prudence. According to the OCA, it is mere fortuity that the SMC is available at the time Duquesne proposed to make these needed upgrades to its systems. OCA M.B. at 21.

Next, the OCA cited to Section 2807(f)(7) of the Code which addresses the recovery of costs of providing smart meter technology. The OCA noted that the definition of "smart meter technology" is provided within Section 2807(g) which states, in part:

> . . . 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.

66 Pa. C.S. § 2807(g).

The OCA explained that under this definition, only the costs of distribution system upgrades that enable metering and network communication technology can be recovered through the SMC. The OCA opined that the ADMS is not needed to enable the smart meters as they are capable of working with the existing OAS. Rather, the OCA maintained that this upgrade is a cost of doing business, that is, a cost an EDC must incur to provide safe, reliable and adequate service. OCA M.B. at 22.

The OCA argued the ADMS should not be recovered through the SMC and that if Duquesne goes forward with this project, it should instead seek recovery in a base rate proceeding, because the Company already receives revenues in base rates to pay for outage and distribution management. According to the OCA, any costs associated with the upgrades to these systems should remain in base rates because this is the standard practice for recovering these types of costs. The OCA explained that through base rates, operating efficiencies and associated cost reductions that accrue as a result of the

investment in the ADMS will eventually flow back to customers. The OCA pointed out that, at this time, soft benefits cannot be quantified nor is the longevity of the soft benefits quantifiable at this time. However, the OCA posited that recovering the costs of the ADMS project as part of the base rates will allow for the forecasted soft benefits to be captured through base rates, over the same time period that the costs of the project are being collected through base rates. OCA M.B. at 22-23.

Citizen Power questioned the cost recovery of the proposed ADMS Project through the SMC, which allocates common costs on a per meter basis as opposed to recovering ADMS costs in base rates. Citizen Power claimed that there exists a requirement that "all measures associated with an EDC's smart metering plan shall be financed by the customer class that receives the benefit of such measures." Citizen Power M.B. at 9 (quoting *Implementation Order* at 32). Citizen Power submitted that if a customer class receives a negligible amount of benefits from a measure, it should not be required to contribute toward the financing of such measure. Citizen Power opined that the benefits from the reduced call volume and storm efficiency accrue directly to Duquesne and therefore the associated costs are not recoverable. Citizen Power asserted that in this case, using base rates would be much more appropriate from the standpoint that rates should be prudent and reasonable. According to Citizen Power, Duquesne's proposed method of cost recovery would allocate approximately ninety percent of the costs to the residential class. However, Citizen Power claimed that based on the estimated value of reliability improvement derived from the ICE calculator, less than two percent of the societal benefits would accrue to the residential class. Citizen Power opined that this extreme divergence between costs and benefits points to the propriety of allocating ADMS costs to base rates. Citizen Power M.B. at 9-10 (citing OCA St. 1-S at 4; and Duquesne Exh. JK 2-R at 2).

2. ALJ's Decision

In her Initial Decision, the ALJ found that Citizen Power's argument was persuasive given the unquantifiable nature of estimating societal or soft benefits. The ALJ found that these soft benefits cannot be used to calculate the cost effectiveness, especially since ninety percent of the costs for OMS and DMS will be borne by residential customers who will only see two percent of the benefits from these new functionalities. The ALJ pointed out that Duquesne admitted it cannot quantify these benefits now. According to the ALJ, soft benefits can be quantified better after the fact and therefore can be better recovered through a base rate proceeding when the reliability and relative costs per customer class are routinely investigated and managed. I.D. at 53.

The ALJ stated that her decision on this issue would be different if the costs of implementing these two functionalities (through the implementation of the ADMS and after creating the electric model) were not so high. However, the ALJ asserted that the Commission's mandate was clear when it ordered Duquesne to determine if the smart meter functionalities were cost effective. The ALJ stated that if cost effective, the Commission wanted Duquesne to add the functionalities and seek cost recovery through the SMC. Unfortunately, the ALJ concluded that the proposed implementation is not cost effective. While the availability of these functionalities could be very useful, the ALJ averred that their implementation, and therefore cost recovery, cannot be made through the SMC due to a failure of the Company to show cost effectiveness. Additionally, the ALJ maintained that the other large EDCs in Pennsylvania have implemented similar versions of the OMS and DMS but sought recovery through their respective base rates. I.D. at 53.

3. Exceptions and Replies

In its Exceptions, Duquesne states that the Commission's *Implementation Order* clearly defined enhanced outage communication, outage restoration and voltage monitoring capabilities as desired smart meter capabilities. Duquesne Exc. at 16 (citing *Implementation Order* at 16). In addition, Duquesne states that the Commission's Order at *Petition of Duquesne Light Company for Approval of Its Final Smart Meter Procurement and Installation Plan*, Docket No. M-2009-2123948 (Order entered May 6, 2013) (*2013 Smart Meter Order*) at 15, required the Company to evaluate whether including enhanced outage communication, outage restoration and voltage monitoring in the Company's Smart Meter Plan was cost effective. Duquesne maintains that it is proposing to implement the ADMS project to enhance its outage communication, outage restoration and voltage monitoring capabilities pursuant to the *Implementation Order* and the Company's *2013 Smart Meter Order*. According to Duquesne, the ALJ's conclusion that the Company should recover ADMS costs in base rates and not through the SMC is contrary to Commission precedent and to Act 129 of 2008. Duquesne Exc. at 16-17.

Next, Duquesne explains that Act 129 provided EDCs the discretion to recover smart meter technology costs through base rates or on a full and current basis through a reconcilable automatic adjustment clause under Section 1307. Duquesne asserts that it has elected to recover such costs on a full and current basis through its SMC, which is a reconcilable automatic adjustment clause under Section 1307. Duquesne further asserts that the Commission has expressly authorized it and all other EDCs in Pennsylvania to recover their smart meter costs through reconcilable automatic adjustment clauses under Section 1307. Duquesne Exc. at 17-18 (citing *Petition of Duquesne Light Company for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123948 (Order entered May 11, 2010) at 14; *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) at 17-18; *Joint Petition of Metropolitan Edison Company, Pennsylvania Electric Company and Pennsylvania Power Company for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123950 (Order entered June 9, 2010) at 27-28; *Petition of PPL Electric Utilities Corporation for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123945 (Order entered June 24, 2010) at 10-11).

Next, Duquesne states that the ALJ's justification for denying ADMS cost recovery through the SMC on the basis that other EDCs have recovered ADMS costs through base rates is not a valid basis. While Duquesne notes that the OCA claims it is "standard practice" for recovering ADMS costs in base rates, the OCA presented no detail about the level of ADMS costs incurred by other EDCs and to what extent that EDCs recovered ADMS costs in base rates or in their respective smart meter charges. Furthermore, Duquesne notes that the OCA admitted that other EDCs in Pennsylvania have recovered "costs associated with supplemental outage and voltage management upgrades through the SMC." Duquesne Exc. at 19 (quoting OCA St. No. 1-R at 4). Duquesne avers that it must upgrade its outage restoration, outage communication and voltage monitoring capabilities to comply with the Commission's smart meter requirements and as such, should be permitted to recover these system upgrade costs in its SMC. Duquesne Exc. at 19-20.

Duquesne explains that all EDCs in Pennsylvania had implemented different levels of meter functionality at the time that Act 129 was enacted. Duquesne notes that it has an automated meter reading system that was read remotely, that PPL had an automated meter reading system that was able to read meters hourly over the electric lines and that the FirstEnergy EDCs read meters via a meter reading workforce. According to Duquesne, all of these various systems had to be replaced by smart meter technology and the Commission had recognized that each EDC had unique circumstances in its *Implementation Order*. Duquesne maintains that it had implemented an OAS

system before Act 129 was enacted to meet its service requirements for outage restoration and communication. Duquesne opines that its proposal to implement the ADMS project is a direct response to Act 129 and the *Implementation Order* requirements and the Company should be permitted to recover ADMS costs in its SMC. Duquesne Exc. at 20.

Next, Duquesne asserts that the ADMS project is not a normal cost of doing business for the Company as alleged by the OCA. Duquesne explains that its current OAS which it has used for many years to provide service to customers meets the Company's normal and reasonable service requirements under the Code. Installing the ADMS system is a direct response to the Commission's smart meter orders. Also, Duquesne points out that the OCA raised a similar argument in West Penn's smart meter proceeding, arguing that West Penn should not be permitted to recover CIS costs in its SMC because CIS costs are normal operating costs.[8] However, Duquesne states that the Commission denied this argument finding that the CIS costs are a recoverable cost of compliance with smart meter implementation and are recoverable through West Penn's smart meter surcharge. According to Duquesne, its proposed ADMS project is a smart meter project to comply with the smart meter mandates of Act 129. Duquesne Exc. at 20-22.

In its Replies to Exceptions, the OCA states that the ALJ correctly determined that if Duquesne proceeds with implementation of the ADMS, recovery of the costs of the project should be sought in a base rate proceeding and not obtained through the smart meter charge. First, the OCA submits that ADMS costs do not meet the definition of smart meter technology as provided in Act 129. The OCA states that this Act defines "smart meter technology" under 66 Pa. C.S. § 2807(g). The OCA asserts that ADMS costs are not "smart meter technology" costs under this definition as both the

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[8] Duquesne Exc. at 20-21 (citing *Joint Petition of Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company and West Penn Power Company for Approval of Their Smart Meter Deployment Plan,* Docket Nos. M-2013-2341990, *et al.*, (Order entered March 6, 2014) at 33-34).

OMS and DMS systems utilize the bidirectional communication and data production capabilities of the smart meter technology to better manage Duquesne's distribution system, but they are not necessary to enable the technology. According to the OCA, only the costs of distribution system upgrades that enable metering and network communication technology can be recovered through the SMC. The OCA avers that Duquesne's testimony at the Further Evidentiary Hearing established that the ADMS is not needed to enable the smart meters as they are capable of working with Duquesne's existing outage monitoring system, the OAS. OCA R. Exc. at 10-12 (citing Tr. at 98).

The OCA posits that installation of the OMS and DMS are not exclusively driven by the provisions of the *Implementation Order*, but that they represent upgrades to systems that should occur in the regular course of doing business as a public utility. The OCA points out that a Duquesne witness testified that the OAS is approximately twenty years old and would need to be upgraded at some point. OCA R. Exc. at 13 (citing Tr. at 98). The OCA avers that another Duquesne witness agreed that part of the cost of upgrading to the OMS from OAS and adding DMS is just the cost of doing business as an EDC and part is in addition to that. *Id.* (citing Tr. at 145-146, 148). The OCA maintains that this same witness revealed that Duquesne's impetus for installing the ADMS is being driven not just by the Commission's *Implementation Order,* but by the need simply to upgrade key systems as part of the cost of doing business as a public utility. As such, the OCA submits that the costs of implementing the ADMS are really costs that would be incurred by Duquesne in the ordinary course of business and recovery of these costs should be sought through a base rate proceeding where all issues can be thoroughly examined. OCA R. Exc. at 13-14.

The OCA submits that Duquesne is essentially proposing to bootstrap normal operating investment and expenses incurred in the ordinary course of business and typically recovered through base rates into smart meter costs recoverable through the SMC which allows for accelerated recovery and limits opportunity to explore issues of

reasonableness and prudence. According to the OCA, it is mere fortuity that the SMC is available at the time Duquesne proposes to make needed upgrades to its systems. OCA R. Exc. at 14.

Finally, the OCA posits that because the cost-effectiveness of ADMS can only be established by relying on the difficult to quantify and speculative societal benefits and because these benefits represent such a significant portion of the claimed overall benefits of the project and cannot be reflected as a savings offset in the surcharge, seeking recovery through base rates is appropriate as it would allow for the potential recovery of only those costs found to be reasonable and prudent. OCA further contends that it would better coincide with the period over which the benefits materialize, to the extent that they do, and would ensure that cost recovery from the rate classes and the benefits of the system are properly aligned. The OCA explains that based on the results of Duquesne's application of the ICE calculator there was an imbalance between the cost recovery of ADMS and the expected benefits by rate class because at the conclusion of the ADMS project life, more than half of the benefits would be from "societal" benefits. Also, the OCA explains that according to Duquesne's ICE calculator results, only 1.5 percent of the societal benefits will accrue to the residential class. However, the OCA points out that recovery through the SMC would impose ninety percent of ADMS costs on the residential class. Therefore, the OCA strongly supports the reasoning of the ALJ that points to this disparity as a reason to support base rate recovery for ADMS costs. The OCA opines that questions of cost allocation among rate classes are best and most comprehensively addressed in the context of a base rate case. The OCA submits that front-loading the costs of the ADMS through the SMC in the face of the uncertainty of the benefits from the project, would not meet the just and reasonable standard of ratemaking. OCA R. Exc. at 15.

4. Disposition

Upon our review of the evidence of record, the Exceptions and Replies, thereto, and based upon our prior determination that Duquesne's proposed ADMS project is not cost effective, we shall adopt the determination of the ALJ that the costs of this ADMS project are not recoverable through Duquesne's SMC. We are in agreement with the ALJ's conclusion that the soft benefits estimated by the Company can be quantified better after the fact and therefore can be better recovered through a base rate proceeding when the reliability and relative costs per customer class are routinely investigated and managed. However, based upon the evidence provided in this proceeding, the proposed implementation was not proven to be cost effective and recovery through the SMC would not be reasonable or in the public interest.

Accordingly, we shall deny the Exceptions filed by Duquesne on this issue and adopt the ALJ's decision that denies cost recovery of the proposed ADMS project through Duquesne's existing SMC.

F. Recovery of Bill Ready Costs

1. Positions of the Parties

Duquesne proposed to recover the costs for implementing Bill Ready functionality through its SMC. Duquesne explained that Bill Ready is the billing process whereby an EDC provides the EGS with usage data, receives back the total calculated EGS charges, and places those EGS charges on the joint EDC/EGS bill to the customer. According to Duquesne, Rate Ready is the billing practice whereby the EDC receives the EGS rate and the EDC calculates the EGS charges to be included on the joint EDC/EGS bill to customers. Duquesne contended that the Commission directed EDCs to include the Bill Ready functionality as part of their smart meter plans because of the

Commission's belief that Bill Ready capabilities facilitate time-of-use (TOU) and real-time (RT) pricing. Duquesne M.B. at 28-29 (citing *Smart Meter Procurement and Installation Final Order*, Docket No. M-2009-2092655 (Order entered December 6, 2012) (*Final Implementation Order*) at 10). Duquesne maintained that implementing the Bill Ready functionality is part of its SMP, and the Company should be permitted to recover costs for implementing the Bill Ready functionality through its SMC. Duquesne M.B. at 28-29.

The OCA recommended that the costs to implement Bill Ready billing be recovered from the EGSs and not from Duquesne's customers. The OCA asserted that this position is based on the recognition that EGSs are the principal beneficiaries of this functionality. Citing to OCA St. No. 1 at 18, the OCA explained that presently, Duquesne offers only Rate Ready billing. According to the OCA, being able to provide Bill Ready billing facilitates the ability of EGSs operating in Duquesne's territory to offer a greater range of products to their customers. The OCA opined that a substantial portion of Duquesne's customer base will derive no benefit from the Bill Ready functionality. Furthermore, the OCA argued that Duquesne ignores all of its non-shopping customers when it seeks recovery of these costs from all of its customers, whether shopping in the supply market or not. The OCA also maintained that not all customers who do shop will avail themselves of the special rates offered by the EGSs, because many customers now prefer to remain on fixed rates that do not vary by time of use. According to the OCA, fundamental fairness in ratemaking requires that these costs should be borne by the entities that are the predominant beneficiaries of this capability and that in this proceeding, those predominant beneficiaries are the EGSs. OCA M.B. at 23-24.

2. ALJ's Decision

The ALJ concluded that it is appropriate and reasonable to recover these Bill Ready costs through the SMC as she found that Duquesne is correct that it was not

required to do a cost-benefit analysis. In addition, the ALJ averred that although Bill Ready benefits EGSs, not EDCs, there is some benefit to customers. She explained that with Bill Ready, some suppliers will be able to offer competitive rates that may save customers money. Also, she stated that the Bill Ready functionality will enable the suppliers to implement TOU and other similar rates. According to the ALJ, to the extent Duquesne has customers who are willing to risk having variable rates, this functionality may encourage customers to shop and to reduce consumption. I.D. at 56.

Next, the ALJ explained that Bill Ready is a billing function that is not a smart meter function, *per se*, and in that regard is not related to providing smart meters or smart meter technology to customers. However, she noted that Bill Ready is a functionality that uses smart meter capability and was cited by the Commission in the *Final Implementation Order*. The ALJ stated that the Commission indicated that the costs of the Bill Ready functionality are related to customers who have smart meters, and she found that Duquesne is correct to include this functionality in its modified SMP, especially since no mechanism currently exists for the Company to bill the suppliers. I.D. at 56.

3. Exceptions and Replies

In its Exceptions, the OCA states that the $7 million cost of implementing Bill Ready billing should not be imposed on customers as Duquesne proposed, but rather should be borne by EGSs, who are the principal beneficiaries of an EDC's implementation of the Bill Ready billing functionality. The OCA explains that Bill Ready billing enables EGSs to take interval data from customers' smart meters and calculate the generation and transmission charges for special pricing programs that they may offer and then forward those charges to the EDC for inclusion on the EDC bill rendered to the customer. The OCA explains that presently Duquesne offers only Rate Ready billing under which EGSs provide their rates to the EDC and the EDC calculates

customer bills using the EGS supplied rate. According to the OCA, it is clear that being able to provide Bill Ready billing will facilitate the ability of EGSs operating in Duquesne's territory to offer a greater range of products to attract more customers. As such, the OCA asserts that EGSs are clearly the principal beneficiaries of this functionality and should bear the costs of its implementation and continuation. OCA Exc. at 1-2.

Next, the OCA points out that the ALJ recognized that Bill Ready is a billing function that is not a smart meter function, *per se*, and in that regard is not related to providing smart meters or smart meter technology to customers. The OCA states that while the Commission required EDCs to include provisions for Bill Ready billing in their SMPs, it does not necessarily follow that the costs of Bill Ready billing should or must be a smart meter cost, recoverable through the SMC. The OCA also points out that the ALJ noted that "[Bill Ready billing] allows EGSs to take advantage of the TOU and RT Pricing programs. Almost the entire benefit of having Bill Ready functionality is a benefit only the EGSs will enjoy although the cost of the function will be borne entirely by customers." OCA Exc. at 3 (quoting I.D. at 56). The OCA asserts that despite making these points, the ALJ finds that the cost of the Bill Ready functionality should be carried entirely by customers through the SMC based on two grounds: (1) that although Bill Ready billing benefits EGSs, not EDCs, there is some benefit to customers; and (2) there is not currently a mechanism by which Duquesne could bill the EGSs. The OCA takes exception on both grounds. OCA Exc. at 3.

Next, the OCA states that while it may be the case that a segment of Duquesne's customers would benefit from the new EGS rates, it is also true that about thirty to forty percent of Duquesne's residential and commercial customers shop for

generation supply.[9] The OCA points out that not all customers who shop will necessarily avail themselves of the special rates offered by EGSs as a result of Bill Ready billing and may prefer to remain on fixed rates that don't vary by time of use. As such, the OCA claims that it is most likely that a substantial portion of Duquesne's customer base will derive no benefit from the Bill Ready functionality. OCA Exc. at 3-4.

In response to whether there exists a mechanism for billing EGSs for the costs of Bill Ready billing, the OCA states that it is true that none of the charges imposed by Duquesne on EGSs pursuant to its Electric Generation Supplier Coordination Tariff currently provides for such recovery. However, the OCA opines that if the Commission determined that recovering Bill Ready costs from EGSs was more appropriate than seeking it from customers, it could direct the Company either to develop a new charge for that purpose or to modify an existing charge. According to the OCA, one possibility might be to incorporate the costs of Bill Ready billing into the Technical Support and Assistance Charge that is currently imposed by Duquesne on EGSs under its Supplier Tariff. OCA Exc. at 4 (citing Duquesne Light Company Electric Generation Supplier Coordination Tariff at 42).

Finally, the OCA states that Duquesne is coming late to implementing Bill Ready functionality as all the other major EDCs had this capability in place at the time the Commission issued its *Final Implementation Order* in December of 2012. In fact, the OCA avers that some of the EDCs appear to have had Bill Ready billing in place prior to the passage of Act 129 and the imposition of smart meter mandates on the EDCs. According to the OCA, for these EDCs, the costs of Bill Ready billing are recovered through existing rates. The OCA asserts that it is not aware of any other EDC that recovers such costs through their SMC and that Duquesne's insistence to do so is unique

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[9] The OCA references PA OCA Electric Shopping Statistics, October 1, 2016 indicating that 31.6% of Duquesne's residential customers and 42.2% of its commercial customers were shopping as of that date. OCA Exc. at 3.

among the EDCs. Therefore, the OCA submits that Bill Ready costs are not smart meter costs that should be recovered through the SMC. OCA Exc. at 4.

In reply, Duquesne first states that the ALJ's conclusion on this issue is consistent with the *Final Implementation Order* in which the Commission directed EDCs to include Bill Ready functionalities as part of their SMPs. Duquesne notes that the Commission stated within that Order it would be best to promote uniformity and direct that all EDCs subject to the smart meter provisions propose Bill Ready and Dual Billing functionalities as part of their smart meter plans. Duquesne R. Exc. at 1-2 (citing *Final Implementation Order* at 10). Duquesne asserts that the OCA's argument is not logical as the Commission would not have ordered EDCs to include Bill Ready as part of their smart meter plans if it did not anticipate that EDCs could recover these costs, like all other costs associated with smart meter plans, through the SMC. Duquesne asserts that it included Bill Ready functionality as part of its smart meter plan, and therefore is permitted to recover all smart meter plan costs, including Bill Ready costs, through its SMC. Duquesne R. Exc. at 1-2.

Next, Duquesne states that the OCA's position is inconsistent with the Commission's categorization of Bill Ready and smart meter capability as the Commission adopted a broad view of smart meter functionalities in its *Implementation Order*. Duquesne further states that the Commission recognized in its *Final Implementation Order* that Bill Ready facilitates TOU and RT Pricing. Duquesne asserts that because Bill Ready costs are necessary for effectively implementing TOU and RT capabilities, Bill Ready costs should be recovered through the SMC. According to Duquesne, the OCA does not offer any basis to differentiate Bill Ready from other smart meter functionalities for purposes of recovery through the SMC. Duquesne R. Exc. at 3-4.

Next, Duquesne states that Bill Ready capability has the potential to benefit all customers contrary to the OCA's assertions. Duquesne notes that Bill Ready will allow suppliers to offer competitive rates that may save customers money as it facilitates TOU rates which may encourage customers to shop and to reduce consumption. Duquesne opines that these customer benefits provide further support for recovering Bill Ready costs through the SMC. Duquesne further states that the OCA's argument that customers receive no benefit from Bill Ready is without merit because Bill Ready provides customers with the choice to avail themselves of TOU rate offerings at any time. Duquesne opines that whether customers actually decide to shop or elect TOU rates is irrelevant because facilitating shopping provides alternatives to customers. Duquesne asserts that by directing EDCs to include Bill Ready functionalities in their smart meter plans, the Commission clearly viewed the customer benefits of Bill Ready as justifying the associated cost. Duquesne R. Exc. at 4-5.

Duquesne further maintains that there is no reasonable mechanism in place to recover Bill Ready costs from EGSs. Duquesne explains that there are several obstacles to recovering these costs from EGSs as this would be a complex process. Duquesne asserts that EGSs enter and exit the market creating uncertainty for recovery and that some EGSs may not want Bill Ready functionality for product offerings, and therefore, would not be willing to pay for Bill Ready costs. Duquesne avers that for the first time in its Exceptions, the OCA introduces a proposal for recovering Bill Ready costs by incorporating them into the Technical Support and Assistance Charge in the Company's Supplier Tariff. Duquesne requests that the OCA's cursory suggestion must be rejected because it is untimely and not part of the record in this proceeding. According to Duquesne, the OCA did not introduce a single recommendation as to how the Company could recover Bill Ready costs from EGSs and its attempt to introduce one at this late stage of the proceeding is inappropriate. Duquesne maintains that by waiting until the exception stage, the OCA has deprived it of adequate time to evaluate and respond to its proposal. Duquesne R. Exc. at 5-6.

Finally, Duquesne states that the OCA's arguments regarding other EDCs' Bill Ready functionality are unsubstantiated and irrelevant. Duquesne asserts that the OCA's assertions regarding cost recovery by other EDCs should not be considered because they are not part of the record in this proceeding. Duquesne opines that the OCA cannot rely on facts that are not part of the record or attempt to introduce new evidence in support of its position at this stage of the proceeding. Also, Duquesne posits that the OCA failed to mention that, while other EDCs had Bill Ready functionality in place, not all EDCs had Rate Ready in place before Act 129's smart meter deployment requirement. Duquesne cites to PPL Electric Utilities Corporation (PPL), for example, as a utility that did not have Rate Ready in place before it implemented a smart meter plan. Duquesne asserts that following the *Implementation Order*, the Commission directed PPL to implement Rate Ready in addition to Bill Ready. Duquesne R. Exc. at 7 (citing *PPL Electric Utilities Corporation Retail Markets*, Docket No. M-2009-2104271 (Order entered August 11, 2009)) at 19-21. Thus, Duquesne contends that while other EDCs may have been recovering Bill Ready costs through existing rates, not all EDCs were recovering Rate Ready costs through existing rates. According to Duquesne, the fact that it implemented Rate Ready while others had in place Bill Ready provides no support for the OCA's argument that Bill Ready costs should not be recovered through the SMC. Duquesne R. Exc. at 6-7.

4. Disposition

Based upon our review of the evidence of record, we shall adopt the determination of the ALJ that Duquesne's cost to implement Bill Ready billing are properly recoverable through the Company's SMC. We are in agreement with the conclusions of the ALJ that Duquesne was not required to perform a cost-benefit analysis to implement Bill Ready billing and that all customers could potentially benefit from its implementation as suppliers will be able to offer more competitive rates and will enable

them to implement TOU and other RT rates. As such we conclude that it is appropriate and reasonable for Duquesne to recover these costs through its existing SMC mechanism. While we are sensitive to the concerns expressed by the OCA that the EGSs will benefit from the implementation of Bill Ready billing, we are in agreement with Duquesne that there is no reasonable mechanism currently in place to recover these costs from EGSs. Also, we agree with Duquesne that the OCA's suggestion in its Exceptions to introduce a possible mechanism at that late stage of the proceeding is inappropriate and should be rejected.

Accordingly, we shall deny the Exceptions filed by the OCA on this issue and adopt the decision of the ALJ.

G. Incremental Advanced Metering Infrastructure (AMI) Project Costs

1. Positions of the Parties

Concerning the costs of the AMI project, Duquesne contended that the AMI project is complex because of the system functionality, testing and operational requirements. Duquesne asserted that it is important to recognize that it is very difficult to accurately forecast costs for such a significant project, especially when the project must be implemented over a number of years. According to Duquesne, the systems that are being implemented are new, complex IT systems that often require more work than anticipated to achieve the necessary functionality. Duquesne opined that the AMI project is required by statute, and the Company should be permitted to recover all of its prudently incurred costs. Duquesne M.B. at 29-30 (citing Duquesne St. No. 3-R at 3-4).

With respect to the $54 million increase in AMI-related costs that are unrelated to ADMS, the OCA took the position that with the exception of the $7 million cost for the Bill Ready functionality, the increase should be approved and permitted to be

recovered through the SMC.[10] According to the OCA, these costs will enable Duquesne to complete implementation of the original portion of its smart meter technology program. OCA M.B. at 24-25.

2. ALJ's Decision

The ALJ concluded that Duquesne's proposed costs to cover the accelerated deployment of its smart meters are appropriate and reasonable and should be permitted to be recovered through the Company's SMC. Furthermore, she found that the accelerated deployment of smart meters is a cost neutral event because the increased deployment costs will be offset by the reduced meter installation and management costs.[11] Therefore, the ALJ concluded that the $54 million in additional costs for the AMI program should be approved. According to the ALJ, Duquesne needs to complete the implementation of the program, and accelerated deployment is consistent with the Commission's stated purposes for the SMP Program in Pennsylvania. I.D. at 58.

3. Disposition

No Party excepts to the ALJ's determination in regard to the incremental AMI costs. Finding the ALJ's decision to be reasonable, appropriate and in accordance with the record evidence, we shall adopt her position on this issue.

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10 OCA St. No. 1 at 16.

11 Duquesne St. No. 1 at 4, 5.

H. Allocation of ADMS Costs

1. Positions of the Parties

In response to the questions posed by the ALJ in her Post-Hearing Order, Duquesne claimed that the Company must install the entire OMS and ADMS project, as proposed, to receive the full voltage monitoring and outage communication capabilities. Duquesne stated that while the ADMS provides benefits to customers that go above and beyond the outage communication and voltage monitoring capabilities, these additional benefits do not require additional costs. Duquesne averred that it could purchase additional systems for the ADMS that would enhance functionality, but has not done so and is not requesting to recover costs for these systems through the SMC. Duquesne M.B. at 30.

Next, Duquesne cited to the *Implementation Order* at 16 wherein the Commission noted that smart meter technology can support more than the capability requirements set forth in Act 129. Duquesne asserted that while the Commission recognized that smart meter technology would provide many benefits to EDCs and to customers, the Commission did not state that costs to implement smart meter technology should be separated between costs for smart meter technology and costs for ancillary functionalities or benefits. Duquesne maintained that in developing its ADMS project, the Company only included components that relate to outage communication, restoration and voltage monitoring. According to Duquesne, any attempt to segregate the specific functionalities provided by the ADMS between smart meter functionalities and non-smart meter functionalities is inconsistent with the *Implementation Order*. Duquesne opined that it would be nearly impossible to attempt to segregate ADMS functionalities in this manner. Duquesne M.B. at 30-31.

The OCA took the position that there appeared to be an imbalance between the cost recovery of ADMS and the expected benefits by rate class. The OCA pointed out that according to the Company's ICE calculator results, only 1.5 percent of the societal benefits will be derived by the residential class, but based upon Duquesne's proposed method of cost recovery, the residential class will be allocated approximately ninety percent of the ADMS costs. The OCA asserted that the existence of this disparity supports its position that recovery of these costs should be sought in a base rate proceeding, where the costs and benefits can be thoroughly examined and issues of cost allocation fully addressed. However, the OCA opined that if the Commission authorizes Duquesne to recover ADMS costs through the SMC, cost allocation under the SMC may need to be addressed to better match costs with benefits. OCA M.B. at 25-26.

2. ALJ's Decision

The ALJ stated that Duquesne acknowledged at the Further Hearing that less than 100% of the cost of the installation of the ADMS is related to smart meter costs. The ALJ asserted that despite being directed to present evidence that breaks out these costs as a percentage, the Company failed to do so or show how much of the cost of the ADMS, which includes the costs of the OMS and DMS, is actually related to smart meter costs. According to the ALJ, she essentially provided Duquesne a "second bite at the apple" when scheduling the Further Hearing and by specifically directing the Company to present detailed cost evidence. However, she explained that Duquesne's response to the Post-Hearing Order was to present the same information as presented at the Initial Hearing. In fact, the ALJ claimed that the only new detailed information divulged at the Further Hearing resulted primarily from the questions she asked. I.D. at 59.

The ALJ posited that Duquesne's responsibility in this proceeding was to provide convincing evidence that its request for a massive increase in smart meter costs,

which subsequently would be borne by all ratepayers, was a justified request. According to the ALJ, Duquesne failed to do so. *Id.*

However, the ALJ explained that her decision to deny assessing the costs of the ADMS through the SMC is not a denial of the ADMS project. She noted that the functionalities provided by the ADMS, OMS and DMS, as outlined by Duquesne, will provide tools and capabilities that will permit the EDC to improve its reliability, provide more competitive opportunities for customers to save money, will likely decrease consumption and will save money for both Duquesne and its customers. The ALJ asserted, however, that seeking ADMS cost recovery through the SMC is the incorrect way for Duquesne to proceed. I.D. at 59-60.

The ALJ concluded that as modeled by the other EDCs, Duquesne should implement the ADMS through base rates. She maintained that in base rates, the costs attributable to the various rate classes can be investigated, evaluated and appropriately allocated. Additionally, she opined that through base rates, the benefits can be quantified and validated using publically available and discernible calculation methods. I.D. at 60.

3. Exceptions and Replies

In its Exceptions, Duquesne states that the ALJ erred in concluding that the Company improperly failed to split the ADMS project between smart meter and non-smart meter functionalities. Duquesne claims that all of the reasonable costs of implementing the OMS are related to outage communications and all of the reasonable costs of implementing the DMS are related to voltage monitoring. Duquesne also states that the Company must install the entire ADMS project, as proposed, to achieve the full voltage monitoring and outage communication and restoration capabilities. Duquesne avers that while the ADMS provides benefits to customers that go above and beyond the outage communication, outage restoration and voltage monitoring capabilities, these

additional benefits do not require additional costs. Furthermore, Duquesne explains that it could purchase additional system enhancements for the ADMS that would enhance functionality beyond the required smart meter requirements, but has not done so and is not requesting to recover such costs for these systems through the SMC. According to Duquesne, the Company limited its ADMS project to costs that are necessary to implement the required smart meter functionality. Therefore, Duquesne posits that there is no basis to segregate the specific functionalities provided by the ADMS between smart meter and non-smart meter functionalities and avers that the ALJ's conclusion should not be accepted. Duquesne Exc. at 22-23.

4. Disposition

Upon our consideration of the evidence of record, we agree with the ALJ's conclusion but note that this issue is essentially moot as we have previously concluded that Duquesne's proposed ADMS project has not been shown to be cost effective in this proceeding. However, it is important to reiterate the ALJ's statement in her Initial Decision that our determination in this proceeding that the ADMS project has not been proven to be cost effective to permit recovery through the SMC should not be interpreted as a blanket denial of Duquesne's potential implementation of the ADMS project. We believe there are potential benefits from these capabilities for the customers of Duquesne and we would encourage the Company to consider going forward with this project and seek recovery through a base rate proceeding where the costs and allocations of those costs are more properly evaluated.

Accordingly, we shall deny the Exceptions filed by Duquesne on this issue and adopt the ALJ's determination.

V. Conclusion

We have reviewed the record as developed in this proceeding, including the ALJ's Initial Decision and the Exceptions and Replies to Exceptions filed thereto. Based on this review, we shall adopt the ALJ's Initial Decision in its entirety and shall deny the Exceptions filed by Duquesne and the OCA in response to the Initial Decision; **THEREFORE,**

VI. Ordering Paragraphs

IT IS ORDERED:

1. That the Exceptions filed by Duquesne Light Company on November 28, 2016, to the Initial Decision of Administrative Law Judge Katrina L. Dunderdale issued on November 8, 2016, are denied, consistent with this Opinion and Order.

2. That the Exceptions filed by the Office of Consumer Advocate on November 28, 2016, to the Initial Decision of Administrative Law Judge Katrina L. Dunderdale issued on November 8, 2016, are denied, consistent with this Opinion and Order.

3. That the Initial Decision of Administrative Law Judge Katrina L. Dunderdale, issued on November 8, 2016, is adopted.

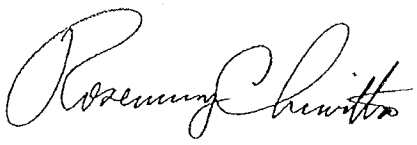
4. That the Petition for Approval to Modify the Smart Meter Procurement and Installation Plan filed on August 4, 2015 is denied, in part, in that Duquesne Light Company is not authorized to implement the Automated Distribution Management System because it is not cost effective as proposed.

5. That the Petition for Approval to Modify the Smart Meter Procurement and Installation Plan filed on August 4, 2015, is granted, in part, in that Duquesne Light Company is authorized to incur costs and implement the Bill Ready functionality and the accelerated deployment of Smart Meters.

6. That the Petition to Withdraw filed by Citizen Power, Inc. on November 21, 2016, is granted.

7. That the proceeding docketed at P-2015-2497267 be marked closed.

BY THE COMMISSION,



Rosemary Chiavetta
Secretary

(SEAL)

ORDER ADOPTED: March 2, 2017

ORDER ENTERED: April 7, 2017

Appendix Tab 4

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

NORBERT SLIWINSKI, Complainant, vs. DUQUESNE LIGHT COMPANY, Respondent.	: : : :No: C-2016-2559985 : : : :**AFFIDAVIT OF BENJAMIN COTTS,** :**PhD., P.E. IN SUPPORT OF MOTION** :**FOR SUMMARY JUDGMENT** : : :

Served on Behalf of Respondent
Duquesne Light Company

Counsel of Record for this Party:

Jeremy V. Farrell, Esquire
Pa. I.D. No. 316258

Paul Shane Miller, Esquire
Pa. I.D. No. 319174

Tucker Arensberg, P.C.
1500 One PPG Place
Pittsburgh PA 15222
(412) 566-1212

TADMS:1004297-1 014657-158498

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

NORBERT SLIWINSKI,	:	
Complainant,	:	
vs.	:	No: C-2016-2559985
DUQUESNE LIGHT COMPANY,	:	
Respondent.	:	

AFFIDAVIT OF BENJAMIN COTTS, PhD., P.E.
IN SUPPORT OF MOTION FOR SUMMARY JUDGMENT

PRINCE GEORGE'S COUNTY)
) ss:
STATE OF MARYLAND)

Benjamin Cotts, PhD, P.E., being duly sworn, deposes and says:

1. I am a Senior Managing Engineer in the Electrical Engineering and Computer Science Practice at Exponent Inc., an international science and engineering firm.

2. I have been retained by Duquesne Light Company ("Duquesne Light") to offer expert testimony and opinions on its behalf in this case. A true and accurate copy of my expert report is attached to this Affidavit as Exhibit 1. My educational background, qualifications, and curriculum vitae are set forth in Appendix A to Exhibit 1.

3. I earned my Bachelor of Science degree (*summa cum laude*) in Electrical Engineering from the University of Portland and a Master's of Science degree and a Doctor of Philosophy Degree in Electrical Engineering from Stanford University. I am a member of several technical organizations, including the Institute of Electrical and Electronics Engineers (IEEE), the International Council on Large Electric Systems, the IEEE Power Engineering Society Corona and Field Effects Working Group, and the International Committee on Electromagnetic Safety, Subcommittees 3 and 4.

4. I have expertise in applied and theoretical electromagnetics, including modeling, measurement, and analysis studies of natural and manmade radiofrequency (RF) fields and regularly assist clients in evaluating RF fields from a number of sources, including smart meter networks.

5. I have reviewed many documents in connection with this case, including Duquesne Light's Responses to Complainant's First Set of Discovery Requests, which contained information about the operation, duty cycle, and read schedules (among other things) of the smart meters being deployed by Duquesne Light in its service territory. I also reviewed Complainant's Responses to Duquesne Light's Second Set of Discovery Requests, which indicate that Complainant uses the following devices in his home that emit radiofrequency or low frequency fields: One 2009 GE Microwave Model JESCO737DNWW, two Samsung S4 Phones, and one WiFi Router Actiontec MI424WR.

6. I am familiar with the Federal Communications Commission's (FCC) exposure limit for RF, which are codified in the Code of Federal Regulations, Title 47 (§1.1310 and §2.1093). Those exposure limits are based upon the recommendations of organizations such as the National Council for Radiation Protection and the IEEE, with input from various federal health agencies like the Environmental Protection Agency, the National Institute for Occupational Safety and Health, and the Occupational Safety and Health Administration.

7. The IEEE developed these health-based exposure limits for electromagnetic fields through a comprehensive review of scientific literature, a process which was also undertaken by other international agencies like the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Additional information about the background for the above standards can be found in my expert report. Exhibit 1 at pp. 13-14.

8. The FCC limits for the general public at frequencies of smart meter transmissions (900M Hz and 2.4 GHz) are summarized in the following chart, along with the current IEEE and ICNIRP standards.

Agency	Power Density Limit at 900 MHz (W/m^2)	Power Density Limit at 2.4 GHz (W/m^2)	Specific Absorption Rate (SAR) limit (W/kg)
FCC (CFR §§ 1.1310 and 2.1093)	6	10	0.08 (whole body) 1.6 (over any 1 gram of tissue)
ICNIRP (1998)	4.5	10	0.08 (whole body) 2 (over any 10 gram of tissue)
IEEE (C95.1, 2005)	4.5	10	0.08 (whole body) 2 (over any 10 gram of tissue)

These limits are explained in more detail in Exhibit 1 at pp. 13-14.

9. The smart meters being deployed by Duquesne Light comply with the above standards.

10. Even assuming that Duquesne Light's smart meters transmitted constantly (i.e. a 100 percent duty cycle), the 900 MHz LAN radio on the meters constitutes only 38 percent of the FCC limit and the 2.4 GHz Zigbee radio amounts to only 3.1 percent of the FCC limit (see Addendum, pp. 3). See Exhibit 1 at pp. 15-16 for more background about these calculations.

11. Using the average duty cycle of 0.06 percent for a typical Duquesne Light smart meter), the RF exposure for the 900 MHz LAN radio (which is the higher-power radio of the two that are in Duquesne Light's smart meters, as noted in the preceding paragraph) at 1 yard directly in front of the smart meter outside is 0.0029 percent ($1/35{,}000^{th}$) of the FCC limit and at 1 yard behind the smart meter inside is 0.00013 percent ($1/780{,}000^{th}$) of the FCC limit. See Exhibit 1 at pp. 17-20 for more background about these calculations.

12. Utilizing the data contained in the material described above and in other materials identified in my report, I have reached the following opinions and conclusions

within a reasonable degree of scientific certainty, which are all explained in greater detail throughout my expert report:

a. The Smart Meters operated by Duquesne Light will represent a negligible contribution to the overall RF exposure of Complainant;

b. The RF exposures from other existing sources both inside and outside the residence are many times greater than from a typical Duquesne Light smart meter; and

c. The RF exposure from a typical Duquesne Light smart meter, whether evaluated inside or outside of Complainant's residence, represent a fraction of the allowable FCC limit and complies with applicable industry standards.

See Addendum at pp. 1-2.

Benjamin Cotts, PhD, PE

Sworn to before me this 11th day of October 2018.

Notary Public

My commission expires September 25, 2019

KAREN L. JOHNSON NOTARY PUBLIC ANNE ARUNDEL COUNTY, MD

TADMS:1004297-1 014657-158498

Appendix Tab 5

TUCKER | ARENSBERG
Attorneys

Lauren N. Rulli 412.594.5510
lrulli@tuckerlaw.com

P. Shane Miller 412.594.5503
smiller@tuckerlaw.com

July 27, 2018

Via Email - nsliwinski@hotmail.com
and Regular Mail

Norbert Sliwinski
856 Cottonwood Drive
Monroeville, PA 15146

RE: **Norbert Sliwinski v. Duquesne Light Company**
Docket No. C-2016-2559985

Dear Mr. Sliwinski:

Enclosed please find Duquesne Light's Responses to your First Set of Discovery Requests.

Thank you for your attention to this matter.

Very truly yours,

Lauren N. Rulli /pbm

Lauren N. Rulli, Esquire
Paul Shane Miller, Esquire

LNR/sls
Enclosures

TADMS:1003972-1 014657-158498

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

NORBERT SLIWINSKI,	:	
Complainant,	:	
vs.	:	No: C-2016-2559985
DUQUESNE LIGHT COMPANY,	:	
Respondent.	:	

RESPONSES TO COMPLAINANT'S FIRST SET OF DISCOVERY REQUESTS

Filed on behalf of Respondent
Duquesne Light Company

Counsel of Record for this Party:

Lauren N. Rulli, Esquire
PA I.D. No. 313768
lrulli@tuckerlaw.com

Paul Shane Miller, Esquire
PA I.D. No. 319174
smiller@tuckerlaw.com

(412) 566-1212
1500 One PPG Place
Pittsburgh, PA 15222

LIT:643601-1 014657-158498

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

NORBERT SLIWINSKI,	:	
Complainant,	:	
vs.	:	No: C-2016-2559985
DUQUESNE LIGHT COMPANY,	:	
Respondent.	:	

DUQUESNE LIGHT'S RESPONSES TO COMPLAINANT'S FIRST SET OF DISCOVERY REQUESTS

Respondent Duquesne Light Company ("Duquesne Light") submits the following Responses to certain of Complainant's First Set of Discovery Requests.

GENERAL RESPONSES AND COMMENTS

1. Duquesne Light's responses to the discovery requests are made to the best of its present knowledge, are based upon information currently known to Duquesne Light, and are given without prejudice to his rights to change, supplement, and/or clarify its answers and responses, if necessary.

2. To the extent that the discovery requests purport to enlarge Duquesne Light's obligations beyond the requirements of the applicable rules of practice and procedure and/or imprecisely specify the information requested and/or documents requested, Duquesne Light has endeavored in good faith to produce discoverable information that can reasonably be identified as responsive to the discovery requests.

3. Duquesne Light's responses to the discovery requests are limited to the smart meters being installed in the company's service territory.

4. Duquesne Light's responses to the discovery requests are made subject to, and without in any way waiving or intending to waive, any objections as to the competency, relevancy, materiality, privilege or admissibility of evidence, for any purpose, of any of the

information provided and/or documents produced. In the event that any privileged information is divulged by Duquesne Light, its disclosure is inadvertent and does not constitute a waiver of any privilege.

5. Duquesne Light's responses to the specific discovery requests are written in bold font below.

DISCOVERY RESPONSES

3. Provide evidence (Engineering drawings, pictures or videos, showing location of adequately sized surge protector. List part #, Model #, S/N #, Manufacturer's name together with maximum inrush voltage) as installed in DLC's SM.

ANSWER: The OpenWay CENTRON meter is designed to exceed ANSI C12.1 requirements. The attached test report indicates the OpenWay CENTRON meter is in compliance with the following surge or transient conditions outlined in the ANSI C12.1 specification.

***4.7.3.3.1 100 kHz ring wave*: This test subjects the power input of the meter device to a 100 kHz Ring Wave with a Peak Voltage of 6 kV and Short-Circuit Peak Current of 0.5 kA.**

***4.7.3.3.2 High Voltage Line Surge - Combination Waveform*: This test subjects the AC power input of the metering device to a 1.2/50 µs – 8/20 µs combination wave with a peak voltage of 6 kV and peak current of 3 kA.**

4.7.3.7 Test No. 21*: Effect of current surge in ground conductor: Three metering devices shall be subjected to one transient surge of 20 000 A (20/50 microsecond wave) of either polarity through a conductor placed vertically 1.5 inches (38.1 mm) behind the flat portion of the base of the metering device, with a socket in place. *This test shall not apply for metering devices with terminal compartments (Type A) or for Class 10 or Class 20 metering devices.

***4.7.3.11 Test No. 25*: Effect of electrical fast transient/burst test: The metering device shall meet the Fast Transient Surge Test requirements of IEC 61000-4-4. This test subjects the power inputs and the I/O circuits of the metering device to repetitive bursts of 5 ns rise time, 50 ns duration electrical fast transients.**

a. **Test voltages on the voltage and current circuits: 4 kV**

b. **Test voltage on I/O signal, data and control lines: 2 kV**

c. **Repetition rate 5 kHz**

d. **Duration of the test: minimum 60 seconds**

4.7.3.11a Test No. 25a: Effect of electrical oscillatory SWC test: The metering device shall meet the Electrical Oscillatory SWC Test requirements of IEEE 37.90.1. This test subjects the power inputs and the I/O circuits of the metering device to repetitive bursts damped oscillatory waves with an initial crest of 2.5 kV for a duration of 2 minutes.

8. Acknowledge that Itron's Publication (Exhibit A) confirms that DLC's SM can attain a 0.58% Duty Cycle.

ANSWER: Itron's white paper titled "Wireless Transmissions: An Examination of OpenWay Smart Meter Transmissions in a 24-Hour Duty Cycle" shows that, while meter emission times may vary, the maximum observed transmit duty cycle was found to be 0.58% (or just over 8 minutes per day). This observation was based on a field study of approximately 7,000 meters.

11. Provide the encryption or security methods used for DLC's SM.

ANSWER: With respect to Duquesne Light's Smart Meter system, the system uses advanced and open standard data encryption and authentication techniques that have been approved internationally by bodies such as the National Institute of Standards and Technology and the National Security Agency.

12. Provide records of actual cost of DLC SM and its LiveCycle. How long will it last?

ANSWER: This request seeks confidential information and privileged trade secret information. The cost of the smart meters is part of the purchase order between Duquesne Light and Itron, which is confidential. Therefore, this information is not produced as doing so would violate the confidentiality terms of the purchase order. By way of further response, the expected life as depreciated by Duquesne Light is 15 years.

13. Provide the following information about DLC's SM: intensity of output, duration and frequency of output, and pattern of sending and receiving transmissions to and from all sources.

ANSWER: The peak, radiated output power of the 900MHz radio in the smart meter is 1.14 Watts. The peak, radiated output power of the 2.4GHz radio (Zigbee) is 0.156 Watts.

The duration of each transmission is 150 milliseconds or less.

For the 900MHz radio, the average transmit duty cycle is 53.14 seconds per day. The peak transmit duty cycle is just over 8 minutes per day. This is made up of short duration transmissions (150ms or less) throughout the day.

For the 2.4GHHz, Zigbee radio, the idle transmit duty cycle is 9.9 seconds per day. The duty cycle with one device attached is 132 seconds per day. This is made up of short duration transmissions (150ms or less) throughout the day.

16. In reply to Dr. Cotts "Executive Summary" page viii and his alleged investigation inside or near my home (was he near a home or inside a home?) - provide date, time, and RF frequency for afore mentioned investigation.

ANSWER: The information used by Dr. Cotts in his investigation was provided to him through Complainant's responses to Duquesne Light's discovery requests. Dr. Cotts was not inside Complainant's home or any neighbor's home.

17. In reply to Dr. Cotts "Executive Summary" page viii, provide date, time and location of alleged RF source and substantiate with date stamped meter readings near my home.

ANSWER: The information used by Dr. Cotts in his investigation was provided to him through Complainant's responses to Duquesne Light's discovery requests. Dr. Cotts was not inside Complainant's home or any neighbor's home.

Respectfully submitted,

TUCKER ARENSBERG, P.C.

Lauren N. Rulli, Esquire
PA I.D. No. 313768
(412) 594-5510
Paul Shane Miller, Esquire
PA I.D. No. 319174
(412) 5503594-
1500 One PPG Place
Pittsburgh, PA 15222
Counsel for Respondent, Duquesne Light Company

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

NORBERT SLIWINSKI,	:	
	:	
Complainant,	:	
	:	
vs.	:	No: C-2016-2559985
	:	
DUQUESNE LIGHT COMPANY,	:	
	:	
Respondent.	:	

VERIFICATION

I, Yvonne Phillips, hereby state that the facts above set forth are true and correct (or are true and correct to the best of my knowledge, information and belief) and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

Yvonne Phillips

Yvonne Phillips

7-23-2018

Date

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

NORBERT SLIWINSKI,	:	
	:	
Complainant,	:	
	:	
vs.	:	No: C-2016-2559985
	:	
DUQUESNE LIGHT COMPANY,	:	
	:	
Respondent.	:	

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the foregoing Responses to Complainant's First Set of Discovery Requests upon the participant listed below in accordance with the requirements of 52 PA. Code § 1.54 (relating to service by a participant):

Norbert Sliwinski
856 Cottonwood Drive
Monroeville, PA 15146
Via Email - nsliwinski@hotmail.com
And Regular Mail

Dated this 27TH day of July, 2018

Lauren N. Rulli, Esquire
PA I.D. No. 313768
(412) 594-5510
lrulli@tuckerlaw.com
Paul Shane Miller, Esquire
PA I.D. No. 319174
(412) 594-5503
smiller@tuckerlaw.com
1500 One PPG Place
Pittsburgh, PA 15222
(412) 594-5619 (fax)
Counsel for Respondent, Duquesne Light Company

Appendix Tab 6

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Formal Complaint

1. Customer (Complainant) Information

Name Norbert Sliwinski

Street 856 Cottonwood Dr

City Monroeville State PA Zip 15146

County Allegheny

Telephone Number(s) Where We Can Contact You During the Day:

412 372 7338 (home) n/a (mobile)

E-mail Address (optional): nsliwinski@hotmail.com

Utility Account Number: (from your bill) 6259350000

2. Name of Utility or Company (Respondent)

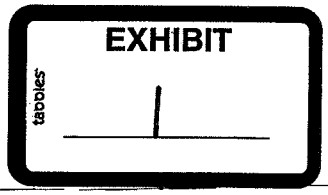
Provide the full name of the utility or company about which you are complaining. The name of your utility or company is on your bill.

Duquesne Light Company

3. Type of Utility Service

Check the box listing the type of utility service that is the subject of your complaint (check only one):

- ☑ ELECTRIC
- ☐ WASTEWATER/SEWER
- ☐ GAS
- ☐ TELEPHONE/TELECOMMUNICATIONS (local, long distance)
- ☐ WATER
- ☐ MOTOR CARRIER (*e.g.* taxi, moving company, limousine)
- ☐ STEAM HEAT



4. **Reason for Complaint**

What kind of problem are you having with the utility or company? Check all boxes below that apply and state the reason for your complaint. Explain specifically what you believe the utility or company has done wrong. Provide relevant details including dates, times and places and any other information that may be important. If the complaint is about billing, tell us the amount you believe is not correct. Use additional paper if you need more space. **Your complaint may be dismissed without a hearing if you do not provide specific information.**

☐ The utility is threatening to shut off my service or has already shut off my service.

☐ I would like a payment agreement.

☐ Incorrect charges are on my bill. Provide dates that are important and an explanation about any amounts or charges that you believe are not correct. Attach a copy of the bill(s) in question if you have it/them.

☐ I am having a reliability, safety or quality problem with my utility service. Explain the problem, including dates, times or places and any other relevant details that may be important.

☑ Other see attached

5. **Requested Relief**

How do you want your complaint to be resolved? Explain what you want the PUC to order the utility or company to do. Use additional paper if you need more space.

6. **Protection From Abuse (PFA)**

Has a court granted a "Protection From Abuse" order that is currently in effect for your personal safety or welfare? The PUC needs this information to properly process your complaint so that your identity is not made public.

Has a court granted a "Protection From Abuse" order for your personal safety or welfare?

YES ☐

NO ☑

If your answer to the above question is "yes," attach a copy of the current Protection From Abuse order to this Formal Complaint form.

7. **Prior Utility Contact**

a. **Is this an appeal from a decision of the PUC's Bureau of Consumer Services (BCS)?**

YES ☐

NO ☑

b. **If this is not an appeal from a BCS decision, have you spoken to a utility or company representative about this complaint?**

YES ☐

NO ☑

c. **If you tried to speak to a utility company representative about your complaint but were not able to do so, please explain why.**

8. **Legal Representation**

If you are filing a Formal Complaint as an individual on your own behalf, you are <u>not</u> required to have a lawyer. You may represent yourself at the hearing.

If you are already represented by a lawyer **in this matter**, provide your lawyer's name, address, telephone number, and e-mail address, if known. Please make sure your lawyer is aware of your complaint. If represented by a lawyer, both you and your lawyer must be present at your hearing.

Lawyer's Name _____

Street/P.O. Box _____

City _____ State _____ Zip _____

Area Code/Phone Number _____

E-mail Address (if known) _____

9. Verification and Signature

You must sign your complaint. Individuals filing a Formal Complaint **must** print or type their name on the line provided in the verification paragraph below and **must** sign and date this form in **ink. If you do not sign the Formal Complaint, the PUC will not accept it.**

Verification:

I NORBERT SLIWINSKI ***, hereby state that the facts above set forth are true and correct (or are true and correct to the best of my knowledge, information and belief) and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).***

N. Sliwinski
(Signature of Complainant)

7/20/16
(Date)

_____
Title of authorized employee or officer (only applicable to corporations, associations, partnerships, limited liability companies or political subdivisions)

10. Two Ways to File Your Formal Complaint

Electronically. You must create an account on the PUC's eFiling system, which may be accessed at http://www.puc.pa.gov/efiling/default.aspx.

Secretary
Pennsylvania Public Utility Commission
400 North Street
Harrisburg, Pennsylvania 17120

Attachment to PUC Complaint Form dated July 18th 2016

This is to inform you that I am vehemently opposed to the installation of a so called Smart Meter anywhere on my premises. Hundreds if not thousands of these meters have been, and still are being installed on peoples properties without the consent of the property owners. The meters have not undergone any long term testing, or environmental studies to determine there safety. The World Health Organization has already classified the meter which emits HRF as a **2B Health** hazard –as carcinogen - same as DDT and lead from decades ago, which where touted to be save.

Based on case studies which have shown that pulsed radiation as produced by Smart Meters can, and have caused serious health problems, including tinnitus, memory loss and seizures. Studies have linked biological effects to RF radiation exposure, including increased cancer risk, damage to the nervous system, adverse reproductive effects, DNA damage, and more. Customers with smart meter have registered health complaints, which include sleep problems, headaches, nausea, anxiety, heart palpitations, tinnitus and ear pain, concentration and memory problems, dizziness, immune, nervous and hormonal system impacts. We are already being bombarded by cell towers, cell phones and Wi-Fi at infinitum, and do not need another source of harmful HFR especially not this close to our living quarters.

My wife and I are both seniors and therefore in the above target group of any of the biological affects of HFR. We are also concerned about our young grandchildren who visit us frequently and are staying in bedrooms which are less than 3 feet away from the present electric meter. There are hundreds of physicist, scientists and medical doctors who have studied the effects of the Smart Meter and are warning the populations of all countries who are either using or are planning to use them. I am also quoting your own Section 1501 of the Public Utility Code which states: "requires every public utility in Pennsylvania to "maintain adequate, efficient, safe, and reasonable service and facilities"

Since it has been shown that the Smart Meters are not safe, I am therefore against the meter exchange and do not grant permission to install of foresaid meter.

Please view the attached file https://www.youtube.com/watch?v=v4HsxNG2-4M which clearly explains the side effects a Smart Meter has on human beings.

Sincerely,

Norbert Sliwinski

Norbert Sliwinski
856 Cottonwood Dr.
Monroeville, PA 15146

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400 NORTH STREET
HARRISBURG PA 17120

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Appendix Tab 7

Norbert Sliwinski 856 Cottonwood Dr Monroeville, PA 15146

February 6, 2017

Pennsylvania Public Utility Commission
POB 32656
Harrisburg, PA 17105-3265

Delivered by email as dated

Re: C-2016-2559985

TO ALL PARTIES

Am herewith filing my OFFICIAL EXEPTIONS the PUC's INITIAL DECISION SUSTAINING MOTION FOR JUDGEMENT ON PLEADINGS dated Jan 17 2017

According to your prior letter dated 10/7/2016 where you dismissed the formal DLC complaint when you stated that the context of my complaint would deserve a hearing, see page 4 § 3 where it states: ***Here, Complainant has raised material questions of fact and has provided an explanation for the boxes checked on his formal complaint form. Based upon the averments set forth in the formal complaint, it appears that Complainant has raised a question of fact that would be best addressed at a hearing, affording the parties an opportunity to be heard in this proceeding, which would be in the public interest.***

According to **law**, a **hearing** is a proceeding before a court or other decision-making body or officer, such as a government agency or a Parliamentary committee. A **hearing** is generally distinguished from a trial in that it is usually shorter and often less formal. See also: Title 66 PUC Code Chp 7 §703, a , b & c.

I have not heard anything from you (PUC) regarding a hearing date, I had contacted Judge Watson directly, but never received and answer until the above letter dated 1/17/2017 arrived whose reasoning for dismissal I do not understand.

Not being a lawyer, I do not understand the dismissal clause ***"the utility is not in violation of any relevant Commission statutes, regulation and orders."*** Would you please elaborate on what Commission statutes, regulation and orders" are.

I since have researched the PUC and discovered that none of the commissioners nor the administrative law judges have ANY technical background which would qualify them to judge or determine the design or function of the Smart Meter (SM). With all due respect, pray tell, how can any administrative law judge like Judge Watson arrive at any decision about the SM regarding safety, health and privacy intrusion without having seen one, tested and tried it?
Also having looked at and read the **The Office of Administrative Law Judge Operating Procedures Manual** , I did not see any qualification requirements for an administrative law judge to pass judgment on whether the operation of a (SM) - which is a very sophisticated piece of electronic equipment – is qualified to pass judgment on issues such as safety, privacy and security.

I did not see a University or Technical education background in any of the present

commissioners, which incidentally, are politically appointed positions by the Governor, who in turn, is an elected official paid for by Pennsylvania taxpayers, and as such responsible for the peoples safety, privacy and security – which this EXEPTION is all about.

In the meantime it should be quite obvious by now to each reader, that the issue of the Smart Meter is a "hot" topic which has, is - and still will be discussed for a long time. You all heard, seen or read all and any argument made by Physicist, Scientist, Ph.Ds' et al debunking the wonderful time and moneysaving virtues of the SM. It is no secret that people all over this nation and - even the world, are complaining about health issues, increasing utility rates, safety - and privacy issues. There is also plenty of evidence that the Smart Meters have caught fire and set houses and businesses ablaze. It is also an established fact the Smart Meter technology is a money making scheme which was cooked up in response to the so called Global Warming Alarm, which was than used as a scapegoat declaring an "Energy Crisis" - and whole world believes it! It has to be so, even Leonard diCaprio said so ? Viola, the Smart Meter (SM) was born! You all have been privy to my previous correspondence in which I highlighted some of the problems and concerns I have with the SM. But whether you like it or not - all of you are subject and are being exposed to the High Frequency Radiation (HFR) and the constant streaming of your personal data, of the privacy invading SM. The company OPOWER [ii] which you (DLC) cited and told your consumers to contact if you wanted to be exempt from making your usage data available to them? Really ? First of all that company does not exist anymore - it has been purchased by Oracle [iii] for the paltry sum of $ 532.3 Million.

And do you really believe that over 500 computer nerds worked all that time on software just to read your Kilowatt consumption on your electrical meter?

Do you really believe that 190,000 pulses a day are required to send just that signal? Please wake up and use your common sense. You may have heard of a device called RFID [iv]?

I urge you also to think of your children and grandchildren which have no knowledge of this hideous conspiracy. So, I am not going to regurgitating the evidence against the SM but will try to appeal to your intellect and common sense. There are much bigger forces in play than you ever knew. The entire World is being changed now. Check for your self and Google it: NOW or Agenda21.
You soon will find out that the wealthiest of the wealthy are seeking to bring about a One World Government run by the UN (to which our previous president in his last act before leaving office "awarded" 92 Billion dollars of US taxpayers money). They already control all the banks, oil, gas and electric (energy) industry, the health care, the agricultural industry, the transportation and and most western governments banks including our Federal Reserve Bank. The only thing they do not control yet is YOU. By taking control and regulating your energy consumption with the SM they would have it ALL. Make no mistake, unless -we the people- will do something about that, it will happen!
Since in all your responses are citing all kinds of "laws" with § by § as examples for dismissals of complaints, I am not going to try arguing with you. I am not a lawyer so it would be useless since all of you are "hiding" behind those laws and statues, which again after all have been drafted and enacted by men. May I remind of the Obama Health Care Act. It was touted as the savior for all – but you know the rest of the story. Another law made be man.

So here we why I reject the Smart Meter:

1) **There is NO Federal Mandate!**

The Energy Policy Act of 2005, Title XII, Subtitle E, Section 1252, (a), (14), (C):

Which reads: ***"Each electric utility subject to subparagraph (A) shall provide each customer requesting a time-based rate with a time-based [i] meter capable of enabling the utility and customer to offer and receive such rate, respectively."***

2) **SMART METERS ARE NOT SAFE!** they do pose a fire hazard.

3) **SMART METERS INVADE OUR PRIVACY!** they spy on you

4) **SMART METERS CASE RATE INCREASES** all documented!

REFERENCES:

[i] Time of day metering

Time of Day metering (TOD), also known as Time of Usage (TOU) or Seasonal Time of Day (SToD), metering involves dividing the day, month and year into tariff slots and with higher rates at peak load periods and low tariff rates at off-peak load periods. While this can be used to automatically control usage on the part of the customer (resulting in automatic load control), it is often simply the customer's responsibility to control his own usage, or pay accordingly (voluntary load control). This also allows the utilities to plan their transmission infrastructure appropriately.

TOD metering normally splits rates into an arrangement of multiple segments including on-peak, off-peak, mid-peak or shoulder, and critical peak. A typical arrangement is a peak occurring during the day (non-holiday days only), such as from 1 pm to 9 pm Monday through Friday during the summer and from 6:30 am to 12 noon and 5 pm to 9 pm during the winter. More complex arrangements include the use of critical peaks which occur during high demand periods. The times of peak demand/cost will vary in different markets around the world.

[ii] Opower

Opower is a publicly held Software-as-a-Service company that provides cloud-based software to the utility industry and their customers. Working with 95+ utilities and serving 50+ million homes in 9 countries, Opower's customer engagement platform positions utilities as trusted energy advisors to the customers they serve. Opower's software provides customers with better information about their energy consumption, along with personalized ways to save energy and money. Opower's technology platform analyzes more than 300 billion meter reads to deliver its services, and has created enough energy savings through behavior change to power all the homes in a city of 1 million people for a year.

Founded in 2007 by long-time friends Dan Yates and Alex Laskey, Opower is headquartered in Arlington, Virginia. As of February 2014, it employed more than 500 people In November 2010, the company announced its third round of venture capital funding, a $50 million investment led by Accel Partners and Kleiner Perkins Caufield & Byers, to accelerate its expansion.

During a visit to Opower headquarters in Arlington in 2010, President Obama said the company's growth is "a model of what we want to be seeing all across the country".

In May 2013, Opower was named to the Inaugural CNBC Disruptors 50 List.

In November 2013, Opower was named the #1 fastest growing tech company in the DC region, and #20 in the US, by Deloitte.

Opower held its initial public offering on April 4, 2014.

On May 2, 2016, Opower announced that it was being acquired by Oracle.

Opower's software uses statistical algorithms to perform pattern recognition analysis from data in order to derive actionable insights for utility customers. Without any devices installed in the home, the platform can perform usage-disaggregation analysis, presenting end users information such as heating or cooling usage apart from overall usage, and thus allowing them to spot additional opportunities to save money. The reports include targeted tips that seek to motivate customers to lower their energy consumption to the "normal" neighborhood rate. The reports also feature smiley-face emoticons for the most energy-efficient homes, a feature that Opower added after research showed that some consumers who used less energy than average started using more once they knew the norm. The reports also compare energy usage among neighbors with similarly sized houses.The company mails the reports to consumers, but also offers the information in other formats, including internet portals, text messages, email and in-home energy displays. Opower's software enables customers to input more information to generate recommendations about specific types of energy use, such as air-conditioning and heating.

President Barack Obama visited Opower headquarters in Arlington on March 5, 2010. He touted the company as an economic "success story" amid a troubled economy and as a "great emblem" for clean-energy jobs. He made the visit two months after announcing a "$2.3 billion program of tax credits for "green jobs." "The work you do here...is making homes more energy efficient, it's saving people money, it's generating jobs, and it's putting America on the path to a clean energy future", Obama said at Opower.

[iii] https://www.oracle.com/index.html

[iv] * **Duquesne Light Company**
a privately held company incorporated as LLC or Limited Liability Corporation.

In May 2007, Duquesne was acquired by a consortium of private equity investors. The consortium consists of several institutional investors which own all of the common equity of our parent company, DQE Holdings LLC.
Below are the members of the consortium and their ownership interests in DQE Holdings LLC:

Epsom Investment Pte. Ltd. is an affiliate of GIC Pte. Ltd. (GIC). GIC is a global investment management company established in 1981 to manage Singapore's foreign reserves. GIC invests internationally in equities, fixed income, foreign exchange, commodities, money markets, alternative investments, real estate, private equity, and infrastructure. GIC manages well over $100 billion in assets and is among the world's largest fund management companies. GIC's infrastructure portfolio is focused on minority equity stakes in infrastructure assets across various subsectors including transportation, energy and utilities, and communications.
Codan Trust Company (Cayman) Limited is the trustee of IFM Global Infrastructure Fund, which is advised by IFM Investors Pty Ltd (IFM Investors), an investment management company with over $44 billion funds under management. IFM Investors advises/manages portfolios across listed equities, infrastructure, debt, and private capital via a global team based in Australia, North America, Europe and Asia.
Three Rivers Utility Holdings, LLC (Three Rivers) is a limited liability company formed under the laws of the State of Delaware. Its members are John Hancock Entities and PGGM Infrastructure Fund 2016. The John Hancock Entities collectively hold 33.33% of Three Rivers. The John Hancock Entities are wholly owned, indirect subsidiaries of Manulife Financial Corporation ("Manulife"). Manulife is a Canadian, publicly traded financial services company with operations in Asia, Canada, and the United States. PGGM Infrastructure Fund 2016 (PGGM Fund 2016) is an asset-class pooled investment vehicle and is the economic beneficiary of the remaining 66.67% of the membership interests in Three Rivers. The legal title to those membership interests is held by Stichting Depositary PGGM Infrastructure Funds, which is a foundation organized under the laws of the Netherlands. Various Dutch pension funds participate in PGGM managed funds, including in PGGM Fund 2016.

First State Super is one of Australia's largest superannuation funds with more than AUD52 billion in funds under management and over 750,000 members. First State Super is a not-for-profit fund, run for the benefit of its members.

STC Funds Nominee Pty Limited is affiliated with SAS Trustee Corporation (STC), the trustee of the defined contribution superannuation (pension) scheme for New South Wales Government employees and their families. STC is one of the largest superannuation funds in Australia.

GIC/Epsom Investment Pte. Ltd.	with 31%	since 2011
Three Rivers Holdings LLC	with 30.4%	since 2016
IFM/Codan Trust Co Ltd (Cayman Islands)	with 25.2%	since 2007
State Super	with 6.8%	since 2007
First State Super	with 6.6%	since 2007

[v] http://www.technovelgy.com/ct/Technology-Article.asp?ArtNum=2

[v] ***Made-in-China home appliances contain spy chips***
Those cheap made-in-China home appliances you bought from Walmart, like electric irons and tea kettles, may contain computer chips that will infect your computer with viruses.
The BBC News reports that Rossiya 24, the Russian state-owned TV channel, showed footage of a technician opening up an iron included in a batch of Chinese imports to find a "spy chip" with "a little microphone".
The hidden spy chips are mostly being used to spread viruses, by connecting to any computer within a 656 ft radius which uses unprotected Wi-Fi networks. Other products found to have rogue components reportedly included **mobile phones and car dashboard cameras.**
The TV report quoted one customs brokerage professional as saying the hidden chips had been used to infiltrate company networks, sending out spam without administrators' knowledge.
Erik Sherman reports for CBS News, Nov.1, 2013, that according to tech blog The Register, spy chips were also found in kettles.
Sherman writes: [...] this is hardly the first time Chinese products were reported infested with ways for someone to break into systems. There was the report last year that a researcher found a so-called back door in a military-grade computer chip, meaning that someone could, from anywhere, get ready access to the chip and, through it, connected systems. If military-grade products can be compromised, consumer products can be as well.
Former U.S. counter-terrorism head Richard Clarke says that any electronics product made in China is potentially vulnerable. Many parts are counterfeits with no control by manufacturers over how they're designed and built, and Clarke wonders whether "real" parts from China could also be compromised. (Other security researchers disputed whether the backdoors were added by China or even intentionally malicious. Backdoors are sometimes added by manufacturers as mechanisms for testing and support, although they still add vulnerability.) There have been **cases where suspected hacking from China** paralleled Chinese military interests, again **raising suspicion that the government is either directly or indirectly involved with both military and industrial espionage.** But given the vast number of products made in China and the increasing percentage of items that included chips of some sort, the potential for problems could be disturbing. One step, as CBS MoneyWatch's Dave Johnson recently noted, is to **turn encryption on for all your wireless networks. That locks out any device that doesn't know the password.** Of course, that wouldn't necessarily help block **a new computer "super virus"** that **seems to infect computers even without a network connection**, according to an Ars Technica report. The original discovery was by a highly-respected security researcher and no one is sure how it works, other than possibly using high-frequency sound emitted by the speaker of an infected computer and received by the microphone of the target. Could an infected household appliance include a tiny speaker that might broadcast such a sound? Certainly.

Below are some live examples of what the SM does and how it is designed.
RF radiation: https://www.youtube.com/watch?v=vNrRIFkiHKM https://www.youtube.com/watch?v=rC-NI8gGWQk

What the inside looks like, notice the motor which is remotely controlled to CUT of the electricity to your home: https://www.youtube.com/watch?v=yQdeLQqaStA&t=355s

Causing nerve damage: https://www.youtube.com/watch?v=4NTSejgsjTc&t=21s

SM emitting CONSTANT radiation, this one is from Australia: https://www.youtube.com/watch?v=hTLCgwDQIiY

Retards the growth of plants: https://www.youtube.com/watch?v=KaWLNR6-rAU

Pulsing radiation: https://www.youtube.com/watch?v=aOabFJlenz4

EMF RF radiation test results from a smart meter: www.youtube.com/watch?v=MQ_t39kAdi8&t=17s

Same states have an OPT-OUT alternative: Here some info about "Opt-Out" states and cities : SMART METERS ARE OPTIONAL.doc

As a reminder to all readers, here is an excerpt from the PA Constitution as it relates to my rights in the Commonwealth of Pennsylvania, and as a citizen of this state, I demand that my constitutional rights as set forth herein, must not be refused or denied see § 1 and § 8.

CONSTITUTION of the COMMONWEALTH OF PENNSYLVANIA

Article

Preamble

I. Declaration of Rights

PREAMBLE

WE, the people of the Commonwealth of Pennsylvania, grateful to Almighty God for the blessings of civil and religious liberty, and humbly invoking His guidance, do ordain and establish this Constitution.

ARTICLE I
DECLARATION OF RIGHTS

Sec.

1. Inherent rights of mankind.
8. Security from searches and seizures.

Adoption. Unless otherwise noted, the provisions of Article I were adopted December 16, 1873, 1874 P.L.3, effective January 1, 1874.

That the general, great and essential principles of liberty and free government may be recognized and unalterably established, WE DECLARE THAT--

§ 1. **Inherent rights of mankind.**

All men are born equally free and independent, and have certain inherent and indefeasible rights, among which are those of enjoying and defending life and liberty, of acquiring, possessing and protecting property and reputation, and of pursuing their own happiness.

§ 8. **Security from searches and seizures.**

The people shall be secure in their persons, houses, papers and possessions from unreasonable searches and seizures, and no warrant to search any place or to seize any person or things shall issue without describing them as nearly as may be, nor without probable cause, supported by oath or affirmation subscribed to by the affiant.

THEREFORE,

I, Norbert Sliwinski, again, in the strongest terms do not consent to the installation of a Smart Meter by DCL or any other electricity supplier at any time on my premises citing § 1501 66 Pa C.S.A which states:

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.

and because:

Smart Meters are NOT safe, do invade my privacy and pose a dangerous health hazard.

Smart Meters have never undergone any documented long term test by either the manufacturers - the PUC or the Utility companies to determine their safety.

Smart Meters are not approved according to UL 2375 standard, still causing a fire a hazard.

and: I am claiming my constitutional rights as set forth in the Constitution of the Commonwealth of Pennsylvania.

Signed

Norbert A Sliwinski

Norbert Sliwinski

Appendix Tab 8

Rulli, Lauren

From: Norbert Sliwinski <nsliwinski@hotmail.com>
Sent: Thursday, April 26, 2018 12:42 PM
To: Rulli, Lauren
Subject: Docket C-2016-2559985

External Email: Use Caution When Opening Attachments or Links.

Dear Ms. Rulli,

here than my Discoveries,

April 26, 2018

Dear Ms. Rulli,

First of I would like to thank you for granting me another extension for the Discoveries. As you may understand it was quite an undertaking for such a complex subject to do the due diligence research, and I appreciate your patience with me. Due to the difficulty in trying to convert your written communication (converting a HTML/pdf file) into a WORD document caused me to spend an inordinate amount of time without achieving the desired result. So, I would like to apologize for replying with this format (it is a original .doc file) You can edit this document.

I would like you to consider that my research on the Smart Meter painted a total different picture than presented by the utility company. You will find the ***Expert Report of Dr. Andrew A Marino*** especially compelling since he had already presented his findings to the PUC last year. Also, I would like you for a moment, to consider that your dad or your mom are suffering from heart problems, blood clots, hypersensitivity to sound, spinal stenosis and other age-related aches and pains. Would you want them to be exposed to the Smart Meter?

The above cited medical conditions are I am suffering from, and a smart meter less 3 feet from my head while I sleep, would greatly exacerbate my condition. So, is it therefore too much to ask to be exempt from the installation of a Smart Meter?

Settlement Offer

Having studied the Prehearing Order from Judge Watson dated March 22, 2018 wherein he encourages a settlement, I am proposing the following option: I will take a reading of my existing meter every month and forward it to the utility company. Every three month I will take a date stamped photo of the meter with the meter reading. The utility company is more than welcome to verify the accuracy of the reading at any time they wish. <u>This procedure has been successfully used in the past by the utility company for years and was working just fine.</u>

Protecive Order

Furthermore, I will comply with the commission's regulations (52 Pa Code §5.423) which since has been replaced by 52 Pa Code § 5.365 if a settlement can be reached.

DISCOVERY REQUESTS

Question 1.

ANSWER: There is overwhelming amount of evidence in the scientific literature that report adverse health effects from non-Thermal radio frequency radiation or RF emitted by the Itron Smart Meter which are installed by DLC. See Expert Report of Andrew A Marion tesifiying before the PUC in August of 2016

Expert Report of Andrew A Marino

August 8, 2016

This report was prepared by Andrew A. Marino at the request of Stephen G. Harvey, counsel for Maria Povacz, Laura Sunstein Murphy, Diane and Stephen Van Schoyck, Cynthia Randall, and Paul Albrecht as Complainants in litigation before the Pennsylvania Utility Commission with PECO as the Respondent. For convenience of presentation on complex subject matter, the report is presented in question and answer format.

Purpose

Q. What is the purpose of your report?

A. **My first** purpose is to express my professional opinion that there is a basis in established science for Complainants' concern regarding risks to human health caused by man-made electromagnetic energy in the environment, including the type of electromagnetic energy emitted by smart meters, and to describe the scientific basis of my opinion with particularly.

My second purpose is to express and explain my professional opinion that it would be unreasonable to involuntarily and chronically expose the Complainants to the electromagnetic energy emitted by smart meters. Scientific evidence indicates that the neurological syndrome of electromagnetic hypersensitivity exists. There is a reasonable basis to believe that the symptomatology of the Complainants and its relation to smart-meter electromagnetic energy is factual. There is a basis in established science to support the Complainants' concerns that future exposure to smart-meter energy will worsen their already precarious medical conditions. Ample scientific evidence indicates that the aforementioned exposure would be a risk to the health of the Complainants.

Qualifications

Q. What are your qualifications to express these opinions.

A. I earned a PhD in biophysics in 1968 and a JD in 1974. My curriculum vitae is attached as Exhibit 1. Briefly, from 1964 to 2014, I worked full-time teaching and performing research in the area of experimental biology that deals with the role of natural electromagnetic energy in animals and human beings, and with the effects of man-made electromagnetic energy on animals and human beings. I retired from those duties in 2014 and began working on developing commercial technology capable of obtaining clinical diagnostic information from measurements of the electroencephalogram, which is the natural electromagnetic energy emitted by the brain.

Q. Where did you conduct your research on electromagnetic energy?

A. For the first sixteen years of my career, at the Veterans Administration hospital in Syracuse, New York. For the next thirty-three years, my research laboratory was in the LSU medical school in Shreveport Louisiana, where I served full-time as a professor in the departments of orthopedic surgery, neurology, and cellular biology and anatomy.

Q. Regarding your teaching responsibilities, what did you teach, and to whom?

A. To medical students, I taught musculoskeletal medicine, the scientific basis of medicine, experimental biology, human research methods, and the legal- ethical responsibilities of physicians. To graduate students I taught the cognitive structure of science, which is the framework within which researchers make valid observations and attach meaning to them, and I taught particular techniques of experimental biology. To medical residents and medical fellows I taught specialized subjects, for example, methods of analysis of the electrical activity of the brain, and general subjects, for example how to formulate a clinically relevant hypothesis and then answer it by means of an animal or human experiment.

Q. What area of science is relevant to the issue of health risks posed by smart meters?

A. The general area is experimental biology, by which I mean the scientific method for finding reliable knowledge about living systems.

Q. Did you author peer-reviewed scientific publications in your area of expertise?

A. I wrote many peer-reviewed publications dealing with all aspects of electromagnetic energy, including its biological effects on humans, animals, cells, its biophysical effects on biological molecules, and its engineering characteristics. These publications are listed in my curriculum vitae which is attached as Exhibit 1.

Q. What is electromagnetic energy?

A. It is one of the four basic forces in the universe. Electromagnetic energy is present within all living things; it regulates the function of every cell in the body and serves as one of the two basic languages of the brain, the heart, the nervous system, and the musculoskeletal system. Electromagnetic energy occurs naturally in the environment, for example, the earth's magnetic field, and has a profound influence on all basic biological phenomena including growth regulation and control, circadian rhythms, and spatial orientation. Since the beginning of the twentieth century, and particularly after the end of World War II, the levels of man-made electromagnetic energy occurring in the general and work-place environments have risen dramatically as a result of man's economic and social activities.

Q. What activities?

A. The things that characterize and define modernity: the telegraph, radio, television, radar, power lines, cell phones, wireless networks, smart meters, and innumerable other similar examples.

Q. What kind of human experiments did you do, and why?

A. In clinical research involving patients suffering from orthopedic diseases, my colleagues and I applied simulated natural electromagnetic energy for the purpose of bringing about cures. In laboratory research, we exposed clinically normal volunteers to simulated man-made electromagnetic energy of the type and at the levels that are pervasively present in the environment. Our goal was to obtain fundamental knowledge about how the human body detected the presence of man-made electromagnetic energy.

Q. What was the objective of the laboratory research that involved the normal volunteers?

A. There are three basic kinds of theories regarding how man-made electromagnetic energy can affect the human beings and animals. Each theory hypothesizes a different process regarding how the energy interacts with the living

system. My objective was to test the theory that the process is sensory transduction, which is how the body detects all other signals including light, sound, heat, pressure, and pain. Previous research by my colleagues and I had indicated that transduction was a likely process by which the body detected electromagnetic energy, See Electromagnetism and Life (Exhibit 1) and Exhibit 2 at No. 75, 90, 94, and 98.

Q. Were the experiments completely safe for the volunteers?

A. The present scientific evidence regarding the health risks due to man- made electromagnetic energy link chronic exposure to disease. By that term I mean exposure that is continuous and/or continual. The volunteers were exposed to the energy for only about ten minutes. That information was presented to them in a written informed-consent document whose content was approved by an impartial committee, as required by federal law. They were told that there were no known risks because exposure would last for only a few minutes, but the volunteers were not told that the experiment was completely safe. Such statements cannot be proven and are therefore not permitted in consent forms for human studies.

Q. What were the results of the experiments?

A. Briefly, that human beings have the sensory capability to detect man-made electromagnetic energy of the type present in the general environment, including the type produced by smart meters. Information concerning the presence of the energy in the subject's environment is transmitted to the brain, where it is processed. These publications are listed in Exhibit 2 at No. 60, 61, 64,68, 69, 70, 74, 75, 83, 84, 94, 96, 97, 100, and 102.

Q. What were the consequences in the volunteers after they detect the electromagnetic energy?

A. Systems in the body discarded the information because it served no useful purpose for the body, by which I mean an evolutionary conditioned purpose. Information contained in light or sound, as examples, is key to the survival of animals and humans. In contrast, man-made electromagnetic energy in the environment has no biological benefit. From a physiological perspective purpose the energy is a kind of pollution because it was not put in place with the intention of affecting the human body. The key point of the experiments was to prove that the information entered the body, which is an absolutely necessary step for any adverse changes to eventually develop.

Q. If the information is discarded, how can adverse effects subsequently develop?

A. One possibility is that process of discarding information has a physiological cost. Discarding information is an adaptive process, but the ability of the body to adapt is finite. If that ability is exceeded the result can be clinically recognizable stress and/or stress-related disorders. Such conditions, in turn, promote the development of disease.

Q. How many times does the adaptive process need to occur before adverse effects occur?

A. We did not address that question in our experiments. Within the framework of these experiments I can say only that the information activates various cells in the brain, but not the cells that produce consciousness. We know that was the case because the volunteers were always unaware of the presence of the energy to which they were exposed, even though it changed the electrical activity of their brains.

Q. Would you briefly describe how you did these experiments and what you measured?

A. I designed and built an apparatus that permitted me to expose the volunteers to man-made electromagnetic energy. During the experiment I continuously recorded the electroencephalogram from six locations on the scalp. The energy was turned on and off according to a timing pattern that was unknown to the volunteer. Using technical methods of data analysis that I developed with colleagues, we compared the electrical activity in the brain that occurred in the presence and absence of the energy. In essentially every volunteer, we found to a statistical certainty that the brain activity differed between the two conditions, meaning that each volunteer had detected the energy, which is a condition precedent to all biological effects caused by man-made electromagnetic energy.

Q. What kind of animal experiments did you do, and why?

A. I did experiments on rats, mice, rabbits, and fish. Different experiments were done for different purposes. One purpose was to test my hypothesis regarding the physiological process by which chronic exposure to man-made electromagnetic energy can ultimately lead to human disease and disorders. There are several basic kinds of theories. Our theory was that exposure was a stress on the body, and that if the stress continued too long the body's inherent protective and adaptive mechanisms would ultimately break down, resulting in clinical disease. We tested our theory by measuring endpoints in rats and mice that would be expected to be altered if the electromagnetic energy were a stressor, and we were successful. Another purpose was to determine the anatomical location of the cells in the body that actually detected the man-made electromagnetic energy. There are two basic kinds of theories regarding this issue, one holding that all cells can detect the energy, the other that only specialized cells can detect the energy, similar to specialization that accounts for the detection of light, sound, taste, pressure, and pain. We favored the latter theory and tested it using rabbits, which are sufficiently large that the energy can be reasonably localized, permitting assessment of whether the rabbits' brain electrical activity is altered when the energy was present. These studies were successful.

A third purpose was to test my hypothesis regarding the biophysical process responsible for detection of environmental-level man-made electromagnetic energy. There are three major types of theories in this area. One theory holds that none exists. This theory originated in Germany during World War II, and is outmoded even though it remains as the basis of the present FCC rules regarding safety of cellphones and smart meters. A second theory envisions direct effects of the energy on the DNA of the subject. A third theory is based on the process of sensory transduction, which I described herein above. My colleagues and I conducted experiments with fish to test whether a particular biophysical process could account for the sensory-transduction of low-frequency electromagnetic energy, and we were successful. The results of the experiments I described can be found in Exhibit 2 at No. 1, 54, 66, 76, 85, 86, 88, 89, 92, 92, 99, 102, 104, 110, 111, 112, 118, 119, and 120.

Q. Why did you use fish?

A. Because the methodology we used, one of the most advance techniques presently used in experimental biology, would have been impossible in any other animal species.

Q. Is the biophysical process you described the same one that accounts for how the electromagnetic energy from smart meters is detected?

A. No. It cannot serve as a biophysical explanation for detecting smart-meter energy. But in a recent human experimental study I presented evidence for a different biophysical process that can provide such an explanation (Exhibit 2 at No. 1).

Electromagnetic Energy

Q. Are there different types of electromagnetic energy?

A. At an engineering level there is an infinity of technically different types of electromagnetic energy. Essentially, at an engineering level, every kind of energy-emitting device emits a different type of energy, as does every brand of each such device. But with respect to the issue of health risks posed by exposure to man-made electromagnetic energy, including that emitted by smart meters, there is no material difference among the infinity of technically different types because there is no empirical evidence that they produce different kinds of biological effects. Consequently the technical differences are irrelevant, at least for the purposes of assessing human health risks.

Q. What is the basis of you opinion that they are irrelevant?

A. There is a large scientific literature regarding the effects on human beings and animals caused by man-made environmental electromagnetic energy, but the literature contains no credible indication that the effects are related to differences in the technical type of the electromagnetic energy. Actually the opposite is true, as I first pointed out in 1982, in Electromagnetism & Life (see Exhibit 1).

Q. What do you mean when you say that the opposite is true?

A. In my book I presented clear evidence that the same biological effect could be produced by technically different types of man-made electromagnetic energy. Since the book was published there have been many confirmations of my original conclusion. From animal studies we can now see that essentially any biological system in the body can be altered by environmental-strength levels of any technical type of electromagnetic energy. See Exhibit 2 at No. 7, 16, 18, 19, 23, 29, 35, 48, 51, 67, 72, 82, 87, 88, 89, 91,92, 93,122, 128 and 140.

Q. You said there were no technically different types of electromagnetic energy as regards evaluating health risks of man-made electromagnetic energy. Are there general types of electromagnetic energy?

A. Yes. I think it is useful to divide man-made electromagnetic energy into two classes, based on the biophysics of the process by which the human body detects them (see Exhibit 2 at No 1 and 76). Almost all commercial sources of electromagnetic energy fall into one or both classes, which I will call low frequency and high frequency. Examples of sources in the low-frequency class include low-voltage and high-voltage power lines, household wiring, electric blankets, electric lights, computers, battery chargers, arc welders, and electric cars. Examples of sources in the high-frequency class include radio and television signals, radar, microwave ovens, wireless networks, computers, cell phones, and smart meters. Both classes of electromagnetic energy can cause the same biological effects in animals and human beings, meaning that the risks suggested by the observed effects are more or less the same for the two classes.

Health Risks Due to Man-made Environmental Electromagnetic Energy

Q. When you said that there is a basis in established science for serious concern regarding risks to human health caused by man-made electromagnetic energy in the environment, what did you mean by "established science."

A. I meant the two types of peer-reviewed publications that are the primary repository of our scientific knowledge about living systems including, of course, knowledge about the effects of electromagnetic energy on living things. The two types are experimental studies and epidemiological studies.

Q. What are experimental studies?

A. Experimental studies are well-established formal procedures for generating knowledge about nature. Generally, they involve the randomization of subjects to groups that are or are not exposed to the factor of interest, electromagnetic energy for example, measurement of a chosen biological parameter, statistical comparison of the measurements between the two groups, and a conclusion regarding whether or not the energy caused a change in the parameter measured. Such studies produce the most reliable type of scientific knowledge because they can rationalize the existence of cause-and-effect-relationships. As with all scientific studies, experimental studies have fundamental limitations.

Q. What are epidemiological studies?

A. They are non-experimental studies in which pre-existing information such as health data collected by government agencies is analyzed to assess whether a particular disease or disorder is statistically associated with a factor of interest, smoking for example. Such studies produce the most relevant type of scientific knowledge regarding health risks of electromagnetic energy because their conclusions apply directly to human beings. Nevertheless, their probative value is far more limited compared with experimental studies. This limitation arises directly from the logical structure of epidemiological studies.

Q. What do you mean?

A. Epidemiological studies are inherently incapable of evidencing a cause/effect relationship. The strongest kind of a conceptual link epidemiological studies can yield is that of an association. Associations sometimes foreshadow causal connections, sometimes not, and the investigator never knows which conclusion is correct

Q. What do you mean by "health risk" and how is its existence determined scientifically?

A. By that term I mean a factor or condition that is reasonably suspected of contributing to the development of human disease or disorder. There are two scientific methods for producing evidence that a specific factor or condition is a health risk. The traditional method for evaluating novel factors or conditions is to expose animals to the factor or condition and observe what happens. This method is commonly used to evaluate the safety of herbicides, pesticides, and cosmetics, food additives, and the safety of drugs. Epidemiological studies constitute the second scientific method. They come into play when the factor or condition is not novel, but rather is generally present in the human environment. If the factor or condition is a risk factor, then a natural experiment will have actually been performed, and evidence of possible adverse associations should be discoverable by studying sick people a Public concern about a factor or condition is sometimes triggered by an epidemiological study that seems to suggest that the factor or condition is associated with the occurrence of a human disease or disorder. Typically, the concern is amplified because there is no experimental evidence from animal studies showing safety.

Q. Is this what happened to the manufacturers of smart meters?

A. Yes. Many independent investigators throughout the world did epidemiological studies of the possible health risks of man-made electromagnetic energy from various sources, and these investigators reported that the energy was associated with a wide range of human diseases and disorders. See Exhibit 2 at No. 2, 15, 20, 21, 22, 25, 31, 32, 33, 38, 40, 41, 42, 44, 46, 47, 49, 62, 63, 71, 73, 79, 81. 82, 87, 95, 113, 121, 129, 130, and 133.

Q. Is the list exhaustive?

A. No.

Q. Why do you conclude that there is a basis in established science for serious concern regarding risks to human health caused by man-made electromagnetic energy in the environment, including the type of electromagnetic energy emitted by smart meters?

A. Because both methods in experimental biology for assessing whether a factor or condition is a possible health risk, namely experimental studies and epidemiological studies, individually and together, indicate that man-made environmental electromagnetic energy is a health risk. Numerous peer-reviewed scientific studies in experimental biology involving the effects of man-made electro-magnetic energy, including the type produced by smart meters, have shown that such energy causes a wide range of biological effects on the endocrinological, immunological, cardiovascular, hematological and neural systems of the body, and on growth and healing. The results of these studies are the best evidence obtainable by means of the scientific method regarding the possible existence of health risks to humans. Consequently, these studies directly support the conclusion that exposure to man-made electromagnetic energy is a health risk to humans. In addition, many independent epidemiological studies indicate that man-made environmental electromagnetic energy is associated with a broad range of human diseases and disorders, especially cancer. It is difficult for me to imagine what further evidence would be needed to establish that there is a basis in established science for serious concern regarding risks to human health caused by man-made electromagnetic energy in the environment, including the type of electromagnetic energy emitted by smart meters.

Electromagnetic Hypersensitivity

Q. What is electromagnetic hypersensitivity?

A. It is a physiological condition in which the affected person experiences musculoskeletal, immunological, and/or neurological symptoms that flare or intensify upon exposure to man-made electromagnetic energy in the environment.

Q. Can you be more specific regarding what the symptoms are?

A. There are many reports in the literature in which investigators have listed or classified the symptoms. See Exhibit 2 at No. 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 24, 26, 30, 31, 32, 33, 34, 36, 38, 39, 40, 41, 45, 52, 55, 57, 63, 65, 77, 123, 124, 125. 126, 127, 134, 135, 136, 137, 138, 139. Essentially, the list consists of all the undesirable somatic reactions that human beings can experience. The complaint that people who suffer from electromagnetic hypersensitivity have in common is that they feel discomforted and/or unwell. They exhibit a general syndrome of just being sick, as opposed to exhibiting symptoms that are pathognomonic for a particular disease.

Q. Are you saying that man-made electromagnetic energy causes the symptoms?

A. Yes, in the but-for sense of causality.

Q. What do you mean by the but-for sense?

A. This is an important point. The available scientific and clinical evidence shows that man-made electromagnetic energy can trigger a symptomatic response in some human beings. Most studies indicate 5-10% of the general population self-report as suffering from electromagnetic hypersensitivity. See Exhibit 2 at No. 141, 142, 143, and 144. The energy isn't a complete causal explanation for the syndrome in the sense that gravity explains why objects fall. In a particular sufferer the energy causes the symptoms in the sense that the symptoms would not exist at that time but for the presence of the energy. Because human beings are all different, the precise level of the energy that can trigger a response, the precise set of symptoms, and their requisite level and duration of exposure differ profoundly among suffers. Presently the precise reasons why some humans report symptoms from man-made electromagnetic energy and others do not, why the symptoms vary from person to person, and how the symptoms depend on the levels and duration of exposure are all unknown. But these unresolved issues do not undermine the scientific conclusion that man-made electromagnetic energy causes the reported symptoms in some human beings.

Q. Including energy from smart meters?

A. Yes. That's the most reasonable inference I can make from the available evidence. There is no empirical evidence whatsoever to suggest that smart meters are somehow different from other sources of electromagnetic energy in some meaningful way that would eliminate concern about health risks or about triggering hypersensitivity reactions.

Q. Have the possible health risks of smart meters with respect to hypersensitivity been studied in experiments?

A There are no published experimental studies, either by independently-funded investigators or by the industry.

Q. Is electromagnetic hypersensitivity like an allergic reaction?

A. Yes, in the sense that symptoms can flare or intensify when the person suffering from the disorder is exposed to levels of electromagnetic energy that normally don't trigger a symptomatic response in most people. But the condition is probably mediated by an aberration in the body's overall electrical

regulatory system, not by an aberration in the body's biochemical-based regulatory systems, such as those that produce type-1 and type-4 allergic reactions.

Q. Is electromagnetic hypersensitivity a new condition that has just begun to appear recently?

A. During the last 35 years I met many people with self-diagnosed electromagnetic hypersensitivity. Public concern about it increased greatly during that period, especially after the increase in man-made energy in the environment that occurred following development of cellphones and wireless networks. Electromagnetic hypersensitivity can now be recognized as a part of the larger problem regarding the public-health risks of man-made environmental electromagnetic energy.

Q. In what way is it a part of a larger problem?

A. Historically cancer was the focus of the risks due to electromagnetic energy, particularly cancer of the blood from low-frequency energy such as that from power lines, and brain cancer from high frequency energy such as that from cellphones. Less attention was given to electromagnetic hypersensitivity. There was common notion that the sufferer could fix the problem by simply avoiding exposure to the device that emitted the energy. We can now see that is not always easy to do, as this case shows. Also the rules for diagnosing electromagnetic hypersensitivity have not been finalized in the sense of specific guidelines for use by primary-care physicians.

Q. Have you conducted human studies on electromagnetic hypersensitivity?

A. My colleagues and I conducted a controlled study in which we demonstrated to a statistical certainty that electromagnetic hypersensitivity was a real neurological syndrome, and the results were published See Exhibit 2 at No. 56.

Q. Would you briefly describe the study?

A. The subject was a young female physician with multiple neurological and somatic symptoms including headaches, hearing and visual disturbances, subjective sleep disturbances and non-restorative sleep, and musculoskeletal complaints, all of which she reported could be precipitated by exposure to environmental electromagnetic energy and abated by moving away from the energy source. Among the triggering devices she identified were cell phones, computers, power lines, and various common electrical devices. During extensive pre-study interviews she credibly explained the reasons for her belief that energy from common environmental sources could provoke symptoms. Her ability to do so was an important consideration in our decision to commit resources to the study, because, in my experience, those who suffer from electromagnetic hypersensitivity are usually not suitable volunteers for a scientific study of the syndrome. After she agreed to medical tests that were appropriate for evaluating her medical condition, she underwent a physical exam, a comprehensive neurologic exam, a clinical electroencephalogram, non-contrast magnetic resonance imaging of the brain, an overnight sleep study with video and expanded EEG montage, a standard laboratory evaluation of serum electrolytes and blood chemistry, liver function tests, and serum fasting cortisol determination. In the judgments of her attending physicians, none of her signs and symptoms supported a diagnosis in terms of any generally recognized specific medical disorder. When my colleagues and I exposed her to electromagnetic energy in a scientific study under properly controlled conditions, she developed temporal pain, headache, muscle twitching, and skipped heartbeats. All these symptoms occurred within 100 seconds after initiation of exposure to the energy. The causal link between the electromagnetic energy and the symptoms was proved to greater than a 95% certainty.

Q. How was it possible to be so certain that the subject actually suffered from electromagnetic hypersensitivity?

A. Because the determination was not a subjective clinical diagnosis but rather was based on the use of an objective scientific method, with appropriate use of statistical analysis.

Q. Would you describe how you were able to make that determination?

A. The subject sat in chair in a dark quiet room. The source of the electromagnetic energy was near her head, but she never knew whether or not the source was emitting energy at any particular time. A

large number of separate trials were conducted to assess whether she exhibited any symptomatic response to the energy.

Q. What do you mean by a trial?

A. A trial consisted of a 100-second interval during which pulsed electromagnetic energy was or was not applied; the actual condition was chosen by the experimenter but was not known by the subject. When the interval began she had no symptoms. After it ended I interviewed her and asked whether she experienced any symptoms. If yes, I asked her to describe the symptoms, and to characterize them as mild or moderate. Then I waited until she told me that the

symptoms had abated. When they did we began a new trial. If no symptoms were reported we began the next trial immediately.

Q. What was the reason for doing many trials?"

A. From a scientific perspective it was necessary to compare the subjects self-reported symptoms between times when the energy was present or absent. That is the only possible way to show a causal link.

Q. Did the subject know when the energy was present?"

A. No. She wasn't told, she couldn't perceive it like a sound or a touch, and the experimental equipment was hidden from her view so that she had no cue when the energy was present.

Q. What was the basic result of the study?

A. Her symptoms sometimes began almost immediately after exposure to the energy began, and sometimes after the energy had been present for a few seconds. She reported moderate symptoms in 100% of the trials where the energy was present. She never reported a false result, by which I mean a claim that she had moderate symptoms following an interval where I did not apply the energy, which is called a sham trial.

Q. So the corresponding result for the sham trial was 0%?

A. Correct.

Q. You said that you didn't tell the subject when the electromagnetic energy was being applied. Is it nevertheless possible that she could have perceived it, like a light beam or a touch?

A. Based on our present knowledge, man-made environmental-strength electromagnetic energy is not consciously detected by human beings. We therefore expected that the subject would not be conscious of the presence of the electromagnetic energy that we applied. We conducted a separate study of that question and proved that she was not conscious of the presence of the energy, as expected. That was an important observation because, taken together with the observation showing 100% occurrence of moderate symptoms, the overall results provided our first insight into how the brain of persons suffering from electromagnetic hypersensitivity processes information.

Q. What is this first insight?

A. We showed that the subject was not aware of the energy but that it nevertheless triggered various somatic symptoms. The symptoms must therefore have been generated and controlled by information-processing in her brain that occurred below the level of the cerebral cortex, which is where consciousness is created. Then, as a result of information-processing in lower brain regions, the brain initiated electromagnetic and hormonal signals that initiated responses by various organs in the body. This is the fundamental way the brain responds when it receives any sensory information, in the presence or absence of awareness, including but not limited to the presence of man-made electromagnetic energy. A prototypical response of the body to the presence of man-made electromagnetic energy is the triggering in the body of a condition known as stress. In most persons, the effect of the stress is not recognized clinically until after the person develops a clinically recognized disease. In hypersensitive persons, in contrast, the initial reactive process in the brain are overactive, and go beyond the initiation of stress, thereby immediately trigger somatic symptoms.

Q. Did you make any other observations that in your opinion are relevant to his case?

A. Yes. Based on our previous studies regarding how human beings and animals detect man-made

electromagnetic energy, we expected that pulsed energy would be more effective than non-pulsed energy in producing symptomatic responses, and that was what we observed and reported in the provocation study. Smart meters emit pulsed energy.

Q. What overall conclusion do you draw from this study?

A. That, to a scientific certainty, the neurological syndrome known as electromagnetic hypersensitivity actually exists, as we showed using the scientific and diagnostic procedures I just described.

Q. Couldn't the same tests be done to determine whether the Complainants in this case actually suffer from electromagnetic hypersensitivity?

A. I estimate that the total cost of our study was between $500,000 and $1,000,000. But not only would the cost of performing the study routinely be prohibitive, it would be quite unnecessary.

Q. Why do you say that it would be unnecessary?

A. Because the objective of our study was not to diagnose electromagnetic hypersensitivity but to accomplish the far more difficult and expensive objective of establishing the existence of the neurological syndrome. Having established that such a syndrome exists, it now becomes the responsibility of clinicians to formulate diagnostic guidelines. Such efforts are underway at institutions around the world. See Exhibit 2 at No. 4, 12, 30, 52, 59, 125, 126, 127, 135, 136, 137, 138, and 19. After guidelines are developed and put into effect, the result will be a system to diagnose hypersensitivity in specific subjects. I anticipate that the guidelines will include some form of a provocation test, like the RAST for allergies. But as with allergies, the diagnosis will be based on the treating physician's experience and personal observations of the particular patient in relation to the general guidelines, not on an objective scientific study such as the one done by colleagues and me.

The Complainants

Q. Why is the exposure of the Complainants to the electromagnetic energy from smart meters unreasonable?

A. Maria Povacz, Laura Sunstein Murphy, Diane Van Schoyck, and Cynthia Randall all suffer from serious diseases, disorders, and somatic symptomatology. They report that some of their present symptoms are caused by the electromagnetic energy from smart meters, and they express concerns that their present disease conditions are likely to be worsened by exposure to the electromagnetic energy emitted by smart meters. There is a sound basis in experimental biology that supports their concerns regarding the consequences to their health that have occurred and that may occur due to future chronic exposure to the electromagnetic energy emitted by smart meters. Under the conditions pertinent to the conditions of this case, coercing the Complainants to endure these risks and uncertainties is unwarranted, unjustified, and would amount to involuntary human experimentation by PECO. For all these reasons individually and especially taken together, it would be unreasonable to forcibly expose the Complainants to smart-meter electromagnetic energy.

Q. What serious disease and disorders are you referring to and how are they linked to the electromagnetic energy from smart meters?

A. I will answer with respect to the Complainants individually. For purposes of this report, I am assuming that all of the facts referenced herein will be proved by the Complainants through testimony, records, or otherwise.

Diane Van Schoyck – Diane has a clinically demonstrated hypersensitivity to sound. She suffers from hypothyroidism, spinal stenosis, aortic valve regurgitation, and hypertension. In 2015, PECO installed a smart meter on the home. Shortly thereafter she reported to PECO that she experienced various symptoms. Diane reported additional symptoms to PECO: heart palpitations, insomnia, extreme fatigue, anxiety, skin rashes, flushing, memory concentration difficulty, shortness of breath, hearing buzzing and other ill-defined sounds, dry eyes, and teeth sensitivity After PECO installed a new AMI smart meter on the home her symptoms continued including. infections,

lack of sleep, fatigue, and loss of sinus libido, symptoms of chest tightness, teeth pain, and back pain. When PECO's smart meter was replaced with an analog meter her symptoms improved. Diane's sympto-matology, considered in

the context in which it occurred, may markedly have been caused by exposure to smart-meter electromagnetic energy. It is possible that the meter emissions led to the symptoms. In my opinion, as a person who has studied public health generally and health risks of electromagnetic energy specifically, the only reasonable course of action is to defer to the recommendation of her physician. If one or more of her treating physicians recommend that she not be exposed to the electromagnetic energy, then that judgment should be accepted by PECO. It is the responsibility of a physician to diagnose and treat disease and their symptoms, not to conduct experiments to determine what caused those conditions. The treatment and advice rendered to a patient by a physician is governed by a consideration of the best interests of the patient. In my opinion, if a competent physician considers Diane's history, signs, and symptoms and recommends that she not be exposed to the energy, PECO should be bound by that judgment, even if PECO denies the existence of a causal link between Diane's symptomatology and electromagnetic energy.

Cynthia Randall - Cynthia was treated for Stage II breast cancer and comes from a family with the BRCA1 gene. She also had kidney cancer and skin cancer, underwent multiple gynecologic procedures for cervical dysplasia during the past 20 years, and suffers from a chronic viral infection. Recent clinical testing raised the possibility that she might be developing psoriatic arthritis. She has been advised by her physician to avoid exposure to electromagnetic energy. Cynthia is justifiably concerned about the health risks of a smart meter because she has a long history of cancer, and there is strong evidence in the peer-reviewed scientific literature indicating that man-made electromagnetic energy causes stress, and that added stress is strongly counter-indicated in all persons suffering from cancer for the reason that stress initiates complicates and/or exacerbates disease. See Exhibit 2 at No. 2 7, 14, 15, 17, 25, 28, 35, 37, 38, 39, 40, 41, 42, 44, 48, 51, 53, 54, 71, 81, 82, 93, 103, 105, 106, 107, 108, 109, 111, 114, 115, 116, 117, 118, 119, 130, 131, and 140. In the face of the existing scientific literature and the recommendations of treating physicians, it would be unreasonable for PECO to force Cynthia to undergo chronic exposure to the energy emitted by its smart meters.

Laura Sunstein Murphy - Laura has been hypersensitive to fluorescent lights since 1972. A smart meter was installed on her home in 2002, but she was not made aware that the meter was a source of electromagnetic energy. Soon thereafter, and continuing for the next 14 years, she developed a long list of symptoms and medical problems, including diverticulitis, hypothyroidism, uterine fibroids, atrial fibrillation, ptosis, aortic-valve regurgitation, mitral-valve prolapse, detached retina, severe leg pain, vein ablations, cataracts, severe sinus infection, colon resections, and lipedema, endometrial lesions, vitamin malabsorption, and anemia. In 2015, during litigation occasioned by her refusal to allow installation of a new smart meter, she learned that the original meter had been emitting electromagnetic energy for the past 14 years. For the first time, she took many specific steps to reduce her exposure to the electromagnetic energy but her discomfort continued. Her symptomatology improved when the smart meter was replaced by an analog meter; she felt better, the pains in her legs eased, she was able to stand and walk for longer periods of time, and her headaches stopped. Her symptoms suddenly returned, and after an investigation she learned that PECO had reinstalled a smart meter. After it was once again removed and replaced by an analog meter, her health again began to improve. In my opinion there is enough scientific information and diagnostic capability to sustain the judgment that Laura symptoms were triggered by smart meter energy. It is sad that a lay person such as Laura is forced to try to conduct experiments and prove by an excessively high evidentiary standard that a link exists between her symptoms and PECO's smart meter. The striking reality to me is that the remedy Laura seeks seems be a small burden for PECO but a large benefit to her. It is not my intention to opine directly on PECO's burden, but rather to recognize that there are health-related costs associated with the use of smart meters. My opinion is that the state of the science, the context of her symptoms, and opinions of her physician, and the reasonableness of the solution she seeks, taken together, indicate that she should not be forced to chronically endure exposure to smart-meter energy in her own home. Scientific studies can and have shown the existence of electromagnetic hyper-sensitivity, but they cannot provide a clinical diagnosis, which is the exclusive province of the diagnosing physician. A diagnosis is an algorithmic approach to a disease or disorder that has been formulated by specialists in the different relevant areas of clinical medicine and adopted by consensus. Clinicians cannot presently diagnose electromagnetic hypersensitivity in accordance with any consensus algorithm because none has yet been developed. But even in the absence of a universally established algorithm for a diagnosis, all clinicians have an ethical responsibility to guide and warn their

patients, and to err on the side of patient safety. In the present cases, since a physician supports her position, it seems unimaginable that PECO would be permitted to ignore that advice, to Laura's detriment.

Maria Povacz- In 2012, shortly after PECO installed a new smart meter about ten feet from her bedroom, Maria began to hear ringing in her ears. Other symptoms then developed including sleep deprivation, headaches, chest pains, dizziness, inability to concentrate, thyroid problems and disorders in vitamin metabolism. She took numerous steps to reduce her exposure to electromagnetic energy, but these measures were not sufficient in relieving her discomfort. In 2014, she was clinically diagnosed with electromagnetic hypersensitivity syndrome. When she traveled abroad, she felt much better. When she returned home, her symptoms resumed. Maria's case echoes the unfairness that results from failure to respect the recent scientific and clinical developments regarding electro-magnetic hypersensitivity. Maria can do no more than she has done to explain what has happened to her body in relation to smart-meter electromagnetic energy. She knows that there are many sources of such energy in the modern world, and that in all likelihood she will still be faced with challenges after the present matter is resolved. Even so, the link between smart-meter energy and her medical condition is sufficiently strong that is reasonable for her to avoid such exposure and unreasonable for PECO to mandate it.

Q. Why would exposure of the Complainants in this case to the electromagnetic energy from smart meters be involuntary human experimentation?

A. Human experimentation is the testing of a scientific hypothesis in an experiment that involve human subjects. If the subjects have not given their written informed consent, the experimentation is involuntary. In my opinion, that is exactly what PECO is doing.

Q. Are their official rules for human experimentation?

A. Yes. They developed after World War II and became codified in federal law in 1976.

Q. What are these rules?

A. Perhaps the best way to answer the question would be to describe how they presently function. There are presently about 800 institutions in the United States, more or less, where human research may be lawfully performed. Assume that investigators at one of these institutions wanted to expose human subjects to the electromagnetic energy from smart meters. The investigators would be required to apply to the institution's research board for human research (IRB) for permission to do the study. The backgrounds of the members of the IRB are specified by law, as are the extensive procedural rules that must be followed. Principal among them are the requirements that the investigators provide a written description of exactly what they plan to do, and that they secure written informed consent from each volunteer in the study, using a form specifically approved by the IRB in which full disclosure is made regarding all aspects of the study, especially including the risks. It is not legally possible to claim that there are no risks. It is also not legally possible for investigators to conduct a study without following these rules. PECO is intentionally exposing human subjects to the electromagnetic energy from smart meters, which is something that cannot be done by any research institution in the United States without first securing permission and consent within the context of federal laws. The upshot is a Kafkaesque situation in which bona fide investigators cannot study the risks of smart-meter electromagnetic energy unless they follow stringent rules, especially the rule involving consent, and yet PECO can involuntarily expose human subjects in the absence of any oversight whatsoever. Equally disturbing, PECO has not disclosed any plan to collect health data as it tests its hypothesis that exposure to its energy is safe, an omission that guarantees PECO will never find evidence of adverse effects.

Q. Have you personally had any experience with the IRB?

A. All of my human studies were approved by my institution's IRB, I served as a member of the IRB for ten years, five years as its chairman.

PECO Experts

Q. Have you read the curriculum vitae of Dr. Mark Israel?

A. Yes.

Q. What is his specialty?

A. He is a pediatrician with a sub-specialty in oncology.

Q. Is he also an experimental biologist?

A. Yes. He has co-authored many peer-reviewed publications in his area of expertise.

Q. What is his area as assessed from his publications?

A. The biochemistry and molecular biology of cancer.

Q. Did you find any evidence to suggest that he has worked in the area of experimental biology that deals with the biological effects on electromagnetic energy?

A. No

Q. Have you read Dr. Israel's testimonies dated May 18, 2016 and May 20, 2016?

A. Yes.

Q. What do you understand his conclusion to be?

A. That neither Maria Povacz nor Laura Sunstein Murphy have been harmed by PECO's smart meters, and that neither of them will be harmed in the future.

Q. What do you understand to be the bases for these conclusions?

A. His conclusion that the Complainants have not been harmed was based on his medical evaluation of the testimony of the Complainants.

Q. What was the basis of his conclusion that the Complainants will not be harmed in the future by electromagnetic energy from smart meters?

A. The basis appears to be a medical evaluation of a literature review that he conducted regarding the biological effects of electromagnetic energy.

Q Do you know him to be a worker in the field of biological effects of electromagnetic energy?

A. No. As best I can tell, he became seriously interested in the area at about the time this litigation commenced.

Q Do you have any opinion regarding his "medical evaluation" of the Complainants?

A Dr. Israel uses the term "medical evaluation" equivocally. At times he seems to employ the orthodox meaning, that of a conclusion of a treating physician, but he is not a treating physician bound by ethical duty to advance the best interest of the patient.

Q. What other way does Dr. Israel employ the term?

A. He sometimes employs "medical evaluation" idiosyncratically to mean, judging from context, that he reads the scientific literature dealing with the experimental biology of electromagnetic fields, the epidemiological studies dealing with that topic, and the opinion of various agencies and blue-ribbon committees, and evaluates that literature using his skills as a physician, leading him to opine that the Complainants have not been injured by exposure to smart meters and even in the future they will not be injured by smart-meter energy. When Dr. Israel uses "medical evaluation" in this sense, to mean the analysis of peer-reviewed scientific publications by a physician who has not actually done research on the subject in question I have a definite opinion, namely that it is ineffective and fruitless. Science and medicine each have rules for generating and recognizing knowledge, and the two systems are different. Confounding the two sets of rules, as he did, is unhelpful and unfortunate, and ultimately impossible. He clearly rejects the idea of electromagnetic hypersensitivity, but he didn't get to that conclusion by conducting an authoritative scientific analysis of the literature based on familiarity and experience in the area.

Q. In your opinion, how did he reach that conclusion?

A. I cannot tell from his testimony. But I can say with considerable confidence it didn't come from scientific analysis. Then he rationalized his choice by cherry-picking published studies that fit his mindset, particularly the work of Rubin. Dr. Israel's reliance on Rubin was to me the clearest possible indication that he does not know the territory related to the health risks of electromagnetic energy.

Q. Are you familiar with Rubin's work?

A. Yes.

Q. What is your understanding of what he is and what he says about electromagnetic hypersensitivity?

A. He is a psychologist who claims that electromagnetic hypersensitivity is a form of mental illness.

Q. What kind of mental illness?

A. A psychosomatic disorder, by which he seems to mean that the sufferers only imagine that their symptoms are caused by man-made electromagnetic energy.

Q. Does he claim that the symptoms aren't real?

A. No. That's not possible because symptoms are subjective. He acknowledges that the sufferer might actually have symptoms, but he denies the possibility that the symptoms might be caused by man-made electromagnetic energy. He employs the term "idiopathic environmental intolerance" to underscore his point that the trigger is some unknown factor in the environment, except that it can't be man made electromagnetic energy.

Q. Have you had any contact with Rubin?

A. Not directly. The Bioelectromagnetics Society invited us both to appear at their annual meeting in 2015 and debate the issue of electromagnetic hypersensitivity. I accepted, but Rubin declined, so the debate never took place.

Q. Have you had any indirect contact with him?

A. Following publication of our provocation study, he wrote twice to the journal editor, commenting on what he believed to be errors in our work. We pointed out the errors in his analyses of our work and the entire correspondence was published in the journal See Exhibit 2 at 43 and 50.

Q. Would you explain the relation between your work and his work?

A. The nominal purpose of his experiments was to find electromagnetic hypersensitivity. But he didn't find it so he concluded essentially that it didn't exist. But in science a negative result is universally acknowledged as having low probative value, because anybody can find nothing. Special talent or training is not needed. The upshot is that a hundred negative studies can be conclusively refuted by one valid positive result. This is why negative studies are usually not published. Our one study showed that he was wrong to interpret his observations to mean that electromagnetic hypersensitivity did not exist.

Q. In your opinion, why did his studies fail?

A. In Rubin's perspective, the only way to scientifically prove that man-made electromagnetic energy could cause somatic symptoms in self-diagnosed sufferers was to first pick a symptom to be studied. Then, after assembling a group of self-diagnosed sufferers who had that particular symptom, he designed the statistical structure of his study such that the cause/effect link between the energy and the symptom could not be detected unless the symptom was precisely reproducible in each subject during repeated trials, and also in all subjects. This design was a near certain guarantee that he would not find what he professed to be seeking because sufferers are human beings, not machines, and they do not react like machines. Consequently, at the statistical level, Rubin simply averaged away reality, like the man with his feet in a fire and his head in a block of ice who reported that his body temperature was normal, on average.

Q. How did your study differ in this regard?

A. We assumed that any symptoms triggered by the energy we applied would be specific to the subject, rather than universal reactions that were similar in nature and intensity to the reactions of all true hypersensitivity sufferers. We allowed for the possibility that the same subject could exhibit different symptoms during independent trials. For example, if a sufferer reported knee pain in the first trial, fatigue or weakness in the second, and a headache in the third, we counted the results as three reports of a link between exposure and a hypersensitivity reaction, Rubin would count the reports as a failure to find a link because the symptoms were all different. Finally, we used the experimental subject as her own control. That was the purpose of the sham trials.

Q. You said the subject's symptoms were mild or moderate. Did she have any severe symptoms?

A. Yes. That happened, depending on how long she was exposed and on the level of the electromagnetic energy I applied. But our study was not intended to address the issue of symptom severity, but rather to prove the existence of a causal link between electromagnetic energy and symptoms. To accomplish this objective, it was necessary to conduct a sufficient number of independent trials to be able to show to a statistical certainty that she reported symptoms more often during actual exposure intervals compared with sham intervals, which were the intervals when the energy was not applied. When the symptoms were severe they did not abate for hours, which made it impractical to do the study. During a period of about a week, by trial and error, I learned how low to set the energy level so that her symptoms following a 100-second exposure would abate in less than about 15 minutes. Our identification of that threshold made it possible to achieve our study objective, but it also precluded us from studying the link between exposure and severe symptoms.

Q. Overall, do you disagree with Dr. Israel's analysis?

A. Yes. I think that Dr. Israel's testimony was polemical not analytical. Essentially he doesn't accept the existence of electromagnetic hypersensitivity. I think his perspective is understandable because the research area involving electromagnetic bioeffects is far from his routine responsibilities as a physician. Nevertheless it is not credible for him to enter this field, make a "medical evaluation," and then ask to be believed because he is a doctor, which is what it seems to me that he did.

Q. Have you read the curriculum vitae of Dr. Christopher Davis?

A. Yes.

Q. What is his specialty?

A. He is an engineer.

Q. Is he also an experimental biologist?

A. No, but his research-related activities have been heavily supported by many industrial and government agencies, and he has co-authored many peer-reviewed publications in his area of expertise.

Q. What is his area of expertise as assessed from his publications?

A. Engineering support. He has assisted investigators studying many different kinds of problems. For examples, the solid-state, viscoelastic, light-transmission, and electrical properties of various materials, and the dynamics of wireless networks.

Q. Did you find any evidence to suggest that he has worked in the area of experimental biology that deals with the biological effects on electromagnetic energy.

A. No

Q. Have you read the testimonies of Dr. Davis dated May 18, 2016 and May 20, 2016?

A. Yes.

Q. What did you understand was the substance of what he said?

A. That smart meters emit electromagnetic energy, that the energy is not unusual, and that the energy is safe because the FCC says so.

Q. Do you agree with what you understood him to say?

A. I agree that smart meters emit energy. I don't agree with the assertion that the energy is not unusual because, in the context he used it, the claim is misleading.

Q. Why is it misleading?

A. Because what is or is not "unusual" depends completely on the frame of reference. If the symptoms of the Complainants is frame of reference, the energy is unusual because at least some of their symptoms didn't develop in the absence of the smart-meter energy. If the frame of reference is the natural world as it existed before man-made electromagnetic energy was invented, smart-meter energy is unusual because it is about a billion times stronger than the corresponding natural level, more or less. If the reference frame is the location in the houses of the Complainants where the smart meters will be installed, then it is unusual because the resulting energy at those locations will be about a million times stronger compared with the pre-installation levels, more or less.

Q. Why do you disagree with Dr. Davis's testimony concerning the FCC?

A. Because it is misleading. According to the FCC, smart meters and cellphones are safe when manufactured according to the presently mandated emission levels. But the FCC defines an emission level as "safe" if it doesn't result in adverse biological effects caused by heating or cooking of the exposed subject. Nowhere does the FCC say that smart meters are safe with regard to physiological changes cause by physical processes other than heating or cooking. That claim is unsupportable and counter-scientific and has not been made by the FCC. Dr. Davis's testimony

is pregnant with the notion that the FCC says smart meters are safe with respect to all possible mechanisms, which is not the case.

Q. Dr. Davis testified that he agrees with the FCC statement on its website that adverse biological effects from non-thermal exposure levels of electromagnetic energy are ambiguous and unproven. Do you agree?

A. I am familiar with what the FCC means by "ambiguous" and "unproven, with the legal context that governs its jurisdiction, with the extent to which the experiments the FCC is required by law to consider are specifically designed to create ambiguity, and with the overwhelming economic and sociological consequences if the FCC were to say otherwise. In my opinion, in the context of this case, the FCC issue is a red herring.

Q. Dr. Davis testified that installation of a smart meter wouldn't increase the amount of electro-magnetic energy in the house where it was installed. Do you agree?

A. No. When electromagnetic energy is created at a specific location, the laws of physics almost always require that it add to, not cancel, any preexisting electromagnetic energy. There are exceptions, but they do not apply to context relevant this case.

Q. Dr. Davis testified that there have been many reports by expert panels whose consensus is that there is no consistent, reproducible evidence that electromagnetic energy causes any biological effects. Do you agree?

A. Yes, but considering the purpose for which he offered the testimony, it is extremely misleading.

Q. What do you mean, why is it misleading?

A. The thrust of his testimony is to assert that all experts agree that man- made electromagnetic energy in environment, including but not limited to smart meters, doesn't cause any biological effects. I know or have known many such experts, perhaps most, either personally or by reading their publications, and I can say without any qualification that their consensus is the opposite of the one Dr. Davis has asserted. Even more counterfactual, Dr. Davis trusts that the experts on the panels he cited were disinterested, but historically that has almost never been the case.

Q What do you understand to be Dr. Davis's testimony regarding the possibility that smart meters can cause human disease or trigger hypersensitivity reactions?

A. I believe he conceptualizes that the only possible biological effects from man-made electromagnetic energy occur by means of heating or cooking tissues. Since smart meters can't cause those effects, they must be safe.

Q. Do you agree with him?

A. No, because his premise is wrong. There is a very large data base of empirical studies in experimental biology that demonstrates beyond reasonable doubt that biological effects can occur at levels of man-made electromagnetic energy actually present in the environment

Q. What do you understand to be Dr. Davis's testimony regarding his measurements of man-made electromagnetic energy actually present in the environment, including levels produced by smart meters.

A. I believe he conceptualizes that the results of brief, spatially and temporally localized measurements at particularly chosen locations can adequately characterize the electromagnetic environment of the homes of the Complainants, and he did so to in a manner that, at least on the surface tends to trivialize the concerns of the Complainants.

Q. Do you agree with him?

A. No. His testimony in this regard was highly misleading.

Q. In what way?

A. In two ways. He testified that the electromagnetic energy from PECO 's smart meter in Ms. Povacz was 246 times smaller than the level in New Hope, PA. But that comparison was strongly dependent on the locations of the measurements. If he made the measurements at different locations from the smart meter and at different locations in New Hope, he could easily have found that the level in Ms. Povacz house was 246, or even 2046, times greater than the level in New Hope. A meaningful comparison of ambient levels is extremely difficult. Dr. Davis didn't even come close to accomplishing this task. Second, I think that Dr. Davis's testimony created the false impression that time is not a material factor in an attempt to establish a comparison. At virtually all representative points in the general environment, the actual levels of man-made electromagnetic energy vary over extremely wide ranges. A variation of 1,000,000% would not be unusual, and a variation of 1,000% would be extremely common. In so far as I could determine, Dr. Davis did not consider this factor.

Q. What do you understand to be Dr. Davis's testimony regarding the relation between how much of a change in the existing level of electromagnetic energy caused by smart meters must occur before the matter of health risks is raised?

A. I understood him to mean that if the PECO energy levels were low compared with some reference value then the PECO energy wouldn't matter from a health perspective.

Q. Do you agree with him?

A. No. I understand his perspective. He is an engineer and his professional activities involves working with what are called linear systems, by which I mean things that follow laws whereby if a little change does something, then a change ten times as much will do ten time more. Virtually every system in the world of an engineer works that way. But animals and human beings are nonlinear systems, buy which I mean that their laws can allow things to happen which cannot happen in linear systems. For example, human beings can exhibit very strong responses to very small stimuli in the complete absence of a proportion between the cause and the effect. Dr. Davis's assumption that the stimulus-response relationships of human beings are governed by linear laws is wrong. See Exhibit 2 at No. 84, 88, and 89. Consequently he has no rational basis to argue that PECO's energy is too small to matter.

Opinions of Agencies

Q. In forming the opinions you expressed here, have you taken into consideration the official positions of government agencies regarding safety regulations concerning electromagnetic energy?

A. I know about those positions generally, but for at least two reasons they have not had a significant impact on my opinions. First, their positions are far behind the present state of the science. They are

based on out-moded concepts which the independent workers who study the effects of electromagnetic energy that I know do not regard as reasonable. Second, the legal structure of federal law as regards the toxic side-effects of man-made environmental electromagnetic energy effectively requires the agencies to discount the health risks due to man-made electromagnetic energy in the environment.

Q. What legal structure are you referring to?

A. The Radiation Control for Health and Safety Act of 1968. See Exhibit 2 at No 78.

Q. What does that law have to do with the issues in this case?

A. In 1962, following the birth of thousands of armless and legless babies in Europe caused by thalidomide that had been sold to pregnant women, the US Congress required drug companies to provide pre-market scientific evidence of the safety of new drugs. In 1968, Senator Rogers, of Florida proposed applying the same social principle to devices that emitted man-made electromagnetic energy into the environment. His proposal, The Radiation Control for Health and Safety Act of 1967, would have authorized the government to perform research and regulate the safety of all devices that emitted man-made electromagnetic energy. But opponents of this principle, the industries that manufactured and sold energy-emitting devices, successfully argued that the health impact of man-made electromagnetic energy should be assessed subsequent to marketing. This policy shifted the burden of proof to the party asserting injury and was subsequently adopted by all federal agencies. Each relevant federal agency therefore begins with the assumption of safety, and requires any aggrieved litigant to prove non-safety.

Q. In forming the opinions you expressed here, have you taken into consideration the official positions of private national and international agencies regarding safety regulations concerning electromagnetic energy?

A. I know about their positions generally, but they have not had a significant impact on my opinions because their positions are far behind the present state of the science and are invariably heavily biased in favor of industry positions. In addition, in all the cases that know about, the decisions of the agencies were star-chamber processes in which those with opposing views were excluded.

Q. Is it your opinion that the only ethical basis for assessing the health risks of electromagnetic energy from devices such as smart meters is knowledge gained from animal studies?

A. Yes, at least with regard to prospective studies.

Q. What do you mean?

A. We suspect that the energy from such devices is a serious health risk. More definitive studies are needed, but such studies will be expensive, and there is no independent source of funds for independent investigators to perform the needed studies. This vacuum is presently being filled by epidemiological studies, which are retrospective analyses of databases of unfortunate persons who have already died or developed disease. Because of their logical structure, epidemiological studies can never answer the basic questions. But far worse is the fact that industry and government are intentionally relying on such studies to provide an answer. In my view, that intention amounts to an egregiously unacceptable form of involuntary human experimentation.

Q. Are the needed animal studies being performed?

A. No. In the US, pursuant to the policy that established by the Radiation Control Law in 1968, such studies are generally regarded a private responsibility. There are no sufficient funds for independent investigators to carry out such studies.

Conclusion

Q. What are your conclusions?

A. **First**, here is a reasonable basis in established science for the Complainants' concern regarding risks to human health caused by man-made electromagnetic energy in the environment, including the type of electromagnetic energy emitted by smart meters. These health risks are heightened in the very young, the very old, and in those with preexisting diseases or disorders.

Second, electromagnetic hypersensitivity is a documented neurological condition in which the affected person experiences musculoskeletal, immunological, and/or neurological symptoms that noticeably flare or intensify upon exposure to man-made electromagnetic energy in the environment. About 5-10% of the general public are self-reported to suffer from this disorder.

Third, the Complainants were forced into the almost impossible position of conducting experiment on themselves to prove to PECO's satisfaction that their claims of a link between their symptoms and electromagnetic energy from smart meters were sufficiently credible as to warrant some remediable action by PECO.

Fourth, there is no justifiable reason for PECO to doubt the reality of the Complainants' symptoms, to question their intentions in seeking relief, or to not respect and implement the advice they received from their physicians that exposure to smart-meter energy should be avoided.

Fifth, chronic exposure to the electromagnetic energy from smart meters causes risks to human health that go far beyond the capability of the energy to trigger hypersensitivity reactions in sensitive persons. A large literature in experimental biology indicates that man-made electromagnetic energy, including that from smart meters, causes biological effects involving every essentially physiological process that occurs in living organisms. A large literature in nonexperimental biology shows that man-made electromagnetic energy, including that from smart meters, is associated with a plethora of human diseases. People who suffer from pre-existing conditions are particularly vulnerable, and all the Complainants suffer from such conditions.

Sixth, PECO's claim that the FCC has pronounced smart meter safe is spurious because the FCC has made that statement only with regard to the heating and cooking effects of electromagnetic energy. The Complainants have made no claims that smart meters are like microwave ovens.

Seventh, PECO has claimed that expert committees have pronounced smart meters safe, but PECO has not acknowledged the blatant conflicts-of-interests that infect such committees nor the serious limitations on their reports, such as the failure to address much of the relevant literature.

Eighth, PECO proposes to expose human beings to smart-meter electromagnetic energy over their objection under conditions that would not be acceptable to any institution in the United States where human experimentation can lawfully be performed. Consequently, coercing the Complainants to endure the risks and uncertainties of such exposure is unwarranted, unjustified, and would amount to involuntary human experimentation by PECO.

Exhibit 1

CURRICULUM VITAE

Andrew A. Marino, PhD

304 Caddo Street

Belcher, LA 71004

E-mail: andrewamarino@gmail.com

EDUCATION

Ph.D., Biophysics, Syracuse University, Syracuse, NY, 1968

J.D., Law, Syracuse University College of Law, 1974

POSITIONS HELD

Research Biophysicist, Veterans Administration Medical Center, Syracuse, New York, 1964-1981

Assistant Professor, Department of Orthopaedic Surgery, SUNY Upstate Medical Center, Syracuse, New York, 1972-1981

Assistant Professor, Department of Orthopaedic Surgery, Louisiana State University Medical Center, Shreveport, Louisiana, 1981-1985

Associate Professor, Department of Orthopaedic Surgery, Louisiana State University Medical Center, Shreveport, Louisiana, 1985-1989

Professor: Department of Neurology, Louisiana State University Health Sciences Center, Shreveport, Louisiana, 2010 to 2014

Department of Cellular Biology and Anatomy, Louisiana State University Medical Center, Shreveport, Louisiana, 1989 to 2014

Department of Orthopaedic Surgery, Louisiana State University Health Sciences Center, Shreveport, Louisiana, 1989-2010

Manager: ABR Analytics, 2014 to present

BAR MEMBERSHIP:

New York, 1975-present

Louisiana, 1995-present

BOOKS

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Exhibit 2

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