**BEFORE THE**

**PUBLIC UTILITY COMMISSION**

Petition of PPL Electric Utilities Corporation :

for Approval of Its Smart Meter Technology : M-2014-2430781

Procurement and Installation Plan :

**INITIAL DECISION**

Before

Susan D. Colwell

Administrative Law Judge

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I. INTRODUCTION

 This decision approves the petition of an electric distribution company (EDC) for approval of its smart meter technology plan with several specific limitations advocated by the litigating parties to this case.

II. HISTORY OF THE PROCEEDING

 On June 30, 2014, PPL Electric Utilities Corporation (PPL or Company) filed its Petition for approval of its smart meter technology procurement and installation plan. Accompanying the petition was a Smart Meter Technology Procurement and Installation Plan (SMP or SMTP) and the direct testimony of six witnesses, PPL Electric Statements 1 through 6.

Notice of the filing was published in the *Pennsylvania Bulletin* on July 19, 2014, with an August 11, 2014 deadline set for intervention or protests, and notice of a prehearing conference on August 11, 2014.

 On July 8, 2014, I issued a prehearing order which directed those entities wishing to participate to follow Commission regulations regarding protests and interventions, and directed the filing of prehearing memorandum on or before 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.

 PPL Electric, OCA, OSBA, IBEW, CAUSE-PA, and PPLICA each filed a timely prehearing memorandum. The prehearing conference was held as scheduled, with the following attending: on behalf of PPL Electric, Paul E. Russell, Esq., and Anthony Kanagy, Esq.; on behalf of OCA, Christy Appleby, Esq.; on behalf of OSBA, Steven C. Gray, Esq.; on behalf of IBEW, Scott J. Rubin, Esq.; on behalf of CAUSE-PA, Elizabeth Marx, Esq., and on behalf of PPLICA, Adeolu Bakare, Esq.

 The second prehearing order, the Scheduling Order, issued August 11, 2014, granted the interventions as unopposed and set the litigation schedule. Discovery modifications proposed by OCA were also adopted by the Scheduling Order.

 By email sent October 29, 2014, the Company indicated that, pursuant to the schedule adopted in the above-referenced proceeding, PPL Electric held a settlement conference with available parties on Tuesday, October 28, 2014 in compliance with the Scheduling Order.

 On November 4, 2014, the Company filed a Motion for Protective Order, averring the proper justification for its grant and indicating that it was unopposed by any other party. Accordingly, it was granted by Order issued November 5, 2014.

 The parties pre-served testimony according to the litigation schedule. On December 9, 2014, the Company sent me a cross-examination matrix and a proposed common outline for the briefs.

 The evidentiary hearing was held as scheduled on December 16, 2014, and the following testimony and exhibits were admitted to the record (plain numbers are direct, "R" signifies rebuttal and "S" signifies surrebuttal):

**PPL Electric**

 Dennis A. Urban, Jr., Statements 1

 David R. Glenwright, Statements 2, 2-R (Proprietary and Public versions), 2-RJ

 Jason Kinslow, Statement 3

 Christine E. Ogozaly, Statement 4, 4-R, 4-RJ

 Kent Simendinger, Statement 5, 5-R, 5-RJ

 Bethany L. Johnson, Statement 6, 6-R, 6-RJ

 Exhibits 1 and 2

**OCA**

 Christina R. Mudd, Statements 1 (Proprietary and Public versions), 1-S

 Thomas S. Catlin, Statements 2, 2-S

 Nancy Brockway, Statements 3, 3-S

 Cross-examination exhibit 1

**OSBA**

 Robert D. Knecht, Statements 1 and 2 (surrebuttal)

 Cross-examinations exhibits 1-3

**PPLICA**

Cross-examinations exhibits 1-3

**CAUSE – PA**

 Exhibits 1 & 2

 A transcript of 190 pages was created. The parties filed Initial Briefs on or before January 12, 2015, and reply briefs on or before February 2, 2015. The record closed upon their receipt. The matter is now ripe for disposition.

III. FINDINGS OF FACT

 1. PPL Electric Utilities Corporation is a jurisdictional public utility providing electric distribution and transmission service to approximately 1.4 million customers in the Commonwealth of Pennsylvania in portions of 29 counties.

 2. OCA is a statutorily created public advocate empowered to represent the interests of consumers before the Public Utility Commission, pursuant to Act 161 of the General Assembly, as amended, 71 P.S. §§ 309-1 *et seq.*

 3. OSBA is authorized to represent the interests of small business customers of utility services before the Commission, pursuant to the provisions of the Small Business Advocate Act, Act 181 of 1988, 73 P.S. §§ 399.41-399.50.

 4. Intervenor PPLICA is an organization of industrial and commercial users which included the following at the time of filing: Air Products and Chemicals, Inc.; Armstrong World Industries, Inc.; General Dynamics-OTS Scranton; Harristown Enterprises, Inc.; Hercules Cement Company; Linde LLC; SAPA Extrusions, Inc.; The Hershey Company; TIMET North America; and Wegmans Food Markets, Inc. PPLICA Petition to Intervene.

 5. Intervenor Coalition for Affordable Utility Services and Energy Efficiency in Pennsylvania (CAUSE-PA) is an unincorporated association of low-income individuals that advocates on behalf of its members to enable consumers of limited economic means to connect to and maintain affordable water, electric, heating and telecommunication services. Petition to Intervene of CAUSE-PA.

 6. Dennis A. Urban, Jr., Vice President of Finance and Regulatory Affairs, appeared and testified on behalf of PPL Electric. Tr. 25, PPL Electric Stmt. 1.

 7. The Company's present system was one of the first to be installed which provided automated meter reading by communicating through the power lines. PPL Electric can read its meters on an hourly, daily or monthly basis. PPL Electric Stmt. 1 at 5; PPL Stmt. Electric 2 at 4.

 8. Beginning in 2005, PPL Electric installed a Meter Data Management System (MDMS) to support processing of meter data being collected from the system to directly interface with a customer portal known as the Energy Analyzer, which allows customers to see hourly energy usage. PPL Electric Stmt. 1 at 5; PPL Electric Stmt. 2 at 5.

 9. PPL Electric's existing metering system does not meet the smart meter requirements of Act 129 of 2008. PPL Electric Stmt. 1 at 6.

 10. The existing system is a Power Line Carrier (PLC) metering system. PPL Electric Stmt. 1 at 6.

 11. The replacement system proposed is a Radio Frequency (RF) Mesh system that will fully comply with the Act 129 requirements and the additional capabilities set forth in the Commission's *Implementation Order.* PPL Electric Stmt. 1 at 6-7.

 12. The Company has conducted numerous pilot programs and hired IBM to assist in the evaluation of smart meter systems being used by other utilities across the country. PPL Electric Stmt. 1 at 7.

 13. David R. Glenwright, Advanced Metering Development Project Manager for PPL Electric, appeared on behalf of the Company. Tr. 33.

 14. After conducting pilot programs, the Company determined that the existing system is not conducive to upgrades which would bring it into compliance, and that the replacement of the system is the appropriate path to follow. PPL Electric Stmt. 2 at 7.

 15. Approximately 86% of the total existing meters are 2002 vintage electromechanical meters retrofitted with a first generation PLC communication module. PPL Electric Stmt. 2 at 8.

 16. The remaining 14% of the existing meters are upgraded solid-state electronic meters with a newer vintage PLC communication module. PPL Electric Stmt. 2 at 8‑9.

 17. Neither type of the existing meters complies with all of the requirements of Act 129 and the Commission's *Implementation Order.* PPL Electric Stmt. 2 at 8-9.

 18. Market assessments and pilot programs conducted by the Company found an increasingly declining market presence of PLC technology and supporting metering systems, which are limited in both scalability and functionality versus competing advanced metering infrastructure (AMI) technology types and supporting systems. PPL Electric Stmt. 2 at 9.

 19. In 2013, PPL Electric experienced approximately 28,000 failed meters, which is approximately four times the industry standard. PPL Electric Stmt. 2 at 10; Tr. 41.

 20. According to the SMTP, meters will be fully deployed by the beginning of 2017. PPL Electric Stmt. 2 at 12.

 21. Meters installed according to this SMTP will have the following capabilities:

Bidirectional data communications;

 Recording of usage data on at least an hourly basis once per day, and providing customers with information on their hourly consumption;

 Support of Time-Of-Use (TOU) and Real-Time-Pricing (RTP);

 Ability to provide 15-minute or shorter interval data to customers, EGS's, third-parties, and an RTO on a daily basis, consistent with the data availability, transfer, and security standards adopted by the RTO.

 Remote Service Switch capability;

 On-board Meter Storage of meter Data that complies with the nationally-recognized non-proprietary standards;

 Open standards and protocols that comply with the nationally recognized non-proprietary standards;

 Ability to upgrade as technology advances and becomes economically feasible;

 Remote programming capability;

 Ability to communicate outages and restorations for ping and power restoration;

 Ability to support net metering of customer generators.

PPL Electric Stmt. 2 at 12-13.

 22. Mid-deployment capabilities will include the ability to monitor voltage at each meter and report in a manner that allows an EDC to react to the information, and the ability to communicate outages and restorations using last gasp and power restoration messages. PPL Electric Stmt. 2 at 13.

 23. As deployment advances, customers will have direct access to consumption and pricing information as the meters will be able to provide 15-minute or shorter interval data. PPL Electric Stmt. 2 at 13.

 24. The SMP includes a plan to implement a "Deployment Sample Process" to identify a statistically significant random sample of removed meters. This sample of removed meters will be flagged for registration accuracy testing and returned to the Company's meter test lab as they are removed from service by the deployment vendor. PPL Electric Stmt. 2 at 14-15.

 25. The Company will hold all removed meters for two billing cycles before allowing them to be retired to permit any customer billing concerns to be addressed. PPL Electric Stmt. 2 at 15.

 26. The present meter system cannot interact with the proposed RF Mesh meters, which means that present replacements in areas where RF Mesh network is not yet installed will be the existing PLC meters. PPL Electric Stmt. 2 at 20.

 27. Jason Kinslow, Associate Partner with IBM Corp. (IBM) and IBM Project Manager, testified on behalf of the Company. PPL Electric Stmt. 3.

 28. The program development process began with a series of workshops to define the set of guiding principles to use in formulating the SMP. PPL Electric Stmt. 3 at 3.

 29. Three types of meter technology types were evaluated: Power Line Carrier (PLC), Point to Multipoint, and Radio Frequency Mesh. PPL Electric Stmt. 3 at 3.

 30. The technology types were evaluated across seven feature areas: network design, bandwidth/latency, resilience/maintenance, security, maturity, outage management and smart grid synergies. PPL Electric Stmt. 3 at 3.

 31. A request for information (RFI) was released to nine AMI solution providers, and the responses provided information to be used in making the final determination. PPL Electric Stmt. 3 at 4.

 32. Each technology type was evaluated to determine whether it would comply with the Act 129 and *Implementation Order*[[1]](#footnote-1) requirements as well as for comparable cost. PPL Electric Stmt. 3 at 4.

 33. The proposed system is a Radio Frequency Mesh system comprised of Zigbee enabled meters to support in-premise communications and field devices leveraging both public networks and PPL Electric's network for the Wide Area Network backhaul. PPL Electric Stmt. 3 at 5.

 34. The proposed Plan includes the need to install: (1) a head end system for communication with all meters and field devices; (2) a meter asset management (MAM) system to register the solution assets and manage testing, maintenance and life cycle; (4) a network operating center (NOC) to manage the real time operations of the systems; and (5) a customer presentment portal to provide customers access to their validated usage information. This will entail upgrades to elements of the Company's IT architecture and analytical foundation. PPL Electric Stmt. 3 at 6.

 35. Christine Ogozaly, Director of Advanced Metering and Data Operations for PPL Electric, testified on behalf of the Company. PPL Electric Stmt. 4, 4R.

 36. In 2013, the Company completed the RFI stage, meaning that evaluations of the responses were conducted and used to develop the next stage. PPL Electric Stmt. 4 at 3.

 37. Next, PPL Electric plans to solicit vendors for responses to an RFP for components of the plan. The first phase of RFPs will include: (1) AMI System; (2) meter data management (MDM); (3) Customer Portal; (4) NOC; (5) Project Management Office (PMO); (6) System Integrator (SI); and (7) MAM. The second phase will include RFPs for Deployment Vendor and Secondary Meter Vendor. PPL Electric Stmt. 4 at 3.

 38. The cost estimate is dependent on the proposed implementation schedule. PPL Electric Stmt. 4 at 6.

 39. The 8-year cost is estimated at $449.3 million. PPL Electric Stmt. 4 at 6.

 40. Estimated costs are broken down as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Category** | **Capital (M)** | **O&M (M)** | **TOTAL (M)** |
| Meter  | $284.9  | $0 | $284.9 |
| Network & Network Management | $31.4  | $7.9  | $39.3 |
| Information Technology | $53.0 | $24.7 | $77.7 |
| Systems Integration | $8.8 | $0 | $8.8 |
| Program Integration | $23.2  | $5.4 | $28.6 |
| Communications/Change Mgt. | $6.6 | $3.4 | $10.0 |
| TOTALS | $407.9  | $41.4 | $449.3 |

PPL Electric Stmt. 4 at 7.

 41. Kent Simendinger, Senior Manager of the Information Assurance Group (IAG) of PPL Services, testified on behalf of the Company. PPL Electric Stmts. 5, 5-R, 5-RJ.

 42. PPL Electric maintains an internal cyber security focused IAG workgroup, which includes trained, certified and experienced personnel to deliver on cyber security and privacy requirements. PPL Electric Stmt. 5 at 4.

 43. PPL Electric's IAG employees work with business and IT partners to implement and monitor the layers of cyber defenses. PPL Electric Stmt. 5 at 4.

 44. IAG members hold government Secret clearances and participate in local, regional and national information and intelligence sharing to enable the team to keep up with emerging threats, defenses design, and evolving technologies, including smart meter technology. PPL Electric Stmt. 5 at 4.

 45. PPL Electric engages experienced and objective third party assessors to perform skills, design, and operational reviews, and to benchmark against peers and accepted industry cyber security standards and frameworks. PPL Electric Stmt. 5 at 4.

 46. To ensure cyber security risks are adequately addressed, PPL Electric will utilize its project management methodology to aid in creating cyber security and data privacy controls, processes and procedures. PPL Electric Stmt. 5 at 5.

 47. The project management methodology process is a risk management-based approach for identifying, quantifying, and mitigating risks throughout a project's lifecycle. This approach enables PPL Electric to understand and manage the threats and risks in its current operations, as well as to identify potential future risks and to develop appropriate mitigation plans. PPL Electric Stmt. 5 at 5.

 48. Bethany Johnson, Manager of Regulatory Compliance, testified on behalf of the Company. PPL Electric Stmt. 6.

 49. The SMP proposes to calculate the rate based on historic data instead of budgeted data as is done in the current Smart Meter Rider (SMR). The proposal is to change the costs included in the rate calculation to include expenses and plant placed in-service on the books and records during the applicable period, rather than estimates. PPL Electric Stmt. 6 at 6.

 50. The SMP proposes to change the SMR on a quarterly basis versus annual changes in order to provide smaller, more frequent price changes for customers instead of a larger, annual price change. PPL Electric Stmt. 6 at 6.

 51. The SMP proposes to change the pricing for residential and Small C&I customers to a customer charge from a usage based charge in the current rider, which is consistent for how meters are handled in the Company's base distribution rates. PPL Electric Stmt. 6 at 6-7.

 52. The SMP proposes to recover costs incurred through December 31, 2014, over a three-year period. PPL Electric Stmt. 6 at 7.

 53. Nancy Brockway, consultant in the area of utilities, appeared and testified on behalf of the Office of Consumer Advocate. OCA Stmts. 3, 3-S.

 54. The Company's Communications strategy is incomplete and needs more information, such as how it will staff its customer service function to respond to AMI inquiries, the roles of internal and external resources, and vendor support, as well as specific interactions it intends to have with customers as part of the education function. OCA Stmt. 3 at 5.

 55. The Company conducted three pilot programs with consequences for residential consumer rights: the feasibility of using remote connect/disconnect; service limiting; and prepayment. OCA Stmt. 3 at 13-14.

 56. Christine R. Mudd, Principal with Exeter Associates, Inc., appeared and testified on behalf of OCA. OCA Stmts. 1 and 1-S.

 57. PPL Electric is experiencing a high rate of meter failures. OCA Stmt. 1 at 6, 21.

 58. Thomas S. Catlin, Principal with Exeter Associates, Inc., appeared and testified on behalf of OCA. OCA Stmts. 2, 2-S.

 59. Robert D. Knecht, Principal and Treasurer of Industrial Economics, Inc., appeared and testified on behalf of OSBA. OSBA Stmts. 1 and 2.

IV. DISCUSSION

 Act 129 of 2008 (Act 129) was signed into law on October 15, 2008 and took effect on November 14, 2008. This Act required that EDCs with more than 100,000 customers to file by August 14, 2009, a smart meter technology procurement and installation plan with the Commission for approval.[[2]](#footnote-2)

 Electric distribution companies (EDCs) in the Commonwealth are required to develop, seek approval for, and implement a plan to provide smart meters to their customers:

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

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

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

 (3) Effectively support the automatic control of the customer's electricity consumption by one or more of the following as selected by the customer:

 (i) the customer;

 (ii) the customer's utility; or

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

66 Pa.C.S. § 2807(g).

 The statute provides that:

(f) Smart meter technology and time of use rates. –

\* \* \*

 (2) Electric distribution companies shall furnish smart meter technology as follows:

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

(ii) In new building construction.

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

 (3) Electric distribution companies shall, with customer consent, make available direct meter access and electronic access to customer meter data to third parties, including electric generation suppliers and providers of conservation and load management services.

 (4) In no event shall lost or decreased revenues by an electric distribution company due to reduced electricity consumption or shifting energy demands be considered any of the following:

(i) A cost of smart meter technology recoverable under a reconcilable automatic adjustment clause under section 1307(b) except that decreased revenues and reduced energy consumption may be reflected in the revenue and sales data used to calculate rates in a distribution rate base rate proceeding filed under section 1308 (relating to voluntary changes in rates).

 (ii) A recoverable cost.

66 Pa.C.S.A. § 2807(f).

 On June 18, 2009, the Commission adopted the *Implementation Order* in the proceeding captioned *Smart Meter Procurement and Installation*, at Docket No. M-2009-2092655, (Order entered on June 24, 2009) (*Implementation Order*), establishing the standards each plan must meet and providing guidance on the Commission’s expectations for deployment of smart meters. The Implementation Order also established the smart meter capability requirements[[3]](#footnote-3) and provided for a period of up to 30 months for each EDC to assess its needs, select technology, secure vendors, train personnel, install and test support equipment and establish a detailed meter deployment schedule.[[4]](#footnote-4)

 The *Implementation Order* directs that the EDC's smart meter technology support the following capabilities:

Specifically, we direct that the plan filing shall quantify the costs to deploy and operate smart meter technology that is capable of the following minimum requirements set forth in 66 Pa.C.S. § 2807(g):

* Bidirectional data communications.
* Recording usage data on at least an hourly basis once per day.
* Providing customers with direct access to and use of price and consumption information.
* Providing customers with information on their hourly consumption.
* Enabling time‑of‑use rates and real‑time price programs.
* Supporting the automatic control of the customer’s electric consumption.

 In addition, each plan filing shall include the individual incremental costs for deploying and operating the following smart meter technology capabilities:

* Ability to remotely disconnect and reconnect.
* Ability to provide 15‑minute or shorter interval data to customers, EGSs, third‑parties and an RTO on a daily basis, consistent with the data availability, transfer and security standards adopted by the RTO.
* On‑board meter storage of meter data that complies with nationally recognized non‑proprietary standards such as ANSI C12.19 and C12.22 tables.
* Open standards and protocols that comply with nationally recognized non‑proprietary standards, such as IEEE 802.15.4.
* Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible.
* Ability to monitor voltage at each meter and report data in a manner that allows an EDC to react to the information.
* Ability to remotely reprogram the meter.
* Ability to communicate outages and restorations.
* Ability to support net metering of customer‑generators.

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. All cost estimates must be supported by estimates from at least two vendors where available. To the extent that an EDC or another party demonstrates that a particular Commission imposed requirement is not cost‑effective, the Commission will have the option of waiving a particular requirement for that EDC or all EDCs. This waiver authority does not extend to the minimum requirements delineated in 66 Pa.C.S.

§ 2807(g). Any EDC that is unable to provide this cost data with its August 14, 2009 filing can petition the Commission for permission to file such data at a later date. Any such filing shall include a proposed filing date.

*Implementation Order* at 16-17.

**Burden of Proof**

 The party seeking affirmative relief from the Commission bears the burden of proof. 66 Pa.C.S. § 332(a). This must be shown by a preponderance of the evidence. *Samuel J. Lansberry, Inc. v. Pa. Pub. Util. Comm'n,* 578 A.2d 600 (1990), *alloc, denied*, 602 A.2d 863 (1992). A preponderance of evidence is that which is more convincing, by even the smallest amount, than that presented by the other party. *Se-Ling Hosiery v. Margulies,* 364 Pa. 45, 70 A.2d 854, 1950 Pa. LEXIS 316 (1950).

 Additionally, any finding of fact necessary to support the Commission's adjudication must be based upon substantial evidence. *Mill v. Pa. Pub. Util. Comm'n*, 447 A.2d 1100 (Pa.Cmwlth. 1982); *Edan Transportation Corp. v. Pa. Pub. Util. Comm'n,* 623 A.2d 6 (Pa. Cmwlth. 1993); 2 Pa.C.S. § 704. More is required than a mere trace of evidence or a suspicion of the existence of a fact sought to be established. *Norfolk and Western Ry. v. Pa. Pub. Util. Comm'n,* 489 Pa. 109, 413 A.2d 1037 (1980); *Erie Resistor Corp. v. Unemployment Compensation Bd. Of Review,* 166 A.2d 96 (Pa.Super. 1960); *Murphy v. Dep't. of Public Welfare, White Haven Center,* 480 A.2d 382 (Pa. Cmwlth. 1984).

Petitioner PPL Electric has the burden of proving that it has presented substantial evidence to support approval of its Petition. 66 Pa.C.S.A. § 332(a).

**PPL's History**

 PPL submitted its Plan to the Commission on August 14, 2009, *Petition of PPL Electric Utilities Corporation for Approval of Smart Meter Technology Procurement and Installation Plan,* Docket No. M-2009-2123945. In its Plan, PPL proposed to use the 30-month grace period to conduct a series of pilot programs and technology evaluations to extend the capabilities of the Company’s existing advanced meter system. On June 24, 2010, the Commission entered an order approving PPL’s Plan.[[5]](#footnote-5) In its *Smart Meter Order*, the Commission noted that PPL’s Plan would comply with Act 129’s requirement to provide customers direct access to price and consumption information if PPL’s home area network pilot was successful. The Commission went on to note, however, that to the extent PPL’s Plan simply provides validated access to hourly usage data on PPL’s website within 48 hours, falls short of the goal to provide direct access to customer usage data. The Commission further noted that PPL’s Plan to provide pulse data to customers who desire direct access to meter data, was inadequate as PPL failed to demonstrate that pulse meter data recorders were a sufficiently accurate, operationally efficient and cost effective tool to meet the Act 129 requirements.

 As such, the Commission directed PPL to use the grace period to continue to identify, test, develop, and implement more cost effective means to directly provide meter usage data from the meter to its customers to effectively support the automatic control of electric consumption. The Commission further directed PPL to use its proposed pilots and collaborative meetings to ensure compliance with these minimum requirements, as well as to present evidence regarding the additional smart meter capability requirements contained in the *Implementation Order*. The Commission also directed PPL to address how its smart meter technology will effectively support automatic control of a customer’s consumption by a customer’s chosen third party, in addition to the customer or PPL. Finally, the Commission stated that since PPL’s existing system does not fully meet all Act 129 requirements, it should use the grace period pilot programs to fully develop a plan, to be filed with the Commission, to fully comply with Act 129.[[6]](#footnote-6)

 In a Petition filed May 4, 2012, PPL sought an extension of the 30-month grace period which would expire on December 24, 2012, to file a revised plan that would fully comply with the Act 129 requirements. By Order entered August 2, 2012, the Commission granted an extension to June 30, 2014 to file a revised smart meter plan. The present SMP was filed on June 30, 2014.

 The parties followed a common briefing outline, and this Decision will follow it for the Discussion to facilitate ease of reference.

**A. COMPLIANCE WITH ACT 129 AND THE IMPLEMENTATION ORDER**

**PPL Electric**

 In evaluating PPL Electric's SMP, the timeline of its prior actions and the regulatory actions plays an important role to understanding the situation. The Company points out that its existing meter system was implemented between 2002 and 2004, six years before the adoption of the statute requiring smart meters. The current system uses Power Line Carrier (PLC) technology to transmit data from the customer meters to the Company.

 On June 24, 2009, the Commission issued its Smart Meter *Implementation Order*, which established the standards that the Commission expected each EDC to meet. PPL Electric filed its first SMP on August 14, 2009, which proposed to meet those standards using its existing PLC-based technology. The Commission Order of June 24, 2010, found that the existing system did not meet the requirements:

In the Commission’s *Implementation Order*, the Commission did require utilities to fully install, test, and rollout support equipment and software, and to have the smart meter networks up and running. At the end of the Grace Period, then, PPL should be capable of deploying smart meters that meet Act 129’s requirements. PPL is off to a real head start and should be commended for its forward thinking which has enabled it to record hourly meter usage, provide hourly meter usage via the Internet on a 48-hour lag basis, and even allocate energy on an hourly basis individually for all of its customers for use in usage profiles. PPL, therefore, is well ahead of most electric utilities in the nation. However, PPL needs to expand its metering capabilities to meet the higher standards of Act 129. The fact that PPL has made such investments may present unique challenges when attempting to dovetail the capabilities of its new system with the more rigorous requirements of Act 129. **Since PPL’s existing system does not fully meet all Act 129 requirements, it should use the Grace Period Pilot programs to fully develop a Plan, to be filed with the Commission, to fully comply with Act 129.**

 *2010 SMP Order*  at 24 (footnote omitted, emphasis added).

 The part missing from the present system is the Home Area Network capability that the *Implementation Order* requires. *2010 SMP Order* at 22. The Commission expects the metering system to provide direct access to customer usage data, i.e., price and consumption information, more quickly than its present system permits. PPL Electric evaluated its system capabilities in terms of possible upgrades to determine if the present system could meet the Act 129 requirements, and concluded that it could not. Its witness Glenwright testified:

The existing Aclara PLC AMI meters deployed at PPL Electric do not have Zigbee communication chips inside the meters and there are no plans by Aclara to develop that technology. PPL Electric has worked with Aclara regarding their HAN capabilities. Aclara does not intend to develop and commercialize Zigbee communication chips in their meters and if PPL Electric required this as an option, then PPL Electric would be the only Aclara customer requiring this technology and would need to fund the development and future support for this technology.

PPL Electric St. 2-R at 3.

  Witness Glenwright also testified that 86% of the existing PLC meters are prior generation electromechanical meters that do not meet 7 of the 15 requirements set forth in the *Implementation Order.*[[7]](#footnote-7)

**OCA**

 OCA argues that the proposed timing of the implementation of PPL Electric’s SMP has not been shown to be necessary to meet the requirements of Act 129 and that it has not been shown to be a cost effective method to meet the additional nine *Implementation Order* capabilities. OCA shifts the focus from meeting the *Implementation Order* additional requirements to the present system’s ability to meet the six requirements in the statute. OCA’s Main Brief quotes its witness Mudd, who testified that the present system can meet the six requirements of Act 129, 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.

OCA Witness Mudd acknowledges that the Commission stated that access to hourly usage data within 48 hours was not sufficient to provide customers with direct access to and use of price information. OCA MB at 16; OCA Stmt. 1 at 7-8.

 OCA argues that the 48-hour delay was the biggest concern for the Commission, and that in response to that concern, the Company executed a pilot project to examine the issues, and OCA Witness Mudd points out that an upgrade to the existing system will significantly alter the options for accelerating timeliness of providing pricing data. OCA Stmt. 1 at 8; OCA MB at 17. The 48-hour window was reduced to less than 24 hours without using a Zigbee capable device. However, OCA argues that the six statutory requirements are already met, and the existing system has not presented any impediments to the Company’s ability to meet the other objectives of Act 129.

 OCA argues further that the existing capabilities of the present system come close to meeting the *Implementation Order* requirements, and that the remaining requirements do not support the accelerated schedule for system replacement. OCA MB at 19. OCA joins with OSBA in arguing that the accelerated deployment is not justified.

**OSBA**

 OSBA lists the six statutory requirements and acknowledges that the Company’s existing system is not compliant with the requirement that the smart meters provide customers with direct access to and use of price and consumption information. OSBA MB at 10. However, OSBA argues that this is a limited benefit for which PPL Electric offers no quantitative evidence to support a finding that this limited benefit will provide a benefit to ratepayers. Further, OSBA states that giving customers more real time information regarding consumption and market prices will only have value if customers use that information to modify their consumption levels in reaction to price signals. Therefore, OSBA reasons, only customers on TOU rates or real-time pricing can take advantage of this functionality, and PPL Electric’s TOU history has resulted in very little customer interest. OSBA MB at 11.

 While it is acknowledged that the present system does not meet all of the requirements in the Commission’s *Implementation Order,* OSBA argues that the Commission has made it clear that the additional capabilities were only to be added if a specific additional capability was cost effective. It bases this interpretation on the Commission’s statement:

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. All cost estimates must be supported by estimates from at least two vendors where available. To the extent that an EDC or another party demonstrates that a particular Commission imposed requirement is not cost effective, the Commission will have the option of waiving a particular requirement for that EDC or all EDCs.

 *Implementation Order* at 30; OSBA MB at 12-13.

  OSBA argues that this means that the fact that the present system does not meet all of the requirements “has no bearing on whether the Company’s proposed smart meter upgrade should be implemented.” OSBA MB at 13. In addition, it provides no basis for accelerating the adoption of a second generation of smart meters with some of that functionality.

**CAUSE-PA**

 The position expressed by CAUSE-PA crosses the topics set by the common briefing outline, and it chose to place its position in the Compliance section. It will fit just as easily in the next section, and it will be referred to there as well.

 CAUSE-PA explains that PPL Electric is seeking permission to install new RF-based meters which will enable communications to a home area network (HAN) device, which the customer is responsible for purchasing and installing, as well as for establishing the network connection. Petition at 13, paragraph 31. The Company presents this as the only viable option for fulfilling the remaining Act 129 requirement of facilitating the ability for customer to have direct access to and use of price and consumption information. However, CAUSE-PA points out that the language in Act 129 is not to facilitate usage and pricing information. Rather, the language is that “. . . the technology shall *provide* customers with direct access to and use of price and consumption information.” 66 Pa.C.S. Section 2807(g); CAUSE-PA MB at 9 (emphasis added).

 CAUSE-PA urges the Commission to reject PPL’s proposal and to require PPL to modify the Plan to include a thorough accounting and assessment of the costs to the customer associated with adoption of HAN technology. CAUSE-PA MB at 9. The current meter requires only an internet connection to connect the customer to the PPL customer web portal.

 CAUSE-PA argues that this makes HAN technology unaffordable for vulnerable Pennsylvanians who struggle to maintain basic utility service and are unlikely to have financial capital sufficient to invest in a HAN device. CAUSE-PA MB at 10, referencing OCA Stmt. 3 at 16. CAUSE-PA continues with a direct quote:

The results of the 2011 National Energy Assistance Survey, conducted by the National Energy Assistance Survey, conducted by the National Energy Assistance Directors Association (NEADA) showed that nearly 90 percent of LIHEAP recipient households have at least one vulnerable member – defined as someone age 60 or older, age 18 or younger, or disabled. *The survey paints a picture of households at risk [of termination]:*

* + 40 percent have someone age 60 or older
	+ 72 percent have a family member with a serious medical condition
	+ 26 percent use medical equipment that requires electricity
	+ 19 percent became sick because the home was too cold
	+ 85 percent of people with a medical condition are seniors.

 OCA Stmt. 3 at 16; CAUSE-PA MB at 11 (emphasis in CAUSE-PA MB).

 There is no clear benefit to the most vulnerable of PPL Electric’s customers despite the cost of approximately $320 per customer, as those customers who do not purchase a HAN device will continue to receive the same information available now. CAUSE-PA argues that cost of purchasing a HAN device is crucial to determining whether there really is access to actual usage, and thus whether there is compliance with Act 129. CAUSE –PA MB at 11. CAUSE-PA argues:

PPL’s plan will require HAN devices to obtain direct access to and use of hourly price and consumption information; and PPL’s “customers are responsible for purchasing and installing their own HAN devices as well as establishing the network connection.” Yet, PPL fails to identify how it will provide the means to enable its low-income OnTrack CAP or LIURP participant customer to purchase and install the HAN device as well as establish and maintain the network connection. The failure of the company to develop and state such a plan will effectively exclude its CAP and LIURP program participants from obtaining access to the specific customer benefit intended to be provided by the HAN and the proposed meters. Without the ability to access hourly price and consumption information, customers unable to afford the additional costs associated with HAN purchase and use would be unable to access information necessary to be an informed and knowledgeable consumer in the competitive generation market.

 CAUSE-PA MB at 12 (footnotes omitted).

  CAUSE-PA argues that, without further information regarding how access to usage information will be given to its low-income customers, such as whether the HAN ability will be provided through the Company’s universal service programs and funded, the Commission should reject this SMP and require revisions to address this issue.

 The Company responds to these arguments by emphasizing that the Commission specifically found that the current meter system’s provision of usage information within 24 hours of actual use does not fulfill the requirement. Its pilot program did not reduce the time sufficiently to meet the requirement. All other EDCs are meeting the direct access requirement through Home Area Networks, which the Commission specifically recognizes as fulfilling that requirement. The present system cannot meet the Act 129 requirement, and therefore another solution must be found. PPL Electric RB at 6.

**Disposition**

 While the OCA, OSBA and CAUSE-PA arguments are well-intentioned and well presented, the bottom line is that the legislature requires compliance with Act 129, the Commission has indicated that the present PPL Electric meters do not comply, and that the introduction of HAN capability would bring compliance. The arguments would have been better made before the adoption of the *Implementation Order.*

  While OSBA’s reasoning that there is little interest in TOU rates in PPL Electric’s service territory is correct, and even if the analysis assumes that this lack of interest will continue, there is a benefit to customers in having access to real time information regarding usage which will assist in the reduction of overall usage where that is the customer’s goal. This is a legislative mandate and not subject to question in this proceeding. OSBA does not dispute this, but it states that it “would hardly justify accelerating the imposition of a substantial cost burden on ratepayers as proposed by PPL in this proceeding.” OSBA MB at 12. Timing is discussed below.

 PPL Electric has met the burden of proving that the proposed SMP will comply with the requirements of Act 129 and the terms set forth in the Commission's *Implementation Order.*

**B. TECHNOLOGY ISSUES – RF MESH VERSUS PLC**

Only the Company and OCA address this issue.

**PPL Electric**

 The Company explains that, in response to the Commission’s 2010 SMP Order, it hired industry experts to assist in evaluating the strengths and weaknesses of both PLC and RF mesh technology, and determined that the PLC technology presently in place presented the following problems:

* The inability of the PLC solution and vendor to provide a reasonable HAN solution.
* The inability of PLC technology to support proactive outage notifications and “last gasp” technology.
* Bandwidth constraints on the PLC system.
* The inability of the Company’s PLC network to read all meters at 15-minute intervals while still maintaining key performance.
* The significant risk with the Company’s current PLC vendor.
* Limited investment in new PLC technology by large investor owned utilities in recent years.

PPL Electric MB at 14-15, citing PPL Electric Stmt. 2-R at 12-19.

 The Company identified the following benefits to the RF Mesh technology:

* HAN capability.
* Enhanced functionality such as last gasp and proactive outage notification.
* Highly scalable network bandwidth.
* Ease of implementing redundancies within the network.
* Widespread use by all other major EDCs in Pennsylvania.
* Multiple RF vendors reduces risk.

PPL Electric MB at 15, citing PPL Electric Stmt. 2-R at 12-19.

  In addition, PPL Electric witness Glenwright testified that a substantial upgrade to the present system would both be close to the same cost as replacement of the system and would still fall short of full capabilities that the RF Mesh system would have upon installation. PPL Electric MB at 15, citing PPL Electric Stmt. 2-R at 5.

**OCA**

 OCA’s witness Mudd provides a good description of the RF Mesh meter network proposed:

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 transmitter/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 MB at 21, citing OC St. 1 at 15-16.

OCA argues that the RF Mesh technology typically requires more protocols, and that the ability to perform configuration and firmware management is much more difficult and involved, requiring an upgrade to the MAM System to effectively track and manage the assets. Its advantage is flexibility and scalability. In addition, the existing PLC system is disadvantaged by bandwidth limitations, which may ultimately require a shift to an RF network. OCA MB at 21-22, citing OCA Stmt. 1 at 16-17.

 While the move to RF is “more likely to serve PPL’s needs in the long-term, in particular as it relates to addressing bandwidth and customer portal limitation with the current system,” OCA MB at 22, citing OCA Stmt. 1 at 19-20, OCA witness Mudd advises against immediate replacement of the current 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.

 Two pilot programs which were important to PPL Electric’s decision to propose replacement at this time were the Two Way Automatic Communications System (TWACS 20) pilot, which evaluated the ability of the next generation TWACS Network System (TNS) protocol to improve overall meter performance at bandwidth constrained substations, 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’ WiFi-enabled devices. These pilots showed the limitations of the existing system and are used to support the Company’s decision to move to the RF Mesh system at this time.

 However, OCA points out that the proposed system will not initially provide 15‑minute interval data for all customers. The Company indicated that there is no point in building the information technology platform to support this function when there is no call for it at this time. OCA MB at 23. OCA Witness Mudd agrees with this conclusion. OCA MB at 24, citing OCA Stmt. 1 at 17-18.

 The second pilot was the In-Home Display pilot, which was tested with a wireless local area network (WLAN) communications system. It did not perform well with the In-Home Display prototypes that were developed for purposes of conducting the pilot study. 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. It is faster and interfaces well with various media/entertainment devices wirelessly. Zigbee is designed to exchange data and is more prevalent in wireless sensor-based networks such as those in home automation systems or industrial machinery coordination systems. It is the lower cost option because it has lower data processing requirements, and is most prevalent in North America’s smart meters. OCA MB at 24, citing OCA Stmt. 1 at 18-19.

 OCA witness Mudd testifies further:

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. 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 MB at 26, citing OCA Stmt. 1 at 19 (citation omitted).

 OCA avers that neither pilot support replacement of the existing system at an accelerated basis at this time, and that the Company should maintain the existing PLC AMI system and work towards a more advanced AMI system by 2025. OCA MB at 25.

 In response to the OCA argument, PPL Electric quotes its Witness Glenwright at length, making points which are relevant here and therefore, are repeated:

The technical assessment evaluated the strengths and weaknesses of three AMI solution technology types: PLC, RF Mesh, and RF Point-to-Point. At a fundamental level, it was determined that the specific technical features required by PA Act 129 and the ensuing Implementation Order would require a large amount of additional bandwidth, exceeding the technical capabilities of PPL Electric’s PLC solution. It was also concluded that these additional bandwidth needs could adversely affect system performance. This is especially true for the requirement to provide 15-minute interval data, which would result in an approximately four times increase in data traffic on an already strained PLC network.

As part of the technical assessment, PPL Electric also solicited detailed Requests for Information (RFIs) from leading AMI solution vendors in North America. Vendors were evaluated in several areas of their solution, including Meter technology, Head End technology, IT, and other areas such as network design.

This solution evaluation demonstrated the strengths of RF Mesh AMI technology relative to its peer technology types. These strengths include highly scalable network bandwidth, ease of implementing redundancies within the network, enhanced functionality such as last gasp and proactive outage notification, and robust research and development. PPL Electric also engaged with peer utilities during the technical assessment process and validated those strengths as witnessed in their own RF-based AMI solution deployments.

The technical assessment also showed that RF Mesh has a significantly higher market share relative to PLC in North America. This provides several benefits from business and risk perspectives. Choosing to pursue an RF mesh solution will allow PPL Electric to continue to leverage lessons learned from its peer utilities across North America, many of whom have deployed RF mesh AMI solutions since PPL Electric’s initial AMI PLC deployment in 2002. Additionally, this will allow PPL Electric to learn from its peers in Pennsylvania and to provide the same level of service to its customers as its peers, all of whom have chosen an RD-based AMI solution to comply with Act 129 and Implementation Order requirements.

Cost and solution prudency was also an input into the decision to proceed with an RF Mesh solution. Through the development of an AMI solution financial model, which incorporated cost information requested from vendors through the RFI process, the Company determined that the costs of upgrading its PLC network and continuing to use of [sic] an RF solution would not be a prudent expenditure. This was due in part to the inability of PLC technology to provide some of the unique features required by Act 129 and the Implementation Order, such as HAN technology. PPL Electric also determined that the development of technologies to support that functionality would be cost-intensive and cost-prohibitive.

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Ultimately, PPL Electric believes that the benefits of RF Mesh exceed those of continuing to use PLC technology, the latter of which cannot be prudently adapted to meet future regulatory, business, and customer needs. Based on its extensive multi-year evaluations, with the assistance of industry experts from Black and Veatch and IBM, PPL Electric is confident that an RF Mesh solution presents the best possible choice for its future AMI solution and will best enable the Company to continue to provide a high level of service to its customers.

 PPL RB at 14-16, citing PPL Electric Stmt. 2-R at 12-15.

**Disposition**

 Even though Act 129 provides that the EDC shall provide customers with direct access to and use of price and consumption information, as CAUSE-PA points out, it is not inconsistent for the Commission to find that the access provided is *facilitation* by the EDC, and actual access requires the interested customer to make an additional purchase to use the HAN technology. The Commission has already decided this issue, and the lack of a final plan for aiding low-income customers to implement this ability is not sufficient reason to reject this SMP.

 As even the OCA recognizes that the RF-Mesh technology is likely to better serve PPL’s needs in the long term, and given the factors expressed above, the RF-Mesh technology is recommended for the service territory of this utility. There is simply no reason to require the extension of the present technology when the parties recognize that it will be replaced. The policy of the Commission and the legislature is that this technology is desirable as soon as possible. CAUSE-PA's points are well-taken, but low-income access can be part of the Company's customer assistance programs without full development in this proceeding. As it is an important point, this RD will recommend that the Company include an evaluation in its next universal service case.

**C. METER FAILURES**

**PPL Electric**

The Company reports that its current meters and the supporting system were installed between 2002 and 2004, and that the meters have electronic components that are more susceptible to wear from external conditions than prior generation meters without the electronic communication components. Evaluation of the metering system shows that it is nearing the end of its useful life. A meter reliability analysis conducted with Aclara, the meter manufacturer, resulted in the estimate that 50% of PPL Electric’s first generation meters will fail within 18.2 years, or between 2020 and 2022.

 Historic meter failures have increased from approximately 10,000 in 2007 to over 28,000 in 2013, and failure is likely to increase exponentially.

**OCA**

 OCA submits that the replacement cost of an existing meter in kind is still 17% less than the estimated per-meter replacement cost provided in proprietary testimony. OCA MB at 26-27, citing OCA Stmt. 1 at 22 (proprietary).

 In addition, the existing meters should not have exhausted their useful life in 10-12 years, and if they have, then the Company should be pursuing legal action against the manufacturer to recover damages that will reduce the cost of the replacement. OCA MB at 27-28. OCA states that the Company began to receive credits from the manufacturer in 2008, which indicates that there have been issues with the meters since at least that time. The Company's strategy of complete replacement long before the actual statutory deadline shifts the cost responsibility to the ratepayers, and that, OCA submits, is not a reasonable approach. OCA MB at 28.

**OSBA**

 OSBA points out that the dire forecast claimed by PPL Electric that the meter failure rate is four times the industry standard is somewhat misleading. Of the Company's 1.4 million customers, there were 25,634 failures in 2012, 28,234 in 2013, and 30,801 (estimated) for 2014. OSBA RB at 13-14, citing Tr. at 159, lines 1-20. The failure rate for 2012 was 2.35% for 2012, less than the 2.5 % *predicted by the vendor*. OSBA RB at 14, citing Tr. 89. So, while actual meter failures have increased with time, there is no support for the catastrophic numbers predicted by the Company. OSBA RB at 14.

 The only real reason that the Company presents to justify accelerating the replacement of the meters is a meter failure rate which is consistent with the manufacturer's predictions.

 OSBA states that it would fully support a plan that meets the legal requirements for smart meters at a minimum cost to ratepayers. With the statutory obligation for compliance set at April 2025, the Company is proposing to reach substantial compliance by 2019 and full compliance by 2021. PPL Electric has failed to demonstrate that the plan minimizes costs to ratepayers by accelerating the implementation.

**Disposition**

The public advocates seek to delay the implementation of the SMP and criticize the claim by PPL Electric that the rate of the failures of the existing meters is gaining speed. While the Company claims appear to be more dire than the statistics support, there is no contesting the fact that repair of the existing meters incurs costs, and that the existing meters will need to be replaced eventually anyway. The discussion regarding the timing of the replacement follows. There is no real disposition necessary for this section.

**D. IMPLEMENTATION TIMELINE**

**PPL Electric**

 The Company’s proposed timeline includes the following goals:

2015 - Building the IT systems necessary support the smart meter system

2016 - Solution Validation phase – deployment of up to 50,000 meters to test the systems with a limited meter population

2017 - through 2019 - Full deployment, averaging 2,000 meters per day

 The final phase, labeled the Stabilization Phase, will begin after full deployment and run through 2021, during which time the system will be fully switched from PLC to RF Mesh technology. PPL Electric MB at 20-21, citing PPL Electric Exhibit 1.

 To support its proposed timeline, PPL Electric states that upon completion, the system will fully comply with Act 129 and will provide the full benefit of the smart meter additions more quickly. In addition, the Company notes that the Commission has encouraged other Commonwealth EDCs to speed up their own implementation because the full deployment represents money that ratepayers could potentially save through the access to tools provided by smart meters. PPL Electric MB at 21, citing the FirstEnergy SMP Order.[[8]](#footnote-8)

 The Company points out that the RF Mesh will provide additional benefits to customers that are not available now, including HAN capability, which permits customers with the additional electronic components to see their usage and track price information on a near real-time basis and improved outage management with the addition of “last gasp” technology, which provides the meter with the ability to send a signal to the Company when the meter loses power. Also, the proposed system will improve the tracking of unaccounted for energy, it will support enhanced customer self-service, improve distribution load management through the application of voltage and load monitoring and power quality. PPL Electric MB at 22, citing PPL Electric Exhibit 1.

 The Company submits that the timeline will result in a full deployment date that is comparable to those of the other major EDCs. With PECO’s deployment already finished, and the FirstEnergy Companies scheduled for 2019, only Duquesne Light has a later date at 2020, a far cry from the 2025 recommended by the public advocates in this proceeding. PPL Electric MB at 22. The consistent deployment will prevent PPL Electric from being an outlier and will allow for consistent rates and programs across the Commonwealth. PPL Electric MB at 23.

 The current system will require significant meter replacement due to meter failures, and the Company estimates that the incremental cost of a 2-year delay would be $38.4 million, including $27.9 million in additional investment in PLC meters that would be unnecessary if the proposed timeline is approved. A 4-year delay is estimated to cost $85.6 million, including $62.7 million in additional investment in PLC meters that would be unnecessary if the Company’s deployment schedule is approved. The Company believes that the proposed deployment schedule is prudent because it will avoid a steep increase in PLC meter failure rates. PPL Electric MB at 23.

 PPL Electric advocates the proposed deployment schedule because it will allow the Company to provide reasonable and continuous service as is required under the Public Utility Code. 66 Pa.C.S. §1501. The Company states that delay would result in increased customer complaints and decrease customer satisfaction. PPL Electric MB at 23-24. In addition, the evidence is that the meters are reaching the end of their useful lives, PPL Electric RB at 19-21, and that with replacement inevitable, there is no point in delaying.

**OCA**

 OCA and OSBA both aver that PPL Electric must justify its acceleration of implementation, reasoning that the statute does not require full deployment until 2025, and anything faster must provide a benefit.

 OCA witness Mudd recommends that the Company use the entire statutory period:

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 MB at 29, quoting OCA Stmt. 1 at 24.

**OSBA**

 OSBA argues that a faster deployment than that required by statute is an acceleration which must be justified by a cost-benefit analysis. OSBA avers:

 The Company got around to providing something of a quantitative cost-benefit assessment in the Rebuttal Testimony of Ms. Ogozaly to justify the acceleration of PPL’s proposed SMP. In the OSBA’s view, the Company’s failure to provide any credible quantitative justification for its massive investment program prior to the filing of rebuttal testimony should, in itself, cause the Company’s proposal to be rejected as insufficiently supported. OSBA was not provided with sufficient time to fully evaluate this claim, conduct discovery, and respond fully in testimony. As noted by Mr. Knecht, OSBA was allotted only two weeks to respond to the only quantitative analysis submitted by the Company, and those two weeks included the two-day Thanksgiving holiday and a one day government shutdown for snow. OSBA Statement No. 2, at 2. Therefore, on one hand, the Company’s *Petition* could be rejected on procedural ground. On the other hand, this belated filing of evidence clearly demonstrates the lack of substantive evidence underpinning PPL’s *Petition.* In addition, it might reasonably be inferred that PPL did not want to admit in its *Petition* that the real reason it was accelerating the adoption of a second generation of smart meters was not for the benefits of improved functionality for ratepayers but in order for PPL to avoid incurring base rates costs to replace the failing first generation meters.

 OSBA MB at 17.

 OSBA then argues that the Company’s analysis was not done in a net present value (NPV) framework, and criticizes the analysis accordingly. OSBA concludes that “the cost to PPL’s ratepayers of accelerating the implementation of the Company’s proposed smart meter upgrades is significant with no concomitant benefit flowing to those ratepayers.” OSBA MB at 20.

 OSBA further argues that the Company’s reliance on the FirstEnergy case is not relevant to this proceeding as PPL Electric already has first-generation smart meters in place and FirstEnergy does not. OSBA RB at 19-20. Also, OSBA points out that the Company’s claim that the deployment schedule will allow the Company to provide reasonable and continuous service within the meaning of Section 1501 of the Public Utility Code is a statement without a basis:

The Company has propounded no evidence in this proceeding that PPL’s ability to provide reasonable and continuous service is threatened by the failure of, and the resulting replacement of, a small percentage of its smart meter.

 If PPL now contends that its ability of [sic] operate in accordance with 66 Pa.C.S. § 1501 is threatened, the OSBA respectfully requests that the Commission deny the *Petition* and order PPL to immediately file for Extraordinary Rate Relief under 66 Pa.C.S. § 1308(e).

 The remaining part of PPL’s fourth contention is that PPL’s customers will become dissatisfied with more failing smart meters. That is mere speculation (and possibly wishful thinking) on PPL’s part. Since PPL enjoys positing hypotheticals, the OSBA counters PPL’s assumption with its own: PPL’s customers will be highly dissatisfied with the massive bill that the Company is trying to saddle them with.

 OSBA RB at 21.

  The Company counters by stating that the OSBA’s NPV analysis does not consider business and customer impacts. The current meter’s manufacturer, Aclara, is not continuing to upgrade the MDMS platform, which makes it a stand-alone platform. It fails to consider the risk involved in Aclara’s recent acquisition by a venture capital firm which had not, at the time of the service of testimony, provided information regarding which products that they would continue to support. In addition, OSBA’s NPV analysis does not consider the benefits to the upgrade, such as the last gasp technology, power restoration messages, access to real-time price and usage information, and other benefits of the RF Mesh technology. PPL Electric MB at 24-25.

 Further, there is no requirement that the Company engage in a cost analysis related to PLC meter failures. If OSBA wanted information regarding PLC meter costs related to delayed deployment, OSBA should have asked for it in discovery. It did not. PPL Electric RB at 23.

**Disposition**

There has been a great deal of conflict regarding the timing of this Plan, and while there are real concerns addressed by the public advocates’ interest in reducing the charge to the customer bills to pay for the implementation by stretching those costs over a longer time period, there are solid reasons for implementing the plan more quickly than required if it can be done well and reasonably. This is supported by the chart provided by the Company which shows its implementation as compared to the other EDCs in the Commonwealth. It is important to remember that the smart meter program is, at its very basis, meant to enable the intelligent use of a variety of energy packages at the supplier level. It only makes sense to have all of the Commonwealth’s EDCs capable of providing the necessary hardware for the packages that can be offered in PA EDC’s service territories.

 OSBA, in particular, engages in a meticulous and detailed cost-benefit analysis which points to the flaws which would be crucial if the Company were required to justify a Plan that it had developed *without* a statutory mandate, through a cost-benefit analysis. This level of analysis is particularly useful and the Commission is grateful to have it in a base rate proceeding or other matter where the Company is required to justify its proposals where cost is the key component. In smart meter cases, however, the General Assembly has spoken and the Commission has echoed the importance of giving the additional tools for customer energy usage management to those customers as soon as reasonably possible – no *later* than April 2025. The emphasis here is on the compliance with Act 129 sooner rather than later. While the plan, as well as its implementation must be reasonable, the timeline for implementation need not carry deployment to the end of the allowed statutory period to save money at the expense of the customers’ ability to better manage energy use sooner. The Commission's priority is clear, and implementation as soon as reasonably possible is the Commission's goal.

**E. COST SAVINGS/QUANTIFICATION OF BENEFITS**

**PPL Electric**

 PPL Electric proposes to continue to reflect AMI savings in base rates. The Company points out that the cost savings realized by implementing the first generation of smart meter, i.e., elimination of meter readers due to the remote reading capability of the meters, have already been realized and reflected in base rates. Savings included a reduction in call center costs, special meter reads, and costs involved in monitoring data quality manually. PPL Electric MB at 28. These savings were quantifiable and were already reflected in base rates and are not going to be experienced again with the proposed SMP.

 Savings which may be experienced but will be difficult to quantify include improved outage management, power quality and customer service. Therefore, PPL Electric argues, they should be included in base rates. PPL Electric MB at 29.

**OCA**

 OCA points out that Act 129 is quite specific in its requirements:

**§ 2807. Duties of electric distribution companies**

\* \* \*

**(f) Smart meter technology and time of use rates. –**

\* \* \*

(7) An electric distribution company may recover reasonable and prudent costs of providing smart meter technology under paragraph (2)(ii) and (iii), as determined by the commission. This paragraph includes annual depreciation and capital costs over the life of the smart meter technology and the cost of any system upgrades that the electric distribution company may require to enable the use of the smart meter technology which are incurred after the effective date of this paragraph, less operating and capital cost savings realized by the electric distribution company from the installation and use of the smart meter technology. Smart meter technology shall be deemed to be a new service offered for the first time under section 2804(4)(vi). An electric distribution company may recover smart meter technology costs:

(i) through base rates, including a deferral for future base rate recovery of current basis with carrying charge as determined by the commission; or

(ii) on a full and current basis through a reconcilable automatic adjustment clause under section 1307.

66 Pa.C.S. § 2807(f)(7)(emphasis added by OCA).

 OCA reads the above language to require PPL Electric to limit cost recovery to be net of any operating and cost savings realized by PPL Electric. OCA cites PPL witnesses in their testimony that there may be savings associated with reduced meter support, decreased call center volumes, improved outage management, and improved identification and cost recovery for unaccounted-for energy although the anticipated benefits cannot be quantified at this time. OCA MB at 23-33, citing PPL Electric Stmts. 2 at 15-20 and 2-R at 21. Based on this testimony, the OCA submits that the Company must establish a mechanism to track savings and to reflect those savings 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.

 OCA MB at 33.

OCA contrasts this Plan with the smart meter plans of the other Pennsylvania EDCs:

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 MB at 33-34, quoting OCA Stmt. 1 at 12.

 OCA recommends that PPL Electric 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. Prior to the implementation of the SMP, the Company should be required to create a baseline from which to measure the savings and a tracking mechanism to analyze and track the level of savings. When those savings are identified, they should be included in the calculation of the PPL Electric SMR.

OCA MB at 34-35.

 While recognizing that this particular SMP will have few savings or benefits from the deployment of second generation smart meters, OCA submits that it is not proper to ignore the issue to defer it to a base rate case as PPL Electric proposes. Rather, the establishment of a baseline and tracking for eight categories of savings that FirstEnergy would be tracking is recommended.[[9]](#footnote-9)

**OSBA**

 OSBA observes that PPL Electric has identified numerous *potential* benefits but has only quantified an annual savings of $2.5 million per year associated with remote connect/disconnect capability. OSBA MB at 20-21. OSBA turns to the negative financial impact of the SMP and determines that there is a theoretical benefit of $89 million to ratepayers if the implementation of the plan is delayed by 4-5 years. OSBA MB at 22-23.

 In addition, OSBA asserts that the Company will be double-charging customers for meter costs. With the 15-year depreciation of the first-generation meters in effect and presumably reflected in revenue requirements established in the Company's base rates cases in 2007, 2010 and 2012, the costs associated with the original meters will drop to zero between 2017 and 2019. However, the current cost for existing smart meters included in current rates is approximately $30.9 million per year. In the meantime, PPL Electric will recover costs for the second generation of smart meters in its reconcilable Smart Meter Rider (SMR) charges. Thus, OSBA points out, absent a base rate proceeding, by 2019 ratepayers will be paying $30.9 million per year for cost no longer incurred by the Company, plus the costs for all second generation meters which are loaded into the Smart Meter Rider.

**CAUSE-PA**

CAUSE-PA argues that the Company has not determined the quantifiable cost of its proposal in comparison to the quantifiable savings, and is able only to affirmatively show that the use of remote connect/disconnect switches will save approximately $2.5 million per year after full deployment in 2020. This means that the Company is asking for permission to approve a ratepayer-financed investment of nearly $450 million for a quantifiable benefit of only $2.5 million per year. In addition, customers are expected to purchase their own HAN devices. CAUSE-PA argues that it is fundamentally imprudent and unreasonable to ask for approval of a design with so little accounting of the potential for the technology to achieve savings. CAUSE-PA MB at 15. CAUSE-PA joins the OCA in asking the Commission to require the Company to retain an independent consultant to prepare a written, fully documented report assessing the potential for the Company to achieve additional savings from the implementation of the SMP and that it be submitted to stakeholders and the parties to this proceeding to review and comment. CAUSE-PA MB at 15-16.

**Disposition**

The Company argues that its benefits are not as easily quantified as those of the EDCs who are implementing first generation smart meters because the greatest savings are in the salaries and benefits of the meter reading employees who are no longer needed to perform that function. While all parties acknowledge this, the OCA and CAUSE-PA argue that there should still be an attempt to identify and track potential savings, consistent with the statute. This is a valid point, and while the Company will not be required to hire an outside consultant, it will be required to track savings in at least the eight identified categories and the savings shall be flowed through its SMT-C rider filings.

**F. SMART METER CHARGE ISSUES**

 **1. Calculation of the Smart Meter Charge**

**PPL Electric**

The Company proposal is to calculate the SMR charge separately for each customer class: Residential, Small Commercial & Industrial (Small C&I), and Large Commercial and Industrial (Large C&I). This is consistent with the existing SMR which exists to recover the costs of the smart meter pilot programs. This is one of the Company’s ten Section 1307[[10]](#footnote-10) automatic adjustment clauses, none of which split the Small C&I class charges down to the rate schedule level. PPL Electric MB at 35, citing PPL Electric Stmt. 6-R at 2.

**OCA**

 OCA proposed several modifications to the existing SMR which PPL Electric agreed to in rejoinder testimony. OCA recommends modifying how PPL Electric calculates deferred income taxes and accelerated tax deductions for state income taxes. OCA Stmt. 2 at 2.

 There are two issues. Presently, PPL Electric separately adds deferred federal income taxes on the full amount of the difference between tax and book depreciation. This separate addition should 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. The other point is explained as follows:

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.

 OCA MB at 35, quoting OCA Stmt. 2 at 5-10.

 PPL Witness Johnson agreed in rebuttal that the change should be made and that the overstatement of the SMR revenue requirements should be corrected by recalculating the SMR revenue requirements from 2010 forward. PPL Electric Stmt. 6-R at 305, Exh. BLJ2-R.

 The Company is currently revising its SMR calculation and agreed that it would file an interim price change to its existing SMR and an updated reconciliation upon completion of the calculation and in accordance with its tariff. PPL Electric agreed to work with the OCA and interested parties, which could review both the existing SMR and proposed SMR when they were filed. PPL Electric MB at 35, citing PPL Electric Stmt. 6-RJ at 2.

 OSBA has taken no position on the calculation of the smart meter charge.

**Disposition**

 The two parties who have expressed an opinion are in agreement. The Commission should approve the proposed changes to PPL's tax calculation as proposed by OCA witness Catlin and accepted by PPL Electric witness Johnson. The Commission should 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**

**PPL Electric**

The proposal in the Company's Petition is to recover the costs of the SMP by replacing the current per kWh charge in the Smart Meter Rider (SMR) with a flat, per-customer charge. The charge is proposed to be the same within each rate class. OCA does not take a position on this issue.

**OSBA**

 OSBA takes issue with assessing all customers in the Small C&I class with the same flat charge. OSBA proposed that the Company’s smart meter charges be developed separately for GS-1 and GS-3 rate schedules within the Small C&I class. OSBA argues that it costs PPL Electric 44% more to service GS-3 customers than it does to serve GS-1 customers, and that the proposed rate design does not reflect this significant difference.

 OSBA reasons that the cost to service larger customers in the Small C&I class is higher than the cost to serve smaller customers, and customers in this rate class vary greatly in size. A single charge across this class will result in the smaller customer subsidizing the costs of the larger customers. Therefore, OSBA recommends two changes to the SMR: (1) split the flat rage charge into two separate rates for GS-1 and GS-3 customers; and (2) calculate a separate rate for the GS-1 and GS-3 customer classes. OSBA MB at 28.

  PPL Electric explains:

 As shown on the revised response to OSBA Set I, Question 7, the meter costs for GS-1 customer range from $113 to $185. The meter costs for GS-3 customers range from $171 to $399. However, the vast majority of GS-3 meters cost either $171 or $181. Only 1,491 of 27,363 GS-3 meters cost $399. Therefore, approximately 95% of the GS-3 meters are within the range of costs of the GS-1 meters. Moreover, as explained by Ms. Johnson,

 PPL Electric’s proposed rate structure, in which the entire Small C&I class is combined, results in each customer paying an average meter cost of approximately $137. If the $399 meter for the largest Small C&I customers is removed from cost analysis (due to creating a separate charge for these customers), this results in the remaining customers each paying for an average meter cost of approximately $135. This is only $2 less that they would pay if all meter costs are combined into one charge for all Small C&I customers. This $2 dollar difference would produce a de minimus rate impact over the 15-year depreciable life of the meter.

(PPL Electric St. No. 6-RJ, p. 4)

 In addition, the OSBA’s proposal to split the Small C&I SMR charge into separate charges for the GS-1 and GS-3 rate schedules does not address the Small C&I GH-2 rate schedule. Moreover, splitting the Small C&I SMR charge into separate rate schedules would require programming charges that would increase costs for customers. (PPL Electric St. No. 6-RJ, p.3)

PPL MB at 36.

 OSBA responds by pointing out that the Company's most recent filed cost allocation study shows that a Rate GS-3 first generation smart meter was 5.6 times that of the cost for a Rate GS-1. OSBA Stmt. 2 at 10. While removing the most expensive meter from the analysis would only reduce the cost by $2, separating the two schedules would result in an average meter cost of $129 for the GS-1, and $185 for the GS-3.

 OSBA answers the Company's claim that the OSBA proposal does not address GH-2 customers:

. . . Rate GH-2 is a special grandfathered clause, which is in "the process of elimination," and which, for the most part, has been closed to new entrants since August 21, 1972 (more than 42 years ago). *See* PPL Tariff Page No.42. Furthermore, the OSBA notes that the current customer charge for Rate GS-1 is $16.00 per month, and the current customer charge for Rate GH-2 is $16.00 per month. *See* PPL Tariff Pages 24 and 42. The OSBA respectfully submits that GH-2 customers should be included in the

GS-1 smart meter charge, at least until PPL finally gets around to eliminating the GH-2 class.

 OSBA RB at 27.

 Finally, the PPL claim that adoption of the OSBA proposal will result in additional programming costs has no evidentiary support in the record. OSBA RB at 27-28, citing PPL Electric Stmt. 6-RJ at 3.

 The OSBA agrees with the Company that the OSBA proposal for differentiated smart meter charges should not be adopted if it will result in excessive COBOL programming costs being imposed on ratepayers. However, as PPL has the burden of proving those excessive costs, and has explicitly failed to address this issue, the OSBA respectfully submits that programming costs associated with implementing this proposal should be borne by PPL.

 OSBA RB at 28.

**Disposition**

OSBA's proposal to split the Small C&I flat rate charge into two separate rates for GS-1 and GS-3 customers is based on a solid assumption: that the Company's costs are higher for the GS-3 customers than for GS-1 customers, and therefore, the charges for each schedule should reflect that fact. PPL Electric's dismissive approach towards this common sense proposal, i.e., relying on the fact that the other 1307(e) automatic adjustment clauses are not designed this way, that the overall meter costs only vary by a few dollars, and stating without support of any kind that it *might* cost too much to adjust the computer programming without even attempting to support that statement, is inappropriate.

 The Public Utility Code requires each rate class to pay the cost of service to that class. To this point, the breakdown of costs in PPL's service territory is among three classes only. While there exists a varied usage within the classes, those classes have not been split into smaller schedules for purposes of Section 1307 recovery. There is insufficient evidence in this record to support a diversion from this approach, although there may well be a different result in another case should the evidence be stronger.

**G. COMMUNICATIONS STRATEGY**

 **1. Overall strategy**

**PPL Electric**

The goal of the PPL Electric communications strategy is to ensure that customers are informed about AMI benefits and the installation experience, including when they can expect new meters. The Company plans to educate and inform employees, stakeholders, members of the media, public officials, and other audiences about why they are upgrading to advanced meters. The Company plans to develop its comprehensive communications plan following approval of the SMP and prior to beginning deployment. This comprehensive plan will be communicated to the Commission upon its completion.

 The deployment plan will include customer notifications at set times prior to installation, which will include communication with customers 90 days, 60 days, and 30 days prior to installation, as well as post-installation notification and a survey.

PPL Electric Smart Meter Plan at 60-62.

**OCA**

OCA 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 Stmt. 3 at 3; OCA MB at 37.

 OCA Witness Brockway found that the Company’s communication strategy in general focuses more heavily on deployment issues than teaching customers how to use the technology that comes with the new metering system. OCA Stmt. 3 at 2. Witness Brockway testified that the Company has not yet developed the following areas:

* How the Company will staff it 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 MB at 38, citing OCA Stmt. 3 at 55.

The OCA emphasized that the Company’s plan to provide information to customers falls short of actual education. Providing information is a one-way, Company to customer plan, where true education requires a two-way, interactive communication. There should be an effort to show customers how this new system can affect their lives and should provide opportunities for interaction and customer participation in the education process. OCA MB at 39, citing OCA Stmt. 3 at 6.

 The Company has not yet developed this part of the SMP, and therefore, the opportunity for the development of a plan which addresses concerns of other stakeholders still exists here. OCA points out that the FirstEnergy Companies were required to work with stakeholders to develop their communications plans,[[11]](#footnote-11) and avers that PPL Electric should be required to do so here as well. Then, 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 sufficiently. OCA MB at 39-40.

 The Company does not object to the meeting with stakeholders regarding the development of the communications strategy, and the single contested issue here is whether the Company must seek Commission approval of its plan prior to its implementation. PPL Electric MB at 38. PPL Electric has agreed to file its final plan but does not believe that it needs to seek Commission approval.

 **2. Outage management**

 OCA recommends that the Company not include a claim that its new metering system will “improve outage management,” as there are not studies to support this claim, nor does the pilot program, the Outage Duration Project, support it. The goal of the pilot was to demonstrate the ability of AMI system to retrieve outage information from solid state meters and use this information for outage analysis. While the SMI meters will provide a more precise record of the time of the beginnings and endings of outages, they will not affect the frequency or duration. OCA MB at 41, citing OCA Stmt. 3 at 10-11.

 PPL Electric Witness Glenwright refers to an article to support the Company’s claim that the meters support outage management, and OCA Witness Brockway testified that, although the article supports a claim that technology in theory can provide the satisfaction of customers, it does not support the claim of superior outage management.

 It appears that the difference in the two parties’ claims resides in the difference in their use of the term “outage management.” PPL Electric uses it to describe how the outages are detected, identified, and addressed. OCA uses it to describe the frequency and length of outages.

 The Company states that its knowledge of the experiences of other companies using meter technology which has the “last gasp” technology, by which a meter sends an outage message when the power goes out, supports their belief that this technology improves a utility’s ability to manage outages. Under the Company definition, this is true. Under the OCA definition, this knowledge of an outage does not necessarily result in fewer outages, or shorter outages.

 The point of the OCA argument is that the Company’s educational outreach must make this distinction as well. Customers should not be given reason to have false expectations. OCA MB at 40-43.

**Disposition**

 OCA's points regarding this issue are well taken. First, a more detailed, finished and polished communications strategy would have been far preferable to the several pages of general ideas to be implemented when the time for deployment gets closer that appear in the SMP at pages 60-62. I note here that the Commission-imposed deadline for the filing of this Plan was June 14, 2014, and that the Company filed it on that date.

 OCA asks for a directive that the Company file its final Communications Plan prior to its implementation, and as the existing plan lacks sufficient detail, this request is granted. According to the implementation timeline, the 2015 and 2016 phases are ideal for the collaboration with stakeholders and the formulation of adequate communication such as form of notices, etc., for customers and other interested parties. Accordingly, the Company will be directed to enter into a stakeholder process and to file its final communication plan no later than January 1, 2016, or six months prior to the first deployment of the next generation meters, whichever is later.

 Second, customers should be given facts regarding the capabilities of the meter system but not be given undefined promises of benefits that the customers are not likely to see. If outage frequency and duration are to be part of customer education, then the actual impact of the smart meter technology should be made clear.

**H. CYBERSECURITY ISSUES**

**PPL Electric**

 The SMP Cybersecurity and Data Privacy section of the SMP is located at page 35 of the SMP, and provides a solid overview of the way that the Company handles cybersecurity and the application of its methods to the SMP. First, the Company maintains a cybersecurity-focused workgroup, the Information Assurance Group (IAG), which is comprised of individuals who are trained, certified and experienced in information and cyber security. The Plan describes a detailed and thorough plan, which will be applied to the SMP. It describes the approach, the vendor requirements assessment, and cyber security operations. It states:

 The project management methodology extends to operational support of the cyber security environment. To that end, the smart meter program will implement monitoring, logging, and incident reporting. PPL Electric plans to implement intrusion detection systems and processes to provide alarming and notification of security events. Additionally, the Company's Computer Security Incident Response Team (CSIRT) will utilize existing tools, capabilities, and procedures to provide timely response and recovery from security incidents. Upon notification that a security incident may have occurred, or is likely to occur, an alert is sent to the Information Assurance Group (IAG). IAG assesses the incident and, if necessary, assembles a CSIR Team comprised of subject matter experts relevant to the specifics of the incident. The response team prepares an action plan, mitigates the security incident, and assembles documentation in accordance with PPL Electric incident response procedures. These procedures will be reviewed and updated, if necessary, during the AMI cyber security design process. PPL Electric currently has in place policies and procedures for managing user access, performing system audits, reviewing system logs, etc. to maintain cyber security vigilance. These policies and procedures will be augmented, if need be, to address any new or unique risks or issues associated with AMI. In addition, updates and patches to infrastructure devices and systems will be managed using the existing Configuration and Change Management Standard. This standard requires that major upgrades and patches must include a security risk assessment prior to operational implementation.

 PPL Electric has in place both Disaster Recovery (DR) ad Business Continuity (BC) plans that are regularly tested by means of DR and BC drills. These plans will be updated to encompass the AMI systems, and DR and BC drills will be conducted as part of operational readiness testing to verify plan effectiveness.

 SMP at 39-40.

 The SMP goes on to describe how the Company conducts security risk assessments, vulnerability scans, and penetration testing, which uses "Certified Ethical Hackers" to test the vulnerability of its systems to cyber-attacks. SMP at 40-41.

**OCA**

 OCA expressed concerns regarding the utility’s approach to cybersecurity and made recommendations that the utility: (1) participate as a utility partner on cybersecurity risks and responses, sharing information with other large Pennsylvania utilities and the Commission, and maintaining vigilance; and (2) 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. OCA MB at 44.

 OCA reports that the response by PPL Electric Witness Simendinger specifically addressed these recommendations by testifying that the Company has been and will continue to be an active participant in cybersecurity working groups and related forums, and that the Company will remain vigilant in this area. OCA MB at 44, citing PPL Electric Stmt. 5-R at 5-7. In particular,

 OCA is satisfied with these responses and does not seek further Commission directives regarding this issue. OCA MB at 45.

**OSBA**

 OSBA cites the testimony of PPL Witness Simendinger at the hearing, when he responded to questioning regarding whether the proposed system will provide significantly more security for customer information than the existing system already does:

The OSBA is cognizant that, at the time of this writing, there is no “magic bullet” to solve all the issues surrounding cyber security. Nevertheless, PPL is proposing an extremely expensive upgrade to its existing smart meter system. The fact that Mr. Simendinger cannot provide a quantitative answer as to whether the new smart meters would provide significantly more protection from hackers is not a knock on Mr. Simendinger, it simply illustrates how complex and difficult this problem is.

 There are many reasons that the OSBA is advocating for a delay in the implementation of PPL SMP. In regards to cyber security, the OSBA advocates to delay that implementation so that PPL can observe the level of success other Commonwealth EDCs have with their new smart meter platforms. That delay may allow PPL to benefit from new developments in cyber security that will benefit not only the Company itself, but also PPL’s ratepayers.

 OSBA MB at 30.

 PPL Electric responds that it has proposed a comprehensive cybersecurity plan that has not been challenged by any party in this proceeding. The plan does provide additional security features:

RF mesh meters provide enhanced security features, including but not limited to the use of industry standard encryption, use of security certificates for device authentication, proprietary protocols that reduce exposure to threats posed by use of common IP-based protocols, anti-tampering features that thwart and alert on unauthorized attempts to manipulate device configurations, and embedded security monitoring features that can be integrated with security and incident event monitoring (SIEM) systems in place at PPL Electric to detect unauthorized or unusual network traffic.

(PPL Electric Stmt. No. 5-RJ, p. 4.); PPL Electric RB at 33.

 The Company points out that it already consults with other EDCs, and that there is no evidence to support a finding that delaying implementation will create additional cybersecurity benefits. PPL Electric RB at 33.

**Disposition**

PPL Electric has sustained its burden of establishing that the SMP contains a cybersecurity plan that is reasonable and sufficient to deal with the concerns raised by a metering system that is heavily dependent on potentially vulnerable systems. No party opposes it, and the OSBA recommendation that delaying implementation of the SMP in order to learn from the experiences of other utilities is denied. Technology is constantly developing and becoming more sophisticated. Waiting will result in the introduction of another, more advanced system that is subject to the same approach that the Company should wait in order to learn from others' experiences. At some point, the Company should take advantage of the technology available now, and provide existing capabilities to their customers. There is no tangible reason to delay.

**I. DATA PRIVACY ISSUES**

 1. **General**

**PPL Electric**

 The SMP provides this explanation:

 As part of the project management methodology, one of the first steps of the initial security assessment is to determine the type of data so that the appropriate security controls are planned for. For the Smart Meter Project, IAG will also follow "Guidelines for Smart Grid Cybersecurity; Vol. 2, Privacy and the Smart Grid" recommendation sand [sic] conduct a privacy impact assessment (PIA) before any deployment. The PIA will help the project team with the following:

Identifying and managing privacy risks: Conducting an exercise to identify potential privacy risks early in the project demonstrates good governance and business practice.

Avoid unnecessary costs: By undertaking an assessment early in the project to identify potential privacy risks, it will allow the project team to consider any safeguards as part of the project budget and thereby avoids unexpected costs after deployment.

Meeting legal requirements: Conducting the assessment provides the opportunity to ensure that any privacy risks are identified early, and thereby implementing the appropriate controls that will allow for ensuring the implementation adheres to legal requirements. This also applies when engaging a third party, where the data owner is responsible for ensuring the appropriate controls are in place to protect personal data.

 SMP at 41.

**OCA**

 OCA points out that the protection of customers’ personal and usage data must be a critical component of a Smart Meter Plan. The SMP at 35-42 addresses the proposal.

 OCA Witness Brockway states that the SMP does not address the unique challenges of customer privacy resulting from the deployment of smart meters, summarizing as follows:

I reviewed the privacy policies of PPL Electric that I could find, and showed their limitations from a SMP 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 SMP 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 SMP. 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 SMP as written is unlikely to lead to privacy policies that address customers’ desire for privacy in an advanced metering world.

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

 OCA MB at 45-56.

OCA recommends that the Company be required to revise the privacy components of its SMP, 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.

**CAUSE-PA**

 CAUSE-PA avers that the current policies of PPL Electric were developed to coordinate with its present system, and that the simple application of these existing policies are insufficient to protect customer information obtained under the proposed SMP. CAUSE-PA looked at the current website and noted that PPL Electric reserves the right for using the energy, technical and reference information it collects, in aggregate or individual form for:

* Sending requested messaging
* Processing requests
* Service provisioning
* Account creation and maintenance
* Billing
* Promotion
* Advertising
* Customer support
* Site customization
* Statistical analysis
* Background charts, reporting and collecting debts
* Product development
* Marketing
* Announcements
* Content improvement
* Technical support
* Security or law enforcement investigations
* Cooperation with legal requirements
* Protecting our rights and property and that of other users

The Privacy Notice also leaves open the possibility that PPL may “rent, license, or sell Personal Information, defined as “including the customer’s name, address, password, home service, domain and email address, transaction, billing and payment history, and usage, among other things, to third parties." CAUSE-PA MB at 18-19.

 Therefore, a customer who accesses the PPL Electric website to pay a bill or to use the Energy Analyzer to manage usage exposes their smart meter data to broad disclosure under the present privacy notice. Given that the new information will be available under the new SMP, it only stands to reason that a new privacy policy should be implemented.

 PPL Electric responds that the Commission's regulations define what customer data should remain private, and that the Company follows all Commission regulations in maintaining customer data. In addition:

As outlined in rebuttal and rejoinder responses, we believe the SMIP outlines the necessary high level components related to data privacy, albeit on the surface it may appear as merely through the lens of cybersecurity. In its plan, PPL Electric has cited its proposed use of a methodology leveraging established security and data privacy standards, including performing a Privacy Impact Assessment (PIA). Conducting a PIA addresses data privacy concerns, and the “Guidelines for Smart Grid Cybersecurity: Vol. 2, Privacy and the Smart Grid” illustrate this data privacy focus of the plan to review the findings and incorporate recommendations of these guidelines, categorized within areas titled: Management and Accountability, Notice and Purpose, Choice and Consent, Collection and Scope, Use and Retention, Individual Access, Disclosure and Limiting Use, Security and Safeguards, Accuracy and Quality, Openness, Monitoring, and Challenging Compliance. PPL Electric’s customer service employees are 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 Electric St. No. 5-RJ, pp. 3-4.)

 PPL Electric MB at 34.

 Accordingly, the Company states that these recommendations are unnecessary and would both increase costs for the Company and interfere in the management of the Company. PPL Electric MB at 34.

**2. Supplier Portal Issues**

**PPLICA**

 PPLICA does not oppose the SMP but requests that approval be conditioned on further refinements to two components of PPL’s Plan.

 The SMP contains the proposal to implement a Supplier Portal for purposes of facilitating EGS and third-party access to customer usage data. PPLICA avers that the customer usage data will remain at risk absent additional Commission action to refine current policies placing the burden of monitoring access to customer usage data on the customer.

 The purpose of the proposed portal is to provide access directly without need for an EDI request and response. Access will be permitted if the EGSs or third parties meet the standards set.

 Presently, customers are permitted to opt out of allowing EDCs to share their information with EGSs and third parties. However, presently the EDCs do not affirmatively review requests for customer data to confirm whether the customer had opted out, and the EGS bears responsibility for asking for the appropriate data. PPLICA MB at 5.

  The Supplier Portal increases the ease of access to customer information, such as two years of summary monthly billing data, a year of interval data at the account and meter level, two months of paper bill images, and a list of customers currently enrolled with the specific EGS. Also available is the eligible customer list, capacity and transmission tags, load profile data, customer rate class, account status, account activation date, net meter indicator, area light indicator, summary billing indicator, and customer bill cycle. PPLICA MB at 7, citing PPLICA Cross-Examination Exhibit No. 1 at 2.

 PPL Electric’s oversight consists of granting the original access to an EGS or third party, and the maintenance of an event log. PPLICA submits that this is insufficient to properly protect customer information.

**CAUSE-PA**

 CAUSE-PA argues that the Commission must direct PPL Electric to revise its policy regarding the Supplier Portal in a manner which provides actual protection from dissemination of information of customers who have opted out:

In accordance with guidance and direction from the Commission, PPL adopted a Supplier Portal to make information available to suppliers. However, the Supplier Portal goes far beyond providing access to customer information, and allows electric generation suppliers nearly unfettered access to extremely sensitive personally identifying information, including the customer’s Social Security number and detailed usage data, without obtaining verification of customer consent. As PPL explained, “[t]o search for an account number, the EGS or 3rd party must know the name of the customer as it appears on the customer’s PPL electric bill at a minimum.” And, once the customer’s name is supplied (or, if the name is not known, the phone number, Social Security Number, e-mail address, meter number, or premises address), an EGS or 3rd party can access a plethora of personal information, including the customer’s Social Security Number. After providing the customer’s name, the EGS or third party must self-certify that they have the customer’s authorization and that they have verified the customer’s identification. But, to put those added self-certification requirements in context, the sole protection that these self-certifications rest alone on in the “integrity” of the EGS or the 3rd party, without any verification by PPL to ensure that their customer’s information is protected.

At the final hearing, it was further revealed that “the customer’s designation of their data as confidential or nonconfidential does not affect the EGS or third party’s ability to access customer data through the supplier portal. So, not only is the information easy to access, it is also impossible to protect from dissemination. And, once information is disseminated, the harm is difficult for a customer to remedy or ameliorate.

\* \* \*

Essentially, the Supplier Portal undermines and effectively thwarts any attempt by PPL to address personal data privacy through the creation of a robust policy and detailed protocols and procedures because it creates a shortcut for an unknown number of individuals to access highly sensitive data, leaving the system vulnerable to widespread and irremediable abuse.

 CAUSE-PA MB at 20-21(citations omitted).

 The Company’s response was to state that “the burden is on the EGS and/or third party to ensure that they have the appropriate authority,” and that PPL Electric maintains a log of such access. The Company states that it follows applicable Commission guidance with respect to the Supplier Portal, and that changing Commission policies with regard to one EDC is inappropriate.

**Disposition**

 The Company already has policies in place which it will adapt to cover the new concerns which arise with the technology upgrade in the proposed RF Mesh system. The Company rejects any suggestion that they consult with stakeholders and reevaluate its plan with the new abilities in mind. However, it is the lack of detail in the plan itself that raises the concerns expressed by the OCA and CAUSE-PA. The Company will be required to develop a stand-alone customer privacy policy specifically related to the protection of smart meter information before the deployment of the smart meters. It will be directed to confer with stakeholders in developing the new policy and during the educational process described in its SMP.

 Regarding the Supplier Portal, the Company states that it follows Commission guidelines and policies. However, it provides no citations or support for those statements, and thus, it is not possible to know which Commission guidance and/or policies the Company purports to follow. Accordingly, this statement is given no weight, and the Company has not sustained its burden of proving that this portion of the SMP is reasonable. Commission initiatives, however, will determine the Company's ultimate actions in this subject.

 While PPLICA's and CAUSE-PA's request that the Company revise its policy and procedure regarding access to the Supplier Portal to enable customers to protect their information from inclusion in the Supplier Portal and to require verification of EGS certifications is reasonable, the Company will be bound by a Commission initiative presently underway. The electronic data exchange working group (EDEWG) convened a web portal working group (WPWG) to develop standardized solutions for the acquisition of both the historical interval usage (HIU) and billing quality interval use (IU) data via a secure web portal, under Commission Order entered December 6, 2012, in this docket. On February 17, 2015, a final version of the document titled "Pennsylvania Web Portal Working Group Solutions Framework" was filed, which purportedly outlines the portal solution that would permit third parties such as EGSs and Conservation Service Providers (CSPs) to acquire data within 48 hours of daily meter reads. Commission review of this document will occur at a public meeting. The outcome of this proceeding will likely determine the direction of this issue.

 Ideally, the Commission's scrutiny will result in regulations, which are the appropriate way to implement a statute. The parties' failure to mention the ongoing Commission initiative is understood because a search of the Commission's regulations would not result in finding them. Rather, the process is one that the Commission uses when the directions in a new statute require Commission guidance before regulations can be promulgated, and where the Commission institutes a regulatory process afterwards to ensure the due process rights of all involved.

 In the meantime, the Company will be expected to comply with whatever outcome that the EDEWG recommends and the Commission approves at Docket No. M-2009-2092655, and there appears to be a recommendation pending at this time. The Commission's Final Order in that matter may be available to provide guidance for the disposition of this issue by the time the Commission issues its Final Order in the present case, but it is not available at this time. Accordingly, the parties who seek to be involved in the development of that process should look to that docket, and that the Company develop its Plan in accordance with Commission guidelines.

**J. REMOTE DISCONNECT, SERVICE LIMITING AND PRE-PAY METERING ISSUES**

**PPL Electric**

 The next generation of smart meters proposed in this proceeding will be able to remotely disconnect service at the meter. PPL Stmt. 2 at 12-13. The Company proposes using it in response to a customer request for move in or move out situations. One of the pilot programs was the Remote Connect/Disconnect Project which evaluated the usefulness of remote connection and disconnection when the action was requested by the customer.

 The smart meters will have other functionality, however, and are capable of being used to limit the amount of energy available to a household, or to permit pre-payment for electricity usage.

 The Company agrees to meet with stakeholders to seek their input prior to implementing service limiting, remote involuntary disconnection, or prepaid metering programs. PPL Electric Stmt. 2-R at 23-24. However, if these programs can be implemented in the future in accordance with Commission regulations, PPL Electric opposes the request of the parties to seek prior approval from the Commission. If necessary, the Company will seek appropriate approvals. PPL MB at 40-41.

**OCA**

 The OCA concerns are not with the *voluntary* use of remote connection or disconnection that the Company proposes with its SMP but with several new uses that the Company might implement in the future but does not propose here. First, OCA fears that there will be a future use of the remote disconnect feature for payment related reasons, which would raise problems concerning risks to individuals, households, and communities. OCA sees this possibility as a real threat and advocates against it:

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 MB at 49-50, quoting OCA Stmt. 3 at 15.

 OCA seeks a Commission directive that requires the Company to seek specific Commission approval should a plan to use this function for involuntary terminations be developed in the future, prior to its implementation.

 Second, “Service Limiting Technology” will provide the Company with the ability to provide a minimal level of amperage to a customer facing termination due to non-payment. The Company indicated that it conducted a high-level pilot evaluation on this technology and determined not to move forward. The costs, operational effects of non-business-hour disconnects, and customer perception outweighed the potential benefits of using the technology. OCA Stmt. 3 at 29; OCA MB at 51.

 OCA asks the Commission to specifically recognize that the Company is not authorized to implement service limiting technology, and that any change in the future be subject to a stakeholder process before seeking Commission approval prior to its implementation.

  Third and finally:

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.

 OCA MB at 52-53.

 As with the other two potential uses of the smart meter technology, OCA asks the Commission to specifically require PPL Electric to engage in a stakeholder process in the development of the pilot and to obtain Commission approval prior to the pilot being implemented.

 CAUSE-PA joins the OCA in requesting stakeholder involvement in the development of pilot programs and specific Commission approval prior to the implementation of any involuntary remote disconnection, service limiting or pre-pay metering programs. The Commission’s 2009 Implementation Order states that these functions raise significant concerns for the health and safety of the residents of the Commonwealth and did not support them. CAUSE-PA MB at 22, citing Implementation order at 18.

 CAUSE-PA quotes OCA Witness Brockway, who testified in some detail regarding the dangers of involuntary termination, as well as the dangers of households without electricity.

**Disposition**

 It is important to note that the Commission regulations do not now permit the implementation of any of these functions. Termination requirements are clear and quite stringent, and the use of pre-paid metering is prohibited without prior Commission approval. CAUSE-PA MB at 24, citing 52 Pa.Code §§ 56.17, 56.65. Therefore, the opportunity for the involvement of the public advocates and CAUSE-PA will be during the evaluation of a proposed rulemaking to change the regulation itself. This process involves several opportunities for public comment which are meant for open discussion and influence of the final wording of the regulation, prior to the adoption and subsequent effectiveness of any Commission regulation.

 The SMP itself does not propose to implement any of the changes which are alarming the other parties, and therefore, the proposals regarding *voluntary* remote connection/disconnection are approved, with the affirmation that any additional usage in the future be consistent with Commission regulations.

**K. MISCELLANEOUS**

 **1. Unaccounted for Energy and Line Loss Factors**

  PPLICA’s second issue is unaccounted for energy and line loss factors (UFE). A benefit identified by the Company due to this SMP is the expectation for improved UFE rates. The Supplier Tariff does not contain an exclusion for UFE. PPLICA asks that the Company be required to publish the calculation of its line loss factors in a compliance filing and to adjust its line loss factors to reflects any changes to its UFE rates following implementation of the SMP plan. PPLICA MB at 9.

**PPL Electric**

The Company protests that PPLICA failed to present any evidence on this issue and thus, the Company was denied a reasonable opportunity to respond on the record.

If PPLICA wanted a detailed itemization of line loss factors, it should have asked for it in discovery, not waited until its Main Brief when the record is closed. PPLICA had a full and fair opportunity to litigate this issue and did not properly raise this issue in testimony in this proceeding. Therefore, PPLICA's request for PPL Electric to provide information in a compliance filing that could have been provided in discovery and addressed in testimony should be denied.

 PPL Electric RB at 37-38.

 However, the Company addresses the merits of the request by citing PPL Electric's Witness Johnson's testimony who stated that the UFE that PPLICA referred to are really system losses and not unaccounted for energy. System losses have no relationship to the meter data, which will not reflect the losses between the generating facility and the customer's meter. Tr. 137-138.

**Disposition**

 PPL Electric's point that PPLICA should have developed this issue during the litigation of the case, through discovery and/or testimony, is well taken. PPLICA's request is denied as untimely.

V. CONCLUSION

 The SMP Petition of PPL Electric is granted and its SMP amended as indicated in the Ordering Paragraphs below.

VI. CONCLUSIONS OF LAW

 1. Act 129 of 2008 required that electric distribution companies (EDCs) with more than 100,000 customers to file by August 14, 2009, a smart meter technology procurement and installation plan with the Commission for approval. *See* 66 Pa.C.S. § 2807(f)(1) and (6).

 2. Electric distribution companies (EDCs) in the Commonwealth are required to develop, seek approval for, and implement a plan to provide smart meters to their customers, which means metering technology and network communications technology capable of bidirectional communication, that records electricity usage on at least an hourly basis, including related electric distribution system upgrades to enable the technology. The technology shall provide customers with direct access to and use of price and consumption information. The technology shall also:

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

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

(3) Effectively support the automatic control of the customer's electricity consumption by one or more of the following as selected by the customer:

(i) the customer;

(ii) the customer's utility; or

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

66 Pa.C.S. § 2807(g).

 3. Electric distribution companies shall furnish smart meter technology

upon request from a customer that agrees to pay the cost of the smart meter at the time of the request, in new building construction, or in accordance with a depreciation schedule not to exceed 15 years. 66 Pa.C.S.A. § 2807(f).

 4. Electric distribution companies shall, with customer consent, make available direct meter access and electronic access to customer meter data to third parties, including electric generation suppliers and providers of conservation and load management services. 66 Pa.C.S.A. § 2807(f).

 5. In no event shall lost or decreased revenues by an electric distribution company due to reduced electricity consumption or shifting energy demands be considered to be

a cost of smart meter technology recoverable under a reconcilable automatic adjustment clause under section 1307(b) except that decreased revenues and reduced energy consumption may be reflected in the revenue and sales data used to calculate rates in a distribution rate base rate proceeding filed under section 1308 (relating to voluntary changes in rates), or a recoverable cost. 66 Pa.C.S.A. § 2807(f).

 6. Commission standards for deployment and capability requirements for smart meters appear in *Implementation Order* in the proceeding captioned *Smart Meter Procurement and Installation*, at Docket No. M-2009-2092655, (Order entered on June 24, 2009) (*Implementation Order*).

 7. The *Implementation Order* directs that the EDC's smart meter technology support the following capabilities:

Specifically, we direct that the plan filing shall quantify the costs to deploy and operate smart meter technology that is capable of the following minimum requirements set forth in 66 Pa.C.S. § 2807(g):

* Bidirectional data communications.
* Recording usage data on at least an hourly basis once per day.
* Providing customers with direct access to and use of price and consumption information.
* Providing customers with information on their hourly consumption.
* Enabling time‑of‑use rates and real‑time price programs.
* Supporting the automatic control of the customer’s electric consumption.

In addition, each plan filing shall include the individual incremental costs for deploying and operating the following smart meter technology capabilities:

* Ability to remotely disconnect and reconnect.
* Ability to provide 15‑minute or shorter interval data to customers, EGSs, third‑parties and an RTO on a daily basis, consistent with the data availability, transfer and security standards adopted by the RTO.
* On‑board meter storage of meter data that complies with nationally recognized non‑proprietary standards such as ANSI C12.19 and C12.22 tables.
* Open standards and protocols that comply with nationally recognized non‑proprietary standards, such as IEEE 802.15.4.
* Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible.
* Ability to monitor voltage at each meter and report data in a manner that allows an EDC to react to the information.
* Ability to remotely reprogram the meter.
* Ability to communicate outages and restorations.
* Ability to support net metering of customer‑generators.

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. All cost estimates must be supported by estimates from at least two vendors where available. To the extent that an EDC or another party demonstrates that a particular Commission imposed requirement is not cost‑effective, the Commission will have the option of waiving a particular requirement for that EDC or all EDCs. This waiver authority does not extend to the minimum requirements delineated in 66 Pa.C.S.

§ 2807(g). Any EDC that is unable to provide this cost data with its August 14, 2009 filing can petition the Commission for permission to file such data at a later date. Any such filing shall include a proposed filing date.

 *Implementation Order* at 16-17.

 8. The party seeking affirmative relief from the Commission bears the burden of proof. 66 Pa.C.S. § 332(a). This must be shown by a preponderance of the evidence. *Samuel J. Lansberry, Inc. v. Pa. Pub. Util. Comm'n,* 578 A.2d 600 (1990), *alloc, denied*, 602 A.2d 863 (1992). A preponderance of evidence is that which is more convincing, by even the smallest amount, than that presented by the other party. *Se-Ling Hosiery v. Margulies,* 364 Pa. 45, 70 A.2d 854, 1950 Pa. LEXIS 316 (1950).

 9. Any finding of fact necessary to support the Commission's adjudication must be based upon substantial evidence. *Mill v. Pa. Pub. Util. Comm'n*, 447 A.2d 1100 (Pa.Cmwlth. 1982); *Edan Transportation Corp. v. Pa. Pub. Util. Comm'n,* 623 A.2d 6 (Pa. Cmwlth. 1993); 2 Pa.C.S. § 704. More is required than a mere trace of evidence or a suspicion of the existence of a fact sought to be established. *Norfolk and Western Ry. v. Pa. Pub. Util. Comm'n,* 489 Pa. 109, 413 A.2d 1037 (1980); *Erie Resistor Corp. v. Unemployment Compensation Bd. Of Review,* 166 A.2d 96 (Pa.Super. 1960); *Murphy v. Dep't. of Public Welfare, White Haven Center,* 480 A.2d 382 (Pa.Cmwlth. 1984).

 10. Petitioner has the burden of proof in this case. 66 Pa.C.S.A. § 332(a).

 11. Petitioner has sustained its burden of proving entitlement to approval of its Smart Meter Technology Procurement and Installation Plan, as modified in the Ordering Paragraphs.

VII. ORDER

 THEREFORE,

 IT IS ORDERED:

1. That the Petition of PPL Electric Utilities Corporation for Approval of its Smart Meter Technology Procurement and Installation Plan, filed at Docket No. M-2014-2430781, is approved as modified by these Ordering Paragraphs.

2. That the next Universal Service Plan filed by PPL Electric Utilities Corporation shall include a discussion of the availability of the Home Access Network functionality to low-income customers.

3. That PPL Electric Utilities Corporation shall fully investigate and track all sources of potential savings, including but not limited to (a) Meter reading; (b) Meter services; (c) Back-office; (d) Contact center; (e) Theft reduction; (f) Revenue enhancement; (g) avoided capital costs; and (h) Distribution operations, and shall flow-through these savings to its customers in future SMT-C rider filings.

4. That the proposed changes to the tax calculations of PPL Electric Utilities Corporation as proposed by the Office of Consumer Advocate and agreed to by PPL Electric Utilities Corporation are approved.

5. That the proposal of the Office of Small Business Advocate to separate the Small Commercial and Industrial rate class into two classes for purposes of establishing and charging rates related to the Smart Meter Plan is denied.

6. That PPL Electric Utilities Corporation shall enter into a stakeholder collaborative for the purpose of formulating and finalizing a Communications Plan as outlined in its Smart Meter Plan and shall file its final communication plan no later than January 1, 2016, or six months prior to the first deployment of the next generation meters, whichever is later.

7. That PPL Electric Utilities Corporation shall file a stand-alone Customer Privacy Policy before any wide scale deployment of smart meters. The stand-alone Customer Privacy Policy shall also be served upon the Reliability and Emergency Preparedness Section of the Commission's Bureau of Technical Utility Services.

8. That PPL Electric Utilities Corporation shall seek prior Commission approval in the form of an amendment to this Smart Meter Plan if, at any time in the future, applicable statutes, regulations, and Commission orders permit the use of smart meters for the termination of customers due to nonpayment.

9. That PPL Electric Utilities Corporation shall develop its customer and supplier portals in accordance with the statutes, regulations and orders administered by the Pennsylvania Public Utility Commission.

Dated: April 20, 2015 /s/

 Susan D. Colwell

 Administrative Law Judge

1. *Smart Meter Procurement and Installation,* Docket No. M-2009-2092655 (Order entered June 24, 2009). [↑](#footnote-ref-1)
2. *See* 66 Pa.C.S. § 2807(f)(1) and (6) [↑](#footnote-ref-2)
3. *Implementation Order* at 15-23. [↑](#footnote-ref-3)
4. *Id*. at 7-9. [↑](#footnote-ref-4)
5. *See Petition of PPL Electric Utilities Corporation for Approval of Smart Meter Technology Procurement and Installation Plan*, Opinion and Order, at Docket No. M-2009-2123945 (*Smart Meter Order*). [↑](#footnote-ref-5)
6. *Id*. at 22-24. [↑](#footnote-ref-6)
7. Remote connect/disconnect, 15-minute interval data, on-board storage of meter data, open standards and protocols, ability to upgrade minimum capabilities, ability to remotely reprogram the meter, and net metering of customer generators. PPL Electric Stmt. 2 at 9. [↑](#footnote-ref-7)
8. *Joint Petition of Metropolitan Edison Company, Pennsylvania Electric Company and Pennsylvania Power Company for Approval of Smart Meter Technology Procurement and Installation Plan,* Docket No. M-2009-2123950 (Order entered June 9, 2010). [↑](#footnote-ref-8)
9. Meter reading, meter services, back office, contact center, theft reduction, revenue enhancement, avoided capital costs, and distribution operations. *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 of March 6, 2014 at 45-46. [↑](#footnote-ref-9)
10. 66 Pa.C.S. Section 1307. [↑](#footnote-ref-10)
11. FirstEnergy March 6, 2014 Order at 46. [↑](#footnote-ref-11)