use of the word "shall" in the statute indicates the

General Assembly's direction that all customers will receive a smart meter. If the General Assembly intended for EDCs to invest in and maintain two separate sets of meter systems based on customer preference – an analog system separate from an AMI system – as part of furnishing "adequate, efficient, safe, and reasonable service and facilities"[34] at "just and reasonable"[35] rates charged customers, it would have plainly stated as much in Act 129, but it did not.

We acknowledge the Complainant's argument that relocating the meter will not solve her problem, but we also note that PECO witness, Mr. Glenn Pritchard, testified that "Moving the meter approximately 30 feet away will decrease the RF fields by about 100 times. In my opinion, given that moving the meter board results in rapid drop off of the RF fields, allowing the meter board and socket to be relocated should be seen as a reasonable accommodation to [the] stated concerns." PECO St. 2 at 11. The ALJ also noted that the meter can be moved away from the Complainant's home structure. We find that PECO's tariff provisions that permit a customer to relocate the meter board and socket including to a location away from the house structure, at the customer's costs, provide a reasonable accommodation, consistent with PECO's duty to provide reasonable service under Section 1501 of the Code. The Complainant is free to choose or not choose this reasonable accommodation. However, given that we find no violation by PECO of Section 1501 based on its plans to install an AMI meter at her residence and use such meter in the ordinary course to measure her usage, we reject the ALJ's directive that PECO shall absorb the costs on its side of the meter to the extent any costs are anticipated to be incurred by PECO should the Complainant opt to relocate the meter board on her property.

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[34] *See*, *supra*, 66 Pa. C.S. § 1501.

[35] *See* 66 Pa. C.S. § 1301, which provides "Every rate made, demand, or received by any public utility…shall be just and reasonable and in conformity with regulations or orders of the [C]ommission."

Based on the foregoing discussion and analysis, we shall deny the Complainant's sixth and ninth Exceptions.

8. Whether the Complainant's Substantive Due Process Rights Will Be Violated by an Order Finding for PECO

a. Positions of the Parties

The Complainant argues that should the Commission rule in favor of PECO in this proceeding and thus force the Complainant to accept the exposure of RF fields against her wishes and against the recommendation of her physician, there would be an obvious violation of the Complainant's due process clause of the 14th Amendment of the United States Constitution as well as the due process protections in Article 1, Section 11 of the Pennsylvania State Constitution. The Complainant argues that this is evident from the discussion of broccoli in the legal debate about the Affordable Care Act that culminated in *National Federation of Independent Businesses v. Sebelius*, 567 U.S. 519, 660 (2012). During the argument in that case, Justice Scalia asked whether Congress could require citizens to buy broccoli. While the issue in that case was determining the extent of Congress' power under Article I, commentators noted that requiring a consumer to buy broccoli would violate fundamental notions of Due Process and forcing a consumer to eat broccoli (not just purchase it) would certainly violate due process. Povacz M.B. at 75-76 (citing Michael C. Dorf, *Commerce, Death Panels, and Broccoli: Or Why the Activity/Inactivity Distinction in the Health Care Case was Really About the Right to Bodily Integrity*, 29 GA. ST. U.L. REV. 897, 917 (2013)).

The Complainant argues that PECO is attempting to do just that – instead of asking its customers for permissions to expose them to RF emissions (purchasing broccoli with option to eat), it is forcing RF exposure on them without consent (force feeding broccoli). The Complainant argues that this raises serious constitutional issues.

Povacz M.B. at 76 (citing *Phillips v. County of Allegheny*, 515 F. 3d 224, 235 (3d Cir. 2008) ("[I]ndividuals have a constitutional liberty interest in personal bodily integrity that is protected by the Due Process Clause of the Fourteenth Amendment."; *In re Cincinnati Radiation Litig.*, 874 F. Supp. 796, 810-11 (S.D. Oh. 1995) ("The right to be free of state-sponsored invasion of a person's bodily integrity is protected by the Fourteenth Amendment guarantee of due process.")). The Complainant submits that any Commission interpretation of statutes or regulations that would infringe constitutionally protected rights for the Complainant should be avoided. Povacz M.B. at 70, 76.

In response, PECO argues that the Complainant's substantive due process argument fails when viewed against the correct standard and burden in this proceeding and given Dr. Marino's testimony that "there is no evidence that would warrant the statement" that PECO's AMI meters will harm the Complainants. See PECO M.B. at 27, n. 12.

b. ALJ's Initial Decision

The ALJ concluded that there is no support for a finding that the Complainant was not provided due process here. Povacz I.D. at 19. The ALJ explained that Act 129 directed EDCs to file smart meter technology procurement and installation plans with the Commission for approval and the Act requires any smart meter technology to have bidirectional or two-way communication technology. Povacz I.D. at 19 (citing 66 Pa. C.S. § 2807(g)). The ALJ noted that the Commission approved the smart meter installation plan developed by PECO and PECO is replacing AMR meters with AMI or "smart meters" in accordance with that approved plan. The ALJ provided that the Commission concluded that there is no provision in the Code of the Commission's Regulations or Orders that allows a PECO customer to "opt out" of smart meter installation. Povacz I.D. at 20 (citing *January 2013 Povacz Order*). The ALJ concluded that by seeking to install a smart meter at the service address, PECO was and is

attempting to comply with Act 129, the orders of the Commission and its tariff. Povacz I.D. at 20.

The ALJ stated that the due process requirements of the Pennsylvania Constitution and the 14th Amendment to the Federal Constitution are indistinguishable. According to the ALJ, the U.S. Constitution requires that the Commission provide due process to the parties appearing before them and this requirement is met when the parties are afforded notice and the opportunity to appear and be heard. I.D. at 21 (citing *Caba v. Weaknecht*, 64 A.3d 39 (2013), citing *Turk v. Dep't of Transp.*, 983 A.2d 805, 818 (Pa. Cmwlth. 2009); *Schneider v. Pa. Pub. Util. Comm'n.*, 479 A.2d 10 (Pa. Cmwlth. 1984)). The ALJ opined that a review of the history in this matter shows that the Complainant has had the opportunity to be heard during several weeks of administrative procedures and hearings spread over a year. The ALJ stated that opportunity continued with briefs submitted on Complainant's behalf and the instant review addressing her concerns about PECO meters. Povacz I.D. at 21-22. Regarding the substantive matter, the ALJ, after reviewing the testimony from the experts and the testimony of the Complainant herself, concluded that the Complainant had "not established that electromagnetic fields that may emanate from the smart meters are unsafe to her." Povacz I.D. at 27 (citing 66 Pa. C.S. § 332(a)).

c. Complainant's Exception No. 7 and PECO's Reply

In the seventh Exception, the Complainant states that the ALJ erred in concluding that mandated exposure to RF-emitting smart meters would not violate due process. The Complainant avers that the ALJ erroneously concluded that because the Complainant had an opportunity to be heard in these proceedings, there is no due process violation. Povacz Exc. at 25 (citing Povacz I.D. at 19-22). According to the Complainant, the ALJ confused the Complainant's argument, which is a substantive due process claim, with a procedural due process claim. The Complainant explains that her

argument is that forced RF exposure violates basic principles of respect for bodily integrity and cannot be justified here, regardless of the procedure provided. Povacz Exc. at 25.

In its Replies to the Complainant's seventh Exception, PECO provides that the Complainants are correct that the Initial Decision discussed the due process argument as a procedural, rather than a substantive, due process argument. PECO notes that if that is error, it is harmless, because elsewhere the Initial Decision made the determination that the Complainants did not meet their burden of proving the EFs from PECO's AMI meters would harm them. According to PECO, the Initial Decision thus correctly concluded that the factual predicate of the substantive due process argument – "harm to bodily integrity" – was not proven. PECO provides that the substantive due process argument should thus be dismissed because, quite simply, the Complainants did not prove (and in fact admit that they did not prove) that they would be harmed by PECO's AMI meters. PECO R. Exc. at 22-23.

d. Disposition

Clearly, the ALJ understood the Complainant's due process claim was more than a procedural question. Perhaps out of an abundance of caution, the ALJ discussed the procedural question first followed by her substantive disposition of the claims before her. In the Initial Decision, the ALJ made the determination that the Complainant did not meet her burden of proving the RF exposure from PECO's AMI meter would harm her health. Likewise, we determine above that the Complainant failed to demonstrate by a preponderance of the evidence that RF exposure from a PECO smart meter will cause or contribute to adverse health effects to the Complainant. In failing to meet the standard or burden in this proceeding, the Complainant has not shown that "forced RF exposure" from a PECO AMI meter violates "basic principles of respect for

bodily integrity" or her substantive due process rights under the Pennsylvania or Federal Constitutions.

Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 7.

IV. Conclusion

In light of the above discussion, we shall: (1) deny the Complainant's Exceptions; (2) grant PECO's Exception; (3) reverse, in part, and modify, in part, the ALJ's Initial Decision; and (4) dismiss the Complaint and the Amended Complaint, consistent with this Opinion and Order; **THEREFORE,**

IT IS ORDERED:

1. That the Exceptions filed by Maria Povacz on May 14, 2018, to the Initial Decision of Administrative Law Judge Darlene D. Heep issued on March 20, 2018, at Docket No. C-2015-2475023, are denied, consistent with this Opinion and Order.

2. That the Exception filed by PECO Energy Company on May 14, 2018, to the Initial Decision of Administrative Law Judge Darlene D. Heep issued on March 20, 2018, at Docket No. C-2015-2475023, is granted, consistent with this Opinion and Order.

3. That the Initial Decision of Administrative Law Judge Darlene D. Heep, issued on March 20, 2018, at Docket No. C-2015-2475023, is reversed, in part, and modified, in part, consistent with this Opinion and Order.

4. That the Formal Complaint filed by Maria Povacz, on March 28, 2015, at Docket No. C-2015-2475023, is dismissed.

5. That the Amended Complaint filed by Maria Povacz on April 8. 2016, at Docket No. C-2015-2475023, is dismissed.

6. That this proceeding is marked closed.

BY THE COMMISSION,

Rosemary Chiavetta
Secretary

(SEAL)

ORDER ADOPTED: March 28, 2019

ORDER ENTERED: March 28, 2019

Appendix C

PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17105-3265

Public Meeting held May 9, 2019

Commissioners Present:

Gladys M. Brown Dutrieuille, Chairman
David W. Sweet, Vice Chairman
Norman J. Kennard
Andrew G. Place
John F. Coleman, Jr.

Laura Sunstein Murphy C-2015-2475726

v.

PECO Energy Company

OPINION AND ORDER

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BY THE COMMISSION:

Before the Pennsylvania Public Utility Commission (Commission) for consideration and disposition are the Exceptions filed by Laura Sunstein Murphy (the Complainant or Ms. Murphy) on May 14, 2018, in response to the Initial Decision of Administrative Law Judge (ALJ) Darlene D. Heep, served on the Parties on March 20, 2018, in the above-captioned proceeding (Murphy Initial Decision or Murphy I.D.). Replies to Exceptions were filed by PECO Energy Company (PECO or the Company) on June 4, 2018. The Murphy Initial Decision denied the Formal Complaint (Complaint) filed by Ms. Murphy on April 7, 2015, as later amended on July 28, 2015 (Amended Complaint) and June 6, 2016 (Second Amended Complaint). For the reasons discussed below, we shall deny the Complainant's Exceptions, adopt in part, and modify, in part, the Initial Decision of ALJ Heep, and dismiss the Second Amended Complaint, consistent with this Opinion and Order.

I. Background

This case involves an inquiry concerning the safety of the Complainant's exposure to the level of radio frequency (RF) fields, or electromagnetic energy,[1] from the

[1] As the ALJ noted in the Murphy Initial Decision, the expert witnesses in this proceeding used the terms "electromagnetic fields" or "EMFs" and RF fields interchangeably to address the emissions or exposure levels concerns of the Complainant in their testimonies. Murphy I.D. at 1, n.2. The ALJ used the abbreviation "EF" to refer to these emissions. *Id*. We do not use herein the "EF" abbreviation utilized by the ALJ in the Murphy Initial Decision. For disposition purposes herein, we will refer to the emissions of concern as RF emissions or RF field exposure.

advanced metering infrastructure (AMI) meter, or smart meter,[2] that PECO proposes to install at the Complainant's residence and use in the ordinary course to measure the Complainant's electricity consumption.

PECO is an electric distribution company (EDC) subject to the jurisdiction of the Commission. ECO furnishes, owns and maintains the meters in its distribution system. *See* PECO's Tariff Electric Pa. P.U.C. No. 5, Section 6.4, at 14; *see also* Section 14.1, page 22.

Act 129 of 2008 (Act 129 or Act), *inter alia*, amended Chapter 28 of the Public Utility Code (Code) and required EDCs with more than 100,000 customers to file smart meter technology procurement and installation plans for Commission approval and to furnish smart meter technology within its service territory in accordance with the provisions of the Act. Section 2807(f) of the Code provides as follows:

> (f) *Smart Meter technology and time of use rates.*
>
> (1) Within nine months after the effective date of this paragraph, electric distribution companies shall file a Smart Meter technology procurement and installation plan with the commission for approval. The plan shall describe the Smart Meter technologies the electric distribution company proposes to install in accordance with paragraph (2).

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[2] In this proceeding, the Complainant claims that PECO's automatic meter reading (AMR) meter caused adverse health conditions between 2002 and 2015. PECO asserted in its Brief that the arguments are nearly identical as to whether the Complainant has proved her allegations with respect to either the AMI meter or AMR meter and, therefore, PECO refers generally to AMI meters or smart meters in its Brief, noting that its arguments apply with equal force to any claims about AMR and AMI meters. *See* PECO Murphy M.B. at 1, n.1. After careful review of the record, we agree with PECO. Therefore, in disposing of the allegations in the Second Amended Complaint, except where it is necessary to distinguish between AMR and AMI meters, we will generally refer to AMI meters, or smart meters, with the disposition applying with equal force to any claims about an AMR meter.

> (2) Electric distribution companies shall furnish Smart Meter technology as follows:
>
> (i) Upon request from a customer that agrees to pay the cost of the Smart Meter at the time of the request.
>
> (ii) In new building construction.
>
> (iii) In accordance with a depreciation schedule not to exceed 15 years.

66 Pa. C.S. § 2807(f). The General Assembly found that it was "in the public interest" to implement the measures set forth in Act 129 and that the universal installation of smart meters would enhance the "health, safety and prosperity" of Pennsylvania's citizens through the "availability of adequate, reliable, affordable, efficient and environmentally sustainable electric service at the least cost." *See* H.B. 2200, 192d Gen. Assemb., Reg. Sess. (Pa. 2008)).

By Order entered in 2009, the Commission directed all EDCs subject to Act 129's smart meter requirements, including PECO, to universally deploy smart meter technology within their respective service territories in the Commonwealth in accordance with a depreciation schedule not to exceed fifteen years and in accordance with other guidelines established therein. *See Smart Meter Procurement and Installation*, Docket No. M-2009-2092655 (Implementation Order entered June 24, 2009) (*Smart Meter Procurement and Installation Order*). PECO sought and obtained the Commission's approval to complete the installation of AMI meters for substantially all customers within its service territory by the end of 2014. *See Petition of PECO Energy Company for Approval of its Smart Meter Universal Deployment Plan*, Docket No. M-2009-2123944 (Order entered August 15, 2013)); *see also Petition of PECO Energy Company for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123944 (Order entered May 6, 2010).

PECO, in carrying out its obligations under Act 129 and the relevant Commission's Orders implementing Act 129, sent a letter to Ms. Murphy on May 12, 2014, announcing its plans to install a smart meter on her property. A technician arrived at Ms. Murphy's home on June 6, 2014 to install an AMI smart Meter. Ms. Murphy denied the technician access to the meter. *See* Murphy I.D. at 7, FOF Nos. 4-7 (citations omitted).

In March 2015, Ms. Murphy received a notice from PECO informing her that her electricity would be turned off in ten days due to her refusal to permit the installation of a smart meter. On March 27, 2015, Ms. Murphy called PECO, and informed PECO that due to medical reasons, she could not have the smart meter installed on her property. That same day, one of Ms. Murphy's doctors, Dr. Peter J. Prociuk, called PECO and explained that Ms. Murphy's electricity could not be shut off as it would be detrimental to her health and later sent medical documentation to PECO. In response to the medical documentation supplied by Dr. Prociuk, PECO placed a thirty day hold on Ms. Murphy's account, staying termination of service and smart meter installation at the Murphy residence. Ms. Murphy filed a complaint with the Commission on April 7, 2015 seeking to enjoin the installation of the smart meter. In response, PECO halted the termination of the Complainant's account and has not shut off electricity to her residence, pending the outcome of this Complaint proceeding. After attending a Commission hearing involving PECO smart meters in March of 2016, the Complainant, without obtaining PECO's permission, caused the removal of PECO's AMR meter and further caused the installation of an analog meter purchased by the Complainant to replace PECO's AMR meter. PECO removed the Complainant's analog meter and reinstalled its AMR meter on May 9, 2016. Approximately one hour after that, the Complainant again caused the removal of PECO's AMR meter and further caused the reinstallation of her analog meter. According to the record, the Complainant-purchased

analog meter currently remains installed and in use at the Complainant's residence.[3] *See* Murphy I.D. at 8, 10, FOF Nos. 8-12, 29-31 (citations omitted).

II. History of the Proceeding

On April 7, 2015, the Complainant filed the Complaint with the Commission against PECO in which she alleged that PECO was threatening to shut off her service after she refused installation of an AMI meter or smart meter, at her home. For relief, Ms. Murphy stated that she wanted PECO to stop threatening to shut off her electric service because she and her husband had medical conditions that would be seriously jeopardized if the service was shut off. Ms. Murphy also averred in her Complaint that she and her husband lived in a rural area and were dependent upon electricity to pump water to their home. She also stated that they paid their bills on time and had been a customer of PECO for over thirty years.

Attached to her Complaint was a March 27, 2015 letter written by Dr. Peter J. Prociuk, MD, which stated that it was an unequivocal medical necessity for electric service to the Complainant's home to be maintained without interruption. Dr. Prociuk further stated that the owners were elderly and in fragile health, that their water comes from a well that is dependent on electricity and that unnecessary or prolonged interruption in electric service would seriously jeopardize their health.

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[3] We note that PECO has voluntarily allowed the Complainant's self-installed analog meter to remain in place. PECO has grounds for immediate termination of the Complainant's service in accordance with 66 Pa. C.S.A. § 1406(c)(1)(iii): "A public utility may immediately terminate service for any of the following actions by the customer including tampering with meters or other public utility's equipment." Additionally, PECO's tariff states: "18.6 Termination for Fraud - The Company may terminate without notice for abuse, fraud, material misrepresentation of the customer's identity, or tampering with the connections, the Company's meters, or other equipment of the Company."

Additionally, Ms. Murphy stated that she had refused PECO access to install a smart meter at her home because PECO had not proven that smart meters will be safe for medically fragile individuals or that they do not cause house fires.

PECO filed an Answer and New Matter on April 23, 2015. The Answer denied all material allegations and stated that the Company was seeking to comply with the Act 129 directive to install AMI, or smart meters, and that PECO had the right to terminate service when access to its equipment is denied. The New Matter averred that Act 129 did not allow a customer to opt out of smart meter installation.

An Amended Complaint was filed on July 28, 2015. In the Amended Complaint, Ms. Murphy alleged that she had received a ten-day shut off notice from PECO on or about March 26, 2015, threatening to shut off her service on April 3, 2015, because she had denied PECO access to the Company's equipment. She also stated that she and her husband are elderly and require uninterrupted electric service. She further averred that her various ailments make her susceptible to EFs. She alleged that smart meters emit EFs and requested that PECO not install a smart meter at her residence. She further stated that installation of a smart meter at her home would create an unsafe and unhealthy condition at her home in violation of 66 Pa.C.S. § 1501 and 52 Pa. Code § 57.194. The allegation that smart meters cause fires was not pursued in the Amended Complaint and is not addressed further in this proceeding.

An Answer to the Amended Complaint was filed on July 31, 2015.

On June 6, 2016, the Complainant filed a Second Amended Formal Complaint (Second Amended Complaint) in which she alleged, *inter alia*, that the she suffers from medical conditions which make her uniquely susceptible to electromagnetic field (EMF) and radio frequency (RF) radiation. The Complainant also stated that her

health has declined since PECO's installation of its AMR meter on her home in 2002. She alleged that her exposure to the EMF and RF emissions from PECO's AMR meter and proposed smart meter "have and will continue to cause grievous bodily harm to Complainant." She also contended that PECO's installation of the wireless AMR meter already constituted a violation of Section 1501 of the Public Utility Code, and PECO's installation of an AMI wireless smart meter would constitute a continuing violation of Section 1501 of the Code and Section 57.194 of the Commission's Regulations because (1) the Zigbee whole-house Wi-Fi portion of the AMI wireless smart meter would subject the entire Murphy household, (which contains no so-called "smart" appliances or equipment), to constant pulsed EMF at least every 30 seconds of the day at 0.7 milliseconds per pulsed transmission, constituting 120 pulses of EMF per hour or 2,280 pulses of EMF per day, in addition to (2) the initial FlexNet Module pulsation of at least 96 times per day at 70 milliseconds per transmission, with all these pulsed EMF emissions continuing twenty four hours a day, day and night. The Complainant stated that she was compelled to purchase and install an analog meter which poses no safety or health threat to Complainant's house structure as certified by a licensed electrician. *See* Second Amended Complaint at ¶¶ 11-12, 14, 34-35, 37.

As relief, the Complainant sought in the Second Amended Complaint an order that (1) compels PECO to abide by the requirements of Section 1501 of the Code and Section 57.184 of the Commission's regulations to provide safe and reasonable service to the Complainant, (2) compels PECO to cease and desist efforts to install any wireless equipment that is harmful or which would exacerbate Complainant's medical conditions and (3) allows the Complainant to retain her analog meter or allows PECO to install a meter that emits no EMF. Second Amended Complaint at ¶¶ 51-53. In the alternative, and pursuant to 52 Pa. Code § 1.91, Complainant respectfully requested that the Commission order the waiver of any rule, regulation or Commission Order that requires PECO to install a smart meter on the Complainant's premises. Second Amended Complaint at ¶ 57.

On July 1, 2016, PECO filed its Answer to the Second Amended Complaint. In its Answer, PECO generally denied all material averments in the Second Amended Complaint. *See generally* Answer to Second Amended Complaint. PECO specifically denied that its AMI meter "is exceedingly harmful" to Complainant's health. *Id*. at ¶ 50. PECO also denied the allegation that the deployment of an AMR or AMI meter at the Complainant's residence is "unsafe" or "unhealthy." *Id*. at ¶ 31. PECO also denied the allegation that its AMI meter utilizes pulsed transmissions and PECO expects the AMI meter at the Murphy residence will be reprogrammed after installation to transmit 6-10 times per day. *Id*. at ¶¶ 21, 35.

PECO further answered the Second Amended Complaint by stating that the General Assembly and the Commission have ordered universal installation of smart meters. *Id*. at ¶ 36. PECO explained that the Complainant was not compelled to remove the AMR meter and have it replaced with an analog meter. Rather, the Complainant chose to engage in self-help measures knowing that they violate PECO's tariff, which has the force of law. PECO denied that the analog meter installed by the Complainant "poses no safety or health threat to Complainant's house structure" and demanded proof of the conclusions reached. *Id*. at ¶ 37.

PECO denied the implied allegation that installation of an AMI meter would prevent the Complainant from having access to safe and reasonable electric services. Answer to Second Amended Complaint at ¶ 47. PECO stated that notwithstanding the fact that the General Assembly has declared that electric service is essential to the health and well-being of residents of the Commonwealth, utilities are still allowed to terminate electric service to customers for designated reasons – specifically including the ability to terminate service because the customer will not give PECO access to its meters for purposes of replacing or upgrading those meters as per 52 Pa. Code §56.81(3). *Id*. at ¶ 48.

Two days of hearing were held June 7-8, 2016 in *Povacz v. PECO Energy Company*, Docket No. C-2015-2475023.

On August 26, 2016, the Parties' Joint Motion for An Omnibus Schedule Revision was granted,[4] and a revised Pre-Hearing Order was issued which stated that unless there is reference to a specific complainant, expert testimony is considered common testimony between and among all Complainants and admitted in accordance with 52 Pa. Code § 5.407.

Further Omnibus Hearings were held September 14 -16, 2016, September 27, 2016, December 5-8, 2016 and January 25, 2017. The final Omnibus transcript was filed with the Commission on February 14, 2017. The record closed on November 13, 2017, upon receipt of the Parties' Reply Briefs. The record in this proceeding consists of 1,910 pages of transcript and 173 exhibits (the Complainants 132 exhibits, PECO 41).[5]

During the hearing, the ALJ granted the unopposed oral request by the counsel for the Omnibus Complainants that all medical information and testimony be marked and kept confidential. A Protective Order regarding medical information of the Complainant was issued on March 13, 2018.

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[4] The Joint Motion combined the schedules for the following proceedings: *Maria Povacz v. PECO Energy Company*, Docket No. C-2015-2475023; *Laura Sunstein Murphy v. PECO Energy Company*, Docket No. C-2015-2475726; *Cynthia Randall and Paul Albrecht v. PECO Energy Company*, Docket No. C-2016-2537666; and *Stephen and Diane Van Schoyk v. PECO Energy Company*, Docket No. C-2015-2478239. On October 25, 2016, the Complainants Stephen and Diane Van Schoyck filed an unopposed Petition to Withdraw, stating that they were removing their home from the electric grid, and therefore the Van Schoycks did not participate in the Omnibus hearings. Thus, the Omnibus Complainants that participated in the hearings are Ms. Povacz, Ms. Murphy, Ms. Randall and Mr. Albrecht.

[5] Briefing outlines, testimony and exhibits are contained in an eighteen volume Joint Appendix for the Omnibus cases agreed to by the parties and filed in *Murphy v. PECO Energy Company* at Docket No. C-2015-2475726.

On March 20, 2018, the Commission served ALJ Heep's Initial Decision in *Laura Sunstein Murphy v. PECO Energy Company*, Docket No. C-2015-2475726. The Commission issued both a confidential "proprietary" version and a non-confidential "non-proprietary" version of the Murphy Initial Decision. For the purposes of this Opinion and Order, all references to the Murphy Initial Decision below will be to the non-proprietary version.

As noted above, on May 14, 2018, Ms. Murphy filed Exceptions to the Murphy Initial Decision.[6] Replies to Exceptions were timely filed by PECO on June 4, 2018.

III. Discussion

A. Legal Standards

As a matter of law, to establish a legally sufficient claim, a complainant must show that the named utility is responsible or accountable for the problem described in the complaint in order to prevail. *Patterson v. The Bell Telephone Company of Pennsylvania*, 72 Pa. P.U.C. 196 (1990) ("*Patterson*"). The offense must be a violation of the Code, a Commission Regulation or Order or a violation of a Commission-approved tariff. 66 Pa. C.S. § 701.

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[6] On March 23, 2018, the Complainant's counsel filed a Petition for Additional Time to File Exceptions due to personal and professional commitments. The request was granted by Secretarial Letter dated March 26, 2018. On April 19, 2018, Complainant's counsel filed a second request for a two-week extension, indicating of the untimely passing of a member of counsel's law firm and advising that opposing counsel for PECO did not object to a ten-day extension. By Secretarial Letter dated April 17, 2018, the deadline to file Exceptions was extended until May 14, 2018, with Replies due twenty days thereafter.

While Act 129 does not provide customers a general "opt-out" right from smart meter installation at a customer's residence, a customer's formal complaint that raises a claim under Section 1501 of the Code, 66 Pa. C.S. § 1501, related to the safety of a utility's installation and use of a smart meter at the customer's residence is legally sufficient to proceed to an evidentiary hearing before an ALJ. *See Maria Povacz v. PECO Energy Company*, Docket No. C-2012-2317176 (Order entered January 24, 2013) (*January 2013 Povacz Order*); *see also Susan Kreider v. PECO Energy Company*, P-2015-2495064 (Order entered January 28, 2016) (*Kreider*).

As the party seeking affirmative relief from the Commission, the complainant in a formal complaint proceeding has the burden of proof. 66 Pa. C.S. § 332(a). The burden of proof is the "preponderance of the evidence" standard. *Suber v. Pennsylvania Com'n on Crime and Deliquency*, 885 A. 2d 678, 682 (Pa. Cmwlth. 2005) (*Suber*); *Samuel J. Lansberry, Inc. v. Pa. PUC*, 578 A.2d 600 (Pa. Cmwlth. 1990), *alloc. denied*, 529 Pa. 654, 602 A.2d 863 (1992) (*Lansberry*); *see also North American Coal Corp. v. Air Pollution Commission*, 279 A.2d 356 (Pa. Cmwlth. 1971). To establish a fact or claim by a preponderance of the evidence means to offer the greater weight of the evidence, or evidence that outweighs, or is more convincing than, by even the smallest amount, the probative value of the evidence presented by the other party. *See Se-Ling Hosiery, Inc. v. Margulies*, 364 Pa. 45, 48-49, 70 A.2d 854, 855 (1950).

The burden of proof is comprised of two distinct burdens: the burden of production and the burden of persuasion. *Hurley v. Hurley*, 2000 Pa. Super. 178, 754 A.2d 1283 (2000). The burden of production, also called the burden of going forward with the evidence, determines which party must come forward with evidence to support a particular claim or defense. *Scott and Linda Moore v. National Fuel Gas Distribution*, Docket No. C-2014-2458555 (Initial Decision issued May 11, 2015) (*Moore*). The burden of production goes to the legal sufficiency of a party's claim or affirmative

defense. *See Id.* It may shift between the parties during a hearing. A complainant may establish a *prima facie* case with circumstantial evidence. *See Milkie v. Pa. Pub. Util. Comm'n*, 768 A.2d 1217, 1220 (Pa. Cmwlth. 2001) (*Milkie*). If a complainant introduces sufficient evidence to establish legal sufficiency of the claim, also called a *prima facie* case, the burden of production shifts to the utility to rebut the complainant's evidence. *See Moore*.

If the utility introduces evidence sufficient to balance the evidence introduced by the complainant, that is, evidence of co-equal value or weight, the complainant's burden of proof has not been satisfied and the burden of going forward with the evidence shifts back to the complainant, who must provide some additional evidence favorable to the complainant's claim. *See Milkie,* 768 A.2d at 1220*.; see also Burleson v. Pa. PUC*, 443 A.2d 1373 (Pa. Cmwlth. 1982), *aff'd*, 501 Pa. 433, 461 A.2d 1234 (1983).

Having produced sufficient evidence to establish legal sufficiency of a claim, the party with the burden of proof must also carry the burden of persuasion to be entitled to a favorable ruling. *See Moore*. While the burden of production may shift back and forth during a proceeding, the burden of persuasion never shifts; it always remains on a complainant as the party seeking affirmative relief from the Commission. *See Milkie*, 768 A.2d at 1220; *see also, Riedel v. County of Allegheny*, 633 A.2d 1325, 1328, n.11 (Pa. Cmwlth. 1993); *see also, Burleson*, 443 A.2d at 1375. It is entirely possible for a party to carry the burden of production but not be entitled to a favorable ruling because the party did not carry the burden of persuasion. *See Moore.* In determining whether a

complainant has met the burden of persuasion, the ultimate fact-finder[7] may engage in determinations of credibility, may accept or reject testimony of any witness in whole or in part, and may accept or reject inferences from the evidence. *See Moore*, citing *Suber*.

Adjudications by the Commission must be supported by substantial evidence in the record. 2 Pa. C.S. § 704; *Lansberry*, 578 A.2d at 602. Substantial evidence is such relevant evidence that a reasonable mind might accept as adequate to support a conclusion. *Consolidated Edison Company of New York v. National Labor Relations Board*, 305 U.S. 197, 229, 59 S.Ct. 206, 217. More is required than a mere trace of evidence or a suspicion of the existence of a fact sought to be established. *Norfolk & Western Ry. Co. v. Pa. PUC*, 489 Pa. 109, 413 A.2d 1037 (1980) (*Norfolk*); *Erie Resistor Corp. v. Unemployment Comp. Bd. of Review*, 166 A.2d 96 (Pa. Super. 1961); *Murphy v. Comm. Dept. of Public Welfare, White Haven Center*, 480 A.2d 382 (Pa. Cmwlth. 1984).

Pursuant to Section 1501 of the Code, a public utility has a duty to maintain "adequate, efficient, safe, and reasonable service and facilities" and to make repairs, changes, and improvements that are necessary or proper for the accommodation, convenience, and safety of its patrons, employees, and the public. *See* 66 Pa. C.S. § 1501. Section 1501 of the Code, 66 Pa. C.S. § 1501, provides, in pertinent part, as follows:

> Every public utility shall furnish and maintain adequate, efficient, safe, and reasonable service and facilities, and shall

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[7] In formal complaint proceedings, the Commission, not the ALJ, is the ultimate fact-finder; it weighs the evidence and resolves conflicts in testimony. When reviewing the initial decision of an ALJ, the Commission has all the powers that it would have had in making the initial decision except as to any limits that it may impose by notice or by rule. *Milkie*, 768 A.2d at 1220, n. 7 (citing, *inter alia*, 66 Pa. C.S. § 335(a)).

> 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 and facilities shall be in conformity with the regulations and orders of the commission.

The term "service" is defined broadly under Section 102 of the Code, 66 Pa. C.S. § 102, in relevant part, as follows:

> **"Service."** Used in its broadest and most inclusive sense, includes all acts done, rendered, or performed, and all things furnished or supplied, and any and all facilities used, furnished, or supplied by public utilities. . .in the performance of their duties under this part to their patrons, employees, other public utilities, and the public, as well as the interchange of facilities between two or more of them . . .

Section 1505(a) of the Code, 66 Pa. C.S. § 1505(a), provides that:

> Whenever the commission, after reasonable notice and hearing, upon its own motion or upon complaint, finds that the service or facilities of any public utility are unreasonable, unsafe, inadequate, insufficient, or unreasonably discriminatory, or otherwise in violation of this part, the commission shall determine and prescribe, by regulation or order, the reasonable, safe, adequate, sufficient, service or facilities to be observed, furnished, enforced, or employed, including all such repairs, changes, alterations, extensions, substitutions, or improvements in facilities as shall be reasonably necessary and proper for the safety, accommodation, and convenience of the public.

Pursuant to Section 57.28(a)(1) of our Regulations,[8] 52 Pa. Code § 57.28(a)(1), an EDC must use reasonable efforts to properly warn and protect the public from danger and to exercise reasonable care to reduce the hazards to which customers may be subjected to by reason of the EDC's provision of electric utility service and its associated equipment and facilities. Section 57.28(a)(1), 52 Pa. Code § 57.28(a)(1), provides specifically:

> An electric utility shall use reasonable effort to properly warn and protect the public from danger, and shall exercise reasonable care to reduce the hazards to which employees, customers, the public and others may be subjected to by reason of its provision of electric utility service and its associated equipment and facilities.

An EDC that violates the Code or a Commission Order or Regulation may be subjected to a civil penalty of up to $1,000 per violation for every day of that violation's continuing offense. *See* 66 Pa. C.S. § 3301(a)-(b). The Commission's policy statement at 52 Pa. Code § 69.1201 establishes specific factors and standards the Commission will consider in evaluating litigated cases involving violations and in determining whether a fine is appropriate.

In the Initial Decision, ALJ Heep made sixty-seven Findings of Fact and reached nine Conclusions of Law. *See* Murphy I.D. at 7-16, 33-34. The Findings of Fact and Conclusions of Law are incorporated herein by reference and are adopted without comment unless they are either expressly or by necessary implication rejected or modified by this Opinion and Order.

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[8] *See Final Rulemaking Order, Rulemaking Re: Electric Safety Regulations, 52 Pa. Code Chapter 57*, Docket No. L-2015-2500632 (Order entered April 20, 2017) (*Electric Safety Final Rulemaking Order*).

As we proceed in our review of the various positions of the Parties in this proceeding, we are reminded that the Commission is not required to consider expressly or at length each contention or argument raised by the parties. *Consolidated Rail Corp. v. Pa. PUC*, 625 A.2d 741 (Pa. Cmwlth. 1993); *also see, generally, University of Pennsylvania v. Pa. PUC*, 485 A.2d 1217 (Pa. Cmwlth. 1984). Thus, any issue or Exception that we do not specifically address shall be deemed to have been duly considered and denied without further discussion.[9]

B. Litigated Issues

1. Whether the Complainant was Required under Applicable Law to Prove that RF Exposure from a PECO Smart Meter Caused or Will Cause the Adverse Health Effects Alleged in the Amended Complaint

a. Positions of the Parties

The Parties each assert that the seminal Commission decision that applies in this proceeding is *Kreider, supra*. *See* Murphy M.B. at 75; PECO M.B. at 13. However, the Parties disagree over what it is exactly the Complainant must prove in this proceeding based on the Commission's decision in *Kreider* in order for the Complainant

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[9] The Complainant's Exceptions include an "Introduction" section, which contains arguments not found elsewhere in the numbered Exceptions including: (1) a citation to *Murray v. Motorola*; (2) an argument that the Commission should refrain from deciding this case; and (3) a request for notice and comment rulemaking. PECO R. Exc. at 1. Pursuant to our Regulations, each exception must be numbered and identify the finding of fact or conclusion of law to which exception is taken and cite relevant pages of the decision. 52 Pa. Code § 5.533(b). Because the arguments contained in the Introduction section are non-conforming to the requirements of 52 Pa. Code § 5.533(b), we will not dispose of those arguments appearing in the Complainant's Introduction to Exceptions that do not appear elsewhere in her numbered Exceptions.

to prevail in her Complaint under Section 1501 of the Code. *See* Murphy M.B. at 75-77, Murphy R.B. at 5-17; PECO's M.B. at 12-23, PECO R.B. at 4-19. We stated as follows in *Kreider*:

> 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.
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> [T]he 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. *See*, [*Woodbourne-Heaton Remand Order*, slip op., at] 12-13 (stating that the ALJ's role was to determine whether there was sufficient record evidence to support a finding that the petitioners would be adversely affected by the reconductoring of the transmission line at issue).

Kreider, slip op., at 21-23 (citing *Letter of Notification of Philadelphia Electric Company 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 Counties*, 78 Pa.P.U.C. 486, 1993 WL 383052 (Pa.P.U.C.), 1992 Pa. PUC Lexis 160, Docket No. A-

110550F0055 (Remand Order entered March 26, 1993) (*Woodbourne-Heaton Remand Order*), slip op., at 12-13) (quoted in PECO's Main Brief at 13).

The Complainant argues that the Commission's decision in *Kreider* does not require proof of medical causation, *i.e*., that PECO's AMI smart meter caused or will cause health conditions for the Complainant or will interfere with her health. According to the Complainant, in a Section 1501 complaint alleging human health hazards from the utility's service and facilities, requiring proof of medical causation is so high a burden that it eviscerates PECO's duty to provide safe and reasonable service. The Complainant submits that the Commission, in enforcing Section 1501, must be concerned not just with actual proven harm, but also with the potential for harm, because the role of the Commission includes consideration of policy. Murphy M.B. at 75-77; R.B. at 10-12, 17. According to the Complainant, if something is potentially harmful to the Complainant, it is both unsafe and unreasonable as to the Complainant. Murphy M.B. at 75; R.B. at 11-12. For the Complainant, this means that proving PECO's use of smart meters adversely affects them and that it is unsafe and unreasonable under the circumstances for PECO to deploy a smart meter at her residence. Murphy M.B. at 75.

The Complainant argues that the *potential for harm* is the standard the Commission must consider under Section 1501, because safety regulation cannot wait to act until the possibility of harm is conclusively proven. Murphy M.B. at 59 (emphasis added). The Complainant argues that even PECO's witness Dr. Davis admitted that experiments must be conducted on animals and not humans, for obvious reasons, and that because of that necessary limitation, the most an animal study will ever support is a conclusion about the potential for harm to humans. Murphy M.B. at 58.

The Complainant argues that PECO tries to put the burden on the Complainant to prove RF has conclusively been proven to cause harm, but the Complainant states that PECO should shoulder the burden of proving safety. *Id*. at 60.

The Complainant argues that PECO cannot meet that burden, which, according to the Complainant, is the reason why PECO relies so heavily on the Federal Communications Commission (FCC) limits, which the Complainant characterizes as being outdated. According to the Complainant, the most that PECO could hope to prove in these proceedings regarding the safety of smart meters is that the answer to this important question is currently undecided – neither proved nor disproved, with evidence on both sides of the issue. *Id*. at 61.

The Complainant submits that if the Commission requires the Complainant to prove that harm was or will be caused, then:

> Taking PECO's position to its logical but absurd conclusion, it does not matter how much of a risk of harm is presented, no customer could establish a violation of Section 1501 unless they could prove by a preponderance of the evidence (51%) that they have been or will be harmed. Under that reasoning, a 25% risk of electrocution of an electricity customer through the action of a Pennsylvania utility would be deemed to be safe and not a violation of Section 1501.

Murphy R.B. at 8. The Complainant argues that such result cannot be right, that the General Assembly could not have intended this, and the plain meaning of "safe" does not permit it.[10] Murphy R.B. at 8.

Relying upon its statutory interpretation under the Statutory Construction Act, the Complainant argues that there is nothing in the plain language of Section 1501 to

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[10] The Complainant cites to the definitions contained in the Merriam-Webster dictionary of "safe" as "free from harm or risk" and "harm" as defined as "physical or mental damage" and "risk" as "possibility of loss or injury." Murphy R.B. at 7 (citations omitted). The Complainant also provides numerous other definitions of these and similar terms. *See* Murphy R.B. at 7, n.2.

support the argument that the Complainant must prove that harm was or will be caused. Murphy R.B. at 6-8.[11] In other words, the Complainant submits, a customer is not required to prove causation of harm as is required in a tort or toxic tort claim for damages. *See* Murphy R.B. at 8-10.[12] The Complainant argues that the standard applicable to an administrative agency charged with ensuring safety and reasonableness, "is reasonably lower than that appropriate in tort law, which traditionally makes more particularized inquiries into cause and effect and requires a plaintiff to prove that it is more likely than not that another individual has caused him or her harm." Murphy R.B. at 10 (quoting *Allen v. Pennsylvania Engin.* Corp, 102 F.3d 194, 198 (5th Cir. 1996)). The Complainant states that there is no requirement under Section 1501 that she prove that, more likely than not, she has been or will be harmed. Murphy R.B. at 17.

The Complainant argues that the Commission did not explain in *Kreider* what it meant to be "adversely affected," and it did not state that Ms. Kreider had to provide proof of tort law causation. In any event, the Complainant argues that the Commission in *Kreider* used the disjunctive *or* to mean that, in addition to proving that she was adversely affected by PECO's use of a smart meter, Ms. Kreider could prevail by proving that service was unsafe or unreasonable. Murphy R.B. at 13. The Complainant

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[11] Even though the Complainant describes in her Reply Brief, pp. 6-7, that the Commission's statutory interpretation of the word "safe" in Section 1501 is a "threshold issue," it does not mention this argument in its Main Brief or its Exceptions. We note that PECO did take the opportunity to respond to the Complainant's statutory construction argument in its Reply Brief at pages 18-19, submitting that "since the Commission has a well-developed body of law regarding burden of proof that is specific to this kind of medical/scientific controversy, it would not be appropriate to supplant that precedent with the Merriam-Webster dictionary." PECO R.B. at 19.

[12] The Complainant cites to three cases to emphasize its point through contrast. Murphy R.B. at 10 (citing *e.g. Brandon v. Ryder Truck Rental, Inc*., 34 A. 3d 104, 110 (Pa. Super. Ct. 2011), *Viguers v. Phillip Morris USA, Inc*., 837 A.2d 534, 540 (Pa. Super. Ct. 2003), *Spino v. John S. Tilley Ladder Co*., 696 A. 2d 1169, 1172 (Pa. 1997). The Complainant quotes these opinions, which indicate that proving causation is a required element of the cause of action under the applicable law.

argues that *Kreider* did not address the specific issue presented here, *i.e.*, whether Complainants must prove causation as if this were a tort case or whether she may instead prevail by proving lack of safety (risk of harm) or the unreasonable nature of PECO's conduct. Murphy R.B. at 13. The Complainant argues, however, that *Kreider* does indeed suggest that the relevant inquiry is the potential for harm by referring to *Renney Thomas v. PECO Energy Company*, Docket No. C-2012-2336225 (Order entered December 31, 2013) (*Renney Thomas*). Murphy R.B. at 13 *(citing Kreider*, slip op., at 1). The Complainant submits that the Commission recognized in *Kreider* that the complainant in the *Renney Thomas* case did not need to prove his pregnant wife had already been harmed, but that the proper inquiry was the potential for harm. Murphy R.B. at 14. Thus, the Complainant argues that the Commission must consider the potential for harm as well as the reasonableness of PECO's conduct in insisting that Complainants suffer exposure to RF at their homes or properties in order to retain electric service. Murphy R.B. at 14.

The Complainant also submits that the Commonwealth Court in *Romeo v. PaPUC*, 154 A.3d 422 (Pa. Cmwlth. 2017) (*Romeo*), "did not discuss the meaning in Section 1501 of the words 'safe' and 'reasonable'" and "nowhere did the court state that Romeo had the burden of proving causation of harm, in the tort law sense." Murphy R.B. at 14, 15.

PECO, on the other hand, argues that the Complainant can prevail only if she proves, by a preponderance of the evidence that her exposure to the RF emissions from PECO smart meters has caused or will cause, contribute, or exacerbate her adverse health conditions. PECO M.B. at 1, 10; PECO R.B. at 11. PECO submits that the Complainant relied exclusively on the testimony of the Complainant's expert witness in this proceeding, Dr. Andrew Marino, who testified that, while he believes that there is potential, or possible, risk from exposure to smart meters – that is, that they "could" cause harm – he also testified that there is "no evidence to warrant the statement" that a

PECO smart meter "will," "would," or "did" harm the Complainants. PECO Main Brief at 10.

PECO argues that the Complainant seeks to reverse the normal burden of proof by placing it on PECO and that such reversal would violate PECO's due process rights because, in response to the legislative mandate and Commission Orders, PECO has invested over $750 million to install an AMI system within its service territory – and under the reversed burden of proof proposed by Complainants, they would be allowed to disrupt that investment and deployment without proving that PECO's system causes any harm. PECO submits that this is no way to run a utility system because it effectively gives veto power over any utility initiative to any customer who sincerely believes that the utility system has "potential for harm." PECO M.B. at 14.

Moreover, PECO asserts that the Complainant seeks to have the Commission apply a standard of proof that would normally be used only in a legislative or quasi-legislative function proceeding, such as a rulemaking, even though this instant proceeding is an exercise of the Commission's quasi-judicial function. PECO M.B. at 4-5.

PECO further argues that the Commonwealth Court's decision in *Romeo* used causation language when remanding the case, which provides support to the view that these cases are about causation. PECO M.B. at 15; PECO R.B. at 13. As quoted by PECO in its Briefs, the *Romeo* court stated (emphasis added by PECO):

> Romeo claimed that the smart meters *cause* safety and fire hazards and have a negative health impact. Just because he cannot personally testify as to the health and safety effects

> does not mean that his complaint is legally insufficient. He could make out his claim through the testimony of others as well as evidence that goes to that issue.

PECO M.B. at 15; PECO R.B. at 13 (citing *Romeo*, 154 A.3d at 430). PECO submits that the Commonwealth Court did state that the remand in *Romeo* was for the purpose of allowing Mr. Romeo to prove causation. The court did not say that the case was remanded to allow a discussion of "potential" or "risk." PECO R.B. at 13. PECO submits, therefore, that the court's decision in *Romeo* is more consistent with PECO's view of the burden of proof than with the Complainant's view. PECO R.B. at 14.

Moreover, PECO argues that the Commission's decision in *Kreider* provided clear guidance on the standard of proof to be used in a Section 1501 complaint proceeding involving conflicting scientific claims regarding adverse health effects by directing the parties to the early 1990s *Letter of Notification* proceeding involving PECO's reconstruction of its Woodburne-Heaton 230 kV transmission line. PECO M.B. 15-16; PECO R.B. at 11 (citing *Woodbourne-Heaton Remand Order*, slip op., at 7-8); (citing also *Letter of Notification of Philadelphia Electric Company 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 Counties*, 1993 WL 855896 (Pa. P.U.C. 1993), Docket No. 110550F0055 (Final Order entered November 12, 1993) (*Woodbourne-Heaton Final Order*). As PECO explains, the protestants to the Woodbourne-Heaton transmission line, similar to the Complainant in this proceeding, made the claim that the utility facility can be unreasonable even without conclusive evidence that exposure causes harm, which the Commission rejected. The Commission approved the transmission line, stating:

> That by reason of the fact that the additional scientific research and studies presented of record at the hearing in the remanded proceedings do not support a finding or conclusion

> that there is a conclusive casual connection between exposure to EMFs and adverse human health effects because of the inconclusive nature of said research and studies, when viewed in totality, the Commission's February 9, 1990 Order approving the Letter of Notification . . . is, hereby, affirmed; AND provided that the Woodbourne-Heaton Line must be operated and maintained in compliance with the National Electric Safety Code and with all applicable statutes, regulations and codes for the protection of the public and the natural resources of the Commonwealth of Pennsylvania.

PECO R.B. at 10 (citing *Woodbourne-Heaton Final Order*, slip op., at 11).

PECO submits that the Commission's *Woodbourne-Heaton Final Order* provides a dispositive framework for the burden and standard of proof in the instant proceeding – that is, if the Complainants prove that there is a body of conflicting and inconclusive science, or that the science is "undecided," then the Complainants have failed to meet their burden of proof, and cannot prevail. And PECO asserts that is exactly what the Complainants claim to have demonstrated. PECO M.B. at 18. PECO submits that the rule established in *Woodbourne-Heaton* has been utilized by the Commission to decide transmission line siting cases for a quarter of a century, and it is an appropriate approach to resolving claims that exposure to a utility facility is unsafe. PECO R.B. at 10.

Moving on from the implications of *Woodbourne-Heaton*, PECO argues that *Kreider* provides a separate, independent basis for concluding that the applicable standard in this case requires the Complainant to prove that PECO's AMI meters will cause, contribute to, or exacerbate their adverse health conditions. PECO emphasizes that *Kreider* states that the Complainants "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*." PECO M.B. at 18 (citing *Kreider*, slip op., at 23.) (emphasis added by PECO). Here, argues PECO, each of the

Omnibus Complainants alleged in their respective Complaints that PECO's AMI would cause, contribute to, or exacerbate their specific health conditions. PECO M.B. at 18.

PECO also argues that *Kreider* does not speak of proving the "potential" or "possibility" of harm. PECO M.B. at 19. PECO submits that *Kreider* does not say that the Complainant must prove that "PECO is responsible or accountable for the possibility that the problem described in the Complaint will actually exist," or that they must prove that "PECO is responsible for or accountable for the potential that such a problem may exist," or any other wording. According to PECO, that additional wording is being written in, *post hoc*, by the Complainant's Briefs. PECO M.B. at 19.

PECO does not believe that the scope of the hearing in *Renney Thomas* offers any support for the Complainants' view on burden of proof. The complainant in that proceeding claimed in his formal complaint that "electromagnetic fields pose a threat to fetal brain development" and other body functions. PECO filed preliminary objections claiming that a hearing was not allowed. The ALJ convened oral argument on PECO's preliminary objections to allow the complainant to be heard on the alleged safety issue. Citing *Renney Thomas*, slip op., at 3. Because the complainant in that case provided no evidence that smart meters constitute a danger to health or physical safety, the ALJ granted PECO's preliminary objections as a matter of law and dismissed the case without a full evidentiary hearing. PECO submits that there is nothing in *Renney Thomas* to suggest the use of a lower standard of proof based on "potential" risk. PECO R.B. at 12-13.

PECO recognizes that the burden of proof that is set forth in *Woodbourne-Heaton*, *Kreider* and *Romeo* have a great deal in common with causation theories that are used in toxic tort litigation. But labelling the argument as being similar to toxic tort causation does not provide any insights into whether it is the proper burden of proof for use in this proceeding. PECO R.B. at 14. To that point, PECO notes that while the

Complainants cite to numerous cases that describe what one must prove in a toxic tort case, not a single one of those of cases discusses what standard the Commission should use in this case. PECO R.B. at 14-15 (citations omitted).

Regarding the Complainant's analogy to electrocution, PECO responds:

> [The Complainant is] mixing apples and elephants. Electrocution is a known phenomenon that is known to cause adverse health effects. If a grounded person touches an energized facility without protective gear, the electric current will seek ground through the person's body. Depending upon the voltage and amperage of the energized facility, the person might experience a shock, injury or even death. That general proposition certainly can be demonstrated by a preponderance of the evidence. And, if it was demonstrated by a preponderance of the evidence that a piece of utility equipment had a 25% chance of causing electrocution, it would of course be deemed unsafe.

PECO R.B. at 15. PECO states that for RF emissions, the Complainant admits that she has not demonstrated, by a preponderance of the evidence, that exposure causes injury or death. And, in that critical way, PECO submits that the Complainant's electrocution analogy is not analogous to exposure to RF emissions. PECO R.B. at 15-16.

b. ALJ's Initial Decision

The ALJ stated if the Complainant has established a *prima facie* case and the utility rebuts the Complainant's evidence with evidence of co-equal weight, the burden is then upon the Complainant to rebut the utility's evidence by a preponderance of the evidence. Murphy I.D. at 18 (citation omitted).[13] The ALJ noted that the

[13] The preponderance of evidence standard is explained in the "Legal Standards" section of this Order and will not be repeated.

Commission stated, in smart meter matters, "[t]he ALJs role in the proceedings 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 will constitute unsafe or unreasonable serve in violation of Section 1501 under the circumstances in this case." Murphy I.D. at 19 (citing *Kreider*, slip op. at 23). To prevail, the ALJ stated that the Complainant must prove her contention that installing AMR and AMI meters is unsafe and unreasonable by a preponderance of the evidence. Murphy I.D. at 19-20. The ALJ implicitly concluded that the Complainant must demonstrate that a PECO smart meter caused or will cause adverse health effects. Murphy I.D. at 32.

c. Complainant's Exception No. 5 and PECO's Reply

In the Complainant's fifth Exception, the Complainant states that the ALJ erred by implicitly concluding that the Complainant was required to prove that RF exposure from PECO's meter would cause, contribute to, or exacerbate her conditions and symptoms. Murphy Exc. at 23 (citing Murphy I.D. at 32). The Complainant notes that the ALJ did not explicitly address the issue of whether the Complainant must prove causation, but ultimately decided against the Complainant on this issue by noting that Dr. Marino did not testify that RF exposure from PECO's meter would cause harm to Complainant and that Dr. Davis and Dr. Israel testified that it would not cause harm. Murphy Exc. at 23 (citing Murphy I.D. at 32). The Complainant states that there is no requirement to prove causation of harm to prove that electric service is not safe or reasonable to the Complainant. The Complainant avers that service that could cause harm to Complainant would violate Section 1501. Murphy Exc. at 23-24. The Complainant argued that if an electric facility presented a 10% risk of death by electrocution, surely that risk would support a conclusion that the facility is unsafe or unreasonable and such could still be true of a 1% risk or even a .001% risk or lower. Murphy Exc. at 24. This simple explanation, argues the Complainant, illustrates why an

agency charged with safety oversight like the Commission should not look at the issue as if this were a tort lawsuit seeking damages. *Id*. In a tort case, a plaintiff would have to prove causation of harm to recover damages, but there is no similar requirement under Section 1501 as to the Complainant and it would defeat the express language and legislative intent to engraft such a requirement. *Id*. (citing Murphy R.B. at 5-17).

In its Replies to the Complainant's fifth Exception, PECO submits that the Complainants reiterate their ongoing position that they do not have to prove that exposure to RF fields from AMI meters will cause them harm, only that it might cause them harm. PECO notes that this issue was fully briefed by both parties. PECO R. Exc. at 18 (citing Complainants' M.B. at 75-77, PECO's M.B. at 12-24, Complainant's R.B. at 5-17, PECO R.B. at 4-19). PECO contends that the Complainant's summary overview of their burden of proof and standard of law argument does not provide any reason to reject the Initial Decision. PECO R. Exc. at 20.

d. Disposition

Although we believe the ALJ correctly decided the issue, we will provide further clarification on this legal question given the extensive briefing by the Parties on their positions and in an effort to minimize potential future re-litigation of this question in applicable proceedings.

In reaching our conclusion in *Kreider*[14] that we could hear and adjudicate a complainant's allegation(s) of unsafe service and facilities related to an EDC's smart meter, we did not modify the standard or burden of proof that applies to a complainant in a formal complaint proceeding under Section 1501 before the Commission. As we stated in *Povacz v. PECO Energy Company*, Docket No. C-2015-2475023 (Order entered March 28, 2019) (*2019 Povacz Order*):

> In *Kreider*, we correctly stated that the complainant in that case must prove, by a preponderance of the evidence, that the EDC is responsible or accountable for the problem described in the complaint. *Kreider*, slip op., at 23. Because the complainant in that case had alleged that her health was "adversely affected" by the smart meter installed outside of her bedroom and that PECO's use of a smart meter would violate Code § 1501, we explained that it would be the role of the ALJ to determine 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 would constitute unsafe or unreasonable service in violation of Section 1501 under the circumstances in that case. Those statements appearing in *Kreider*, in our opinion, are an accurate summary of applicable law, which is discussed extensively above in the "Legal Standards" section of this Order.

Povacz 2019 Order, slip op., at 26-27.

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[14] In *Kreider*, PECO's petition for reconsideration came before us after we had already denied PECO's preliminary objections requesting that we dismiss the complaint as legally insufficient as a matter of law. The main issue before us on reconsideration was whether anything in Act 129, the Commission's Regulations or Commission's Orders prohibited us from holding a hearing when a customer raises safety allegations under Code § 1501 concerning smart meter use and installation. We concluded in the negative and denied PECO's petition. Moreover, we stated that to ignore claims relating to the safety of smart meters would be an abdication of our duties and responsibilities under Section 1501 of the Code. *Kreider*, slip op., at 20.

Here, Ms. Murphy must show that PECO is responsible or accountable for the problem described in the Second Amended Complaint and that the offense is a violation of the Code, a Commission Regulation or Order or a violation of a Commission-approved tariff. 66 Pa. C.S. § 701; *Patterson*, *supra*. Upon a careful review of the statements contained in the Complainant's Second Amended Complaint, this means Ms. Murphy must prove, by a preponderance of the evidence, that she is "uniquely susceptible to" EMFs and RF fields and that her exposure to the RF fields from the AMR meter that PECO installed at her home and used in the ordinary course to measure her electricity consumption between 2002 and 2015 has caused or contributed to her health condition and the AMI meter that PECO plans to install and use at the Complainant's residence to measure her usage will "adversely affect" her "fragile" health and, therefore, constitute unsafe and unreasonable service in violation of Section 1501 of the Code.[15] *See* Second Amended Complaint at ¶¶ 11-14, 16, 27, 28, 31, 40-41.

The Complainant has argued that in order to prevail under Section 1501, she need not demonstrate by a preponderance of the evidence that exposure to the RF emissions from PECO's smart meter caused or will cause adverse effects, or harm, to her health. However, this is exactly the allegation made in her Second Amended Complaint to support her claim that PECO's proposed smart meter constitutes unsafe service under Section 1501 of the Code. As discussed above, the Complainant is required to demonstrate the allegations in her Second Amended Complaint by a preponderance of the evidence.

Moreover, the Complainant has argued that if she proves the "potential for harm" from the RF exposure from a PECO smart meter, or as the Complainant has stated in another way, that the RF exposure "could" cause harm, it is sufficient to prevail under Section 1501, and to require proof of causation in this proceeding would be akin to a tort

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[15] *See*, n.2, *supra*.

claim for damages, which is too high a standard. We respectfully reject the Complainant's position. As we stated in the *2019 Povacz Order*:

> We agree with PECO's position that the standard of review under Section 1501 that we articulated in the *Woodbourne-Heaton Final Order* applies here. The issue on review for our consideration in that case was related to EMFs exposure from an EDC transmission facility and adverse human health effects. We articulated that it must be demonstrated by a preponderance of the evidence that there is a "conclusive causal connection" between exposure to EMFs and adverse human health effects; when the record evidence demonstrates a body of inconclusive scientific research and studies as to the causal connection, the burden of proof is not satisfied. *Woodbourne-Heaton Final Order*, slip op., at 11. Applying that standard here, the Complainant must demonstrate by a preponderance of the evidence a "conclusive causal connection" between the low-level RF exposure from a PECO smart meter and the alleged adverse human health effects.
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> To otherwise address the Complainant's tort law comparison, unlike tort law which includes as a required element proof of harm or injury already occurred, it is important to recognize that our enforcement authority under Sections 1501 and 1505 is not limited to review of claims only involving harm or injury already occurred. Our broad authority under Sections 1501 and 1505 also clearly includes our ability to hear and adjudicate claims that seek to prevent harm. *See e.g., Woodbourne-Heaton Final Order; see also e.g. Renney Thomas v. PECO Energy Company*, Docket No. C-2012-2336225 (Order entered December 31, 2013); *see also e.g. Robert M Mattu v. West Penn Power Company*, Docket No. C-2016-2547322 (Order entered October 25, 2018) (finding that the complainant satisfied his burden in showing that a utility's proposed use of herbicide in implementing its vegetation management practices constituted unreasonable service).

2019 Povacz Order, slip op., at 28.

Indeed, this proceeding is a good case in point as multiple days of evidentiary hearings have been held before an ALJ notwithstanding the fact that an AMI meter has yet to be installed at the Complainant's residence. FOF Nos. 4-5, 8, 29-31. As we continued in the *2019 Povacz Order*:

> Nevertheless, the question of causation is still relevant. When the prevention of harm is involved, the question becomes whether the preponderance of the evidence demonstrates that a utility's service or facilities will cause harm.
>
> To illustrate the point, we wish to highlight the Complainant's hypothetical example of electrocution and PECO's response thereto. In its response to the Complainant's example, PECO acknowledged in its Reply Brief that if a showing by a preponderance of the evidence was made that an electric facility presented even a 25% risk of causing harm from electrocution, the facility would be deemed unsafe. We agree with PECO's response, and we add further that, in such a hypothetical example, our oversight authority does not require that we wait for the perfect or foreseeable exposure condition to materialize, such as, for example, a customer not wearing protective gear to walk up to and touch the uninsulated energized facility; instead, *the proven exposure to harm* would be sufficient to deem the facility unsafe in violation of Section 1501 and to direct the utility under Section 1505 to remove the unsafe facility and to furnish a safe facility.
>
> After careful review of the Parties' positions, our concern with the Complainant's "potential for harm" or "capable of causing harm" standard under Section 1501, which we reject, is that it allows the mere demonstration by a preponderance of the evidence that a hazard[13] exists in utility service to be sufficient to prevail under Section 1501. Continuing with the Complainant's hypothetical example, under the Complainant's standard, the mere showing that an energized facility is by its very nature hazardous because it is a source of potential electrocution, or, in the Complainant's words, is a source of "potential for harm" or is "capable of causing

harm," would be sufficient for a finding of a violation of Section 1501. Under the Complainant's standard, it would not matter how the utility designs, installs, operates, uses or maintains the energized line to reduce exposure to the hazard and to otherwise warn of and protect from danger. The Complainant's standard rests upon a logical fallacy that equates any hazard with exposure to harm,[14] and, on that basis, according to the Complainant, all hazards must be removed from utility services or facilities in order to be safe. However, even a layperson knows that public utility operations are not, as a general matter, hazard-free. As part of ensuring the safe operation of facilities and the safe provision of service, public utilities are, on a near continual basis, tasked with properly identifying, handling and reducing physical and health hazards to avoid danger to its employees, its customers and the general public. Indeed, the provisions of our Regulations at 52 Pa. Code § 57.28(a)(1), *supra*, recognize that it is the statutory duty of an EDC under Section 1501 to use reasonable efforts to properly warn and protect the public from danger and to exercise reasonable care to reduce the hazards to which customers may be subjected by reason of the EDC's provision of electric utility service and its associated equipment and facilities. In our opinion, application of the Complainant's standard, which we reject, is an overreach and would have dire consequences to the daily functioning and operation of public utilities and the provision of utility services within the Commonwealth as well as to our execution of our safety oversight authority over public utility operations. Consequently, we conclude that the Complainant's interpretation of 66 Pa. C.S. § 1501 is not supported by the rules of statutory construction set forth under the Statutory Construction Act. *See* 1 Pa. C.S. § 1921 ("The object of all interpretation and construction of statutes is to ascertain and effectuate the intention of the General Assembly"); *see also* 1 Pa. C.S. § 1922(1) (it is presumed "That the General Assembly does not intend a result that is absurd, impossible of execution or unreasonable").

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[13] Merriam-Webster online dictionary defines "hazard" as a "source of danger." https://www.merriam-webster.com/dictionary/hazard. The term "danger" is defined as "exposure or liability to injury, pain, harm or loss." https://www.merriam-webster.com/dictionary/danger.

> [14] The following simple example helps explain the difference between the two: If there was a spill of water in a room, then that water would present a hazard to persons passing through it. If access to that room was open and no warning was given, then the persons passing through it would be exposed to harm resulting from a slip and fall. If access to that area was prevented by a physical barrier and a warning was posted, then the hazard would remain, but the exposure to harm would be abated.

2019 Povacz Order, slip op., at 29-31. In her Exceptions, the Complainant focuses on the electrocution hypothetical by further arguing that if an electric facility presented even a 10%, 1% or .001% risk of death by electrocution, that the risk would support a conclusion that the facility is unsafe or unreasonable. Murphy Exc. at 24. In referencing PECO's response to the Complainant's hypothetical presented in Reply Brief where the Complainant used a 25% risk of death as an example, we do not simply draw a bright line in terms of a specific risk percentage being dispositive on the issue of whether an existing or proposed utility facility/service or service is unsafe. Rather, as we clearly articulated in the *2019 Povacz Order*, the proper focus of an inquiry regarding the safety of a utility facility or service is whether the preponderance of the evidence demonstrates that a utility facility or service caused or will cause harm to the public.

Based on the foregoing discussion, we shall deny the Complainant's Exception No. 5.

2. Whether the Complainant Has Demonstrated by a Preponderance of the Evidence that RF Exposure from a PECO Smart Meter Caused or Will Cause Adverse Health Effects to Her

a. Positions of the Parties

On the one hand, the Complainant argues that she has met the burden of proof in this proceeding in demonstrating the potential for harm to the Complainant from PECO's AMR meter or AMI smart meter. Murphy M.B. at 75-77, 79-81. The Complainant submits that PECO's presentation of evidence did not effectively rebut the evidence presented by the Complainant in this proceeding. Murphy M.B. at 41-71. On the other hand, PECO argues that the Complainant did not satisfy her burden of proof in this proceeding in demonstrating that that exposure to RF fields from AMI meters[16] has caused or will cause, contribute to, or exacerbate any adverse health effects. Indeed, PECO submits that the Complainant concedes she has not proven causation – meaning, she has not proved that PECO's proposed smart meter did, will or would harm the Complainant's health. PECO M.B. at 27; PECO R.B. at 1-3. Regardless, PECO submits that it effectively rebutted the Complainant's evidence presented in this proceeding through the substantial, persuasive expert testimony that it presented. PECO M.B. at 44-49; PECO R.B. at 2.

We begin our more detailed review of the Parties' positions with a summary of the Complainant's presentation of the evidence and PECO's challenges related thereto. In relevant part, the Complainant's presentation of the evidence included the testimony of Ms. Murphy herself, the expert testimony of Ms. Murphy's treating physician, Dr. Peter Prociuk, M.D., and the expert testimony of Dr. Andrew Marino,

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[16] *See*, n.2, *supra*.

PhD.[17] Murphy I.D. at 24-27. Dr. Prociuk is one of Ms. Murphy's treating physicians. Dr. Prociuk is board certified in Internal Medicine and has experience in homeopathy. Murphy I.D. at 8; FOF 10-11, Murphy St. 3 at 1-2.

As for Dr. Marino's qualifications, Dr. Marino was a professor at the Louisiana State University Medical School for approximately thirty-three years. At the time of the hearing, he was retired from the medical school and worked developing software intended to diagnose neurological and neuropsychiatric diseases. During his career, he focused on the biological effects of electromagnetic energy and the electrical properties of tissue as they are influenced by that energy. He has a B.S. in physics from Saint Joseph's University and a Ph.D. in biophysics from Syracuse University. Murphy I.D. at 25-26 (citing *Testimony of Dr. Andrew Marino Hearing Transcript* at 565-566); FOF 48-49; Murphy M.B. at 40-41.

The Complainant argues that Dr. Marino's background of scientific education, experience and authorship "uniquely" qualifies him to testify credibly on the issues before the Commission. Murphy M.B. at 40. The Complainant states: "Dr. Marino's long career (more than 45 years) focused on the biological effects of [electromagnetic energy] including more than 100 published papers, testimony in 20 cases, and three books – all dealing with the biological effects of [electromagnetic energy]." Murphy R.B. at 31; *see also* Murphy M.B. at 40-41. The Complainant claims that "Dr. Marino is far more qualified than either of PECO's experts." Murphy R.B. at 31.

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[17] The Complainant also presented the testimony of Martin Pall, Ph.D.; however, the Complainant decided to forego discussion of the testimony of Dr. Pall in her Briefs and PECO, therefore, followed suit. Murphy M.B. at 27, n. 1; PECO M.B. at 5. According to the Parties, Dr. Pall testified primarily regarding the mechanism for harm from RF exposure and that his testimony is not relevant to the burden of proof here. Accordingly, Dr. Pall's testimony is not discussed in the Murphy Initial Decision or this Order.

In response, PECO states that it accepted the proffer of Dr. Marino as an expert without objection or *voir dire*, and it continues to accept that Dr. Marino has sufficient background and training to meet the definition of an expert, but PECO sees nothing in those qualifications that makes him "uniquely" qualified to testify in this proceeding. PECO M.B. at 38.

The Complainant submits that Ms. Murphy self-reports electromagnetic hypersensitivity syndrome or "EHS," and that Ms. Murphy's treating physician, Dr. Prociuk, has confirmed her self-report of EHS. Murphy M.B. at 36 (citing September 15, 2016 Transcript at 641-42). The Complainant submits that Ms. Murphy testified that she has taken responsible steps to avoid exposure to RF emissions or electromagnetic energy. Murphy M.B. at 36 (citing Direct Testimony of Laura Sunstein Murphy at 48). The Complainant explains that the role of a treating physician is not to make determinations about causation but rather to diagnose disease, give advice about avoiding worsening the disease and treat the disease. Murphy M.B. at 37 (citing September 15, 2016 Transcript at 645). The Complainant further submits that there is no consensus clinical diagnosis for EHS, and that in the absence of consensus clinical diagnosis, physicians do the best they can to address EHS based on what is available in peer-reviewed literature. Murphy M.B. at 37 (citing September 15, 2016 Transcript at 645, 647-48). As Dr. Marino testified, without conducting a test that would cost $500,000, as in the case of his published paper on EHS, it is "impossible" to prove causation for any particular person and thus he could not say that RF emissions from a PECO smart meter did or will cause the symptoms reported by Ms. Murphy. Murphy M.B. at 36 (citing September 15, 2016 Transcript at 643-44); Murphy R.B. at 18-19.

PECO challenges the testimonies of Ms. Murphy and her treating physician by submitting that the Complainant's own expert witness in this case, Dr. Marino, testified that "a person's subjective self-diagnosis of [EHS] is not sufficient to establish

that the person has [EHS]." PECO M.B. at 34 (citing September 16, 2016 Transcript at 787). Based on this conflicting testimony by the Complainant's own expert, PECO asserts that no weight should be given to the Complainant's self-diagnosis that she has EHS. Moreover, Ms. Murphy's treating physician, Dr. Prociuk, testified that he did no independent diagnostic testing to confirm the self-diagnosis of EHS. PECO M.B. at 34 (citing December 5, 2016 Transcript at 83). Thus, PECO argues that the only testimony on EHS that the Complainant has is based upon information that, according to Dr. Marino, is "not sufficient to establish that the person has" EHS. Additionally, PECO argues that the testimony of Dr. Prociuk does not meet the burden of proof in this proceeding as he testified that "with respect to this syndrome of electromagnetic sensitivity, we're in this sort of clinical stage of infancy . . . So when I say yes, there could be a connection, I am very mindful of the fact that the clinical science is not well established." PECO M.B. at 35 (citing December 5, 2016 Transcript at 82).

The Complainant submits that Dr. Marino offered two overall expert opinions in this proceeding. Murphy M.B. at 28. His first opinion is "that there is a basis in established science to conclude that the Complainants could be exposed to harm from the radiation emitted by PECO AMI or AMR smart meters." Murphy M.B. at 28. The bases for Dr. Marino's first opinion included experimental animal studies, epidemiological studies, his published study on EHS, studies about possible mechanism and studies about pulse structure (as he defined it). Murphy M.B. at 31 (citing September 15, 2016 Transcript at 594); Murphy R.B. at 31. He also relied upon the May 2016 Report of the National Toxicology Program (NTP). Murphy M.B. at 64 (citing January 25, 2017 Hearing Transcript at 1854). The Complainant goes on to summarize specific details of these individual studies upon which Dr. Marino relied in forming his opinion. *See* Murphy M.B. at 31-35 (citing September 15, 2016 Transcript at 723-32, 596-97, 601-23, 625, 628-29); Murphy M.B. at 64-66 (citing January 25, 2017 Hearing Transcript at 1854-56, 1859-61). The Complainant described such details of the bases of his opinion, in relevant part, as follows:

- Dr. Marino presented a chart, Marino Direct 3, showing recent studies on animals exposed to electromagnetic energy at high frequencies, such as smart meters and cellphones, and at low frequencies such as powerlines and household appliances. All the studies show biological effects. Dr. Marino's opinion is that it is unreasonable to dispute the fact that the studies shown in his chart, as well as other studies not listed, show that energy levels comparable to those produced by PECO's smart meters produce biological changes in humans and animals.

- Dr. Marino presented another chart, Marino Direct 4, of peer reviewed epidemiological studies at both high and low frequencies with energy comparable to PECO's smart meters and they show a range of associations. In Dr. Marino's opinion, these epidemiological studies give reason to believe that there is a potential for harm associated with being exposed to RF emissions like that from the PECO smart meter. According to Dr. Marino, that opinion is accepted by those who are independent from industry and not accepted by those who are not independent, which Dr. Marino refers to as being "bonded to industry."[18]

- Dr. Marino performed a research study on EHS and published the results of that research in peer-reviewed literature in 2011, which was coauthored with colleagues at LSU. The purpose of the study was to test whether there is a *bona fide* neurological condition called EHS. The study was performed on one subject, and to a statistical certainty, *i.e.*, 95% probability, the subject was able to detect the presence of electromagnetic energy; the physicians who worked on the study conducted appropriate tests to rule out other causes for the subject's symptoms

[18] By referring to individuals who are "bonded to industry," Dr. Marino testified that he means "they were consultants to industry or had some financial relationship or at a minimum an undisclosed conflict of interest with regard to industry. That was summed up in the term bonded." September 16, 2016 Transcript at 835.

when exposed to electromagnetic energy. The study cost more than $500,000 to conduct.

- Dr. Marino has published and co-published various scientific studies and papers espousing different theories regarding the "non-thermal" mechanism by which RF energy can get into the human body and lead to adverse health effects. However, the Complainant submits in her Main Brief that it is not necessary for her to prove mechanism in this proceeding and admits that while the mechanism Dr. Marino's papers describe is a sufficient mechanism there could be better explanations that come along as science advances. The Complainant further submits that this explanation of mechanism is unnecessary to the cause and effect relationship that is demonstrated by the empirical evidence presented by the Complainant in this proceeding.

- Dr. Marino relied upon the May 2016 Report of the NTP, a government agency that studies toxicological effects in the general public due to environmental factors. According to Dr. Marino, the draft NTP report concluded that RF energy that was studied caused cancer in rats, even at RF levels which were below the FCC limits. Dr. Marino testified that the report is still in draft because it has not yet been published in an archival scientific journal, but that the report has been intensively peer-reviewed more than any other report in the history of experimental biology that Dr. Marino knows about. Dr. Marino testified that the report is crucially important because it is a federal government agency that provides the evidence that the recognized basis of the present federal safety regulatory scheme at the FCC is not protective of health. Dr. Marino also testified that the report has direct bearing on the International Agency for Research on Cancer's ("IARC's") classification of low levels of RF energy as a possible carcinogen.

In response to Dr. Marino's first expert opinion, PECO raises a few challenges. First, PECO submits that Dr. Marino actually testified that there is a basis in established science that the Complainants could be "exposed to danger" not "exposed to harm." PECO M.B. at 25 (citing September 15, 2016 Transcript at 578). According to PECO, this is not a trivial difference. Elsewhere in Dr. Marino's testimony, he repeatedly used "risk" and "danger" as synonyms. Indeed, he testified that his definition of "health risks" is "actual or potential danger to human health from manmade electromagnetic energy." Citing September 15, 2016 Transcript at 671. Therefore, whenever Dr. Marino discussed health "risks" or "dangers," his testimony included the "potential" that the smart meters would cause harm. According to PECO, this is not a hypothetical difference, and it goes directly to whether the Complainant met her burden of proof. On direct testimony, Dr. Marino was directly asked to distinguish whether his opinion is that exposure to RF fields from PECO's smart meter "could" – that is, has the potential to – cause harm to the Complainant or that exposure "would" – that is, actually – cause harm to the Complainant. PECO submits that Dr. Marino was absolutely clear that he was speaking only about the potential "could," not the actual "would" and quotes his testimony from the transcript as follows:

> Q: Now, do you have an opinion about whether electromagnetic energy from smart meters could cause the symptoms that were reported by Maria [Povacz] and Laura [Murphy]?
>
> A: Yes.
>
> Q: What is that opinion?
>
> A: It could happen. It could be responsible. It could be a causal relationship. The evidence I think is clear about that. It could.
>
> Q: Do you have an opinion about whether it did cause those symptoms?
>
> A: I have an opinion that I can't say whether it did or not. That's my opinion about "did."

> Q: Okay. So why – why – what is the basis for that?
>
> A: Well because in order to answer that, we would have to do a $500,000 study. That's the only way you can normalize a cause and effect relationship in a given human being. You got to bring them in and do an experiment.
>
> Q: You're talking about with respect to electromagnetic energy?
>
> A: Yes.
>
> Q: Now, do you have an opinion about whether electromagnetic energy from smart meters could cause harm to the health of Cynthia Randall?
>
> A: Yes.
>
> Q: What is that opinion?
>
> A: It could.
>
> Q: Are you saying it will cause harm to her health?
>
> A: No.
>
> Q: And why are you not saying that it will cause harm to her health?
>
> A: Because I have no basis to say that.
>
> Q: Why not?
>
> A: Why not? Why don't I have a basis? I just don't have it. There's no evidence that could warrant that statement.

PECO M.B. at 25-26 (citing to September 15, 2016 Transcript at 643-44).

According to PECO, when taken at face value and accepted as true, Dr. Marino's first opinion does not establish that exposure to PECO's smart meter will cause, contribute to, or exacerbate any of the Complainant's health conditions. According to PECO, his testimony does not meet the standard and burden of proof in this proceeding. PECO M.B. at 27.

Next, PECO contends there is little value in addressing each of the individual studies upon which Dr. Marino relied in forming his first opinion given PECO's argument that Dr. Marino's first opinion does not meet the standard or burden of proof in this proceeding. PECO M.B. at 31. However, PECO goes on to highlight a few issues because, in PECO's opinion, they call into question whether even Dr. Marino's expressed opinion should be accepted as stated, and certainly call into question whether his opinion should be the basis of a Commission action. PECO M.B. at 31-33. PECO identified the following issues with the bases for Dr. Marino's first opinion:

- The first issue is Dr. Marino's EHS study. PECO asserts that Dr. Marino candidly testified that, prior to his EHS study, there were no published studies that any person is able to detect the presence or absence of electromagnetic energy, and that he believes all of the studies other than his were poorly designed. PECO M.B. at 31 (citing September 15, 2016 Transcript at 614). He further testified that taking into consideration his own study, his opinion is that PECO's smart meter has the potential to "trigger EHS, not cause it, trigger it," but that "I believe my speculation is that's the case, but I don't have direct evidence to say that." Citing September 15, 2016 Transcript at 779. PECO submits his testimony does not provide evidentiary basis to remove AMI meters from the Complainant's residence. PECO M.B. at 31.

- The second issue is Dr. Marino's view of "negative" studies.[19] In forming his opinion, Dr. Marino testified that he believes that a negative study has "no probative value" and consequently gave no weight to any published research in

[19] The Parties each explain that, in scientific research, a "positive" study is short for a study in which the investigator finds that exposure to an agent of interest results in a change in a measured endpoint, while a "negative" study refers to a scientific study in which the investigator finds that exposure does not result in change to a measured endpoint. PECO M.B. at 32; Murphy M.B. at 51.

which the investigator sought, but was not successful, at showing that exposure to RF fields caused a change in a measured endpoint. PECO M.B. at 32. PECO submits that its expert, Dr. Israel, testified that it is not scientifically valid to ignore negative studies, and it is very important to consider negative studies in determining whether a reported effect is reproducible. Dr. Israel stated that the practice of ignoring negative studies is not a generally accepted scientific practice, and that scientists routinely consider negative studies in making their evaluations. PECO M.B. at 32 (citing December 8, 2016 Transcript at 1552-53). PECO argues that Dr. Marino's approach will result in a "very stilted" view of the body of research that skews towards only seeing positive studies and thus will lead the reviewer to artificially conclude that effects may exist, even if many negative studies have been done that failed to reproduce or replicate such an outcome.

- The third and final issue is that Dr. Marino's belief about individuals being "bonded to industry" is jaded; that Dr. Marino's testimony reveals that whenever a person or organization disagrees with Dr. Marino as to whether non-thermal effects exist, he does not grapple with the substance of their opinion; he simply concludes that they are "bonded to industry" and dismisses their opinion outright. PECO M.B. at 32-33 (citing September 16, 2016 Transcript at 858-59). PECO asserts that, notably, Dr. Marino placed the European Commission's Scientific Committee on Emerging and Newly Identified Health Risks and an arm of the World Health Organization into the "bonded to industry" category without further evidence that they are being paid by industry simply because they disagree with him. PECO M.B. at 33 (citing September 15, 2016 Transcript at 837-841, 849). PECO argues that testimony based on such an approach cannot and should not be the basis of a Commission determination. PECO M.B. at 33.

In connection with Dr. Marino's first opinion, the Complainant explained that Dr. Marino presented his views on the issues of the background levels of

electromagnetic energy and pulsing. PECO presented challenges to Dr. Marino's views on each issue, as discussed further below.

As for the issue of background levels of electromagnetic energy, Dr. Marino testified that in order for PECO's smart meter to present risk, it would have to produce an RF field that is greater than the background or ambient field levels. Dr. Marino recognized that there is some electromagnetic energy in the background virtually everywhere. Dr. Marino assumed that the Complainant lives in a house that is electromagnetically quiet, meaning no Wi-Fi, cell phones, or smart meters and only lights and electric appliances, which, based on Dr. Marino's typical experience, would mean the background level is between 0.01 and 0.001 microwatts per square centimeter. Murphy M.B. at 28-29 (citing September 15, 2016 Transcript at 637, 582-84).

PECO submits that Dr. Marino's testimony on background levels of RF fields should be doubted because Dr. Marino did not do any measurement or calculations of the background or ambient fields at the Complainant's residence or place of work. He simply accepted the representations of the Complainant's counsel that she had made efforts to reduce fields at her home, and he thus assumed that the fields would be similar to "quiet homes" at which he has made measurements in the past. PECO M.B. at 28 (citing September 15, 2016 Transcript at 582-84, 687, 692-93). Therefore, Dr. Marino has no data or baseline for the ambient level at the Complainant's household upon which to base his comparison – only what counsel told him to assume.

As for the issue of pulsing, Dr. Marino testified that in his opinion the term means any source of electromagnetic energy that is turned on and then sometime later is turned off. Murphy M.B. at 30 (citing September 15, 2016 Transcript at 590). In Dr. Marino's opinion, there is no more efficient way to get the body to react to RF energy than to put in a "pulse," as Dr. Marino has used the term. Murphy M.B. at 30 (citing September 15, 2016 Transcript at 630). Dr. Marino testified that PECO smart meters are

pulsed based on his definition of the term. Murphy M.B. at 30 (citing September 15, 2016 Transcript at 592).

In response, PECO's witness Dr. Christopher Davis testified in rebuttal that Dr. Marino's use of the term pulse is the same as a layperson's use of the term, but it is not the description used by communications physicists and engineers. Dr. Davis stated that when the term is used in the scientific sense, PECO's smart meters do not pulse. Dr. Davis stated:

> [I]n communications physics and engineering, "pulsed" means using 1. amplitude modulation and 2. doing so in a way that produces a signal that has abrupt changes in the amplitude of the sine wave. PECO's AMI meter radios are not amplitude modulated so they do not produce "pulsed" fields. PECO's AMI meter radios are frequency modulated, specifically "frequency shift keyed," and send out a collection of regular non-pulsed sine waves around the frequencies they use . . . In sum, the fields from PECO's AMI meters are not amplitude modulated and thus are not "pulsed" and therefore do not create "pulsed" fields. If [one] is using the term "pulsed" to suggest that during the time PECO AMIs transmit, they are sending pulses of radio frequency energy then he is incorrect.

PECO M.B. at 30 (quoting Murphy Rebuttal Testimony of Christopher Davis at 21-22).

The Complainant explains that Dr. Marino's second expert opinion is that "because the PECO smart meters have not been proved safe it is unreasonable to force the Complainants to accept the exposure to the radiation emitted by the smart meters on their residences." Murphy M.B. at 28 (citing September 15, 2016 Transcript at 579). The Complainant submits that the basis for Dr. Marino's second opinion is that it would be unreasonable to expose the Complainant to RF emissions because it would be

tantamount to involuntary testing. Murphy M.B. at 39 (citing September 15, 2016 Transcript at 663-665).

PECO asserts that Dr. Marino's second opinion is even more problematic than his first opinion because, according to PECO, such opinion is simply an argument that the Commission should act upon the lower evidentiary standard proposed by the Complainant. PECO M.B. at 27. PECO submits that, in his direct testimony, Dr. Marino candidly admitted that this issue is not a "purely scientific" opinion, stating that, upon viewing the research data, "you can see that different minds may make different associations. Certain minds may require – certain minds may accept a level very high. Others not so high. Others may be too low. All depending on their attitude . . . That's why it's not a purely scientific question and never can be. Anybody who styles it that way isn't thinking right." PECO M.B. at 27 (citing September 15, 2016 Transcript at 636). PECO argues that since this is not a "purely scientific" issue, there is no reason to give any particular weight or deference to Dr. Marino's opinion on it. Indeed, PECO submits that in the context of this litigation, there is significant reason to devalue Dr. Marino's second opinion because his position reverses the burden of proof completely – according to Dr. Marino, PECO must prove that smart meters are safe, and if it has not done so, then it is "unreasonable" to deploy them to the Complainant's home. According to PECO, this is the same as the claim that PECO has the burden of proof in this proceeding, which is not the standard used by the Commission in complaint proceedings. PECO M.B. at 27-28.

This concludes our summary of the Complainant's presentation of the evidence and PECO's challenges related thereto. Next, we turn to PECO's presentation of the evidence and the Complainant's challenges thereto.

PECO's rebuttal case, or presentation of the evidence, included the expert testimonies of two scientists - Christopher Davis, PhD, and Mark Israel, M.D – and a

PECO engineer, Mr. Glenn Pritchard, with expertise in the design and operation of PECO's AMI system. PECO M.B. at 44.

As for Dr. Davis' qualifications, Dr. Davis is a professor of electrical and computer engineering at the University of Maryland in College Park who studies, researches, teaches, and serves on national and international panels related to physics, biophysics, electrical engineering, electromagnetics, radiofrequency exposure and dosimetry. Murphy I.D. at 27 (citing Murphy Rebuttal Testimony of Christopher Davis at 1-7). Dr. Davis has a PhD in physics from the University of Manchester (England). 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 RF fields. He has served as a consultant on RF fields to the U.S. Institute of Health, the U.S. Food and Drug Administration, and United Kingdom Health Protection Agency. PECO M.B. at 44-45 (citing Murphy Rebuttal Testimony of Christopher Davis at 1-7).

The Complainant argues that Dr. Davis' knowledge and experience is limited regarding the specific issues that are the focus of these proceedings and pale in comparison to Dr. Marino's. The Complainant submits that Dr. Davis is an electrical engineer, not a biologist, and that his core expertise is electrical engineering and physics. The Complainant asserts that while he worked on a number of studies on electromagnetic energy, his primary role in all those studies was to design the exposure system and set up the experiment. The Complainant submits that Dr. Davis even admits that he might have said at a taped presentation that this is a subject on which he has been "peripherally involved." Murphy M.B. at 68-69 (citing December 7, 2016 Transcript at 1138-39, 1143; December 6, 2016 Transcript at 1089).

Dr. Davis testified that the FCC has established a "Maximum Permissible Exposure" or "MPE" for RF fields from AMI meters. The limit is 0.6 mW/cm^2 or 0.6 milliwatts per square centimeter. Dr. Davis testified that the FCC standard was set on the following basis: there is one generally accepted mechanism by which RF fields can cause harm to humans – by being high enough to heat tissues. The FCC determined that the lowest level of RF exposure at which animals have been observed to detect that they are feeling a little bit warm in a RF field. The FCC then set the RF emission standard for humans at a level 50 times below that thermal threshold. Dr. Davis testified that in establishing and maintaining these standards, the FCC consults closely with the Food and Drug Administration (FDA), the Occupational Safety and Health Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH). PECO M.B. at 45 (citing Murphy Rebuttal Testimony of Christopher Davis at 13). Dr. Davis explained that in setting its standards, the FCC considered claims of both thermal and non-thermal effects; however, it set the standards to avoid thermal effects because the scientific studies did not show any non-thermal effects. Dr. Davis testified that the FCC continues to consider whether there are adverse biological effects from non-thermal exposure levels, but it considers the scientific evidence for such effects to be "ambiguous and unproven." PECO M.B. at 46 (citing Murphy Rebuttal Testimony of Christopher Davis at 14-15). Dr. Davis explained that the FCC keeps current on claims that RF fields can cause non-thermal effects; it does not believe that they have been demonstrated sufficiently to warrant change to the FCC standards. *Id*. Dr. Davis explained that the FCC's ongoing review is done in coordination with other government agencies that oversee health and safety, as named above. PECO R.B. at 22-24. Dr. Davis testified that he himself has worked with FCC scientists in their labs on research projects involving cell phone testing in recent years. PECO R.B. at 24.

The Complainant challenges Dr. Davis' testimony regarding the FCC limits. Specifically, the Complainant asserts that while the FCC sets emissions limits for devices like smart meters that emit RF energy, the FCC limits do not reflect a level that is

safe for humans and, therefore, PECO errs in placing reliance on them, especially for the medically vulnerable Complainant. Murphy M.B. at 66-67. The Complainant claims that the FCC limit is outdated and infers that the FCC has not kept current with studies of biological effects from exposure to RF at powers and frequencies comparable to smart meters. The Complainant submits that the FCC set the limits in 1986 based on a report of the National Council of Radiation Protection (NCRP) that demonstrated that effects can occur to humans through the heating of tissues. However, the Complainant claims the FCC has only consulted with other government agencies in *establishing* the limits in 1986, with no reference to *maintaining* the limits. The Complainant argues that Dr. Davis' testimony on the FCC's ongoing review of the limits in not credible and that it is impossible for the Commission to believe Dr. Davis regarding the FCC's ongoing review. Additionally, the Complainant submits that the FCC's use of averages is not a rule of science and Dr. Marino testified that the potential for harm results from the instantaneous or peak value and pulse pattern. Murphy M.B. at 66-67, 37-38 (citing September 15, 2016 Transcript at 653-57), 47-48 (citing Direct Testimony of Dr. Andrew Marino, September 15, 2016 Transcript at 598-599); Murphy R.B. at 35-36.

Dr. Davis testified that the average exposure from an AMI meter[20] is many millions of times less than the FCC standards. For average exposure for a FlexNet meter, Dr. Davis' Exhibit CD-2 shows average exposure at 7.8×10^{-8} mW/cm^2 over a 24-hour period compared to the FCC maximum permissible limit of 0.6 mW/cm^2 over 30 minutes.

[20] To calculate RF exposures associated with an AMI meter that PECO proposes to install and use at Ms. Murphy's residence, Dr. Davis relied upon the data and other technical information that PECO witness Glenn Pritchard provided. Mr. Pritchard testified that in Ms. Murphy's neighborhood, the existing meters have been tuned to six transmissions per day for a 70-millisecond duration at a maximum of two watts of power. The AMI meters also include a ZigBee radio that allows the meter to communicate with devices within the home. When first installed, the ZigBee radio will transmit every thirty seconds at approximately 1/10th of a watt for a duration of less than one microsecond. PECO Energy Company St. 2R at 5-6, December 6, 2016 Tr. at 942, 994.

Dr. Davis also testified that the peak exposure levels of RF fields from a FlexNet meter are 40 times smaller than the FCC average-exposure standards. PECO M.B. at 46 (citing Murphy Rebuttal Testimony of Christopher Davis at 16-17; PECO Exh. CD-2, CD-3). For peak exposure, Dr. Davis' Exhibit CD-3 shows a single emission of 0.016 mW/cm^2 at two watts of power at a distance of one meter.

In response, the Complainant submits that its theory of the case is based on instantaneous or peak RF exposure levels from smart maters, not average values; therefore, the Complainant argues Dr. Davis' calculated average exposure is irrelevant to this proceeding. Moreover, the Complainant explains that the FCC exposure limit is calculated as an average over 30 minutes while Dr. Davis calculated the average over a whole day; therefore, the Complainant asserts that Dr. Davis' average numbers are misleading. Murphy M.B. at 42-43. The Complainant argues that Dr. Davis admitted that the human body can be affected by RF only when exposed, and that to use averages is to consider more than 99% of the time when the human body is not exposed. For example, Dr. Davis admitted that 1,000 watts of radiation in the eye could do very serious harm but if the 1,000 watts was averaged over 30 minutes, it would be less than the power from a PECO smart meter. Murphy M.B. at 48 (citing December 7, 2016 Transcript at 1230, 1347-48). Moreover, the Complainant submits that Dr. Marino and Dr. Davis agree on the power density calculations for peak exposure levels. The Complainant states that these peak exposure levels show that the RF fields from a smart meter is relatively close to the FCC limit – the FCC limit is 60 and the exposure at a distance of one meter is 16. Murphy M.B. at 44 (citations omitted).

Dr. Davis also testified that PECO's existing meter system uses AMR meters and also communicates using RF transmissions. Dr. Davis compared the average RF exposure from existing AMR meters to the average RF exposure from the new AMI meters and concluded that the AMI meter will provide 83% less RF exposure than the electric AMR meter that was installed at the Complainant's residence and later replaced

by Complainant with an analog meter. PECO M.B. at 46-47 (citing Murphy Rebuttal Testimony of Christopher Davis at 18, PECO Exh. CD-8).

The Complainant challenges Dr. Davis' testimony regarding RF emissions from PECO's existing AMR smart meter, explaining that Dr. Davis' assertion is based on average exposure while Dr. Marino's theory is based on peak exposure and pulse patterns (as Dr. Marino defines pulse). The Complainant submits that Dr. Davis even admitted that comparison of peak values shows that the RF exposure from AMI meters is twice as high as exposure from AMR meters. Murphy M.B. at 47 (citing December 7, 2016 Transcript at 1387-88).

Dr. Davis also testified that people's exposure to RF fields from everyday sources, including nearby ultra-high frequency (UHF) radio and television broadcasting stations, are hundreds of times larger than the average exposure from a PECO smart meter. PECO M.B. at 28-29, 47 (citing Murphy Rebuttal Testimony of Christopher Davis at 17-18; PECO Exh. CD-5 and CD-6). For example, exposure when using a cell phone is millions of times higher than from an AMI meter and typical exposure from standing 30 feet away from someone else using a cell phone results in exposure that is 300 times greater than being simultaneously exposed to peak emissions from an electric AMI meter. *Id.*

The Complainant challenges Dr. Davis' testimony of RF exposure in everyday life, arguing that all are meaningless figures and calculations because Dr. Davis admits they are all comparisons of averages. The Complainant argues that examining RF exposure from a PECO AMI meter at peak levels does not seem small at all in comparison to other sources of exposure. Murphy M.B. at 45 (December 7, 2016 Transcript at 1225-1243). Dr. Marino's testimony regarding significant increases in electromagnetic energy exposure to the Complainant if PECO were permitted to deploy a smart meter at her "electromagnetically quiet" home negates this testimony as well as the

testimony of PECO's engineer, Mr. Pritchard, who testified in this proceeding, that the addition of smart meter at Ms. Murphy's residence would not materially add to the RF in her residence and that it would be useless for the Complainant to resist a smart meter on her home because all of the homes in the neighborhood have been fitted with smart meters. Murphy M.B. at 46-47 (citing December 7, 2016 Transcript at 1245-1252; citing also Pritchard Murphy Rebuttal Testimony at 12).

PECO submits that Dr. Davis concluded in his testimony that, to a reasonable degree of scientific certainty, there is no reliable scientific basis to conclude that exposure to RF fields from PECO's AMI meters is capable of causing any adverse biological effects in people, including the Complainant. PECO M.B. at 47 (citing Murphy Rebuttal Testimony of Christopher Davis at 24-25).

The Complainant contends that Dr. Davis' opinion cannot be relied upon by the Commission because he ignored the May 2016 NTP report and the IARC classification in formulating such opinion. Murphy M.B. at 70 (citing January 25, 2017 Transcript at 1882-83; December 7, 2016 Transcript at 1334). The Complainant submits that there is "stark disagreement" between the Parties' experts as what weight to give this report because at the time of the Omnibus Hearings it was still in draft form, but that Dr. Marino said the draft report is crucially important because it is a federal government agency that provides the evidence that the recognized basis of the present regulatory scheme of the FCC is not protective of health and has direct bearing on the IARC classification on low levels of RF exposure as a possible carcinogen. Murphy M.B. at 65 (citing December 9, 2016 Transcript at 1856-57, 1859-60). Additionally, the Complainant argues that Dr. Davis' opinion cannot be relied upon because he took the unreasonable position of saying he was "absolutely certain" that RF exposure cannot cause harm and as a result, "kids can hold cell phones against their heads all day long and there is absolutely nothing to worry about." Murphy M.B. at 70 (December 7, 2016 Hearing Transcript at 1217-18).

PECO responds to the Complainant's challenge by recognizing that Dr. Marino believes the draft, unpublished May 2016 NTP report should be given a great deal of weight because he is convinced that it was a well-done study. PECO submits, however, that Dr. Davis takes the view that one should wait for the review and publication process to be completed before deciding how much weight to give the study; in the interim, he gives it little or no weight. PECO argues that the results will need to be analyzed and integrated in the context of all other existing research on RF exposure and cancer endpoints only when it is finalized and published. Until then, PECO respectfully requests that the Commission treat the May 2016 NTP report as a draft, unpublished report. PECO M.B. at 43.

As noted above, PECO also presented the expert opinion testimony of Dr. Israel. As for Dr. Israel's qualifications, PECO submits that he attended the Albert Einstein College of Medicine, completed an internship and residency at Harvard Medical School, has worked at the National Institute of Health and has been a professor of medicine and medical research at numerous medical schools, including Dartmouth. He has been the Director of the Dartmouth Cancer Center, had a research laboratory at Dartmouth, and had been the chief administrator of the Cancer Center. He has studied RF fields and health effects. Dr. Israel began to examine the research on EMFs, including RF fields, and health effects during his tenure at the National Cancer Institute more than 25 years ago. He has continued to follow the research literature on this subject since that time. Murphy I.D. at 29; PECO M.B. at 48-49 (citing Murphy Rebuttal Testimony of Mark Israel at 5-6). PECO submits that Dr. Israel's training and experience make him eminently qualified to appear as an expert in this proceeding. PECO M.B. at 49, n.15.

The Complainant argues that Dr. Israel's knowledge and experience is limited regarding the specific issues that are the focus of these proceedings. The

Complainant submits that Dr. Israel has never published any research and has never done any research on the effects of electromagnetic energy. Moreover, the Complainant asserts that Dr. Israel showed unfamiliarity with the May 2016 NTP report and the IARC classification, which, according to the Complainant, demonstrate that his knowledge and understanding of the issues before the Commission are limited and therefore, he is not a reliable source of scientific information about any of the issues before the Commission in this case. Murphy M.B. at 69 (citing December 9, 2016 Transcript at 1580).

Dr. Israel testified that he conducted an evaluation of whether exposure to RF fields from PECO's AMI meters can cause, contribute to or exacerbate the conditions described by the Complainant. Based on his evaluation, Dr. Israel concluded that for each of the symptoms or conditions identified by the Complainant, that there is no reliable medical basis to conclude that RF fields from PECO's electric AMI meter caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by the Complainant. PECO M.B. at 49-50 (Murphy Rebuttal Testimony of Mark Israel at 11-31). Dr. Israel's overall medical opinion is that exposure to electromagnetic fields from PECO's smart meters have not been and will not be harmful to the Complainant's health. He holds both his symptom-specific and overall medical opinions to a reasonable degree of medical certainty. PECO M.B. at 50 (Murphy Rebuttal Testimony of Mark Israel at 31-32).

The bases for Dr. Israel's evaluation included the same methodology that he uses in the usual course of his medical work, which included searching medical and scientific databases, analyzing studies identified through that research, evaluating as a whole all of the studies that he determined were relevant to the claimed symptoms, including both positive and negative studies, and review of the findings of public health agencies and organizations to see if they provided any insights Dr. Israel missed and to see if their conclusions were inconsistent with Dr. Israel's initial determinations. PECO M.B. at 49 (citing Murphy Rebuttal Testimony of Mark Israel at 7).

The Complainant challenges the bases for Dr. Israel's opinion testimony because he did not cite to a positive study that he relied upon. Murphy M.B. at 51 (citing December 8, 2016 Transcript at 1641-42). The Complainant argues that Dr. Israel "cherry-picked studies" only to account for negative studies. The Complainant opines that "almost any study can be designed to show no effect" and that Dr. Israel was unaware whether the studies he cited were funded by industry. Murphy M.B. at 51 (citations omitted). The Complainant claims that Dr. Israel relied upon and simply quoted learned treatise and reports of public health agencies in violation of the hearsay rule, citing *Majdic v. Cincinnati Machine Company*, 537 A. 2d 334 (Pa. Super. 1988). Murphy M.B. at 61-63. The Complainant also submits that the bases for Dr. Israel's opinion is troubling because he did not take into consideration the results of the May 2016 NTP report and because he did not give proper weight to the IARC classification. Murphy M.B. at 71 (citing December 9, 2016 Hearing Transcript at 1601, 1629-38).

PECO responds to the Complainant's challenges by stating that Dr. Israel's testimony was not based exclusively on negative studies, noting that he testified to the methodology that he used and that he explicitly stated that: "For each [symptom or condition], I considered the studies that (1) report an effect and (2) studies that report no effect because that is necessary for a reliable medical evaluation." PECO M.B. at 39 (citing Murphy Rebuttal Testimony of Mark Israel at 3-5). PECO responds to the Complainant's hearsay argument that twelve years after the Superior Court issued the *Majdic* ruling, the Pennsylvania Supreme Court issued its Opinion in *Aldridge v. Edmonds*, 750 A.2d 292 (Pa. 2000), in which the Court described the allowable uses of learned treatises in expert testimony. PECO M.B. at 41 (quotation omitted). PECO submits that Dr. Israel testified that he first forms a preliminary opinion based on research and analysis of primary research, then he reviews the reports of public health agencies and similar organizations to see if they provide any insights Dr. Israel missed and to see if their conclusions are inconsistent with Dr. Israel's initial determinations. He

then makes his final medical evaluation. PECO submits his use of these reports is proper under *Aldridge* because the findings of the reports are used by Dr. Israel as the basis for his opinion and are not admitted in this proceeding as evidence of the truth of the matters asserted therein. PECO M.B. at 42.

Regarding the IARC classification of electromagnetic energy as a "possible" carcinogen, PECO submits that Dr. Israel provided context for understanding this classification:

> IARC said that there was limited evidence that radio frequency fields could contribute to cancer and there was limited evidence in animals and those criteria that there's not sufficient evidence to identify it as a probable cause, because there's limited evidence in humans and limited evidence in animals, it gets designated as a category 2B which stands for "possible." I've always been uncomfortable with "possible" because "possible" to me is misleading to the population that I have to take care of because I think what IARC means is that there's limited evidence in humans and limited evidence in animals. "Possible" in the lay language of the people I have to take care of, means my God it might be possible or oh, well anything is possible, so I should pay attention to this. So, I really always focus when I talk to people about the fact there just isn't evidence to identify this as even a probable carcinogen.

PECO M.B. at 37 (citing December 9, 2016 Transcript at 1630-31).

No further evidence was offered into the record by the Complainant to rebut the evidence presented by PECO.

b. ALJ's Initial Decision

The ALJ noted that it is the position of the Complainant that installation of an AMR meter was, and installation of an AMI meter would be, unsafe and unreasonable in violation of 66 Pa.C.S. § 1501 and 52 Pa. Code § 57.194 because these meters emit RFs that are detrimental to her health. Murphy I.D. at 24. The ALJ determined that the Complainant established a *prima facie* case, Murphy I.D. at 27, based on the following evidence presented by the Complainant:

- Ms. Murphy's testimony, in which she stated that she first became ill after installation of the AMR meter in 2002. Murphy I.D. at 24.

- Dr. Prociuk's testimony, in which he stated that Ms. Murphy was a very high functioning individual, and her health did not interfere with her ability to function on a day-to-day basis before 2002. Murphy I.D. at 24 (citing December 5, 2016 Tr. at 100). Dr. Prociuk stated that in 2002, Ms. Murphy's health began to deteriorate at a noticeably increased rate. Murphy I.D. at 24 (citing December 5, 2016 Tr. at 80). According to Dr. Prociuk, the presence of any RF emitting device on Ms. Murphy's property is medically contraindicated. Murphy I.D. at 24 (citing Murphy St. 3 at 20). Dr. Prociuk also stated that there was a dramatic improvement of Ms. Murphy's health, mood and mental acuity when the Complainant hired an electrician in early May of 2016 to remove the AMR meter and replace it with an analog meter. PECO reinstalled the AMR meter on May 9, 2016 and the Complainant had it removed again, about an hour later. Murphy I.D. at 25 (citing Murphy St. 2S at 16, December 6, 2016 Hearing Tr. 1003, December 5, 2016 Tr. at 112-116). Dr. Prociuk also testified that when the AMR meter was reattached to her house, Ms. Murphy began to feel ill immediately. Murphy I.D. at 25 (citing Murphy St. 2S at 15, December 5 Hearing Tr. at 115). Dr. Prociuk testified that "I can say with a high degree of clinical certainty that I

have good reason to believe that she has an extraordinary sensitivity to RFs[.]" Murphy I.D. at 25 (citing December 5, 2016 Tr. at 116).

- Dr. Marino's testimony, which included his opinion that there is a basis in established science for the conclusion that Ms. Murphy could be in or exposed to danger if exposed to the emissions emitted by the PECO AMR or AMI meter. Murphy I.D. at 26 (citing September 15, 2016 Tr. at 578).

Murphy I.D. at 24-26.

The ALJ then turned to a review of PECO's rebuttal presentation of evidence and concluded that PECO presented an "effective rebuttal." Murphy I.D. at 30. The ALJ relied upon the following testimony from Mr. Glenn Pritchard:

- Mr. Pritchard testified that, unlike other meter systems, PECO does not have a mesh system, its meters do not pulse, and its smart meter system transmits on a band reserved for PECO, allowing for less in EF transmission[s] than typical smart meter systems. Murphy I.D. at 27 (citing Murphy Rebuttal Testimony of Glenn Pritchard at 5-7).

- Mr. Pritchard also testified that as far as an accommodation, the customer determines the location of the customer's meter socket and PECO will connect to that location. Mr. Pritchard also testified that although PECO itself did not perform any tests on humans to evaluate the safety of smart meters, PECO ensured that the smart meters were compliant with FCC safety limits. Murphy I.D. at 27 (citing December 6, 2016 Tr. at 1031-1032).

The ALJ relied upon the following testimony from Dr. Davis:

- Dr. Davis testified that the FCC has promulgated limits for the maximum permissible exposure to RFs emitted by a smart meter as 0.6 mW/cm^2, calculated as an average exposure over time. Murphy I.D. at 27 citing Murphy Rebuttal Testimony of Christopher Davis at 13).

- Dr. Davis testified that, based on his calculations, the average exposure from PECO's electric AMI meters is millions of times less than the FCC maximum permissible exposure levels. Murphy I.D. at 27-28 (citing Murphy Rebuttal Testimony of Christopher Davis at 15-16).

- Based on his calculations, the peak exposure from PECO's electric AMI meters is approximately 40 times smaller than the FCC limit for 30-minute average exposure. Murphy I.D. at 28 (citing PECO St. 3R at 15-16; PECO Exh CD-2).

- Dr. Davis also testified that 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. Murphy I.D. at 28 (citing PECO St. 3R at 16-17; PECO Exh. CD-4).

- Dr. Davis testified, to a reasonable degree of scientific certainty, that there is no reliable scientific basis upon which to conclude that exposure to RFs from PECO's AMI meters is capable of causing any adverse biological effects in people, including the Complainant. Murphy I.D. at 29 (citing PECO St. 3R at 24-25).

The ALJ also relied upon the following testimony from Dr. Israel:

- Dr. Israel conducted an evaluation of whether exposure to RF fields from PECO's AMR or AMI meters can cause, contribute to, or exacerbate the conditions

described by Ms. Murphy. In that evaluation, he used the same methodology that he uses in the usual course of his medical work, which included searching medical and scientific databases, analyzing studies identified through that research, evaluating as a whole all of the studies that he determined were relevant to the claimed symptoms, including both studies that showed an effect and studies that did not show an effect, and reviewing the findings of public health agencies and organizations to see if they provided any insights Dr. Israel missed and to see if their conclusions were inconsistent with his initial determinations. He then made his final medical evaluation. Murphy I.D. at 30 (citing Murphy Rebuttal Testimony of Mark Israel at 6-7).

- Dr. Israel conducted the above-described evaluation for each of the symptoms or conditions identified by the Complainant and concluded, for each such symptom, that there is no reliable medical basis to conclude that RF fields from PECO's electric AMR or AMI meters caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by Complainant. Murphy I.D. at 30 (citing Murphy Rebuttal Testimony of Mark Israel at 11-31).

- Dr. Israel offered his overall medical opinion that exposure to EMFs from PECO's AMR or AMI meters has not been and will not be harmful to the Complainant's health, holding both his symptom-specific and overall medical opinions to a reasonable degree of medical certainty. Murphy I.D. at 30 (citing Murphy Rebuttal Testimony of Mark Israel at 26).

The ALJ found that Ms. Murphy clearly established that she unfortunately suffers from various ailments and illnesses. However, the ALJ reasoned, neither the Complainant's testimony nor Dr. Prociuk's testimony, seeking to link her illnesses to installation of the PECO AMR meter, overcomes the testimony of Dr. Davis and

Dr. Israel that RFs from AMR meters or smart meters do not have such effects. Murphy I.D. at 31.

The ALJ noted that Dr. Prociuk testified that he believes that the Complainant's mental and consequently physical health improved upon removal of the AMR meter. However, the ALJ noted, while he properly relied upon representations by the Complainant that her illnesses were affected by the AMR meter and that she was in better health prior to its installation in 2002, Dr. Prociuk had no independent knowledge because the Complainant first saw him in 2005. Murphy I.D. at 31 (citing December 5, 2016 Tr. at 99-100). The ALJ further noted that Dr. Prociuk's first letter to PECO on behalf of the Complainant after she refused access for smart meter installation made no mention of EFs, further suggesting that his testimony at the hearing relied upon representations made by the Complainant. Murphy I.D. at 31 (citing PECO St. 1-R, Exh. BE-5). The ALJ stated that upon cross examination of Dr. Prociuk, it was made clear that before the 2002 installation of the smart meter, Ms. Murphy did not have generally good health and had significant health problems beginning years earlier. Murphy I.D. at 31 (citing Cross Examination Testimony of Peter J. Prociuk, M.D., December 5, 2016, Hearing Transcript at 100-102).

With regard to the AMI meter, the ALJ reasoned that PECO selected and installed smart meters that meet FCC maximum exposure to RFs limits. The ALJ noted that the amount of RFs that emanate from the PECO smart meter is millions of times smaller than the limit allowed by the FCC. According to the ALJ, it was not and is not unreasonable for PECO to seek to install these meters in accordance with the Act 129 installation plan approved by the Commission. Murphy I.D. at 31-32.

The ALJ found that the expert testimony weighed in favor of finding that smart meter RF exposure would not be harmful. The ALJ noted that Dr. Prociuk acknowledged that with respect to any harm from RFs, "clinical science is not well

established." Murphy I.D. at 32 (citing Cross Examination of Dr. Prociuk at 82-83). The ALJ further noted that Dr. Marino would not say definitively that the RFs from the PECO smart meter would cause harm. Murphy I.D. at 32 (citing Direct Testimony of Dr. Andrew Marino, September 1, 2016 Hearing Tr. at 644-645). The ALJ states that Dr. Davis and Dr. Israel were definitive that they would not.

The ALJ concluded that the evidence does not support a finding that Ms. Murphy's medical condition is related to or worsened by the PECO AMR meter that was installed at her residence in 2002. Murphy I.D. at 31. The ALJ also concluded that there is no showing that PECO's use of a smart meter to measure the Complainant's usage will constitute unsafe or unreasonable service in violation of Section 1501. Murphy I.D. at 31. The ALJ concluded that in considering PECO's effective rebuttal, the Complainant did not meet her burden of proving that the installation of a smart meter would adversely affect her health or otherwise constitute unreasonable or unsafe service. Therefore, the ALJ concluded the Complainant cannot prevail. Murphy I.D. at 32.

c. Exceptions and Replies

In her first, second, third, fourth and eighth Exceptions, the Complainant takes exception to the ALJ's conclusion that the Complainant has not met her burden of proof in this proceeding with respect to showing that a PECO smart meter is unsafe because of its RF exposure levels to customers. We discuss the Complainant's first, second, third, fourth and eighth Exceptions, and PECO's Replies thereto, in more depth in our disposition in the next section below.

d. Disposition

Upon review of the evidentiary record and the positions of the Parties, we shall deny the Complainant's first, second, third, fourth and eighth Exceptions. We agree

with the ALJ's conclusion that the Complainant failed to meet her burden of proof in this proceeding, but respectfully, for different reasons, as explained below.

To begin, in our opinion it would not be prudent to give any weight to the Complainant's testimony regarding her self-diagnosis of EHS given the conflicting testimony of Dr. Marino, in which he clearly states that a person's subjective self-diagnosis of EHS is not sufficient to establish that the person has EHS. September 16, 2016 Transcript at 787. We also are forced to give little weight to the testimony of the Complainant's treating physician, Dr. Prociuk. The Complainant submitted that she did not offer Dr. Prociuk's testimony on the issue of causation.[21] Dr. Prociuk testified that "with respect to this syndrome of electromagnetic sensitivity, we're in this sort of clinical stage of infancy . . . So when I say yes, there could be a connection, I am very mindful of the fact that the clinical science is not well established." December 5, 2016 Tr. at 82. Dr. Prociuk further testified that he did not "have the diagnostic criteria or the diagnostic testing to establish this as a clinical, a fixed clinical entity." *Id.* at 84. Thus, Dr. Prociuk's diagnosis of extraordinary sensitivity to RFs for the Complainant was based upon the Complainant's self-diagnosis of EHS, which is information that Dr. Marino testified is "not sufficient to establish that the person has" EHS. September 16, 2016 Transcript at 787. The Complainant seeks to rehabilitate this fact with Dr. Marino's testimony, in which he explained that there is no consensus clinical diagnosis in the medical

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[21] In her Reply Brief, the Complainant states:

> The Complainants and their doctors are not experts in the effects of RF exposure (although Dr. Marino is) and they concede, as they must, that their testimony and that of their doctors would not meet the high burden of proving causation if these proceedings required . . . proof of specific causation of harm.

Murphy R.B. at 18.

community for EHS and that the only certain test would cost $500,000 to conduct.[22] While we would be able to accept that there is no consensus clinical diagnosis in the medical community for EHS, it does not overcome the fact that there is a complete lack of any independent diagnostic testing to corroborate the Complainant's self-diagnosis. Thus, based on the conflicting testimony by Dr. Marino and the lack of corroboration as to the Complainant's EHS diagnosis, we would be on a shaky foundation to find the Complainant has proven by a preponderance of the evidence the allegation in her Second Amended Complaint that she is "uniquely susceptible to Electro Magnetic Field and Radio Frequency radiation" and is, therefore, a medically sensitive customer of PECO's.

Next, while Dr. Marino is clearly qualified as an expert on the issue of causation in this case based on his specialized knowledge, skill, experience in this area of science and his education in biophysics,[23] Dr. Marino's first opinion does not, in our view, constitute an unequivocal opinion to support a finding that the exposure levels to the RF energy from a PECO AMR or AMI meter installed and used at her residence caused, contributed to or exacerbated or will cause, contribute to or exacerbate any adverse health effects for the Complainant. The Complainant concedes in argument that its expert has not proven a conclusive causal connection between the RF emissions from

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[22] The Complainant states:

> [The] Complainants accept that they cannot prove to a medical certainty that they suffer from EHS because, as Dr. Marino testified, there is no consensus clinical diagnosis and it would cost hundreds of thousands of dollars to conduct that kind of test he conducted for his published study with EHS.

Murphy R.B. at 30.

[23] "An otherwise qualified non-medical expert may give a medical opinion so long as the expert witness has sufficient specialized knowledge to aid the [trier of fact] in its factual quest." *McClain ex rel. Thomas v. Welker*, 761 A.2d 155, 157 (Pa. Super. 2000) (citing *Miller v. Brass Rail Tavern*, 541 Pa. 474, 664 A.2d 525 (1995) (holding coroner with years of experience had specialized knowledge regarding time of death and qualified as expert to testify regarding same)).

a PECO smart meter and adverse health effects for the Complainant. Murphy R.B. at 18. Specifically, the Complainant asserts that because there is no consensus clinical diagnosis, Dr. Marino stated he could not testify whether RF exposure did cause or will cause adverse health consequences for the Complainants. Murphy R.B. at 18.

In our view, Dr. Marino's testimony, at best, supports the conclusion that the Complainant's *alleged* condition of EHS *might* be exacerbated if subjected to the low-level RF fields from a PECO smart meter installed at her residence. However, Dr. Marino admits that he has no basis to state the opinion that it did or will cause adverse health effects for the Complainant. September 15, 2016 Transcript at 643-44. Recognizing that Dr. Marino was not required to testify to an absolute certainty as to causation and eliminate all other possible causes, Dr. Marino's opinion does not constitute an unequivocal opinion to a reasonable degree of certainty that the low-level RF fields from a PECO smart meter will adversely affect the Complainant's health. *See Halaski v. Hilton Hotel*, 487 Pa. 313, 409 A.2d 367, 369, n.2 (Pa. 1979) (*Halaski*) (quoting *Menarde v. Philadelphia Transportation Co.*, 376 Pa. 497, 501, 103 A.2d 681, 684 (1954) ("[T]he expert has to testify, not that the condition of claimant might have, or even probably did, come from the cause alleged, but that in his professional opinion the result in question came from the cause alleged. A less direct expression of opinion falls below the required standard of proof and does not constitute legally competent evidence."). Accordingly, his opinion falls below the required standard and burden of proof and does not constitute legally competent evidence to support a finding of fact on the issue of a conclusive causal connection between RF fields from an AMR or AMI meter and adverse human health effects.

Based on the foregoing analysis and discussion, we believe the Complainant's evidence is not sufficient to establish a *prima facie* case under 66 Pa. C.S. § 332(a) in demonstrating that the RF exposure levels from a PECO AMR meter has or an AMI meter will cause adverse health effects for the Complainant. Accordingly, we

respectfully disagree with the ALJ on this point and we shall modify the ALJ's Initial Decision consistent with the discussion above. However, for the sake of providing a full analysis and discussion of the record, assuming the Complainant's evidence is sufficient to carry the burden of proof initially, we agree with the ALJ that PECO credibly carried its burden of production in rebuttal for the reasons discussed below.

PECO's rebuttal evidence included the expert testimony of Dr. Davis and Dr. Israel. Dr. Davis is a qualified expert[24] to testify on the issues in this proceeding, including, *inter alia*, on the scientific or technical principles relevant to the case, the RF field levels emitted from the AMR or AMI meter at issue in this case, the FCC's process in establishing and maintaining current RF exposure limits, and the dosimetry utilized in

[24] In addition to the description of Dr. Davis' qualifications as presented in PECO's Brief and the Murphy Initial Decision, we further note that Dr. Davis has education, training and experience in physics, biophysics, chemistry, electrical engineering, electromagnetics, bioelectromagnetics, and radio frequency bioelectromagnetics and dosimetry (defined as "the measurement and calculation of the level of electromagnetic fields produced from a source"). Murphy Rebuttal Testimony of Dr. Christopher Davis at 11. Murphy Rebuttal Testimony of Dr. Christopher Davis at 24. Dr. Davis explained that he conducted a wide variety of scientific studies in the fields of physics, biophysics, and electrical engineering, and particularly studies on electromagnetics, bioelectromagnetics, and RF electromagnetics and dosimetry. *Id.* at 4-5. Related to the topic of RF, Dr. Davis authored scientific publications including two book chapters on radio frequency fields, twenty-four articles published in peer-reviewed scientific journals on RF fields and presented fifty-five papers at scientific conferences on RF fields. *Id.* at 5. Dr. Davis explained that he has conducted research on RF fields of the type periodically produced by PECO's AMI meters. Dr. Davis stated that he has served as a consultant and provided expert advice on both power frequency and RF fields, including 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. *Id.* at 7.

relevant scientific studies.[25] In our opinion, Dr. Davis' testimony sufficiently demonstrated that the limits on RF emissions that are established and maintained by the FCC are both relevant and persuasive to our review of the issue of whether low-level RF exposure is harmful to human health and therefore unsafe. Dr. Davis explained that the FCC sets exposure limits for devices like smart meters that emit RF energy. Dr. Davis' testimony, as discussed *supra*, sufficiently explained how the FCC limits were established and explained the FCC's process for establishing and maintaining these limits. Specifically, Dr. Davis testified that the FCC has consulted and continues to consult closely with other federal agencies that have authority in the areas of health and safety, including the FDA, OSHA and NIOSH. Dr. Davis explained that in setting its standards, the FCC considered claims of both thermal and non-thermal effects; however, it set the standards to avoid thermal effects because the scientific studies did not show any non-thermal effects. Dr. Davis further explained that while the FCC continues to consider whether there are adverse biological effects from non-thermal exposure levels, *i.e.*, low-level RF exposure, the FCC considers the scientific evidence for such effects to be "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health."
Dr. Davis also explained that the FCC keeps current on claims that RF fields can cause non-thermal effects; however, it does not believe that such claims have been demonstrated sufficiently to warrant change to the FCC standards. Dr. Davis explained that the FCC's ongoing review is done in coordination with the government agencies that oversee health and safety. PECO M.B. at 45-46 (citing Murphy Rebuttal Testimony of Christopher Davis at 13-16).

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[25] Pa. R.E. 702 permits an expert witness to testify "in the form of an opinion or otherwise . . ." The Comment to Pa. R.E. 702 provides: "Much of the literature assumes that experts testify only in the form of an opinion. The language 'or otherwise' reflects the fact that experts frequently are called upon to educate the trier of fact about the scientific or technical principles relevant to the case."

Dr. Davis' testimony, including his calculations that were attached to his testimony as exhibits,[26] sufficiently demonstrated that the RF field exposure from a PECO smart meter, when considered either at an average or a peak level, is significantly lower than the FCC's limit. Murphy Rebuttal Testimony of Christopher Davis at 15-16; PECO Exh CD-2, CD-3; Murphy I.D. at 28.

Dr. Israel also is a qualified expert on the issues in this proceeding.[27] He offered his expert opinion on the issue of the causal connection between low-level RF exposure from a PECO smart meter and adverse human health effects. Dr. Israel's opinion was offered to a reasonable degree of medical certainty based upon his review of available scientific studies, research and reports. His expert opinion stated unequivocally that exposure to the low-level RF fields from a PECO smart meter will not be harmful to the Complainant's health. Dr. Israel's unequivocal opinion meets PECO's required burden of production and constitutes legally competent evidence to support a finding of

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[26] We note that the ALJ overruled the Complainant's request at the hearing to admit Dr. Davis' Exhibits CD-2 through CD-8 into the record purely as demonstrative exhibits, stating that such exhibits "will be admitted as calculations made by the expert, and given the weight according how we weigh the testimony in general." *See* December 8, 2016 Hearing Transcript at 1462-63, 1465-67.

[27] In addition to the description of Dr. Israel's qualifications as presented in PECO's Brief and the Murphy Initial Decision, Dr. Israel provided that he has been conducting medical research for 40 years on topics including systems biology, biochemistry, cell biology, cancer, molecular biology and molecular genetics and has published over 200 papers reporting on his research in medical or scientific journals. Dr. Israel stated that after completing his residency, he pursued medical research at the National institutes of Health, and then the Pediatric Branch of the National Cancer Institute. Dr. Israel noted his interest in RF fields and health began with parents of his patients concerned with exposure to these fields from power lines and cell phones. Dr. Israel stated he began examining the research to inform those parents of patients and has been following the research on those topics for more than 25 years. Dr. Israel noted that he has been teaching for more than 25 years in a number of fields including endocrinology, immunology, hematology, neurology, cardiology, biochemistry, cell biology, genetics, molecular genetics, medical oncology, and radiation oncology. Murphy Rebuttal Testimony of Dr. Mark Israel at 3-6.

fact on the issue of a causal connection between RF fields from an AMI meter and adverse human health effects.

In Briefs and in Exceptions, the Complainant challenged the qualifications of PECO's experts, the bases of their opinions and certain specific areas of their testimonies. After careful review of those challenges, however, we agree with the ALJ that the Complainant did not successfully impugn PECO's rebuttal evidence. We discuss below our specific reasons for this conclusion when we specifically address the Complainant's first, second, third, fourth and eighth Exceptions below. Accordingly, we affirm the ALJ's conclusion that PECO met its burden of production in this proceeding.

Because PECO met its burden of evidence production, the burden of production shifted back to the Complainant. The Complainant did not introduce further evidence into the record to demonstrate a conclusive causal connection between the low-level RF fields from a PECO AMR or AMI meter and adverse health effects for the Complainant. Thus, we affirm the ALJ's conclusion that the Complainant did not meet her burden of proof in this proceeding.

We now turn to address more specifically the Complainant's first, second, third, fourth and eighth Exceptions.

e. Complainant's Exception No. 1 and Disposition

In the first Exception, the Complainant states that the ALJ "erred in placing weight on the testimony of Dr. Israel and Dr. Davis on numerous important points where they disagreed with Dr. Marino." The Complainant provides that "this was arbitrary and capricious because Dr. Marino has far deeper and stronger qualifications on the issue of the health risk from smart meter RF exposure than Dr. Israel and Dr. Davis." The Complainant describes Dr. Marino's qualifications and argues that the credentials of

PECO's expert witnesses in this field were much more limited or nonexistent. Murphy Exc. at 7-8 (citing Murphy M.B. at 40-41, 68-69, 71). For this reason, the Complainant asserts that the ALJ should have accepted Dr. Marino's testimony and rejected the testimony of Dr. Davis and Dr. Israel where the testimonies conflicted. Murphy Exc. at 8.

In Replies to the Complainant's first Exception, PECO reiterates the relevant qualifications of its witnesses as summarized above. PECO R. Exc. at 6 (citing Murphy I.D. at 13, 15, 27, 29). PECO also notes that the Complainants did not identify any specific instance in which they claim that Dr. Marino's testimony should have been given greater weight but claimed there were "numerous important points" about which the expert witnesses disagreed and on which they assert the ALJ was required to believe Dr. Marino. PECO R. Exc. at 6.

Upon review, we disagree with the Complainant's assertion that Dr. Marino is uniquely qualified to testify on the issues in this proceeding. As the ultimate fact-finder, we accept the qualifications of the three expert witnesses and determine that all three witnesses have the scientific, technical, or other specialized knowledge to allow them to provide expert testimony on the issues in this proceeding in accordance with Pa.R.E. 702, as discussed in more detail above. Furthermore, we note that the Complainant did not identify any specific "important points" where Dr. Marino's testimony should have been more persuasive to the ALJ. Because the Complainant did not identify any specific instances where Dr. Marino's testimony should have prevailed, we can only surmise that the ALJ found Dr. Davis' and Dr. Israel's testimony to be persuasive in some instances where the Complainant does not agree. Accordingly, we shall deny the Complainant's Exception No. 1.

f. Complainant's Exception No. 2 and Disposition

In the second Exception, the Complainant contends that it was "arbitrary and capricious" for the ALJ to not accept the evidence presented by the Complainant that forced exposure to RF presents a risk of harm to her. The Complainant explained that this evidence included the testimony of Dr. Andrew Marino based on many years of research, including animal studies, epidemiological studies, the EHS study, and other relevant research, as well as his reliance on the draft 2016 NTP Report. Murphy Exc. at 8. In her second Exception, the Complainant walks the Commission through the testimony of Dr. Marino citing to relevant portions of its Main Brief, at 28-39, 64-66, as summarized above under the Position of the Parties. Murphy Exc. at 8-10.

The Complainant contends that ALJ Heep failed to recognize that PECO did not rebut Dr. Marino's testimony about the potential to cause harm based on the peer-reviewed animal and epidemiological studies he relied upon. Murphy Exc. at 10 (citing Murphy M.B. at 31-33). Likewise, the Complainant submits that PECO did not rebut Dr. Marino's testimony about the potential to cause harm based on the peer-reviewed EHS study he conducted which proved that EHS is a real syndrome. All of this evidence, submits the Complainant, presented substantial grounds for the conclusion that RF exposure is capable of causing harm. Murphy Exc. at 10-11.

The Complainant further submits that the ALJ erred in rejecting the NTP report based on the testimony of Dr. Davis, that the NTP study was a draft and at a high-power density that is not relevant. Murphy Exc. at 11-12 (citing Murphy I.D. at 28). The Complainant requests the Commission to take "judicial notice" of not only what the draft May 2016 NTP report said, but also what the final NTP report has said since. The Complainant submits:

> Specifically, according to its publicly available website, the findings of the 2016 draft report "were reviewed by an expert panel in March 2018….The final NTP reports are expected in fall 2018."… The NTP website also discloses that the external science experts who met in March 2018 "recommended that some [NTP] conclusions be changed to indicate stronger levels of evidence that cell phone radiofrequency (RFR) caused tumors in rats."

Murphy Exc. at 12 (citations omitted).

According to the Complainant, the May 2016 NTP report shows that RF exposure caused cancer in rats under the test conditions, meaning there is a potential for harm to rats from RF exposure below FCC limits, from which potential for harm to humans could be inferred. The Complainant argues further "[t]hat same potential for harm is present for RF exposure from smart meters." Murphy Exc. at 13. The Complainant states that there is no way to compare the potential exposure from a cell phone to that of a smart meter "because there have been no studies on the safety of smart meters." The Complainant further states that "the potential for harm from these RF-emitting devices is completely unknown." Murphy Exc. at 14. The Complainant avers that the Commission should "accept that RF exposure from smart meters is a possible cause of harm to humans, meaning that some scientific evidence supports the point, but it is not yet accepted as conclusively proven." Murphy Exc. at 15.

In Replies to the Complainant's second Exception, PECO maintains that Dr. Marino's testimony does not prove that "forced exposure to RF presents a risk of harm;" to the contrary, it proves that in Dr. Marino's view, it was too costly to collect evidence and consequently he was not able to present any evidence that "forced exposure to RF presents a risk of harm." PECO R. Exc. at 7-8. PECO submits that ALJ correctly accepted, not rejected, this testimony. PECO submits that it should be underscored that the Complainant has frankly admitted throughout this proceeding that she did not meet

the burden of proof with respect to causation. PECO R. Exc. at 8. PECO argues that the Complainant misspeaks when it says PECO offered no response at all to Dr. Marino's testimony. *Id.* Given that Dr. Marino and the Complainant admitted that they had not met burden of proof on causation, PECO did not find it necessary in its briefs to analyze every study that was discussed in the evidentiary hearings. *Id.* PECO maintains, however, that the record contains an extensive, point-by-point, response on the scientific research in the form of the testimony of Drs. Davis and Israel – testimony that the ALJ found to be persuasive and credible. PECO R. Exc. at 8-9.

Regarding the single EHS study, PECO submits that there was no reason that the Initial Decision needed to isolate and discuss this specific study and referred the Commission to its Main Brief at 31, in which PECO explained that Dr. Marino candidly testified that before his EHS study, there were no published studies that any person is able to detect the presence or absence of electromagnetic energy, that his study involved only one subject and that, even taking into consideration his own study, his opinion is that the AMI meter has the potential to "trigger EHS, not cause it, trigger it" but that "I believe my speculation is that's the case, but I don't have direct evidence to say that." PECO R. Exc. at 9 (citing PECO M.B. at 31 (citing September 15, 2016 Transcript at 609, 614 and September 17, 2016 Transcript at 779)).

Regarding the May 2016 NTP report, PECO explains that Dr. Israel testified regarding that report. PECO notes that Dr. Israel had reviewed and analyzed the May 2016 NTP report, found that it had not yet gone through normal peer review process and that it was a draft study of partial results. PECO provides that Dr. Israel placed the NTP results into context with other research and stated that it did not alter his overall conclusions that RF fields from PECO's AMI meters have not been shown to cause, contribute to, or exacerbate health effects. PECO R. Exc. at 10 (citing Tr. at 1527-29, 1603-17). PECO notes that in his testimony, Dr. Davis concluded that the May 2016 NTP report was not applicable to review of AMI meters because it is at "a relatively

high-power density that's not relevant." According to PECO, the power densities used in the NTP research were approximately 300 million times greater than the "incredibly low exposures that you get from PECO's AMI and AMR meters." PECO R. Exc. at 12-13 (citing Tr. 1090-91).

Upon review, we shall deny the Complainant's second Exception for the reasons that follow. We disagree with the Complainant's characterization that the ALJ did not accept the Complainant's evidence, specifically the expert opinion testimony of Dr. Marino, in this proceeding. To the contrary, the ALJ accepted the expert testimony of Dr. Marino into evidence. As discussed above, after reviewing all of the admitted evidence, including Dr. Marino's opinions, we conclude that the Complainant did not sustain her initial burden of proof in demonstrating that RF exposure from a PECO AMR meter has or an AMI meter will cause harm to the Complainant's health. We also reject the Complainant's argument that the ALJ erred by finding PECO's rebuttal evidence sufficient. As discussed above, PECO satisfied its burden of production in this proceeding, which shifted the burden of production back to the Complainant. However, the Complainant failed to submit any additional evidence to demonstrate that the RF exposure from a PECO AMR meter has or an AMI meter will adversely affect her health and therefore failed to carry her ultimate burden of proof.

Next, we turn to the Complainant's arguments in her second Exception related to the various studies and reports upon which the experts relied in forming their opinions. To simplify, the Complainant argues we should give greater weight to Dr. Marino's expert opinion because he considered the correct studies and reports in forming it, specifically Dr. Marino's EHS study and the May 2016 NTP report. Likewise, the Complainant asserts that we should give little to no weight to the opinion testimony of PECO's experts because, according to the Complainant, PECO's experts failed to consider the EHS study and the May 2016 NTP report. The Complainant emphasizes in her Exception No. 2 that the EHS study and the May 2016 NTP report, in

particular, are crucially important on the issue of whether the RF exposure from a smart meter is capable of causing harm to human health and that there is no scientific study relied upon by the experts to demonstrate the safety of RF exposure from smart meters.

Before we address the Complainant's arguments regarding the EHS study and the May 2016 NTP report as the bases for the experts' opinions in this proceeding, we feel it necessary to provide the proper evidentiary context. The various studies and reports relied upon by the Parties' experts in forming their opinions and testimonies were disclosed in this proceeding because Pa. R.E. 705[28] requires such disclosure. However, none of these studies and reports, including the EHS study and the May 2016 NTP report, were admitted into the record as legally competent evidence to support a finding of fact in this proceeding. Rather, it was acknowledged at the hearing that all of the referenced studies and reports are simple hearsay because the statements contained therein were produced by third persons outside of the hearing room not subject to cross-examination.[29] Accordingly, the ALJ admitted the various exhibits on direct or cross, not for the truth of the matters asserted therein, but rather for the limited purpose of establishing whether the expert relied upon such study/report in reaching his opinion pursuant to Pa. R.E. 703[30] or

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[28] Pa. R.E. 705 states "If an expert states an opinion the expert must state the facts or data on which the opinion is based."

[29] *See Walker v. Unemployment Compensation Board of Review*, 367 A. 2d 366, 370 (Pa. Cmwlth. 1976) (*Walker*) (citations omitted); *see also Chapman v. Unemployment Compensation Board of Review*, 20 A. 3d 603, fn. 8 (Pa. Cmwlth. 2011) (*Chapman*) (simple hearsay evidence may support an agency's finding of fact so long as the hearsay is admitted into the record without objection and is corroborated by competent evidence in the record).

[30] Pa. R.E. 703 provides:

> An expert may base an opinion on facts or data in the case that the expert has been made aware of or personally observed. If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted.

otherwise for cross-examination. *See, e.g.*, December 8, 2016 Hearing Transcript at 1467-1469. Rule 703 clearly permits an expert's opinion to be admitted even if it is based on inadmissible hearsay facts or data, so long as experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject.[31] Pa. R.E. 703; *see also, supra, Aldridge v. Edmonds*, 561 Pa. 323, 750 A.2d 292 (Pa. 2000).

With that context, it is clear from the record that Dr. Marino considered, *inter alia*, the EHS study and the May 2016 NTP report in forming his opinion that there is a basis in established science to conclude that the Complainants could be "exposed to danger"[32] from the RF exposure levels from a PECO AMI meter. Nevertheless, even after considering the aforementioned study and report, as discussed above, Dr. Marino did not provide an unequivocal opinion, provided to a reasonable degree of scientific

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[31] Another permitted purpose of limited evidentiary treatment of an underlying study, report or research is to permit parties to establish that the expert's methodology is, or is not, "generally accepted in the relevant field" in accordance with Pa. R.E. 702. The Comment to Pa. R.E. 702(c) provides as follows:

> Pa.R.E. 702(c) differs from F.R.E. 702 in that it reflects Pennsylvania's adoption of the standard in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). The rule applies the "general acceptance" test for the admissibility of scientific, technical, or other specialized knowledge testimony. This is consistent with prior Pennsylvania law. *See Grady v. Frito-Lay, Inc.*, 576 Pa. 546, 839 A.2d 1038 (2003). The rule rejects the federal test derived from *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

Pa. R.E. 702 is applicable to administrative agency proceedings. *Gibson v. WCAB*, 580 Pa. 470, 485-86, 861 A.2d 939, 947 (Pa. 2004) (*Gibson*) (holding, in part, that notwithstanding the statutory maxim of 2 Pa. C.S. § 505, which mandates a relaxation of the strict rules of evidence in agency hearings and proceedings, the "evidentiary Rules 602, 701, and 702 are applicable to agency proceedings in general . . . ").

[32] September 15, 2016 Hearing Transcript at 578.

certainty, that if PECO proceeds with its plan to install and use an AMI smart meter at the Complainant's residence to measure her usage, the RF exposure from the smart meter will cause harm to the Complainant's health. Thus, as stated above, Dr. Marino's first opinion does not meet the standard or burden of proof in this proceeding.

Moreover, the Complainant's arguments in the second Exception do little to help the Complainant's case. In discussing the importance of the results of the May 2016 NTP report, the Complainant states with respect to PECO's smart meters "the potential for harm from these RF-emitting devices is completely unknown" and it offers that this is the case "because there have been no studies on the safety of smart meters." Murphy Exc. at 14. There are two problems with the Complainant's argument.

First, the Complainant's assertion that there have been no studies on the safety of smart meters contradicts the record before us. Dr. Davis formed his opinion based on review of expert panel reports, at least one of which, the New Zealand Expert Ministry report, dealt with smart meters. December 8, 2016 Hearing Transcript at 1459; see also PECO Cross-Examination Exhibit 17. As Dr. Davis explained, this report concluded that "Thermal effects are the only ones for which there is clear evidence." Dr. Davis testified that the findings of the New Zealand Ministry of Health should be considered in evaluating the question of whether RF from PECO's AMR and AMI meters can cause adverse health effects. December 8, 2016 Hearing Transcript at 1546.

Second, the Complainant essentially repeats her argument from her Briefs that because the science is unproven regarding the effects of low-level RF exposure from a smart meter, that it is PECO and this Commission's statutory duty to deem the smart meter as capable of causing harm. The Complainant continues to advocate for a standard and burden that, as discussed above, is not the standard or burden in this case. Before us is an extensively-developed record by the Parties to demonstrate by a preponderance of the evidence whether or not, based on all the available scientific data, research and

studies considered by the experts as of the evidentiary hearing dates, the RF exposure from a PECO smart meter will cause adverse health effects to the Complainant. The evidence submitted by the Complainant in this proceeding – specifically, the expert opinion of Dr. Marino, which was formed based on all available scientific data, research and studies that he considered as of the hearing dates, including, *inter alia*, the EHS study and the draft May 2016 NTP report – simply fell short of the applicable standard and burden in this proceeding because Dr. Marino did not opine that the RF exposure from an AMI meter will cause harm to the Complainant's health.

Furthermore, contrary to the Complainant's characterization, our review of the record demonstrates that PECO's experts did, in fact, consider the EHS study and the May 2016 NTP report in providing their opinions and testimony. As to Dr. Marino's EHS study, Dr. Davis testified that the types of signals Dr. Marino used were not the same as what comes out of PECO's AMR and AMI meters, but were much more intense and repeated on/off periods more frequently than a PECO AMR or AMI meter. Dr. Davis stated that the signal pattern used by Dr. Marino was totally different from that emitted by an AMI meter. Dr. Davis testified that because of the differences in intensity and types of signals, Dr. Marino's study has no relevance to PECO's AMI meters. December 6, 2016 Hearing Transcript at 1107-1108. Meanwhile, Dr. Israel testified that is was not possible to assign some level of significance to the results of a study conducted on only one person. Dr. Israel stated, "We actually identify such studies as case reports, or we talk about them as anecdotes. I think it can be an interesting story, but it has to be given appropriate weight, which is very little, in thinking about medicine and medical issues, because a study of one person doesn't really allow you not only to have much confidence in the findings, but also how to extrapolate a population." December 8, 2016 Hearing Transcript at 1547 – 1548.

Regarding the May 2016 NTP report, at the time of the hearing, the NTP Report was in draft form. Dr. Davis testified that the methodology of the May 2016 NTP

report was not relevant to the RF exposure from a smart meter because the power densities used in the NTP study were extraordinarily high in comparison to the potential exposure from a PECO AMI meter. Dr. Davis testified as follows:

> "[T]he interesting thing that I noticed about it is that it exposed mice and rats to radiation in the 900 megahertz range, and the lowest exposure that he used was nearly 20 times greater than the FCC whole body average. So it may well be that it's a study that's been done at a relatively high power density that's not relevant, certainly not relevant to the incredibly low exposures that you get from PECO's AMI and AMR meter."

December 6, 2016 Hearing Transcript at 1090. When asked how that exposure compares to the exposure from a PECO AMI meter at a distance of one meter, Dr. Davis testified that "it comes out to be about 300 million times smaller." December 6, 2016 Hearing Transcript at 1091. As Dr. Davis testified, the NTP studies were done on rats and mice at a higher energy density than the FCC limits. Dr. Davis also noted several potential problems with the May 2016 NTP study as follows:

> First of all, the species of rat chosen in the study are a species that is designed to get cancer normally. My understanding of the study is that the percentage of rats that got cancer in the study that were RF exposed is the same you would get in a normal population of these rats that were not exposed. In the study, the rats that were exposed, lived longer than the controlled animals and 40 percent of the controlled animals died.

December 7, 2016 Hearing Transcript at 1282. Dr. Davis also testified that it was not possible to prove conclusively that any biological effect would be adverse in humans based solely on animal studies. December 7, 2016 Hearing Transcript at 1208.

Dr. Israel, meanwhile, testified that he took the May 2016 NTP report into consideration, but it did not change his opinion and noted that he did not give it the weight he would give a final, peer-reviewed report. December 8, 2016 Hearing Transcript at 1527-28; December 9, 2016 Hearing Transcript at 1614. When he was asked to ignore, for argument's sake, that the May 2016 NTP report was in draft form and to consider if one study like the May 2016 NTP report could decide the question of whether RF fields cause cancer, Dr. Israel stated, "One study of an exposure and measurement of some outcome I don't think could ever show, at least in terms of what scientists and physicians ask about causation, no one study could show causation." December 8, 2016 Hearing Transcript at 1528. Moreover, Dr. Israel testified that he took possible issue with the characterization of the May 2016 NTP report as having been "peer-reviewed." It was explained during cross-examination by the Complainant's counsel that the May 2016 NTP report was reviewed by experts selected by the National Institute of Health, but Dr. Israel explained that "peer review in our world has a very special meaning. This would not qualify as peer review in the world that I live in as a scientist. Peer review is done by experts that are anonymously chosen by either an editor, or a department head, or a chairman of a granting agency, and the anonymity is considered a key part of the peer review process." December 9, 2016 Hearing Transcript at 1614-15.

Thus, our review of the record indicates that PECO's experts did, in fact, consider Dr. Marino's EHS study and the May 2016 NTP report in forming their expert opinions and testimony in this proceeding, along with all the other studies and reports that were disclosed in this proceeding as having been relied upon by PECO's experts. While PECO's experts did not weigh the EHS study and May 2016 NTP report the same as the Complainant's expert, they sufficiently explained their reasons for giving less weight to this information in forming their opinions. As discussed more extensively above, the evidence offered by PECO through its experts satisfied PECO's burden of

production in this proceeding. Accordingly, we reject the Complainant's argument in her second Exception that PECO failed to meet its burden of production.

Finally, we acknowledge that the Complainant requests in the second Exception that we take "judicial notice" of the fact that, subsequent to the close of the record, the final NTP report was expected to be released in the fall of 2018 and that the NTP website expected some of the conclusions to be changed to indicate stronger levels of evidence that cell phone RF fields caused tumors in rats. We take official notice that a final NTP report was released in November 2018, but it is not an appropriate use of the "official notice" doctrine[33] to do as the Complainant requests because the record demonstrates that the substance of what the final NTP report says and the weight it should be given by an expert are not obvious and notorious to an expert in this agency's field. With that said, we recognize that it is possible for the science related to the question of low-level RF exposure and human health to evolve and for new studies and reports to be published following the close of the record in this proceeding. It has been nearly three years since the Second Amended Complaint was filed by the Complainant in June 2016 and multiple days of evidentiary hearings have been held. We cannot forever hold in abeyance a decision on this matter in recognition that the next piece of scientific evidence or study may bring to light information that was not considered by the experts as of the close of the evidentiary record. Should either Party determine that there is a

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[33] *See Ramos v. Pennsylvania Board of Probation and Parole*, 954 A.2d 107, 110 (Pa. Cmwlth. Ct. 2008) (quoting *Falasco v. Pennsylvania Board of Probation and Parole*, 521 A.2d 991, 995, n.6 (Pa. Cmwlth. Ct. 1987) (""Official notice" is the administrative counterpart of judicial notice and is the most significant exception to the exclusiveness of the record principle, allowing an agency to take official notice of facts which are obvious and notorious to an expert in the agency's field and those facts contained in reports and records in the agency's files, in addition to those facts which are obvious and notorious to the average person; thus, official notice is a broader doctrine than is judicial notice and recognizes the special competence of the administrative agency in its particular field and also recognizes that the agency is a storehouse of information on that field consisting of reports, case files, statistics and other data relevant to its work.")

material change in the underlying science that would change the facts in this proceeding, the procedural and substantive rights of the Parties appearing before this Commission are protected under our Regulations, at 52 Pa. Code § 5.571 (allowing parties to petition to reopen a record prior to a final decision for the purpose of taking additional evidence because material changes of fact have occurred since the conclusion of the hearing) and 52 Pa. Code § 5.572 (allowing parties to petition for rehearing after a final decision). We note that since the final NTP report was released in November 2018, as of the entry date of this Order, which is shown on the last page of this Order, the Complainant has not filed a petition under 52 Pa. Code § 5.571 seeking to reopen the record for the purpose of taking new or additional evidence in light of the conclusions stated in the final NTP report.

Based on our review of the record and the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 2.

g. Complainant's Exception No. 3 and Disposition

In her third Exception, the Complainant argues that the ALJ erred by: (1) not accepting Dr. Marino's testimony regarding background electromagnetic exposure at the Complainant's residence; (2) relying upon Dr. Davis' calculations because they compare peak to average exposures; (3) relying upon Dr. Davis' calculations of average exposure from an AMI smart meter over the course of 24 hours; and (4) by relying upon the FCC's limits because they have not been updated in decades. Murphy Exc. at 15-19 (citing Murphy I.D. at 8-10, 28-29; Murphy M.B. at 44, 47-48; Murphy R.B. at 23, 25).

In Reply, PECO submits that all of these arguments can be dismissed based on responses provided in PECO's Main Brief. First, PECO counters that Dr. Marino's testimony regarding background electromagnetic exposure should be doubted because Dr. Marino did not do any measurements or calculations of background or ambient fields

at the Complainants' residences or places of work, and Dr. Davis testified that people's exposure to fields from everyday sources, including UHF radio stations, is much higher than fields from PECO's AMI meters. PECO R. Exc. at 13 (citing M.B. at 28-30). Second, PECO explains that Dr. Davis' testimony regarding exposure was based on the average exposure to allow for comparison with the FCC limit that is also based on average exposure over time. PECO explains further that Dr. Davis also compared the peak emissions from the AMI meters to the FCC limit and demonstrated that even the peak emissions are 37.5 times smaller than the exposure that is allowed on an average basis. PECO R. Exc. at 14 (citing PECO M.B. at 28-20, Murphy St. 3 (Davis), Exh. CD-3). Third, PECO argues that the record demonstrates that the FCC continues to re-evaluate the science impacting its limit but has found the scientific evidence regarding adverse biological effects from non-thermal exposure levels as "ambiguous and unproven." PECO R. Exc. at 14 (citing PECO M.B. at 45-46).

Upon review, we shall deny the Complainant's third Exception for the reasons discussed below. As an initial matter, we are not persuaded by Complainant's argument that the FCC standard is outdated and therefore not protective of human health. The record demonstrates, through Dr. Davis' testimony, as discussed above, that the FCC, in establishing and maintaining its current standard, has worked and continues to work with other federal agencies that have authority in health and safety in evaluating scientific research on low-level RF exposure and human health. The FCC has concluded that the scientific evidence regarding adverse biological effects from non-thermal exposure levels is "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." Thus, we find that the FCC's limits on RF fields from AMI meters are relevant to our review of whether the RF exposure levels from PECO's smart meter are safe.

Moreover, because the FCC's limits are established based on average exposure, Dr. Davis' calculations of average exposure from a PECO smart meter are

relevant. PECO must present its data in the same format to provide for an "apples to apples" comparison in order to determine if the PECO AMI meters are in compliance with the FCC limit.

We reject the Complainant's argument that Dr. Davis' calculated average exposure levels from a smart meter are misleading given that FCC exposure limit is calculated as an average over 30 minutes while Dr. Davis calculated the average over a 24-hour period. Dr. Davis explained his reasoning for averaging the meter emissions over 24 hours: "Well since these meters only transmit perhaps six times a day, you would have to say well what 30 minutes are you going to average over. Because you could average over 30 minutes when the meter is not transmitting and then the average would be zero. I'm just looking at the chronic overall time exposure from these meters." December 7, 2016 Hearing Transcript at 1246. We find that Dr. Davis' averaging time to be reasonable. A thirty-minute average could be zero as Dr. Davis explained. In our opinion, averaging over twenty-four hours provides a realistic data point for comparison with the FCC limit.

Dr. Davis also provided a calculation of the peak transmission from the AMI meter. As we can see from Table 1 below, Dr. Davis' peak calculation agrees closely with Dr. Marino's calculation of peak RF emissions. Dr. Davis' peak value was also below the FCC limit. We note that as Mr. Pritchard testified, the meter transmits six times per day in Ms. Murphy's neighborhood for a 70-millisecond duration each time.[34] Thus, even if the AMI meter transmitted continuously at its peak level for the entire 30 minutes, rather than at its actual length of time of less than one second/day, it would be in compliance with the FCC limit.

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[34] *See*, *supra*, note 20.

Table 1

Comparison of FCC Limit and PECO AMI Meter Transmission Levels

	FCC Maximum Permissible Exposure Limit for General Population – 30 min average 47 C.F.R. § 1.1310 (2013)	**Peak Transmission Level – Davis CD-3**	**Peak Transmission Level - Marino Direct 1**	**Average Transmission Level – Davis CD-2**
FlexNet Meter only (ZigBee trans-missions are negligible)	0.6 mW/cm^2	0.016 mW/cm^2	0.18 mW/cm^2	7.8×10^{-8} mW/cm^2

Moreover, Dr. Davis testified that PECO's AMR meter provides 83% more RF exposure at average levels than an AMI meter. PECO St. 2 at 5, PECO Exh. CD-8. Dr. Davis also testified that the peak values of AMI exposure, which is the basis of the Complainant's theory in this case, is twice as high as peak value of AMR exposure, and as shown above, AMI peak exposure is below the FCC's limit.

Based on the foregoing discussion, we shall deny the Complainant's Exception No. 3.

h. Complainant's Exception No. 4 and Disposition

In her fourth Exception, the Complainant states that the ALJ erred in accepting PECO's position that there is no reliable scientific basis for concluding that RF exposure is capable of causing any adverse biological effects in humans. Murphy Exc. at 19 (citing Murphy I.D. at 29). The Complainant submits that Dr. Davis took an unusually stark position that he is "absolutely certain" that low-level RF exposure cannot cause harm even if children are chronically exposed to it. Murphy Exc. at 19-20. The

Complainant argues that Dr. Davis incorrectly ignored the May 2016 NTP report, which, according to Complainant, shows that there is reliable scientific evidence of possible biological effects on humans from RF exposure at levels below the FCC limit. Murphy Exc. at 21. The Complainant notes that both Dr. Davis and Dr. Israel were incorrect in their assessments of the IARC classification of RF as a possible carcinogen. The Complainant notes that Dr. Davis disagreed with the IARC classification. The Complainant states that the ALJ erred in accepting Dr. Israel's reading of the IARC classification to mean no evidence of cancer risk. Murphy Exc. at 21-22 (citing Murphy M.B. at 71).

In Replies, PECO provides further explanation of Dr. Davis' conclusion that the FCC deems the science ambiguous and unproven regarding potential adverse health effects from low levels of exposure to RF emissions. PECO explains that the FCC states that proof of harmful biological effects is ambiguous and unproven because the FCC makes it clear that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." PECO R. Exc. at 15 (citing FCC's online FAQ). Regarding the IARC classification that radio frequency fields are a "possible" carcinogen, PECO explains that Dr. Israel provided context for understanding, referring back to its Main Brief, p. 37, as discussed above.

Upon review, we shall deny the Complainant's fourth Exception for the reasons that follow. As discussed above, Dr. Davis testified that the FCC's stated conclusion that proof of harmful biological effects from low-level RF exposure is "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." Moreover, Dr. Davis provided testimony about the scientific and technical principles relevant to this case, including his analysis of the power densities and pulse patterns used in certain underlying scientific studies, such as the EHS study and May 2016 NTP report, as compared to the actual exposure from a PECO AMI meter.

Additionally, regarding the IARC classification that RF fields are a "possible" carcinogen, the record reflects that Dr. Israel provided context for his understanding of this classification. Having considered the IARC classification, among other information, Dr. Israel still provided his unequivocal opinion that there is no reliable medical basis to conclude that RF fields from PECO's electric AMI meter caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by the Complainant. Murphy Rebuttal Testimony of Mark Israel at 11-32. Dr. Israel's overall medical opinion is that exposure to RF fields from PECO's smart meters have not been and will not be harmful to the Complainant's health. He held both his symptom-specific and overall medical opinions to a reasonable degree of medical certainty. Murphy Rebuttal Testimony of Mark Israel at 32. Dr. Davis' testimony and Dr. Israel's opinion constitute legally competent evidence that satisfied PECO's burden of production in this proceeding. Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 4.

i. Complainant's Exception No. 8 and Disposition

In her eighth Exception, the Complainant avers that ALJ Heep failed to give any weight to the Complainant's testimony about her extreme sensitivity to RF exposure or to Dr. Prociuk's recommendation that the Complainant avoid RF exposure from PECO's smart meter. The Complainant states the Commission lacks the authority to override the decision of the Complainant and her doctor about her health risks from smart meter exposure. Murphy Exc. at 28 (citing Murphy I.D. at 9-10, 24-25). The Complainant explains that there is no precedent for the Commission to override the judgement of medical professionals. According to the Complainant, neither the utility nor the Commission's attempt to second guess the medical judgment of physicians who treat non-paying utility customers when they submit medical certificates in order to prevent the utility from shutting off their power. The Complainant asserts that the

Commission should not permit the second guessing of medical judgement here. Murphy Exc. at 29 (citing 66 Pa. C.S. 1406(f)).

In Replies, PECO asserts that the Murphy I.D. does not override the judgement of medical professionals. PECO provides that the testimony from the treating physicians does not support the Complainant's burden of proving that they were or will be harmed by PECO's smart meters. PECO R. Exc. at 23-24.

Upon review, we shall deny the Complainant's eighth Exception. As discussed above, the Complainant had the burden of proving the allegations in her Amended Complaint and that the utility is responsible for the problem. Specifically, the Complainant was required to demonstrate by a preponderance of the evidence that she is "uniquely susceptible to Electro Magnetic Field and Radio Frequency radiation", as she alleged in her Second Amended Complaint, and that PECO's use of an AMR meter has or an AMI meter at her residence will cause harm to her health, also as she alleged in her Second Amended Complaint. While we accepted the testimony of Ms. Murphy and her treating physician, Dr. Prociuk, the Complainant nevertheless did not meet her burden of demonstrating that she is a medically sensitive customer of PECO, as explained above. Moreover, as discussed extensively above, the Complainant's expert witness on causation, Dr. Marino, would not state unequivocally that a PECO AMI meter would cause harm to the Complainant's health.

Finally, we wish to address the Complainant's argument regarding medical certificates permitted under 66 Pa. C.S. § 1406(f), 52 Pa. Code § 56.11. The use of a medical certificate to avoid shut-off is a protection afforded by statute and Regulation for a utility customer or a member of the customer's household who is seriously ill or afflicted with a medical condition that will be aggravated by cessation of service. There has been no fact established in this proceeding to demonstrate that a cessation of electric utility service by PECO would aggravate the Complainant's alleged health condition of

EHS. To the contrary, the Complainant has unsuccessfully tried to establish the fact that a continuation of her electric utility service that would include the installation and use of an AMI meter at her residence to measure her consumption would aggravate the Complainant's health. Thus, the Complainant's argument regarding medical certificates used by customers in billing disputes to avoid service shut-off is irrelevant to the issues in this case.

Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 8.

3. Whether "Reasonable" Service under Section 1501 Requires PECO to Make an Exception to the Installation and Use of a Smart Meter at the Complainant's Residence

a. Positions of the Parties

The Complainant asserts that Dr. Marino explained in his testimony that there is a reliable scientific basis to conclude that RF exposure can cause harm to the Complainant but at present it would cost many tens of thousands of dollars to set up the experiment to test the theory on the Complainant. Murphy M.B. at 79 (citing September 5, 2016 Hearing Transcript at 643-44). The Complainant argues that in the absence of a consensus diagnosis, the Commission should defer to the judgment and recommendation of the Complainant's treating physician. The Complainant consulted with her treating physician who recommended that she avoid RF exposure. Murphy M.B. at 79 (citing Re-Direct Testimony of Dr. Peter J. Prociuk, M.D. at 116). The Complainant argues that it does not matter whether the treating physician had read up on RF exposure or was plainly exercising common sense clinical judgment – according to the Complainant, the Commission has no authority or special competence (under Section 1501 of the Code or otherwise) to second-guess the medical judgment of a treating physician. Murphy M.B. at 80. Ms. Murphy is concerned about chronic RF

exposure and is extremely sensitive to RF exposure. She testified that she suffers immediate effects from RF exposure and consulted with a doctor who recommended reduced exposure to RF. Murphy M.B. 80-81 (citations omitted). Given the amount of money already spent by the Complainant to retain legal counsel and expert witnesses, it would be unreasonable to subject the Complainant to RF exposure from an AMI meter absent some compelling justification. Murphy M.B. at 81. According to the Complainant, there is no compelling justification under Act 129. Murphy M.B. at 83. Conceding that the General Assembly may have approved the concept of a smart meter roll out that would encompass all customers with no generalized opt out, the Complainant argues that the General Assembly did not indicate its intent to force exposure on persons like the Complainant. Murphy M.B. at 83. The Complainant argues that Act 129 and Section 1501 of the Code are completely consistent and authorize, if not require, PECO to accommodate customers with legitimate concerns based on their physician's medical recommendation. Murphy M.B. at 83-84.

In response, PECO asserts that it offers its customers, including the Complainant, reasonable alternatives regarding AMI meter installation. PECO M.B. at 50. As to installation of the smart meter in a different location, PECO's witness Mr. Pritchard testified that under PECO's Tariff, Rules 3.2 and 3.4, the customer has the option of relocating the meter to a different location because the customer has the right under the tariff to choose the location of the meter board and socket (while PECO chooses the type of meter). If the customer would like a different location for the AMI meter, they can hire an electrician at the customer's cost to move the meter board/socket to a new location on their property. To the extent such relocation would require work on the PECO system to extend its conductors to the new meter board location, PECO's tariff Rule 6.2 requires the customer to be responsible for the costs 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. PECO M.B. at 50-51 (citing Murphy Rebuttal Testimony of Glenn Pritchard at 10; PECO Exh.

GP-3). PECO notes that this option remains open, and, if the Complainant wishes to explore this option, PECO will work with them to relocate their meter. PECO M.B. at 51.

b. ALJ's Initial Decision

In her Initial Decision, the ALJ recognized that the Commission has previously determined that there is no general "opt out" right of smart meter installation for electric utility customers. Murphy I.D. at 21 (citing *January 2013 Povacz Orde*r).

c. Complainant's Exception No. 6 and PECO's Reply

In her sixth Exception, the Complainant states that the ALJ erred in concluding that PECO acted reasonably in accordance with the Act 129 Installation Plan approved by the Commission. Murphy Exc. at 24 (citing Murphy I.D. at 31-32). The Complainant explains that nowhere in Act 129, the Orders of the Commission, or PECO's tariff is there any requirement that every single customer, including medically vulnerable customers, must accept an RF-emitting smart meter. According to the Complainant, the General Assembly in Act 129 may have approved the concept of a smart meter rollout that would encompass all customers, with no generalized opt-out, but nothing suggests that the General Assembly intended to permit utilities to force customers to accept exposure where they object on a doctor's recommendation, as is the case here. The Complainant explains that there is nothing in the law that mandates this result, and that Section 1501 also prohibits it. Murphy Exc. at 24-26.

PECO asserts that the Complainant's sixth Exception is an "opt out" argument. PECO provides that the Commission's most recent order on an opt out claim is *Frompovich v. PECO*, C-2017-2474602 (Opinion and Order entered May 3, 2018) (*Frompovich)*. According to PECO, the *Frompovich* decision states that the General

Assembly intended for every single customer to accept a smart meter, even if they object based on health concerns. PECO R. Exc. at 20-21.

d. Disposition

As the ALJ correctly concluded, we have previously determined that Act 129 does not allow an EDC customer to "opt out" of smart meter installation generally. Murphy I.D. at 21 (citing *January 2013 Povacz Order)*. However, we also previously concluded, as discussed above, that it is our duty under Section 1501 of the Code, 66 Pa. C.S. § 1501, to hear and adjudicate individual formal complaints raising physical or health safety issues regarding a utility's smart meter installation and use. *Kreider*. Here, the Complainant alleged in her Second Amended Complainant that she is a medically sensitive customer of PECO's with unique sensitivity to RF fields and that the RF exposure from a PECO smart meter that PECO proposes to install at the Complainant's residence and use to measure her usage will adversely affect her health. Based on our review of the record, as discussed extensively above, we have concluded that the Complainant did not meet her burden of proof in demonstrating that she is in fact a customer with medical sensitivities to RF fields or that RF exposure from a PECO AMR meter has or an AMI meter will adversely affect her health. Therefore, the Complainant has failed to demonstrate that the RF exposure from a PECO smart meter is unsafe.

The Complainant essentially argues it would be absurd for the Commission to allow PECO to install and use an AMI meter on the Complainant's property given her medical needs as testified to by the Complainant and her treating physician; that the General Assembly did not intend an absurd result; and that Section 1501 requires PECO to accommodate the medical needs of this customer by installing only an analog metering

device on her property. However, we reiterate that the Complainant has failed to demonstrate that the RF exposure from a PECO smart meter is unsafe. Accordingly, her request to not receive an AMI meter as part of receiving electric service from PECO is essentially the same as any other opt out request based on customer preference. As we previously indicated in the *January 2013 Povacz Order*, Section 2807(f)(2) of the Code, *supra*, is controlling here, and the use of the word "shall" in the statute indicates the General Assembly's direction that all customers will receive a smart meter. If the General Assembly intended for EDCs to invest in and maintain two separate sets of meter systems based on customer preference – an analog system separate from an AMI system – as part of furnishing "adequate, efficient, safe, and reasonable service and facilities"[35] at "just and reasonable"[36] rates charged customers, it would have plainly stated as much in Act 129, but it did not.

Based on the foregoing discussion and analysis, we shall deny the Complainant's sixth Exception.

4. Whether the Complainant's Substantive Due Process Rights Will Be Violated by an Order Finding for PECO

a. Positions of the Parties

The Complainant argues that should the Commission rule in favor of PECO in this proceeding and thus force the Complainant to accept the exposure of RF fields against her wishes and against the recommendation of her physician, there would be an obvious violation of the Complainant's due process clause of the 14th Amendment of the

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[35] *See*, *supra*, 66 Pa. C.S. § 1501.

[36] *See* 66 Pa. C.S. § 1301, which provides "Every rate made, demand, or received by any public utility…shall be just and reasonable and in conformity with regulations or orders of the [C]ommission."

United States Constitution as well as the due process protections in Article 1, Section 11 of the Pennsylvania State Constitution. The Complainant argues that this is evident from the discussion of broccoli in the legal debate about the Affordable Care Act that culminated in *National Federation of Independent Businesses v. Sebelius*, 567 U.S. 519, 660 (2012). During the argument in that case, Justice Scalia asked whether Congress could require citizens to buy broccoli. While the issue in that case was determining the extent of Congress' power under Article I, commentators noted that requiring a consumer to buy broccoli would violate fundamental notions of due process, and forcing a consumer to eat broccoli (not just purchase it) would certainly violate due process. Murphy M.B. at 77-78 (citing Michael C. Dorf, *Commerce, Death Panels, and Broccoli: Or Why the Activity/Inactivity Distinction in the Health Care Case was Really About the Right to Bodily Integrity*, 29 GA. ST. U.L. REV. 897, 917 (2013)).

The Complainant argues that PECO is attempting to do just that – instead of asking its customers for permissions to expose them to RF emissions (purchasing broccoli with option to eat), it is forcing RF exposure on them without consent (force feeding broccoli). The Complainant argues that this raises serious constitutional issues. Murphy M.B. at 78 (citing *Phillips v. County of Allegheny*, 515 F. 3d 224, 235 (3d Cir. 2008) ("[I]ndividuals have a constitutional liberty interest in personal bodily integrity that is protected by the Due Process Clause of the Fourteenth Amendment."; *In re Cincinnati Radiation Litig*., 874 F. Supp. 796, 810-11 (S.D. Oh. 1995) ("The right to be free of state-sponsored invasion of a person's bodily integrity is protected by the Fourteenth Amendment guarantee of due process.")). The Complainant submits that any Commission interpretation of statutes or regulations that would infringe constitutionally protected rights for the Complainant should be avoided. Murphy M.B. at 70, 78.

In response, PECO argues that the Complainant's substantive due process argument fails when viewed against the correct standard and burden in this proceeding and given Dr. Marino's testimony that "there is no evidence that would warrant the

statement" that PECO's AMI meters will harm the Complainants. See PECO M.B. at 27, n.12.

b. ALJ's Initial Decision

The ALJ concluded that there is no violation of the Complainant's due process rights here. Murphy I.D. at 23. The ALJ explained that Act 129 directed EDCs to file smart meter technology procurement and installation plans with the Commission for approval and the Act requires any smart meter technology to have bidirectional or two-way communication technology. Murphy I.D. at 21 (citing 66 Pa.C.S. § 2807(g)). The ALJ noted that the Commission approved the smart meter installation plan developed by PECO and PECO is replacing AMR meters with AMI or "smart meters" in accordance with that approved plan. The ALJ provided that the Commission concluded that there is no provision in the Code of the Commission's Regulations or Orders that allows a PECO customer to "opt out" of smart meter installation. Murphy I.D. at 21 (citing *January 2013 Povacz Order*). The ALJ concluded that by seeking to install a smart meter at the service address, PECO was and is attempting to comply with Act 129, the orders of the Commission and its tariff. Murphy I.D. at 22.

The ALJ stated that the due process requirements of the Pennsylvania Constitution and the 14th Amendment to the Federal Constitution are indistinguishable. According to the ALJ, the U.S. Constitution requires that the Commission provide due process to the parties appearing before them and this requirement is met when the parties are afforded notice and the opportunity to appear and be heard. Murphy I.D. at 23 (citing *Caba v. Weaknecht*, 64 A.3d 39 (2013), citing *Turk v. Dep't of Transp.*, 983 A.2d 805, 818 (Pa. Cmwlth. 2009); *Schneider v. Pa. Pub. Util. Comm'n.*, 479 A.2d 10 (Pa. Cmwlth. 1984)). The ALJ opined that a review of the history in this matter shows that the Complainant has had the opportunity to be heard during several weeks of administrative procedures and hearings spread over a year. The ALJ stated that opportunity continued

with briefs submitted on Complainant's behalf and the instant review addressing her concerns about PECO meters. Murphy I.D. at 23. Regarding the substantive matter, the ALJ, after reviewing the testimony from the experts and the testimony of the Complainant herself, concluded that the Complainant did not meet her burden of proving that the installation of a smart meter would adversely affect her health or otherwise constitute unreasonable or unsafe service. Murphy I.D. at 32.

c. Complainant's Exception No. 7 and PECO's Reply

In the seventh Exception, the Complainant states that the ALJ erred in concluding that mandated exposure to RF-emitting smart meters would not violate due process. The Complainant avers that the ALJ erroneously concluded that because the Complainant had an opportunity to be heard in these proceedings, there is no due process violation. Murphy Exc. at 26 (citing Murphy I.D. at 20-23). According to the Complainant, the ALJ confused the Complainant's argument, which is a substantive due process claim, with a procedural due process claim. The Complainant explains that her argument is that forced RF exposure violates basic principles of respect for bodily integrity and cannot be justified here, regardless of the procedure provided. Murphy Exc. at 26.

In its Replies to the Complainant's seventh Exception, PECO provides that the Complainants are correct that the Initial Decision discussed the due process argument as a procedural, rather than a substantive, due process argument. PECO notes that if that is error, it is harmless, because elsewhere the Initial Decision made the determination that the Complainants did not meet their burden of proving the EFs from PECO's AMI meters would harm them. According to PECO, the Initial Decision thus correctly concluded that the factual predicate of the substantive due process argument – "harm to bodily integrity"

– was not proven. PECO provides that the substantive due process argument should thus be dismissed because, quite simply, the Complainants did not prove (and in fact admit that they did not prove) that they would be harmed by PECO's AMI meters. PECO R. Exc. at 22-23.

d. Disposition

Clearly, the ALJ understood the Complainant's due process claim was more than a procedural question. Perhaps out of an abundance of caution, the ALJ discussed the procedural question first followed by her substantive disposition of the claims before her. In the Initial Decision, the ALJ made the determination that the Complainant did not meet her burden of proving the RF exposure from PECO's AMI meter would harm her health. Likewise, we determine above that the Complainant failed to demonstrate by a preponderance of the evidence that RF exposure from a PECO AMR or AMI meter caused or will cause or contribute to adverse health effects to the Complainant. In failing to meet the standard or burden in this proceeding, the Complainant has not shown that "forced RF exposure" from a PECO AMR or AMI meter violates "basic principles of respect for bodily integrity" or her substantive due process rights under the Pennsylvania or Federal Constitutions.

Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 7.

IV. Conclusion

In light of the above discussion, we shall: (1) deny the Complainant's Exceptions; (2) modify, in part, the ALJ's Initial Decision; and (3) dismiss the Complaint, the Amended Complaint, and the Second Amended Complaint, consistent with this Opinion and Order; **THEREFORE,**

IT IS ORDERED:

1. That the Exceptions filed by Laura Sunstein Murphy on May 14, 2008, to the Initial Decision of Administrative Law Judge Darlene D. Heep issued on March 20, 2018, at Docket No. C-2015-2475726, are denied, consistent with this Opinion and Order.

2. That the Initial Decision of Administrative Law Judge Darlene D. Heep, issued on March 20, 2018, at Docket No. C-2015-2475726, is modified, in part, consistent with this Opinion and Order.

3. That the Formal Complaint filed by Laura Sunstein Murphy, on April 7, 2015, at Docket No. C-2015-2475726, is dismissed.

4. That the Amended Complaint filed by Laura Sunstein Murphy on July 28, 2015, at Docket No. C-2015-2475726, is dismissed.

5. That the Second Amended Complaint filed by Laura Sunstein Murphy on June 6, 2016, at Docket No. C-2015-2475726, is dismissed.

6. That this proceeding is marked closed.

BY THE COMMISSION,

Rosemary Chiavetta
Secretary

(SEAL)

ORDER ADOPTED: May 9, 2019

ORDER ENTERED: May 9, 2019

Appendix D

PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17105-3265

Public Meeting held May 9, 2019

Commissioners Present:

Gladys M. Brown Dutrieuille, Chairman
David W. Sweet, Vice Chairman
Norman J. Kennard
Andrew G. Place
John F. Coleman, Jr.

Cynthia Randall and Paul Albrecht C-2016-2537666

v.

PECO Energy Company

OPINION AND ORDER

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BY THE COMMISSION:

Before the Pennsylvania Public Utility Commission (Commission) for consideration and disposition are the Exceptions filed by Cynthia Randall, PhD (Ms. Randall or the Complainant)[1] and Paul Albrecht on May 14, 2018, in response to the Initial Decision of Administrative Law Judge (ALJ) Darlene D. Heep, served on the Parties on March 20, 2018, in the above-captioned proceeding (Randall Initial Decision or Randall I.D.). PECO Energy Company (PECO or the Company) filed Replies to the Complainant's Exceptions on June 4, 2018. The Randall Initial Decision denied the Formal Complaint (Complaint) filed by Ms. Randall and Mr. Albrecht on April 1, 2016. For the reasons discussed below, we shall deny the Complainant's Exceptions, modify, in part, and adopt, in part, the Initial Decision of ALJ Heep, and dismiss the Complaint, consistent with this Opinion and Order.

I. Background

This case involves an inquiry concerning the safety of the Complainant's exposure to the level of radio frequency (RF) fields, or electromagnetic energy,[2] from the

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[1] We will follow the format used by Cynthia Randall and Paul Albrecht in their Exceptions. Cynthia Randall is referred to as Ms. Randall rather than Dr. Randall. The Exceptions focus on Ms. Randall as the Complainant and states that "it is unnecessary to address Mr. Albrecht's factual circumstances." Randall Exc. at 1, n.1.

[2] As the ALJ noted in the Randall Initial Decision, the expert witnesses in this proceeding used the terms "electromagnetic fields" or "EMFs" and RF fields interchangeably to address the emissions or exposure levels concerns of the Complainant in their testimonies. Randall I.D. at 1, n.3. The ALJ used the abbreviation "EF" to refer to these emissions. *Id*. We do not use herein the "EF" abbreviation utilized by the ALJ in the Randall Initial Decision. For disposition purposes herein, we will refer to the emissions of concern as RF emissions or RF field exposure.

advanced metering infrastructure (AMI) meter, or smart meter, that PECO proposes to install at the Complainant's residence and use in the ordinary course to measure the Complainant's electricity consumption.

PECO is an electric distribution company (EDC) subject to the jurisdiction of the Commission. PECO furnishes, owns and maintains the meters in its distribution system. *See* PECO's Tariff Electric Pa. P.U.C. No. 5, Section 6.4, at 14; *see also* Section 14.1, page 22.

Act 129 of 2008 (Act 129 or Act), *inter alia*, amended Chapter 28 of the Public Utility Code (Code) and required EDCs with more than 100,000 customers to file smart meter technology procurement and installation plans for Commission approval and to furnish smart meter technology within its service territory in accordance with the provisions of the Act. Section 2807(f) of the Code provides as follows:

> (f) *Smart Meter technology and time of use rates.*
>
> (1) Within nine months after the effective date of this paragraph, electric distribution companies shall file a Smart Meter technology procurement and installation plan with the commission for approval. The plan shall describe the Smart Meter technologies the electric distribution company proposes to install in accordance with paragraph (2).
>
> (2) Electric distribution companies shall furnish Smart Meter technology as follows:
>
> (i) Upon request from a customer that agrees to pay the cost of the Smart Meter at the time of the request.
>
> (ii) In new building construction.

> (iii) In accordance with a depreciation schedule not to exceed 15 years.

66 Pa. C.S. § 2807(f). The General Assembly found that it was "in the public interest" to implement the measures set forth in Act 129 and that the universal installation of smart meters would enhance the "health, safety and prosperity" of Pennsylvania's citizens through the "availability of adequate, reliable, affordable, efficient and environmentally sustainable electric service at the least cost." *See* H.B. 2200, 192d Gen. Assemb., Reg. Sess. (Pa. 2008)).

By Order entered in 2009, the Commission directed all EDCs subject to Act 129's smart meter requirements, including PECO, to universally deploy smart meter technology within their respective service territories in the Commonwealth in accordance with a depreciation schedule not to exceed fifteen years and in accordance with other guidelines established therein. *See Smart Meter Procurement and Installation*, Docket No. M-2009-2092655 (Implementation Order entered June 24, 2009) (*Smart Meter Procurement and Installation Order*). PECO sought and obtained the Commission's approval to complete the installation of AMI meters for substantially all customers within its service territory by the end of 2014. *See Petition of PECO Energy Company for Approval of its Smart Meter Universal Deployment Plan*, Docket No. M-2009-2123944 (Order entered August 15, 2013)); *see also Petition of PECO Energy Company for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123944 (Order entered May 6, 2010).

PECO, in carrying out its obligations under Act 129 and the relevant Commission's Orders implementing Act 129, sent a letter to the Complainant on May 14, 2013, announcing its plans to install a smart meter on her property. The Complainant objected to the installation of the AMI meter and contacted PECO through an attorney to demand that the company not change the meter. At the time Ms. Randall and

Mr. Albrecht contacted PECO, the Complainant believed that she had an analog meter rather than the AMR meter PECO had installed at her home in 2002. *See* Randall I.D. at 5, FOF Nos. 5-8 (citations omitted).

On January 21, 2016, PECO sent a letter to the Complainant stating that PECO planned to install a smart meter at the Complainant's home in April 2016. The Complainant's attorney sent a letter dated March 2, 2016 stating that the Complainant did not wish to have a smart meter installed at her residence. On March 14, 2016, PECO replied to the Complainant's March 2, 2016 letter, stating that PECO had placed the installation of the smart meter on hold, but notifying the Complainant that PECO planned to replace the Complainant's meter. Complaint at ¶¶ 6,8.

II. History of the Proceeding

On April 1, 2016, the Complainant filed the Complaint with the Commission against PECO in which she stated that she did not wish to have a smart meter installed on her premises because of the health risks presented by the installation of such meters. Complaint at ¶ 6. For relief, the Complainant requested that the Commission: (1) compel PECO to comply with 66 Pa.C.S. § 1501 and Section 57.194; (2) compel PECO to cease attempting to install a smart meter on her property; (3) compel PECO to provide an accommodation for the Complainant based on her medical history; (4) compel PECO to allow the Complainant to utilize an analog meter at her residence; and (5) order a permanent stay of any current or future termination on the part of PECO. Complaint at ¶¶ 30-34. In the alternative, and pursuant to 52 Pa. Code § 1.91, the Complainant respectfully requested that the Commission order the waiver of any rule, regulation or Commission Order that requires PECO to install a smart meter on the Complainant's premises. Complaint at ¶ 35.

PECO filed an Answer and Preliminary Objection on April 21, 2016. In its Answer, PECO denied that the smart meter will have adverse health effects and further averred that the Company is installing these meters in compliance with its obligations under Act 129 and Commission orders. The company also asserts that termination of service is authorized where a customer will not provide access to a meter.

On June 14, 2016, the Preliminary Objection filed by PECO was sustained in part with respect to the request for relief seeking an "opt out" of smart meter installation. It was ordered that a hearing be scheduled to address whether installation of a smart meter at the Complainant's residence, in light of her health concerns, constitutes unsafe and unreasonable service in violation of 66 Pa.C.S. § 1501.

Two days of hearing were held June 7-8, 2016 in *Povacz v. PECO Energy Company*, Docket No. C-2015-2475023.

On August 26, 2016, the Parties' Joint Motion for An Omnibus Schedule Revision was granted,[3] and a revised Pre-Hearing Order was issued which stated that unless there is reference to a specific complainant, expert testimony is considered common testimony between and among all Omnibus Complainants and admitted in accordance with 52 Pa. Code § 5.407.

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[3] The Joint Motion combined the schedules for the following proceedings: *Maria Povacz v. PECO Energy Company*, Docket No. C-2015-2475023; *Laura Sunstein Murphy v. PECO Energy Company*, Docket No. C-2015-2475726; *Cynthia Randall and Paul Albrecht v. PECO Energy Company*, Docket No. C-2016-2537666; and *Stephen and Diane Van Schoyk v. PECO Energy Company*, Docket No. C-2015-2478239. On October 25, 2016, the Complainants Stephen and Diane Van Schoyck filed an unopposed Petition to Withdraw, stating that they were removing their home from the electric grid, and therefore the Van Schoycks did not participate in the Omnibus hearings. Thus, the Omnibus Complainants that participated in the hearings are Ms. Povacz, Ms. Murphy, Ms. Randall and Mr. Albrecht.

Further Omnibus Hearings were held September 15 -16, 2016, September 27, 2016, December 5-9, 2016 and January 25, 2017. The final Omnibus transcript was filed with the Commission on February 14, 2017. The record closed on November 13, 2017, upon receipt of the Parties' Reply Briefs. The record in this proceeding consists of 1,910 pages of transcript and 173 exhibits (the Complainants 132 exhibits, PECO 41).[4]

During the hearing, the ALJ granted the unopposed oral request by the counsel for the Complainants that all medical information and testimony be marked and kept confidential. A Protective Order regarding medical information of the Complainants was issued on March 13, 2018.

On March 20, 2018, the Commission served ALJ Heep's Initial Decision in *Cynthia Randall and Paul Albrecht v. PECO Energy Company*, Docket No. C-2016-2537666. The Commission issued both a confidential "proprietary" version and a non-confidential "non-proprietary" version of the Randall Initial Decision. For the purposes of this Opinion and Order, all references to the Randall Initial Decision below will be to the non-proprietary version.

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[4] Briefing outlines, testimony and exhibits are contained in an eighteen volume Joint Appendix for the Omnibus cases agreed to by the parties and filed in *Murphy v. PECO Energy Company* at Docket No. C-2015-2475726.

As noted above, on May 14, 2018, Ms. Randall filed Exceptions to the Randall Initial Decision.[5] Replies to Exceptions were timely filed by PECO on June 4, 2018.

III. Discussion

A. Legal Standards

As a matter of law, to establish a legally sufficient claim, a complainant must show that the named utility is responsible or accountable for the problem described in the complaint in order to prevail. *Patterson v. The Bell Telephone Company of Pennsylvania*, 72 Pa. P.U.C. 196 (1990) ("*Patterson*"). The offense must be a violation of the Code, a Commission Regulation or Order or a violation of a Commission-approved tariff. 66 Pa. C.S. § 701.

While Act 129 does not provide customers a general "opt-out" right from smart meter installation at a customer's residence, a customer's formal complaint that raises a claim under Section 1501 of the Code, 66 Pa. C.S. § 1501, related to the safety of a utility's installation and use of a smart meter at the customer's residence is legally sufficient to proceed to an evidentiary hearing before an ALJ. *See Maria Povacz v. PECO Energy Company*, Docket No. C-2012-2317176 (Order entered January 24, 2013)

[5] On March 23, 2018, the Complainant's counsel filed a Petition for Additional Time to File Exceptions due to personal and professional commitments. The request was granted by Secretarial Letter dated March 26, 2018. On April 19, 2018, Complainant's counsel filed a second request for a two-week extension, indicating of the untimely passing of a member of counsel's law firm and advising that opposing counsel for PECO did not object to a ten-day extension. By Secretarial Letter dated April 17, 2018, the deadline to file Exceptions was extended until May 14, 2018, with Replies due twenty days thereafter.

(*January 2013 Povacz Order*); *see also Susan Kreider v. PECO Energy Company*, P-2015-2495064 (Order entered January 28, 2016) (*Kreider*).

As the party seeking affirmative relief from the Commission, the complainant in a formal complaint proceeding has the burden of proof. 66 Pa. C.S. § 332(a). The burden of proof is the "preponderance of the evidence" standard. *Suber v. Pennsylvania Com'n on Crime and Deliquency*, 885 A. 2d 678, 682 (Pa. Cmwlth. 2005) (*Suber*); *Samuel J. Lansberry, Inc. v. Pa. PUC*, 578 A.2d 600 (Pa. Cmwlth. 1990), *alloc. denied*, 529 Pa. 654, 602 A.2d 863 (1992) (*Lansberry*); *see also North American Coal Corp. v. Air Pollution Commission*, 279 A.2d 356 (Pa. Cmwlth. 1971). To establish a fact or claim by a preponderance of the evidence means to offer the greater weight of the evidence, or evidence that outweighs, or is more convincing than, by even the smallest amount, the probative value of the evidence presented by the other party. *See Se-Ling Hosiery, Inc. v. Margulies*, 364 Pa. 45, 48-49, 70 A.2d 854, 855 (1950).

The burden of proof is comprised of two distinct burdens: the burden of production and the burden of persuasion. *Hurley v. Hurley*, 2000 Pa. Super. 178, 754 A.2d 1283 (2000). The burden of production, also called the burden of going forward with the evidence, determines which party must come forward with evidence to support a particular claim or defense. *Scott and Linda Moore v. National Fuel Gas Distribution*, Docket No. C-2014-2458555 (Initial Decision issued May 11, 2015) (*Moore*). The burden of production goes to the legal sufficiency of a party's claim or affirmative defense. *See Id.* It may shift between the parties during a hearing. A complainant may establish a *prima facie* case with circumstantial evidence. *See Milkie v. Pa. Pub. Util. Comm'n*, 768 A.2d 1217, 1220 (Pa. Cmwlth. 2001) (*Milkie*). If a complainant introduces sufficient evidence to establish legal sufficiency of the claim, also called a *prima facie* case, the burden of production shifts to the utility to rebut the complainant's evidence. *See Moore*.

If the utility introduces evidence sufficient to balance the evidence introduced by the complainant, that is, evidence of co-equal value or weight, the complainant's burden of proof has not been satisfied and the burden of going forward with the evidence shifts back to the complainant, who must provide some additional evidence favorable to the complainant's claim. *See Milkie,* 768 A.2d at 1220.*; see also Burleson v. Pa. PUC,* 443 A.2d 1373 (Pa. Cmwlth. 1982), *aff'd,* 501 Pa. 433, 461 A.2d 1234 (1983).

Having produced sufficient evidence to establish legal sufficiency of a claim, the party with the burden of proof must also carry the burden of persuasion to be entitled to a favorable ruling. *See Moore*. While the burden of production may shift back and forth during a proceeding, the burden of persuasion never shifts; it always remains on a complainant as the party seeking affirmative relief from the Commission. *See Milkie,* 768 A.2d at 1220; *see also, Riedel v. County of Allegheny*, 633 A.2d 1325, 1328, n.11 (Pa. Cmwlth. 1993); *see also, Burleson*, 443 A.2d at 1375. It is entirely possible for a party to carry the burden of production but not be entitled to a favorable ruling because the party did not carry the burden of persuasion. *See Moore.* In determining whether a complainant has met the burden of persuasion, the ultimate fact-finder[6] may engage in determinations of credibility, may accept or reject testimony of any witness in whole or in part, and may accept or reject inferences from the evidence. *See Moore*, citing *Suber*.

Adjudications by the Commission must be supported by substantial evidence in the record. 2 Pa. C.S. § 704; *Lansberry*, 578 A.2d at 602. Substantial evidence is such relevant evidence that a reasonable mind might accept as adequate to

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[6] In formal complaint proceedings, the Commission, not the ALJ, is the ultimate fact-finder; it weighs the evidence and resolves conflicts in testimony. When reviewing the initial decision of an ALJ, the Commission has all the powers that it would have had in making the initial decision except as to any limits that it may impose by notice or by rule. *Milkie*, 768 A.2d at 1220, n. 7 (citing, *inter alia*, 66 Pa. C.S. § 335(a)).

support a conclusion. *Consolidated Edison Company of New York v. National Labor Relations Board*, 305 U.S. 197, 229, 59 S.Ct. 206, 217. More is required than a mere trace of evidence or a suspicion of the existence of a fact sought to be established. *Norfolk & Western Ry. Co. v. Pa. PUC*, 489 Pa. 109, 413 A.2d 1037 (1980) (*Norfolk*); *Erie Resistor Corp. v. Unemployment Comp. Bd. of Review*, 166 A.2d 96 (Pa. Super. 1961); *Murphy v. Comm. Dept. of Public Welfare, White Haven Center*, 480 A.2d 382 (Pa. Cmwlth. 1984).

Pursuant to Section 1501 of the Code, a public utility has a duty to maintain "adequate, efficient, safe, and reasonable service and facilities" and to make repairs, changes, and improvements that are necessary or proper for the accommodation, convenience, and safety of its patrons, employees, and the public. *See* 66 Pa. C.S. § 1501. Section 1501 of the Code, 66 Pa. C.S. § 1501, provides, in pertinent part, as follows:

> 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 and facilities shall be in conformity with the regulations and orders of the commission.

The term "service" is defined broadly under Section 102 of the Code, 66 Pa. C.S. § 102, in relevant part, as follows:

> **"Service."** Used in its broadest and most inclusive sense, includes all acts done, rendered, or performed, and all things furnished or supplied, and any and all facilities used, furnished, or supplied by public utilities. . .in the performance of their duties under this part to their patrons, employees,

> other public utilities, and the public, as well as the interchange of facilities between two or more of them . . .

Section 1505(a) of the Code, 66 Pa. C.S. § 1505(a), provides that:

> Whenever the commission, after reasonable notice and hearing, upon its own motion or upon complaint, finds that the service or facilities of any public utility are unreasonable, unsafe, inadequate, insufficient, or unreasonably discriminatory, or otherwise in violation of this part, the commission shall determine and prescribe, by regulation or order, the reasonable, safe, adequate, sufficient, service or facilities to be observed, furnished, enforced, or employed, including all such repairs, changes, alterations, extensions, substitutions, or improvements in facilities as shall be reasonably necessary and proper for the safety, accommodation, and convenience of the public.

Pursuant to Section 57.28(a)(1) of our Regulations,[7] 52 Pa. Code § 57.28(a)(1), an EDC must use reasonable efforts to properly warn and protect the public from danger and to exercise reasonable care to reduce the hazards to which customers may be subjected to by reason of the EDC's provision of electric utility service and its associated equipment and facilities. Section 57.28(a)(1), 52 Pa. Code § 57.28(a)(1), provides specifically:

> An electric utility shall use reasonable effort to properly warn and protect the public from danger, and shall exercise reasonable care to reduce the hazards to which employees, customers, the public and others may be subjected to by reason of its provision of electric utility service and its associated equipment and facilities.

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[7] *See Final Rulemaking Order, Rulemaking Re: Electric Safety Regulations, 52 Pa. Code Chapter 57*, Docket No. L-2015-2500632 (Order entered April 20, 2017) (*Electric Safety Final Rulemaking Order*).

An EDC that violates the Code or a Commission Order or Regulation may be subjected to a civil penalty of up to $1,000 per violation for every day of that violation's continuing offense. *See* 66 Pa. C.S. § 3301(a)-(b). The Commission's policy statement at 52 Pa. Code § 69.1201 establishes specific factors and standards the Commission will consider in evaluating litigated cases involving violations and in determining whether a fine is appropriate.

In the Initial Decision, ALJ Heep made thirty-five Findings of Fact and reached eight Conclusions of Law. *See* Randall I.D. at 4-9, 23-24. The Findings of Fact and Conclusions of Law are incorporated herein by reference and are adopted without comment unless they are either expressly or by necessary implication rejected or modified by this Opinion and Order.

As we proceed in our review of the various positions of the Parties in this proceeding, we are reminded that the Commission is not required to consider expressly or at length each contention or argument raised by the parties. *Consolidated Rail Corp. v. Pa. PUC*, 625 A.2d 741 (Pa. Cmwlth. 1993); *also see, generally, University of Pennsylvania v. Pa. PUC*, 485 A.2d 1217 (Pa. Cmwlth. 1984). Thus, any issue or Exception that we do not specifically address shall be deemed to have been duly considered and denied without further discussion.[8]

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[8] The Complainant's Exceptions include an "Introduction" section, which contains arguments not found elsewhere in the numbered Exceptions including: (1) a citation to *Murray v. Motorola*; (2) an argument that the Commission should refrain from deciding this case; and (3) a request for notice and comment rulemaking. PECO R. Exc. at 1. Pursuant to our Regulations, each exception must be numbered and identify the finding of fact or conclusion of law to which exception is taken and cite relevant pages of the decision. 52 Pa. Code § 5.533(b). Because the arguments contained in the Introduction section are non-conforming to the requirements of 52 Pa. Code § 5.533(b), we will not dispose of those arguments appearing in the Complainant's Introduction to Exceptions that do not appear elsewhere in her numbered Exceptions.

B. Litigated Issues

1. Whether the Complainant was Required under Applicable Law to Prove that RF Exposure from a PECO Smart Meter Will Cause the Adverse Health Effects Alleged in the Amended Complaint

a. Positions of the Parties

The Parties each assert that the seminal Commission decision that applies in this proceeding is *Kreider*, *supra*. *See* Randall M.B. at 71; PECO M.B. at 13. However, the Parties disagree over what it is exactly the Complainant must prove in this proceeding based on the Commission's decision in *Kreider* in order for the Complainant to prevail in her Complaint under Section 1501 of the Code. *See* Randall M.B. at 71-73, Randall R.B. at 5-17; PECO's M.B. at 12-23, PECO R.B. at 4-19. We stated as follows in *Kreider*:

> 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.
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> * * *
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> [T]he 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. See, Woodbourne-Heaton Remand Order, slip op., at 12-13 (stating that the ALJ's role was to determine whether there was sufficient record evidence to support a finding that the petitioners would be adversely affected by the reconductoring of the transmission line at issue).

Kreider, slip op., at 21-23 (citing *Letter of Notification of Philadelphia Electric Company 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 Counties*, 78 Pa.P.U.C. 486, 1993 WL 383052 (Pa.P.U.C.), 1992 Pa. PUC Lexis 160, Docket No. A-110550F0055 (Remand Order entered March 26, 1993) (*Woodbourne-Heaton Remand Order*), slip op., at 12-13) (quoted in PECO's Main Brief at 13).

The Complainant argues that the Commission's decision in *Kreider* does not require proof of medical causation, *i.e*., that PECO's AMI smart meter caused or will cause health conditions for the Complainant or will interfere with her health. According to the Complainant, in a Section 1501 complaint alleging human health hazards from the utility's service and facilities, requiring proof of medical causation is so high a burden that it eviscerates PECO's duty to provide safe and reasonable service. The Complainant submits that the Commission, in enforcing Section 1501, must be concerned not just with actual proven harm, but also with the potential for harm, because the role of the Commission includes consideration of policy. Randall M.B. at 71-73; Randall R.B. at 10-12, 17. According to the Complainant, if something is potentially harmful to the Complainant, it is both unsafe and unreasonable as to the Complainant. Randall M.B. at 71; Randall R.B. at 11-12. For the Complainant, this means that proving PECO's use of smart meters adversely affects them and that it is unsafe and unreasonable under the circumstances for PECO to deploy a smart meter at her residence. Randall M.B. at 71.

The Complainant argues that the *potential for harm* is the standard the Commission must consider under Section 1501, because safety regulation cannot wait to act until the possibility of harm is conclusively proven. Randall M.B. at 55 (emphasis added). The Complainant argues that even PECO's witness Dr. Davis admitted that experiments must be conducted on animals and not humans, for obvious reasons, and that because of that necessary limitation, the most an animal study will ever support is a conclusion about the potential for harm to humans. Randall M.B. at 54-55.

The Complainant argues that PECO tries to put the burden on the Complainant to prove RF has conclusively been proven to cause harm, but the Complainant states that PECO should shoulder the burden of proving safety. *Id*. at 57. The Complainant argues that PECO cannot meet that burden, which, according to the Complainant, is the reason why PECO relies so heavily on the Federal Communications Commission (FCC) limits, which the Complainant characterizes as being outdated. According to the Complainant, the most that PECO could hope to prove in these proceedings regarding the safety of smart meters is that the answer to this important question is currently undecided – neither proved nor disproved, with evidence on both sides of the issue. *Id*. at 57.

The Complainant submits that if the Commission requires the Complainant to prove that harm was or will be caused, then:

> Taking PECO's position to its logical but absurd conclusion, it does not matter how much of a risk of harm is presented, no customer could establish a violation of Section 1501 unless they could prove by a preponderance of the evidence (51%) that they have been or will be harmed. Under that reasoning, a 25% risk of electrocution of an electricity customer through

> the action of a Pennsylvania utility would be deemed to be safe and not a violation of Section 1501.

Randall R.B. at 8. The Complainant argues that such result cannot be right, that the General Assembly could not have intended this, and the plain meaning of "safe" does not permit it.[9] Randall R.B. at 8.

Relying upon its statutory interpretation under the Statutory Construction Act, the Complainant argues that there is nothing in the plain language of Section 1501 to support the argument that the Complainant must prove that harm was or will be caused. Randall R.B. at 6-8.[10] In other words, the Complainant submits, a customer is not required to prove causation of harm as is required in a tort or toxic tort claim for damages. *See* Randall R.B. at 8-10.[11] The Complainant argues that the standard applicable to an administrative agency charged with ensuring safety and reasonableness, "is reasonably lower than that appropriate in tort law, which traditionally makes more

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[9] The Complainant cites to the definitions contained in the Merriam-Webster dictionary of "safe" as "free from harm or risk" and "harm" as defined as "physical or mental damage" and "risk" as "possibility of loss or injury." Randall R.B. at 7 (citations omitted). The Complainant also provides numerous other definitions of these and similar terms. *See* Randall R.B. at 7, n.2.

[10] Even though the Complainant describes in her Reply Brief, pp. 6-7, that the Commission's statutory interpretation of the word "safe" in Section 1501 is a "threshold issue," it does not mention this argument in its Main Brief or its Exceptions. We note that PECO did take the opportunity to respond to the Complainant's statutory construction argument in its Reply Brief at pages 18-19, submitting that "since the Commission has a well-developed body of law regarding burden of proof that is specific to this kind of medical/scientific controversy, it would not be appropriate to supplant that precedent with the Merriam-Webster dictionary." PECO R.B. at 19.

[11] The Complainant cites to three cases to emphasize its point through contrast. Randall R.B. at 10 (citing *e.g. Brandon v. Ryder Truck Rental, Inc*., 34 A. 3d 104, 110 (Pa. Super. Ct. 2011), *Viguers v. Phillip Morris USA, Inc*., 837 A.2d 534, 540 (Pa. Super. Ct. 2003), *Spino v. John S. Tilley Ladder Co*., 696 A. 2d 1169, 1172 (Pa. 1997). The Complainant quotes these opinions, which indicate that proving causation is a required element of the cause of action under the applicable law.

particularized inquiries into cause and effect and requires a plaintiff to prove that it is more likely than not that another individual has caused him or her harm." Randall R.B. at 10 (quoting *Allen v. Pennsylvania Engin.* Corp, 102 F.3d 194, 198 (5th Cir. 1996)). The Complainant states that there is no requirement under Section 1501 that she prove that, more likely than not, she has been or will be harmed. Randall R.B. at 17.

The Complainant argues that the Commission did not explain in *Kreider* what it meant to be "adversely affected," and it did not state that Ms. Kreider had to provide proof of tort law causation. In any event, the Complainant argues that the Commission in *Kreider* used the disjunctive *or* to mean that, in addition to proving that she was adversely affected by PECO's use of a smart meter, Ms. Kreider could prevail by proving that service was unsafe or unreasonable. Randall R.B. at 13. The Complainant argues that *Kreider* did not address the specific issue presented here, *i.e*., whether Complainants must prove causation as if this were a tort case or whether she may instead prevail by proving lack of safety (risk of harm) or the unreasonable nature of PECO's conduct. Randall R.B. at 13. The Complainant argues, however, that *Kreider* does indeed suggest that the relevant inquiry is the potential for harm by referring to *Renney Thomas v. PECO Energy Company*, Docket No. C-2012-2336225 (Order entered December 31, 2013) (*Renney Thomas*). Randall R.B. at 13-14 *(citing Kreider*, slip op., at 1). The Complainant submits that the Commission recognized in *Kreider* that the complainant in the *Renney Thomas* case did not need to prove his pregnant wife had already been harmed, but that the proper inquiry was the potential for harm. Randall R.B. at 14. Thus, the Complainant argues that the Commission must consider the potential for harm as well as the reasonableness of PECO's conduct in insisting that Complainants suffer exposure to RF at their homes or properties in order to retain electric service. Randall R.B. at 14.

The Complainant also submits that the Commonwealth Court in *Romeo v. PaPUC*, 154 A.3d 422 (Pa. Cmwlth. 2017) (*Romeo*), "did not discuss the meaning in

Section 1501 of the words 'safe' and 'reasonable,'" and "nowhere did the court state that Romeo had the burden of proving causation of harm, in the tort law sense." Randall R.B. at 14-15.

PECO, on the other hand, argues that the Complainant can prevail only if she proves, by a preponderance of the evidence that her exposure to the RF emissions from PECO smart meters has caused or will cause, contribute, or exacerbate her adverse health conditions. PECO M.B. at 1, 10; PECO R.B. at 11. PECO submits that the Complainant relied exclusively on the testimony of the Complainant's expert witness in this proceeding, Dr. Andrew Marino, who testified that, while he believes that there is potential, or possible, risk from exposure to smart meters – that is, that they "could" cause harm – he also testified that there is "no evidence to warrant the statement" that a PECO smart meter "will," "would," or "did" harm the Complainants. PECO Main Brief at 10.

PECO argues that the Complainant seeks to reverse the normal burden of proof by placing it on PECO and that such reversal would violate PECO's due process rights because, in response to the legislative mandate and Commission Orders, PECO has invested over $750 million to install an AMI system within its service territory – and under the reversed burden of proof proposed by Complainants, they would be allowed to disrupt that investment and deployment without proving that PECO's system causes any harm. PECO submits that this is no way to run a utility system because it effectively gives veto power over any utility initiative to any customer who sincerely believes that the utility system has "potential for harm." PECO M.B. at 14.

Moreover, PECO asserts that the Complainant seeks to have the Commission apply a standard of proof that would normally be used only in a legislative or quasi-legislative function proceeding, such as a rulemaking, even though this instant

proceeding is an exercise of the Commission's quasi-judicial function. PECO M.B. at 4-5.

PECO further argues that the Commonwealth Court's decision in *Romeo* used causation language when remanding the case, which provides support to the view that these cases are about causation. PECO M.B. at 15; PECO R.B. at 13. As quoted by PECO in its Briefs, the *Romeo* court stated (emphasis added by PECO):

> Romeo claimed that the smart meters *cause* safety and fire hazards and have a negative health impact. Just because he cannot personally testify as to the health and safety effects does not mean that his complaint is legally insufficient. He could make out his claim through the testimony of others as well as evidence that goes to that issue.

PECO M.B. at 15; PECO R.B. at 13 (citing *Romeo*, 154 A.3d at 430). PECO submits that the Commonwealth Court did state that the remand in *Romeo* was for the purpose of allowing Mr. Romeo to prove causation. The court did not say that the case was remanded to allow a discussion of "potential" or "risk." PECO R.B. at 13. PECO submits, therefore, that the court's decision in *Romeo* is more consistent with PECO's view of the burden of proof than with the Complainant's view. PECO R.B. at 14.

Moreover, PECO argues that the Commission's decision in *Kreider* provided clear guidance on the standard of proof to be used in a Section 1501 complaint proceeding involving conflicting scientific claims regarding adverse health effects by directing the parties to the early 1990s *Letter of Notification* proceeding involving PECO's reconstruction of its Woodburne-Heaton 230 kV transmission line. PECO M.B. at 15-16; PECO R.B. at 11 (citing *Woodbourne-Heaton Remand Order*, slip op., at 7-8) (citing also *Letter of Notification of Philadelphia Electric Company 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 Counties, 1993 WL 855896 (Pa. P.U.C. 1993), Docket No. 110550F0055 (Final Order entered November 12, 1993) (*Woodbourne-Heaton Final Order*). As PECO explains, the protestants to the Woodbourne-Heaton transmission line, similar to the Complainant in this proceeding, made the claim that the utility facility can be unreasonable even without conclusive evidence that exposure causes harm, which the Commission rejected. The Commission approved the transmission line, stating:

> That by reason of the fact that the additional scientific research and studies presented of record at the hearing in the remanded proceedings do not support a finding or conclusion that there is a conclusive casual connection between exposure to EMFs and adverse human health effects because of the inconclusive nature of said research and studies, when viewed in totality, the Commission's February 9, 1990 Order approving the Letter of Notification . . . is, hereby, affirmed; AND provided that the Woodbourne-Heaton Line must be operated and maintained in compliance with the National Electric Safety Code and with all applicable statutes, regulations and codes for the protection of the public and the natural resources of the Commonwealth of Pennsylvania.

PECO R.B. at 10 (citing *Woodbourne-Heaton Final Order*, slip op., at 11).

PECO submits that the Commission's *Woodbourne-Heaton Final Order* provides a dispositive framework for the burden and standard of proof in the instant proceeding – that is, if the Complainants prove that there is a body of conflicting and inconclusive science, or that the science is "undecided," then the Complainants have failed to meet their burden of proof, and cannot prevail. And PECO asserts that is exactly what the Complainants claim to have demonstrated. PECO M.B. at 18. PECO submits that the rule established in *Woodbourne-Heaton* has been utilized by the Commission to decide transmission line siting cases for a quarter of a century, and it is an appropriate

approach to resolving claims that exposure to a utility facility is unsafe. PECO R.B. at 10.

Moving on from the implications of *Woodbourne-Heaton*, PECO argues that *Kreider* provides a separate, independent basis for concluding that that applicable standard in this case requires the Complainant to prove that PECO's AMI meters will cause, contribute to, or exacerbate their adverse health conditions. PECO emphasizes that *Kreider* states that the Complainants "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*." PECO M.B. at 18 (citing *Kreider*, slip op., at 23.) (emphasis added by PECO). Here, argues PECO, each of the Omnibus Complainants alleged in their respective Complaints that PECO's AMI would cause, contribute to, or exacerbate their specific health conditions. PECO M.B. at 18.

PECO also argues that *Kreider* does not speak of proving the "potential" or "possibility" of harm. PECO M.B. at 19. PECO submits that *Kreider* does not say that the Complainant must prove that "PECO is responsible or accountable for the possibility that the problem described in the Complaint will actually exist," or that they must prove that "PECO is responsible for or accountable for the potential that such a problem may exist," or any other wording. According to PECO, that additional wording is being written in, *post hoc*, by the Complainant's Briefs. PECO M.B. at 19.

PECO does not believe that the scope of the hearing in *Renney Thomas* offers any support for the Complainants' view on burden of proof. The complainant in that proceeding claimed in his formal complaint that "electromagnetic fields pose a threat to fetal brain development" and other body functions. PECO filed preliminary objections claiming that a hearing was not allowed. The ALJ convened oral argument on PECO's preliminary objections to allow the complainant to be heard on the alleged safety issue. Citing *Renney Thomas*, slip op., at 3. Because the complainant in that case provided no

evidence that smart meters constitute a danger to health or physical safety, the ALJ granted PECO's preliminary objections as a matter of law and dismissed the case without a full evidentiary hearing. PECO submits that there is nothing in *Renney Thomas* to suggest the use of a lower standard of proof based on "potential" risk. PECO R.B. at 12-13.

PECO recognizes that the burden of proof that is set forth in *Woodbourne-Heaton*, *Kreider* and *Romeo* have a great deal in common with causation theories that are used in toxic tort litigation. But labelling the argument as being similar to toxic tort causation does not provide any insights into whether it is the proper burden of proof for use in this proceeding. PECO R.B. at 14. To that point, PECO notes that while the Complainants cite to numerous cases that describe what one must prove in a toxic tort case, not a single one of those of cases discusses what standard the Commission should use in this case. PECO R.B. at 14-15 (citations omitted).

Regarding the Complainant's analogy to electrocution, PECO responds:

> [The Complainant is] mixing apples and elephants. Electrocution is a known phenomenon that is known to cause adverse health effects. If a grounded person touches an energized facility without protective gear, the electric current will seek ground through the person's body. Depending upon the voltage and amperage of the energized facility, the person might experience a shock, injury or even death. That general proposition certainly can be demonstrated by a preponderance of the evidence. And, if it was demonstrated by a preponderance of the evidence that a piece of utility equipment had a 25% chance of causing electrocution, it would of course be deemed unsafe.

PECO R.B. at 15. PECO states that for RF emissions, the Complainant admits that she has not demonstrated, by a preponderance of the evidence, that exposure causes injury or

death. And, in that critical way, PECO submits that the Complainant's electrocution analogy is not analogous to exposure to RF emissions. PECO R.B. at 15-16.

b. ALJ's Initial Decision

The ALJ stated if the Complainant has established a prima facie case and the utility rebuts the Complainant's evidence with evidence of co-equal weight, the burden is then upon the Complainant to rebut the utility's evidence by a preponderance of the evidence. Randall I.D. at 10 (citation omitted).[12] The ALJ noted that the Commission stated, in smart meter matters, "[t]he ALJs role in the proceedings 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 will constitute unsafe or unreasonable serve in violation of Section 1501 under the circumstances in this case." Randall I.D. at 12 (citing *Kreider* at 23). To prevail, the ALJ stated that the Complainant must prove her contention that installing an AMI meter is unsafe and unreasonable by a preponderance of the evidence. Randall I.D. at 12. The ALJ implicitly concluded that the Complainant must demonstrate that a PECO smart meter will cause adverse health effects. Randall I.D. at 23.

c. Complainant's Exception No. 5 and PECO's Reply

In the Complainant's fifth Exception, the Complainant states that the ALJ erred by implicitly concluding that the Complainant was required to prove that RF exposure from PECO's meter would cause, contribute to, or exacerbate her conditions and symptoms. The Complainant notes that the ALJ did not explicitly address the issue

[12] The preponderance of evidence standard is explained in the "Legal Standards" section of this Order and will not be repeated.

of whether the Complainant must prove causation, but ultimately decided against the Complainant on this issue by noting that Dr. Marino did not testify that RF exposure from PECO's meter would cause harm to Complainant and that Dr. Davis and Dr. Israel testified that it would not cause harm. Randall Exc. at 23-24. The Complainant states that there is no requirement to prove causation of harm to prove that electric service is not safe or reasonable to the Complainant. The Complainant avers that service that could cause harm to Complainant would violate Section 1501. Randall Exc. at 23-24. The Complainant argued that if an electric facility presented a 10% risk of death by electrocution, surely that risk would support a conclusion that the facility is unsafe or unreasonable and such could still be true of a 1% risk or even a .001% risk or lower. Randall Exc. at 24. This simple explanation, argues the Complainant, illustrates why an agency charged with safety oversight like the Commission should not look at the issue as if this were a tort lawsuit seeking damages. *Id*. In a tort case, a plaintiff would have to prove causation of harm to recover damages, but there is no similar requirement under Section 1501 as to the Complainant and it would defeat the express language and legislative intent to engraft such a requirement. *Id*. (citing Povacz R.B. at 5-17).

In its Replies to the Complainant's fifth Exception, PECO submits that the Complainants reiterate their ongoing position that they do not have to prove that exposure to RF fields from AMI meters will cause them harm, only that it might cause them harm. PECO notes that this issue was fully briefed by both parties. PECO R. Exc. at 18 (citing Complainant's M.B. at 71-73, PECO's M.B. at 12-24, Complainant's R.B. at 5-17, PECO R.B. at 4-19). PECO contends that the Complainant's summary overview of her burden of proof argument does not provide any reason to reject the Initial Decision. PECO R. Exc. at 20.

d. Disposition

Although we believe the ALJ correctly decided the issue, we will provide further clarification on this legal question given the extensive briefing by the Parties on their positions and in an effort to minimize potential future re-litigation of this question in applicable proceedings.

In reaching our conclusion in *Kreider*[13] that we could hear and adjudicate a complainant's allegation(s) of unsafe service and facilities related to an EDC's smart meter, we did not modify the standard or burden of proof that applies to a complainant in a formal complaint proceeding under Section 1501 before the Commission. As we stated in *Povacz v. PECO Energy Company*, Docket No. C-2015-2475023 (Order entered March 28, 2019) (*2019 Povacz Order*):

> In *Kreider*, we correctly stated that the complainant in that case must prove, by a preponderance of the evidence, that the EDC is responsible or accountable for the problem described in the complaint. *Kreider*, slip op., at 23. Because the complainant in that case had alleged that her health was "adversely affected" by the smart meter installed outside of her bedroom and that PECO's use of a smart meter would violate Code § 1501, we explained that it would be the role of the ALJ to determine 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

[13] In *Kreider*, PECO's petition for reconsideration came before us after we had already denied PECO's preliminary objections requesting that we dismiss the complaint as legally insufficient as a matter of law. The main issue before us on reconsideration was whether anything in Act 129, the Commission's Regulations or Commission's Orders prohibited us from holding a hearing when a customer raises safety allegations under § 1501 of the Code concerning smart meter use and installation. We concluded in the negative and denied PECO's petition. Moreover, we stated that to ignore claims relating to the safety of smart meters would be an abdication of our duties and responsibilities under Section 1501 of the Code. *Kreider*, slip op., at 20.

> to measure this Complainant's usage would constitute unsafe or unreasonable service in violation of Section 1501 under the circumstances in that case. Those statements appearing in *Kreider*, in our opinion, are an accurate summary of applicable law, which is discussed extensively above in the "Legal Standards" section of this Order.

2019 Povacz Order, slip op., at 26-27.

Here, Ms. Randall must show that PECO is responsible or accountable for the problem described in the Complaint and that the offense is a violation of the Code, a Commission Regulation or Order or a violation of a Commission-approved tariff. 66 Pa. C.S. § 701; *Patterson*, *supra*. Upon a careful review of the statements contained in the Complaint, this means Ms. Randall must prove, by a preponderance of the evidence, that she is a medically vulnerable customer as to RF exposure given her medical history with cancer and other ailments and that her exposure to the RF fields from the AMI wireless smart meter that PECO plans to install and use at the Complainant's residence to measure her usage has or will "exacerbate" or "adversely affect" her health and, therefore, constitute unsafe and unreasonable service in violation of Section 1501 of the Code. *See* Complaint at ¶¶ 9-14, 16, 19-20, 24, 26, 28-29.

The Complainant has argued that, in order to prevail under Section 1501, she need not demonstrate by a preponderance of the evidence that exposure to the RF emissions from PECO's smart meter, once it is installed at her residence and used for the purpose of measuring her electricity consumption, will cause adverse effects, or harm, to her health. However, this is exactly the allegation made in her Complaint to support her claim that PECO's proposed smart meter constitutes unsafe service under Section 1501 of the Code. As discussed above, the Complainant is required to demonstrate the allegations in her Complaint by a preponderance of the evidence.

Moreover, the Complainant has argued that if she proves the "potential for harm" from the RF exposure from a PECO smart meter, or as she has stated in another way, that the RF exposure "could" cause harm, it is sufficient to prevail under Section 1501, and to require proof of causation in this proceeding would be akin to a tort claim for damages, which is too high a standard. We respectfully reject the Complainant's position. As we stated in the 2019 *Povacz Order*:

> We agree with PECO's position that the standard of review under Section 1501 that we articulated in the *Woodbourne-Heaton Final Order* applies here. The issue on review for our consideration in that case was related to EMFs exposure from an EDC transmission facility and adverse human health effects. We articulated that it must be demonstrated by a preponderance of the evidence that there is a "conclusive causal connection" between exposure to EMFs and adverse human health effects; when the record evidence demonstrates a body of inconclusive scientific research and studies as to the causal connection, the burden of proof is not satisfied. *Woodbourne-Heaton Final Order*, slip op., at 11. Applying that standard here, the Complainant must demonstrate by a preponderance of the evidence a "conclusive causal connection" between the low-level RF exposure from a PECO smart meter and the alleged adverse human health effects.
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> To otherwise address the Complainant's tort law comparison, unlike tort law which includes as a required element proof of harm or injury already occurred, it is important to recognize that our enforcement authority under Sections 1501 and 1505 is not limited to review of claims only involving harm or injury already occurred. Our broad authority under Sections 1501 and 1505 also clearly includes our ability to hear and adjudicate claims that seek to prevent harm. *See e.g., Woodbourne-Heaton Final Order; see also e.g. Renney Thomas v. PECO Energy Company*, Docket No. C-2012-2336225 (Order entered December 31, 2013); *see also e.g. Robert M Mattu v. West Penn Power Company*, Docket No. C-2016-2547322 (Order entered October 25, 2018) (finding that the complainant satisfied his burden in showing that a

> utility's proposed use of herbicide in implementing its vegetation management practices constituted unreasonable service).

2019 Povacz Order, slip op., at 28.

Indeed, this proceeding is a good case in point as multiple days of evidentiary hearings have been held before an ALJ notwithstanding the fact that an AMI meter has yet to be installed at the Complainant's residence.[14] FOF Nos. 5-7. As we continued in the *2019 Povacz Order*:

> Nevertheless, the question of causation is still relevant. When the prevention of harm is involved, the question becomes whether the preponderance of the evidence demonstrates that a utility's service or facilities will cause harm.
>
> To illustrate the point, we wish to highlight the Complainant's hypothetical example of electrocution and PECO's response thereto. In its response to the Complainant's example, PECO acknowledged in its Reply

[14] The Complainant filed this case as a formal complaint proceeding and included the prayer for relief that the Commission stop PECO from terminating her service and direct PECO to allow the Complainant to use an analog meter at her residence and not an AMI smart meter. The record demonstrates that the Complainant is a customer of PECO's, that PECO sent written notice to the Complainant of its plans to install an AMI meter at her residence and that PECO sent written notice of its plan to terminate service to her residence as a result of the Complainant's refusal to allow PECO access to her property to install the AMI meter. After the Complaint was filed by Ms. Randall, PECO ceased its termination efforts as required by our Regulations, at 52 Pa. Code § 56.92, and continued to stay its efforts to install the proposed AMI meter at the Complainant's residence, keeping its existing AMR meter in place. The Parties have fully litigated this case as a formal complaint proceeding and at no point in this proceeding has PECO argued that the Complainant's claims are not ripe or otherwise appropriate for a Commission decision under Section 1501 or 1505 based on the procedural vehicle of the case (*i.e.*, this being a formal complaint as opposed to a petition for relief) or the fact that PECO has not yet installed or begun using the AMI meter at her residence.

Brief that if a showing by a preponderance of the evidence was made that an electric facility presented even a 25% risk of causing harm from electrocution, the facility would be deemed unsafe. We agree with PECO's response, and we add further that, in such a hypothetical example, our oversight authority does not require that we wait for the perfect or foreseeable exposure condition to materialize, such as, for example, a customer not wearing protective gear to walk up to and touch the uninsulated energized facility; instead, *the proven exposure to harm* would be sufficient to deem the facility unsafe in violation of Section 1501 and to direct the utility under Section 1505 to remove the unsafe facility and to furnish a safe facility.

After careful review of the Parties' positions, our concern with the Complainant's "potential for harm" or "capable of causing harm" standard under Section 1501, which we reject, is that it allows the mere demonstration by a preponderance of the evidence that a hazard[13] exists in utility service to be sufficient to prevail under Section 1501. Continuing with the Complainant's hypothetical example, under the Complainant's standard, the mere showing that an energized facility is by its very nature hazardous because it is a source of potential electrocution, or, in the Complainant's words, is a source of "potential for harm" or is "capable of causing harm," would be sufficient for a finding of a violation of Section 1501. Under the Complainant's standard, it would not matter how the utility designs, installs, operates, uses or maintains the energized line to reduce exposure to the hazard and to otherwise warn of and protect from danger. The Complainant's standard rests upon a logical fallacy that equates any hazard with exposure to harm,[14] and, on that basis, according to the Complainant, all hazards must be removed from utility services or facilities in order to be safe. However, even a layperson knows that public utility operations are not, as a general matter, hazard-free. As part of ensuring the safe operation of facilities and the safe provision of service, public utilities are, on a near continual basis, tasked with properly identifying, handling and reducing physical and health hazards to avoid danger to its employees, its customers and the general public. Indeed, the provisions of our Regulations at 52 Pa. Code § 57.28(a)(1), *supra*, recognize that it is the statutory duty of an EDC under Section

> 1501 to use reasonable efforts to properly warn and protect the public from danger and to exercise reasonable care to reduce the hazards to which customers may be subjected by reason of the EDC's provision of electric utility service and its associated equipment and facilities. In our opinion, application of the Complainant's standard, which we reject, is an overreach and would have dire consequences to the daily functioning and operation of public utilities and the provision of utility services within the Commonwealth as well as to our execution of our safety oversight authority over public utility operations. Consequently, we conclude that the Complainant's interpretation of 66 Pa. C.S. § 1501 is not supported by the rules of statutory construction set forth under the Statutory Construction Act. *See* 1 Pa. C.S. § 1921 ("The object of all interpretation and construction of statutes is to ascertain and effectuate the intention of the General Assembly"); *see also* 1 Pa. C.S. § 1922(1) (it is presumed "That the General Assembly does not intend a result that is absurd, impossible of execution or unreasonable").
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> [13] Merriam-Webster online dictionary defines "hazard" as a "source of danger." https://www.merriam-webster.com/dictionary/hazard. The term "danger" is defined as "exposure or liability to injury, pain, harm or loss." https://www.merriam-webster.com/dictionary/danger.
>
> [14] The following simple example helps explain the difference between the two: If there was a spill of water in a room, then that water would present a hazard to persons passing through it. If access to that room was open and no warning was given, then the persons passing through it would be exposed to harm resulting from a slip and fall. If access to that area was prevented by a physical barrier and a warning was posted, then the hazard would remain, but the exposure to harm would be abated.

2019 Povacz Order, slip op., at 29-31. In her Exceptions, the Complainant focuses on the electrocution hypothetical by further arguing that if an electric facility presented even a 10%, 1% or .001% risk of death by electrocution, that the risk would support a conclusion that the facility is unsafe or unreasonable. Randall Exc. at 24. In referencing

PECO's response to the Complainant's hypothetical presented in Reply Brief where the Complainant used a 25% risk as an example, we do not simply draw a bright line in terms of a specific risk percentage being dispositive on the issue of whether an existing or proposed utility facility/service is safe or unsafe. Rather, as we clearly articulated in the *2019 Povacz Order*, the proper focus of an inquiry regarding the safety of a utility facility or service is whether the preponderance of the evidence demonstrates that a utility facility or service caused or will cause harm to the public.

Based on the foregoing discussion, we shall deny the Complainant's Exception No. 5.

2. Whether the Complainant Has Demonstrated by a Preponderance of the Evidence that RF Exposure from a PECO Smart Meter Will Adversely Affect Her Health

a. Positions of the Parties

On the one hand, the Complainant argues that she has met the burden of proof in this proceeding in demonstrating the potential for harm to the Complainant from PECO's AMI smart meter. Randall M.B. at 75-77, 79-80. The Complainant submits that PECO's presentation of evidence did not effectively rebut the evidence presented by the Complainant in this proceeding. Randall M.B. at 41-70. On the other hand, PECO argues that the Complainant did not satisfy her burden of proof in this proceeding in demonstrating that that exposure to RF fields from an AMI meter has caused or will cause, contribute to, or exacerbate any adverse health effects. Indeed, PECO submits that the Complainant concedes she has not proven causation – meaning, she has not proved that PECO's proposed smart meter did, will or would harm the Complainant's health. PECO M.B. at 27; PECO R.B. at 1-3. Regardless, PECO submits that it effectively rebutted the Complainant's evidence presented in this proceeding through the substantial, persuasive expert testimony that it presented. PECO M.B. at 44-49; PECO R.B. at 2.

We begin our more detailed review of the Parties' positions with a summary of the Complainant's presentation of the evidence and PECO's challenges related thereto.

In relevant part, the Complainants' presentation of the evidence included[15] the testimony of Ms. Randall, the expert testimony of Ms. Randall's treating physician, Dr. Ann Honebrink, M.D., and the expert testimony of Dr. Andrew Marino, PhD. Randall I.D. at 16-18. Dr. Honebrink is one of Ms. Randall's treating physicians. Dr. Honebrink is part of the faculty in the obstetrics-gynecology department at the University of Pennsylvania. Dr. Honebrink has been treating Ms. Randall since at least 1989. Randall I.D. at 16-17; FOF 13-15, September 27, 2016 Hearing Tr. at 9-10.

As for Dr. Marino's qualifications, Dr. Marino was a professor at the Louisiana State University Medical School for approximately thirty-three years. At the time of the hearing, he was retired from the medical school and worked developing software intended to diagnose neurological and neuropsychiatric diseases. During his career, he focused on the biological effects of electromagnetic energy and the electrical properties of tissue as they are influenced by that energy. He has a B.S. in physics from Saint Joseph's University and a Ph.D. in biophysics from Syracuse University. Randall I.D. at 17 (citing *Testimony of Dr. Andrew Marino Hearing Transcript* at 565-566); Randall M.B. at 36-37.

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[15] The Complainants Maria Povacz and Laura Sunstein Murphy also presented the testimony of Martin Pall, Ph.D.; however, the Complainant decided to forego discussion of the testimony of Dr. Pall in its Briefs and therefore PECO followed suit. Randall M.B. at 23, n. 1; PECO M.B. at 5. According to the Parties, Dr. Pall testified primarily regarding the mechanism for harm from EF exposure and that his testimony is not relevant to the burden of proof here. Accordingly, Dr. Pall's testimony is not discussed in the Randall Initial Decision or this Order.

The Complainant argues that Dr. Marino's background of scientific education, experience and authorship "uniquely" qualifies him to testify credibly on the issues before the Commission. Randall M.B. at 36. The Complainant states: "Dr. Marino's long career (more than 45 years) focused on the biological effects of [electromagnetic energy] including more than 100 published papers, testimony in 20 cases, and three books – all dealing with the biological effects of [electromagnetic energy]." Randall R.B. at 31; *see also* Murphy M.B. at 40-41. The Complainant claims that: "Dr. Marino is far more qualified than either of PECO's experts." Randall R.B. at 31.

In response, PECO states that it accepted the proffer of Dr. Marino as an expert without objection or *voir dire*, and it continues to accept that Dr. Marino has sufficient background and training to meet the definition of an expert, but PECO sees nothing in those qualifications that makes him "uniquely" qualified to testify in this proceeding. PECO M.B. at 38.

The Complainant submits that she does not self-report as having electromagnetic hypersensitivity syndrome or "EHS," but she does express concern about this risk if chronically exposed to a PECO smart meter at her residence, based on her medical history. Randall M.B. at 32 (citing September 15, 2016 Transcript at 641). The Complainant submits that Ms. Randall testified that she has taken responsible steps to avoid exposure to RF emissions or electromagnetic energy. Randall M.B. at 32 (citing September 27, 2016 Tr. at 59). The Complainant explains that the role of a treating physician is not to make determinations about causation but rather to diagnose disease, give advice about avoiding worsening the disease and treat the disease. Randall M.B. at 33 (citing September 15, 2016 Transcript at 645). The Complainant further submits that there is no consensus clinical diagnosis for EHS, and that in the absence of consensus clinical diagnosis, physicians do the best they can to address EHS based on what is

available in peer-reviewed literature. Randall M.B. at 33 (citing September 15, 2016 Transcript at 645, 647-48).

PECO argues that the testimony of Dr. Honebrink does not meet the burden of proof in this proceeding. When Dr. Honebrink was asked: "In your opinion, has it been scientifically demonstrated the RF [radio frequency] fields from the PECO AMI meter can cause cancer?" She responded: "I really don't have an opinion on that because I have not studied the PECO fields." She was further asked: "In your opinion, has it been scientifically demonstrated that RF fields from the PECO AMI meter can exacerbate cancer?" She answered: "Again, that is not something I have specifically studied." PECO M.B. at 35 (citing September 27, 2016 Tr. at 29).

The Complainant submits that Dr. Marino offered two overall expert opinions in this proceeding. Randall M.B. at 24. His first opinion is "that there is a basis in established science to conclude that the Complainants could be exposed to harm from the radiation emitted by PECO AMI or AMR smart meters." Randall M.B. at 24. The bases for Dr. Marino's first opinion included experimental animal studies, epidemiological studies, his published study on EHS, studies about possible mechanism and studies about pulse structure (as he defined it). Randall M.B. at 26-27 (citing September 15, 2016 Transcript at 594); Randall R.B. at 29. He also relied upon the May 2016 Report of the National Toxicology Program (NTP). Randall M.B. at 60 (citing January 25, 2017 Hearing Transcript at 1854). The Complainant goes on to summarize specific details of these individual studies upon which Dr. Marino relied in forming his opinion. *See* Randall M.B. at 27-29 (citing September 15, 2016 Transcript at 723-32, 596-97, 601-23, 625, 628-29); Randall M.B. at 60-62 (citing January 25, 2017 Hearing Transcript at 1854-56, 1859-61). The Complainant described such details of the bases of his opinion, in relevant part, as follows:

- Dr. Marino presented a chart, Marino Direct 3, showing recent studies on animals exposed to electromagnetic energy at high frequencies, such as smart meters and cellphones, and at low frequencies such as powerlines and household appliances. All the studies show biological effects. Dr. Marino's opinion is that it is unreasonable to dispute the fact that the studies shown in his chart, as well as other studies not listed, show that energy levels comparable to those produced by PECO's smart meters produce biological changes in humans and animals.

- Dr. Marino presented another chart, Marino Direct 4, of peer reviewed epidemiological studies at both high and low frequencies with energy comparable to PECO's smart meters and they show a range of associations. In Dr. Marino's opinion, these epidemiological studies give reason to believe that there is a potential for harm associated with being exposed to RF emissions like that from the PECO smart meter. According to Dr. Marino, that opinion is accepted by those who are independent from industry and not accepted by those who are not independent, which Dr. Marino refers to as being "bonded to industry."[16]

- Dr. Marino performed a research study on EHS and published the results of that research in peer-reviewed literature in 2011, which was coauthored with colleagues at LSU. The purpose of the study was to test whether there is a *bona fide* neurological condition called EHS. The study was performed on one subject, and to a statistical certainty, *i.e*., 95% probability, the subject was able to detect the presence of electromagnetic energy; the physicians who worked on the study conducted appropriate tests to rule out other causes for the subject's symptoms

[16] By referring to individuals who are "bonded to industry," Dr. Marino testified that he means "they were consultants to industry or had some financial relationship or at a minimum an undisclosed conflict of interest with regard to industry. That was summed up in the term bonded." September 16, 2016 Transcript at 835.

when exposed to electromagnetic energy. The study cost more than $500,000 to conduct.

- Dr. Marino has published and co-published various scientific studies and papers espousing different theories regarding the "non-thermal" mechanism by which RF energy can get into the human body and lead to adverse health effects. However, the Complainant submits in her Main Brief that it is not necessary for her to prove mechanism in this proceeding and admits that while the mechanism Dr. Marino's papers describe is a sufficient mechanism there could be better explanations that come along as science advances. The Complainant further submits that this explanation of mechanism is unnecessary to the cause and effect relationship that is demonstrated by the empirical evidence presented by the Complainant in this proceeding.

- Dr. Marino relied upon the May 2016 Report of the NTP, a government agency that studies toxicological effects in the general public due to environmental factors. According to Dr. Marino, the draft NTP report concluded that RF energy that was studied caused cancer in rats, even at RF levels which were below the FCC limits. Dr. Marino testified that the report is still in draft because it has not yet been published in an archival scientific journal, but that the report has been intensively peer-reviewed more than any other report in the history of experimental biology that Dr. Marino knows about. Dr. Marino testified that the report is crucially important because it is a federal government agency that provides the evidence that the recognized basis of the present federal safety regulatory scheme at the FCC is not protective of health. Dr. Marino also testified that the report has direct bearing on the International Agency for Research on Cancer's ("IARC's") classification of low levels of RF energy as a possible carcinogen.

In response to Dr. Marino's first expert opinion, PECO raises a few challenges. First, PECO submits that Dr. Marino actually testified that there is a basis in established science that the Complainants could be "exposed to danger" not "exposed to harm." PECO M.B. at 25 (citing September 15, 2016 Transcript at 578). According to PECO, this is not a trivial difference. Elsewhere in Dr. Marino's testimony, he repeatedly used "risk" and "danger" as synonyms. Indeed, he testified that his definition of "health risks" is "actual or potential danger to human health from manmade electromagnetic energy." Citing September 15, 2016 Transcript at 671. Therefore, whenever Dr. Marino discussed health "risks" or "dangers," his testimony included the "potential" that the smart meters would cause harm. According to PECO, this is not a hypothetical difference, and it goes directly to whether the Complainant met her burden of proof. On direct testimony, Dr. Marino was directly asked to distinguish whether his opinion is that exposure to RF fields from PECO's smart meter "could" – that is, has the potential to – cause harm to the Complainant or that exposure "would" – that is, actually – cause harm to the Complainant. PECO submits that Dr. Marino was absolutely clear that he was speaking only about the potential "could," not the actual "would" and quotes his testimony from the transcript as follows:

> Q: Now, do you have an opinion about whether electromagnetic energy from smart meters could cause the symptoms that were reported by Maria [Povacz] and Laura [Murphy]?
>
> A: Yes.
>
> Q: What is that opinion?
>
> A: It could happen. It could be responsible. It could be a causal relationship. The evidence I think is clear about that. It could.
>
> Q: Do you have an opinion about whether it did cause those symptoms?
>
> A: I have an opinion that I can't say whether it did or not. That's my opinion about "did."

> Q: Okay. So why – why – what is the basis for that?
>
> A: Well because in order to answer that, we would have to do a $500,000 study. That's the only way you can normalize a cause and effect relationship in a given human being. You got to bring them in and do an experiment.
>
> Q: You're talking about with respect to electromagnetic energy?
>
> A: Yes.
>
> Q: Now, do you have an opinion about whether electromagnetic energy from smart meters could cause harm to the health of Cynthia Randall?
>
> A: Yes.
>
> Q: What is that opinion?
>
> A: It could.
>
> Q: Are you saying it will cause harm to her health?
>
> A: No.
>
> Q: And why are you not saying that it will cause harm to her health?
>
> A: Because I have no basis to say that.
>
> Q: Why not?
>
> A: Why not? Why don't I have a basis? I just don't have it. There's no evidence that could warrant that statement.

PECO M.B. at 25-26 (citing to September 15, 2016 Transcript at 643-44).

According to PECO, when taken at face value and accepted as true, Dr. Marino's first opinion does not establish that exposure to PECO's smart meter will cause, contribute to, or exacerbate any of the Complainant's health conditions. According to PECO, his testimony does not meet the standard and burden of proof in this proceeding. PECO M.B. at 27.

Next, PECO contends there is little value in addressing each of the individual studies upon which Dr. Marino relied in forming his first opinion given PECO's argument that Dr. Marino's first opinion does not meet the standard or burden of proof in this proceeding. PECO M.B. at 31. However, PECO goes on to highlight a few issues because, in PECO's opinion, they call into question whether even Dr. Marino's expressed opinion should be accepted as stated, and certainly call into question whether his opinion should be the basis of a Commission action. PECO M.B. at 31-33. PECO identified the following issues with the bases for Dr. Marino's first opinion:

- The first issue is Dr. Marino's EHS study. PECO asserts that Dr. Marino candidly testified that, prior to his EHS study, there were no published studies that any person is able to detect the presence or absence of electromagnetic energy, and that he believes all of the studies other than his were poorly designed. PECO M.B. at 31 (citing September 15, 2016 Transcript at 614). He further testified that taking into consideration his own study, his opinion is that PECO's smart meter has the potential to "trigger EHS, not cause it, trigger it," but that "I believe my speculation is that's the case, but I don't have direct evidence to say that." Citing September 15, 2016 Transcript at 779. PECO submits his testimony does not provide evidentiary basis to remove AMI meters from the Complainant's residence. PECO M.B. at 31.

- The second issue is Dr. Marino's view of "negative" studies.[17] In forming his opinion, Dr. Marino testified that he believes that a negative study has "no probative value" and consequently gave no weight to any published research in

[17] The Parties each explain that, in scientific research, a "positive" study is short for a study in which the investigator finds that exposure to an agent of interest results in a change in a measured endpoint, while a "negative" study refers to a scientific study in which the investigator finds that exposure does not result in change to a measured endpoint. PECO M.B. at 32; Randall M.B. at 47.

which the investigator sought, but was not successful, at showing that exposure to RF fields caused a change in a measured endpoint. PECO M.B. at 32. PECO submits that its expert, Dr. Israel, testified that it is not scientifically valid to ignore negative studies, and it is very important to consider negative studies in determining whether a reported effect is reproducible. Dr. Israel stated that the practice of ignoring negative studies is not a generally accepted scientific practice, and that scientists routinely consider negative studies in making their evaluations. PECO M.B. at 32 (citing December 8, 2016 Transcript at 1552-53). PECO argues that Dr. Marino's approach will result in a "very stilted" view of the body of research that skews towards only seeing positive studies and thus will lead the reviewer to artificially conclude that effects may exist, even if many negative studies have been done that failed to reproduce or replicate such an outcome.

- The third and final issue is that Dr. Marino's belief about individuals being "bonded to industry" is jaded; that Dr. Marino's testimony reveals that whenever a person or organization disagrees with Dr. Marino as to whether non-thermal effects exist, he does not grapple with the substance of their opinion; he simply concludes that they are "bonded to industry" and dismisses their opinion outright. PECO M.B. at 32-33 (citing September 16, 2016 Transcript at 858-59). PECO asserts that, notably, Dr. Marino placed the European Commission's Scientific Committee on Emerging and Newly Identified Health Risks and an arm of the World Health Organization into the "bonded to industry" category without further evidence that they are being paid by industry simply because they disagree with him. PECO M.B. at 33 (citing September 15, 2016 Transcript at 837-841, 849). PECO argues that testimony based on such an approach cannot and should not be the basis of a Commission determination. PECO M.B. at 33.

In connection with Dr. Marino's first opinion, the Complainant explained that Dr. Marino presented his views on the issues of the background levels of

electromagnetic energy and pulsing. PECO presented challenges to Dr. Marino's views on each issue, as discussed further below.

As for the issue of background levels of electromagnetic energy, Dr. Marino testified that in order for PECO's smart meter to present risk, it would have to produce an RF field that is greater than the background or ambient field levels. Dr. Marino recognized that there is some electromagnetic energy in the background virtually everywhere. Dr. Marino assumed that the Complainant lives in a house that is electromagnetically quiet, meaning no Wi-Fi, cell phones, or smart meters and only lights and electric appliances, which, based on Dr. Marino's typical experience, would mean the background level is between 0.01 and 0.001 microwatts per square centimeter. Randall M.B. at 24-25 (citing September 15, 2016 Transcript at 637, 582-84).

PECO submits that Dr. Marino's testimony on background levels of RF fields should be doubted because Dr. Marino did not do any measurement or calculations of the background or ambient fields at the Complainant's residence or place of work. He simply accepted the representations of the Complainant's counsel that she had made efforts to reduce fields at her home, and he thus assumed that the fields would be similar to "quiet homes" at which he has made measurements in the past. PECO M.B. at 28 (citing September 15, 2016 Transcript at 582-84, 687, 692-93). Therefore, Dr. Marino has no data or baseline for the ambient level at the Complainant's household upon which to base his comparison – only what counsel told him to assume.

As for the issue of pulsing, Dr. Marino testified that in his opinion the term means any source of electromagnetic energy that is turned on and then sometime later is turned off. Randall M.B. at 26 (citing September 15, 2016 Transcript at 590). In Dr. Marino's opinion, there is no more efficient way to get the body to react to RF energy than to put in a "pulse," as Dr. Marino has used the term. Randall M.B. at 26 (citing September 15, 2016 Transcript at 630). Dr. Marino testified that PECO smart meters are

pulsed based on his definition of the term. Randall M.B. at 26 (citing September 15, 2016 Transcript at 592).

In response, PECO's witness Dr. Christopher Davis testified in rebuttal that Dr. Marino's use of the term pulse is the same as a layperson's use of the term, but it is not the description used by communications physicists and engineers. Dr. Davis stated that when the term is used in the scientific sense, PECO's smart meters do not pulse. Dr. Davis stated:

> [I]n communications physics and engineering, "pulsed" means using 1. amplitude modulation and 2. doing so in a way that produces a signal that has abrupt changes in the amplitude of the sine wave. PECO's AMI meter radios are not amplitude modulated so they do not produce "pulsed" fields. PECO's AMI meter radios are frequency modulated, specifically "frequency shift keyed," and send out a collection of regular non-pulsed sine waves around the frequencies they use . . . In sum, the fields from PECO's AMI meters are not amplitude modulated and thus are not "pulsed" and therefore do not create "pulsed" fields. If [one] is using the term "pulsed" to suggest that during the time PECO AMIs transmit, they are sending pulses of radio frequency energy then he is incorrect.

PECO M.B. at 30 (quoting Murphy[18] Rebuttal Testimony of Christopher Davis at 21-22).

The Complainant explains that Dr. Marino's second expert opinion is that "because the PECO smart meters have not been proved safe it is unreasonable to force

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[18] The Murphy Rebuttal Testimony of Dr. Christopher Davis and the Murphy Rebuttal Testimony of Dr. Mark Israel were entered into the record for Randall and Albrecht at the December 8, 2016 Hearing along with revised exhibits PECO Exhs. CD1-7. December 8, 2016 Hearing Tr. at 1466, 1476. The Povacz Rebuttal Testimony of Glenn Pritchard was entered into the Randall record at the December 6, 2016 Hearing along with PECO Exh. GP-11. December 6, 2016 Hearing Tr. at 1004.

the Complainants to accept the exposure to the radiation emitted by the smart meters on their residences." Randall M.B. at 24 (citing September 15, 2016 Transcript at 579). The Complainant submits that the basis for Dr. Marino's second opinion is that it would be unreasonable to expose the Complainant to RF emissions because it would be tantamount to involuntary testing. Randall M.B. at 35 (citing September 15, 2016 Transcript at 663-665).

PECO asserts that Dr. Marino's second opinion is even more problematic than his first opinion because, according to PECO, such opinion is simply an argument that the Commission should act upon the lower evidentiary standard proposed by the Complainant. PECO M.B. at 27. PECO submits that, in his direct testimony, Dr. Marino candidly admitted that this issue is not a "purely scientific" opinion, stating that, upon viewing the research data, "you can see that different minds may make different associations. Certain minds may require – certain minds may accept a level very high. Others not so high. Others may be too low. All depending on their attitude . . . That's why it's not a purely scientific question and never can be. Anybody who styles it that way isn't thinking right." PECO M.B. at 27 (citing September 15, 2016 Transcript at 636). PECO argues that since this is not a "purely scientific" issue, there is no reason to give any particular weight or deference to Dr. Marino's opinion on it. Indeed, PECO submits that in the context of this litigation, there is significant reason to devalue Dr. Marino's second opinion because his position reverses the burden of proof completely – according to Dr. Marino, PECO must prove that smart meters are safe, and if it has not done so, then it is "unreasonable" to deploy them to the Complainant's home. According to PECO, this is the same as the claim that PECO has the burden of proof in this proceeding, which is not the standard used by the Commission in complaint proceedings. PECO M.B. at 27-28.

This concludes our summary of the Complainant's presentation of the evidence and PECO's challenges related thereto. Next, we turn to PECO's presentation of the evidence and the Complainant's challenges thereto.

PECO's rebuttal case, or presentation of the evidence, included the expert testimonies of two scientists, Christopher Davis, PhD, and Mark Israel, M.D, and a PECO engineer, Mr. Glenn Pritchard, with expertise in the design and operation of PECO's AMI system. PECO M.B. at 44.

As for Dr. Davis' qualifications, Dr. Davis is a professor of electrical and computer engineering at the University of Maryland in College Park who studies, researches, teaches, and serves on national and international panels related to physics, biophysics, electrical engineering, electromagnetics, radiofrequency exposure and dosimetry. Randall I.D. at 20 (citing Murphy Rebuttal Testimony of Christopher Davis at 1-7). Dr. Davis has a PhD in physics from the University of Manchester (England). 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 RF fields. He has served as a consultant on RF fields to the U.S. Institute of Health, the U.S. Food and Drug Administration, and United Kingdom Health Protection Agency. PECO M.B. at 44-45 (citing Murphy Rebuttal Testimony of Christopher Davis at 1-7).

The Complainant argues that Dr. Davis' knowledge and experience is limited regarding the specific issues that are the focus of these proceedings and pale in comparison to Dr. Marino's. The Complainant submits that Dr. Davis is an electrical engineer, not a biologist, and that his core expertise is electrical engineering and physics. The Complainant asserts that while he worked on a number of studies on electromagnetic energy, his primary role in all those studies was to design the exposure system and set up

the experiment. The Complainant submits that Dr. Davis even admits that he might have said at a taped presentation that this is a subject on which he has been "peripherally involved." Randall M.B. at 64-65 (citing December 7, 2016 Transcript at 1138-39, 1143; December 6, 2016 Transcript at 1089).

Dr. Davis testified that the FCC has established a "Maximum Permissible Exposure" or "MPE" for RF fields from AMI meters. The limit is 0.6 mW/cm^2 or 0.6 milliwatts per square centimeter. Dr. Davis testified that the FCC standard was set on the following basis: there is one generally accepted mechanism by which RF fields can cause harm to humans – by being high enough to heat tissues. The FCC determined that the lowest level of RF exposure at which animals have been observed to detect that they are feeling a little bit warm in a RF field. The FCC then set the RF emission standard for humans at a level 50 times below that thermal threshold. Dr. Davis testified that in establishing and maintaining these standards, the FCC consults closely with the Food and Drug Administration (FDA), the Occupational Safety and Health Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH). PECO M.B. at 45 (citing Murphy Rebuttal Testimony of Christopher Davis at 13). Dr. Davis explained that in setting its standards, the FCC considered claims of both thermal and non-thermal effects; however, it set the standards to avoid thermal effects because the scientific studies did not show any non-thermal effects. Dr. Davis testified that the FCC continues to consider whether there are adverse biological effects from non-thermal exposure levels, but it considers the scientific evidence for such effects to be "ambiguous and unproven." PECO M.B. at 46 (citing Murphy Rebuttal Testimony of Christopher Davis at 14-15). Dr. Davis explained that the FCC keeps current on claims that RF fields can cause non-thermal effects; it does not believe that they have been demonstrated sufficiently to warrant change to the FCC standards. *Id*. Dr. Davis explained that the FCC's ongoing review is done in coordination with other government agencies that oversee health and safety, as named above. PECO R.B. at 22-24. Dr. Davis testified that

he himself has worked with FCC scientists in their labs on research projects involving cell phone testing in recent years. PECO R.B. at 24.

The Complainant challenges Dr. Davis' testimony regarding the FCC limits. Specifically, the Complainant asserts that while the FCC sets emissions limits for devices like smart meters that emit RF energy, the FCC limits do not reflect a level that is safe for humans and, therefore, PECO errs in placing reliance on them, especially for the medically vulnerable Complainant. Randall M.B. at 62-63. The Complainant claims that the FCC limit is outdated and infers that the FCC has not kept current with studies of biological effects from exposure to RF at powers and frequencies comparable to smart meters. The Complainant submits that the FCC set the limits in 1986 based on a report of the National Council of Radiation Protection (NCRP) that demonstrated that effects can occur to humans through the heating of tissues. However, the Complainant claims the FCC has only consulted with other government agencies in *establishing* the limits in 1986, with no reference to *maintaining* the limits. The Complainant argues that Dr. Davis' testimony on the FCC's ongoing review of the limits in not credible and that it is impossible for the Commission to believe Dr. Davis regarding the FCC's ongoing review. Additionally, the Complainant submits that the FCC's use of averages is not a rule of science and Dr. Marino testified that the potential for harm results from the instantaneous or peak value and pulse pattern. Randall M.B. at 62-63, 33-34 (citing September 15, 2016 Transcript at 653-57), 43-44 (citing Direct Testimony of Dr. Andrew Marino, September 15, 2016 Transcript at 598-599); Randall R.B. at 35-36.

Dr. Davis testified that the average exposure from an AMI meter[19] is many millions of times less than the FCC standards. For average exposure for a FlexNet meter, Dr. Davis' Exhibit CD-2 shows average exposure at 7.8 x 10^{-8} mW/cm^2 over a 24-hour period compared to the FCC maximum permissible limit of 0.6 mW/cm^2 over 30 minutes. Dr. Davis also testified that the peak exposure levels of RF fields from a FlexNet meter are 40 times smaller than the FCC average-exposure standards. PECO M.B. at 46 (citing Murphy Rebuttal Testimony of Christopher Davis at 16-17; PECO Exh. CD-2, CD-3). For peak exposure, Dr. Davis' Exhibit CD-3 shows a single emission of 0.016 mW/cm^2 at two watts of power at a distance of one meter.

In response, the Complainant submits that its theory of the case is based on instantaneous or peak RF exposure levels from smart maters, not average values; therefore, the Complainant argues Dr. Davis' calculated average exposure is irrelevant to this proceeding. Moreover, the Complainant explains that the FCC exposure limit is calculated as an average over 30 minutes while Dr. Davis calculated the average over a whole day; therefore, the Complainant asserts that Dr. Davis' average numbers are misleading. Randall M.B. at 39. The Complainant argues that Dr. Davis admitted that the human body can be affected by RF only when exposed, and that to use averages is to consider more than 99% of the time when the human body is not exposed. For example, Dr. Davis admitted that 1,000 watts of radiation in the eye could do very serious harm but if the 1,000 watts was averaged over 30 minutes, it would be less than the power from a

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[19] To calculate RF exposures associated with an AMI meter that PECO proposes to install and use at Ms. Randall's residence, Dr. Davis relied upon the data and other technical information that PECO witness Glenn Pritchard provided. Mr. Pritchard testified that in Ms. Randall's neighborhood, the existing meters have been tuned to six or seven transmissions per day for a 70-millisecond duration at a maximum of two watts of power. The AMI meters also include a ZigBee radio that allows the meter to communicate with devices within the home. When first installed, the ZigBee radio will transmit every thirty seconds at approximately 1/10th of a watt for a duration of less than one microsecond. PECO Energy Company St. 2R at 5-6, December 6, 2016 Tr. at 942, 1004.

PECO smart meter. Randall M.B. at 44 (citing December 7, 2016 Transcript at 1230, 1347-48). Moreover, the Complainant submits that Dr. Marino and Dr. Davis agree on the power density calculations for peak exposure levels. The Complainant states that these peak exposure levels show that the RF fields from a smart meter is relatively close to the FCC limit – the FCC limit is 60 and the exposure at a distance of one meter is 16. Randall M.B. at 40 (citations omitted).

Dr. Davis also testified that PECO's existing meter system uses AMR meters and also communicates using RF transmissions. Dr. Davis compared the average RF exposure from existing AMR meters to the average RF exposure from the new AMI meters and concluded that the AMI meter will provide 83% less RF exposure than the electric AMR meter that was installed at the Complainant's residence and later replaced by Complainant with an analog meter. PECO M.B. at 46-47 (citing Murphy Rebuttal Testimony of Christopher Davis at 18, PECO Exh. CD-8).

The Complainant challenges Dr. Davis' testimony regarding RF emissions from PECO's existing AMR smart meter, explaining that Dr. Davis' assertion is based on average exposure while Dr. Marino's theory is based on peak exposure and pulse patterns (as Dr. Marino defines pulse). The Complainant submits that Dr. Davis even admitted that comparison of peak values shows that the RF exposure from AMI meters is twice as high as exposure from AMR meters. Randall M.B. at 43 (citing December 7, 2016 Transcript at 1387-88).

Dr. Davis also testified that people's exposure to RF fields from everyday sources, including nearby ultra-high frequency (UHF) radio and television broadcasting stations, are hundreds of times larger than the average exposure from a PECO smart meter. PECO M.B. at 28-29, 47 (citing Murphy Rebuttal Testimony of Christopher Davis at 17-18; PECO Exh. CD-5 and CD-6). For example, exposure when using a cell phone is millions of times higher than from an AMI meter and typical exposure from

standing 30 feet away from someone else using a cell phone results in exposure that is 300 times greater than being simultaneously exposed to peak emissions from an electric AMI meter. *Id.*

The Complainant challenges Dr. Davis' testimony of RF exposure in everyday life, arguing that all are meaningless figures and calculations because Dr. Davis admits they are all comparisons of averages. The Complainant argues that, when examining RF exposure from a PECO AMI meter at peak levels, such does not seem small at all in comparison to other sources of exposure. Randall M.B. at 41 (December 7, 2016 Transcript at 1225-1243). Dr. Marino's testimony regarding significant increases in electromagnetic energy exposure to the Complainant if PECO were permitted to deploy a smart meter at her "electromagnetically quiet" home negates this testimony as well as the testimony of PECO's engineer, Mr. Pritchard, who testified in the Povacz and Murphy proceedings, that the addition of a smart meter at the Povacz residence and the Murphy residence would not materially add to the RF in their residences and that it would be useless for the Complainants to resist a smart meter on their homes because all of the homes in their neighborhoods have been fitted with smart meters. Randall M.B. at 42-43 (citing December 7, 2016 Transcript at 1245-1252; citing also Pritchard Murphy Rebuttal Testimony at 12, Pritchard Povacz Rebuttal Testimony at 17).

PECO submits that Dr. Davis concluded in his testimony that, to a reasonable degree of scientific certainty, there is no reliable scientific basis to conclude that exposure to RF fields from PECO's AMI meters is capable of causing any adverse biological effects in people, including the Complainant. PECO M.B. at 47 (citing Murphy Rebuttal Testimony of Christopher Davis at 24-25).

The Complainant contends that Dr. Davis' opinion cannot be relied upon by the Commission because he ignored the May 2016 NTP report and the IARC classification in formulating such opinion. Randall M.B. at 66 (citing January 25, 2017

Transcript at 1882-83; December 7, 2016 Transcript at 1334). The Complainant submits that there is "stark disagreement" between the Parties' experts as what weight to give this report because at the time of the Omnibus Hearings it was still in draft form, but that Dr. Marino said the draft report is crucially important because it is a federal government agency that provides the evidence that the recognized basis of the present regulatory scheme of the FCC is not protective of health and has direct bearing on the IARC classification on low levels of RF exposure as a possible carcinogen. Randall M.B. at 67 (citing December 9, 2016 Transcript at 1856-57, 1859-60). Additionally, the Complainant argues that Dr. Davis' opinion cannot be relied upon because he took the unreasonable position of saying he was "absolutely certain" that RF exposure cannot cause harm and as a result, "kids can hold cell phones against their heads all day long and there is absolutely nothing to worry about." Randall M.B. at 66 (December 7, 2016 Hearing Transcript at 1217-18).

PECO responds to the Complainant's challenge by recognizing that Dr. Marino believes the draft, unpublished May 2016 NTP report should be given a great deal of weight because he is convinced that it was a well-done study. PECO submits, however, that Dr. Davis takes the view that one should wait for the review and publication process to be completed before deciding how much weight to give the study; in the interim, he gives it little or no weight. PECO argues that the results will need to be analyzed and integrated in the context of all other existing research on RF exposure and cancer endpoints. And only then will the experts know what weight to give this research. Until then, PECO respectfully requests that the Commission treat the May 2016 NTP report as a draft, unpublished report. PECO M.B. at 43.

As noted above, PECO also presented the expert opinion testimony of Dr. Israel. As for Dr. Israel's qualifications, PECO submits that he attended the Albert Einstein College of Medicine, completed an internship and residency at Harvard Medical School, has worked at the National Institute of Health and has been a professor of

medicine and medical research at numerous medical schools. He has studied RF fields and health effects. Dr. Israel began to examine the research on EMFs, including RF fields, and health effects during his tenure at the National Cancer Institute more than 25 years ago. He has continued to follow the research literature on this subject since that time. Randall I.D. at 18; PECO M.B. at 48-49 (citing Murphy Rebuttal Testimony of Mark Israel at 5-6). PECO submits that Dr. Israel's training and experience make him eminently qualified to appear as an expert in this proceeding. PECO M.B. at 49, n.15.

The Complainant argues that Dr. Israel's knowledge and experience is limited regarding the specific issues that are the focus of these proceedings. The Complainant submits that Dr. Israel has never published any research and has never done any research on the effects of electromagnetic energy. Moreover, the Complainant asserts that Dr. Israel showed unfamiliarity with the May 2016 NTP report and the IARC classification, which, according to the Complainant, demonstrate that his knowledge and understanding of the issues before the Commission are limited and therefore, he is not a reliable source of scientific information about any of the issues before the Commission in this case. Randall M.B. at 65 (citing December 9, 2016 Transcript at 1580).

Dr. Israel testified that he conducted an evaluation of whether exposure to RF fields from PECO's AMI meters can cause, contribute to or exacerbate the conditions described by the Complainant. Based on his evaluation, Dr. Israel concluded that for each of the symptoms or conditions identified by the Complainant, that there is no reliable medical basis to conclude that RF fields from PECO's electric AMI meter caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by the Complainant. PECO M.B. at 49-50 (Murphy Rebuttal Testimony of Mark Israel at 11-31). Dr. Israel's overall medical opinion is that exposure to electromagnetic fields from PECO's smart meters have not been and will not be harmful to the Complainant's health. He holds both his symptom-specific and overall

medical opinions to a reasonable degree of medical certainty. PECO M.B. at 50 (Murphy Rebuttal Testimony of Mark Israel at 31-32).

The bases for Dr. Israel's evaluation included the same methodology that he uses in the usual course of his medical work, which included searching medical and scientific databases, analyzing studies identified through that research, evaluating as a whole all of the studies that he determined were relevant to the claimed symptoms, including both positive and negative studies, and review of the findings of public health agencies and organizations to see if they provided any insights Dr. Israel missed and to see if their conclusions were inconsistent with Dr. Israel's initial determinations. PECO M.B. at 49 (citing Murphy Rebuttal Testimony of Mark Israel at 7).

The Complainant challenges the bases for Dr. Israel's opinion testimony because he did not cite to a positive study that he relied upon. Randall M.B. at 47 (citing December 8, 2016 Transcript at 1641-42). The Complainant argues that Dr. Israel "cherry-picked studies" only to account for negative studies. The Complainant opines that "almost any study can be designed to show no effect" and that Dr. Israel was unaware whether the studies he cited were funded by industry. Randall M.B. at 47 (citations omitted). The Complainant claims that Dr. Israel relied upon and simply quoted learned treatise and reports of public health agencies in violation of the hearsay rule, citing *Majdic v. Cincinnati Machine Company*, 537 A. 2d 334 (Pa. Super. 1988). Randall M.B. at 57-59. The Complainant also submits that the bases for Dr. Israel's opinion is troubling because he did not take into consideration the results of the May 2016 NTP report and because he did not give proper weight to the IARC classification. Randall M.B. at 67 (citing December 9, 2016 Hearing Transcript at 1601, 1629-38).

PECO responds to the Complainant's challenges by stating that Dr. Israel's testimony was not based exclusively on negative studies, noting that he testified to the methodology that he used and that he explicitly stated that: "For each [symptom or

condition], I considered the studies that (1) report an effect and (2) studies that report no effect because that is necessary for a reliable medical evaluation." PECO M.B. at 39 (citing Murphy Rebuttal Testimony of Mark Israel at 3-5). PECO responds to the Complainant's hearsay argument that twelve years after the Superior Court issued the *Majdic* ruling, the Pennsylvania Supreme Court issued its Opinion in *Aldridge v. Edmonds*, 750 A.2d 292 (Pa. 2000), in which the Court describe the allowable uses of learned treatises in expert testimony. PECO M.B. at 41 (quotation omitted). PECO submits that Dr. Israel testified that he first forms a preliminary opinion based on research and analysis of primary research, then he reviews the reports of public health agencies and similar organizations to see if they provide any insights Dr. Israel missed and to see if their conclusions are inconsistent with Dr. Israel's initial determinations. He then makes his final medical evaluation. PECO submits his use of these reports is proper under *Aldridge* because the findings of the reports are used by Dr. Israel as the basis for his opinion and are not admitted in this proceeding as evidence of the truth of the matters asserted therein. PECO M.B. at 42.

Regarding the IARC classification of electromagnetic energy as a "possible" carcinogen, PECO submits that Dr. Israel provided context for understanding this classification:

> IARC said that there was limited evidence that radio frequency fields could contribute to cancer and there was limited evidence in animals and those criteria that there's not sufficient evidence to identify it as a probable cause, because there's limited evidence in humans and limited evidence in animals, it gets designated as a category 2B which stands for "possible." I've always been uncomfortable with "possible" because "possible" to me is misleading to the population that I have to take care of because I think what IARC means is that there's limited evidence in humans and limited evidence in animals. "Possible" in the lay language of the people I have to take care of, means my God it might be possible or oh, well anything is possible, so I should pay attention to this.

> So, I really always focus when I talk to people about the fact there just isn't evidence to identify this as even a probable carcinogen.

PECO M.B. at 37 (citing December 9, 2016 Transcript at 1630-31).

No further evidence was offered into the record by the Complainant to rebut the evidence presented by PECO.

b. ALJ's Initial Decision

The ALJ noted that it is the position of the Complainant that installation of an AMI meter would be, unsafe and unreasonable in violation of 66 Pa.C.S. § 1501 and 52 Pa. Code § 57.194 because these meters emit EFs that are detrimental to her health. Randall I.D. at 10. The ALJ determined that the Complainant established a *prima facie* case, Randall I.D. at 18, based on the following evidence presented by the Complainant:

- Dr. Anne Honebrink's testimony, in which she stated that it would be prudent for Ms. Randall to avoid unnecessary radiation exposure. Randall I.D. at 16-17.

- Dr. Hanoch Talmor's testimony in these proceedings, in which he stated that exposure to a smart meter could be harmful and should be avoided. Randall I.D. at 17 (citing Direct Testimony of Dr. Hanoch Talmor, M.D. at 5).

- Dr. Marino's testimony, which included his opinion that there is a clear basis in established science for the conclusion that Ms. Randall could be in or exposed to

danger if exposed to the emissions emitted by the PECO AMR or AMI meters. Randall I.D. at 17 (citing September 15, 2016 Tr. at 578).

Randall I.D. at 17.

The ALJ then turned to a review of PECO's rebuttal presentation of evidence and concluded that the preponderance of the evidence was presented by PECO. Randall I.D. at 23. The ALJ relied upon the following testimony from Dr. Mark Israel:

- Dr. Israel conducted an evaluation of whether exposure to RF fields from PECO's AMI meters can cause, contribute to, or exacerbate the conditions described by Ms. Randall. In that evaluation, he used the same methodology that he uses in the usual course of his medical work, which included searching medical and scientific databases, analyzing studies identified through that research, evaluating as a whole all of the studies that he determined were relevant to the claimed symptoms, including both studies that showed an effect and studies that did not show an effect, and reviewing the findings of public health agencies and organizations to see if they provided any insights Dr. Israel missed and to see if their conclusions were inconsistent with his initial determinations. He then made his final medical evaluation. Randall I.D. at 19 (citing Murphy Rebuttal Testimony of Mark Israel at 7).

- Dr. Israel conducted the above-described evaluation for each of the symptoms or conditions identified by the Complainant and concluded, for each such symptom, that there is no reliable medical basis to conclude that RF fields from PECO's electric AMI meters caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by Complainant. Randall I.D. at 19 (citing Murphy Rebuttal Testimony of Mark Israel at 11-31).

- Dr. Israel offered his overall medical opinion that exposure to EMFs from PECO's AMI meters has not been and will not be harmful to the Complainant's health, holding both his symptom-specific and overall medical opinions to a reasonable degree of medical certainty. Randall I.D. at 20 (citing Murphy Rebuttal Testimony of Mark Israel at 31-32).

The ALJ also relied upon the following testimony from Mr. Pritchard:

- Mr. Pritchard testified that while PECO itself did not perform any tests on humans to evaluate the safety of smart meters, PECO ensured that the smart meters were FCC compliant. Randall I.D. at 20 (citing Cross Examination of Glenn Pritchard, December 6, 2016, Hearing Tr. at 1031-1032).

The ALJ relied upon the following testimony from Dr. Davis:

- Dr. Davis testified that the FCC has promulgated limits for the maximum permissible exposure to RFs emitted by a smart meter as 0.6 mW/cm^2, calculated as an average exposure over time. Randall I.D. at 20 (citing Murphy Rebuttal Testimony of Christopher Davis at 13).

- Dr. Davis testified that, based on his calculations, the average exposure from PECO's electric AMI meters is millions of times less than the FCC maximum permissible exposure levels. Randall I.D. at 21 (citing Murphy Rebuttal Testimony of Christopher Davis at 15-16).

- Based on his calculations, the peak exposure from PECO's electric AMI meters is approximately 40 times smaller than the FCC limit for 30-minute average exposure. Randall I.D. at 21 (citing PECO St. 3R at 16; PECO Exh CD-3).

- Dr. Davis also testified that 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. Randall I.D. at 21 (citing PECO St. 3R at 16-17; PECO Exh. CD-4).

- Dr. Davis did not find that the Complainant has an electromagnetically quiet home. He stated that in everyday life, people are exposed to radiofrequency filed levels from many sources that are much higher than the radiofrequency fields associated with PECO's AMR or AMI meters. Randall I.D. at 21 (citing Murphy Rebuttal Testimony of Christopher Davis at 17). Dr. Davis testified that given even the limited cell phone use of the Complainant, her exposure to radiofrequency fields from cell phones is markedly greater than that from AMI meters. Randall I.D. at 22 (citing Murphy Rebuttal Testimony of Christopher Davis at 18).

The ALJ noted that at the time of the Complaint, Ms. Randall believed that she had an analog meter at her residence, rather than the AMR meter installed by PECO in about the year 2000. Randall I.D. at 22 (citing Testimony of Cynthia Randall, September 27, 2016, Complainant Exh. A). Dr. Davis testified that the AMI meter will emit 83% less radiofrequency fields than does the AMR meter currently at the Randall/Albrecht residence. Randall I.D. at 22 (citing Murphy Rebuttal Testimony of Christopher Davis at 18). The ALJ provided that this is a reduction of risk, if any, to Dr. Randall. The ALJ provided further that in Dr. Davis' expert opinion, to a reasonable degree of scientific certainty, there is no reliable scientific basis to conclude that exposure to radio frequency fields from PECO's AMI meters is capable of causing any adverse biological effects. Randall I.D. at 22 (citing Murphy Rebuttal Testimony of Christopher Davis at 24-25).

With regard to the AMI meter, the ALJ reasoned that

PECO selected and installed smart meters that meet FCC maximum exposure to EFs limits. The ALJ noted that the amount of EFs that emanate from the

PECO smart meter is millions of times smaller than the limit allowed by the FCC. According to the ALJ, it was reasonable for PECO to seek to install these meters in accordance with the Act 129 installation plan approved by the Commission. Randall I.D. at 22.

The ALJ found that the expert testimony weighed in favor of finding that smart meter EF exposure would not be harmful. The ALJ further noted that Dr. Marino would not say definitively that the EFs from the PECO smart meter would cause harm. Randall I.D. at 23 (citing Direct Testimony of Dr. Andrew Marino, September 15, 2016 Hearing Tr. at 644-645). The ALJ states that Dr. Davis and Dr. Israel were definitive that they would not. The ALJ concluded that the Complainant did not present any evidence to overcome the testimony of Dr. Israel and his certainty that the EFs emitted from the AMI meter would not cause, contribute to, or exacerbate the conditions of concern to Dr. Randall. Randall I.D. at 23.

c. Exceptions and Replies

In her first, second, third, fourth and eighth Exceptions, the Complainant takes exception to the ALJ's conclusion that the Complainant has not met her burden of proof in this proceeding with respect to showing that a PECO smart meter is unsafe because of its RF exposure levels to customers. We discuss the Complainant's first, second, third, fourth and eighth Exceptions, and PECO's Replies thereto, in more depth in our disposition in the next section below.

d. Disposition

Upon review of the evidentiary record and the positions of the Parties, we shall deny the Complainant's first, second, third, fourth and eighth Exceptions. We agree

with the ALJ's conclusion that the Complainant failed to meet her burden of proof in this proceeding, but respectfully for different reasons, as explained below.

To begin, in our opinion, we are forced to give little weight to the testimony of Complainant's treating physician, Dr. Ann Honebrink. Importantly, the Complainant submitted that she did not offer Dr. Honebrink's testimony on the issue of causation.[20] While Dr. Honebrink wrote, at Ms. Randall's request, in an April 20, 2016 letter to PECO that "it would be prudent to avoid any unnecessary radiation exposure," Dr. Honebrink could not say that the PECO AMI meter can cause or exacerbate cancer. September 27, 2016 Tr. at 16, 24. When Dr. Honebrink was asked: "In your opinion, has it been scientifically demonstrated that RF fields from the PECO AMI meter can cause cancer?" She responded, "I really don't have an opinion on that because I have not studied the PECO fields." She was further asked: "In your opinion, has it been scientifically demonstrated that RF fields from the PECO AMI meter can exacerbate cancer?" She answered, "Again, that is not something I have specifically studied." PECO M.B. at 35 (citing September 27, 2016 Tr. at 29).

Thus, based on Dr. Honebrink's testimony, we are unable to find the Complainant has proven by a preponderance of the evidence the allegation in her Complaint that she is medically vulnerable to RF exposure or that the PECO AMI meter would be "exceedingly harmful to the health and well-being" of the Complainant. Complaint at ¶¶ 28, 29.

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[20] In her Reply Brief, the Complainant states:

> The Complainants and their doctors are not experts in the effects of RF exposure (although Dr. Marino is) and they concede, as they must, that their testimony and that of their doctors would not meet the high burden of proving causation if these proceedings required…proof of specific causation of harm.

Randall R.B. at 18.

Next, while Dr. Marino is clearly qualified as an expert on the issue of causation in this case based on his specialized knowledge, skill, experience in this area of science and his education in biophysics,[21] Dr. Marino's first opinion does not, in our view, constitute an unequivocal opinion to support a finding that the exposure levels to the RF energy from a PECO smart meter installed and used at her residence will cause adverse health effects for the Complainant. The Complainant concedes in argument that its expert has not proven a conclusive causal connection between the RF emissions from a PECO smart meter and adverse health effects for the Complainant. "Dr. Marino is of the opinion that [RF fields] from a PECO smart meter could cause harm to the health of [Ms. Randall], but he could not say whether it will cause harm." Randall M.B. at 32 (citing September 15, 2016 Tr. at 644). "Dr. Marino also testified that, because there is no consensus clinical diagnosis, he could not testify whether RF exposure did cause or will cause adverse health consequences for the Complainants." Randall R.B. at 18.

In our view, Dr. Marino's testimony, at best, supports the conclusion that the Complainant's *alleged* medical vulnerability *might* be exacerbated if subjected to the low-level RF fields from a PECO smart meter installed at her residence. However, Dr. Marino admits that he has no basis to state the opinion that it will cause adverse health effects for the Complainant. September 15, 2016 Transcript at 643-44. Recognizing that Dr. Marino was not required to testify to an absolute certainty as to causation and eliminate all other possible causes, Dr. Marino's opinion does not constitute an unequivocal opinion to a reasonable degree of certainty that the low-level

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[21] "An otherwise qualified non-medical expert may give a medical opinion so long as the expert witness has sufficient specialized knowledge to aid the [trier of fact] in its factual quest." *McClain ex rel. Thomas v. Welker*, 761 A.2d 155, 157 (Pa. Super. 2000) (citing *Miller v. Brass Rail Tavern*, 541 Pa. 474, 664 A.2d 525 (1995) (holding coroner with years of experience had specialized knowledge regarding time of death and qualified as expert to testify regarding same)).

RF fields from a PECO smart meter will adversely affect the Complainant's health. *See Halaski v. Hilton Hotel*, 487 Pa. 313, 409 A.2d 367, 369, n.2 (Pa. 1979) (*Halaski*) (quoting *Menarde v. Philadelphia Transportation Co.*, 376 Pa. 497, 501, 103 A.2d 681, 684 (1954) ("[T]he expert has to testify, not that the condition of claimant might have, or even probably did, come from the cause alleged, but that in his professional opinion the result in question came from the cause alleged. A less direct expression of opinion falls below the required standard of proof and does not constitute legally competent evidence."). Accordingly, his opinion falls below the required standard and burden of proof and does not constitute legally competent evidence to support a finding of fact on the issue of a conclusive causal connection between RF fields from an AMR or AMI meter and adverse human health effects.

Based on the foregoing analysis and discussion, we believe the Complainant's evidence is not sufficient to establish a *prima facie* case under 66 Pa. C.S. § 332(a) in demonstrating that the RF exposure levels from a PECO AMI meter will cause adverse health effects for the Complainant. Accordingly, we respectfully disagree with the ALJ on this point and we shall modify the ALJ's Initial Decision consistent with the discussion above. However, for the sake of providing a full analysis and discussion of the record, assuming the Complainant's evidence is sufficient to carry the burden of proof initially, we agree with the ALJ that PECO credibly carried its burden of production in rebuttal for the reasons discussed below.

PECO's rebuttal evidence included the expert testimony of Dr. Davis and Dr. Israel. Dr. Davis is a qualified expert[22] to testify on the issues in this proceeding, including, *inter alia*, on the scientific or technical principles relevant to the case, the RF field levels emitted from the AMI meter at issue in this case, the FCC's process in establishing and maintaining current RF exposure limits, and the dosimetry utilized in relevant scientific studies.[23] In our opinion, Dr. Davis' testimony sufficiently demonstrated that the limits on RF emissions that are established and maintained by the FCC are both relevant and persuasive to our review of the issue of whether low-level RF exposure is harmful to human health and therefore unsafe. Dr. Davis explained that the FCC sets exposure limits for devices like smart meters that emit RF energy. Dr. Davis' testimony, as discussed *supra*, sufficiently explained how the FCC limits were

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[22] In addition to the description of Dr. Davis' qualifications as presented in PECO's Brief and the Randall Initial Decision, we further note that Dr. Davis has education, training and experience in physics, biophysics, chemistry, electrical engineering, electromagnetics, bioelectromagnetics, and radio frequency bioelectromagnetics and dosimetry (defined as "the measurement and calculation of the level of electromagnetic fields produced from a source"). Murphy Rebuttal Testimony of Dr. Christopher Davis at 11. Murphy Rebuttal Testimony of Dr. Christopher Davis at 24. Dr. Davis explained that he conducted a wide variety of scientific studies in the fields of physics, biophysics, and electrical engineering, and particularly studies on electromagnetics, bioelectromagnetics, and RF electromagnetics and dosimetry. *Id.* at 4-5. Related to the topic of RF, Dr. Davis authored scientific publications including two book chapters on radio frequency fields, twenty-four articles published in peer-reviewed scientific journals on RF fields and presented fifty-five papers at scientific conferences on RF fields. *Id.* at 5. Dr. Davis explained that he has conducted research on RF fields of the type periodically produced by PECO's AMI meters. Dr. Davis stated that he has served as a consultant and provided expert advice on both power frequency and RF fields, including 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. *Id.* at 7.

[23] Pa. R.E. 702 permits an expert witness to testify "in the form of an opinion or otherwise . . .." The Comment to Pa. R.E. 702 provides: "Much of the literature assumes that experts testify only in the form of an opinion. The language 'or otherwise' reflects the fact that experts frequently are called upon to educate the trier of fact about the scientific or technical principles relevant to the case."

established and explained the FCC's process for establishing and maintaining these limits. Specifically, Dr. Davis testified that the FCC has consulted and continues to consult closely with other federal agencies that have authority in the areas of health and safety, including the FDA, OSHA and NIOSH. Dr. Davis explained that in setting its standards, the FCC considered claims of both thermal and non-thermal effects; however, it set the standards to avoid thermal effects because the scientific studies did not show any non-thermal effects. Dr. Davis further explained that while the FCC continues to consider whether there are adverse biological effects from non-thermal exposure levels, *i.e.*, low-level RF exposure, the FCC considers the scientific evidence for such effects to be "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." Dr. Davis also explained that the FCC keeps current on claims that RF fields can cause non-thermal effects; however, it does not believe that such claims have been demonstrated sufficiently to warrant change to the FCC standards. Dr. Davis explained that the FCC's ongoing review is done in coordination with the government agencies that oversee health and safety. PECO M.B. at 45-46 (citing Murphy Rebuttal Testimony of Christopher Davis at 13-16).

Dr. Davis' testimony, including his calculations that were attached to his testimony as exhibits,[24] sufficiently demonstrated that the RF field exposure from a PECO smart meter, when considered either at an average or a peak level, is significantly lower than the FCC's limit. Murphy Rebuttal Testimony of Christopher Davis at 15-16; PECO Exh CD-2, CD-3; Randall I.D. at 21.

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[24] We note that the ALJ overruled the Complainant's request at the hearing to admit Dr. Davis' Exhibits CD-2 through CD-8 into the record purely as demonstrative exhibits, stating that such exhibits "will be admitted as calculations made by the expert, and given the weight according how we weigh the testimony in general." *See* December 8, 2016 Hearing Transcript at 1462-63, 1465-67.

Dr. Israel also is a qualified expert on the issues in this proceeding.[25] He offered his expert opinion on the issue of the causal connection between low-level RF exposure from a PECO smart meter and adverse human health effects. Dr. Israel's opinion was offered to a reasonable degree of medical certainty based upon his review of available scientific studies, research and reports. His expert opinion stated unequivocally that exposure to the low-level RF fields from a PECO smart meter will not be harmful to the Complainant's health. Dr. Israel's unequivocal opinion meets PECO's required burden of production and constitutes legally competent evidence to support a finding of fact on the issue of a causal connection between RF fields from an AMI meter and adverse human health effects.

In Briefs and in Exceptions, the Complainant challenged the qualifications of PECO's experts, the bases of their opinions and certain specific areas of their testimonies. After careful review of those challenges, however, we agree with the ALJ that the Complainant did not successfully impugn PECO's rebuttal evidence. We discuss below our specific reasons for this conclusion when we specifically address the

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[25] In addition to the description of Dr. Israel's qualifications as presented in PECO's Brief and the Randall Initial Decision, Dr. Israel provided that he has been conducting medical research for 40 years on topics including systems biology, biochemistry, cell biology, cancer, molecular biology and molecular genetics and has published over 200 papers reporting on his research in medical or scientific journals. Dr. Israel stated that after completing his residency, he pursued medical research at the National institutes of Health, and then the Pediatric Branch of the National Cancer Institute. Dr. Israel noted his interest in RF fields and health began with parents of his patients concerned with exposure to these fields from power lines and cell phones. Dr. Israel stated he began examining the research to inform those parents of patients and has been following the research on those topics for more than 25 years. Dr. Israel noted that he has been teaching for more than 25 years in a number of fields including endocrinology, immunology, hematology, neurology, cardiology, biochemistry, cell biology, genetics, molecular genetics, medical oncology, and radiation oncology. Murphy Rebuttal Testimony of Dr. Mark Israel at 3-6.

Complainant's first, second, third, fourth and eighth Exceptions below. Accordingly, we affirm the ALJ's conclusion that PECO met its burden of production in this proceeding.

Because PECO met its burden of evidence production, the burden of production shifted back to the Complainant. The Complainant did not introduce further evidence into the record to demonstrate a conclusive causal connection between the low-level RF fields from a PECO AMI meter and adverse health effects for the Complainant. Thus, we affirm the ALJ's conclusion that the Complainant did not meet her burden of proof in this proceeding.

We now turn to address more specifically the Complainant's first, second, third, fourth and eighth Exceptions.

e. Complainant's Exception No. 1 and Disposition

In the first Exception, the Complainant states that the ALJ "erred in placing weight on the testimony of Dr. Israel and Dr. Davis on numerous important points where they disagreed with Dr. Marino." The Complainant provides that "this was arbitrary and capricious because Dr. Marino has far deeper and stronger qualifications on the issue of the health risk from smart meter RF exposure than Dr. Israel and Dr. Davis." The Complainant describes Dr. Marino's qualifications and argues that the credentials of PECO's expert witnesses in this field were much more limited or nonexistent. Randall Exc. at 7-8 (citing Randall M.B. at 36-37, 64-65, 70). For this reason, the Complainant asserts that the ALJ should have accepted Dr. Marino's testimony and rejected the testimony of Dr. Davis and Dr. Israel where the testimonies conflicted. Randall Exc. at 8.

In Replies to the Complainant's first Exception, PECO reiterates the relevant qualifications of its witnesses as summarized above. PECO R. Exc. at 6 (citing Murphy I.D. at 13, 15, 27, 29). PECO also notes that the Complainants did not identify

any specific instance in which they claim that Dr. Marino's testimony should have been given greater weight but claimed there were "numerous important points" about which the expert witnesses disagreed and on which they assert the ALJ was required to believe Dr. Marino. PECO R. Exc. at 6.

Upon review, we disagree with the Complainant's assertion that Dr. Marino is uniquely qualified to testify on the issues in this proceeding. As the ultimate fact-finder, we accept the qualifications of the three expert witnesses and determine that all three witnesses have the scientific, technical, or other specialized knowledge to allow them to provide expert testimony on the issues in this proceeding in accordance with Pa.R.E. 702, as discussed in more detail above. Furthermore, we note that the Complainant did not identify any specific "important points" where Dr. Marino's testimony should have been more persuasive to the ALJ. Because the Complainant did not identify any specific instances where Dr. Marino's testimony should have prevailed, we can only surmise that the ALJ found Dr. Davis' and Dr. Israel's testimony to be persuasive in some instances where the Complainant does not agree. Accordingly, we shall deny the Complainant's Exception No. 1.

f. Complainant's Exception No. 2 and Disposition

In the second Exception, the Complainant contends that it was "arbitrary and capricious" for the ALJ to not accept the evidence presented by the Complainant that forced exposure to RF presents a risk of harm to her. The Complainant explained that this evidence included the testimony of Dr. Andrew Marino based on many years of research, including animal studies, epidemiological studies, the EHS study, and other relevant research, as well as his reliance on the draft 2016 NTP Report. Randall Exc. at 8. In her second Exception, the Complainant walks the Commission through the testimony of Dr. Marino citing to relevant portions of its Main Brief, at 24-35, 60-62, as summarized above under the Position of the Parties. Randall Exc. at 8-10.

The Complainant contends that ALJ Heep failed to recognize that PECO did not rebut Dr. Marino's testimony about the potential to cause harm based on the peer-reviewed animal and epidemiological studies he relied upon. Randall Exc. at 10 (citing Randall M.B. at 27-29). Likewise, the Complainant submits that PECO did not rebut Dr. Marino's testimony about the potential to cause harm based on the peer-reviewed EHS study he conducted which proved that EHS is a real syndrome. All of this evidence, submits the Complainant, presented substantial grounds for the conclusion that RF exposure is capable of causing harm. Randall Exc. at 10-11.

The Complainant further submits that the ALJ erred in rejecting the NTP report based on the testimony of Dr. Davis, that the NTP study was a draft and at a high-power density that is not relevant. Randall Exc. at 11-12 (citing Randall I.D. at 21). The Complainant requests the Commission to take "judicial notice" of not only what the draft May 2016 NTP report said, but also what the final NTP report has said since. The Complainant submits:

> Specifically, according to its publicly available website, the findings of the 2016 draft report "were reviewed by an expert panel in March 2018….The final NTP reports are expected in fall 2018.". . . The NTP website also discloses that the external science experts who met in March 2018 "recommended that some [NTP] conclusions be changed to indicate stronger levels of evidence that cell phone radiofrequency (RFR) caused tumors in rats."

Randall Exc. at 12 (citations omitted).

According to the Complainant, the May 2016 NTP report shows that RF exposure caused cancer in rats under the test conditions, meaning there is a potential for harm to rats from RF exposure below FCC limits, from which potential for harm to

humans could be inferred. The Complainant argues further "[t]hat same potential for harm is present for RF exposure from smart meters." Randall Exc. at 13. The Complainant states that there is no way to compare the potential exposure from a cell phone to that of a smart meter "because there have been no studies on the safety of smart meters." The Complainant further states that "the potential for harm from these RF-emitting devices is completely unknown." Randall Exc. at 14. The Complainant avers that the Commission should "accept that RF exposure from smart meters is a possible cause of harm to humans, meaning that some scientific evidence supports the point, but it is not yet accepted as conclusively proven." Randall Exc. at 15.

In Replies to the Complainant's second Exception, PECO maintains that Dr. Marino's testimony does not prove that "forced exposure to RF presents a risk of harm;" to the contrary, it proves that in Dr. Marino's view, it was too costly to collect evidence and consequently he was not able to present any evidence that "forced exposure to RF presents a risk of harm." PECO R. Exc. at 7-8. PECO submits that the ALJ correctly accepted, not rejected, this testimony. PECO submits that it should be underscored that the Complainant has frankly admitted throughout this proceeding that she did not meet the burden of proof with respect to causation. PECO R. Exc. at 8. PECO argues that the Complainant misspeaks when it says PECO offered no response at all to Dr. Marino's testimony. *Id*. Given that Dr. Marino and the Complainant admitted that they had not met burden of proof on causation, PECO did not find it necessary in its briefs to analyze every study that was discussed in the evidentiary hearings. *Id*. PECO maintains, however, that the record contains an extensive, point-by-point, response on the scientific research in the form of the testimony of Drs. Davis and Israel – testimony that the ALJ found to be persuasive and credible. PECO R. Exc. at 8-9.

Regarding the single EHS study, PECO submits that there was no reason that the Initial Decision needed to isolate and discuss this specific study and referred the Commission to its Main Brief at 31, in which PECO explained that Dr. Marino candidly

testified that before his EHS study, there were no published studies that any person is able to detect the presence or absence of electromagnetic energy, that his study involved only one subject and that, even taking into consideration his own study, his opinion is that the AMI meter has the potential to "trigger EHS, not cause it, trigger it" but that "I believe my speculation is that's the case, but I don't have direct evidence to say that." PECO R. Exc. at 9 (citing PECO M.B. at 31 (citing September 15, 2016 Transcript at 609, 614 and September 17, 2016 Transcript at 779)).

Regarding the May 2016 NTP report, PECO explains that Dr. Israel testified regarding that report. PECO notes that Dr. Israel had reviewed and analyzed the May 2016 NTP report, found that it had not yet gone through normal peer review process and that it was a draft study of partial results. PECO provides that Dr. Israel placed the NTP results into context with other research and stated that it did not alter his overall conclusions that RF fields from PECO's AMI meters have not been shown to cause, contribute to, or exacerbate health effects. PECO R. Exc. at 10 (citing Tr. at 1527-29, 1603-17). PECO notes that in his testimony, Dr. Davis concluded that the May 2016 NTP report was not applicable to review of AMI meters because it is at "a relatively high-power density that's not relevant." According to PECO, the power densities used in the NTP research were approximately 300 million times greater than the "incredibly low exposures that you get from PECO's AMI and AMR meters." PECO R. Exc. at 12-13 (citing Tr. 1090-91).

Upon review, we shall deny the Complainant's second Exception for the reasons that follow. We disagree with the Complainant's characterization that the ALJ did not accept the Complainant's evidence, specifically the expert opinion testimony of Dr. Marino, in this proceeding. To the contrary, the ALJ accepted the expert testimony of Dr. Marino into evidence. As discussed above, after reviewing all of the admitted evidence, including Dr. Marino's opinions, we conclude that the Complainant did not sustain her initial burden of proof in demonstrating that RF exposure from a PECO AMI

meter will cause harm to the Complainant's health. We also reject the Complainant's argument that the ALJ erred by finding PECO's rebuttal evidence sufficient. As discussed above, PECO satisfied its burden of production in this proceeding, which shifted the burden of production back to the Complainant. However, the Complainant failed to submit any additional evidence to demonstrate that the RF exposure from a PECO AMI meter will adversely affect her health and therefore failed to carry her ultimate burden of proof.

Next, we turn to the Complainant's arguments in her second Exception related to the various studies and reports upon which the experts relied in forming their opinions. To simplify, the Complainant argues we should give greater weight to Dr. Marino's expert opinion because he considered the correct studies and reports in forming it, specifically Dr. Marino's EHS study and the May 2016 NTP report. Likewise, the Complainant asserts that we should give little to no weight to the opinion testimony of PECO's experts because, according to the Complainant, PECO's experts failed to consider the EHS study and the May 2016 NTP report. The Complainant emphasizes in her Exception No. 2 that the EHS study and the May 2016 NTP report, in particular, are crucially important on the issue of whether the RF exposure from a smart meter is capable of causing harm to human health and that there is no scientific study relied upon by the experts to demonstrate the safety of RF exposure from smart meters.

Before we address the Complainant's arguments regarding the EHS study and the May 2016 NTP report as the bases for the experts' opinions in this proceeding, we feel it necessary to provide the proper evidentiary context. The various studies and reports relied upon by the Parties' experts in forming their opinions and testimonies were disclosed in this proceeding because Pa. R.E. 705[26] requires such disclosure. However,

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[26] Pa. R.E. 705 states "If an expert states an opinion the expert must state the facts or data on which the opinion is based."

none of these studies and reports, including the EHS study and the May 2016 NTP report, were admitted into the record as legally competent evidence to support a finding of fact in this proceeding. Rather, it was acknowledged at the hearing that all of the referenced studies and reports are simple hearsay because the statements contained therein were produced by third persons outside of the hearing room not subject to cross-examination.[27] Accordingly, the ALJ admitted the various exhibits on direct or cross, not for the truth of the matters asserted therein, but rather for the limited purpose of establishing whether the expert relied upon such study/report in reaching his opinion pursuant to Pa. R.E. 703[28] or otherwise for cross-examination. *See e.g.* December 8, 2016 Hearing Transcript at 1467-1469. Rule 703 clearly permits an expert's opinion to be admitted even if it is based on inadmissible hearsay facts or data, so long as experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the

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[27] *See Walker v. Unemployment Compensation Board of Review*, 367 A. 2d 366, 370 (Pa. Cmwlth. 1976) (*Walker*) (citations omitted); *see also Chapman v. Unemployment Compensation Board of Review*, 20 A. 3d 603, n.8 (Pa. Cmwlth. 2011) (*Chapman*) (simple hearsay evidence may support an agency's finding of fact so long as the hearsay is admitted into the record without objection and is corroborated by competent evidence in the record).

[28] Pa. R.E. 703 provides:

> An expert may base an opinion on facts or data in the case that the expert has been made aware of or personally observed. If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted.

subject.[29] Pa. R.E. 703; *see also, supra*, *Aldridge v. Edmonds*, 561 Pa. 323, 750 A.2d 292 (Pa. 2000).

With that context, it is clear from the record that Dr. Marino considered, *inter alia*, the EHS study and the May 2016 NTP report in forming his opinion that there is a basis in established science to conclude that the Complainants could be "exposed to danger"[30] from the RF exposure levels from a PECO AMI meter. Nevertheless, even after considering the aforementioned study and report, as discussed above, Dr. Marino did not provide an unequivocal opinion, provided to a reasonable degree of scientific certainty, that if PECO proceeds with its plan to install and use an AMI smart meter at the Complainant's residence to measure her usage, the RF exposure from the smart meter will cause harm to the Complainant's health. Thus, as stated above, Dr. Marino's first opinion does not meet the standard or burden of proof in this proceeding.

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[29] Another permitted purpose of limited evidentiary treatment of an underlying study, report or research is to permit parties to establish that the expert's methodology is, or is not, "generally accepted in the relevant field" in accordance with Pa. R.E. 702. The Comment to Pa. R.E. 702(c) provides as follows:

> Pa.R.E. 702(c) differs from F.R.E. 702 in that it reflects Pennsylvania's adoption of the standard in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). The rule applies the "general acceptance" test for the admissibility of scientific, technical, or other specialized knowledge testimony. This is consistent with prior Pennsylvania law. *See Grady v. Frito-Lay, Inc.*, 576 Pa. 546, 839 A.2d 1038 (2003). The rule rejects the federal test derived from *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

Pa. R.E. 702 is applicable to administrative agency proceedings. *Gibson v. WCAB*, 580 Pa. 470, 485-86, 861 A.2d 939, 947 (Pa. 2004) (*Gibson*) (holding, in part, that notwithstanding the statutory maxim of 2 Pa. C.S. § 505, which mandates a relaxation of the strict rules of evidence in agency hearings and proceedings, the "evidentiary Rules 602, 701, and 702 are applicable to agency proceedings in general . . .").

[30] September 15, 2016 Hearing Transcript at 578.

Moreover, the Complainant's arguments in the second Exception does little to help the Complainant's case. In discussing the importance of the results of the May 2016 NTP report, the Complainant states with respect to PECO's smart meters "the potential for harm from these RF-emitting devices is completely unknown" and it offers that this is the case "because there have been no studies on the safety of smart meters." Randall Exc. at 14. There are two problems with the Complainant's argument.

First, the Complainant's assertion that there have been no studies on the safety of smart meters contradicts the record before us. Dr. Davis formed his opinion based on review of expert panel reports, at least one of which, the New Zealand Expert Ministry report, dealt with smart meters. December 7, 2016 Hearing Transcript at 1459; see also PECO Cross-Examination Exhibit 17. As Dr. Davis explained, this report concluded that "Thermal effects are the only ones for which there is clear evidence." Dr. Davis testified that the findings of the New Zealand Ministry of Health should be considered in evaluating the question of whether RF from PECO's AMI meters can cause adverse health effects. December 7, 2016 Hearing Transcript at 1546.

Second, the Complainant essentially repeats her argument from her Briefs that because the science is unproven regarding the effects of low-level RF exposure from a smart meter, that it is PECO and this Commission's statutory duty to deem the smart meter as capable of causing harm. The Complainant continues to advocate for a standard and burden that, as discussed above, is not the standard or burden in this case. Before us is an extensively-developed record by the Parties to demonstrate by a preponderance of the evidence whether or not, based on all the available scientific data, research and studies considered by the experts as of the evidentiary hearing dates, the RF exposure from a PECO smart meter will cause adverse health effects to the Complainant. The evidence submitted by the Complainant in this proceeding – specifically, the expert opinion of Dr. Marino, which was formed based on all available scientific data, research and studies that he considered as of the hearing dates, including, *inter alia*, the EHS study

and the draft May 2016 NTP report – simply fell short of the applicable standard and burden in this proceeding because Dr. Marino did not opine that the RF exposure from an AMI meter will cause harm to the Complainant's health.

Furthermore, contrary to the Complainant's characterization, our review of the record demonstrates that PECO's experts did, in fact, consider the EHS study and the May 2016 NTP report in providing their opinions and testimony. As to Dr. Marino's EHS study, Dr. Davis testified that the types of signals Dr. Marino used were not the same as what comes out of PECO's AMI meters, but were much more intense signals that repeated on/off periods more frequently than a PECO AMI meter. Dr. Davis stated that the signal pattern used by Dr. Marino was totally different from that emitted by an AMI meter. Dr. Davis testified that because of the differences in intensity and types of signals, Dr. Marino's study has no relevance to PECO's AMI meters. December 6, 2016 Hearing Transcript at 1107-1108. Meanwhile, Dr. Israel testified that is was not possible to assign some level of significance to the results of a study conducted on only one person. Dr. Israel stated, "We actually identify such studies as case reports or we talk about them as anecdotes. I think it can be an interesting story, but it has to be given appropriate weight, which is very little, in thinking about medicine and medical issues, because a study of one person doesn't really allow you not only to have much confidence in the findings, but also how to extrapolate a population." December 8, 2016 Hearing Transcript at 1547 – 1548.

Regarding the May 2016 NTP report, at the time of the hearing, the NTP Report was in draft form. Dr. Davis testified that the methodology of the May 2016 NTP report was not relevant to the RF exposure from a smart meter because the power densities used in the NTP study were extraordinarily high in comparison to the potential exposure from a PECO AMI meter. Dr. Davis testified as follows:

> "[T]he interesting thing that I noticed about it is that it exposed mice and rats to radiation in the 900 megahertz range, and the lowest exposure that he used was nearly 20 times greater than the FCC whole body average. So it may well be that it's a study that's been done at a relatively high power density that's not relevant, certainly not relevant to the incredibly low exposures that you get from PECO's AMI and AMR meter."

December 6, 2016 Hearing Transcript at 1090. When asked how that exposure compares to the exposure from a PECO AMI meter at a distance of one meter, Dr. Davis testified that "it comes out to be about 300 million times smaller." December 6, 2016 Hearing Transcript at 1091. As Dr. Davis testified, the NTP studies were done on rats and mice at a higher energy density than the FCC limits. Dr. Davis also noted several potential problems with the May 2016 NTP study as follows:

> First of all, the species of rat chosen in the study are a species that is designed to get cancer normally. My understanding of the study is that the percentage of rats that got cancer in the study that were RF exposed is the same you would get in a normal population of these rats that were not exposed. In the study, the rats that were exposed, lived longer than the controlled animals and 40 percent of the controlled animals died.

December 7, 2016 Hearing Transcript at 1282. Dr. Davis also testified that it was not possible to prove conclusively that any biological effect would be adverse in humans based solely on animal studies. December 7, 2016 Hearing Transcript at 1208.

Dr. Israel, meanwhile, testified that he took the May 2016 NTP report into consideration, but it did not change his opinion and noted that he did not give it the weight he would give a final, peer-reviewed report. December 8, 2016 Hearing Transcript at 1527-28; December 9, 2016 Hearing Transcript at 1614. When he was

asked to ignore, for argument's sake, that the May 2016 NTP report was in draft form and to consider if one study like the May 2016 NTP report could decide the question of whether RF fields cause cancer, Dr. Israel stated, "One study of an exposure and measurement of some outcome I don't think could ever show, at least in terms of what scientists and physicians ask about causation, no one study could show causation." December 8, 2016 Hearing Transcript at 1528. Moreover, Dr. Israel testified that he took possible issue with the characterization of the May 2016 NTP report as having been "peer-reviewed." It was explained during cross-examination by the Complainant's counsel that the May 2016 NTP report was reviewed by experts selected by the National Institute of Health, but Dr. Israel explained that "peer review in our world has a very special meaning. This would not qualify as peer review in the world that I live in as a scientist. Peer review is done by experts that are anonymously chosen by either an editor, or a department head, or a chairman of a granting agency, and the anonymity is considered a key part of the peer review process." December 9, 2016 Hearing Transcript at 1614-15.

Thus, our review of the record indicates that PECO's experts did, in fact, consider Dr. Marino's EHS study and the May 2016 NTP report in forming their expert opinions and testimony in this proceeding, along with all the other studies and reports that were disclosed in this proceeding as having been relied upon by PECO's experts. While PECO's experts did not weigh the EHS study and May 2016 NTP report the same as the Complainant's expert, they sufficiently explained their reasons for giving less weight to this information in forming their opinions. As discussed more extensively above, the evidence offered by PECO through its experts satisfied PECO's burden of production in this proceeding. Accordingly, we reject the Complainant's argument in her second Exception that PECO failed to meet its burden of production.

Finally, we acknowledge that the Complainant requests in the second Exception that we take "judicial notice" of the fact that, subsequent to the close of the

record, the final NTP report was expected to be released in the fall of 2018 and that the NTP website expected some of the conclusions to be changed to indicate stronger levels of evidence that cell phone RF fields caused tumors in rats. We take official notice that a final NTP report was released in November 2018, but it is not an appropriate use of the "official notice" doctrine[31] to do as the Complainant requests because the record demonstrates that the substance of what the final NTP report says and the weight it should be given by an expert are not obvious and notorious to an expert in this agency's field. With that said, we recognize that it is possible for the science related to the question of low-level RF exposure and human health to evolve and for new studies and reports to be published following the close of the record in this proceeding. It has been nearly three years since the Complaint was filed by the Complainant in April 2016 and multiple days of evidentiary hearings have been held. We cannot forever hold in abeyance a decision on this matter in recognition that the next piece of scientific evidence or study may bring to light information that was not considered by the experts as of the close of the evidentiary record. Should either Party determine that there is a material change in the underlying science that would change the facts in this proceeding, the procedural and substantive rights of the Parties appearing before this Commission are protected under our Regulations, at 52 Pa. Code § 5.571 (allowing parties to petition to reopen a record prior to a final decision for the purpose of taking additional evidence because material changes of fact have occurred since the conclusion of the hearing) and

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[31] *See Ramos v. Pennsylvania Board of Probation and Parole*, 954 A.2d 107, 110 (Pa. Cmwlth. Ct. 2008) (quoting *Falasco v. Pennsylvania Board of Probation and Parole*, 521 A.2d 991, 995, n.6 (Pa. Cmwlth. Ct. 1987) (""Official notice" is the administrative counterpart of judicial notice and is the most significant exception to the exclusiveness of the record principle, allowing an agency to take official notice of facts which are obvious and notorious to an expert in the agency's field and those facts contained in reports and records in the agency's files, in addition to those facts which are obvious and notorious to the average person; thus, official notice is a broader doctrine than is judicial notice and recognizes the special competence of the administrative agency in its particular field and also recognizes that the agency is a storehouse of information on that field consisting of reports, case files, statistics and other data relevant to its work.").

52 Pa. Code § 5.572 (allowing parties to petition for rehearing after a final decision). We note that since the final NTP report was released in November 2018, as of the entry date of this Order, which is shown on the last page of this Order, the Complainant has not filed a petition under 52 Pa. Code § 5.571 seeking to reopen the record for the purpose of taking new or additional evidence in light of the conclusions stated in the final NTP report.

Based on our review of the record and the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 2.

g. Complainant's Exception No. 3 and Disposition

In her third Exception, the Complainant argues that the ALJ erred by: (1) not accepting Dr. Marino's testimony regarding background electromagnetic exposure at the Complainant's residence; (2) relying upon Dr. Davis' calculations because they compare peak to average exposures; (3) relying upon Dr. Davis' calculations of average exposure from an AMI smart meter over the course of 24 hours; and (4) by relying upon the FCC's limits because they have not been updated in decades. Randall Exc. at 15-19 (citing Randall I.D. at 5-6, 9, 21-22; Randall M.B. at 24-25, 30-45, 62-63; Randall R.B. at 35-36).

In Reply, PECO submits that all of these arguments can be dismissed based on responses provided in PECO's Main Brief. First, PECO counters that Dr. Marino's testimony regarding background electromagnetic exposure should be doubted because Dr. Marino did not do any measurements or calculations of background or ambient fields at the Complainants' residences or places of work, and Dr. Davis testified that people's exposure to fields from everyday sources, including UHF radio stations, is much higher than fields from PECO's AMI meters. PECO R. Exc. at 13 (citing M.B. at 28-30). Second, PECO explains that Dr. Davis' testimony regarding exposure was based on the

average exposure to allow for comparison with the FCC limit that is also based on average exposure over time. PECO explains further that Dr. Davis also compared the peak emissions from the AMI meters to the FCC limit and demonstrated that even the peak emissions are 37.5 times smaller than the exposure that is allowed on an average basis. PECO R. Exc. at 14 (citing PECO M.B. at 28-20, Murphy St. 3 (Davis), Exh. CD-3). Third, PECO argues that the record demonstrates that the FCC continues to re-evaluate the science impacting its limit but has found the scientific evidence regarding adverse biological effects from non-thermal exposure levels as "ambiguous and unproven." PECO R. Exc. at 14 (citing PECO M.B. at 45-46).

Upon review, we shall deny the Complainant's third Exception for the reasons discussed below. As an initial matter, we are not persuaded by Complainant's argument that the FCC standard is outdated and therefore not protective of human health. The record demonstrates, through Dr. Davis' testimony, as discussed above, that the FCC, in establishing and maintaining its current standard, has worked and continues to work with other federal agencies that have authority in health and safety in evaluating scientific research on low-level RF exposure and human health. The FCC has concluded that the scientific evidence regarding adverse biological effects from non-thermal exposure levels is "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." Thus, we find that the FCC's limits on RF fields from AMI meters are relevant to our review of whether the RF exposure levels from PECO's smart meter are safe.

Moreover, because the FCC's limits are established based on average exposure, Dr. Davis' calculations of average exposure from a PECO smart meter are relevant. PECO must present its data in the same format to provide for an "apples to apples" comparison in order to determine if the PECO AMI meters are in compliance with the FCC limit.

We reject the Complainant's argument that Dr. Davis' calculated average exposure levels from a smart meter are misleading given that FCC exposure limit is calculated as an average over 30 minutes while Dr. Davis calculated the average over a 24-hour period. Dr. Davis explained his reasoning for averaging the meter emissions over 24 hours: "Well since these meters only transmit perhaps six times a day, you would have to say well what 30 minutes are you going to average over. Because you could average over 30 minutes when the meter is not transmitting and then the average would be zero. I'm just looking at the chronic overall time exposure from these meters." December 7, 2016 Hearing Transcript at 1246. We find that Dr. Davis' averaging time to be reasonable. A thirty-minute average could be zero as Dr. Davis explained. In our opinion, averaging over twenty-four hours provides a realistic data point for comparison with the FCC limit.

Dr. Davis also provided a calculation of the peak transmission from the AMI meter. As we can see from Table 1 below, Dr. Davis' peak calculation agrees closely with Dr. Marino's calculation of peak RF emissions. Dr. Davis' peak value was also below the FCC limit. We note that as Mr. Pritchard testified, the meter transmits six to seven times per day in Ms. Randall's neighborhood for a 70-millisecond duration each time.[32] Thus, even if the AMI meter transmitted continuously at its peak level for the entire 30 minutes, rather than at its actual length of time of less than one second/day, it would be in compliance with the FCC limit.

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[32] *See*, *supra*, n.19.

Table 1

Comparison of FCC Limit and PECO AMI Meter Transmission Levels

	FCC Maximum Permissible Exposure Limit for General Population – 30 min average 47 C.F.R. § 1.1310 (2013)	**Peak Transmission Level – Davis CD-3**	**Peak Transmission Level - Marino Direct 1**	**Average Transmission Level – Davis CD-2**
FlexNet Meter only (ZigBee trans-missions are negligible)	0.6 mW/cm^2	0.016 mW/cm^2	0.18 mW/cm^2	7.8×10^{-8} mW/cm^2

Moreover, Dr. Davis testified that PECO's AMR meter provides 83% more RF exposure at average levels than an AMI meter. PECO St. 2 at 5, PECO Exh. CD-8. Dr. Davis also testified that the peak values of AMI exposure, which is the basis of the Complainant's theory in this case, is twice as high as peak value of AMR exposure, and as shown above, AMI peak exposure is below the FCC's limit.

Based on the foregoing discussion, we shall deny the Complainant's Exception No. 3.

h. Complainant's Exception No. 4 and Disposition

In her fourth Exception, the Complainant states that the ALJ erred in accepting PECO's position that there is no reliable scientific basis for concluding that RF exposure is capable of causing any adverse biological effects in humans. Randall Exc. at 19 (citing Randall I.D. at 23). The Complainant submits that Dr. Davis took an unusually stark position that he is "absolutely certain" that low-level RF exposure cannot

cause harm even if children are chronically exposed to it. Randall Exc. at 20. The Complainant argues that Dr. Davis incorrectly ignored the May 2016 NTP report, which, according to Complainant, shows that there is reliable scientific evidence of possible biological effects on humans from RF exposure at levels below the FCC limit. Randall Exc. at 21. The Complainant notes that both Dr. Davis and Dr. Israel were incorrect in their assessments of the IARC classification of RF as a possible carcinogen. The Complainant notes that Dr. Davis disagreed with the IARC classification. The Complainant states that the ALJ erred in accepting Dr. Israel's reading of the IARC classification to mean no evidence of cancer risk. Randall Exc. at 21-22 (citing Randall M.B. at 67).

In Replies, PECO provides further explanation of Dr. Davis' conclusion that the FCC deems the science ambiguous and unproven regarding potential adverse health effects from low levels of exposure to RF emissions. PECO explains that the FCC states that proof of harmful biological effects is ambiguous and unproven because the FCC makes it clear that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." PECO R. Exc. at 15 (citing FCC's online FAQ). Regarding the IARC classification that radio frequency fields are a "possible" carcinogen, PECO explains that Dr. Israel provided context for understanding, referring back to its Main Brief, p. 37, as discussed above.

Upon review, we shall deny the Complainant's fourth Exception for the reasons that follow. As discussed above, Dr. Davis testified that the FCC's stated conclusion that proof of harmful biological effects from low-level RF exposure is "ambiguous and unproven" but that "further research is needed to determine the generality of such effects and their possible relevance, if any, to human health." Moreover, Dr. Davis provided testimony about the scientific and technical principles relevant to this case, including his analysis of the power densities and pulse patterns used

in certain underlying scientific studies, such as the EHS study and May 2016 NTP report, as compared to the actual exposure from a PECO AMI meter.

Additionally, regarding the IARC classification that RF fields are a "possible" carcinogen, the record reflects that Dr. Israel provided context for his understanding of this classification. Having considered the IARC classification, among other information, Dr. Israel still provided his unequivocal opinion that there is no reliable medical basis to conclude that RF fields from PECO's electric AMI meter caused, contributed to, or exacerbated, or will cause, contribute to, or exacerbate, any of the symptoms identified by the Complainant. Murphy Rebuttal Testimony of Mark Israel at 11-32. Dr. Israel's overall medical opinion is that exposure to RF fields from PECO's smart meters have not been and will not be harmful to the Complainant's health. He held both his symptom-specific and overall medical opinions to a reasonable degree of medical certainty. Murphy Rebuttal Testimony of Mark Israel at 32. Dr. Davis' testimony and Dr. Israel's opinion constitute legally competent evidence that satisfied PECO's burden of production in this proceeding. Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 4.

i. Complainant's Exception No. 8 and Disposition

In her eighth Exception, the Complainant avers that ALJ Heep failed to give any weight to the Complainant's testimony about her medical vulnerability to RF exposure or to Dr. Honebrink's recommendation that Complainant avoid RF exposure from PECO's smart meter. The Complainant states the Commission lacks the authority to override the decision of the Complainant and her doctor about her health risks from smart meter exposure. Randall Exc. at 28 (citing Randall I.D. at 5-6). The Complainant explains that there is no precedent for the Commission to override the judgement of medical professionals. According to the Complainant, neither the utility nor the Commission's attempt to second guess the medical judgment of physicians who treat

non-paying utility customers when they submit medical certificates in order to prevent the utility from shutting off their power. The Complainant asserts that the Commission should not permit the second guessing of medical judgement here. Randall Exc. at 29 (citing 66 Pa. C.S. 1406(f)).

In Replies, PECO asserts that the Randall I.D. does not override the judgement of medical professionals. PECO provides that the testimony from the treating physicians does not support the Complainant's burden of proving that they were or will be harmed by PECO's smart meters. PECO R. Exc. at 2324.

Upon review, we shall deny the Complainant's eighth Exception. As discussed above, the Complainant had the burden of proving the allegations in her Complaint and that the utility is responsible for the problem. Specifically, the Complainant was required to demonstrate by a preponderance of the evidence that she is "medically vulnerable", as she alleged in her Complaint, and that PECO's use of an AMI meter at her residence will cause harm to her health, also as she alleged in her Complaint. While we accepted the testimony of Ms. Randall and her treating physician, Dr. Honebrink, the Complainant nevertheless did not meet her burden of demonstrating that she is a medically vulnerable customer of PECO, as explained above. Moreover, as discussed extensively above, the Complainant's expert witness on causation, Dr. Marino, would not state unequivocally that a PECO AMI meter would cause harm to the Complainant's health.

Finally, we wish to address the Complainant's argument regarding medical certificates permitted under 66 Pa. C.S. § 1406(f), 52 Pa. Code § 56.11. The use of a medical certificate to avoid shut-off is a protection afforded by statute and Regulation for a utility customer or a member of the customer's household who is seriously ill or afflicted with a medical condition that will be aggravated by cessation of service. There has been no fact established in this proceeding to demonstrate that a cessation of electric

utility service by PECO would aggravate the Complainant's alleged health condition of medical vulnerability. To the contrary, the Complainant has unsuccessfully tried to establish the fact that a continuation of her electric utility service that would include the installation and use of an AMI meter at her residence to measure her consumption would aggravate the Complainant's health. Thus, the Complainant's argument regarding medical certificates used by customers in billing disputes to avoid service shut-off is irrelevant to the issues in this case.

Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 8.

3. Whether "Reasonable" Service under Section 1501 Requires PECO to Make an Exception to the Installation and Use of a Smart Meter at the Complainant's Residence

a. Positions of the Parties

The Complainant asserts that Dr. Marino explained in his testimony that there is a reliable scientific basis to conclude that RF exposure can cause harm to the Complainant but at present it would cost many tens of thousands of dollars to set up the experiment to test the theory on the Complainant. Randall M.B. at 75 (citing September 15, 2016 Hearing Transcript at 643-44). The Complainant argues that in the absence of a consensus diagnosis, the Commission should defer to the judgment and recommendation of the Complainant's treating physician. The Complainant consulted with her treating physician who recommended that she avoid RF exposure. Randall M.B. at 75 (citing Direct Testimony of Dr. Ann Honebrink, September 27, 2016 Tr. at 16). The Complainant argues that it does not matter whether the treating physician had read up on RF exposure or was plainly exercising common sense clinical judgment – according to the Complainant, the Commission has no authority or special competence (under Section 1501 of the Code or otherwise) to second-guess the medical judgment of a

treating physician. Randall M.B. at 76. Ms. Randall is concerned about chronic RF exposure based on her medical history. Randall M.B. at 32. Given the state of the scientific record, it would be cruel to subject the Complainant[s] to RF exposure from an AMI meter absent some compelling justification. Randall M.B. at 77. According to the Complainant, there is no compelling justification under Act 129. Randall M.B. at 79. Conceding that the General Assembly may have approved the concept of a smart meter roll out that would encompass all customers with no generalized opt out, the Complainant argues that the General Assembly did not indicate its intent to force exposure on persons like the Complainant. Randall M.B. at 79. The Complainant argues that Act 129 and Section 1501 of the Code are completely consistent and authorize, if not require, PECO to accommodate customers with legitimate concerns based on their physician's medical recommendation. Randall M.B. at 80.

In response, PECO asserts that it offers its customers, including the Complainant, reasonable alternatives regarding AMI meter installation. PECO M.B. at 50. As to installation of the smart meter in a different location, PECO's witness Mr. Pritchard testified that under PECO's Tariff, Rules 3.2 and 3.4, the customer has the option of relocating the meter to a different location because the customer has the right under the tariff to choose the location of the meter board and socket (while PECO chooses the type of meter). If the customer would like a different location for the AMI meter, they can hire an electrician at the customer's cost to move the meter board/socket to a new location on their property. To the extent such relocation would require work on the PECO system to extend its conductors to the new meter board location, PECO's tariff Rule 6.2 requires the customer to be responsible for the costs 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. PECO M.B. at 50-51 (citing Murphy Rebuttal Testimony of Glenn Pritchard at 10; PECO Exh. GP-3). PECO notes that this option remains open, and, if the Complainant wises to

explore this option, PECO will work with them to relocate their meter. PECO M.B. at 51.

b. ALJ's Initial Decision

In her Initial Decision, the ALJ recognized that the Commission has previously determined that there is no general "opt-out" right of smart meter installation for electric utility customers. Randall I.D. at 15 (citing *January 2013 Povacz Orde*r).

c. Complainant's Exception No. 6 and PECO's Reply

In her sixth Exception, the Complainant states that the ALJ erred in concluding that PECO acted reasonably in accordance with the Act 129 Installation Plan approved by the Commission. Randall Exc. at 25 (citing Murphy I.D. at 31-32). The Complainant explains that nowhere in Act 129, the Orders of the Commission, or PECO's tariff is there any requirement that every single customer, including medically vulnerable customers, must accept an RF-emitting smart meter. According to the Complainant, the General Assembly in Act 129 may have approved the concept of a smart meter rollout that would encompass all customers, with no generalized opt-out, but nothing suggests that the General Assembly intended to permit utilities to force customers to accept exposure where they object on a doctor's recommendation, as is the case here. The Complainant explains that there is nothing in the law that mandates this result, and that Section 1501 also prohibits it. Randall Exc. at 25-26.

PECO asserts that the Complainant's sixth Exception is an "opt-out" argument. PECO provides that the Commission's most recent order on an opt-out claim is *Frompovich v. PECO*, C-2017-2474602 (Opinion and Order entered May 3, 2018) (*Frompovich)*. According to PECO, the *Frompovich* decision states that the General

Assembly intended for every single customer to accept a smart meter, even if they object based on health concerns. PECO R. Exc. at 20-21.

d. Disposition

As the ALJ correctly concluded, we have previously determined that that Act 129 does not allow an EDC customer to "opt out" of smart meter installation generally. Randall I.D. at 15 (citing *January 2013 Povacz Order)*. However, we also previously concluded, as discussed above, that it is our duty under Section 1501 of the Code, 66 Pa. C.S. § 1501, to hear and adjudicate individual formal complaints raising physical or health safety issues regarding a utility's smart meter installation and use. *Kreider*. Here, the Complainant alleged in her Complaint that she is a medically vulnerable customer of PECO's due to her medical history and that the RF exposure from a PECO smart meter that PECO proposes to install at the Complainant's residence and use to measure her usage will adversely affect her health. Based on our review of the record, as discussed extensively above, we have concluded that the Complainant did not meet her burden of proof in demonstrating that she is in fact medically vulnerable as to RF exposure or that RF exposure from a PECO AMI meter will adversely affect her health. Therefore, the Complainant has failed to demonstrate that the RF exposure from a PECO smart meter is unsafe.

The Complainant essentially argues it would be absurd for the Commission to allow PECO to install and use an AMI meter on the Complainant's property given her medical needs as testified to by the Complainant and her treating physician; that the General Assembly did not intend an absurd result; and that Section 1501 requires PECO to accommodate the medical needs of this customer by not installing only an analog metering device on her property. However, we reiterate that the Complainant has failed to demonstrate that the RF exposure from a PECO smart meter is unsafe. Accordingly, her request to not receive an AMI meter as part of receiving electric service from PECO

is essentially the same as any other opt-out request based on customer preference. As we previously indicated in the *January 2013 Povacz Order*, Section 2807(f)(2) of the Code, *supra*, is controlling here, and the use of the word "shall" in the statute indicates the General Assembly's direction that all customers will receive a smart meter. If the General Assembly intended for EDCs to invest in and maintain two separate sets of meter systems based on customer preference – an analog system separate from an AMI system – as part of furnishing "adequate, efficient, safe, and reasonable service and facilities"[33] at "just and reasonable"[34] rates charged customers, it would have plainly stated as much in Act 129, but it did not.

Based on the foregoing discussion and analysis, we shall deny the Complainant's sixth Exception.

4. Whether the Complainant's Substantive Due Process Rights Will Be Violated by an Order Finding for PECO

a. Positions of the Parties

The Complainant argues that should the Commission rule in favor of PECO in this proceeding and thus force the Complainant to accept the exposure of RF fields against her wishes and against the recommendation of her physician, there would be an obvious violation of the Complainant's due process clause of the 14th Amendment of the United States Constitution as well as the due process protections in Article 1, Section 11 of the Pennsylvania State Constitution. The Complainant argues that this is evident from the discussion of broccoli in the legal debate about the Affordable Care Act that

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[33] *See*, *supra*, 66 Pa. C.S. § 1501.

[34] *See* 66 Pa. C.S. § 1301, which provides "Every rate made, demand, or received by any public utility…shall be just and reasonable and in conformity with regulations or orders of the [C]ommission."

culminated in *National Federation of Independent Businesses v. Sebelius*, 567 U.S. 519, 660 (2012). During the argument in that case, Justice Scalia asked whether Congress could require citizens to buy broccoli. While the issue in that case was determining the extent of Congress' power under Article I, commentators noted that requiring a consumer to buy broccoli would violate fundamental notions of due process, and forcing a consumer to eat broccoli (not just purchase it) would certainly violate due process. Randall M.B. at 73-74 (citing Michael C. Dorf, *Commerce, Death Panels, and Broccoli: Or Why the Activity/Inactivity Distinction in the Health Care Case was Really About the Right to Bodily Integrity*, 29 GA. ST. U.L. REV. 897, 917 (2013)).

The Complainant argues that PECO is attempting to do just that – instead of asking its customers for permissions to expose them to RF emissions (purchasing broccoli with option to eat), it is forcing RF exposure on them without consent (force feeding broccoli). The Complainant argues that this raises serious constitutional issues. Randall M.B. at 74 (citing *Phillips v. County of Allegheny*, 515 F. 3d 224, 235 (3d Cir. 2008) ("[I]ndividuals have a constitutional liberty interest in personal bodily integrity that is protected by the Due Process Clause of the Fourteenth Amendment."; *In re Cincinnati Radiation Litig*., 874 F. Supp. 796, 810-11 (S.D. Oh. 1995) ("The right to be free of state-sponsored invasion of a person's bodily integrity is protected by the Fourteenth Amendment guarantee of due process.")). The Complainant submits that any Commission interpretation of statutes or regulations that would infringe constitutionally protected rights for the Complainant should be avoided. Randall M.B. at 74.

In response, PECO argues that the Complainant's substantive due process argument fails when viewed against the correct standard and burden in this proceeding and given Dr. Marino's testimony that "there is no evidence that would warrant the statement" that PECO's AMI meters will harm the Complainants. See PECO M.B. at 27, n.12.

b. ALJ's Initial Decision

The ALJ concluded that there is no violation of the Complainant's due process rights here. Randall I.D. at 13. The ALJ explained that Act 129 directed EDCs to file smart meter technology procurement and installation plans with the Commission for approval and the Act requires any smart meter technology to have bidirectional or two-way communication technology. Randall I.D. at 14 (citing 66 Pa.C.S. § 2807(g)). The ALJ noted that the Commission approved the smart meter installation plan developed by PECO and PECO is replacing AMR meters with AMI or "smart meters" in accordance with that approved plan. The ALJ provided that the Commission concluded that there is no provision in the Code of the Commission's Regulations or Orders that allows a PECO customer to "opt out" of smart meter installation. Randall I.D. at 15 (citing *January 2013 Povacz Order*). The ALJ concluded that by seeking to install a smart meter at the service address, PECO was and is attempting to comply with Act 129, the orders of the Commission and its tariff. Randall I.D. at 15.

The ALJ stated that the due process requirements of the Pennsylvania Constitution and the 14th Amendment to the Federal Constitution are indistinguishable. According to the ALJ, the U.S. Constitution requires that the Commission provide due process to the parties appearing before them and this requirement is met when the parties are afforded notice and the opportunity to appear and be heard. Randall I.D. at 13 (citing *Caba v. Weaknecht*, 64 A.3d 39 (2013), citing *Turk v. Dep't of Transp.*, 983 A.2d 805, 818 (Pa. Cmwlth. 2009); *Schneider v. Pa. Pub. Util. Comm'n*., 479 A.2d 10 (Pa. Cmwlth. 1984)). The ALJ opined that a review of the history in this matter shows that the Complainant has had the opportunity to be heard during several weeks of administrative procedures and hearings spread over many months. The ALJ stated that opportunity continued with briefs submitted on Complainant's behalf and the instant review. Randall I.D. at 13. Regarding the substantive matter, the ALJ, after reviewing the testimony from the experts and the testimony of the Complainant herself, concluded that the Complainant

did not meet her burden of proving that the installation of a smart meter would adversely affect her health or otherwise constitute unreasonable or unsafe service. Randall I.D. at 23.

c. Complainant's Exception No. 7 and PECO's Reply

In the seventh Exception, the Complainant states that the ALJ erred in concluding that mandated exposure to RF-emitting smart meters would not violate due process. The Complainant avers that the ALJ erroneously concluded that because the Complainant had an opportunity to be heard in these proceedings, there is no due process violation. Randall Exc. at 26 (citing Randall I.D. at 13). According to the Complainant, the ALJ confused the Complainant's argument, which is a substantive due process claim, with a procedural due process claim. The Complainant explains that her argument is that forced RF exposure violates basic principles of respect for bodily integrity and cannot be justified here, regardless of the procedure provided. Randall Exc. at 26-27.

In its Replies to the Complainant's seventh Exception, PECO provides that the Complainants are correct that the Initial Decision discussed the due process argument as a procedural, rather than a substantive, due process argument. PECO notes that if that is error, it is harmless, because elsewhere the Initial Decision made the determination that the Complainants did not meet their burden of proving the EFs from PECO's AMI meters would harm them. According to PECO, the Initial Decision thus correctly concluded that the factual predicate of the substantive due process argument -- "harm to bodily integrity" -- was not proven. PECO provides that the substantive due process argument should thus be dismissed because, quite simply, the Complainants did not prove (and in fact admit that they did not prove) that they would be harmed by PECO's AMI meters. PECO R. Exc. at 22-23.

d. Disposition

Clearly, the ALJ understood the Complainant's due process claim was more than a procedural question. Perhaps out of an abundance of caution, the ALJ discussed the procedural question first followed by her substantive disposition of the claims before her. In the Initial Decision, the ALJ made the determination that the Complainant did not meet her burden of proving the RF exposure from PECO's AMI meter would harm her health. Likewise, we determine above that the Complainant failed to demonstrate by a preponderance of the evidence that RF exposure from a PECO smart meter will cause or contribute to adverse health effects to the Complainant. In failing to meet the standard or burden in this proceeding, the Complainant has not shown that "forced RF exposure" from a PECO AMI meter violates "basic principles of respect for bodily integrity" or her substantive due process rights under the Pennsylvania or Federal Constitutions.

Based on the foregoing discussion and analysis, we shall deny the Complainant's Exception No. 7.

IV. Conclusion

In light of the above discussion, we shall: (1) deny the Complainant's Exceptions; (2) modify, in part, the ALJ's Initial Decision; and (3) dismiss the Complaint, the Complaint, consistent with this Opinion and Order; **THEREFORE,**

IT IS ORDERED:

1. That the Exceptions filed by Cynthia Randall and Paul Albrecht on May 14, 2018, to the Initial Decision of Administrative Law Judge Darlene D. Heep

issued on March 20, 2018, at Docket No. C-2016-2537666, are denied, consistent with this Opinion and Order.

2. That the Initial Decision of Administrative Law Judge Darlene D. Heep, issued on March 20, 2018, at Docket No. C-2016-2537666, is modified, in part, consistent with this Opinion and Order.

3. That the Formal Complaint filed by Cynthia Randall and Paul Albrecht, on April 1, 2016, at Docket No. C-2016-2537666, is dismissed.

4. That this proceeding is marked closed.

BY THE COMMISSION,

Rosemary Chiavetta
Secretary

(SEAL)

ORDER ADOPTED: May 9, 2019

ORDER ENTERED: May 9, 2019

Appendix E

66 Pa. C.S.A. § 1501

§ 1501. Character of service and facilities

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. Any public utility service being furnished or rendered by a municipal corporation beyond its corporate limits shall be subject to regulation and control by the commission as to service and extensions, with the same force and in like manner as if such service were rendered by a public utility. The commission shall have sole and exclusive jurisdiction to promulgate rules and regulations for the allocation of natural or artificial gas supply by a public utility.

66 Pa. C.S.A. § 2807

§ 2807. Duties of electric distribution companies
…
(f) Smart meter technology and time of use rates.--
(1) Within nine months after the effective date of this paragraph, electric distribution companies shall file a smart meter technology procurement and installation plan with the commission for approval. The plan shall describe the smart meter technologies the electric distribution company proposes to install in accordance with paragraph (2).
(2) Electric distribution companies shall furnish smart meter technology as follows:
(i) Upon request from a customer that agrees to pay the cost of the smart meter at the time of the request.
(ii) In new building construction.
(iii) In accordance with a depreciation schedule not to exceed 15 years.
(3) Electric distribution companies shall, with customer consent, make available direct meter access and electronic access to customer meter data to third parties,

including electric generation suppliers and providers of conservation and load management services.
(4) In no event shall lost or decreased revenues by an electric distribution company due to reduced electricity consumption or shifting energy demand be considered any of the following:
(i) A cost of smart meter technology recoverable under a reconcilable automatic adjustment clause under section 1307(b), except that decreased revenues and reduced energy consumption may be reflected in the revenue and sales data used to calculate rates in a distribution rate base rate proceeding filed under section 1308 (relating to voluntary changes in rates).
(ii) A recoverable cost.
(5) By January 1, 2010, or at the end of the applicable generation rate cap period, whichever is later, a default service provider shall submit to the commission one or more proposed time-of-use rates and real-time price plans. The commission shall approve or modify the time-of-use rates and real-time price plan within six months of submittal. The default service provider shall offer the time-of-use rates and real-time price plan to all customers that have been provided with smart meter technology under paragraph (2)(iii). Residential or commercial customers may elect to participate in time-of-use rates or real-time pricing. The default service provider shall submit an annual report to the price programs and the efficacy of the programs in affecting energy demand and consumption and the effect on wholesale market prices.
(6) The provisions of this subsection shall not apply to an electric distribution company with 100,000 or fewer customers.
(7) An electric distribution company may recover reasonable and prudent costs of providing smart meter technology under paragraph (2)(ii) and (iii), as determined by the commission. This paragraph includes annual depreciation and capital costs over the life of the smart meter technology and the cost of any system upgrades that the electric distribution company may require to enable the use of the smart meter technology which are incurred after the effective date of this paragraph, less operating and capital cost savings realized by the electric distribution company from the installation and use of the smart meter technology. Smart meter technology shall be deemed to be a new service offered for the first time under section 2804(4)(vi). An electric distribution company may recover smart meter technology costs:
(i) through base rates, including a deferral for future base rate recovery of current basis with carrying charge as determined by the commission; or
(ii) on a full and current basis through a reconcilable automatic adjustment clause under section 1307.

(g) Definition.--As used in this section, the term “smart meter technology” means technology, including metering technology and network communications technology capable of bidirectional communication, that records electricity usage on at least an hourly basis, including related electric distribution system upgrades to enable the technology. The technology shall provide customers with direct access to and use of price and consumption information. The technology shall also:
(1) Directly provide customers with information on their hourly consumption.
(2) Enable time-of-use rates and real-time price programs.
(3) Effectively support the automatic control of the customer's electricity consumption by one or more of the following as selected by the customer:
(i) the customer;
(ii) the customer's utility; or
(iii) a third party engaged by the customer or the customer's utility.

IN THE SUPREME COURT OF PENNSYLVANIA

Maria Povacz	:	622 MAL 2020
v.	:	623 MAL 2020
Pennsylvania Public Utility Commission	:	624 MAL 2020

Petition of: PECO Energy Company

PROOF OF SERVICE

I hereby certify that this 23rd day of November, 2020, I have served the attached document(s) to the persons on the date(s) and in the manner(s) stated below, which service satisfies the requirements of Pa.R.A.P. 121:

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IN THE SUPREME COURT OF PENNSYLVANIA

PROOF OF SERVICE

(Continued)

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IN THE SUPREME COURT OF PENNSYLVANIA

PROOF OF SERVICE

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IN THE SUPREME COURT OF PENNSYLVANIA

PROOF OF SERVICE

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IN THE SUPREME COURT OF PENNSYLVANIA

PROOF OF SERVICE

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/s/ Stephen G. Harvey

(Signature of Person Serving)

Person Serving:	Harvey, Stephen G.
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Representing:	Petitioner Albrecht, Paul Petitioner Murphy, Laura Sunstein Petitioner Povacz, Maria Petitioner Randall, Cynthia

IN THE SUPREME COURT OF PENNSYLVANIA

Maria Povacz, Respondent	:	619 MAL 2020
v.	:	620 MAL 2020
Pennsylvania Public Utility Commission, Petitioner	:	621 MAL 2020

PROOF OF SERVICE

I hereby certify that this 23rd day of November, 2020, I have served the attached document(s) to the persons on the date(s) and in the manner(s) stated below, which service satisfies the requirements of Pa.R.A.P. 121:

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Phone:	717-787-7466
Representing:	Respondent Pennsylvania Public Utility Commission Respondent Pennsylvania Public Utility Commission Respondent Public Utility Commission

Served:	Kriss E. Brown
Service Method:	eService
Email:	kribrown@pa.gov
Service Date:	11/23/2020
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Phone:	717--78-7-5000
Representing:	Respondent Pennsylvania Public Utility Commission Respondent Pennsylvania Public Utility Commission Respondent Public Utility Commission

IN THE SUPREME COURT OF PENNSYLVANIA

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IN THE SUPREME COURT OF PENNSYLVANIA

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IN THE SUPREME COURT OF PENNSYLVANIA

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IN THE SUPREME COURT OF PENNSYLVANIA

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/s/ Stephen G. Harvey

(Signature of Person Serving)

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