

COMMONWEALTH OF PENNSYLVANIA



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January 13, 2015

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

RE: Petition of PPL Electric Utilities
Corporation for Approval of Its Smart Meter
Technology Procurement and Installation
Plan
Docket No. M-2014-2430781

Dear Secretary Chiavetta:

Enclosed please find the Office of Consumer Advocate's Main Brief, in the above-referenced proceeding. Please be advised that this Brief contains **Proprietary Information**. For your convenience, I have enclosed a Proprietary and Non-Proprietary version.

Copies have been served upon all parties of record as shown on the attached Certificate of Service.

Respectfully Submitted,

A handwritten signature in cursive script that reads "Christy M. Appleby".

Christy M. Appleby
Assistant Consumer Advocate
PA Attorney I.D. # 85824

Enclosures

cc: Honorable Susan D. Colwell, ALJ
Certificate of Service

186854

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation :
For Approval of its Smart Meter Technology : Docket No. M-2014-2430781
Procurement and Installation Plan :

MAIN BRIEF
OF THE OFFICE OF CONSUMER ADVOCATE

-NON-PROPRIETARY VERSION-

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Dated: January 13, 2015

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I. INTRODUCTION

On November 14, 2008, Act 129 of 2008 (Act 129 or Act) became effective and among other things, contained a section requiring Electric Distribution Companies (EDCs) with at least 100,000 customers to present a Smart Meter Technology Procurement and Installation Plan (SMP or Plan) to the Commission for approval. 66 Pa. C.S. § 2807(f). Specifically, Section 2807(f)(2) states:

(2) [EDCs] shall furnish smart meter technology as follows:

- (i) Upon request from a customer that agrees to pay the cost of the smart meter at the time of the request;
- (ii) In new building construction;
- (iii) In accordance with a depreciation schedule not to exceed 15 years.

66 Pa. C.S. § 2807(f)(2).

Act 129 requires Electric Distribution Companies (EDCs) with at least 100,000 customers to present a Plan to the Pennsylvania Public Utility Commission (Commission) for approval. 66 Pa. C.S. § 2807(f). Each Plan must describe the smart meter technologies that the EDC plans to install upon customer request or in new building construction and in accordance with a depreciation schedule not to exceed fifteen (15) years. Id. Act 129 also requires that, with customer consent, the EDCs make available direct meter access and electronic access to customer meter data to third parties including electric generation suppliers (EGSs) and providers of conservation and load management services. Id. The Act further defines the requirements for acceptable smart meter technology. 66 Pa. C.S. § 2807(g).

Finally, Act 129 permits the recovery of “reasonable and prudent costs of providing smart meter technology.” 66 Pa. C.S. § 2807(f)(7). The reasonable and prudent costs include annual depreciation and capital costs over the life of the smart meter technology plus the cost of any system upgrades required to enable the use of the smart meter technology incurred after

November 14, 2008, less operating and capital cost savings realized from the installation and use of the technology. Id. EDCs may recover smart meter technology costs (1) through base rates, by deferring such costs to a future base rate case or (2) on a full and current basis through a reconcilable rider under Section 1307. Id.

On June 24, 2009, the Commission entered an order, *inter alia*, detailing the standards and guidelines for implementing the smart meter requirements of Act 129. See gen'ly Re: Smart Meter Procurement and Installation, Docket No. M-2009-2092655, Implementation Order (June 24, 2009) (Implementation Order). In the Implementation Order, the Commission permitted a thirty-month grace period to give each Electric Distribution Company (EDC) the opportunity to assess its needs, select technology, secure vendors, train personnel, install and test support equipment and establish a detailed meter deployment schedule consistent with the requirements of Act 129. Implementation Order at 9.

Pursuant to the Implementation Order, on August 14, 2009, PPL filed its Petition of PPL Electric Utilities Corporation for Approval of a Smart Meter Technology Procurement and Installation Plan (Initial Plan). When PPL filed its Initial Plan, PPL was uniquely situated because unlike other Pennsylvania EDCs, the Company had already installed advanced meter infrastructure for all of its customers from 2002 through 2004. Petition of PPL Electric Utilities for Approval of a Smart Meter Technology Procurement and Installation Plan, Docket No. M-2009-2123945, Order at 5 (June 24, 2010) (June 24 Order). By 2004, the deployment was complete and the Company had installed smart meters for all of its customers. Id. The system was built using a Power Line Communications (PLC) system and consisted of meters, communications, infrastructure, computer services and applications that allow PPL to remotely read the meters for all its customers. Id. Beginning in 2005, the Company also upgraded its

AMI System through the installation of a Meter Data Management System. June 24 Order at 5. The system provided for advanced metering applications including: (1) a customer interface that allows customers to analyze their specific usage; (2) a data storage base that provides storage for two years of hourly reads from all customers; (3) a billing system that allows hourly billing; (4) an energy settlement system that allow electric generation suppliers to serve customers based on actual hourly usage; and advanced load analysis capabilities. Id.

In the Initial Plan proceeding, PPL stated that its existing smart meter system was able to support all of the capabilities set forth in the Commission's Implementation Order. See, June 24 Order at 6. Since all of the Company's customers had advanced meters installed, the Company proposed to study, test, and pilot applications to enhance and to expand the capabilities of its current advanced meter infrastructure over the thirty-month grace period provided for in the Commission's Implementation Order. June 24 Order at 6. The Commission's June 24 Order approved PPL's proposed Plan to move forward with the pilots during the grace period. June 24 Order at 32-33. On August 24, 2012, the Commission granted a further extension of the grace period until June 30, 2014 in order to address technical delays that occurred in the pilot programs. Petition of PPL Electric Utilities Corporation for Approval to Modify its Smart Meter Technology Procurement and Installation Plan and to Extend its Grace Period, Docket Nos. P-2002,2303075, M-2009-2123945, Order at 20 (August 2, 2012) (August 2 Order).

On June 30, 2014, PPL filed its Petition of PPL Electric Utilities Companies for Approval of its Smart Meter Technology Procurement and Installation Plan, Docket No. M-2014-2430781. PPL is proposing to remove its existing advanced metering infrastructure to move from its current Power Line Communications (PLC) system to a new system based on Radio Frequency Mesh (RF Mesh) technology. PPL estimates that the total cost of implementing the Plan will be

\$449.3 million (\$407 million for capital expenditures and \$41.4 million for operations and maintenance (O&M) costs.) OCA St. 1 at 4.

PPL recommends the adoption of its \$450 million Plan for two major reasons: (1) to address the Act 129 requirements and the nine additional capabilities identified in the Commission's Implementation Order and (2) to address meter failure rates that are four times the industry standard. OSBA witness Knecht succinctly summarized PPL's proposal. Mr. Knecht testified:

PPL Electric's proposal hinges on two basic conclusions. First, the Company concludes that the existing smart meter system does not meet the functionality required by the Commission to comply with Act 129. Specifically, the technology cannot provide customers with direct access to price and use information through a home area network ("HAN"). Second, the Company concludes that the technology originally adopted by PPL Electric is obsolete, and cannot be upgraded to the meter functionality that is required by law and is being adopted by other EDCs. The Company therefore proposes to abandon much of its current technology, and replace all of its existing meters and most of the systems infrastructure. Ratepayers are asked to absorb the full cost and the major risks associated with this proposal.

OSBA St. 1 at 3.

The OCA submits that PPL has not demonstrated that it is reasonable to proceed with an accelerated full deployment of a new metering system at this time at a cost of \$450 million. The OCA submits that the Commission should require PPL to evaluate its options to extend the life of the current AMI system while working towards a more gradual, cost-effective transition to a new metering system by 2025. The Commission's Implementation Order allows the Company 15 years from the date of Plan approval, or until 2025, to deploy its meters if the current meters are insufficient to meet the requirements of the Act. Implementation Order at 15.¹ The Commission's Implementation Order provides that a more expedited deployment process would

¹ PPL's Plan was approved in 2010, and therefore, the full smart meter deployment need not be completed until 2025.

be encouraged “if it will provide increased customer benefits in a cost-effective manner.” Id. at 14. The record in this case, however, shows that there are no anticipated benefits to the accelerated deployment as proposed by PPL and that the accelerated deployment is not necessary to meet the requirements or the objectives of the Act. The objectives of the Act can be met, and are being met, with the current advanced meter system. Moreover, Office of Small Business Advocate (OSBA) witness Knecht presented evidence that it may be more costly to deploy the meters on an accelerated basis over the full deployment period.

PPL has identified that the second reason for deploying smart meters on an accelerated basis is to address the meter failure rate for its current advanced meters that is four times the industry standard. In order to address the failure of its existing AMI meters, however, PPL should not only be looking towards ratepayers to replace the failing smart meters and recover the costs through an automatic surcharge, but instead, the Company should be looking towards the manufacturer of the smart meters, Aclara PLC AMI system (Aclara) to address the meter failures and the attendant costs. As discussed below, PPL has not aggressively pursued this issue but instead has elected to replace the meters and recover the costs from ratepayers through the smart meter surcharge. The OCA submits that PPL should more fully explore its options to address the costs of meter failures with Aclara.

Act 129 also requires that the Company include any operational or capital cost savings in its smart meter surcharge. 66 Pa. C.S. § 2807(f)(7). PPL argues that there is no need to quantify savings because there will be no savings associated with the core functions of meter reading, billing and customer service since PPL has already implemented its AMI. PPL St. 2-R at 20. The Company does acknowledge that it anticipates that there may be savings associated with reduced meter services support, decreased call center volumes, improved outage management,

and improved identification and cost recovery for unaccounted-for energy but is not able to quantify the anticipated benefits. Id.; PPL St. 2 at 15-20. The Company proposes to flow through any benefits in the next base rate proceeding. Since the Company has elected to recover its costs through the smart meter surcharge, the OCA submits that Act 129 requires that any savings that may develop be identified and flowed through the smart meter surcharge as a cost off-set. The OCA submits that when the Company replaces its existing smart meters, the Company should be required to establish a baseline and to create a tracking mechanism in order to quantify any savings associated with investment in the proposed AMI system and to reflect those savings in its smart meter surcharge.

The Plan also includes a description of the Company's communication strategy and its cybersecurity and data privacy plan. The objective of PPL's communication strategy is to educate customers about the benefits of and the deployment of the smart meter technology, and address concerns customers may have about the new technology. See Plan at 60. PPL will create a comprehensive communications plan which it will share with the Commission once the Plan is approved. Id. The cybersecurity and data privacy plan provides a high level description of how the Company will address cybersecurity threats and protect private customer data. See Plan at 35-45. As discussed more fully below, the Company's communications strategy and cybersecurity and data privacy plan are incomplete and fail to address critical issues related to the deployment of smart meters. The OCA submits that both the communications strategy and cybersecurity and data privacy plan contained in the SMP should be revised to incorporate the specific recommendations below, and that the completed communications plan and cybersecurity and data privacy plan should be approved by the Commission prior to implementation.

The Company's filing also contains its intentions regarding the implementation of remote disconnect, service limiting, and prepayment metering. At this time, the Company plans to use remote disconnect as a voluntary disconnect tool, such as at the customer's request for a move-in or move-out situation, but does not intend to move forward with remote disconnect for involuntary terminations. PPL St. 2 at 12-13. The Company indicates, however, that it may move forward with expanding remote disconnect to involuntary situations sometime in the future. The Company also determined not to move forward at this time with service limiting and prepayment metering. The OCA supports the Company's decision not to move forward with remote disconnect for involuntary terminations, service limiting and prepayment meters. As discussed below, any plan to use these technologies may have adverse impacts on customers and may conflict with the Public Utility Code and Commission regulations. As such, the OCA submits that any order approving the Plan explicitly recognize that the current Plan does not allow for remote disconnection for involuntary terminations, service limiting, and prepayment metering technology. If the Company chooses to proceed with using these technologies in the future, the OCA submits that the Company should be required to hold a stakeholder process to explore the use of these technologies. In addition, due to the potential implications of Chapter 56 and Chapter 14, any plan to use these technologies should be considered an amendment to the instant Plan and be filed with and approved by the Commission prior to implementation.

II. PROCEDURAL HISTORY

On June 30, 2014, the Company filed its Smart Meter Technology Procurement and Installation Plan (Plan) pursuant to the requirements of Act 129 and the Commission's Implementation Order. The Petition was published in the Pennsylvania Bulletin on July 12, 2014 with Answers to the Petition due on August 11, 2014.

On July 21, 2014, the Office of Consumer Advocate (OCA) filed its Notice of Intervention, Public Statement and Answer. On August 6, 2014, the Office of Small Business Advocate (OSBA) filed its Notice of Intervention, Public Statement and Notice of Appearance. On August 7, 2014, the International Brotherhood of Electrical Workers, Local 1600 (IBEW), filed a Petition to Intervene. On August 8, 2014, the Coalition for Affordable Utility Service and Energy Efficiency in Pennsylvania (CAUSE-PA), and the PP&L Industrial Customer Alliance (PPLICA) each filed a Petition to Intervene, with PPLICA also filing a protest.

Hearings were held before ALJ Susan D. Colwell on December 16, 2014. During hearings, the following testimonies of the OCA's witnesses were admitted into the record: Direct Testimony of Christina R. Mudd² (OCA St. 1); Direct Testimony of Thomas S. Catlin³ (OCA St. 2); Direct Testimony of Nancy Brockway⁴ (OCA St. 3); Surrebuttal Testimony of Christina R.

² Ms. Mudd is a Principal with Exeter Associates, Inc. Ms. Mudd's work at Exeter is primarily related to the analysis of state regulatory and legislative policies for the development of renewable resources, the expansion of energy efficiency and conservation, and the use of distributed resources. Ms. Mudd also has considerable experience with the analysis of climate change mitigation strategies, including the evaluation of various benefits-costs assessments and the Regional Greenhouse Gas Initiative. Ms. Mudd has testified before the Pennsylvania Public Utility Commission on five previous occasions, including the Duquesne Light (M-2009-2123948) and PPL's (M-2009-2123950) smart meter proceedings. A resume and list of prior expert testimony provided by Ms. Mudd is attached to OCA St. 1 as Attachment A.

³ Mr. Catlin is a principal with Exeter Associates, Inc. and has previously presented testimony on more than 250 occasions before the Federal Energy Regulatory Commission and the public utility commissions of more than 20 states, including Pennsylvania, and the District of Columbia. Mr. Catlin's work at Exeter involves the analysis of the operations of public utilities, with particular emphasis on utility rate regulation. Mr. Catlin has also been extensively involved in the review and analysis of utility rate filings, as well as other types of proceedings before state and federal regulatory authorities. His work in utility rate filings has focused on revenue requirements issues, but has also addressed service cost and rate design matters. Mr. Catlin has also been involved in analyzing affiliate relations, alternative regulatory mechanisms, and regulatory restructuring issues. A list of prior expert testimony provided by Mr. Catlin is attached to OCA St. 2 as Appendix A.

⁴ Ms. Brockway heads her own consulting firm specializing in the energy and utility industries, with particular attention on the role of regulation in the protection of consumers and the environment. She has over 25 years of experience and is a former Commissioner of the New Hampshire Utilities Commission. She was also formerly a hearing officer and advisor to the Maine Public Utilities Commission and General Counsel of the Massachusetts Department of Public Utilities. Ms. Brockway has provided expert testimony in the FirstEnergy (M-2013-2341990 and M-2013-2341994), Duquesne Light (M-2009-2123948) PECO (M-2009-2123944), Met-Ed, Penelec, and Penn Power (M-2009-2123950), and West Penn (M-2009-2123951) smart meter proceedings before the Pennsylvania Public Utility Commission. Ms. Brockway earned a Juris Doctor degree from Yale Law School

Mudd (OCA St. 1S); Surrebuttal Testimony of Thomas S. Catlin (OCA St. 2S); and Surrebuttal Testimony of Nancy Brockway (OCA St. 2S). During hearings the testimony of OSBA's witness was also admitted into the record: Direct Testimony of Robert D. Knecht (OSBA St. No. 1); and Surrebuttal Testimony of Robert D. Knecht (OSBA St. No. 1S). Finally, the following testimonies of the Company's witnesses were admitted into the record: Direct Testimony of Dennis A. Urban, Jr. (PPL Electric Statement No. 1); Direct Testimony of David R. Glenwright (PPL Electric Statement No. 2); Direct Testimony of Jason Kinslow (PPL Electric Statement No. 3); Direct Testimony of Christine E. Ogozaly (PPL Electric Statement No. 4); Direct Testimony of Kent Simendinger (PPL Electric Statement No. 5); Direct Testimony of Bethany L. Johnson (PPL Electric Statement No. 6); Rebuttal Testimony of David R. Glenwright (PPL Electric Statement No. 2-R); Rebuttal Testimony of Christine E. Ogozaly (PPL Electric Statement No. 4-R); Rebuttal Testimony of Kent Simendinger (PPL Electric Statement No. 5-R); and Rebuttal Testimony Bethany L. Johnson (PPL Electric Statement No. 6-R).

This Main Brief is submitted pursuant to ALJ Colwell's Prehearing Conference Order dated August 11, 2014.

III. STATEMENT OF THE QUESTIONS INVOLVED

1. Has PPL shown that the accelerated implementation schedule it proposes is in the public interest and will result in rates that are just and reasonable?

Suggested Answer: No.

2. Is PPL's proposed Communications Strategy for educating customer about its Smart Meter Implementation program sufficient?

Suggested Answer: No.

and a Bachelor of Arts degree from Smith College. A resume and list of prior expert testimony provided by Ms. Brockway is attached to OCA St. 3 as Exhibit NB-1.

3. Does PPL's proposed Plan, as well as its current privacy policies, sufficiently address the unique data privacy challenges resulting from the deployment of smart meters?

Suggested Answer: No.

IV. BURDEN OF PROOF

Under Section 332 of the Code, the proponent of a rule or order in any Commission proceeding has the burden of proof. 66 Pa.C.S. §332. As the party seeking the Commission's approval to implement its proposed Smart Meter Plan, PPL has the burden of proof in the instant case. Moreover, PPL must also demonstrate that it has met all of the requirements set forth in Act 129 of 2008, the nine capabilities identified in the Implementation Order, and all other applicable statutes and regulations.

In its Implementation Order, the Commission directed that Electric Distribution Companies (EDCs), in seeking approval of their smart meter deployment plans, "shall detail their system-wide deployment plans to the Commission, including any type of tiered rollout the company proposes, as well as the associated costs and benefits incurred from such a rollout."

Implementation Order at 14. Further, the Commission stated:

An EDC is encouraged to expedite the deployment process if it will provide increased customer benefits in a cost-effective manner. Again, the primary goal of the EDC deployment plan should be to implement a deployment and installation schedule that best balances the overall efficiency and timeliness of the smart meter installations with the costs incurred.

Id. Act 129 permits EDCs recovery of only the reasonable and prudent costs of providing smart meter technology to customers less any operating and capital cost savings realized from the installation and use of smart meter technology. 66 Pa. C.S. § 2807(f)(7). See also, Implementation Order at 28, 29, 35. The Commission explained:

The EDC must also provide sufficient support to demonstrate that all such costs are reasonable and prudent with respect to its smart meter plan. Consistent with Section 315(a), the burden of proof shall be on the EDC. 66 Pa.C.S. § 315(a).

Implementation Order at 29.

PPL bears the burden of proof to establish that the costs of its proposed Smart Meter Plan and proposed Smart Meter Rider (SMR) rates are just, reasonable and prudent. As set forth in Section 315(a) of the Public Utility Code:

Reasonableness of rates – In any proceeding upon the motion of the Commission, involving any proposed or existing rate of any public utility, or in any proceedings upon the complaint involving any proposed increase in rates, the burden of proof to show that the rate involved is just and reasonable shall be upon the public utility.

66 Pa. C.S. § 315(a).

“The term ‘burden of proof’ is comprised of two distinct burdens, the burden of production and the burden of persuasion.” Hurley v. Hurley, 754 A.2d 1283, 1285 (Pa. Super. Ct. 2000). The burden of production dictates which party has the duty to introduce enough evidence to support a cause of action. Id. at 1286. The burden of persuasion determines which party has the duty to convince the finder-of-fact that a fact has been established. Id. “The burden of persuasion never leaves the party on whom it is originally cast.” Id. See also Pa. PUC v. Equitable Gas Co., 57 Pa. PUC 423, 471 (1983).

“It is well-established that the evidence adduced by a utility to meet this burden must be substantial.” Lower Frederick Twp. v. Pa. PUC, 409 A.2d 505, 507 (1980). The Supreme Court of Pennsylvania has stated that even where a party establishes a prima facie case by producing enough evidence to support a cause of action, the party does not satisfy its burden of persuasion unless the elements of that cause of action are proven with substantial evidence. Burleson v. Pa. PUC, 461 A.2d 1234, 1236 (Pa. 1983). Thus, a utility has an affirmative burden to produce enough evidence to establish the justness and reasonableness of every component of its request, and in order to persuade the finder-of-fact, there must be substantial evidence that each

component of its request is in fact just and reasonable. See e.g., Sharon Steel Corp. v. Pa. PUC, 468 A.2d 860, 862 (1978); Johnstown v. Pa. PUC, 133 A.2d 246, 250 (Pa. Super. 1957).

In conclusion, the OCA submits that PPL must affirmatively demonstrate the reasonableness of every element of its claims and demonstrate that any resulting rates are just, reasonable, and in the public interest. As discussed in more detail below, the OCA submits that the Company has not met its burden that the costs of its proposed Smart Meter Plan are reasonable and prudent, or that the Smart Meter Plan should be approved without modification.

V. SUMMARY OF ARGUMENT

The OCA submits that PPL's Plan for an accelerated replacement of its current advanced meters and advanced metering infrastructure, as filed, should not be approved. PPL's current advanced meters adequately address the statutory requirements of Act 129, and many of the additional requirements included in the Commission's Implementation Order. The OCA submits that the Company should be directed to evaluate the options and the costs to extend the life of the current AMI system for two to five years while working towards a more gradual, cost-effective transition to a new smart meter system by 2025. To the extent that the Company's proposed Plan is driven by failures of the Company's existing meters above the industry standard, the Company should seek to remedy this situation with the meter manufacturer, Aclara, and not shift this risk and cost to ratepayers through the smart meter charge. Moreover, when the Company replaces its existing smart meters, the Company should be required to quantify any savings that might result from investment in the proposed AMI system. As such, the Commission should direct PPL:

- To evaluate the costs associated with maintaining and enhancing the current system for an additional two to five years before engaging in a costly deployment of new meters;

- To evaluate options to extend the life of the current AMI system while working toward a more gradual, cost-effective transition to a more advanced AMI system by 2025;
- To identify incremental savings associated with the deployment of the RF Mesh AMI system;
- To reflect any operational savings associated with the deployment of the RF Mesh AMI system in the Smart Meter Rider;
- To implement the two changes to the Company's tax calculation as described by OCA witness Thomas Catlin at pages 5 to 10 of his Direct Testimony and as accepted by Company witness Bethany Johnson at pages 3 to 5 of her Rebuttal Testimony;
- To make the appropriate adjustment to the calculation of the total refund amount included in the SMR in the Company's SMR reconciliation filing as identified at pages 2 to 3 of Mr. Catlin's Surrebuttal Testimony and accepted by Company witness Bethany Johnson at page 2 of her Rejoinder Testimony;
- To seek to address the costs for high meter failure rates with its current AMI provider, Aclara;
- To work with stakeholders to prepare an interactive customer education plan to enable customers to make use of the new AMI technology, and to seek Commission approval before implementing the education plan;
- To review messages to ensure that they are accurate especially with regard to outage frequency and duration;
- To meet with stakeholders prior to developing any plans to use service limiters, remote involuntary disconnection, and prepayment metering and seek Commission approval if

PPL seeks to use service limiters, remote involuntary disconnection, or pre-payment metering; and

- To develop a detailed stand-alone customer privacy policy statement specifically related to the protection of smart meter information before the deployment of smart meters.

VI. ARGUMENT

A. Compliance with Act 129 and the Implementation Order

One of the two reasons that PPL recommends the adoption of its \$450 million Plan to replace its existing advanced meters and advanced metering infrastructure is to address the Act 129 requirements for smart meters and the nine additional smart meter capabilities identified in the Commission's Implementation Order.⁵ In its June 24 Order, the Commission adopted PPL's proposal to examine through a series of pilot programs whether PPL's current smart metering system could meet the six requirements included in Act 129 and the nine capabilities identified in the Commission's Implementation Order. June 24 Order at 6. The pilot projects were designed to evaluate: (1) whether the existing Power Line Communications (PLC) Advanced Metering Infrastructure (AMI) installed from 2002-2004 met the requirements of both Act 129 and additional nine Implementation Order capabilities and (2) whether it was cost-effective to implement the additional nine Implementation Order capabilities. In its Plan, PPL argues that full replacement of its existing smart meters on an accelerated timeline is necessary to meet one of the Act 129 requirements and seven of the nine Implementation Order capabilities. The Act 129 requirement includes direct access to and use of price information. The Implementation Order capabilities include: (1) ability to remotely connect and disconnect; (2) ability to provide 15-minute or shorter interval data; (3) on-board meter storage data that complies with open standards and protocols; (4) use of open standards and protocols; (5) ability to upgrade these

⁵ The second reason, meter failure rates, will be discussed in Section C below.

capabilities; (6) ability to remotely re-program the meter; and (7) ability to support net-metering of customer generators. PPL St. 2 at 9. At pages 14-16 of the Company's Petition in this matter, the Company states while the current system is not optimal for supporting these additional capabilities, the PLC meters and supporting data management system is able to provide four of the nine capabilities, including: (1) remote connect/disconnect, (2) 15-minute or shorter interval data, (3) monitor voltage, and (4) monitor outages by polling (pinging) the meter to obtain power status. PPL Exh. 2, Petition at 14-16; see also, OCA St. 1 at 10.

The OCA submits that accelerated replacement of the existing metering infrastructure at a cost of \$450 million has not been shown to be necessary to meet the requirements of Act 129 and that it has not been shown that it is a cost-effective method to meet the additional nine Implementation Order capabilities. The OCA will discuss in Section B below the technological differences between the existing PLC AMI and the proposed \$450 million RF Mesh technology AMI. The OCA submits that the Company should evaluate its options over the next two to five years while working toward a more gradual, cost-effective transition to its next generation AMI system by 2025.

Act 129 provides six requirements for smart meters and defines smart meter technology as:

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

- (1) Directly provide customers with information on their hourly consumption.
- (2) Enable time-of-use rates and real-time price programs.
- (3) Effectively support the automatic control of customer's electricity consumption by one or more of the following as selected by the customer:
 - (i) the customer;
 - (ii) the customer's utility; or

(iii) a third party engaged by the customer or the customer's utility.

66 Pa. C.S. A. § 2807(g).

OCA witness Mudd explained the capability of existing PLC AMI system to meet the six requirements identified in Act 129:

[t]he existing PLC AMI system is able to provide the six requirements established by legislation in Act 129 of 2008, including: (1) bidirectional data communication; (2) recording usage data on at least an hourly basis once per day; (3) providing customers with direct access to and use of price and consumption information; (4) providing customers with information on their hourly consumption; (5) enabling time-of-use ("TOU") rates and real-time pricing programs; and (6) supporting the automatic control of the customer's electric consumption. However, in the Commission's Order approving PPL's Initial SMP, the Commission stated that providing access to hourly usage data within 48 hours was not considered to be providing customers with "direct access to and use of price information" (requirement 3, above.) (*Petition of PPL Electric Utilities Corporation for Approval of a Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123945, August 14, 2009, page 1; and Response to Interrogatories of the OSBA, Set I, Question 4.)

OCA St. 1 at 7-8.

Based on the Commission's Order regarding the requirement for direct access to and use of price information, PPL argues that it must replace its existing PLC AMI metering system and plans to deploy a new smart meter system on an expedited basis. In the June 24 Order, however, the Commission stated that providing access to hourly usage data within 48 hours was not considered to be providing customers with "direct access to and use of price information" in accordance with Act 129. June 24 Order at 22-23. It was the 48 hour delay, and not necessarily the underlying metering system, that was of concern to the Commission.

In response to the Commission's concerns, one of the Company's pilot projects, the Faster Data Presentment Project, examined this issue and the current 48-hour lag in providing direct access to and use of price information. OCA witness Mudd explained:

The Faster Data Presentment Project, one of the Company's pilot programs, addressed the 48-hour lag in providing direct access to and use of price information. A study conducted by Black and Veatch in conjunction with the pilot project explored various opportunities for accelerating the data verification and processing process to provide more timely usage and price information. A key parameter to the speed at which this data can be provided to customers relates to the MDM System. Upgrading and/or replacing the MDM System will significantly alter the options for accelerating timeliness of providing pricing data.

OCA St. 1 at 8. OCA witness Mudd explained how "direct access" could be provided with the existing smart meter infrastructure in less than the 48 hours identified in the Commission's June 24 Order with the existing infrastructure.

OCA witness Mudd explained that there are internal processes that could be implemented, such as web-based mechanisms, to provide direct access to pricing in a shorter timeframe than 48 hours with the existing metering infrastructure. When asked in cross-examination if it was Ms. Mudd's position that the Company's currently installed AMI system meets the six statutory requirements, she testified:

Yes. However, I understand that there's interpretations of what the term "direct access to price use information" may be. In my view, there are capabilities -- web-based capabilities that allow for direct access to pricing that could be contemplated that wouldn't involve a ZigBee capable device.

Tr. 146. Ms. Mudd further explained:

I also understand that the primary reason [under the Commission's prior Order] was that the information was not available in a short enough time period from the actual usage, consumption usage, and the pricing availability of the electricity, and that through some pilot projects undertaken by PPL, that there were options to sort of speed up that access to information.

So, I'm not sure that the "direct access to information" question was necessarily resolved, because there was a forty-eight-hour window period prior to the pilot project, and following the pilot project, the window was under twenty-four hours.

Tr. 147. Ms. Mudd testified that:

I think there are capabilities in -- available where you can find real-time pricing, you know, on the web for customers and a variety of products. PJM has

wholesale prices available. There are products from the Apple store, consumption products and what you're using in terms of your – your heating and cooling systems, so I believe it's possible to have direct access of information at this time.

Tr. 147.

Further, the OCA submits that the current system has not presented any impediments to the Company's ability to meet other objectives of Act 129, such as Time-of-Use rates. The current PLC AMI also has not seemed to have impeded customer switching. Ms. Mudd testified:

It is difficult to know with any degree of certainty whether customer switching or participation in TOU rate programs would be any different with a more advanced AMI system. Approximately 46 percent of PPL's customers have switched to a competitive supplier, which is among the highest switching rates in the state. Participation in TOU rates has been relatively low, but this is more likely related to the rate design which does not provide the right incentives to encourage participation. Once PPL's new redesigned TOU rate is in place, interest in time-sensitive pricing programs may improve. This leads me to conclude that the 48-hour delay in direct access to and use of price information has not impacted customer participation in competitive retail electricity markets.

OCA St. 1 at 11.

In addition to the six requirements identified in Act 129, the Commission's Implementation Order identified nine additional capabilities to be considered by EDCs during the development of smart meter plans. The additional nine capabilities include: (1) ability to remotely connect and disconnect; (2) ability to provide 15-minute or shorter interval data; (3) on-board meter storage data that complies with open standards and protocols; (4) use of open standards and protocols; (5) ability to upgrade these capabilities; (6) ability to monitor voltage and report data in a manner that allows an EDC to react to the information; (7) ability to remotely re-program the meter; (8) ability to communicate outages and restorations; and (9) ability to support net-metering of customer generators. Implementation Order at 30.

OCA witness Mudd found that the existing system could address four of the nine capabilities identified in the Implementation Order. OCA St. 1 at 10; Implementation Order at

30. OCA witness Mudd testified:

While the Company concludes that the current system is not optimal for supporting these additional capabilities, it states that the PLC meters and supporting data management system is able to provide four of the nine capabilities, including: remote connect/disconnect, 15-minute or shorter interval data, monitor voltage, and monitor outages by polling (pinging) the meter to obtain power status. (*Petition of PPL Electric Utilities Corporation for Approval of its Smart Meter Technology Procurement and Installation Plan*, pp. 14-16.) The current system is unable to meet the requirements for on-board meter storage of data, use of open standards and protocols that comply with nationally recognized non-proprietary standards, and it is unable to easily upgrade and remotely re-program the meter. The current PLC system can support net-metering of customer generators by exchanging the normal retrofitted electromechanical meter for an electronic one.

OCA St. 1 at 9-10.

With respect to on-board storage of data, use of open standards and protocols, and the upgradability of the existing smart meter infrastructure, the OCA submits that there has been no demonstrated need that warrants replacement of the existing AMI metering system on an accelerated basis when the cost-effectiveness of such accelerated replacement has not been shown. A key component of the Implementation Order is to examine the cost-effectiveness of each of the additional nine capabilities. The Implementation Order directs each of the EDCs to examine the incremental costs for the deployment and operation of each of the additional nine capabilities and whether the costs of such capabilities exceed the benefits. Implementation Order at 17. The Implementation Order states:

While the Commission believes that all of the above-listed capabilities will further facilitate the consumer's ability to intelligently control their electric use and costs, we are cognizant that the costs of some of these added capabilities may exceed any benefit they may provide. Therefore the Commission reserves the authority to waive the requirement for any of the Commission imposed requirements.

Implementation Order at 17.

OSBA witness Knecht presented testimony which addressed whether it would be more cost-beneficial for ratepayers if the Company extends its proposed deployment schedule. OSBA witness Knecht testified:

simply delaying an investment reduces the net present value cost of a project, all other factors being equal, because the opportunity cost of capital is generally higher than the rate of cost inflation for the investment. As PPL Electric is currently asking for a pre-tax return of 11.78 percent on its investment, and even assuming that cost inflation for the investment plan is 2.0 percent, the present value savings of deferring the Company's SMP by four years is on the rough order of \$103 million.

Third, given the technological change in metering and data systems over the past decade, it would be much more likely that a delay would either reduce implementation costs or improve technical functionality. It is even possible that PPL Electric or its vendors could develop an approach that would allow it to continue to use the PLC technology to meet its legal obligations, and thereby further delay the need for a massive investment project. Delaying the project would also allow PPL Electric to benefit from the experiences of other EDCs, much as other utilities have benefited from lessons learned from PPL Electric's early implementation of the technology.

OSBA St. 1 at 5-6.

The OCA submits that the Company has not shown a need to replace its existing meters on an accelerated basis in order to address the requirements of Act 129. In fact, as OSBA witness Knecht described, there may be potential benefits to ratepayers by delaying the deployment of its second generation AMI. The OCA submits, therefore, that the Company should continue to evaluate its options over the next two to five years to extend the life of the current AMI system while working toward a more gradual, cost-effective transition to its second generation AMI system by 2025.

B. Technology Issues- RF Mesh Versus PLC

In its Plan, PPL proposes to switch from its existing PLC Advanced Metering Infrastructure technology to RF Mesh Advanced Metering Infrastructure technology at a cost of nearly \$450 million. OCA witness Mudd described the difference between the Company's existing PLC Networks and the RF Mesh networks:

RF Mesh networks use alternating currents to transmit data across unlicensed RF spectrums using a mesh topography. A wide range of applications make use of RF networks, including: cordless and cellular telephones, radio and television broadcast stations, computer data links, wireless bar-code readers, wireless keyboards for PCs, wireless security systems, and consumer electronic remote controls. Full Mesh topography occurs when every node has a circuit connecting it to every other node in a network, offering a great amount of redundancy. Within the RF Mesh network, smart meters play the role of transmitters/receivers and are communicating with each other to provide a redundant Mesh network. Data is collected by concentrators throughout the network with the help of repeaters, and is ultimately provided to the head-end system. RF Mesh networks are a relative newcomer to the utility meter communication industry. The scalability of RF Mesh networks allows for transmission of large amounts of data at high speeds. PLC networks use power lines as data transmission supports to send meter data to the head-end system. PLC systems can be bi-directional and are a well-known technology which has been used for years in home automation, multimedia or electrical grids applications, with low or high data rates. AMI applications are usually based on low data rate technologies (few hundreds of kilobits/sec max). It allows a bi-directional communication between the meter and a concentrator usually located in a transformer. This is a mature technology with several open standards and many vendors.

OCA St. 1 at 15-16.

Each of the technologies has pros and cons. The RF Mesh technology has more flexibility and scalability, but the existing PLC system leverages the existing infrastructure and can have improved communications in rural or other challenging landscapes. OCA witness Mudd explained the differences:

The RF Mesh Systems typically require more complicated protocols which provide challenges with respect to routing, security, and updates. Additionally, the Mesh architecture increases the cost and complexity of the network with each additional node. The ability to perform configuration and firmware management

is much more difficult and involved with the proposed RF Mesh System, requiring an upgrade to the MAM System to effectively track and manage the assets. (OCA, Set I, Q. 6) The advantage of the RF Mesh System is its flexibility and scalability. The key advantage of the PLC system is the ability to leverage the use of existing utility infrastructure of poles and wires with improved communication in rural areas, challenging terrain, and long distances. A key disadvantage to the PLC system can be bandwidth limitations, as was evident in the PPL TWACS 20 pilot study. The network requirements associated with reading and transmitting 15-minute interval reads may exceed available PLC bandwidth, which might ultimately require a shift to an RF Mesh network.

OCA St. 1 at 16-17.

As described in Section A above, PPL conducted several pilot programs, including a 15-minute interval pilot and an In-Home Display pilot, to determine if the existing smart meter technology could meet the six requirements of Act 129 and the nine capabilities identified in the Commission's Implementation Order. OCA witness Mudd evaluated PPL's pilot programs and determined that the RF Mesh technology solution does not necessarily provide the optimal alternative for PPL at this time. Ms. Mudd testified:

PPL demonstrates that given the statutory and regulatory requirements established by Act 129 and the Commission's *Implementation Order*, the RF Mesh System is more likely to serve PPL's needs in the long-term, in particular as it relates to addressing bandwidth and customer portal limitations with the current system. However, PPL should not rush to replace the PLC system on the basis of the limitations for meeting the 15-minute interval data requirements and the problems identified in the In-Home Display pilot evaluation. Given the uncertainty of how and when the 15-minute interval data functionality would be utilized with the new system, and considering the continued potential for ZigBee-enabled devices to be used for In-Home Display, these provide weak arguments for replacing the current PLC AMI System at this time with a new RF Mesh System at a cost of nearly \$450 million.

OCA St. 1 at 19-20.

OCA witness Mudd explained the results of the two pilots that were conducted regarding the 15-minute interval data and the In-Home Display Pilot:

The technology assessments were conducted simultaneously and were parallel to ongoing pilot programs to determine the feasibility of upgrades to the current

system. Two pilot programs were particularly important to PPL's decision to propose replacing the PLC meter system with an RF Mesh System. The Two Way Automatic Communications System ("TWACS 20") pilot program evaluated the ability of the next generation TWACS Network System ("TNS") protocol to improve overall meter performance at bandwidth constrained substations, primarily as needed to allow for 15-minute interval data; and the In-Home Display pilot program which evaluated the ability to send real-time data to customers' Wi-Fi-enabled devices. Based largely on the result of these two pilot programs, PPL concluded that the existing PLC AMI solution was technically limited in its ability to fully comply with legal, regulatory, and future business requirements. (SMP, page 9.)

OCA St. 1 at 14-15.

The Commission's June 24 Order also directed the Company to provide a cost-benefit analysis in the pilot regarding the need for sub-hourly metering, including fifteen-minute interval data for small business and commercial customers. June 24 Order at 27-29. Even though the Company used the availability of 15-minute interval data as a rationale for moving to the RF Mesh system, the Company's proposed RF Mesh System will not initially provide 15-minute interval data for all customers. In its Plan, the Company stated that while this functionality will be supported at the meter level, the Company does not plan to build out the information technology platform to support the functionality for 15-minute data for all customers. Plan at 21; OCA St. 1 at 17. In response to the OSBA's interrogatory on this issue, the Company stated that there is no business case for investing in a system to provide the 15-minute functionality because neither the Electric Generation Suppliers (EGSs) nor the PJM Settlement Subcommittee currently make use of the interval data. PPL states that "several of the additional requirements may not offer a significant benefit to customers." OCA St. 1 at 17. Specifically, PPL states that it is not aware of any current interest in using 15-minute interval data. (Response to OSBA Set 1, Q. 6-J.2.)" Id.

OCA witness Mudd agreed with PPL that the majority of customers will not require or benefit from this 15-minute interval functionality. Ms. Mudd explained:

At this point in time, the need for 15-minute interval data is limited to a very small number of customers with specialized operational needs. There is an expectation that at some point in the future, the wholesale electricity market will offer products where access to 15-minute interval data would be required. However, this could be ten or 20 years, from now. For the majority of customers, access to 15-minute interval data will be unnecessary and the data requirements inherent with developing a network with the bandwidth, on-board meter storage, and MDM System required to accommodate 15-minute interval data may add significant costs to PPL's customers.

OCA St. 1 at 17-18.

The second technological reason cited for moving ahead with the RF Mesh Technology was the In-Home Display Pilot. OCA witness Mudd explained the In-Home Display Pilot conducted:

The wireless local area network (WLAN) communications system did not perform well with the In-Home Display prototypes that were developed for purposes of conducting the pilot study. PPL chose to evaluate the Wi-Fi-based WLAN system instead of ZigBee compatible systems based on the belief that the WLAN system would generally be more accepted in the future because many customers already have Wi-Fi in use in their homes and businesses. WLAN is essentially the in-home Wi-Fi available to most residential customers. ZigBee has often been regarded as a mini-version of Wi-Fi. ZigBee and Wi-Fi are often used in similar applications in terms of household-based wireless communication. Wi-Fi tends to be the preferable choice for Internet connection-based networks because it is faster and interfaces well with various media/entertainment devices wirelessly. Wi-Fi is the most common protocol used for data exchange between a computer and a modem, streaming music and videos on a television through a Wi-Fi-enabled computer or media device. The ZigBee protocol was designed specifically to exchange data, albeit at slightly slower speeds, but is more prevalent in wireless sensor-based networks such as those in home automation systems or industrial machinery coordination systems. Zigbee is also a lower-cost option because it has lower data processing requirements. Most smart meters that are being deployed in North America have ZigBee radios to communicate with home energy devices. Wi-Fi's penetration is largely limited to wireless thermostats and other off-the-shelf energy management devices such as the Nest Learning Thermostat.

OCA St. 1 at 18-19.

The OCA submits, however, that PPL's pilot results do not support accelerated deployment as proposed by PPL. OCA witness Mudd testified:

PPL proceeded with the WLAN-based pilot project with the expectation that the ZigBee Smart Energy Profile (SEP) 1.x would remain an active standard providing smart energy functionality using the existing meter hardware. With the release of ZigBee 2.0 in 2013, PPL expressed concern that the 2.0 standard would not be backward compatible with SEP1.0, and therefore may not be compatible with the existing PLC hardware. (OCA-3-Q-6, Attachment 1, page 86.) However, ZigBee SEP 1.x devices are interoperable with SEP 2 devices through a gateway. Furthermore, Aclara offers a TWACS-based Home Area Network and In-Home Display system that utilizes ZigBee communication systems which may provide additional ZigBee-based In-Home Display alternatives to the PLC AMI system.

OCA St. 1 at 19.

The conclusion reached by OCA witness Mudd is that neither the 15-minute interval data nor the In-Home Display technological issues provide a basis for replacing the existing PLC AMI system on an accelerated basis at this time. The OCA submits that the Company should maintain the existing PLC AMI system and work towards a more gradual, cost-effective transition to a more advanced AMI system by 2025.

C. Meter Failures

Through the Company's pilot programs, the Company began to consider whether upgrades to the existing infrastructure would be possible due to the high level of meter failures experienced with the Aclara meters. The Company stated:

During this period, PPL Electric began experiencing increasingly higher meter failure rates. PPL Electric's meter population consists of both electromechanical and solid state meters. The population demographic is 86% and 14% respectively. A typical mature meter population experiences a low failure rate during the asset life of the meter. An industry standard failure rate for a meter population during its useful life is approximately 0.5%. For PPL Electric's population of 1.4 million meters, a failure rate consistent with the industry standard would realize [sic] as approximately 7,000 meter replacements per year. PPL Electric experienced approximately 28,000 failed meters in 2013-four times

the industry standard. The Company expects this trend to continue at an accelerated rate.

Plan at 10-11. PPL witness Ogozaly acknowledged that one of the core driving factors behind PPL's decision to replace its existing smart meters under the accelerated deployment plan proposed here is the rate of meter failures experienced with Aclara. PPL St. 4-R at 2. Ms. Ogozaly stated that "PPL's proposed deployment schedule for RF mesh meters from 2017 to 2019 was established, in part, by the need to minimize investment in PLC meters." Id. The OCA recommends that the Company direct its efforts to address the failing meters with Aclara. PPL's proposal here would simply shift the risk of premature meter failure to ratepayers through an accelerated second generation smart meter deployment and dollar for dollar recovery through an automatic recovery mechanism.

The meter failure rate experienced by PPL is four times the industry standard which is driving, in substantial part, PPL's proposal. Plan at 10-11; OCA St. 1 at 20; Tr. 40. Company witness Ogozaly argues in Rebuttal Testimony that the "higher than the industry standard" meter failure rates are really just "business as usual" according to the Weibull probability curve. PPL St. 4-R at 2-3; OCA St. 1-S at 5. This high meter failure rate has cost the Company approximately **Begin PROPRIETARY ***** [REDACTED]

***** End PROPRIETARY**

OCA St. 1 at 21 (Proprietary). OCA witness Mudd testified as to the import of this information:

PPL published testimony and press releases indicating that its AMI system replaced 1.3 million meters, installed communications equipment in over 300 substations, and modified its billing and meter data systems at a cost of \$160 million, or approximately \$124 per meter. (*PPL Utilities Automated Meter Reading System*, Doug Stinner, Presentation before FERC, January 25, 2006.) **Begin Proprietary ***** [REDACTED]

*** End Proprietary

OCA St. 1 at 22 (Proprietary). The OCA submits that such high meter failure rates and the ultimate cost to ratepayers should not be considered “business as usual” for the Company or for ratepayers. The existing smart meters reached an age of 10-12 years as of the time of the 2013 analysis and should not have exhausted their useful life.⁶

The Company is proposing to replace its existing metering infrastructure due to these high failure rates and is proposing to use Act 129’s funding mechanism to finance the change to a new meter system due to these meter failures. The purpose of Act 129 was to provide customers with access to smart meter technology. PPL has already provided this technology to ratepayers through its Aclara meters. As OCA witness Mudd testified, PPL should be looking to Aclara to recoup the costs associated with the high rate of meter failures. OCA St. 1 at 22. OCA witness Mudd testified:

According to Ms. Ogozaly, the meter failure rate is a significant driving factor for the accelerated deployment of the proposed RF Mesh system. Additionally, the useful life of the AMI meters and the expectations with respect to acceptable levels of meter failures are important because they set a precedent for how the

⁶ When the Company first installed the meters in 2002, the Company projected a useful life of approximately 28 years and used 28 years in its depreciation schedule for ratemaking purposes. OCA St. 1 at 20. In 2005, the Company updated the useful life to 15 years, but the issue of the expected life of the meters remains unclear. OCA St. 1 at 20-21. As OCA witness Mudd testified:

There is still some discrepancy as to the expected life of the current PLC Meter population. Ms. Ogozaly states that “no party has disputed that the current PLC meters have a 15-year useful life.” (PPL Electric St. 4-R, Page 13.) However, in the analysis conducted by Aclara in 2011 and provided with responses to Interrogatory OCA Set 4, Question 5, the useful life of the meters with the IMT communications module was found to be 18.2 years. (PPL Electric Statement 4-R, Page 4.) Furthermore, page 13 of Ms. Ogozaly’s Rebuttal Testimony indicates that the estimated life of the Company’s existing PLC meters was 15 years when they were installed. However, PPL’s responses to OCA Interrogatory Set 1, Question 2, also prepared by Ms. Ogozaly, states that the useful life of meters associated communications equipment at the time of installation was 28 years. According to the information provided to OCA in Interrogatory Set 1, Question 2, the useful life expectation was changed in 2005, only after the investment in and installation of the Aclara PLC AMI system. Thus, the useful meter life and acceptable meter failure rate appear to be a moving target.

OCA St. 1-S at 5-6.

Company will work with future meter vendors going forward. The AMI surcharge should not be used as the cost recovery mechanism to replace current or future advanced metering systems that did not live up to expectations. One hundred percent of the costs associated with a metering system that underperformed should not sit with ratepayers.

OCA St. 1-S at 6.

Company witness Ogozaly testified in cross-examination that the Company received a stipend per meter for meter purchases from 2008 to 2013 annually of approximately \$10 per meter, or roughly \$1.5 million. Tr. 88. The total cost for meter failures over the course of the last five years, though, was **Begin PROPRIETARY *** [REDACTED] *** End PROPRIETARY** OCA St. 1 at 21 (Proprietary).

When asked about whether the Company had pursued legal action against Aclara, Ms. Ogozaly testified that the Company determined not to file a “claim for the meter failures based on the age of the system and the useful life of the system thus far.” Tr. 90. The OCA submits, however, that the Company began receiving credits for failed meters in 2008 when many of the meters were not even 10 years old. The problems with meter failure clearly have existed for a substantial amount of time. In cross-examination, Ms. Ogozaly stated that the long-term strategy to address meter failures “is to complete deployment as described in our filing plan for 2017 to 2019.” Tr. 90. Shifting the cost responsibility to ratepayers through an accelerated smart meter deployment plan, however, is not a reasonable or prudent approach.

PPL has not aggressively pursued this issue but instead has elected to replace the meters and recover the costs from ratepayers through the smart meter surcharge. The OCA submits that PPL should more fully explore its options to address the costs of meter failures with Aclara.

D. Implementation Timeline

The Plan provides for an implementation timeline in which vendors are selected in 2015, and the Company would have one additional year to build the back office IT and network systems. Plan at 19. The full smart meter deployment would begin in 2017 and is expected to conclude in 2019. Id. The Company proposes to follow with a two-year stabilization period in order to optimize system operation. Id. While the Company proposes to complete the deployment by 2019, the Commission's Implementation Order and Act 129 provides for the opportunity for a longer deployment period. Implementation Order at 14-15; 66 Pa. C.S. §§ 2807(f)(1), (2). In its Implementation Order, the Commission stated that the 15-year period should commence upon plan approval. Implementation Order at 15. PPL's Plan was approved in 2010, and therefore, the full smart meter deployment must be completed by 2025. Under the Company's accelerated smart meter deployment Plan, the proposed timeline would deploy the second generation of smart meters five years in advance of the Commission's Implementation Order requirement of 2025. For the reasons set forth in Sections A and B above, the OCA submits that the Company should evaluate its options over the next two to five years to extend the life of the current AMI system while working toward a more gradual, cost-effective transition to a more advanced AMI system.

OCA witness Mudd recommends that the Company utilize at least the full Act 129 period until 2025 in order to deploy its proposed second generation smart meters. OCA witness Mudd testified:

Since PPL's existing AMI system already meets the core Act 129 requirements, there is less urgency to move forward to deploy a subsequent AMI technology. PPL has the benefit of being able to observe and study the RF Mesh AMI deployments of other utilities, allowing for further technological advancements and development of best practices.

OCA St. 1 at 24. OSBA witness Knecht similarly testified:

The other Pennsylvania EDCs currently have no little [sic] or no smart metering capabilities for residential and commercial customers. In contrast (as I noted, to its credit), PPL Electric has had smart meters in place for over a decade, and some smart metering infrastructure in place for several years. Moreover, PPL Electric is already substantially compliant with the requirements of Act 129, whereas other Pennsylvania EDCs are not. Thus, the benefits for ratepayers of accelerating the implementation of smart meter at other EDCs are substantially greater than the benefits associated with PPL Electric's proposal in this proceeding.

OSBA St. 1 at 5. While other EDCs have operated under shorter deployment timelines, the facts of this case as discussed in Sections A and B above support utilizing a longer deployment period as recommended by OCA witness Mudd and OSBA witness Knecht. OCA St. 1 at 24-25; see also, OSBA St. 1 at 3,5.

Regarding the deployment timeline, PPL is not similarly situated to other EDCs in Pennsylvania because the other EDCs did not have a similar level of AMI meters and infrastructure already installed. The Company has not shown any benefits to accelerating the deployment of the second generation of smart meters in advance of the deadline established by the Commission's Implementation Order. OCA witness Mudd further explained:

The timeline is fairly aggressive and assumes prompt resolution of any concerns raised through this proceeding to move forward with vendor selection in the first quarter of 2015. Despite the concerns outlined by PPL in their filing and SMP, specifically the challenges presented in upgrading aging technologies and higher-than-expected meter failure rates, a more prudent approach would be to take the time necessary to identify what, if any, interim solutions might be employed.

OCA St. 1 at 24-25.

For the reasons set forth in Sections A and B and in this Section, the OCA submits that the timeline for deployment be further extended. The OCA submits that PPL should be directed to evaluate the costs associated with maintaining and enhancing the current system for an

additional two to five years before engaging in a costly, second generation smart meter deployment. OCA St. 1 at 25.

E. Cost Savings/Quantification of Benefits

PPL proposes to use its SMR to recover the costs for RF Mesh smart meter deployment, without incorporating into the calculation any cost savings or quantification of benefits that may result. The Company states that it will reflect any savings in the next base rate proceeding. Act 129 and the Commission's Implementation Order, however, require that any savings be included as an off-set to the costs, and PPL's proposed approach does not adequately reflect savings in a timely manner. 66 Pa. C.S. § 2807(f)(7); Implementation Order at 16, 30. In order to determine the level of savings achieved, the Company must establish both a baseline from which to measure the savings and a mechanism to track the savings achieved. PPL has not proposed to establish either a baseline or a mechanism to track savings. Tr. 40.

Act 129 requires that PPL incorporate any cost off-sets into its calculation of the SMR.

Act 129 states:

An electric distribution company may recover reasonable and prudent costs of providing smart meter technology under paragraph 2(ii) and (iii), as determined by the commission. This paragraph includes annual depreciation and capital costs over the life of the smart meter technology and the cost of any system upgrades that the electric distribution company may require to enable the use of the smart meter technology which are incurred after the effective date of this paragraph, less operating and capital cost savings realized by the electric distribution company from the installation and use of the smart meter technology. Smart meter technology shall be deemed to be a new service offered for the first time under section 29084(4)(vi). An electric distribution company may recover smart meter technology costs:

- (i) through base rates, including a deferral for future base rate recovery of current basis with carrying charge as determined by the commission; or
- (ii) on a full and current basis through a reconcilable automatic adjustment clause under section 1307.

66 Pa. C.S. § 2807(f)(7)(emphasis added). Section 2807(f)(7) allows EDCs to recover reasonable and prudent costs of providing smart meter technology, but requires that the cost recovery should be net of any operating and cost savings realized by the EDC. Since PPL has elected to use a Section 1307 recovery mechanism rather than base rates, the savings must be included in the Section 1307 mechanism.

The Commission directed that the operating and capital cost savings be incorporated into the EDCs' Plan filings. In its Implementation Order, the Commission stated:

In order to ensure that these additional smart meter functions are cost-effective, we direct that each smart meter plan filing include cost data that quantifies the costs to meet the minimum requirements set forth in Act 129, the costs to meet all of the requirements set forth in Section C above, and the individual incremental costs of each added function, less any operating and capital cost savings.

Implementation Order at 29. The Implementation Order stated:

The deployment and operating costs to be presented shall include a breakdown of all incremental costs and any associated potential operational and maintenance cost savings for each functionality and configuration.

Implementation Order at 30. The Commission identified some of the potential savings that EDCs should expect to enjoy with the deployment of smart meters. Specifically, the Commission stated:

Smart meters have the ability to support maintenance and repair functions, theft detection, system security, consumer assistance programs, customer-generator net metering, and other programs that increase an EDC's efficiencies and reduce operating costs.

Implementation Order at 16.

PPL argues that there is no need to quantify savings because as PPL witness Glenwright testified, there will be no savings associated with the core functions of meter reading, billing and customer service since PPL has already implemented its AMI. PPL St. 2-R at 20. Mr. Glenwright, however, testified that he anticipates that there may be savings associated with

reduced meter services support, decreased call center volumes, improved outage management, and improved identification and cost recovery for unaccounted-for energy but is not able to quantify the anticipated benefits. Id.; PPL St. 2 at 15-20. Mr. Glenwright states that “[t]hese savings are much more difficult to quantify at this time because they involve detailed business process design work and a detailed understanding of how the new features will be incorporated into the business processes.” PPL St. 2-R at 20. Further, Mr. Glenwright stated in cross-examination “[w]e have not established a plan to develop a baseline for savings.” Tr. 40. PPL states that it will address the issue in its next base rate proceeding. PPL St. 2-R at 21.

The OCA submits that the Company must establish the mechanism by which to track potential savings and reflect any savings that might develop in the SMR. Waiting for the next base rate case is not appropriate when costs are being recovered between base rate cases through the SMR. Savings realized must be flowed through as the costs are incurred to meet the statutory standard. If costs are to be recovered on a “full and current basis,” then savings must likewise be reflected on a full and current basis.

PPL has failed to develop a reasonable projection of potential savings associated with the Plan and has not established any mechanism to track or reflect savings that might develop. This is in contrast to other EDC Plans and Commission Orders. OCA St. 1 at 12; see, 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, M-2013-2341991, M-2013-2341993, M-2013-2341994, Order at 45-46 (March 6, 2014) (FirstEnergy Order). OCA witness Mudd testified:

The AMI plans of various utilities include projections of potential savings in revenue enhancement, avoided capital costs, and distribution operations. Specific savings opportunities include theft reduction and savings from eliminating truck rolls associated with false outage signals. Many of the savings typically achieved

with the deployment of AMI, including, but not limited to, the reduction in meter reading, meter services, and back office costs, have already been achieved by PPL due to the installation of the PLC AMI system between 2002-2004.

OCA St. 1 at 12. While many savings have been achieved by the prior deployment, other categories of potential savings remain.

The OCA recommends that the Commission require the Company to retain an independent consultant with experience in identifying savings from the deployment of the RF Mesh System to prepare a report assessing the potential for the Company to achieve additional savings. OCA witness Mudd testified:

Such additional areas of possible savings may include, but is not limited to, reduced costs for outage management, further automation of back-office operations, and reduction in customer call center costs. I further recommend that the Commission require the Company to present the findings of the report to stakeholders and the parties to this proceeding and provide stakeholders and interested parties an opportunity to review and comment on the report. As I also discuss below, these savings will need to be reflected in the Smart Meter Rider.

OCA St. 1 at 13.

In other smart meter proceedings, EDCs have committed to establishing accurate baselines for specific cost savings categories from which it will be possible to measure the savings achieved from the smart meter deployment. FirstEnergy Order at 45-46 (March 6, 2014). OCA witness Mudd explained:

For example, FirstEnergy will create a baseline and track savings related to eight distinct categories of savings: (1) meter reading; (2) meter services; (3) back-office; (4) contact center; (5) theft reduction; (6) revenue enhancement; (7) avoided capital costs; and (8) distribution operations. Despite the low expectation with respect to the anticipated cost savings associated with the deployment of the RF Mesh system, PPL should be required to provide the same level of analysis and tracking as needed to appropriately pass through savings to the Smart Meter Surcharge.

OCA St. 1-S at 8. Under PPL's current Plan, the Company does not have any means of identifying savings achieved either currently or in a future base rate proceeding because the Company is not planning to track savings or even to establish a baseline for savings.

The OCA submits that the Commission should require the Company to retain an independent consultant with experience in identifying savings from the deployment of the RF Mesh System to prepare a report assessing the potential for the Company to achieve additional savings. The OCA submits that the Company should be directed to create a baseline from which to measure the savings and a tracking mechanism to analyze and track the level of savings. When savings are identified, the Company should include them in the calculation of its SMR.

F. Smart Meter Charge Issues

1. Calculation of the Smart Meter Charge

OCA witness Thomas Catlin identified two changes to be made to the calculation of income taxes included in PPL's SMR rate: (1) the elimination of the separate addition of deferred federal income taxes and (2) the calculation of income tax expense at the full statutory rate. OCA St. 2 at 5-10. OCA witness Catlin explained:

First, in addition to accounting for the income taxes on the equity component of the return requirement, PPL has separately added deferred federal income taxes on the full amount of the difference between tax and book depreciation. The separate addition of deferred federal income taxes needs to be eliminated because deferred income taxes are not a separate tax that is paid in addition to income tax expense calculated at the statutory rates.

Second, PPL has calculated income tax expense at the full statutory rate for both state and federal income taxes. Due to the significant accelerated tax deductions for smart meter investment, PPL will pay little or no state income taxes on its SMR revenue. In Pennsylvania, state income tax benefits have traditionally been flowed through to ratepayers on a current basis, consistent with the actual taxes paid doctrine. Because PPL will not pay state income taxes on the full amount of its equity return, these deductions should be taken into account in determining state income tax expense in PPL's SMR rate calculations.

Id. at 2. In her Rebuttal Testimony, PPL witness Johnson adopted the OCA's changes to its tax calculations. PPL St. 6-R at 3 to 5, Exh. BLJ2-R.

Since PPL has been following the same procedures since the SMR was implemented in 2010, Ms. Johnson agreed that the resulting overstatement of the SMR revenue requirements should be corrected by recalculating the SMR revenue requirements from 2010 forward. PPL St. 6-R at 3 to 5, Exh. BLJ2-R. OCA witness Catlin explained:

Including interest, Ms. Johnson determined that the amount by which SMR costs had been overstated from the inception of the SMR through December 31, 2014, is approximately \$1.7 million and proposed to offset this amount against the amount by which SMR revenues have been under-collected (approximately \$2.2 million). Ms. Johnson provided calculations and indicated that PPL would reflect the changes in an SMR reconciliation filing.

OCA St. 2-S at 2-3. As noted in Mr. Catlin's Surrebuttal Testimony, PPL may have overstated the amount of the \$1.7 million refund owed to customers for the period from the inception of the SMR in 2010 through December 31, 2014. The errors in the calculations were brought to PPL's attention and the final calculations will be reviewed in conjunction with the SMR reconciliation filing that PPL intends to file in the near future. Id. at 3; PPL St. 3-RJ at 2.

The OCA submits that the Commission should approve the proposed changes to PPL's tax calculation as proposed by OCA witness Catlin, accepted by PPL witness Johnson. The OCA recommends that the Commission review the final, corrected refund amount as included in the Company's next SMR reconciliation filing.

2. Proposed Modifications to the Small C&I Smart Meter Charge

The OCA takes no position regarding the proposed modifications to the small C&I smart meter charge.

G. Communications Strategy

1. Overview

PPL's communications strategy consists of a series of communication activities directed at customers, stakeholders and regulatory agencies related to the deployment of its new smart meter technology. Plan at 60. The Company's communication strategy includes an education component for customers on the implementation process and benefits of the new smart meters. Plan at 60. The communications directed at customers will also include information on customer concerns such as security, privacy and health effects. Plan at 60.

PPL intends to develop a comprehensive communications plan once the Plan is approved by the Commission. Plan at 60. PPL proposes to use vendor support and will conduct consumer research to develop its communication materials. PPL St. 4 at 19. PPL states that it will provide the comprehensive communications plan to the Commission upon completion. Plan at 60.

OCA witness Nancy Brockway reviewed PPL's Plan and the Company's discovery responses related to the Company's communication strategy. OCA St. 3 at 2. Ms. Brockway identified opportunities for improvement in the Company's communications strategy and made the following recommendations:

- The Company should “work with stakeholders to prepare an interactive customer education plan to enable customers to make use of the new SMI technology, and seek Commission approval before implementing the education plan;”
- The Company should “review messages to ensure they are accurate with regard to outage frequency and duration” and continue to “seek analyses and case studies of actual utility experience using SMI to improve outage management, with sufficient facts and analysis that they can be reviewed by the Company and stakeholders to determine their relevance to PPL Electric's operations; and make clear to the Commission, its customers and other stakeholders the extent to which claimed outage frequency and duration reductions are the result of more granular data, rather than actual changes in frequency and duration in the field.”

OCA St. 3 at 3.

As explained more fully below, the OCA submits that the Ms. Brockway's recommendations should be adopted by the Commission, and that the Company should be required to modify its communications strategy accordingly.

2. Communications Plan and its education component

Ms. Brockway found that the Company's communication strategy in general focuses "almost exclusively on deployment issues, rather than empowerment of consumers to make use of the technology being deployed." OCA St. 3 at 2. Ms. Brockway testified that the Company has not yet developed customer communication and education on the following topics:

- "how it will staff its customer service function to respond to customers' questions about AMI, including specialized questions requiring technical knowledge;"
- "the roles of internal and external resources, and vendor support, in developing its communications plan;"
- "specific interactions it plans to have with customers as part of its education function;" and,
- "metrics and strategies for success."

OCA St. 3 at 5.

Ms. Brockway recommended that the Company work with stakeholders to develop its comprehensive communications plan, particularly in regard to the plan's education component. OCA St. 3 at 3, 8. Ms. Brockway testified that in discovery, the Company provided examples of customer communications that it may later establish, and that these included "'information on the installation process, customer questions on AMI functionality (benefits),' as well as responses to [customer] questions regarding data security, privacy, and potential radio frequency communication system health impacts." OCA St. 3 at 6. Ms. Brockway testified that while the Company's plan to provide customers with information about these issues is critically important,

it does not go far enough to educate customers, stating “[d]elivery of information is necessary in order to educate customers about how to use AMI functionalities, but education goes far beyond merely information delivery.” OCA St. 3 at 6. Ms. Brockway explained the difference between effectively informing customers and effectively educating customers, stating:

The key difference between effectively informing customers and effectively educating a customer is that the first is a one-way delivery of materials or information, whereas attempting to educate customers requires a two-way, interactive communication. Getting the word out to the customers, in ways they can understand, is important for effectively informing the public. But providing information, by itself, does not amount to education. Especially when trying to educate adults, the Company would need to show customers how the material could affect their lives and would need to provide opportunities for interaction and customer participation in the education process. To be successful, educators must not only be sure that their message is heard correctly (successfully inform customers), but that the consumer has taken in the information and can make decisions regarding the issue (successfully educate the consumers).

OCA St. 3 at 7.

The fact that the Company’s communications plan, and its education component, have not yet been developed offers the opportunity for the Company to reassess the goals and methods of the communications plan, particularly the education portion, with the aid of other stakeholders. In other smart meter proceedings, the Commission has ordered EDCs to work with stakeholders to develop their communications plans and to file the plans with the Commission. See, 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, M-2013-2341991, M-2013-2341993, M-2013-2341994, Order at 46 (March 6, 2014). The OCA submits that the same requirement should be placed on PPL; that the Company should be required to work with stakeholders to develop the communications plan and its education function, as recommended by Ms. Brockway. OCA St. 3 at 8. Upon completion of the communications plan, the Company should be required

to obtain Commission approval prior to its implementation to ensure that the plan sufficiently meets the objective of educating customers on the new smart meter technology.

3. Company's claims regarding the outage management benefits

In reviewing the Company's communications strategy, Ms. Brockway identified concerns with the Company's claims regarding the outage management benefits of the new smart meter technology. At present, the Company plans to inform customers that the new smart meter technology will "support various operational improvements including ... outage detection and restoration..." PPL St. 4 at 18. Upon further examination of the Company's claim, Ms. Brockway concluded as follows:

[T]he Company statements to its customers claiming that its proposed Smart Meter Implementation will reduce outage frequency and duration are not supported by the information gathered by the Company through pilots and other research, and these continued claims at this point are likely to create unfulfillable expectations among customers."

OCA St. 3 at 2-3.

Ms. Brockway testified that the Company's claims regarding outage detection and restoration have not been supported by the Company. Ms. Brockway testified that the Company conducted two pilot programs focused on assessing the improvements in outage management from smart meter technology, but that neither of these pilot programs supported PPL's claim that the new smart meter technology will improve outage management. OCA St. 3 at 9. The first pilot program, the Proactive Detection Project, was conducted to determine the extent of an outage and identify the device that operated before a customer called to report the same information. OCA St. 3 at 9. Ms. Brockway testified that the Company's Proactive Detection Project report states that "the technologies around proactive outage detection are not fully mature for a production rollout," and that the Company acknowledged that it "may be able to devise a process that is superior to customer calls, however currently the limitations in these

steps make the overall process less effective than customers calling in.” OCA St. 3 at 10. The second pilot program, the Outage Duration Project, was designed to demonstrate “the ability of PPL’s AMI system to retrieve outage information from solid state meters and incorporate this data into field engineering operations for outage analysis.” OCA St. 3 at 10. In testimony, Ms. Brockway explained that the results from this pilot show that SMI meters will allow the Company to more precisely record the starts and ends of outages, but that “customers will experience outages at the same frequency and duration as was the case without the SMI.” OCA St. 3 at 11.

Ms. Brockway also reviewed an article provided by PPL to support its outage management claim.⁷ Ms. Brockway testified that the article does not support the Company’s claim, stating:

It describes how the technology theoretically could provide satisfaction and improved perception to customers. It does not, however, demonstrate that the technology has in fact had that effect. Rather, the article demonstrates that the ability to identify customer-side issues enables a utility to reduce the *reported* frequency and duration of outages, not their actual frequency and duration.

OCA St. 3 at 12. (Emphasis in original).

Ms. Brockway summarized her review of the Company’s claim as follows:

From its pilot results and its response to information requests, it appears that outage detection and restoration improvements may not materialize, and to the extent they are measured today, the effect is largely the result of greater precision in measuring outage durations. In other words, SMI has not made outages less frequent or shorter, but the statistics the Company reports to the Commission will look as if they are improved. For this reason, the Company risks creating unreasonably high expectations of outage management improvements upon deployment of SMI.

OCA St. No. 3 at 9.

⁷ Glenwright, D., Prichard, G., & Steklac, I. (September 2006). AMR Improves Outage Management: PECO OMS Integration Provides Operation and Maintenance Savings, Shorter Outages, and More Satisfied Customers. *Transmission and Distribution World*, 40-46. A copy of this article is attached to OCA Statement No. 3 as Exhibit NB-2.

In Rebuttal Testimony, PPL witness David R. Glenwright attempted to offer additional support for PPL's outage management claim, stating:

Experiences from other companies like ONCOR and PECO have demonstrated improvements in their ability to manage outages due to the outage message. Real life examples from [sic] these utilities and others were shared with PPL Electric on various site visits.

PPL St. 2-R at 21-22 (Public Version). Mr. Glenwright's rebuttal testimony, however, is not persuasive. As Ms. Brockway testified:

The major problem to date with claims of improved outage management from SMI is the failure of any utility or respected analysis group to publish a study that provides more than mere assertions and anecdotes about improvements in outage management brought about by SMI. The information presented by Mr. Glenwright is anecdotal and incomplete.

OCA St. 3-S at 2.

Ms. Brockway testified that she is not disputing that the Company's ability to more accurately measure outage duration and frequency is an important part of the outage management process, but explained that her recommendation regarding the Company's outage benefits claim is to ensure that the Company's communication of this information is carefully presented to customers to ensure that customers do not interpret this information to mean that they will have fewer and shorter outages. Specifically, Ms. Brockway stated:

Mr. Glenwright focuses on the term "outage management." I agree that having the more granular data from SMI readings provides a more precise measurement of outage length. Mr. Glenwright misses the point I make about this fact, however. The "ability to manage outages" is often presented as a great benefit of SMI. I do not disagree that in time we may discover this to be true. The anecdotal evidence may be shorn up with more reliable engineering data. But the terminology is being used today as if it supported a claim of greatly reduced outage times. For example, apparent reliability improvements set out in the trade press article attached to Mr. Glenwright's Direct testimony, reduce on closer reading to the fact that the utility in question was able to report much better outage statistics. The article, and similar references to the outage management benefits of SMI, do not reveal expressly that the reduction is a reduction in outage time counted, not a reduction in the real time of outages.

OCA St. 3-S at 3.

Ms. Brockway testified to the consequence of the Company providing customers with claims that are not well-supported, stating that “[c]ustomers can get a false sense of the benefits of SMI. If promised improvements do not materialize, customers may get disillusioned about other SMI promises.” OCA Statement No. 3 at 13. To avoid any such false expectations arising here, Ms. Brockway recommended as follows:

I recommend that the Company continue to seek analyses and case studies of actual utility experience using SMI to improve outage management, with sufficient facts and analysis that they can be reviewed by the Company and stakeholders to determine their relevance to PPL Electric’s operations. I recommend that the Company make clear to the Commission, its customers and other stakeholders the extent to which claimed outage frequency and duration reductions are the result of more granular data, rather than actual changes in frequency and duration in the field.

OCA Statement No. 3 at 13.

The OCA submits that Ms. Brockway’s recommendation be accepted. The OCA submits that the Company should be required to review messages relating to outage frequency and duration, and make clear to customers and the Commission the actual impact the smart meter technology will have on outage frequency and duration.

H. Cybersecurity

OCA witness Nancy Brockway reviewed the Company’s cybersecurity program as part of this proceeding. See OCA St. 3 at 30-34. As Ms. Brockway testified, the Company has an extensive cybersecurity program. See OCA St. 3 at 31-32. While no system is ironclad, Ms. Brockway found that the Company recognizes the importance of cybersecurity, acknowledges that its cybersecurity defenses are not foolproof, and appears to be working towards maximizing security as the technology develops. OCA St. 3-S at 6.

In Direct Testimony, Ms. Brockway made the following recommendations:

- Participate willingly as a utility partner on cybersecurity risks and responses, sharing cybersecurity information with other large Pennsylvania utilities, as well as the Commission, and maintaining vigilance regarding possible threats; and
- Review the composition and mandate of the Information Assurance Group, to make sure that the Company has addressed the relationship between informational cybersecurity issues and operational cybersecurity problems, and to make sure that those in the Company responsible for operational use of cyber technology are part of the team considering the Company's cybersecurity protocols and priorities.

OCA St. 3 at 4.

In Rebuttal Testimony, PPL witness Kent Simendinger specifically addressed Ms. Brockway's recommendations regarding cybersecurity. In regard to Ms. Brockway's first recommendation that PPL participate as a utility partner on cybersecurity risks and responses, Mr. Simendinger testified that the Company has been and continues to be an active participant in cybersecurity working groups and related forums, and provided several examples where the Company participates as such. PPL St. 5-R at 7. Mr. Simendinger also testified that the Company "remains vigilant in reviewing and incorporating applicable existing, as well as emerging appropriate standards." PPL St. 5-R at 5.

In his rebuttal, Mr. Simendinger also addressed Ms. Brockway's concerns regarding the relationship between informational cybersecurity issues and operational cybersecurity. Mr. Simendinger stated that the Company "clearly recognizes the need and value to bridge the responsibilities for cybersecurity across IT and operational groups," that "employees responsible for the operational use of cyber technology are consulted and included as part of the team considering the Company's cybersecurity protocols and priorities," and that "the project and risk methodologies outlined in the SmartMeter filing do include that cross-functional involvement throughout the phases of the project." PPL St. 5-R at 7-8.

Upon reviewing the new information provided by Mr. Simendinger, Ms. Brockway testified that Mr. Simendinger “provides reassuring detail on the level of intensity and involvement in cyber-security issues undertaken by the Company.” OCA St. 3-S at 6. As such, the OCA does not seek to have Ms. Brockway’s specific recommendations regarding the Company’s cybersecurity program adopted in the Commission’s order. The OCA, however, submits that Company should continue to remain vigilant for emerging cybersecurity threats.

I. Data Privacy Issues

Smart meters have the capacity to provide a great deal of information about a customer’s life and habits or about a business operation. As such, the protection of customers’ personal and usage data must be a critical component of a Smart Meter Plan. PPL’s proposed Plan states that one of its objectives is to “address cyber security and privacy of customer data concerns.” Plan at 4. The Plan contains a section that addresses the Company’s plan to protect the privacy of its customers. See Plan at 35-42. OCA witness Nancy Brockway reviewed PPL’s proposed Plan, as well as its current privacy policies, and determined that the Company’s proposed Plan is not complete and does not address the unique challenges of customer privacy resulting from the deployment of smart meters. See OCA St. 3 at 30; OCA St. 3-S at 7. Ms. Brockway summarized her testimony regarding her concerns with the Company’s privacy policies as follows:

I reviewed the privacy policies of PPL Electric that I could find, and showed their limitations from a SMIP perspective. I recited that PPL Electric intends to address privacy issues with an engineering group, who will not be aware of the privacy concerns from the customer perspective. I noted that the Company makes no mention of Green Button privacy issues in its SMIP or elsewhere. I concluded that PPL either does not yet have a sense of what information its customers might like it to protect as private, or has not fully described its approach to privacy in the SMIP. I also concluded that PPL considers privacy a sub-set of cyber-security, rather than a topic that needs to be addressed on its own terms. The Company’s

SMIP as written is unlikely to lead to privacy policies that address customers' desire for privacy in an advanced metering world.

OCA St. 3-S at 7. (Citations omitted).

In support of her conclusion that the privacy component of the Plan is incomplete and needs to be revised, Ms. Brockway testified that the Company's Plan fails to address critical issues essential to customer privacy. For example, the Company's proposed Plan does not provide the privacy risks that the Company anticipates it will face as a result of the implementation of the new smart meters. Specifically, Ms. Brockway stated:

It references an assessment yet to be undertaken to assess privacy risks, without giving the impression that the Company has any sense of the information that customers will want to secure from distribution as part of their privacy needs. Indeed, one can read the Petition and the SMIP and have no idea of what information PPL thinks that customers will consider private.

OCA St. 3 at 28. Ms. Brockway also testified that the Company does not identify potential areas of dispute such as what information must be kept private, how it plans to enforce privacy policies on third parties while permitting customers to release their own data, or other issues that have arisen when states have addressed the privacy implications of smart meter technology. OCA St. 3 at 28. As such, Ms. Brockway testified that the Company should "be required to revise the privacy components of its SMIP, and that it do so with the assistance of employees well-versed in customer service issues, and of stakeholders who are able to communicate various consumers' desires for privacy." OCA St. 3-S at 7.

PPL witness Kent Simendinger disputed that there is a need to revise the Company's privacy components of its Plan. PPL St. 5-R at 4. Mr. Simendinger testified that "PPL Electric's current standards and procedures as outlined in its privacy policy are evident, and aligned to its overall cybersecurity protections, which protect customer data and its privacy in its collection, storage, transit and access by customers, third parties [...], and PPL Electric staff." PPL St. 5-R

at 4. He went on to state that, as “specific technical solutions and updated business process and procedures for the smart meter project evolve, so too will cybersecurity protection of associated customer information, and the data privacy procedures and customer communications regarding PPL Electric’s commitment to data privacy.” PPL St. 5-R at 4.

Mr. Simendinger’s testimony, however, did not adequately address the privacy concerns raised by Ms. Brockway. The privacy policy referenced in Mr. Simendinger’s Rebuttal Testimony is limited to personal data obtained via the Company’s website, and does not extend to personal data that the Company has obtained in another manner, such as over the phone or by mail, or to usage data collected by the smart meter. See PPL St. 1-R, Exhibit KTS 1-R at 1. As Ms. Brockway pointed out in testimony:

Smart meters provide data to the company through “means other than” the Company’s website. Thus, the privacy policy set out in Exhibit KTS 1-R (and the companion Terms of Use of the Company’s website) do not apply to the major source of new information about customers’ usage that will be supplied by smart meters.

OCA St. 3-R at 8. Ms. Brockway further testified that the “Privacy Policy” provided in Exhibit KTS 1-R does not direct customers to a privacy policy for personal data obtained by means other than the Company’s website, nor does the privacy policy address how the Company will handle smart meter data. OCA St. 3-R at 9.

In Rejoinder Testimony, Mr. Simendinger acknowledged that the existing privacy policy is directed towards protecting personal data collected via the use of its website, but stated that it is the Company’s intention to use the current privacy policy as a model that will be “enhanced to address data privacy and cybersecurity protections beyond just the website, such as for use of smart meters.” PPL St. 5-RJ at 3. Mr. Simendinger explained that any new or revised privacy policies “must await fundamental decisions on the ultimate smart meter technology and design, to determine what customer data can (e.g. technical limitations) and will be collected beyond that

already described in the website Privacy Policy... ." PPL St. 5-RJ at 3. Mr. Simendinger further stated in his Rejoinder Testimony that the Company should not be required to revise the privacy component of its Plan to include a commitment to use customer service personnel because PPL's customer service employees are already "engaged as part of the Smart Meter project team to address data privacy matters among many other aspects of the project's scope, working with cybersecurity and engineering resources, to keep customer data private and secure." PPL St. 5-RJ at 3.

The OCA submits that it appears that the Company does not object to the substance of Ms. Brockway's recommendations, but merely the need to include these recommendations into the Order approving the Plan. See PPL St. 5-RJ at 3. The OCA submits that any Order approving the Plan should explicitly state what the Company is required to do in relation to data privacy protection, as the ability to protect customer information is a critical responsibility of any EDC deploying smart meters. The OCA notes that the Commission has required other EDCs to work with stakeholders to develop stand-alone customer privacy policies specifically related to the protection of smart meter information before deployment of the smart meters, and such a directive is appropriate here. See, 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, M-2013-2341991, M-2013-2341993, M-2013-2341994, Order at 47 (March 6, 2014). As such, the OCA submits that the Company should be directed to develop a stand-alone customer privacy policy relating to the deployment of smart meter technology using customer service employees as part of its smart meter team and with the input of stakeholders who are able to communicate various customers' desires for privacy.

J. Remote Disconnect, Service Limiting and Pre-Pay Metering Issues

1. Remote Disconnect

One of the functionalities of the new smart meters will be the ability to use remote disconnection. PPL St. 2 at 12-13. Remote disconnect can be used as a voluntary disconnection tool, such as at the customer request for a move-in or move-out, or as an involuntary remote termination tool for non-payment of past-due bills. The Company currently only plans to utilize remote disconnection for move-in/move-out situations. OCA St. 3 at 14. The Company, however, indicates that it may use remote disconnect as an involuntary termination tool at some point in the future. OCA St. 3 at 17.

In regard to the Company's current use of voluntary remote disconnections for move-ins or move-outs, OCA witness Brockway reviewed PPL's Remote Connect/Disconnect Project and concluded that voluntary remote disconnects for customer-requested disconnections appears to be "working without major difficulties." OCA St. 3 at 18. Ms. Brockway testified, however, that involuntary remote disconnect for payment related reasons "raises larger problems concerning risks to individuals, households and communities." OCA St. 3 at 18.

Ms. Brockway testified that there are numerous issues that are raised if PPL expands remote disconnect for involuntary disconnection, stating:

Disconnection for non-payment is a crude collection tool at best. Remote involuntary disconnection will tend to make disconnection easier, and thus contribute to increased use of this tool, as opposed to other tools better suited to getting utility and customer into a mutually beneficial relationship. Because disconnection has severe results, the General Assembly and the Commission have specified a number of protections for consumers, in Chapter 14 and 56. These protections must continue to be observed if remote disconnection is to be used for involuntary terminations. The specific circumstances of remote disconnection, as opposed to disconnection by sending field staff to the customer's home, make it necessary to add particular protections if involuntary remote disconnection is to be used. If customers are not protected with sufficient protocols, they and their families are at risk of disconnection in situations where termination could have

been avoided. This would create dislocation, and may put the household in danger.

OCA St. 3 at 15. These issues should be thoroughly addressed if the Company proposes to move forward with involuntary remote disconnect, as termination of electric service puts serious risks on the customer at some point in the future. As Ms. Brockway testified:

Households without power cannot keep warm or cool. Households without power cannot store food safely. Households without power do not have lighting for children's homework, paying bills, or many other obligations. Households whose power is cut, particularly renters, are more likely to have to move than other households. Such forced mobility can disrupt the children's education, displace long-term residents, and undermine a community's cohesion.

OCA St. 3 at 15-16.

The Company stated that it will engage in the stakeholder process when the Company determines whether to move forward with expanding remote disconnect to involuntary terminations. OCA St. 3 at 17-18. The OCA commends the Company's willingness to engage with stakeholders to address issues associated with involuntary remote disconnection. As noted by Ms. Brockway, the consumer protections contained within Chapter 14 and Chapter 56 must be preserved in any plan to use remote disconnect in this manner. OCA St. 3 at 15, 18. The OCA, however, is concerned with the Company's position that any specific plan to use remote disconnect for involuntary terminations does not require Commission approval prior to implementation if the Company determines that the plan does not require changes to or a waiver of the Commission's regulations." PPL St. 2-R at 23. As Ms. Brockway testified:

Any such program should be filed with the Commission for approval, however, regardless of the Company's view that it fully complies with all applicable consumer protections. Reasonable people may differ about the application of consumer protection laws and regulations to any of these programs. Also, there are fundamental policy and fact questions raised by proposals to use SMI for these purposes. That "the Company has demonstrated its willingness to work with stakeholders throughout the entire Smart Meter Plan," does not assure that consumers will be able to air their concerns with these uses of SMI, nor that an

objective decision-maker will review the plans to ensure they preserve consumer protections.

OCA St. 3-R at 4-5. (Citation omitted).

The OCA submits that the Order to this proceeding must specifically recognize that PPL is not authorized to use remote disconnect for involuntary termination as part of the Plan. Further, the OCA recommends that due to the potential implications of Chapter 56 and Chapter 14, that any proposal to pursue involuntary remote termination in the future should be considered an amendment to the instant Plan and should be filed with the Commission for review and approval. The Commission should also memorialize the Company's commitment to bring any future proposal to pursue remote involuntary termination to a stakeholder group of interested parties for further discussion.

2. Service Limiting

Service limiting technology allows an EDC the ability to provide a minimal level of amperage to a customer facing termination due to non-payment. Service limiting could be used as an alternative to service termination. Instead of a customer having service completely terminated, a customer instead would receive a low level of amperage that would provide power for necessary uses only. The Company conducted a high-level pilot evaluation on this technology and determined not to move forward with an actual pilot program. OCA St. 3 at 19. The OCA supports the Company's decision.

The Company determined not to proceed with a service limiting pilot program because its research indicated that the costs, the operational effects of non-business-hour disconnects, and customer perception outweighed the potential benefits of using the technology. OCA St. 3 at 19. The OCA fully supports this decision. OCA witness Ms. Brockway testified that there are other dangers as well that can result from the use of service limitations, stating:

Customers may easily go over their limit without realizing why or how to avoid doing so, and this would trigger a disconnection with no further interaction with the customer. If the disconnection occurred at night, for example, and the customer was unsure of how to get power back on, the household could be without power needed to supply heat, air conditioning, medical equipment, refrigeration, and lighting. It is also important not to assume that all customers will be able to figure out how to get power restored.

OCA St. No. 3 at 19-20.

Ms. Brockway concluded:

I agree with the Company's conclusion that adverse impacts of service limiting outweigh any benefits the process might provide. Before the Company revisits this conclusion, it should engage with its stakeholders on the prospect of reopening this issue, and it should not go forward without explicit Commission authorization.

OCA St. No. 3 at 20.

The OCA submits that the Order to this proceeding should specifically recognize that the Company is not authorized to implement service limiting technology. If the Company determines at some point in the future to use this technology, the OCA submits that Ms. Brockway's recommendation that the Company be required to engage in a stakeholder process with interested parties to develop any plan to use this technology and that any plan must be approved by the Commission prior to implementation be adopted.

3. Prepayment Metering

Prepayment metering is a system where electricity is only delivered if the price for the power is paid in advance. The Company has explored prepayment metering to "enable customers to make energy consumption decisions based on a 'pay-as-you-go' approach." OCA St. 3 at 20. PPL conducted a pilot scoping project and worked with prepay vendors to learn about prepay system capabilities and functionality. OCA St. 3 at 20. Through this process, PPL identified concerns with this function, and concluded that "substantial system integration would need to be developed to build a prepayment infrastructure." OCA St. 3 at 20-21. PPL stated

that if it chooses to move forward with a prepayment metering pilot in the future, it will meet with stakeholders and seek Commission approval prior to implementing the pilot. OCA St. 3 at 21.

The OCA agrees that a prepayment metering plan should not be implemented at this time. As explained by OCA witness Ms. Brockway, the Company determined not to move forward with a prepayment metering pilot because prepayment metering raises substantial issues that will require careful consideration. See OCA St. 3 at 21. Ms. Brockway explained the Company's decision, stating:

Through the research done for the pilot, PPL learned that the successful implementation of the prepay program offered by Arizona's Salt River Project, often held up as a national model, "required consensus and clemency from all parties." PPL Electric's evaluation indicated that several portions of Chapter 56 would need to be waived, "including the whole Subchapter M. Billing and Payment Standards." PPL concluded that it would have to conduct substantial discussions with its stakeholders before proposing a prepayment metering pilot. Accordingly, PPL has deferred implementation of a prepayment metering pilot, to allow the Company and interested stakeholders to shape a program that will "best suit the needs of the customer base and transform perceptions and business processes."

OCA St. 3 at 21. (Citations omitted).

The OCA agrees with the Company's decision not to move forward with a prepayment metering pilot. The OCA submits that the Order to this proceeding should specifically state that a prepayment metering pilot is not authorized as part of this Plan. If the Company desires to pursue a prepayment metering pilot in the future, the OCA submits that the Company should be required to engage in a stakeholder process in the development of the pilot and obtain Commission approval prior to the pilot being implemented.

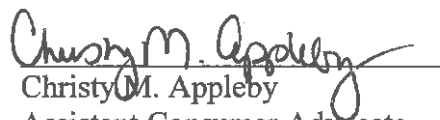
K. Miscellaneous

The OCA does not have any additional issues at this time. The OCA reserves the right to address in its Reply Brief any additional issues raised by other parties.

VII. CONCLUSION

For the reasons set forth above, the Office of Consumer Advocate respectfully submits that PPL has not shown that its proposed accelerated deployment Plan is reasonable. If the Plan moves forward, the OCA submits that the modifications and recommendations herein be adopted.

Respectfully Submitted,



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DATE: January 13, 2015
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Proposed Findings of Fact, Conclusions of Law and Ordering Paragraphs

Proposed Findings of Fact

1. PPL proposes to remove its existing Power Line Communications (PLC) system and replace it with a new system based on Radio Frequency Mesh (RF Mesh) technology. OCA St. 1 at 4.
2. PPL estimates that the total cost of implementing the Plan will be \$449.3 million (\$407 million for capital expenditures and \$41.4 million for operations and maintenance (O&M) costs.) OCA St. 1 at 4.
3. When PPL filed its Initial Plan, PPL was uniquely situated because unlike other Pennsylvania EDCs, the Company had already installed advanced meter infrastructure for all of its customers from 2002 through 2004. Petition of PPL Electric Utilities for Approval of a Smart Meter Technology Procurement and Installation Plan, Docket No. M-2009-2123945, Order at 5 (June 24, 2010) (June 24 Order); PPL St. 1 at 5.
4. By 2004, the AMI deployment was complete. June 24 Order at 5; PPL St. 1 at 5.
5. The existing system was built using a PLC system and consisted of meters, communications, infrastructure, computer services and applications that allow PPL to remotely read the meters for all its customers. OCA St. 1 at 15-16.
6. Beginning in 2005, the Company also upgraded its AMI System through the installation of a Meter Data Management System. June 24 Order at 5; PPL St. 1 at 5.
7. The current system provided for advanced metering applications including: (1) a customer interface that allows customers to analyze their specific usage; (2) a data storage base that provides storage for two years of hourly reads from all customers; (3) a billing system that allows hourly billing; (4) an energy settlement system that allow electric generation suppliers to serve customers based on actual hourly usage; and advanced load analysis capabilities. June 24 Order at 5.
8. PPL used its 30-month grace period to conduct 25 pilot programs to study, test, and pilot applications to enhance and expand upon the capabilities of PPL's existing system. OCA St. 1 at 5.
9. The current system adequately addresses all of the statutory requirements of Act 129, and the cost-effective requirements in the Commission's Implementation Order. OCA St. 1 at 6.
10. The one Act 129 requirement to be addressed in this proceeding is whether the current metering system provided "direct access to and use of price information." OCA St. 1 at 8.

11. With respect to the “direct access to and use of price information,” the Commission’s June 24 Order identified that the 48 hour delay in providing the information to consumers was of concern to the Commission. OCA St. 1 at 8.
12. OCA witness Mudd that there are internal processes that could be implemented, such as web-based mechanisms, to provide direct access to pricing in a shorter timeframe than 48 hours with the existing metering infrastructure. Tr. 146-147.
13. The current system has not presented any impediments to the Company’s ability to meet other objectives of Act 129, such as Time-of-Use rates, and does not seem to have impeded customer switching. OCA St. 1 at 11.
14. At pages 14-16 of the Company’s Petition in this matter, the Company states while the current system is not optimal for supporting these additional capabilities, the PLC meters and supporting data management system is able to provide four of the nine capabilities, including: (1) remote connect/disconnect, (2) 15-minute or shorter interval data, (3) monitor voltage, and (4) monitor outages by polling (pinging) the meter to obtain power status. PPL Exh. 2, Petition at 14-16; see also, OCA St. 1 at 10.
15. OSBA witness Knecht presented testimony that stated that it might be more cost-beneficial for ratepayers if the Company extends its proposed deployment schedule. OSBA St. 1 at 5-6.
16. The RF Mesh technology solution does not necessarily provide the optimal alternative for PPL at this time. OCA St. 1 at 19-20.
17. Although the RF Mesh technology will support the 15-minute interval data at the meter level, the Company does not plan to build out the information technology platform to support the functionality for 15-minute data for all customers. Plan at 21; OCA St. 1 at 17.
18. In response to the OSBA’s interrogatory regarding the 15-minute interval data, the Company stated that there is no business case for investing in a system to provide the 15-minute functionality because neither the Electric Generation Suppliers (EGSs) nor the PJM Settlement Subcommittee currently make use of the interval data. OCA St. 1 at 17.
19. PPL states that “several of the additional requirements may not offer a significant benefit to customers.” OCA St. 1 at 17.
20. PPL states that it is not aware of any current interest in using 15-minute interval data. (Response to OSBA Set 1, Q. 6-J.2.)” OCA St. 1 at 17.
21. The majority of customers will not require or benefit from this 15-minute interval functionality. OCA St. 1 at 17-18.

22. Company witness Ogozaly acknowledged that one of the core driving factors behind PPL's decision to replace its existing smart meters under the accelerated deployment plan is the rate of meter failures experienced with its manufacturer, Aclara. PPL St. 4-R at 2.
23. The meter failure rate experienced by PPL is four times the industry standard which is driving in substantial part PPL's proposal. Plan at 10-11; OCA St. 1 at 20; Tr. 40.
24. PPL anticipates that the useful life of the new meters will be 15 years. OCA St. 1 at 6.
25. This high meter failure rate has cost the Company approximately **Begin PROPRIETARY ***** [REDACTED] ***** End PROPRIETARY.** OCA St. 1 at 21 (Proprietary).
26. PPL has not proposed to establish either a baseline or a mechanism to track savings. Tr. 40.
27. PPL witness Glenwright testified that he anticipates that there may be savings associated with reduced meter services support, decreased call center volumes, improved outage management, and improved identification and cost recovery for unaccounted-for energy but is not able to quantify the anticipated benefits. PPL St. 2-R at 15-20.
28. PPL proposes to address the issue of cost savings in its next base rate proceeding. PPL St. 2-R at 21.
29. OCA witness Catlin identified two changes to be made to the calculation of income taxes included in PPL's SMR rate: (1) elimination of the separate addition of deferred federal income taxes and (2) the calculation of income tax expense at the full statutory rate. OCA St. 2 at 5-10.
30. PPL witness Bethany Johnson adopted the OCA's changes to PPL's tax calculations. PPL St. 6-R at 3-5, Exh. BLJ.2-R.
31. One of the functionalities of the new smart meters will be the ability to use remote disconnection. PPL St. 2 at 12-13.
32. The Company currently only plans to utilize remote disconnection for move-in/move-out situations. OCA St. 3 at 14.
33. The Company indicates that it may use remote disconnect as an involuntary termination tool at some point in the future. OCA St. 3 at 18.
34. Involuntary remote disconnect for payment related reasons "raises larger problems concerning risks to individuals, households and communities." OCA St. 3 at 18.

Proposed Conclusions of Law

1. Accelerated replacement of the existing metering infrastructure at a cost of \$450 million has not been shown to be necessary to meet the requirements of Act 129 nor has it been shown that to be a cost-effective method to meet the additional nine Implementation Order capabilities.

2. PPL has not shown that its accelerated deployment of the RF Mesh system is reasonable, necessary or cost beneficial.

3. The Commission's Implementation Order allows the Company 15 years from the date of Plan approval, or until 2025, to deploy its meters if the current meters are insufficient to meet the requirements of the Act. Implementation Order at 15.

4. Act 129 requires that the Company include any operational or capital cost savings in its smart meter surcharge, and PPL has not developed a reasonable projection of savings to be achieved or mechanism to track savings in accordance with the requirements of Act 129. 66 Pa. C.S. § 2807(f)(7).

5. The Commission's Implementation Order directed that the operating and capital cost savings be incorporated into the EDCs' Plan filings. Implementation Order at 29-30.

6. PPL has not developed a baseline in order to calculate the savings achieved in accordance with 66 Pa. C.S. § 2807(f)(7).

7. PPL's proposed Communications Strategy is not sufficient to educate customers about its Smart Meter Implementation program.

8. The Company has failed to support its claims regarding the outage management benefits of the new smart meter technology.

9. The Company's proposed Communications Strategy, as well as its current privacy policies do not sufficiently address the unique data privacy challenges resulting from the deployment of smart meters.

10. The Company's Plan does not allow for the use of remote disconnect for involuntary terminations, service limiting, and prepayment metering technology.

Proposed Ordering Paragraphs

IT IS HEREBY ORDERED THAT:

1. PPL is directed to evaluate options to extend the life of the current AMI system for an additional two to five years while working toward a more gradual, cost-effective transition to a more advanced AMI system by 2025.

2. PPL is directed to: (1) identify the incremental savings associated with the deployment of the RF Mesh AMI system prior to approving PPL's Plan, (2) to establish a baseline to measure the savings, and (3) to reflect any operational savings associated with the deployment of the RF Mesh AMI system in the Smart Meter Rider.

3. PPL is directed to address the high rate of meter failures directly with the manufacturer.

4. PPL shall implement the two changes to the Company's tax calculation as described by OCA witness Thomas Catlin at pages 5 to 10 of his Direct Testimony and as accepted by Company witness Bethany Johnson at pages 3 to 5 of her Rebuttal Testimony;

5. The proposed changes and process for calculation of a corrected refund amount for PPL's tax calculation as proposed by OCA witness Catlin are approved. The Company will make the appropriate adjustment to the calculation of the total refund amount and include in the SMR in the Company's SMR reconciliation filing.

6. PPL shall work with stakeholders to prepare an interactive customer education plan to enable customers to make use of the new AMI technology, and to seek Commission approval before implementing the education plan.

7. PPL shall review its customer messages to ensure that they are accurate especially with regard to outage frequency and duration.

8. PPL may not use service limiters, remote involuntary disconnection, and prepayment metering as part of its current Plan. The Company must meet with stakeholders and amend its Plan and receive Commission approval if PPL seeks to use service limiters, remote involuntary disconnection, or pre-payment metering.

9. The Company will develop a detailed stand-alone customer privacy policy statement specifically related to the protection of smart meter information before the deployment of smart meters, using customer service employees as part of the smart meter team developing the customer privacy policy statement.

CERTIFICATE OF SERVICE

Petition of PPL Electric Utilities Corporation :
for Approval of its Smart Meter Technology : Docket No. M-2014-2430781
Procurement and Installation Plan :
:

I hereby certify that I have this day served a true copy of the foregoing document, the Office of Consumer Advocate's Main Brief, upon parties of record in this proceeding in accordance with the requirements of 52 Pa. Code Section 1.54 (relating to service by a participant), in the manner and upon the persons listed below:

Dated this 13th day of January 2015.

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