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File #: 2507/142658

August 1, 2012

Rosemary Chiavetta
Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
P.O. Box 3265
Harrisburg, PA 17105-3265

RE: Petition of PPL Electric Utilities Corporation for Approval to Modify its Smart Meter Technology Procurement and Installation Plan and to Extend its Grace Period
Docket No. M-2009-2123945

Dear Secretary Chiavetta:

Enclosed please find PPL Electric Utilities Corporation's 2012 Annual Smart Meter Plan Filing for the above-referenced proceeding. Copies have been provided as indicated on the Certificate of Service.

Respectfully Submitted,

Anthony D. Kanagy

ADK/skr

Enclosure

cc: Certificate of Service
Paul T. Diskin
Richard E. Wallace

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SECRETARY'S BUREAU

Before the
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PPL Electric Utilities Corporation
Smart Meter Technology Procurement and Installation Plan

2012 ANNUAL SMART METER PLAN FILING

Docket No. M-2009-2123945

August 1, 2012

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I. INTRODUCTION

In this filing, PPL Electric Utilities Corporation ("PPL Electric" or the "Company") is submitting its 2012 annual smart meter plan update filing as required by the Pennsylvania Public Utility Commission's ("Commission") Order entered on June 24, 2010. *Petition of PPL Electric Utilities Corporation for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123945 ("June 24 Order").

II. BACKGROUND

PPL Electric provides electric distribution, transmission and default generation services to approximately 1.4 million customers in a certificated service territory that spans approximately 10,000 square miles in all or portions of 29 counties in eastern and central Pennsylvania. PPL Electric is a "public utility" and "electric distribution company" ("EDC") as those terms are defined under the Public Utility Code, 66 Pa. Code §§ 102 and 2803.

On August 14, 2009, PPL Electric filed its Smart Meter Plan with the Commission pursuant to Act 129 of 2008, P.L. 1592 ("Act 129") and the Commission's Smart Meter Implementation Order. *Smart Meter Procurement and Installation*, Docket No. M-2009-2092655, Order entered June 24, 2010.

As explained in the Company's Smart Meter filing, PPL Electric already has installed an advanced meter infrastructure ("AMI") system in its service territory. Therefore, under its Smart Meter Plan, PPL Electric proposed to study, test, and pilot applications that enhanced and expanded upon the capabilities of the Company's existing smart meter system, focusing primarily on those that required a benefit to cost analysis as directed by the Commission Order. In its Smart Meter Plan, PPL Electric also proposed a cost recovery mechanism consistent with the requirements of Act 129 and the Commission's Implementation Order.

On June 24, 2010, the Commission entered its order in the Smart Meter proceeding. In its June 24 Order, the Commission revised certain aspects of the Company's Smart Meter Plan. These included:

- Modifying the Company's proposed cost recovery mechanism and reconciliation period;
- Requiring the Company to file Service Limiting and Pre-Pay Metering Pilot Plans for the Commission's consideration before the Company implemented these functionalities;
- Requiring the Company to continue to identify, test, develop and implement cost-effective means for directly providing metered usage data to customers;

- Requiring the Company to address how its smart meter technology will effectively support the automatic control of a customer's consumption by a customer's chosen third party, in addition to the customer or PPL Electric;
- Requiring the Company to expand its metering capabilities to meet Act 129's requirements;
- Eliminating the Company's proposed Feeder Meter pilot program;
- Requiring the Company to ensure that its pilot programs address the need, ability and cost for sub-hourly metering;
- Requiring the Company to recover smart meter plan costs from Large C&I customers through a fixed customer charge.
- Requiring the Company to allocate non-direct common costs based on the ratio of the number of meters assigned to the class, divided by the number of meters for the entire system.

In its June 24 Order, the Commission also required PPL Electric to file annual smart meter filings with the Commission. Pursuant to the Commission's Order, PPL Electric hereby submits its annual filing. Below, PPL Electric explains the actions that it will take under its Smart Meter Plan in 2012 through 2014. PPL Electric also submits proposed Smart Meter Rider ("SMR") charges to be effective for service rendered on and after January 1, 2013.

III. DISCUSSION

Stakeholder Meetings

PPL Electric has held several stakeholder meetings this year. The first general stakeholder meeting was held on February 13, 2012 and the second general meeting was held on July 19, 2012. At these meetings, PPL Electric provided a status update on each of its active pilots/evaluations. Representatives from the Department of Environmental Protection (DEP), Office of Consumer Advocate (OCA), Pennsylvania Utility Law Project (PULP), PP&L Industrial Customer Alliance (PPLICA), Reliant Energy, VCharge, and the following Commission offices: Office of Special Assistants (OSA), Bureau of Consumer Services (BCS), Bureau of Investigation and Enforcement (I&E), Bureau of Audits, Bureau of Technical Utility Services (TUS), Office of the Executive Director, and various Commissioner's offices attended one or both of the meetings.

PPL Electric also held two more focused meetings to discuss details related to piloting of the remote service disconnect functionality. The first meeting was held on March 14, 2012 and was attended by representatives from OCA, PULP, PPLICA, DEP, and the Governor's Green Government Council. The second meeting was held on April 2, 2012 with the PA Coalition Against Domestic Violence to identify issues unique to their constituents and how those issues are addressed in the Company's Smart Meter Plan.

Petition to Modify the Plan and Extend the Grace Period

On May 4, 2012, the Company filed a Petition requesting approval to modify its Smart Meter Plan and to extend its grace period to give the Company additional time to further test and evaluate the most cost-effective ways to meet the Act 129 requirements. *Petition of PPL Electric Utilities Corporation for Approval to Modify Its Smart Meter Technology Procurement and Installation Plan and to Extend its Grace Period*, Docket No. P-2012-2303075 (“May 2012 Petition”). In the May 2012 Petition, the Company requested Commission approval to implement eight new smart meter programs, which include:

- VCharge Project
- Accelerated Supplier Switching Project
- Real Time Pricing for Mid-Size C&I Customers (100 kW – 500 kW) Project
- Meter Data Management Data Warehouse and Analytics Project
- Faster Data Presentment to Customers and Supplier Project
- Supplier Portal Project
- Improve Validation/Editing/Estimation Process Project
- Outage Duration Project

These projects are described in more detail below.

In the May 2012 Petition, the Company also requested a 24-month extension of its Grace Period in order to continue to further test and evaluate the most cost-effective ways to meet the Act 129 requirements. During the past 19 months, the Company has been actively implementing its Smart Meter Plan as approved by the Commission. The Company, however, has experienced delays associated with testing and implementing certain pilot programs its Smart Meter Plan. In particular, the Company has experienced technical issues in implementing its In Home Display Pilot which could impact the Company’s ability to fully comply with Act 129. In addition, the Company proposes to implement new programs to better assist the development of a plan that is fully consistent with Act 129.

PPL Electric’s smart meter pilot findings will shape the outcome of the final plan that will be submitted in 2014. The additional time requested by PPL Electric in its May 2012 petition is to primarily allow more time for the evaluation of: (1) AMI system limitations, (2) remote connect/disconnect functionality, (3) technical issues in implementing the In Home Display Pilot, (4) new programs described herein, and (5) aging AMI infrastructure. The outcome of these evaluations will determine the decisions the Company will make with regards to an overall meter replacement and system

enhancement strategy that will be submitted as part of its Final Smart Meter Plan. Our objective remains to support the Smart Meter requirements of Act 129 in the most cost-effective way.

Smart Meter Plan Actions

Below, PPL Electric summarizes the actions that it will take under its Smart Meter Plan in 2012 and 2013. The Company notes that these actions, including the timeline for performing these actions, are set forth in additional detail in the following attachments to this updated Plan.

- Attachment 1: Smart Meter Milestone Plan
- Attachment 2: Smart Meter Plan Budget
- Attachment 3: Smart Meter Plan Pilot/Evaluation
- Attachment 4: Smart Meter Rider (2012)

For ease of reference, the Company has followed the order of smart meter requirements as set forth on pages 29-30 of the Commission's Smart Meter Implementation Order, and as set forth on pages 17-32 of the Company's original Smart Meter Plan. The Company has also added an appendix (Appendix A titled "Responses to Commission Questions Regarding Ability To Provide 15 Minute or Shorter Interval Data") and moved into that appendix responses to the Commission's questions that were previously provided in the 2011 Annual Update Filing.

1. Bi-directional data communications.

PPL Electric's currently deployed AMI system is capable of bi-directional communications. Full two-way communication exists today on PPL Electric's power line system and in the wireless-based system used for the Company's customers who are served at higher voltages. The power line system is capable of full communication with each meter communicating daily and hourly usage, momentary voltage losses, potential loss of power, and voltage data upon request from the network.

The Company does not expect to conduct specific pilots in this area, but will perform a pilot using in-home displays with home area networks. This pilot is scheduled for 2012 and 2013. This pilot is discussed below under the requirements for open standards and protocols.

2. Recording usage data on at least an hourly basis once per day.

PPL Electric's currently deployed AMI meters record 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.

PPL Electric provides access to price and consumption information to various groupings of customers and to individual customers through the Energy Analyzer, PPL Electric's website, and pulse data. In addition, the Company proposed to pilot two other means of electronic access that included alerts on Price and Usage Information and Faster Data Presentment to Customers & Suppliers. These pilots are discussed below.

A. Messaging – Price and Usage Information

PPL Electric has completed the pilot to provide alerts to customers for changes to prices and/or consumption and has successfully implemented the solution as a current offering to customers. The objective of this pilot was to help customers increase their understanding and awareness of energy usage and pricing; thereby, enabling them to make more informed decisions about their energy usage. Customers have the option to receive three different types of messages, (1) Price to Compare (PTC) Notification, (2) Bill to Date (BTD) Notification, and (3) Abnormal Usage (AU) Notification. Customers are able to receive the notifications through their choice of email, text message and/or an Interactive Voice Response (IVR) phone call. Further description of the notifications is as follows:

- a. PTC notifications are sent to enrolled customers each time PPL Electric's PTC changes. The first PTC notifications were sent out in August 2011.
- b. BTD notifications are sent to enrolled customers when they exceed their specified threshold for the month. Each enrolled customer selects a dollar amount that will trigger a notification through his/her preferred communication channel. The first BTD notifications were sent out in November 2011.
- c. AU notifications are sent to enrolled customers when the Company recognizes abnormal usage for three consecutive days. The first AU notifications were sent out in December 2011.

The messaging pilot demonstrated PPL Electric's ability to integrate meter data collected through the AMI system and housed in the Company's Meter Data Management System (MDM) into an existing third-party messaging system. Calculations are performed on the data in MDM and if the correct customer-established criteria are met, MDM sends a trigger to the messaging system which then sends the alert to the customer via email, text message and/or IVR.

All fixed rate customers are eligible for the PTC notifications. All residential customers are eligible for AU notifications. All residential customers (excluding Time of Use (TOU)) are eligible for the BTD notification. PPL Electric initially planned to allow TOU customers to enroll in BTD notifications. However, due to the complexity and high cost of programming this functionality coupled with the

small number of customers enrolled in the TOU rate, and the pending proposal to restructure the TOU rates, PPL Electric has delayed the TOU phase of the project and will reevaluate completing that phase after these issues are resolved.

The initial phase of the pilot was rolled out at the end of 2011. As of June 30, 2012 there were 4,176 customers enrolled in these notifications broken down as follows:

Price To Compare = 1,417 customers

Bill To Date = 1,133 customers

Abnormal Usage = 1,626 customers

The total cost of this pilot and implementation was \$226,000 which included (1) the initial evaluation in 2010, (2) the pilot phases spanning from 2011 to 2012, (3) software and licensing, (4) evaluation of pilot results, and (5) reporting of results and implementation plan to the Commission. PPL Electric issued a news release in late February highlighting the price and usage messages. PPL Electric featured the price and usage messages in the March "Connect" newsletter which is included with customer bills. PPL Electric also mentioned the price and usage alerts again in the April "Connect" newsletter. Additionally, the price and usage messages were advertised through various social media outlets. Customers can enroll in the alerts through PPL Electric's website, or they can call PPL Electric's Customer Contact Center and a Customer Service Representative can enroll them in an alert. On-going support for the program is part of normal operating costs and not included in the smart meter plan going forward.

The Company is finalizing its evaluation and will provide its analysis in a subsequent filing.

B. Faster Data Presentment to Customers and Suppliers

This pilot was proposed by PPL Electric in its May 4, 2012 petition filed with the Commission to modify its smart meter plan. The Company currently presents validated customer usage data on its website within 48 hours. In its Order approving PPL Electric's Smart Meter Plan, the Commission stated that providing access to hourly usage data within 48 hours was not considered to be providing customers with direct access to customer usage data. Smart Meter Order, p. 22.

The objective of this pilot is to present validated customer data on its website sooner than 48 hours by modifying the way that the Company processes and validates data within its AMI and back office systems. Since the May filing, a project plan with a more refined project scope, revised schedule, resource plan, and estimated cost has been developed. The estimated project cost has been reduced from \$180,000 to \$103,000 of which \$10,000 will be spent in 2012 for the initial scoping. The project is scheduled to be deployed in the latter part of 2013.

4. Providing customers direct information on their hourly consumption.

PPL Electric provides its customers with access to information on hourly consumption from its AMI system. This data is provided on a daily basis to the PPL Electric meter data management system to enable customers to access their individual information on PPL Electric's Energy Analyzer website.

The Company has proposed to implement the following project.

A. Improved Validation / Editing / Estimation (VEE) Process to Incorporate Outage Data:

This project was proposed by PPL Electric in its May 4, 2012 petition filed with the Commission to modify its smart meter plan. Through the operation and on-going evaluation of its smart meter system, PPL Electric has identified an opportunity to improve the interval data validation process related to electric outages. During the meter data validation process, there are times when it is difficult for the VEE algorithms to distinguish between a power outage (during which zero consumption would be a valid value) and a lost communication path to the meter (where a zero might be recorded because there was no communication when, in fact, there actually was usage). Such circumstances are currently addressed by comparing the sum of interval usage to the monthly usage and filling missing intervals with the unaccounted for monthly usage in accordance with profiles. Because the Company typically captures between 99.25% and 99.50% of all hourly data, this issue actually affects very few hours and very few customers where this is an issue. Furthermore, very few of those customers were likely being billed hourly rates. However, the increasing numbers of requests by EGSs for interval billing data for customers not equipped with MV-90 meters and an expected increase in EGS TOU offers appears to indicate that an increasing numbers of customers are being billed on hourly rates.

The objective of this project is, therefore, to improve the VEE process by integrating outage data from the Company's Outage Management System ("OMS"). The project will evaluate integrating outage data from OMS into the MDM system in order for the VEE process to more accurately estimate missing hourly data without populating data into hours with times of known outages. Since the May filing, the pilot has been preliminarily scoped. The Company proposes to begin the project in 2012 and implement changes in 2013. As a result of additional project scoping and planning undertaken since the May filing, the estimated project cost has decreased from \$130,000 to \$103,000 of which \$25,000 will be spent in 2012.

5. Enabling time-of-use rates and real-time price programs.

PPL Electric's currently deployed AMI is capable of providing hourly data to enable the Company to offer TOU rates and real-time price programs to its customers. The existing meter population already is delivering hourly data for billing purposes at a high success rate for TOU applications.

Regarding real-time pricing programs, PPL Electric's currently deployed AMI is capable of accommodating the capture and retrieval of hourly data in accordance with PJM hourly pricing. Beginning January 1, 2010, these programs were offered to Large C&I customers taking delivery at primary voltage and above. Beginning in January 2011, the Company offered this option to all customers with demands that are greater than 500 kW.

A. Real-Time Pricing for Mid-Size C&I Customers (100 kW to 500 kW)

In compliance with the Commission's Final Order on default service plans issued on December 16, 2011 (*Investigation of Pennsylvania's Retail Electricity Market: Recommendations Regarding Upcoming Default Service Plans*, Docket No. I-2011-2237952, Order entered December 16, 2011), PPL Electric filed testimony in its default service proceeding setting forth the costs to allow hourly priced service for all default service commercial and industrial ("C&I") customers larger than 100 kW. (*Petition of PPL Electric Utilities Corporation for Approval of a Default Service Program and Procurement Plan for the Period June 1, 2013 through May 31, 2015*, Docket No. P-2012-2302074, PPL Electric Statement No. 4, the Direct Testimony of Douglas A. Krall) Therein, the Company provided an estimate of \$330,000 to adopt this functionality, and that the Company proposes to make the modifications necessary to support providing hourly priced service for all Default Service customers larger than 100 kW. In the DSP proceeding, the Company also proposes that this functionality be available at the time of the Company's next subsequent default service plan (i.e., June 2015) in order to avoid disrupting existing default service contracts that "overhang" through May 2015 and in consideration of the fact that 93% of the affected population of customers is already taking generation service from an EGS.

Under the Project, PPL Electric will modify financial, customer, billing and meter data management systems and further confirm that the advanced meter infrastructure can support the new regulatory and business requirements in production.

Since the May 4, 2012 petition, an updated project plan with a tentative schedule and estimated costs has been developed. The Company will further define the project scope and resource plans with the intent of being able to deploy changes in 2013. Should the Commission agree with the Company's proposal to delay the functionality until 2015, the Company may seek, through updates to its Smart Meter Plan, to reschedule this work to more closely coincide with a June 1, 2015 in-service date. The updated estimated project cost is \$374,000 of which \$149,000 will be spent in 2012. This estimate has been updated from the estimate provided in the default service testimony.

6. Supporting the automatic control of the customer's electric consumption.

A. Load Control Evaluation

PPL Electric completed a pilot to use the capabilities of the AMI system currently deployed to automatically control individual customer's electric consumption. The objectives of this pilot were to demonstrate the capabilities of PPL Electric's AMI system to directly control a customer's electric consumption, and to demonstrate that electric consumption was reduced during load control periods. In addition, PPL Electric required that customers have the ability to opt-out of any specific load control event. Results were measured through observation of customer hourly consumption interval data. Preparation for this pilot began in 2010 and the pilot was conducted from July 1, 2011 to September 30, 2011. Load control devices were installed on customer air conditioning systems and water heaters. The Company has completed analysis of the results and review of a cost benefit analysis.

PPL Electric's Load Control pilot was available to residential customers who receive electric service from four select electric distribution circuits in the Lehigh Valley. These feeders were chosen based on consideration of the density of residential customers as well as the peak summer load on each feeder. In addition, eligibility was limited to these circuits in order to segregate the Smart Meter Load Control pilot from PPL Electric's Act 129 Energy Efficiency and Conservation Load Control program. This segregation was deemed appropriate in order to more clearly discern results of the pilot and to avoid confusing customers as to the availability of different programs to them or to their neighbors. Approximately 10,000 customers are served from circuits chosen for the pilot. PPL Electric's target was to enroll 500 customers in the pilot.

PPL Electric began soliciting participants in February, 2011. The first solicitation was a letter mailed directly to all residential customers on the selected electric distribution circuits. Subsequently, email solicitations were sent to the residential customers on the selected circuits. Customers were able to enroll in the pilot either by using a website created specifically for the Load Control pilot, or, alternatively, by calling PPL Electric's Customer Contact Center and having a customer service representative assist in their enrollment. Initially, 212 customers agreed to participate in the pilot; however, by the time the pilot started, there were 177 participants. The leading causes given by customers for the attrition were concerns about comfort, health effects, scheduling difficulties for the installation of equipment, and security.

Customers who chose to participate in the Load Control pilot received \$32 for control of their central air conditioning ("AC") unit, and an additional \$18 if they consented to allow PPL Electric to control their electric water heater ("WH"). Six events were initiated during the summer of 2011. Table 1 below provides a summary of the objectives of these events. In its Final Report, the Company will provide an analysis of actual load shed during these events.

Table 1 - Load Control Event Summary				
Date	Start Time	Duration	AC Load Target	WH Load Target
7/11/2011	1:00 PM	3 hours	20%	50%
7/12/2011	1:00 PM	3 hours	20%	50%
7/18/2011	2:00 PM	2 hours	20%	50%
7/19/2011	1:00 PM	5 hours	20%	50%
7/20/2011	1:00 PM	6 hours	20%	50%
7/21/2011	12:00 PM	3 hours	50%	100%

PPL Electric's Load Control pilot incurred a total cost of \$465,513. Based on the 177 customers who elected to participate in the pilot, this is a cost of \$2,630 per customer. At full deployment, it is estimated that 15,000 customers would enroll over a three year period at an estimated cost of \$8.2 million dollars (including deployment costs and the participation incentive), or \$547 per customer.

The pilot was a successful demonstration of the capability of PPL Electric's AMI system to control customer load. The data indicates that each load control event was successful and electric usage was reduced during the load control periods. Furthermore, there were no technical issues with the technology and field devices that would indicate that the pilot could not be expanded to a larger population. However, system scalability tests would need to be performed on the meter data management system, master communication system and other back office systems to determine the extent of the expansion and potential impact on the AMI system operations performance.

PPL Electric is currently offering (in conjunction with a third-party Conservation Service Provider) a similar load control program under the Act 129 Energy Efficiency and Conservation (EE&C) program. This program does not make use of PPL Electric's AMI system for communication. It does employ PPL Electric's AMI system to validate the load reduced through the use of hourly interval meter reads and the analysis capabilities of the meter data management system. There are approximately 45,000 customers enrolled in the EE&C load control program and the frequency of events, duration of events, customer payment, and other parameters that define the customer's participation are similar. The widespread customer acceptance of the EE&C load control program indicates that an adequate program is in place to meet the needs of the customer, the regulations and PPL Electric. Therefore, there is no need for a competing program. Furthermore, the EE&C load control program is a less expensive program than the AMI (smart meter) load control program. The cost on a per customer basis for the third party EE&C load control program is significantly less expensive than the cost of the AMI load control pilot. Even at full implementation, the projected cost of the AMI load control solution is considerably greater than the third party EE&C load control program. The higher

cost of the AMI load control implementation is due to three main issues as follows:

- Significant IT resources would be required to automate processes in PPL Electric's Customer Information System (CIS).
- PPL Electric would need to develop and implement a customer support structure to specifically support the AMI load control program.
- Installation of the AMI load control is more customized and involved than the EE&C solution and requires access to the home and wiring of the thermostat.

Additionally, the third party EE&C load control program is less complex, both from PPL Electric's perspective as well as the customer's perspective. The equipment for the EE&C load control program is installed outside the customer's home, minimizing impact on the customer. The EE&C load control program does not require an internet connection in the customer's home. Finally, the EE&C load control program has a well established, robust customer support structure.

In conclusion, PPL Electric does not recommend the implementation of the AMI load control program as it would add additional cost to PPL Electric's customers and there is already a competitively priced third party solution in place that satisfies the current needs of PPL Electric and its customers.

Subsequently, the future costs have been reduced by \$8.2 million from 2013 to 2015 to reflect that there will be no implementation of this pilot.

7. Ability to remotely disconnect and reconnect

A. Remote Connect / Disconnect

This functionality is supported by PPL Electric's current AMI deployment. Remote disconnection and reconnection can be accomplished through the use of a meter with a service disconnect integrated into either the meter or a disconnect collar installed at the customer's premise.

PPL Electric is planning to conduct a 500 meter pilot in 2012 using a meter with an integrated switch. The objective of the pilot is to test the remote service disconnect functionality and the desirability of incorporating this functionality into the customer-initiated service transfer business process (i.e. move-in / move-out). The pilot would enable "hard" blocking of all meters in the pilot. Terminations for non-payment are not included in this pilot. Project design was reviewed in a focused meeting of interested stakeholders on March 14, 2012. The project is currently in the coding and testing phase with an expected pilot implementation in October 2012. The pilot will run through June 2014, when PPL Electric is planning to submit its Final Smart Meter Technology and Implementation Plan.

Total pilot costs are estimated at \$894,000 through 2014 and includes: (1) establishment of pilot objectives, (2) meter hardware and installation, (3) software and programming, (4) analysis and evaluation of pilot results including a virtual pilot analysis, (5) establishment of an implementation plan, and (6) reporting of results and proposed implementation plan to stakeholders and the Commission.

In the May 2012 Petition, the Company estimated implementation costs of \$7.1 million over a two year period from 2015 through 2016. Those estimated implementation costs have been removed from this filing and will be reevaluated after completion of the pilot and resubmitted as part of the Company's Final Smart Meter Technology and Implementation Plan.

8. Ability to provide 15-minute or shorter interval data.

A. Scalability of PLC System and Focus Meters to Support 15 minute Interval Data

PPL Electric conducted a pilot in 2010 and 2011 to assess the capability to provide 15-minute interval data on a consistent basis using power line meters that have the capability to be configured for 15-minute data collection at the residential and Small C&I customer level. The Company currently, when requested by a customer, provides more granular interval data, such as 15-minute intervals, through the installation of a KYZ pulse equipped recorder meter. The Company spent \$45,000 to complete this pilot and cost benefit evaluation which included: (1) the remote reconfiguration of 500 installed power line meters from 60-minute to 15-minute collection, (2) a scalability test to determine if PPL Electric's power line system can read 15-minute data from all Small C&I accounts (180,000 accounts), (3) evaluation of pilot results, (4) development of recommendations including consideration of process changes necessary to accept customers', EGSs', and/or third parties' requests for 15-minute data, and (5) reporting of results and an implementation plan to the Commission. Answers to the Commission's questions as set forth in the June 24 Order can be found in Appendix A.

In terms of benefits, PPL Electric has concluded from its research that its current approach to 15-minute and shorter interval usage data does not limit the ability of customers to access the benefits that may be available to them in the PJM ancillary services and demand reduction markets. PPL Electric understands that 15-minute interval data may have benefits to EGSs and third parties in designing rates and in their management of demand-reduction programs, but has no information to allow it to quantify those benefits. Finally, the Company has, itself, on certain occasions, used higher resolution data captured from a premise for short periods to investigate customer complaints or power delivery issues, rather than dispatching a technician and leaving expensive equipment at the premise. However, the Company is not aware that its current approach creates a barrier to customers achieving such benefits.

The cost/benefit issue is, therefore, to identify the least costly approach to achieving a fixed set of benefits. As noted above, the cost of providing KYZ pulses is approximately \$475 per customer while the cost of upgrading the entire small C&I class of customers to 15-minute capability is \$1,753,000 plus \$20,000 per year. Ignoring the annual cost of \$20,000 and comparing only undiscounted first costs, one would have to anticipate about 3,700 customers (i.e., \$1,753,000/\$475) desiring 15 minute data to economically choose a class wide solution over a customer specific solution. There are 575 customers with KYZ pulse equipped recorder meters, of which 307 customers are in the small C&I class. The Company believes that, on the basis of this information and in consideration of the fact that the need for KYZ pulse data is driven by specific commercial needs, its current approach is more appropriate than incurring the cost of upgrading all of the meters in the small C&I class.

9. On-board meter storage of meter data.

PPL Electric's originally deployed AMI utilizes meters with sufficient storage to provide billing data when required even though only 24 hours of data is stored in the meter itself. Additionally, the infrastructure complies with nationally recognized non-proprietary standards that are referenced in the Implementation Order.

Residential meters that were originally deployed as part of PPL Electric's AMI are capable of storing 24 values of hourly load profile data. The Company's power line communication system acquires that information every 8 hours on a daily basis. Newer meter modules can store up to 30 days of hourly values. The Company is upgrading its meter population annually through normal meter purchases (currently about 40,000 meters per year) related to new construction, meter replacements and customer requests. Because the vendor's standard meter has greater storage capability than those deployed, the meter population is gradually being upgraded with meters capable of storage, at the meter level, of at least 7 days of daily data and up to 30 days of hourly data.

A. Ability to Read Historical Data / Process IT

PPL Electric will conduct a pilot to test the ability to acquire any or all of the 30 days of data and revalidate it in the meter data management system (MDMS). The primary expected benefit of this pilot is to fill daily and hourly usage that would otherwise be missing with actual information for billing purposes and presentment to customers and suppliers. Development and planning for this pilot began in 2011 and the pilot is expected to end in early 2015. As a result of more detailed project and resource planning, the estimated costs to complete changes required in the meter read schedule and validation processes have increased to from \$395,000 to \$456,000. The increase is primarily due to extending the scope of the pilot to more fully analyze the long term benefits and the increased vendor support that will be required to load and process historical data in the MDM system. The pilot includes (1) software application changes and upgrades to the smart meter infrastructure and the MDMS, (2) changes to business processes for

validation, editing and estimation of billing and presentation data, (3) software and programming, (4) evaluation of pilot results, (5) development of an implementation plan, and (6) reporting of results and an implementation plan to the Commission.

10. Open standards and protocols that comply with nationally recognized non-proprietary standards.

The Company's current AMI deployment can support the open standards and protocols that are recognized nationally. PPL Electric plans to continue incorporating open standards and protocols into the Company's use of smart meter technology. It will accomplish this by monitoring the progress of Smart Grid Standards as guided by the National Institute of Standards and Technology ("NIST") and incorporating those evolving standards into its smart meter and smart grid system.

A recent example of this is the Company's commitment to undertake the Federal government's "Green Button" initiative to implement standardized presentment of usage data (which replaces the more general "open standards and protocols that comply with nationally recognized non-proprietary standards, such as IEEE 802.15.4" The Company has implemented the Green Button initiative, and it became operational on July 31, 2012. The costs to implement the Green Button initiative are not included in the Smart Meter Rider.

The following pilots have been identified to ensure compliance with these standards.

A. In Home Display / Home Area Network

At the time the Company initially filed its Smart Meter Plan, the Company planned to explore incorporating IEEE 802.15.4 compliant Zigbee communications into a home area network through a pilot beginning in 2010 and concluding in 2011. Instead, as the result of technology evolutions since that initial filing, the Company plans to incorporate IEEE 802.11 compliant wireless local area network (WLAN) communications into a home area network pilot. The Company believes that this protocol will be more generally accepted in the future than Zigbee communications. Although PPL Electric does not have specific statistics, it believes many of the Company's customers already have WLAN communications in their home and devices that communicate over WLAN.

Additionally, the Smart Energy Profile (SEP) version 1.x currently in use today will remain an active standard providing smart energy functionality using the existing hardware available today. However, moving forward with new hardware and new functionality, an IP-based solution using a new SEP 2.0 standard is being developed by a consortium of interested industry groups including the WiFi Alliance. The SEP 2.0 standard is not backward compatible with SEP 1.x and today's older hardware is not likely to be upgradeable to 2.0. Currently there are no devices that meet this new standard since the final standard has not been approved, however existing IP-based WiFi hardware does reflect the operating

characteristics of an IP-based standard. Therefore, the Company will proceed with a pilot utilizing the IP-based platform with the expectation that the new SEP 2.0 standard can be utilized for future deployment.

The objective of the pilot is to provide customers with an in-home display so that they can view their real-time energy usage while they are in their home. In its Smart Meter Plan filing in August, 2011, the Company's proposed home area network/In-Home Display pilot was planned to begin in October 2011. Due to technical issues experienced while testing, the pilot has been delayed. The Company continues to work closely with its AMI vendor to troubleshoot technical issues and expects to deploy the pilot in the Fall of 2012 with a small sample group of not more than 50 participants. If the technology works as designed, then a larger group of up to 500 customers will be solicited to participate in the pilot. The pilot will continue through 2014 at which time the Company is planning to file its Final Smart Meter Procurement and Installation Plan. Any future implementation of this technology will be incorporated into that plan.

The estimated cost of this pilot is \$524,000 which includes (1) establishment of pilot objectives, (2) providing price and consumption information to the customer, (3) evaluation of bi-directional communications to end-use devices, (4) inviting customers to participate in the pilot, (5) providing the meter and in home display hardware including any equipment installation, (6) software and programming, (7) evaluation of pilot results and development of an implementation plan, and (8) reporting of results to the Commission.

In the May 2012 Petition, the Company estimated implementation costs of \$4.2 million over a three year period from 2014 through 2016. Those estimated implementation costs have been removed from this filing and will be reevaluated after completion of the pilot and resubmitted as part of the Company's Final Smart Meter Technology and Implementation Plan.

B. AMI System Security Assessment (NEW)

PPL Electric proposes to conduct a security assessment of its AMI systems and processes beginning in 2013. As new technologies are introduced and integrated into the meter, such as WiFi and remote service disconnect switches, additional points of potential access are created and privacy and security concerns are being raised by consumers and the industry. The proposed approach will be to baseline current practices, identify industry standards and trends, identify threats and vulnerabilities, perform a likelihood and impact analysis and develop a mitigation plan. The estimated cost to conduct this evaluation is \$200,000 and will involve hiring an industry expert to assist in the security and vulnerability evaluation.

11. Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible.

PPL Electric's smart meter infrastructure possesses the ability to upgrade firmware and communication systems for compliance with new standards and protocols. The Company's plan addresses technology advances discussed below.

General Obsolescence and Upgrade Issues

Over the next two years, PPL Electric will continue to conduct technological and economic evaluations on potential applications that can enhance the performance of the existing AMI components, as well as the next generation of smart meter system technologies and Smart Grid integration. These evaluations will consider the obsolescence of the communications infrastructure equipment and meters, and their replacement with new technology that enables PPL Electric to continue to meet the smart meter requirements and identify additional capabilities that may be beneficial to customers. Additionally, the Company will consider new applications that complement the capabilities of the existing system.

In 2011, PPL Electric completed a thorough evaluation of the existing power line smart meter infrastructure and its ability to support enhancements. The evaluation considered PPL Electric's current business requirements, anticipated future business requirements and information on possible functional requirements from the Commission's Retail Market Investigation and other sources. The evaluation was completed and resulted in an AMI technology roadmap that will allow the Company to address obsolescence and plan for upgrades. The results of all of the evaluations described below could enable PPL Electric to avoid the complete replacement of its AMI, which is estimated to cost between \$380 and \$450 million depending on the functionality and system deployed. The Company continues to believe that a lower cost option is feasible and needs additional time to evaluate the most cost-effective solution to meet the requirements described previously. The full extent of the meter replacement and system enhancement strategy will determine the future costs. The Company has developed the following pilots in support of this objective.

A. Next Generation PLC System Enhancement – TWACS 20 Pilot

While PPL Electric Utilities existing metering infrastructure meets current business requirements, future requirements may soon exceed the ability of bandwidth constrained substations to meet increased data demands. In order to assess the viability of the Company's AMI system to meet these demands, it is necessary to evaluate the bandwidth increases realized by implementing the next generation communication protocol known as TWACS 20. The objective of this pilot is to evaluate the ability of the next generation communication protocol (TWACS 20) to relieve bandwidth constrained substations within the PLC based AMI system.

The expected high level benefits include (1) verify that TWACS 20 will relieve bandwidth constrained substations as expected, (2) demonstrate that there is a proven solution available for extending the useful life of the Company's PLC based AMI system, (3) demonstrate the ability to support future business requirements such as increased ping volume, on board meter storage, and increased requests for voltage and momentary outage information.

The Sumner substation is one of the more densely populated and constrained Company substations and was chosen for this pilot. The pilot will consist of testing and installing the new TWACS 20 communication software, replacing approximately 12,000 meters with a new digital meter equipped with the next generation communication module, developing metrics to track bandwidth and system performance, conducting a detailed evaluation of findings and developing future recommendations.

The pilot is currently in the testing phase. The installation of meters will begin in the early fall of 2012 and expected to be completed by the end of 2012. The pilot will run through 2014, when the Company will submit its Final Smart Meter Technology and Implementation Plan.

Total pilot costs are estimated at \$2.8 million through 2014 of which \$1.8 million is estimated to be spent in 2012 primarily for the purchase and installation of the meters.

If the pilot is successful a wider deployment may be recommended as part of the Final Smart Meter Technology and Implementation Plan.

B. Telecommunications Substation Modem Evaluation and Replacement

PPL Electric completed a telecommunications substation modem evaluation in 2010 to determine the optimal method to bring meter data back from substations to the central processing point. The Company retrieves meter data from the meter to the substation through the power line carrier system. Previously, at the substation, the data was compiled and sent back to the Company through leased telephone lines. The evaluation in 2010 determined that this was not optimal method to collect this data from the substations. This method has long term operational concerns and is very costly. The Company determined that bringing the data back from substations through cellular modems or fiber were the best options. At substations with PPL Smart Grid capabilities, the Company will bring the data back through fiber optic cable already located at the substation for the PPL Smart Grid project. At all other substations, the data will be brought back through cellular modems. This project is substantially completed and will be finalized by the end of 2012. The final completion has been delayed due to work stoppage issues at one of the Company's communications providers. The total cost of this project is expected to be \$524,000.

C. PLC Based System Enhancements

In 2011, the Company evaluated adding or replacing equipment to enhance data capture and accommodate new end-use devices. The Company evaluated the addition of two different pieces of equipment at substations: (1) additional modulation transformer units (MTU) and (2) new Substation Control Processing Assembly (SCPA) G2 boards. The Company has determined that it is not cost effective to install additional MTU's at substations with only one MTU. Additional MTU's help the Company continue to obtain meter readings during maintenance at the substation. The Company determined it would be more cost effective to build three mobile MTU trailers and two mobile switching trailers that could be installed at the substation when maintenance needs to be performed and removed once the maintenance is completed. This will allow greater flexibility during maintenance at the substation at a reasonable cost. This work is on schedule to be completed in 2012.

Additionally, the Company has "SCPA 93" boards at substations. These boards process all of the commands and data coming in and out of substations. This technology was developed in 1993. The "SCPA G2" board is the next generation technology. The evaluation of the new SCPA G2 boards supports piloting this new equipment in 2012 at 60 substations. In the original filing, the Company planned, if confirmed by the evaluation, to install this new equipment at 175 substations in 2012 and at 150 substations in 2013. The initial results of the evaluation did not clearly confirm the benefits of moving forward with a full implementation; therefore, a slower implementation schedule was chosen in order to allow the Company to verify the performance improvements gained from this new equipment and more definitively determine the benefit of further deployment.

The total cost for the PLC system enhancements is estimated at \$1.2 M consistent with the May 2012 petition.

D. Real Time Path Mapping in PLC System

The Company is currently evaluating operational improvements to the AMI back office system and how the system identifies the path of a meter. The project is estimated at \$62,000 versus the previous estimate of \$194,000 and is on-schedule to be implemented in 2012 with on-going evaluation in 2013.

E. Momentary Outage Monitoring

PPL Electric currently captures and reports customer momentary interruption data ("blink counts") and uses the blink counts to resolve customer complaints regarding power quality and reliability. The Company proposes to enhance this capability and become more proactive in understanding emerging power quality issues and addressing them prior to a customer contacting PPL Electric. This would be accomplished through the aggregation of blink count data in a

meaningful way to aid in determining the approximate location of the device that operated to cause the "blinks". This pilot is under development with an expected implementation in 2012 and continued evaluation through 2014. The objectives of the pilot are to (1) develop and enhance business processes that actively review customer blink information and (2) assure that automation of the processes is implemented for ease of application of the information for all business users.

The total estimated cost to conduct this pilot is \$212,000 which includes, (1) establishment of evaluation objectives, (2) software and IT programming, (3) evaluation of the results, (4) establishment of recommendations for implementation, (5) reporting results and plans to the Commission and, (6) implementation of pilot into production if results warrant full implementation.

F. Service Limiting / Service Extending

This functionality is supported by PPL Electric's smart meter infrastructure. Service extending can be accomplished through the use of a meter with a service disconnect and service limiting intelligence at the customer's premise. This functionality limits the current (amps) level to the premise, thereby allowing essential loads to stay on for the customer. A service extender can be used to allow a customer to maintain a minimum level of service as an alternative to termination of service due to non-payment of bills. The Company recognizes that, while this capability was included in the Commission's Tentative Order, the PUC has not required EDCs to evaluate this capability. However, the Implementation Order does not preclude further consideration of this functionality.

PPL Electric has completed a high-level pilot evaluation and reviewed several different methodologies for use of the service extending functionality to address customer needs and make the Company's business processes more efficient. The Company's research indicates that, although this functionality can provide some benefits to customers and the Company, the costs of IT integration, the daily operational changes, and the potential customer misperception are likely to outweigh the benefits.

Therefore, PPL Electric does not recommend moving forward with a pilot evaluation of the service extending functionality. We will continue to monitor the development of the technology and potential application to utility business processes. Previously estimated costs of \$3.7 million to conduct this program have been removed from the Plan.

PPL Electric incurred approximately \$10,000 of costs to conduct the evaluation and document the recommendation.

G. Prepay Metering

Prepay metering will enable a customer to make wise energy consumption decisions based on a “pay-as-you-go” approach. PPL Electric recognizes that, while this capability was included in the Commission’s Tentative Order, the Commission has not required EDCs to evaluate this capability in the Implementation Order. However, the Implementation Order does not preclude further consideration of this functionality. In fact, the Commission’s regulations at 52 Pa. Code § 56.267 do include a section on the use of pre-pay meters. PPL Electric desires to work directly with Commission staff and interested parties on the objectives for a pilot to evaluate the benefits of this type of program.

The Company proposes to conduct a pilot to begin in 2013 and end in 2015. The pilot will be offered to 500 residential customers. PPL Electric will solicit a select customer base for the pilot, which will exclude low income customers as defined in 52 Pa. Code Section 56.17. PPL Electric has identified high-level pilot requirements, and is currently working with prepay vendors to better understand their capabilities and system functionality. Through the planning and pilot implementation, the Company will assure that public policy issues reflected in the Commission’s regulations are addressed.

The 2012 cost to begin pilot development was originally estimated at \$10,000; however, the time needed to (1) define the pilot requirements, (2) work with prepay vendors, (3) meet with interested stakeholders, and (4) file a detailed prepay plan with the Commission has increased the 2012 estimate to \$50,000. Overall costs through 2014 are estimated at \$550,000. Previously estimated implementation costs of \$3.25 million in 2015 have been removed from this filing and will be reevaluated after completion of the pilot and resubmitted as part of the Company’s Final Smart Meter Technology and Implementation Plan.

The expected high level benefits are that pre-pay metering will (1) contribute to a reduction in the customer’s energy consumption, (2) enable customers to learn how to manage their electric energy payments, (3) enhance customer payment options, and (4) reduce the need and associated costs to dispatch personnel to disconnect and reconnect the customer’s service.

The Company intends to hold a stakeholder meeting to discuss this pilot in the fall of 2012 and intends to file a Petition no later than the first quarter of 2013 requesting Commission authority to implement a prepay metering pilot program.

H. Accelerated Supplier Switching (Off-Cycle)

In the Retail Markets Investigation, the Commission indicated a desire for all customers to be able to switch suppliers more quickly than is permitted under the current switching rules which, in practice, result in a switching delay of between 16 days and 45 days from the date that the EDC is made aware of the request to switch.

In response to this directive, PPL Electric proposes to implement an Accelerated Supplier Switching Pilot Program to evaluate the Company's ability to implement off-cycle switching. This proposal is consistent with comments filed by PPL Electric on December 14, 2011 in response to the Commission's *"Interim Guidelines Regarding Standards for Changing a Customer's Electricity Generation Supplier"* (Docket No. M-2011-2270442). The Commission has not issued a Final Order regarding this matter.

Since the May filing, a project plan with a tentative schedule and estimated costs has been developed. The Company will further define the project scope, schedule resources to ensure consistency with the final direction from the Retail Markets Investigation. The project is expected to be implemented in 2013. The estimated project cost has increased from \$525,000 to \$737,000 of which \$50,000 will be spent in 2012.

I. MDM Data Warehouse and Analytics

The Company's MDMS was designed to meet production needs (meter reading schedules, billing requirements, posting of data to the Energy Analyzer website, etc.) and not to provide for significant amounts of ad-hoc querying of meter data or to provide any complex analytics. In order to meet its current needs, the Company, at times, exceeds the existing data extraction and analysis capabilities of its MDMS, which slows the performance of the system and jeopardizes production activities. As the uses for and demand for interval data grow, this limitation will result in the Company being unable to support these new functionalities and demands.

The industry is adopting data warehouses as the appropriate infrastructure to support the needs of developing advanced analytics for large volumes of meter data and improve operational performance of meter data management systems. The Company proposes to install a data warehouse for meter data beginning in 2012. The first phase of the project would involve installing all required software and hardware for the meter data warehouse and provide the Company's business users ad-hoc querying capability. The key benefits of phase one are to reduce the stress on production activities within MDMS and establish an environment for developing data analytical capabilities. The second phase of the project would involve developing the advanced queries, data analytics, and enable the development of other applications such as the Supplier Portal project (as described below).

In its Implementation Order, the Commission recognized that a fully functional smart meter infrastructure involves more than just the meter hardware attached to the customer's premises but also involves an entire network. Implementation Order, p. 6. The MDM Data Warehouse and Analytics project will enhance PPL Electric's ability to provide smart meter data to customers and EGSs, and provide an ability to perform enhanced analysis of meter data to better serve the Company's customers.

Since the May filing a project plan with schedules and estimated costs has been developed. The total estimated cost of the project has increased from \$1,475,000 to \$2,223,000 of which \$1,723,000 will be spent in 2012 to complete phase one of the project.

J. Supplier Portal Pilot

In the Commission's Order approving PPL Electric's Smart Meter Plan, the Commission directed PPL Electric to continue to test and develop ways to provide customer meter data to customers and third parties. Smart Meter Order, p. 22.

In response to this directive, the Company proposes to conduct a Pilot Program whereby PPL Electric would allow suppliers to access customer meter data through a secure portal to the Company system. The Company notes that the current EDI transaction process to provide EGSs with interval usage data was conceived prior to the advent of smart meters and did not contemplate more than just the largest customers having interval data. The Company and EGSs are discovering that, as the availability and demand for interval usage data are increasing, EDI is proving to be a cumbersome and expensive way of transmitting that data.

Since the May filing, the Company has developed a project scope, schedule and estimated costs. The project is expected to begin development and be deployed in 2013 at an estimated total cost of \$596,000 of which \$10,000 will be spent in 2012. The project involves creating a secure data environment wherein EGSs, and potentially other third parties, can, with appropriate customer authorization, access usage data directly without need for an EDI request and response. It is likely that such data environment would be built using the functionality provided by the Data Warehouse and Analytics Project described above.

K. New Automatic Control Pilot Program / VCharge

In the PPL Electric Smart Meter Order, the Commission held that PPL Electric should continue to identify and test additional ways to support the automatic control of electricity consumption. Consistent with this directive, the Company proposes to implement a new pilot program called the VCharge Project.

During 2011, PPL Electric was approached by VCharge, a company specializing in enabling electric heaters, electric vehicles and other transactive loads with embedded energy storage capability to engage in rapid demand response. Transactive loads are loads that communicate with the grid and with electricity markets in ways that enable participation in the ancillary services markets.

VCharge technology can control when certain devices use electricity. For example, VCharge technology can control when Electric Thermal Storage heaters consume electricity. VCharge technology can, with forecast weather

conditions and hourly price information, estimate the amount of space heating energy needed by a home each day, and establish and implement a schedule for purchasing electricity during the lowest cost hours while maintaining comfort levels. This energy is stored in ceramic bricks and used throughout the day.

VCharge technology also can provide second-to-second control over transactive loads. VCharge technology can assist grid operators by rapidly switching on and off transactive loads and, in the process, secure payments from PJM's ancillary services market. With a forecast of regulation needs, the VCharge technology is capable of optimizing economic benefits from both energy markets and ancillary services markets while maintaining comfort parameters.

The pilot, which is proposed to be conducted in 2012, will consist of:

(1) Upgrading 350 RTS systems to SmartBricks systems with embedded sub-metering, controls, and communications, and

(2) Providing the 350 participants with a competitive generation rate that allows them to access the benefits of (a) purchasing low-cost energy in the PJM wholesale markets and (b) providing ancillary services to PJM. The special generation rate is made possible by Smart Metering – both from PPL Electric and VCharge. The wholesale energy benefits are accessible because the PPL Smart Meter infrastructure settles residential customer load on actual hourly usage. The ancillary services benefits are accessible because of VCharge's revenue-grade AGC power metering.

The VCharge technology will automatically control customers' consumption so that customers purchase electricity and assist in providing grid regulation at the most economically opportune times.

The estimated cost of the pilot is \$550,000, which includes, (1) selection of 350 Rate Schedule RTS customers chosen to assess effects on the distribution system, (2) \$500 per home rebates for SmartBricks hardware, (3) software and IT programming, (4) evaluation of pilot results, (5) development of an implementation plan, and (6) reporting results and the implementation plan to the Commission. This is an early projection of the costs of this program, and this cost estimate may change when the program is actually implemented. PPL Electric proposes to include the actual costs of the Program and other Programs described herein in its SMR.

Accordingly, PPL Electric proposes to adjust its Smart Meter Plan to include a pilot of these functionalities to (1) better understand the interfaces and protocols that are necessary between the vendor's technology, the Company's smart meter infrastructure, and PJM; and (2) identify the economic feasibility of any enhancements to the Company's smart meter infrastructure that are necessary to support this functionality.

12. Ability to monitor voltage at each meter and report data in a manner that allows an EDC to react to the information.

PPL Electric collects voltage information as required for specific engineering review. Industrial and commercial meters also offer more precise voltage, current and relational phase-angle information and the Company uses this information to diagnose meter and service issues. PPL will conduct two pilots to demonstrate this capability as follows:

A. Wireless Based System Enhancement

The Company's wireless based large power meters offer precise voltage, current and relational phase-angle information. The Company has completed a pilot to improve the use of that information for the diagnosis of meter and service issues. This enhancement was implemented in 2011 for the large power meters. The cost of the large power meter information enhancement was \$143,000.

By having more precise service diagnostic information PPL Electric can proactively identify possible equipment damage and better identify abnormal service situations. Quicker, identification and correction of possible issues can help reduce potential revenue losses, billing issues, and increase customer satisfaction.

B. Voltage Measurement / Collection Reporting in PLC Based System

PPL Electric will use the power line carrier (PLC)-based existing smart meter technology and infrastructure to improve the measurement, collection and analysis of voltage information to enhance PPL Electric's distribution system reliability. This pilot is currently in the design phase with a planned implementation in 2012. Analysis and evaluation will continue into 2014.

The estimated cost for the PLC-based pilot is \$320,000 which includes (1) determining the feasibility of gathering this new information by performing an impact analysis on the smart meter infrastructure to ensure there are no performance issues, (2) exporting the data collected into a data management system to provide a facility for engineers to access and apply advanced analytics for their business applications, (3) software and IT programming, (4) establishment of implementation plan, and (5) reporting the results and implementation plans to the Commission.

13. Ability to remotely reprogram the meter.

PPL Electric has the ability, with its smart meter infrastructure, to remotely program communication equipment and newer meters in the system. The Company has demonstrated this capability in several applications.

14. Ability to communicate outages and restorations.

The Company's current deployment is integrated with its OMS to permit a more accurate determination of the extent of an outage and provide the ability to restore customers more quickly than would otherwise be possible. As it moves forward with its Smart Meter Plan, PPL Electric will continue to seek ways to incrementally improve proactive outage detection over the life of the systems. Two pilots are being conducted at this time.

A. Proactive Outage Detection

In 2011, PPL Electric began a pilot to further enhance use of the existing AMI's capabilities. The objective of the pilot is to determine the system-wide feasibility of using the power line system for the purpose of distribution system health checks and proactive outage detection. The pilot was implemented and is in limited production on select feeders for validation and evaluation. Once the results are validated, the pilot will go into full production, which is expected by the end of 2012.

The estimated cost of the pilot and implementation is \$160,000, which includes (1) improving the accuracy of existing meter queries ("pings") through the investigation and mitigation of performance issues, (2) integration of SCADA data to proactively "ping" customers' meters to assess service status, and (3) optimize "ping" services to more actively assess outage conditions and dispatch personnel where required.

B. Outage Duration Pilot

PPL Electric has identified an opportunity to retrieve additional outage information from the meter. Outage duration and timestamps are available in the meter register of the Company's new standard residential meter. The Company believes there may be a benefit in retrieving this data from the meter and using it for outage and power quality analysis to improve customer service.

The Company has developed a preliminary scope for the project and plans to deploy changes in 2013 contingent upon and coincident with the release of vendor software. The Company will take a phased approach to the project. In the first phase, a process would be created to collect the data from the meter. In the second phase, this data would potentially be incorporated into the meter data validation and outage analysis processes. The estimated cost of the project is \$99,000 which is lower than original estimate of \$185,000 presented in the May petition.

15. Ability to support net metering of customer-generators.

The smart meter infrastructure deployed by PPL Electric supports this capability and is utilized today to acquire all the point of contact and generation quantities.

A. Evaluate Feasibility of Metering Customer-Owned Generation with TNS

PPL Electric piloted, in 2010 and 2011, the functionality and performance of new bi-directional meters in its infrastructure that measure energy flow at the PPL Electric point of contact. The pilot consisted of installing 400 bi-directional meters in the power line carrier smart meter system that will provide net energy usage on an interval basis measuring both delivered and received energy flowing to the Company's grid. All residential customers with installed generation now have a bi-directional meter and a process has been established to ensure that customers who install generation in the future receive a bi-directional meter. In addition, the bi-directional meter is now the Company's standard meter for new installations and meter changes.

Within the pilot, it was determined that minimal changes were required to PPL Electric's MDMS and customer information and billing system to accept delivered and received energy usage. Therefore, the estimated cost to conduct this pilot and implementation is significantly less than previously expected. Total costs in 2010 and 2011 were \$177,000. This included (1) upgrading existing net metering customers with the new power line meter, (2) meter hardware and installation, (3) software and IT programming to accept and validate energy data, (4) evaluation of pilot results, and (5) development of an implementation plan.

In 2011, the Company explored the best meter option for small three-phase C&I customers that have generation installed. The Company has identified a meter and proposes to install this meter on all small three-phase C&I accounts with generation installed. Additional costs of \$84,208 are expected in 2012 to change out an additional 143 small three-phase C&I accounts with generation installed. This project is expected to be fully implemented and completed by the end of 2012.

16. Smart Meter Rider

PPL Electric is submitting in this filing its proposed Smart Meter Rider ("SMR") charges to be effective for service rendered on and after January 1, 2013, as well as Supplement No. 121 to PPL Electric's Tariff-Electric Pa. P.U.C. No. 201. A copy of the proposed 2012/2013 SMR with supporting calculations is attached hereto as Attachment 4. Consistent with PPL Electric's tariff, those calculations are based upon an annual budget amount of all costs required for the Company to implement its SMP during the compliance year of January 1, 2013 through December 31, 2013. They also reflect a reconciliation of the Company's SMR charges as of the end of the 12-month period ending June 30, 2012.

IV. CONCLUSION

PPL Electric has made several modifications to its original Smart Meter Plan filing in response to the Commission's June 24 Order and, also, in response to technology evolutions that have occurred since the Company initially filed its Plan. As noted above, the Company has also requested Commission approval to implement eight new smart meter programs and to extend the Company's grace period in its May 2012 Petition. PPL Electric is working to ensure that it provides its customers all of the smart meter functionality required under Act 129 in a cost-effective manner.

Appendix A

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APPENDIX A

Ability to Provide 15-minute or Shorter Interval Data

Answers to Commission's Questions set forth in June 24, 2010 Order

PPL Electric conducted a pilot in 2010 and 2011 to assess the capability to provide 15-minute interval data on a consistent basis using power line meters that have the capability to be configured for 15-minute data collection at the residential and Small C&I customer level. The Company's findings from the pilot are outlined within the following questions that were set forth in the Commission's June 24 Order:

1. *What are the capability and limitations of proposed smart meters to measure and record sub-hourly usage?*

Currently, the Company provides sub-hourly 15-minute interval data for all its large commercial and industrial (C&I) customers. Large C&I customers are defined as C&I customers with a demand of greater than 500 kW.

Currently, small C&I customers are generally provided hourly interval data. Small C&I customers are defined as C&I customers with a demand of less than 500 kW and there are approximately 180,000 such small C&I customers. However, as a result of past participation on now-closed rates and other circumstances, approximately 52,000 of these small C&I customers have a meter that can provide 15-minute interval data without further modification. In order to measure and record sub-hourly usage for all small C&I customers through the power line carrier system, the Company would need to upgrade the meters of 128,000 customers to newer electronic meters at an estimated cost of \$17.28 million. Because the demand for sub-hourly data among this class of customers is not great, the Company's practice has been to, upon request of the customer, provide KYZ pulse data which can be integrated into 15 minute intervals, or any other length of interval the customer or third-party acting on behalf of the customer may desire.

Residential customers are also provided with hourly interval data. In order to measure and record sub-hourly usage for all residential customers through the power line carrier system, the Company would need to upgrade the meters of approximately 1.3 million customers to newer electronic meters at an estimated cost of \$175.5 million.

2. *What are the capability and limitations of proposed smart meter communication and data storage systems to transmit and store sub-hourly usage information?*

In order to transmit and store sub-hourly usage for all small C&I customers, the Company would need to strategically upgrade and/or modify the existing AML system including meters, substation equipment and data storage. The estimated cost of upgrading meters is \$17.28 million as discussed in the response to Question 1, above. The additional substation equipment is estimated to cost \$250,000. The additional data storage costs to store 15-minute interval data for 180,000 small C&I customers on the same basis (accessibility, retention times, etc.) are estimated to be \$20,000 per year.

3. *What are the sub-hourly PJM requirements for participation in ancillary service markets?*

The PJM Interconnection ("PJM") identifies three ancillary services markets on its website (<http://www.pjm.com/markets-and-operations/ancillary-services.aspx>). These are:

- Synchronized Reserve,
- Regulation, and
- Black Start Service.

Each of these services and the associated metering requirements are described below.

Synchronized Reserve

Synchronized reserve service supplies electricity if the grid has an unexpected need for more power on short notice. Both generators and loads can participate in the synchronized reserve market. The power output of generating units supplying synchronized reserve can be increased quickly to supply the needed energy to balance supply and demand; demand resources supplying synchronized reserve can reduce their load quickly in order to maintain the balance between supply and demand. Demand resources providing Synchronized Reserve are required to provide metering information at no less than a one minute scan surrounding a synchronized reserve event. Metering information for demand resources is not required to be sent to PJM in real time. Daily uploads at the close of the next business day after the operating day, if an event has occurred, are sufficient. (PJM Manual 11: **Energy & Ancillary Services Market Operations**; Section 4: Overview of the PJM Synchronized Reserve Market Revision 46; Effective Date: 06/01/2011; pages 63 – 64 and 72)

Regulation

Regulation is necessary to provide for the continuous balancing of resources (generation and interchange) with load and for maintaining scheduled Interconnection frequency at 60 cycles per second (60Hz). PJM commits on-line resources whose output (for generators) or consumption (for loads) is raised or lowered as necessary to follow moment-to-moment changes in generation or load. The resources assigned to provide regulation must be *capable of responding to the Area Regulation signal immediately, achieve*

their bid capability within five minutes and must increase or decrease their outputs at the ramp rates that are specified in the data that is submitted to PJM. Regulation is predominantly achieved using automatic generation control equipment; however, customers (“demand side response resources”) can also provide regulation. Resources (either generators or loads) participating in the regulation market will receive from PJM an assigned regulation signal at 10 second intervals and a real-time regulation signal (intended to move the participating resource) at 2 second intervals. Resources (either generators or loads) participating in the regulation market will send to PJM signals that provide the resource’s capability to provide regulation and the real-time regulation that the resource is providing. Both of these signals are calculated every 2 seconds and sent at 2 second intervals. Consumption metering must, therefore, be able to meet the 2 second calculation requirement. (PJM Manual 12: **Balancing Operations**; Section 4: Providing Ancillary Services; Revision 22, Effective Date: 05/13/2011; pages 38-42)

Black Start Service

Black start capability is necessary to restore the PJM transmission system following a blackout. Black Start Service shall enable PJM and Local Control Centers to designate specific generators whose location and capabilities are required to re-energize the transmission system. Black Start Service applies only to generation resources and, therefore, establishes no requirements for consumption metering. (PJM Manual 12: **Balancing Operations**; Section 4: Providing Ancillary Services; Revision 22, Effective Date: 05/13/2011; pages 49)

Although not listed among the ancillary service markets, many retail customers participate in PJM’s Demand Response Programs. PJM hosts two different programs – the Emergency Load Response Program and the Economic Load Response Program. In both programs, hourly load data is available within 60 days of the participant’s load reduction. (PJM Manual 11: **Energy & Ancillary Services Market Operations**; Section 10: Overview of the Demand Resource Participation; Revision 46, Effective Date: 06/01/2011; pages 103 and 113-117)

4. *What are PPL’s incremental smart meter, communication, data storage, and data sharing costs associated with these sub-hourly requirements for ancillary services?*

As noted in the response to Question 3, there are no requirements for sub-hourly data associated with PJM’s Black Start Service Market. Also, as noted in the response to Question 3, participation in both the Synchronous Reserve and Regulation Markets require the receipt of a signal, rapid response to that signal, and metering information at intervals of a minute and shorter. It is PPL Electric’s understanding that this functionality is typically accomplished

through a communication, metering, and control package that is provided by the service provider the customer engages to facilitate his participation. The Company also understands that the communication, metering, and control package is typically a stand-alone package that performs, by design and intent, independently from the Company's metering equipment, that it may include features that are proprietary in nature, and that it is typically provided under the service contract between the customer and the service provider. Accordingly, PPL Electric incurs no incremental smart meter, communication, data storage, and data sharing costs associated with the participation of customers in the PJM ancillary services markets.

Finally, and also noted in the response to Question 3, participation in PJM's demand response programs, although not among the ancillary services markets, does not require data granularity or communication capability beyond that which is already provided by PPL Electric's AMI. Nevertheless, the Company is aware that at least some curtailment service providers who facilitate the participation of customers in the demand response markets require sub-hourly data for their own purposes. Upon request of a customer, PPL Electric will provide a KYZ pulse equipped recorder meter to customers that require real-time sub-hourly data. The Company is aware that, while in some cases the desire is driven by a need to track real-time energy consumption and demand, in other cases the pulses are used as direct inputs to an energy management system. The incremental cost associated with each such request is \$475. The Company does not directly charge the requesting customer, but, instead, reflects the cost in its base rates.

5. *What are the incremental equipment and installation costs of pulse data recorders used to measure sub-hourly meter data?*

The incremental equipment and installation costs of providing pulse data for the purpose of measuring sub-hourly usage are discussed, above, in the response to Question 4.

6. *Is a pulse data recorder attached to PPL's meter sufficiently accurate for use by PJM in its ancillary markets, or is redundant metering required to meet PJM standards?*

As discussed, above, in response to Question 4, it is PPL Electric's understanding that participation in PJM's ancillary markets requires functionality beyond the simple measurement of usage and, therefore, does not involve PPL Electric's AMI system. PPL Electric's existing AMI system does meet PJM's requirements for participation in its demand response programs. Redundant metering is not required.

7. *What are the additional customer costs associated with (1) transferring pulse meter information from the meter to inside the customer's premise, (2)*

processing this data into usable format, (3) communicating the data to a third party or PJM?

PPL Electric is unable to anticipate and estimate all of the different needs of customers and their third-party consultants regarding meter pulse data. As noted in response to Question 4, above, it is PPL Electric's understanding that while in some cases the desire is driven by a need to track real-time energy consumption and demand, in other cases the pulses are used as direct inputs to an energy management system. Each customer's circumstances are different and costs to transfer pulse meter information from the meter to inside the customer's premise can vary significantly depending on the customer's meter location and needs.

PPL Electric's KYZ pulse equipped recorder meter provides a standard KYZ format and a polling format for direct meter data connections that is consistent with PJM protocols. At this point, the data is in a format that is compatible with standard data integration and control protocols. However, customers, and third-parties acting on behalf of consultants, may have various other requirements, depending upon the market in which they are participating and the nature of their participation.

For example, PPL Electric is working with an entity seeking to place thermal storage heating systems into PJM's regulation market. As described above, this market requires direct telemetering of data and PPL Electric's understanding is that the vendor will be accomplishing this with a single control module that operates the heating system in accordance with the signal received from PJM, meters the system's use, and provides necessary data to PJM. In this application, PPL Electric's advanced metering infrastructure will not be used to facilitate participation in the regulation market; however, it will be used to permit the customer to utilize the enhanced control capability to also purchase retail electricity in real-time.

The majority of customers that request KYZ pulses are participating in a PJM demand response program through a curtailment service provider (CSP). End-use customers cannot participate in a PJM program on their own unless they register with PJM as a CSP. Many of the CSP's in the market utilize the KYZ pulses to meet their specific needs by connecting the pulses directly to their own computer software. These costs are typically not billed directly to the participating customers, but are instead addressed in their service contract with the CSP.

8. *To the extent a customer requests sub-hourly data, what if any cost recovery charge is appropriate, For example, would it be appropriate to have a customer charge that varies with the level of sub-hourly metering requested, and if so, what would those sub-hourly metering charges be?*

Currently, there is not a customer charge for KYZ pulse data. PPL Electric is not proposing to add a customer charge for this service at this time. However, if the Company is asked to provide sub-hourly data through the current AMI system, a customer charge may be required and full recovery for all incremental costs would be necessary.

Attachment 1

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ATTACHMENT 1

PPL Electric Smart Meter Program Milestone Plan	2010				2011				2012				2013				2014			
	1st	2nd	3rd	4th																
6 B(1): Bidirectional data communications capability																				
Note: Demonstration of this functionality will be provided in conjunction with the home area network pilot to be completed in Section 6 C(4).																				
6 B(2): Recording usage data on an hourly basis at least once per day																				
Note: PPL Electric does not anticipate any incremental costs to be expended except for meter replacement under normal conditions such as damage to the meter, defective meters and customer requests.																				
6 B(3): Provide customers with direct access to price and consumption information																				
1. Messaging - Price and usage information [1]																				
- Evaluate various channels of customer communications																				
- Implementation																				
2. Faster Data Presentment to Customers & Suppliers																				
Note: Demonstration of this functionality will be provided in conjunction with home area network pilot to be completed in Section 6 C(4).																				
6 B(4): Provide customers with information on their hourly consumption																				
1. Improve VEE Process to Incorporate Outage Data																				
Note: Work with customers, EGSs and third parties to provide hourly consumption that is in clear and understandable formats. Estimated costs to be quantified later during 30 month grace period.																				
6 B(5): Enabling TOU and RTP Price Programs																				
1. Real-Time Pricing for Mid-Size C&I Customers																				
Note: Demonstration of capability to comply with this requirement for RTP with C&I accounts 500 KW and greater to be completed in conjunction with work to be done in Section 6 C(2). Evaluation was completed outside the Smart Meter Plan and PPL Electric determined that the most cost effective way to provide RTP to this customer class is through the wireless based large power meter system.																				
6 B(6): Supporting automatic control if the customer's electric consumption																				
1. Load Control Evaluation [2]																				
- Conduct pilot of 500 Customer installations																				
6 C(1): Remote disconnection and reconnection																				
1. Remote Disconnect / Reconnect [3]																				
- Evaluate benefits of remote disconnect/reconnect functionality																				
- Conduct pilot- 500 customer installations																				
- Implementation																				
6 C(2): Ability to provide 15 minute or shorter interval data																				
1. Evaluate scalability in PLC based system																				
- Performance evaluation for 800 meters > 500 KW																				
- Potential TNS to MV 90 meter conversion																				
2. Performance evaluation of Focus UMT-r meters																				
- Conduct pilot with 500 meters																				
6 C(3): On-board meter storage of meter data																				
1. Ability to read historical data/process IT [4]																				
- Design/development & pilot with Aclara																				
- MDM capability to upload and re-VEE data																				

ATTACHMENT 1

PPL Electric Smart Meter Program Milestone Plan	2010				2011				2012				2013				2014			
	1st	2nd	3rd	4th																
6 C(6): Ability to monitor voltage at each meter																				
1. Wireless-based system enhancement																				
2. Voltage measurement/collection/ reporting in PLC-based system																				
- Pilot																				
- Full scale implementation and evaluation																				
6 C(7): Remote programming capability																				
Note: To be demonstrated in conjunction with work to be completed in Section 6 C(5).																				
6 C(8): Communicate outages and restorations																				
1. Proactive Outage Detection																				
- Assess options to determine how to become more proactive with outage detection																				
- Implement plan																				
2. Outage Duration																				
6 C(9): Ability to support net metering of customer generators																				
1. Evaluate feasibility Customer Owned Generation with TNS [9]																				
- Conduct pilot with Focus UMT-r meters - 400 meters (existing net metering customers that do not have a Focus UMT-r meter installed)																				
- Implementation																				
Program Management																				

Legend	
Pilot/evaluation	
Potential implementation	

Footnotes
[1] Implementation of TOU deferred at this time.
[2] Implementation delayed for further investigation.
[3] Future implementation plans will be submitted as part of the final SMP.
[4] Project extended to perform further benefit analysis before implementation.
[5] Pilot was delayed due to technology issues.
[6] Implementation extended until August 2012.
[7] Implementation of SCPA G-2 boards extended through 2014.
[8] Recommendation is not proceed with this pilot..
[9] Meter installation extended through 2012.

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Attachment 2

ATTACHMENT 2

PPL Electric Utilities Smart Meter Program Budget	2010	2011	2012	2013	2014	Total
6 B(1): Bidirectional data communications capability						
Note: Demonstration of this functionality will be provided in conjunction with home area network pilot to be completed in Section 6 C(4).						
6 B(2): Recording usage data on an hourly basis at least once per day						
Note: PPL Electric does not anticipate any incremental costs to be expended except for meter replacement under normal conditions such as damage to the meter, defective meters and customer requests.						
6 B(3): Provide customers with direct access to price and consumption information						
1. Messaging - Price and usage information						
- Evaluate various channels of customer communications	\$18,729					\$18,729
- Pilot		\$175,299	\$32,000			\$207,299
2. Faster Data Presentment to Customers and Suppliers			\$10,000	\$93,240		\$103,240
Note: Demonstration of this functionality will be provided in conjunction with home area network pilot to be completed in Section 6 C(4).						
6 B(4): Provide customers with information on their hourly consumption						
1. Improved VEE process to incorporate outage data			\$25,412	\$77,896		\$103,308
Note: Work with customers, EGSs and 3rd parties to provide hourly consumption that is in clear and understandable formats.						
6 B(5): Enabling TOU and RTP Price Programs						
1. Real-Time Pricing for Mid-Sized C&I Customers			\$148,835	\$225,550		\$374,385
Note: Demonstration of capability to comply with this requirement for RTP with industrial and commercial accounts 500 KW and greater to be completed in conjunction with work to be done in Section 6 C(2).						
6 B(6): Supporting automatic control if the customer's electric consumption						
1. Load Control Evaluation						
- Conduct pilot of 500 Customer installations	\$36,851	\$421,795	\$6,052			\$464,698
6 C(1): Remote disconnection and reconnection						
1. Remote Disconnect / Reconnect						
- Conduct pilot- 500 customer installations		\$50,075	\$749,364	\$75,084	\$70,000	\$944,523
6 C(2): Ability to provide 15 minute or shorter interval data						
1. Performance evaluation of Focus UMT-r meters						
- Conduct pilot with 500 meters	\$10,507	\$34,086				\$44,593
6 C(3): On-board meter storage of meter data						
1. Ability to read historical data/process IT						
- Design/development & pilot with Aclara		\$13,824	\$96,204			\$110,028
- MDM capability to upload and re-VEE data				\$239,526	\$120,000	\$359,526
6 C(4): Open standards and protocols						
1. In-Home Display/Home Area Network						
- Evaluate available technologies and requirements	\$16,761					\$16,761
- Conduct Pilot with 500 customers		\$412,630	\$65,000	\$15,000	\$15,000	\$507,630
2. AMI System Security Assessment						
- Assess the current AMI system for security effectiveness				\$200,000		\$200,000
6 C(5): Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible						
1. General Obsolescence and Upgrade Issues						
- Next generation PLC based system evaluation		\$241,628				\$241,628
- Potential next generation PLC based system implementation (TWACS 20 Pilot)			\$1,759,115	\$530,000	\$500,000	\$2,789,115
- Evaluation next generation AMI technologies/Smart Grid integration			\$2,785	\$25,000	\$25,000	\$52,785
- Assessment of existing PLC based functionality	\$12,982					\$12,982
- Telecommunications Substation Modem evaluation and replacement	\$333,962	\$180,531	\$10,000			\$524,493

ATTACHMENT 2

PPL Electric Utilities Smart Meter Program Budget	2010	2011	2012	2013	2014	Total
- Real Time Path mapping in PLC based system						
» Evaluate feasibility and potential design			\$14,783			\$14,783
» Implement/evaluate results of proof of concept design						
» Implement full scale			\$27,291	\$20,000		\$47,291
- PLC Based System Enhancements						
a. Consider addition of Modulation Transformer Units(MTU)						
» Evaluate the benefits for additional MTUs		\$11,332				\$11,332
» Implement additional TWACS Trailers			\$235,800			\$235,800
b. Consider deployment of SCPA G2 Boards						
» Evaluate the benefits for new SCPA G2 boards		\$11,332				\$11,332
» Install SCPA G2 boards			\$171,350	\$472,125	\$348,225	\$991,700
2. Service Extending						
- Conduct pilot - 500 customers			\$10,000			\$10,000
3. Prepay Metering						
- Conduct pilot - 500 customers			\$50,000	\$400,000	\$100,000	\$550,000
4. Momentary Outage Monitoring						
- Conduct pilot		\$15,725	\$127,220			\$142,945
- Implement recommendations				\$55,000	\$15,000	\$70,000
5. Accelerated Supplier Switching Project (Off-Cycle)				\$50,000	\$686,957	\$736,957
6. MDM Data Warehouse and Analytics			\$1,723,255	\$500,145		\$2,223,400
7. Supplier Portal Pilot			\$10,000	\$585,920		\$595,920
8. VCharge Pilot			\$550,000			\$550,000
6 C(6): Ability to monitor voltage at each meter						
1. Wireless-based system enhancement	\$71,027	\$71,645				\$142,672
2. Voltage measurement/collection/ reporting in PLC-based system						
- Pilot	\$4,329	\$123,394				\$127,723
- Full scale implementation and evaluation			\$152,311	\$25,000	\$15,000	\$192,311
6 C(7): Remote programming capability						
Note: To be demonstrated in conjunction with work to be completed in Section 6 C(5).						
6 C(8): Communicate outages and restorations						
1. Proactive Outage Detection						
- Assess options to determine how to become more proactive with outage detection	\$2,630					\$2,630
- Implement pilot		\$127,985				\$127,985
- Implement plan			\$29,500			\$29,500
2. Outage Duration Pilot and Implementation			\$24,344	\$74,638		\$98,982
6 C(9): Ability to support net metering of customer generators						
1. Evaluate feasibility customer owned generation with TNS						
- Conduct pilot with Focus UMT-r meters - 100 meters	\$77,666					\$77,666
- Implementation		\$99,541	\$84,208			\$183,749
Program Management	\$395,846	\$306,810	\$424,141	\$391,024	\$368,416	\$1,886,237
Total	\$981,290	\$2,297,632	\$6,588,970	\$4,692,105	\$1,576,641	\$16,136,638

ATTACHMENT 3

PPL Electric Utilities Corporation Smart Meter Plan Pilot/Evaluation

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6 B(1)
Bidirectional Data Communications

Pilot/Evaluation	<ul style="list-style-type: none">• Perform evaluations using in-home displays with home area networks in coordination with the pilot referenced in section 6C(4)
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• Estimated cost of this pilot is outlined in Section 6C(4)
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Pilot description is outlined in Section 6C(4)
High Level Benefits	<ul style="list-style-type: none">• Benefits are described in Section 6C(4)

6 B(2)

Recording hourly usage data on at least an hourly basis

Pilot/Evaluation	<ul style="list-style-type: none">• None to be performed, because PPL Electric's existing power line and large power smart meter systems already meet this requirement.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• Not applicable.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Continue to deploy meters for new construction, upon customer request, and to replace damaged and defective meters.
High Level Benefits	<ul style="list-style-type: none">• The Company's customers already receive the benefits of hourly meter reads.

6 B(3)

Provide customers with direct access to and use of price and consumption information

Pilot/Evaluation	Price and Usage Information <ul style="list-style-type: none">• An initiative was undertaken to evaluate and pilot various communication mediums. PPL Electric already provides electronic access to price and consumption information today via their website and through EDI transactions. The Company also developed and implemented messaging enhancements that include alerts on price and/or consumption, as well as abnormal usage. The evaluation included tests of communication channels such as near real-time email, phone messages, and text messages to customers.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The estimated project cost is \$226,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Evaluation of available technologies in 2010• Pilot in 2011 and 2012 the following:<ul style="list-style-type: none">○ Messaging to multiple communication channels○ Deployment of software and required licensing from chosen vendor
High Level Benefits	<ul style="list-style-type: none">• Customers will derive increased understanding and awareness of energy usage, which lead to better energy management.

6 B(3)

Provide customers with direct access to and use of price and consumption information

Pilot/Evaluation	Faster Data Presentment to Customers and Suppliers <ul style="list-style-type: none">• The objective of this pilot is to present validated customer data on its website sooner than 48 hours by modifying the way that the Company processes and validates data within its AMI and back office systems.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The estimated project cost is \$103,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Develop scope, cost and detailed schedule• Evaluating all AMI and back office systems that would require changes• Determine net reduction in time to present data• Develop new processes and procedures• Implement changes
High Level Benefits	<ul style="list-style-type: none">• Energy usage information available to customers would be more current than that which presently is available, allowing customers to make decisions regarding their electricity use and consumption based on more current information.• Suppliers may be able to offer new products and billing options to customers.
Potential Implementation	<ul style="list-style-type: none">• If the pilot is successful, PPL Electric will implement the changes on a broader scale in 2013.

6 B(4)

Provide customers with information on their hourly consumption

Pilot/Evaluation	<ul style="list-style-type: none">• PPL Electric provides its customers with information on hourly consumption from its AMI. This data is provided on a daily basis to the PPL Electric meter data management system that enables customers to access their individual information on the web.• The Company also provides hourly consumption through EDI transactions to EGS's and third parties.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• N/A
Pilot/Evaluation Plan	<ul style="list-style-type: none">• N/A
High Level Benefits	<ul style="list-style-type: none">• N/A

6 B(4)

Provide customers with information on their hourly consumption

<p>Pilot/Evaluation</p>	<p>Improved Validation/Editing/Estimation (“VEE”) Process to Incorporate Outage Data</p> <ul style="list-style-type: none"> • This project’s aim is to leverage outage management data to improve the VEE process. • The pilot will evaluate integrating outage data from OMS into the MDM system in order for the VEE process to more accurately estimate missing hourly data without populating data into hours of known outages.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The estimated project cost is \$103,000.
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Develop a scope, cost and detailed schedule • Analyze missing intervals and compare to current VEE process • Evaluate the most cost-effective way to integrate outage data into the meter data validation process • Implement changes into VEE process, if proven to be beneficial
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Customers would no longer see data appear on PPL Electric’s online energy analyzer tool during the hours they are without service. • <i>The Company’s internal algorithms will more accurately profile interval data by avoiding intervals that occurred during a known outage.</i> • Customers will see more accurate data within PPL Electric’s online energy analyzer tool. • Billing that relies on hourly usage (i.e., time-of-use, real time price, critical peak pricing, etc.) will be more accurate.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • If the pilot is successful, PPL Electric would implement on a broader scale and look for additional opportunities to review and refine the data.

6 B(5)
Enabling TOU and RTP Programs

Pilot/Evaluation	<ul style="list-style-type: none">• In 2010, conduct a performance evaluation with the Company's AMI to determine the feasibility of collecting and delivering 15-minute data at a high success rate for RTP billing for large power customers greater than 500 KW in demand. This evaluation will be conducted in coordination with Evaluation #1 discussed in Section 6C (2). Due to billing system limitations for real-time pricing, PPL Electric determined that it was most cost effective to read the accounts with greater than 500 kW demand with the large power meter wireless system. This amounted to 320 accounts and was completed in 2010 outside of the Plan.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• N/A
Pilot/Evaluation Plan	<ul style="list-style-type: none">• N/A
High Level Benefits	<ul style="list-style-type: none">• N/A

6 B(5)
Enabling TOU and RTP Programs

Pilot/Evaluation	<p>Real-Time Pricing for Mid-Size C&I Customers</p> <ul style="list-style-type: none"> • PPL Electric proposes to implement a pilot to demonstrate that its smart meter infrastructure can provide all functionality necessary to enable real-time pricing of default service for mid-size C&I customers (100 kW to 500 kW).
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none"> • The estimated project cost is \$374,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none"> • Develop scope and detailed schedule • Deploy changes under the assumption that customer billing could start as early as June 2013 (i.e., at the conclusion of the Company's current default service plan)
High Level Benefits	<ul style="list-style-type: none"> • Mid-Size C&I customers could receive real-time pricing service, allowing them to make more informed decisions regarding their electricity use and consumption • Suppliers would be able to offer new products and billing options to this customer class
Potential Implementation	<ul style="list-style-type: none"> • If the pilot is successful, PPL Electric could implement on a broader scale beginning in 2013.

6 B(6)

Supporting the automatic control of the customer's electric consumption

Pilot/Evaluation	Load Control <ul style="list-style-type: none">• PPL Electric conducted a pilot to further extend the benefits of the currently deployed AMI system to demonstrate how it meets this minimum requirement. This was accomplished by installing load control devices on air conditioning systems and water heaters. Pilot planning began in 2010 and the pilot was completed in 2011.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The project cost is \$464,698
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Establish pilot objectives• Invite customers to participant in pilot (177 customers participated)• Purchase and install load control devices• Develop/implement required software and IT programming changes and licensing• Evaluate pilot results• Results and proposed implementation plan presented to the Commission in this filing
High Level Benefits	<ul style="list-style-type: none">• Allows customer to take advantage of TOU rate options• Enables customers to shed load during periods of peak pricing• Provides capability for PPL Electric to shed load during emergency load reduction events called by PJM to maintain system reliability
Potential Implementation	<ul style="list-style-type: none">• The future costs have been reduced by \$8.2 M from 2013 to 2015 because the Company is not proposing to implement this pilot.

6 C(1)

Ability to remotely disconnect and reconnect

<p>Pilot/Evaluation</p>	<p>Remote Disconnect/Reconnect</p> <ul style="list-style-type: none"> • PPL Electric conducted an evaluation in 2011 to determine the costs and benefits of remote disconnect/reconnect functionality within their service territory. • A pilot will be conducted in 2012 and would enable "hard" blocking of all accounts in the pilot, excluding terminations for non-payment, and all connects and reconnections.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The estimated project cost is \$944,000
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Establish pilot objectives • Identify locations for pilot meter installs • Purchase of meter hardware and installation • Develop/implement required software and IT programming changes and licensing • Evaluate pilot results • Establish potential implementation plan • Report results and proposed implementation plan to the Commission
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Contributes to the reduction in consumption on inactive meters • Eliminates need to dispatch personnel to disconnect and reconnect • Provides ability to comply with Commission regulations in normal connect/disconnect situations • Provides ability to enable cold load pickup resulting from emergency load reductions or in large storm restoration effort • Automates the process for completing connects and disconnects • Has the potential to support emergency load reductions as directed by PJM and/or PPL Electric's Systems Operations especially where automatic switching is not available.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • Future implementation plans will be submitted as part of the final plan submitted in 2014.

6 C(2)

Ability to provide 15-minute or shorter interval data

<p>Pilot/Evaluation</p>	<p>15 Minute Interval Data</p> <ul style="list-style-type: none"> • A pilot was conducted 2010 and 2011 to determine the feasibility of providing 15-minute interval data in the power line smart meter infrastructure using installed meters that have the capability to be configured for 15-minute data collection at the small commercial customer level. In addition, a scalability test was completed to determine if PPL Electric's power line system can handle reading 15-minute data from all small commercial accounts without significant investment into the power line system. • Based on the pilot, a cost benefit analysis was completed to determine the economic viability of implementing 15-minute interval data to all small commercial customers through the Company's power line carrier system.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The project cost was \$44,593.
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Remote reconfiguration of installed smart meters from 60 minute interval data to 15-minute interval data collection • Scalability test • Evaluate pilot results • Cost Benefit Analysis • Development of recommendations • Report results and an implementation plan to the Commission.
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Determine the most cost-effective method for providing customers with interval data to meet the needs of customers, third-party aggregators and EGS's.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • The Company proposed to maintain its current process of providing customers with 15-minute interval data upon request through KYZ pulses.

6 C(3)

On board meter storage of meter data

<p>Pilot/Evaluation</p>	<p>On-board meter storage</p> <ul style="list-style-type: none"> • A pilot will be conducted to test the ability to acquire any or all of those 30 days of data and revalidate it in the meter data management system (MDMS). Pilot planning will begin in 2011 and the pilot will be conducted beginning in 2012 and ending in 2014.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The estimated project cost is \$470,000.
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Implement software application changes and upgrades to the smart meter infrastructure and the MDMS • Implement changes to business process for validation, editing and estimation of billing and presentation data • Develop/implement required Company software and IT programming changes • Evaluate pilot results • Development of a potential implementation plan • Report results and proposed implementation plan to the Commission.
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Tests the operation and performance of the meters' extended memory capabilities • Demonstrates the ability to support the on-board storage capability • Provides the ability to re-acquire lost data for more accurate billing information and data presentment
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • None planned, except for deploying normally purchased new meters to meet this requirement going forward in the smart meter plan. This plan will provide smart meters for new construction, customer requests, and replacement of damaged and defective meters.

6 C(4)

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

Pilot/Evaluation	<p>In-Home Display/Home Area Network</p> <ul style="list-style-type: none"> • Conduct a home area network pilot trial beginning in 2012 and concluding in 2013 to develop the appropriate technology that meets customer requirements and expectations. The pilot will incorporate IEEE 802.11 compliant wireless local area network (WLAN) communications.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none"> • The estimated project cost is \$524,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none"> • Establish pilot objectives • Provide price and consumption information to the customer to aid in making energy efficient buying decisions • Evaluate bidirectional communications to the end-use devices • Invite customers to participate in the pilot • Provide the meter and home display hardware including any equipment installation • Develop/implement any required software and IT programming changes • Evaluate pilot results • Development of a potential implementation plan • Report results and proposed implementation plan to the Commission
High Level Benefits	<ul style="list-style-type: none"> • Contributes to the reduction of energy consumption through "conservation smart" automated home controls • Provides the basic hardware foundation for special rate initiatives such as critical peak pricing • Enables the customer to understand and control their energy consumption.
Potential Implementation	<ul style="list-style-type: none"> • Future implementation plans will be submitted as part of the final plan submitted in 2014.

6 C(4)

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

Pilot/Evaluation	AMI System Security Assessment <ul style="list-style-type: none">• PPL Electric proposes to conduct a security assessment of its AMI systems and processes beginning in 2013.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The estimated project cost is \$200,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Establish pilot objectives• Conduct pilot• Evaluate pilot results• Development of a potential implementation plan• Report results and proposed implementation plan to the Commission
High Level Benefits	<ul style="list-style-type: none">• Understand security risks and vulnerabilities for new AMI features being offered such as remote service disconnect and in home display.
Potential Implementation	<ul style="list-style-type: none">• Findings from the evaluation will be incorporated into future implementation plans.

6 C(5)

Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible

<p>Pilot/Evaluation</p>	<p>General Obsolescence and Upgrade Issues Projects include: 1. Next generation PLC based system evaluation 2. TWACS 20 Pilot 3. Telecommunications Substation Modem evaluation and replacement 4. Real Time Path mapping in PLC based system 5. PLC Based System Enhancements</p> <ul style="list-style-type: none"> • PPL Electric will conduct technological and economic evaluations that can enhance the performance of the existing AMI components as well as on next generation smart meter system technologies and Smart Grid integration. These evaluations will consider obsolescence of the communications infrastructure equipment and meters, replacement with new technology that enable PPL Electric to extend the minimum requirements and support the additional capabilities.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The estimated cost of all projects listed above is \$4,933,000.
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Evaluate the existing power line smart meter infrastructure in 2011 that extend the minimum requirements and support the additional capabilities, as well as the proposed enhancements • Evaluate Smart Grid Integration over the period from 2011 to 2014 that extend the communication infrastructure's capability to backhaul AMI/Smart Grid data more effectively • Consider additional or new smart meter infrastructure equipment to enhance data capture and accommodate new end use devices • Continually evaluate the next generation of AMI technologies for applicability at PPL Electric. • Periodically report results and potential implementation plans to the Commission.
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Effectively manage obsolescence of existing smart meter infrastructure • Positions PPL Electric for additional capabilities including <i>Smart Grid related applications and operations</i> • Improves efficiency in backhauling advanced meter data.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • Implementation would occur simultaneously as each technology is researched and replaced.

6 C(5)

Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible

Pilot/Evaluation	Service Limiting/Service Extending <ul style="list-style-type: none">• PPL Electric originally intended to conduct a pilot to deploy this enhanced capability at 500 customer accounts from 2013 through 2014. Pilot planning began in 2012. However, as explained in this filing, PPL does not recommend moving forward with a pilot evaluation of the service extending functionality. PPL will continue to monitor the development of the technology and potential application to utility business processes.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The cost to conduct this evaluation is \$10,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• N/A
High Level Benefits	<ul style="list-style-type: none">• N/A
Potential Implementation	<ul style="list-style-type: none">• N/A

6 C(5)

Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible

<p>Pilot/Evaluation</p>	<p>Pre-pay Metering</p> <ul style="list-style-type: none"> • PPL intends to conduct a pilot from 2013 through 2015 that will be offered to 500 residential customers. PPL will solicit a select customer base for the pilot, which will exclude low income customers as defined in 52 Pa. Code Section 56.17. Through the planning and pilot implementation, the Company will assure that public policy issues reflected in the Commission's regulations are addressed. • Pilot planning will begin in 2012.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The estimated project cost is \$550,000.
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Establish pilot objectives • Invite 500 customer to participate in pilot • Purchase and installation of meter hardware with an integrated disconnect and in-home display • Develop/implement required software and IT programming changes • Evaluate pilot results • Development of recommendations for implementation • Periodically report results and a proposed implementation plan.
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Contributes to reduction in the customer's energy consumption • Enables customers to effectively learn how to manage their electric energy payments • Enhances customer payment options • Reduces the need to dispatch personnel to disconnect and reconnect because the customer possesses the control to disconnect/reconnect safely when payment credits expire/recharged.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • The Company intends to hold a stakeholder meeting in the fall of 2012 and to file a Petition no later than the first quarter of 2013 requesting Commission authority to implement a prepay metering pilot program.

6 C(5)

Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible

<p>Pilot/Evaluation</p>	<p>Momentary Outage Monitoring</p> <ul style="list-style-type: none"> • PPL Electric is conducting a pilot in 2012 through 2014 to further refine the use of momentary interruption (blink count) information to determine how blink information can be provided proactively. This would be accomplished through the aggregation of blink count data in a meaningful way to aid in determining the approximate location of the device that operated.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The estimated project cost is \$213,000
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Develop and enhance business processes that actively review customer blink information • Determine the most likely location of a momentary operation • Ascertain how the customer blink information can be incorporated into PPL Electric's outage management system to refine PPL Electric's outage detection analysis and post outage restoration • Assure that automation of the processes is implemented for ease of application of the information for all business users. • Develop/implement required software and IT programming changes • Evaluate the results • Development of recommendations for potential implementation • Report results and implementation plan to the Commission
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Enables proactive messaging to Company engineers when the blink counts reach a specific threshold limit • Alerts the engineer that an issue may be occurring at the customer location or the feeder servicing that customer or group of customers • Enables engineers to take action to begin their investigation and contact the customer(s) to query if they are experiencing any issues as well as informing them that PPL Electric is working on it • Identifies and resolves device issues which have frequent momentary operations • Improves satisfaction of customers who experienced significant numbers of momentary interruptions.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • Implementation would occur simultaneously as this capability is developed and enhanced.

6 C(5)

Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible

Pilot/Evaluation	Accelerated Supplier Switching <ul style="list-style-type: none">• This project will enable customers to switch suppliers more quickly than the current supplier switching rules and will be implemented in accordance with the guidance from the Retail Market Investigation.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The estimated project cost is \$737,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Develop scope, costs and detailed schedule• Work with key stakeholders and Retail Market Investigation• Evaluate all impacted systems• Develop new procedures and processes• <i>Develop training and documentation for customer service</i>• Implement in accordance with final guidance from Retail Market Investigation
High Level Benefits	<ul style="list-style-type: none">• <i>Improve customer satisfaction and development of retail markets by allowing off-cycle switching (limited to one off-cycle switch per month).</i>
Potential Implementation	<ul style="list-style-type: none">• This project is expected to be implemented in 2013.

6 C(5)

Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible

Pilot/Evaluation	<p>VCharge Pilot</p> <ul style="list-style-type: none"> • This pilot would give the Company the ability to support customer participation in the PJM regulation market • VCharge technology can control when certain devices, such as <i>Electric Thermal Storage heaters</i>, consume electricity. • This technology also can optimize energy purchases by comparing estimates of the amount of space heating energy needed by a home each day (utilizing forecasted weather conditions) with day-ahead hourly price information.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none"> • The estimated project cost is \$550,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none"> • <i>Select 350 Rate Schedule RTS customers</i> • Offer \$500 home rebates for SmartBricks hardware • Software and IT programming • Evaluate the results of the pilot • Develop an implementation plan • Report results, as well as the implementation plan, to the Commission.
High Level Benefits	<ul style="list-style-type: none"> • The VCharge technology will automatically control customers' consumption so that customers purchase electricity and provide regulation at the most opportune times. • This technology can provide second-to-second control over transactive loads. • VCharge technology would establish and implement a schedule for purchasing electricity during the lowest cost hours while maintaining comfort levels in a customer's home. • Permit customers to save on electricity costs.
Potential Implementation	<ul style="list-style-type: none"> • If the pilot is successful, PPL Electric will be able to work with technology providers to interface with commercial products on a broader scale.

6 C(5)

Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible

Pilot/Evaluation	Supplier Portal Pilot <ul style="list-style-type: none">• This project is to pilot and evaluate an alternative method of providing large amounts of energy usage and interval data to suppliers through a secure portal.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The estimated project cost is \$596,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Develop scope, costs and detailed schedule• Work with key stakeholders to develop standards• Develop processes and procedures• Create a secure data environment, wherein EGSs, and potentially other third parties, can access usage data directly without the need for an EDI request and response
High Level Benefits	<ul style="list-style-type: none">• Direct access to customer meter data in a more timely manner• Secure data environment• More efficient than the current EDI system• Less expensive than the current EDI system
Potential Implementation	<ul style="list-style-type: none">• If successful, PPL Electric potentially would implement on a broader scale and look for additional opportunities and entities that could utilize the data and the secure portal.

6 C(5)

Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible

Pilot/Evaluation	MDM Data Warehouse and Analytics <ul style="list-style-type: none">• This project is to copy customer meter data into a data warehouse (i.e., non-production) environment to improve PPL Electric's analytical capability to support suppliers and customers.• The Company proposes to install a data warehouse for meter data beginning in 2012.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The estimated project cost is \$2,223,000, of which \$1,723,000 will be spent in 2012, and \$500,000 will be spent in 2013.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• The Company would take a phased approach to the project.• 2012 - Phase 1 - Install all required software and hardware for the meter data warehouse.• 2013 - Phase 2 - Develop an advanced data analytics for meter data.
High Level Benefits	<ul style="list-style-type: none">• Ad-hoc querying capability• Improve MDMS operational performance• Enhance PPL Electric's ability to provide smart meter data to customers and EGSs.• Improve ability to perform better analysis of meter data to better serve customers
Potential Implementation	<ul style="list-style-type: none">• Implementation would occur simultaneously with the two phases of this project.

6 C(6)

Ability to monitor voltage at each meter and report data in a manner that allows an EDC to react to the information

<p>Pilot/Evaluation</p>	<p>Projects include:</p> <ol style="list-style-type: none"> 1. Site Scan Enhancement in wireless-based system 2. Voltage Monitoring in PLC-based system <ul style="list-style-type: none"> • In 2010, PPL Electric began implementing an enhancement that applies more precise voltage, current and relational phase angle information from the Company's large power meters for diagnosing meter and service issues. This enhancement was implemented in 2011 for the large power meters. • A pilot will be conducted from 2011 through 2014 to further the measurement, collection and analysis of voltage information to enhance PPL Electric's distribution system reliability using the power line AMI system.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • Large power meter information enhancement - \$143,000 • PLC based pilot - \$320,000
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Determine the feasibility of gathering this new information by performing an impact analysis on the AMI to ensure there are no performance issues • Export the data collected into a meter data management system which provides a facility for engineers to access and apply the data in business applications • Develop/implement required software and IT programming changes • Establish and report results and implementation plan to the Commission.
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Application of voltage profiling information at a customer, transformer and circuit level will provide information on the health of an entire circuit • Use of this information will alert PPL Electric to customer voltage problems, thereby increasing customer satisfaction by correcting voltage issues on a proactive basis • Applications of voltage, current and relational phase angles information will proactively aid identification of defective metering equipment to avoid revenue loss • Will provide pertinent information to a smart grid strategy that will enable PPL Electric to reduce voltage when needed to maintain distribution system reliability • Will provide a framework for an accurate operational model, which will provide faster customer restoration, and more efficient system utilization.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • Implementation of the PLC-based pilot would occur simultaneously as the capability is developed and enhanced

6 C(7)

Ability to remotely reprogram the meter

Pilot/Evaluation	<ul style="list-style-type: none">• PPL Electric will be evaluating ways to continue refining the power line smart meter infrastructure's remote programming capabilities. These evaluations are associated with the work described in Section 6C(5).
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The costs to complete these evaluations are included in Section 6C(5).
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Demonstrate enhanced ability to reprogram meters• Upgrade the system's equipment firmware to improve performance• Consider potential equipment hardware upgrades to accommodate enhanced functionality.• Reporting results and implementation plans to the Commission.
High Level Benefits	<ul style="list-style-type: none">• Benefits are similar to that described in Section 6C(5).
Potential Implementation	<ul style="list-style-type: none">• Embedded in that described in Section 6C(5).

6 C(8)

Ability to communicate outages and restorations

<p>Pilot/Evaluation</p>	<p>Proactive Outage Detection</p> <ul style="list-style-type: none"> • PPL Electric will define roadmaps and conduct a pilot to further enhance use of the existing AMI's capabilities in 2012. • The objective of the pilot will be to determine the system-wide feasibility of using the power line system for proactive meter outage detection for the purpose of distribution system health checks and active outage detection.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The estimated project cost is \$160,000.
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Establish pilot objectives • Demonstrate improvement in the accuracy of existing pings through the investigation and mediation of performance issues • Integrate SCADA data to proactively "ping" customers' meters to assess service status • Optimize "ping" services to more actively assess outage conditions and dispatch personnel where required • Reporting results and implementation plan to the Commission.
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Implements proactive pinging of customers' meters to determine their outage status will help reduce outage times for customers, specifically for smaller outages, or outages where a customer would not normally report that they are out of service • Ability to know outage types and locations will more quickly allow PPL Electric to report that information to customers who do call in • Will provide a framework for more quickly performing proactive outage notification feature in the future for customers to elect that option.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • Implementation would occur simultaneously as the capability is developed and enhanced.

6 C(8)

Ability to communicate outages and restorations

Pilot/Evaluation	Outage Duration <ul style="list-style-type: none">• PPL will conduct a pilot beginning in 2012 to further enhance the use of outage information.• The objective of the pilot will be to determine the system-wide feasibility of using the power line system for retrieving meter outage duration and time stamp information for the purpose of meter data validation, power quality analysis, and outage management.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• The estimated project cost is \$99,000.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• Establish pilot objectives, cost and detailed schedule• Demonstrate ability to retrieve outage duration information from meters• Develop analysis tools• Determine how to use the information in the meter data validation and outage management processes.
High Level Benefits	<ul style="list-style-type: none">• Improved power quality analysis and customer service• Improved VEE process• More accurate information on customer outages.
Potential Implementation	<ul style="list-style-type: none">• If the pilot is successful, PPL Electric will implement on a broader scale and look for additional opportunities to use the data.

6 C(9)

Ability to support net metering of customer generators

<p>Pilot/Evaluation</p>	<p>Customer-Owned Generation</p> <ul style="list-style-type: none"> • PPL Electric piloted, in 2010 and 2011, the functionality and performance of the new bi-directional meters in its infrastructure that measure energy flow at the PPL Electric point of contact. The pilot will consist of using 400 bi-directional meters in the power line smart meter system that will provide net energy usage on an interval basis measuring delivered and received energy flowing to the PPL Electric grid. The pilot customers will be existing net metering customers with older vintage meters.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • The actual cost of the pilot and implementation was \$261,415.
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Identify approximately 400 existing net metering customers and replace their meter to the new standard power line meter • Meter hardware and installation • Develop/implement required software and IT programming changes for the AMI and MDMS • Evaluate pilot results • Establish an implementation plan • Report results and implementation plan to the Commission.
<p>High Level Benefits</p>	<ul style="list-style-type: none"> • Supports the functional operation and performance capabilities of the power line smart meter infrastructure and bi-directional meters • Meets the intent of the Commission's Net Metering tariffs • Provides a feasible and economical meter solution to monitor AEPS renewable energy requirements through measurement of the generation output of applicable generation sources.
<p>Potential Implementation</p>	<ul style="list-style-type: none"> • Implementation was completed to fully support net metering for customers with generation installed. This included meter changes. Within the pilot, it was determined that minimal changes were required to the Company's MDMS, customer information and billing systems.

Attachment 4

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PPL Electric Utilities Corporation

GENERAL TARIFF

**RULES AND RATE SCHEDULES
FOR ELECTRIC SERVICE**

In the territory listed on pages 4, 4A, and 4B and in the adjacent territory served.

ISSUED: August 1, 2012

EFFECTIVE: January 1, 2013

Issued by

GREGORY N. DUDKIN, PRESIDENT

Two North Ninth Street
Allentown, PA 18101-1179

NOTICE

THIS TARIFF MAKES (CHANGES) IN EXISTING RATES. SEE PAGE TWO.

LIST OF CHANGES MADE BY THIS SUPPLEMENT

CHANGES:

Smart Meter Rider (SMR)
Page No. 19Z.14

The charges under the SMR are set forth for the period January 1, 2013 through December 31, 2013.

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SMART METER RIDER (CONTINUED)

SMART METER RIDER CHARGE

Charges under the SMR for the period January 1, 2013 through December 31, 2013, as set forth in the applicable Rate Schedules.

Customer Class	Large C&I	Small C&I	Residential
Rate Schedule / Charge	LP-4, IS-P (R), LP-5, LP-6, LPEP, IS-T (R), and L5S	GS-1, GS-3, IS-1 (R), BL, GH-1 (R), and GH-2 (R)	RS, RTS (R), and RTD (R)
	\$0.037/Bill (D)	\$0.00002/KWH (D)	\$0.00005/KWH (D)

Small I&C – Street Lights									
Rate Schedule/ Charge	SA	SM (R)		SHS		SE	TS (R)	SI-1 (R)	
	\$/Lamp (D)	Nominal Lumens	\$/Lamp (D)	Nominal Lumens	\$/Lamp (D)	\$/KWH (D)	\$/Watt (D)	Lumens	\$/Lamp (D)
0.001		3,350	0.001	5,800	0.001	0.00002	0.00001	600	0.000
		6,650	0.002	9,500	0.001			1,000	0.001
		10,500	0.002	16,000	0.001			4,000	0.002
		20,000	0.003	25,000	0.002				
		34,000	0.006	50,000	0.004				
		51,000	0.008						

(I) Indicates Increase (D) Indicates Decrease

PPL ELECTRIC UTILITIES CORPORATION
COMPUTATION OF PROPOSED 2013
SMART METER RIDER

Docket No. M-2009-2123945

August 1, 2012

PPL ELECTRIC UTILITIES CORPORATION
SCHEDULE 1 - COMPUTATION OF PROPOSED SMART METER RIDER
COMPUTATION PERIOD: JANUARY 1, 2013 THROUGH DECEMBER 31, 2013

<u>Line No.</u>	<u>Total</u>	<u>Residential</u>	<u>Small Commercial & Industrial</u>	<u>Large Commercial & Industrial</u>
1 Smart Meter Rider Charge		(A)	(A)	(B)
2 SMc = Smart Meter Cost	\$ 2,001,109	\$ 1,720,260	\$ 279,609	\$ 1,240
3 Es = Experienced Net (Over)/Under Collection, including interest through June 30, 2012*	<u>(1,231,513)</u>	<u>(1,132,412)</u>	<u>(98,407)</u>	<u>(694)</u>
4 Total Smart Meter Rider Charge (Line 2 + Line 3)	<u>\$769,596</u>	<u>\$587,848</u>	<u>\$181,202</u>	<u>\$546</u>
5 S = Projected Total Delivered KWH Sales to Customers	<u>36,366,313,000</u>	<u>13,682,085,000</u>	<u>10,940,899,000</u>	<u>11,743,329,000</u>
6 N = Number of bills per year				15,888 (E)
7 $\frac{1}{(1-T)}$ = (T = 5.9% Gross Receipts Tax) x	1.0627			
8 SMR = Smart Meter Rider (\$/ KWH)				
Rate (\$/KWH) (w/o GRT)		\$ 0.00004	0.00002	0.03436 (C)
Rate (\$/KWH) (w/ GRT)		\$ 0.00005	0.00002	0.03651 (D)

(A) $SMR = \{SMc/S-Es/S\}x1/1-T$

(B) $SMR = \{SMc/N-Es/N\}x1/(1-T)$

(C) Rate (\$/Bill) (w/o GRT)

(D) Rate (\$/Bill) (w/ GRT)

(E) Number of customers x 12

* See Appendix 1.

**Smart Meter Program
Schedule 2 - Revenue Requirement**

		<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>
Residential					
Rate Base					
Net Plant ¹		\$ 329,235	\$ 1,709,045	\$ 4,554,014	\$ 7,520,257
ADIT ¹		\$ (66,520)	\$ (473,279)	\$ (952,561)	\$ (1,233,384)
Rate Base ¹		262,715	1,235,766	3,601,452	6,286,872
Rate Base ²		262,715	1,235,766	2,176,133	5,178,830
Return On Investment	8.27%	21,727	102,198	179,966	428,289
Income Taxes ³		9,931	30,852	85,713	201,481
O&M		455,881	571,326	527,570	362,846
Deferred Income Tax Expense		66,520	406,759	479,283	280,823
Depreciation Expense		7,478	69,118	191,542	446,821
Residential Revenue Requirement		\$ 561,537	\$ 1,180,251	\$ 1,464,074	\$ 1,720,260

Small C&I					
Rate Base					
Net Plant ¹		\$ 117,115	\$ 295,999	\$ 692,004	\$ 1,274,769
ADIT ¹		\$ (20,679)	\$ (60,269)	\$ (130,797)	\$ (168,106)
Rate Base ¹		96,436	235,730	561,207	1,106,663
Rate Base ²		96,436	235,730	363,388	924,829
Return On Investment	8.27%	7,975	19,495	30,052	76,483
Income Taxes ³		3,645	6,807	14,223	35,980
O&M		66,553	82,392	77,847	52,589
Deferred Income Tax Expense		20,679	39,591	70,528	37,309
Depreciation Expense		3,463	14,393	31,042	77,248
Small C&I Revenue Requirement		\$ 102,316	\$ 162,678	\$ 223,692	\$ 279,609

Large C&I					
Rate Base					
Net Plant ¹		\$ 847	\$ 1,992	\$ 2,023	\$ 4,899
ADIT ¹		\$ (144)	\$ (355)	\$ (392)	\$ (494)
Rate Base ¹		703	1,637	1,631	4,405
Rate Base ²		703	1,637	1,652	3,284
Return On Investment	8.27%	58	135	137	272
Income Taxes ³		27	46	63	128
O&M		696	465	697	587
Deferred Income Tax Expense		144	211	36	102
Depreciation Expense		22	96	147	152
Large C&I Revenue Requirement		\$ 947	\$ 954	\$ 1,081	\$ 1,240

Smart Meter Program
Schedule 2 - Revenue Requirement

Total				
Rate Base				
Net Plant ¹	\$ 447,197	\$ 2,007,036	\$ 5,248,040	\$ 8,799,925
ADIT ¹	(87,343)	(533,903)	(1,083,750)	(1,401,984)
Rate Base ¹	359,854	1,473,133	4,164,290	7,397,941
Rate Base ²	359,854	1,473,133	2,541,174	6,106,943
Return On Investment	29,760	121,828	210,155	505,044
Income Taxes ³	13,603	37,705	99,999	237,589
O&M	523,130	654,182	606,115	416,021
Deferred Income Tax Expense	87,343	446,561	549,847	318,234
Depreciation Expense	10,964	83,607	222,732	524,221
Total Revenue Requirement	\$ 664,800	\$ 1,343,883	\$ 1,688,847	\$ 2,001,109

1. Based on December 31 balance for the respective year.

2. 2010 and 2011 Rate Base reflects the balance at December 31, 2010 and 2011, respectively; 2012 Rate Base reflects a 13-month average balance for the period December 31, 2011 through December 31, 2012. 2013 Rate Base reflects a 13-month average balance for the period December 31, 2012 through December 31, 2013.

3. Income Taxes is a blended rate of 45.7086% through July 2011 and 46.2231% from August 2011 through June 2012.

Residential Revenue Requirement Calculation		Actual 2012 YTD through Jun	2012 Projection Jul-Dec	2013 PUC Budget	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12
01 - Load Control Pilot	Capital	\$ 6,967	\$ -	\$ -	\$ 480	\$ 3,357	\$ 652	\$ 1,563	\$ -	\$ 815	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
01 - Load Control Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02 - Customer Owned Generation Pilot	Capital	60,307	4,189	-	698	698	698	698	65,816	698	698	698	698	698	698	698
02 - Customer Owned Generation Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03 - IHD/HAN Evaluation and Pilot	Capital	25,024	38,264	15,000	6,240	12,151	3,968	1,373	964	1,198	500	500	9,316	9,316	9,316	9,316
03 - IHD/HAN Evaluation and Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04 - Price and Usage Information Evaluation	Capital	7,363	22,700	-	5,262	1,295	-	308	-	498	2,838	13,312	2,838	2,838	436	436
04 - Price and Usage Information Evaluation	Expense	(2,132)	-	-	-	-	(2,132)	-	-	-	-	-	-	-	-	-
05 - Telecommunication Substation Modern Pilot and Implement	Capital	938	7,804	-	70	482	309	-	77	-	1,301	1,301	1,301	1,301	1,301	1,301
05 - Telecommunication Substation Modern Pilot and Implement	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
06 - Enhance Site Scan Implementation	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
06 - Enhance Site Scan Implementation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07 - Voltage Monitoring Pilot	Capital	45,283	87,734	21,836	5,895	4,937	5,716	7,903	8,026	12,787	33,307	33,307	7,110	6,232	3,889	3,889
07 - Voltage Monitoring Pilot	Expense	141	-	-	141	-	-	-	-	-	-	-	-	-	-	-
08 - Next Generation Technology	Capital	-	1,523,023	462,933	-	-	-	-	-	-	9,535	9,535	531,298	481,560	481,560	9,535
08 - Next Generation Technology	Expense	2,526	-	21,833	81,741	(60,838)	1,299	0	231	92	-	-	-	-	-	-
09 - Proactive Outage Detection Evaluation	Capital	22,196	3,593	-	7,947	7,103	3,747	1,600	1,055	742	599	599	599	599	599	599
09 - Proactive Outage Detection Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10 - 15-minute Interval Data Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10 - 15-minute Interval Data Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11 - Remote Disconnection/Reconnection Pilot	Capital	283,829	330,572	65,585	4,751	15,119	23,582	33,894	53,520	152,963	71,806	138,462	51,050	26,808	26,808	15,641
11 - Remote Disconnection/Reconnection Pilot	Expense	25,641	14,993	-	883	17,129	(1,303)	5,729	-	3,203	14,993	-	-	-	-	-
12 - On-board Meter Data Storage Pilot	Capital	31,380	49,783	209,220	197	152	12,286	6,841	4,706	7,198	8,297	8,297	8,297	8,297	8,297	8,297
12 - On-board Meter Data Storage Pilot	Expense	2,929	-	-	794	2,014	(732)	179	739	(60)	-	-	-	-	-	-
13 - Real Time Pathmapping Evaluation	Capital	2,638	21,435	17,473	-	-	213	657	1,316	450	3,573	3,573	3,573	3,573	3,573	3,573
13 - Real Time Pathmapping Evaluation	Expense	8,598	4,108	-	-	452	4,194	1,327	2,623	822	822	822	822	822	822	822
14 - PLC-Based System Enhancement Evaluation	Capital	203,353	137,589	412,378	-	81,741	49,702	36,828	6,040	29,042	99,089	23,388	5,982	5,982	1,573	1,573
14 - PLC-Based System Enhancement Evaluation	Expense	2,378	-	-	1,820	184	85	210	-	-	-	-	-	-	-	-
15 - Momentary Outage Monitoring Pilot	Capital	30,789	80,003	48,039	1,179	1,474	13,484	8,045	2,781	3,806	13,334	13,334	13,334	13,334	13,334	13,334
15 - Momentary Outage Monitoring Pilot	Expense	435	-	-	751	2,536	(2,852)	-	-	-	-	-	-	-	-	-
17 - Service Extender Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17 - Service Extender Pilot	Expense	6,619	3,381	-	-	348	254	4,102	1,457	458	3,131	250	-	-	-	-
18 - Pre-Pay Metering Pilot	Capital	-	-	400,003	-	-	-	-	-	-	-	-	-	-	-	-
18 - Pre-Pay Metering Pilot	Expense	22,554	27,445	-	-	607	1,184	10,859	5,544	4,560	4,574	4,574	5,718	4,193	4,193	4,193
19 - Accelerated Supplier Switching Project (Off-Cycle)	Capital	-	-	598,097	-	-	-	-	-	-	-	-	-	-	-	-
19 - Accelerated Supplier Switching Project (Off-Cycle)	Expense	15,791	-	-	-	-	-	-	-	15,791	-	-	-	-	-	-
20 - Real-Time Pricing for Mid-Sized C&I Customers	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 - Real-Time Pricing for Mid-Sized C&I Customers	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21 - Improved VEE Process to Incorporate Outage Data	Capital	-	-	67,933	-	-	-	-	-	-	-	-	-	-	-	-
21 - Improved VEE Process to Incorporate Outage Data	Expense	6,454	-	-	-	-	-	-	-	6,454	-	-	-	-	-	-
22 - Outage Duration Pilot	Capital	-	-	66,092	-	-	-	-	-	-	-	-	-	-	-	-
22 - Outage Duration Pilot	Expense	7,944	-	-	-	-	-	-	-	7,944	-	-	-	-	-	-
23 - MDM Data Warehouse & Analytics	Capital	-	-	438,179	-	-	-	-	-	-	-	-	-	-	-	-
23 - MDM Data Warehouse & Analytics	Expense	282	-	-	-	-	-	-	-	282	-	-	-	-	-	-
24 - Faster Data Presentation to Customers & Suppliers	Capital	-	-	81,315	-	-	-	-	-	-	-	-	-	-	-	-
24 - Faster Data Presentation to Customers & Suppliers	Expense	3,903	-	-	-	-	-	-	-	3,903	-	-	-	-	-	-
25 - Supplier Portal Pilot	Capital	-	-	510,981	-	-	-	-	-	-	-	-	-	-	-	-
25 - Supplier Portal Pilot	Expense	3,390	-	-	-	-	-	-	-	3,390	-	-	-	-	-	-
26 - Vcharge Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26 - Vcharge Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Program Management - Smart Meter Team	Expense	222,173	148,018	341,013	42,744	27,525	45,054	21,971	43,900	40,978	20,223	19,450	19,450	38,035	31,302	19,558
Total		\$ 1,059,447	\$ 2,504,635	\$ 3,775,910	\$ 161,703	\$ 98,448	\$ 159,428	\$ 143,888	\$ 198,794	\$ 297,187	\$ 288,618	\$ 271,490	\$ 661,385	\$ 603,588	\$ 587,700	\$ 91,842
Capital					\$ 32,728	\$ 128,508	\$ 114,378	\$ 99,711	\$ 144,301	\$ 210,197	\$ 244,876	\$ 248,304	\$ 835,396	\$ 560,538	\$ 551,384	\$ 68,192
Expense					\$ 128,975	\$ (30,060)	\$ 45,050	\$ 44,177	\$ 54,493	\$ 86,990	\$ 43,742	\$ 25,096	\$ 25,990	\$ 43,050	\$ 36,317	\$ 23,751
Rate Base																
Net Plant					\$ 1,731,781	\$ 1,849,810	\$ 1,853,054	\$ 2,041,037	\$ 2,172,931	\$ 2,369,737	\$ 2,599,959	\$ 2,830,243	\$ 3,447,170	\$ 3,985,918	\$ 4,512,422	\$ 4,554,014
ADIT					(472,479)	(473,557)	(476,219)	(480,498)	(487,598)	(490,453)	(517,814)	(544,087)	(597,010)	(681,981)	(811,736)	(952,561)
Monthly Rate Base					\$ 1,259,282	\$ 1,376,253	\$ 1,476,835	\$ 1,560,541	\$ 1,685,333	\$ 1,879,284	\$ 2,082,144	\$ 2,286,157	\$ 2,850,161	\$ 3,304,937	\$ 3,700,686	\$ 3,601,452
Return On Investment (2010 - actual, 2011-13 mo. Avg.)		8.27%			\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968	\$ 179,968
Income Taxes		45.84%			82,098	82,098	82,098	82,098	82,098	82,493	82,493	82,493	82,493	82,493	82,493	82,493
O&M					128,975	(30,060)	45,050	44,177	54,493	86,990	43,742	25,096	25,990	43,050	36,317	23,751
Deferred Income Tax Expense					(799)	1,078	2,862	4,277	7,102	11,855	18,361	26,272	52,923	84,071	130,855	140,825
Depreciation Expense					10,911	10,459	11,134	11,728	12,408	13,391	14,655	16,019	18,468	21,781	24,879	26,900
Residential Revenue Requirement					\$ 400,250	\$ 243,541	\$ 320,910	\$ 322,248	\$ 338,065	\$ 374,300	\$ 339,218	\$ 329,847	\$ 359,841	\$ 411,371	\$ 454,311	\$ 453,638

Residential Revenue Requirement Calculation		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
01- Lead Control Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-
01- Lead Control Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
02- Customer Owned Generation Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-
02- Customer Owned Generation Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
03- IHDMAN Evaluation and Pilot	Capital	2,143	2,143	2,143	2,143	2,143	2,143	2,143	-	-	-	-	-
03- IHDMAN Evaluation and Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
04- Price and Usage Information Evaluation	Capital	-	-	-	-	-	-	-	-	-	-	-	-
04- Price and Usage Information Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-
05 - Telecommunication Substation Modern Pilot and Implement	Capital	-	-	-	-	-	-	-	-	-	-	-	-
05 - Telecommunication Substation Modern Pilot and Implement	Expense	-	-	-	-	-	-	-	-	-	-	-	-
06 - Enhance Site Scan Implementation	Capital	-	-	-	-	-	-	-	-	-	-	-	-
06 - Enhance Site Scan Implementation	Expense	-	-	-	-	-	-	-	-	-	-	-	-
07 - Voltage Monitoring Pilot	Capital	4,367	4,367	4,367	4,367	4,367	-	-	-	-	-	-	-
07 - Voltage Monitoring Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
08 - Next Generation Technology	Capital	38,578	38,578	38,578	38,578	38,578	38,578	38,578	38,578	38,578	38,578	38,578	38,578
08 - Next Generation Technology	Expense	1,819	1,819	1,819	1,819	1,819	1,819	1,819	1,819	1,819	1,819	1,819	1,819
09 - Proactive Outage Detection Evaluation	Capital	-	-	-	-	-	-	-	-	-	-	-	-
09 - Proactive Outage Detection Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-
10 - 15-minute Interval Data Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-
10 - 15-minute Interval Data Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
11 - Remote Disconnection/Reconnection Pilot	Capital	5,474	5,474	5,474	5,474	5,474	5,474	5,474	5,474	5,474	6,934	5,474	3,911
11 - Remote Disconnection/Reconnection Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
12 - On-board Meter Data Storage Pilot	Capital	6,517	6,517	6,517	6,517	6,517	6,517	6,517	6,517	6,517	137,535	6,517	6,517
12 - On-board Meter Data Storage Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
13 - Real Time Pathmapping Evaluation	Capital	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456
13 - Real Time Pathmapping Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-
14 - PLC-Based System Enhancement Evaluation	Capital	-	-	58,911	58,911	58,911	58,911	58,911	58,911	58,911	-	-	-
14 - PLC-Based System Enhancement Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-
15 - Momentary Outage Monitoring Pilot	Capital	8,863	8,863	8,863	8,863	8,863	8,863	8,863	8,863	-	-	-	-
15 - Momentary Outage Monitoring Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
17 - Service Extender Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-
17 - Service Extender Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
18 - Pre-Pay Metering Pilot	Capital	13,673	13,673	13,673	13,673	133,906	118,906	18,906	18,906	13,673	13,673	13,673	13,666
18 - Pre-Pay Metering Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
19 - Accelerated Supplier Switching Project (Off-Cycle)	Capital	85,585	85,585	85,585	85,585	85,585	85,585	85,585	-	-	-	-	-
19 - Accelerated Supplier Switching Project (Off-Cycle)	Expense	-	-	-	-	-	-	-	-	-	-	-	-
20 - Real-Time Pricing for Mid Sized C&I Customers	Capital	-	-	-	-	-	-	-	-	-	-	-	-
20 - Real-Time Pricing for Mid Sized C&I Customers	Expense	-	-	-	-	-	-	-	-	-	-	-	-
21 - Improved VEE Process to Incorporate Outage Data	Capital	6,720	6,720	8,775	8,775	8,775	8,775	8,775	8,775	490	490	490	460
21 - Improved VEE Process to Incorporate Outage Data	Expense	-	-	-	-	-	-	-	-	-	-	-	-
22 - Outage Duration Pilot	Capital	6,255	6,255	8,457	8,457	8,457	8,457	8,457	8,457	490	490	490	460
22 - Outage Duration Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
23 - MDM Data Warehouse & Analytics	Capital	60,331	34,168	34,168	34,168	34,168	34,168	34,168	34,168	34,168	34,168	34,168	34,168
23 - MDM Data Warehouse & Analytics	Expense	-	-	-	-	-	-	-	-	-	-	-	-
24 - Faster Data Presentation to Customers & Suppliers	Capital	-	6,894	6,894	6,894	6,894	12,127	12,127	12,127	12,127	5,233	-	-
24 - Faster Data Presentation to Customers & Suppliers	Expense	-	-	-	-	-	-	-	-	-	-	-	-
25 - Supplier Portal Pilot	Capital	-	-	63,873	63,873	63,873	63,873	63,873	63,873	63,873	63,873	63,873	-
25 - Supplier Portal Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
26 - Vcharge Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-
26 - Vcharge Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-
Program Management - Smart Meter Team	Expense	24,784	26,343	25,388	26,538	27,305	26,247	25,759	25,759	25,759	43,772	37,601	25,759
Total		\$ 284,566	\$ 248,855	\$ 372,938	\$ 374,090	\$ 495,091	\$ 479,897	\$ 379,410	\$ 284,819	\$ 263,278	\$ 347,961	\$ 140,207	\$ 126,797
Capital		\$ 237,982	\$ 218,693	\$ 345,733	\$ 345,733	\$ 465,966	\$ 451,831	\$ 351,831	\$ 257,240	\$ 235,696	\$ 302,370	\$ 100,786	\$ 99,219
Expense		\$ 26,604	\$ 28,162	\$ 27,205	\$ 28,357	\$ 29,125	\$ 28,066	\$ 27,579	\$ 27,579	\$ 27,579	\$ 45,591	\$ 39,421	\$ 27,579
Rate Base													
Net Plant		\$ 4,764,525	\$ 4,954,498	\$ 5,269,944	\$ 5,583,470	\$ 6,014,673	\$ 6,429,792	\$ 6,742,379	\$ 8,958,684	\$ 7,152,077	\$ 7,410,647	\$ 7,466,513	\$ 7,520,257
ADIT		(954,136)	(850,885)	(962,137)	(970,105)	(983,728)	(1,003,364)	(1,027,359)	(1,056,016)	(1,090,369)	(1,130,596)	(1,176,318)	(1,233,384)
Monthly Rate Base		\$ 3,810,389	\$ 3,997,613	\$ 4,307,808	\$ 4,613,364	\$ 5,031,245	\$ 5,426,428	\$ 5,715,020	\$ 5,902,668	\$ 6,061,688	\$ 6,280,050	\$ 6,290,195	\$ 6,286,872
Return On Investment (2010 - actual, 2011-13 mo. Avg.)	8.27%	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966	\$ 179,966
Income Taxes	45.64%	82,493	82,493	82,493	82,493	82,493	82,493	82,493	82,493	82,493	82,493	82,493	82,493
O&M		26,604	28,162	27,205	28,357	29,125	28,066	27,579	27,579	27,579	45,591	39,421	27,579
Deferred Income Tax Expense		1,574	2,750	5,251	7,969	13,623	18,636	23,995	28,657	34,373	40,267	45,722	57,068
Depreciation Expense		27,451	28,719	30,287	32,208	34,463	37,012	39,244	40,936	42,306	43,800	44,920	45,476
Residential Revenue Requirement		\$ 318,088	\$ 322,090	\$ 325,203	\$ 330,993	\$ 339,670	\$ 347,174	\$ 353,278	\$ 359,631	\$ 366,717	\$ 392,058	\$ 392,522	\$ 392,580

PPL Electric Utilities Corporation

Small C&I Revenue Requirement Calculation	Capital/Expense	Actual 2012 YTD through Jun	2012 Projection Jul-Dec	2013 PUC Budget	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12
01 - Load Control Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01 - Load Control Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02 - Customer Owned Generation Pilot	Capital	9,982	903	-	101	101	101	101	8,478	101	101	101	101	101	101	101
02 - Customer Owned Generation Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03 - IHD/IAN Evaluation and Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03 - IHD/IAN Evaluation and Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04 - Price and Usage Information Evaluation	Capital	1,090	3,200	-	758	186	(307)	44	-	72	400	1,017	400	400	63	63
04 - Price and Usage Information Evaluation	Expense	(707)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
05 - Telecommunication Substation Modern Pilot and Implementation	Capital	135	1,124	-	10	89	44	-	11	-	187	187	187	187	187	187
05 - Telecommunication Substation Modern Pilot and Implementation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
06 - Enhance Site Sign Implementation	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
06 - Enhance Site Sign Implementation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07 - Voltage Monitoring Pilot	Capital	6,518	12,034	3,184	849	711	823	1,138	1,150	1,841	4,798	4,798	1,024	898	500	500
07 - Voltage Monitoring Pilot	Expense	20	-	-	20	-	-	-	-	-	-	-	-	-	-	-
08 - Next Generation Technology	Capital	-	219,325	67,071	67,071	-	-	-	-	-	1,373	1,373	76,510	68,348	68,348	1,373
08 - Next Generation Technology	Expense	364	-	3,183	11,771	(11,641)	187	0	33	13	-	-	-	-	-	-
09 - Proactive Outage Detection Evaluation	Capital	3,106	517	-	1,144	1,023	540	230	152	107	86	86	86	86	86	86
09 - Proactive Outage Detection Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10 - 15-minute Interval Data Pilot	Capital	0	-	-	311	(311)	-	-	679	(679)	-	-	-	-	-	-
10 - 15-minute Interval Data Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11 - Remote Disconnection/Reconnection Pilot	Capital	40,873	47,005	9,502	694	2,177	3,300	4,637	7,707	22,028	10,340	19,820	7,351	3,800	3,800	2,252
11 - Remote Disconnection/Reconnection Pilot	Expense	3,802	-	-	127	2,467	(1,981)	825	483	2,158	-	-	-	-	-	-
12 - On-board Meter Data Storage Pilot	Capital	4,519	-	30,312	28	22	1,790	965	678	1,637	1,185	1,195	1,195	1,195	1,195	1,195
12 - On-board Meter Data Storage Pilot	Expense	422	-	-	114	290	(105)	28	106	(9)	-	-	-	-	-	-
13 - Real Time Pathways Evaluation	Capital	380	3,087	2,531	-	-	31	95	190	65	514	514	514	514	514	514
13 - Real Time Pathways Evaluation	Expense	1,238	-	592	-	65	604	191	378	118	118	118	118	118	118	118
14 - PLC-Based System Enhancement Evaluation	Capital	20,284	10,814	50,747	-	11,771	7,157	5,303	670	4,182	14,270	3,588	862	862	227	227
14 - PLC-Based System Enhancement Evaluation	Expense	342	-	-	278	24	12	30	-	-	-	-	-	-	-	-
15 - Momentary Outage Monitoring Pilot	Capital	4,431	11,521	6,900	170	212	1,942	1,150	400	548	1,920	1,920	1,920	1,920	1,920	1,920
15 - Momentary Outage Monitoring Pilot	Expense	63	-	-	106	365	(411)	-	-	-	-	-	-	-	-	-
17 - Service Extender Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17 - Service Extender Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18 - Pre-Pay Metering Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18 - Pre-Pay Metering Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19 - Accelerated Switching Project (Off-Cycle)	Capital	-	-	86,832	-	-	-	-	-	-	-	-	-	-	-	-
19 - Accelerated Switching Project (Off-Cycle)	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 - Real Time Pricing for Mid-Sized C&I Customers	Capital	2,274	-	225,550	-	-	-	-	-	2,274	-	-	-	-	-	-
20 - Real Time Pricing for Mid-Sized C&I Customers	Expense	10,500	-	-	-	-	-	-	-	10,500	-	-	-	-	-	-
21 - Improved V&E Process to Incorporate Outage Data	Capital	-	-	9,846	-	-	-	-	-	-	-	-	-	-	-	-
21 - Improved V&E Process to Incorporate Outage Data	Expense	929	-	-	-	-	-	-	-	929	-	-	-	-	-	-
22 - Outage Duration Pilot	Capital	-	-	1,144	-	-	-	-	-	-	-	-	-	-	-	-
22 - Outage Duration Pilot	Expense	-	-	-	-	-	-	-	-	1,144	-	-	-	-	-	-
23 - MDM Data Warehouse & Analytics	Capital	-	-	63,219	-	-	-	-	-	-	-	-	-	-	-	-
23 - MDM Data Warehouse & Analytics	Expense	41	-	-	-	-	-	-	-	41	-	-	-	-	-	-
24 - Faster Data Presentation to Customers & Suppliers	Capital	-	-	11,786	-	-	-	-	-	-	-	-	-	-	-	-
24 - Faster Data Presentation to Customers & Suppliers	Expense	502	-	-	-	-	-	-	-	502	-	-	-	-	-	-
25 - Supplier Portal Pilot	Capital	-	-	74,000	-	-	-	-	-	-	-	-	-	-	-	-
25 - Supplier Portal Pilot	Expense	488	-	-	-	-	-	-	-	488	-	-	-	-	-	-
26 - Voltage Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26 - Voltage Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Program Management - Smart Meter Team	Expense	31,997	21,317	49,420	6,158	3,954	6,489	3,164	6,322	5,902	2,812	2,801	2,801	5,478	4,508	2,817
Total		\$ 154,157	\$ 350,737	\$ 718,602	\$ 22,829	\$ 11,498	\$ 22,084	\$ 18,172	\$ 28,181	\$ 31,616	\$ 40,382	\$ 38,317	\$ 83,079	\$ 84,878	\$ 82,688	\$ 11,295
Capital					\$ 4,055	\$ 15,002	\$ 15,803	\$ 13,036	\$ 21,321	\$ 20,301	\$ 35,192	\$ 35,308	\$ 90,160	\$ 79,380	\$ 78,061	\$ 6,478
Expense					\$ 18,574	\$ (4,400)	\$ 6,281	\$ 4,236	\$ 6,840	\$ 22,314	\$ 5,190	\$ 2,820	\$ 2,820	\$ 5,596	\$ 4,828	\$ 2,817
Rate Base																
Net Plant					\$ 298,300	\$ 312,451	\$ 326,355	\$ 338,310	\$ 357,551	\$ 384,633	\$ 417,426	\$ 450,228	\$ 537,444	\$ 613,400	\$ 687,018	\$ 802,004
ADIT					(80,411)	(60,785)	(61,378)	(62,188)	(63,436)	(65,335)	(68,169)	(72,140)	(79,892)	(82,054)	(110,800)	(130,797)
Monthly Rate Base					\$ 237,889	\$ 251,666	\$ 264,976	\$ 276,122	\$ 294,115	\$ 319,298	\$ 349,256	\$ 378,088	\$ 457,552	\$ 521,355	\$ 576,208	\$ 671,207
Return On Investment (2010 - actual, 2011-13 mo Avg)	8.27%				\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052
Income Taxes	45.84%				13,733	13,733	13,733	13,733	13,733	13,733	13,775	13,775	13,775	13,775	13,775	13,775
CGM					18,574	(4,400)	6,281	4,236	6,840	22,314	5,190	2,820	2,820	5,596	4,828	2,817
Deferred Income Tax Expense					141	374	594	819	1,238	1,690	2,834	3,071	7,752	12,162	18,755	19,988
Depreciation Expense					1,755	1,811	1,899	1,981	2,079	2,220	2,399	2,595	2,944	3,415	3,852	4,083
Small C&I Revenue Requirement					\$ 64,255	\$ 41,504	\$ 52,558	\$ 50,822	\$ 53,942	\$ 70,218	\$ 54,251	\$ 53,314	\$ 57,443	\$ 65,000	\$ 71,062	\$ 70,724

PPL Electric Utilities Corporation

Small C&I Revenue Requirement Calculation		Capital / Expense	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
01 - Load Control Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
01 - Load Control Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
02 - Customer Owned Generation Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
02 - Customer Owned Generation Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
03 - IED/AN Evaluation and Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
03 - IED/AN Evaluation and Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
04 - Price and Usage Information Evaluation	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
04 - Price and Usage Information Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
05 - Telecommunication Substation Modern Pilot and Implementation	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
05 - Telecommunication Substation Modern Pilot and Implementation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
06 - Enhance Site Scan Implementation	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
06 - Enhance Site Scan Implementation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
07 - Voltage Monitoring Pilot	Capital	633	633	633	633	633	-	-	-	-	-	-	-	-
07 - Voltage Monitoring Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
08 - Next Generation Technology	Capital	5,589	5,589	5,589	5,589	5,589	5,589	5,589	5,589	5,589	5,589	5,589	5,589	5,589
08 - Next Generation Technology	Expense	264	264	264	264	264	264	264	264	264	264	264	264	264
09 - Prospective Outage Detection Evaluation	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
09 - Prospective Outage Detection Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
10 - Quarterly Interval Data Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
10 - Quarterly Interval Data Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
11 - Remote Disconnection/Reconnection Pilot	Capital	793	793	793	793	793	793	793	793	793	793	1,005	793	567
11 - Remote Disconnection/Reconnection Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
12 - On-board Meter Data Storage Pilot	Capital	944	944	944	944	944	944	944	944	944	944	19,626	944	944
12 - On-board Meter Data Storage Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
13 - Real Time Pathmology Evaluation	Capital	211	211	211	211	211	211	211	211	211	211	211	211	211
13 - Real Time Pathmology Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
14 - PLC Based System Enhancement Evaluation	Capital	-	-	8,535	8,535	8,535	8,535	8,535	8,535	8,535	8,530	-	-	-
14 - PLC Based System Enhancement Evaluation	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
15 - Momentary Outage Monitoring Pilot	Capital	994	994	994	994	994	994	994	-	-	-	-	-	-
15 - Momentary Outage Monitoring Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
17 - Service Extender Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
17 - Service Extender Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
18 - Pre-Pay Meters Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
18 - Pre-Pay Meters Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
19 - Accelerated Switching Project (Off-Cycle)	Capital	12,405	12,405	12,405	12,405	12,405	12,405	12,405	-	-	-	-	-	-
19 - Accelerated Switching Project (Off-Cycle)	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
20 - Real Time Pricing for Mid-Stream C&I Customers	Capital	45,110	45,110	45,110	45,110	45,110	-	-	-	-	-	-	-	-
20 - Real Time Pricing for Mid-Stream C&I Customers	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
21 - Improved VEE Process to Incorporate Outage Data	Capital	974	974	1,272	1,272	1,272	1,272	1,272	1,272	67	67	67	67	67
21 - Improved VEE Process to Incorporate Outage Data	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
22 - Outage Duration Pilot	Capital	907	907	1,226	1,226	1,226	1,226	1,226	1,226	67	67	67	67	67
22 - Outage Duration Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
23 - MDM Data Warehouse & Analytics	Capital	8,744	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952	4,952
23 - MDM Data Warehouse & Analytics	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
24 - Partner Data Presentation to Customers & Suppliers	Capital	-	990	990	990	990	1,758	1,758	1,758	1,758	758	-	-	-
24 - Partner Data Presentation to Customers & Suppliers	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
25 - Supplier Portal Pilot	Capital	-	-	9,258	9,258	9,258	9,258	9,258	9,258	9,258	9,258	-	-	-
25 - Supplier Portal Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
26 - Voltage Pilot	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-
26 - Voltage Pilot	Expense	-	-	-	-	-	-	-	-	-	-	-	-	-
Program Management - Smart Meter Team	Expense	3,562	3,618	3,679	3,645	3,658	3,804	3,733	3,733	3,733	3,733	6,344	5,450	3,733
Total		\$ 81,180	\$ 78,692	\$ 98,884	\$ 97,021	\$ 97,142	\$ 92,004	\$ 81,833	\$ 34,635	\$ 38,171	\$ 48,441	\$ 18,237	\$ 18,384	
Capital		\$ 77,304	\$ 74,511	\$ 92,921	\$ 92,921	\$ 92,921	\$ 47,938	\$ 47,938	\$ 34,538	\$ 32,174	\$ 41,833	\$ 12,823	\$ 12,367	
Expense		\$ 3,856	\$ 4,082	\$ 3,943	\$ 4,110	\$ 4,221	\$ 4,068	\$ 3,997	\$ 3,997	\$ 3,997	\$ 6,608	\$ 5,713	\$ 3,997	
Rate Base														
Net Plant		\$ 764,977	\$ 834,735	\$ 922,438	\$ 1,000,825	\$ 1,000,205	\$ 1,137,590	\$ 1,178,819	\$ 1,206,020	\$ 1,230,871	\$ 1,285,177	\$ 1,270,121	\$ 1,274,769	
ADIT		(131,302)	(132,000)	(133,000)	(134,833)	(136,880)	(139,171)	(142,215)	(145,844)	(150,210)	(155,328)	(161,067)	(168,100)	
Monthly Rate Base		\$ 633,675	\$ 702,735	\$ 789,342	\$ 874,991	\$ 959,606	\$ 998,419	\$ 1,036,604	\$ 1,060,175	\$ 1,080,652	\$ 1,100,845	\$ 1,109,054	\$ 1,106,669	
Return On Investment (2010 - actual, 2011-13 mo. Avg.)	6.27%	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052	\$ 30,052
Income Taxes	45.84%	13,775	13,775	13,775	13,775	13,775	13,775	13,775	13,775	13,775	13,775	13,775	13,775	13,775
O&M		3,856	4,082	3,943	4,110	4,221	4,068	3,997	3,997	3,997	6,608	5,713	3,997	
Deferred Income Tax Expense		505	600	1,066	1,537	2,058	2,481	3,044	3,629	4,375	5,106	5,738	7,039	
Depreciation Expense		4,331	4,753	5,218	5,734	6,250	6,841	7,508	8,253	9,082	10,000	11,013	12,148	
Small C&I Revenue Requirement		\$ 52,519	\$ 53,361	\$ 54,084	\$ 55,209	\$ 56,355	\$ 57,018	\$ 57,778	\$ 58,591	\$ 59,522	\$ 63,072	\$ 62,958	\$ 62,613	

PPL Electric Utilities Corporation

Large C&I Revenue Requirement Calculator	Actual 2012 PUC through Jun	2012 Projection Jun-Dec	2013 PUC Budget	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12
				\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
D1- Load Control Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
D1- Load Control Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O2 - Customer Owned Generation Pilot	Capital	110	7	1	1	1	1	113	1	1	1	1	1	1	1
O2 - Customer Owned Generation Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O3 - (M)HAI Evaluation and Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O3 - (M)HAI Evaluation and Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O4 - Price and Usage Information Evaluation	Capital	13	39	9	2	0	1	0	0	5	23	5	5	5	5
O4 - Price and Usage Information Evaluation	Expense	(4)				4									
O5 - Telecommunication Substation Modern Pilot and Implementation	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O5 - Telecommunication Substation Modern Pilot and Implementation	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O6 - Enhance Site Scan Implementation	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O6 - Enhance Site Scan Implementation	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O7 - Voltage Monitoring Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O7 - Voltage Monitoring Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O8 - Next Generation Technology	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O8 - Next Generation Technology	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O9 - Protective Outage Detection Evaluation	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O9 - Protective Outage Detection Evaluation	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O10 - 15-minute Interval Data Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O10 - 15-minute Interval Data Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O11 - Remote Disconnection/Reconnection Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O11 - Remote Disconnection/Reconnection Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O12 - On-board Meter Data Storage Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O12 - On-board Meter Data Storage Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O13 - Real Time Pathways Evaluation	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O13 - Real Time Pathways Evaluation	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O14 - SCADA System Enhancement Evaluation	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O14 - SCADA System Enhancement Evaluation	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O15 - Momentary Outage Monitoring Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O15 - Momentary Outage Monitoring Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O16 - Momentary Outage Monitoring Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O16 - Momentary Outage Monitoring Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O17 - Service Outage Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O17 - Service Outage Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O18 - Pre-Pay Metering Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O18 - Pre-Pay Metering Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O19 - Accelerated Submeter Switching Project (Off-Cycle)	Capital		1,000	0	0	0	0	0	0	0	0	0	0	0	0
O19 - Accelerated Submeter Switching Project (Off-Cycle)	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O20 - Real-Time Pricing for Mid-Size C&I Customers	Capital	27		0	0	0	0	0	0	0	0	0	0	0	0
O20 - Real-Time Pricing for Mid-Size C&I Customers	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O21 - Improved VEE Process to Incorporate Outage Data	Capital		117	0	0	0	0	0	0	0	0	0	0	0	0
O21 - Improved VEE Process to Incorporate Outage Data	Expense	11		0	0	0	0	0	0	11	0	0	0	0	0
O22 - Outage Duration Pilot	Capital		112	0	0	0	0	0	0	0	0	0	0	0	0
O22 - Outage Duration Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O23 - MIDM Rate Warehouse & Analytics	Capital		750	0	0	0	0	0	0	0	0	0	0	0	0
O23 - MIDM Rate Warehouse & Analytics	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O24 - Faster Data Presentation to Customers & Suppliers	Capital		140	0	0	0	0	0	0	0	0	0	0	0	0
O24 - Faster Data Presentation to Customers & Suppliers	Expense	7		0	0	0	0	0	7	0	0	0	0	0	0
O25 - Supplier Portal Pilot	Capital		678	0	0	0	0	0	0	0	0	0	0	0	0
O25 - Supplier Portal Pilot	Expense	6		0	0	0	0	0	6	0	0	0	0	0	0
O26 - V-charger Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O26 - V-charger Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
O27 - V-charger Pilot	Capital			0	0	0	0	0	0	0	0	0	0	0	0
O27 - V-charger Pilot	Expense			0	0	0	0	0	0	0	0	0	0	0	0
Program Management - Smart Meter Team	Capital	382	254	587	73	47	77	38	75	70	35	33	33	65	54
Program Management - Smart Meter Team	Expense														
Total		\$ 575	\$ 301	\$ 2,815	\$ 84	\$ 51	\$ 75	\$ 38	\$ 189	\$ 137	\$ 41	\$ 58	\$ 40	\$ 71	\$ 56
Capital					\$ 10	\$ 3	\$ 1	\$ 2	\$ 113	\$ 2	\$ 6	\$ 24	\$ 8	\$ 6	\$ 2
Expense					\$ 73	\$ 47	\$ 74	\$ 36	\$ 75	\$ 135	\$ 35	\$ 33	\$ 33	\$ 65	\$ 54
Rate Base															
Net Plant					\$ 1,991	\$ 1,982	\$ 1,972	\$ 1,962	\$ 2,063	\$ 2,052	\$ 2,046	\$ 2,057	\$ 2,051	\$ 2,044	\$ 2,033
ADIT					(356)	(357)	(358)	(359)	(362)	(365)	(368)	(372)	(377)	(382)	(386)
Monthly Rate Base					\$ 1,635	\$ 1,625	\$ 1,614	\$ 1,603	\$ 1,701	\$ 1,687	\$ 1,678	\$ 1,685	\$ 1,674	\$ 1,663	\$ 1,647
Return On Investment (2010 - actual, 2011-13 mo. Avg.)		8.27%			\$ 137										
Income Taxes		45.84%			63										
OGM					73	47	74	38	75	135	35	33	33	65	54
Deferred Income Tax Expense					1	1	1	1	3	3	3	4	4	5	5
Depreciation Expense					12	12	12	12	12	12	13	13	13	13	13
Large C&I Revenue Requirement					\$ 286	\$ 260	\$ 286	\$ 250	\$ 291	\$ 351	\$ 250	\$ 249	\$ 250	\$ 282	\$ 271

PPL Electric Utilities Corporation

Large C&I Revenue Requirement Calculation		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
01 - Load Control Pilot	Capital												
01 - Load Control Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
02 - Customer Owned Generation Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
02 - Customer Owned Generation Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
03 - IHD/HAN Evaluation and Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
03 - IHD/HAN Evaluation and Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
04 - Price and Usage Information	Capital	0	0	0	0	0	0	0	0	0	0	0	0
04 - Price and Usage Information	Expense	0	0	0	0	0	0	0	0	0	0	0	0
05 - Telecommunication Substation Modern Pilot and Implementation	Capital	0	0	0	0	0	0	0	0	0	0	0	0
05 - Telecommunication Substation Modern Pilot and Implementation	Expense	0	0	0	0	0	0	0	0	0	0	0	0
06 - Enhance Site Scan Implementation	Capital	0	0	0	0	0	0	0	0	0	0	0	0
06 - Enhance Site Scan Implementation	Expense	0	0	0	0	0	0	0	0	0	0	0	0
07 - Voltage Monitoring Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
07 - Voltage Monitoring Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
08 - Next Generation Technology	Capital	0	0	0	0	0	0	0	0	0	0	0	0
08 - Next Generation Technology	Expense	0	0	0	0	0	0	0	0	0	0	0	0
09 - Protective Outage Detection Evaluation	Capital	0	0	0	0	0	0	0	0	0	0	0	0
09 - Protective Outage Detection Evaluation	Expense	0	0	0	0	0	0	0	0	0	0	0	0
10 - 15-minute Interval Data Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
10 - 15-minute Interval Data Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
11 - Remote Disconnection/Reconnection Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
11 - Remote Disconnection/Reconnection Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
12 - On-board Meter Data Storage Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
12 - On-board Meter Data Storage Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
13 - Real Time Estimation Evaluation	Capital	0	0	0	0	0	0	0	0	0	0	0	0
13 - Real Time Estimation Evaluation	Expense	0	0	0	0	0	0	0	0	0	0	0	0
14 - PLC-Based System Enhancement Evaluation	Capital	0	0	0	0	0	0	0	0	0	0	0	0
14 - PLC-Based System Enhancement Evaluation	Expense	0	0	0	0	0	0	0	0	0	0	0	0
15 - Momentary Outage Monitoring Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
15 - Momentary Outage Monitoring Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
17 - Service Extender Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
17 - Service Extender Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
18 - Pre-Pay Meters Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
18 - Pre-Pay Meters Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
19 - Accelerated Supplier Switching Project (O/Cycle)	Capital	147	147	147	147	147	147	147	147	147	147	147	147
19 - Accelerated Supplier Switching Project (O/Cycle)	Expense	0	0	0	0	0	0	0	0	0	0	0	0
20 - Real-Time Pricing for Mid-Sized C&I Customers	Capital	0	0	0	0	0	0	0	0	0	0	0	0
20 - Real-Time Pricing for Mid-Sized C&I Customers	Expense	0	0	0	0	0	0	0	0	0	0	0	0
21 - Improved V&E Process to Incorporate Outage Data	Capital	12	12	15	15	15	15	15	15	15	1	1	1
21 - Improved V&E Process to Incorporate Outage Data	Expense	0	0	0	0	0	0	0	0	0	0	0	0
22 - Outage Duration Pilot	Capital	11	11	15	15	15	15	15	15	1	1	1	1
22 - Outage Duration Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
23 - MHD Data Warehouse & Analytics	Capital	104	50	50	50	50	50	50	50	50	50	50	50
23 - MHD Data Warehouse & Analytics	Expense	0	0	0	0	0	0	0	0	0	0	0	0
24 - Faster Data Presentation to Customers & Suppliers	Capital	0	12	12	12	12	21	21	21	21	9	9	9
24 - Faster Data Presentation to Customers & Suppliers	Expense	0	0	0	0	0	0	0	0	0	0	0	0
25 - Supplier Portal Pilot	Capital	0	0	110	110	110	110	110	110	110	110	110	110
25 - Supplier Portal Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
26 - Voltage Pilot	Capital	0	0	0	0	0	0	0	0	0	0	0	0
26 - Voltage Pilot	Expense	0	0	0	0	0	0	0	0	0	0	0	0
Program Management - Smart Meter Team	Expense	43	45	44	48	47	45	44	44	44	75	65	44
Total		\$ 318	\$ 285	\$ 401	\$ 402	\$ 404	\$ 411	\$ 411	\$ 283	\$ 235	\$ 254	\$ 125	\$ 105
Capital		\$ 273	\$ 240	\$ 357	\$ 357	\$ 357	\$ 300	\$ 306	\$ 219	\$ 191	\$ 170	\$ 80	\$ 60
Expense		\$ 43	\$ 45	\$ 44	\$ 46	\$ 47	\$ 45	\$ 44	\$ 44	\$ 44	\$ 75	\$ 65	\$ 44
Rate Base		\$ 2,283	\$ 2,511	\$ 2,850	\$ 3,200	\$ 3,545	\$ 3,899	\$ 4,252	\$ 4,450	\$ 4,637	\$ 4,804	\$ 4,851	\$ 4,809
Net Plant		(392)	(383)	(396)	(400)	(405)	(412)	(422)	(433)	(445)	(460)	(478)	(494)
ADIT		1,891	2,117	2,400	2,800	3,140	3,486	3,830	4,020	4,192	4,344	4,376	4,405
Return On Investment (2010 - actual, 2011-13 mo. Avg.)	8.27%	137	137	137	137	137	137	137	137	137	137	137	137
Income Taxes	45.84%	63	63	63	63	63	63	63	63	63	63	63	63
OG&P		43	45	44	46	47	45	44	44	44	75	65	44
Deferred Income Tax Expense		0	1	2	4	5	7	9	11	13	15	16	16
Depreciation Expense		13	13	13	13	13	13	13	13	13	13	13	13
Large C&I Revenue Requirement		\$ 255	\$ 258	\$ 258	\$ 261	\$ 264	\$ 264	\$ 266	\$ 267	\$ 269	\$ 302	\$ 292	\$ 274

PPL ELECTRIC UTILITIES CORPORATION

**2011/2012 SMART METER RIDER
RECONCILIATION REPORT
For the 12 Months Ended June 30, 2012**

Docket No. M-2009-2123945

July 30, 2012

PPL ELECTRIC UTILITIES CORPORATION
 SMART METER RIDER COLLECTION RECONCILIATION
 Report For The Period July 1, 2011 to December 31, 2012

Line No.	ACTUAL REVENUES	(Schedule B, page 1 of 3, Column S) Residential	(Schedule B, Page 2 of 3, Column S) Small C&I	(Schedule B, page 3 of 3, Column S) Large C&I	Total
1	Smart Meter Revenue Collected	\$ 2,743,604	\$ 343,773	\$ 2,432	\$ 3,089,809
2	Less: GRT (1)	\$ 161,874	\$ 20,282	\$ 143	\$ 182,299
3	Revenue Applicable to Smart Meter Plan	\$ 2,581,730	\$ 323,491	\$ 2,289	\$ 2,907,510
4	Revenues Used for Prior Year	\$ 11,206	\$ 2,729	\$ 56	\$ 13,991
5	Revenues Available for Current Year	\$ 2,570,524	\$ 320,762	\$ 2,233	\$ 2,893,519
ACTUAL EXPENSES					
6	Smart Meter Plan Expenses (2)	\$ 1,504,897	\$ 225,687	\$ 1,538	\$ 1,732,122
7	Expense Applicable to Smart Meter	\$ 1,504,897	\$ 225,687	\$ 1,538	\$ 1,732,122
8	Over/(Under) Collection Current Year (Excluding GRT)	\$ 1,065,627	\$ 95,075	\$ 695	\$ 1,161,397
9	Interest on Over/(Under) Collection Current Year (Per Schedule D, Line 19)	\$ 78,715	\$ 6,540	\$ 51	\$ 85,306
10	Over/(Under) Collection Prior Year, Including Interest (Excluding GRT) (Per Schedule E, Line 13)	\$ (11,930)	\$ (3,208)	\$ (52)	\$ (15,190)
11	Net Over/(Under) Collection, Including Interest (Excluding GRT)	\$ 1,132,412	\$ 98,407	\$ 694	\$ 1,231,513
12	Net Over/(Under) Collection, Including Interest (Including GRT)	\$ 1,203,413	\$ 104,577	\$ 738	\$ 1,308,728

(1) Gross Receipts Tax Factor (1--.059)

(2) This category, which is designated as Smart Meter Plan Expenses, reflects the revenue requirement associated with the Smart Meter Plan's capital and operating costs.

PPL ELECTRIC UTILITIES CORPORATION
 SMART METER RIDER COLLECTION RECONCILIATION
 Residential
 Report For The Period July 1, 2011 to December 31, 2012

Line No.	(A) July	(B) August	(C) September	(D) October	(E) November	(F) December	(G) January	(H) February	(I) March	(J) April	(K) May	(L) June	(M) July	(N) August	(O) September	(P) October	(Q) November	(R) December	(S) Total	
ACTUAL REVENUES																				
1	\$ 115,741	\$ 128,050	\$ 102,725	\$ 82,681	\$ 97,035	\$ 118,857	\$ 294,182	\$ 468,162	\$ 412,931	\$ 314,075	\$ 289,031	\$ 313,134								\$ 2,743,604
2	\$ 6,829	\$ 7,437	\$ 6,061	\$ 5,488	\$ 5,725	\$ 7,072	\$ 17,357	\$ 27,504	\$ 24,383	\$ 18,530	\$ 17,053	\$ 18,475	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 181,874
3	\$ 108,912	\$ 118,613	\$ 96,664	\$ 87,213	\$ 91,310	\$ 112,785	\$ 276,825	\$ 438,658	\$ 388,568	\$ 285,545	\$ 271,978	\$ 294,659	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,581,730
4	0	0	0	0	0	0	\$ 2,421	\$ 2,288	\$ 2,018	\$ 1,535	\$ 1,413	\$ 1,531								\$ 11,206
5	\$ 108,912	\$ 118,613	\$ 96,664	\$ 87,213	\$ 91,310	\$ 112,785	\$ 274,404	\$ 436,370	\$ 386,550	\$ 294,010	\$ 270,565	\$ 293,128	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,570,524
ACTUAL EXPENSES																				
6	\$ 116,176	\$ 125,477	\$ 104,173	\$ 279,214	\$ 125,885	\$ 273,806	\$ 150,877	\$ (4,654)	\$ 73,729	\$ 75,908	\$ 90,986	\$ 83,320								\$ 1,504,897
7	\$ 116,176	\$ 125,477	\$ 104,173	\$ 279,214	\$ 125,885	\$ 273,806	\$ 150,877	\$ (4,654)	\$ 73,729	\$ 75,908	\$ 90,986	\$ 83,320	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,504,897
8	\$ (7,264)	\$ (6,854)	\$ (7,509)	\$ (192,001)	\$ (34,575)	\$ (161,021)	\$ 123,527	\$ 441,024	\$ 312,821	\$ 218,102	\$ 179,579	\$ 199,808	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,065,827

(1) Gross Receipts Tax Factor (1-.059)

(2) This category, which is designated as Smart Meter Plan Expenses, reflects the revenue requirement associated with the Smart Meter Plan's capital and operating costs.

PPL ELECTRIC UTILITIES CORPORATION
 SMART METER RIDER COLLECTION RECONCILIATION
 Small Commercial and Industrial
 Report For The Period July 1, 2011 to December 31, 2012

Line No.	(A) July	(B) August	(C) September	(D) October	(E) November	(F) December	(G) January	(H) February	(I) March	(J) April	(K) May	(L) June	(M) July	(N) August	(O) September	(P) October	(Q) November	(R) December	(S) Total
ACTUAL REVENUES																			
1	\$ 18,897	\$ 19,280	\$ 17,829	\$ 17,217	\$ 15,752	\$ 16,653	\$ 31,844	\$ 41,036	\$ 43,161	\$ 39,015	\$ 39,305	\$ 43,404							\$ 343,773
2	\$ 1,103	\$ 1,138	\$ 1,052	\$ 1,016	\$ 929	\$ 983	\$ 1,879	\$ 2,421	\$ 2,546	\$ 2,337	\$ 2,319	\$ 2,561	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,282
3	\$ 17,594	\$ 18,124	\$ 16,777	\$ 16,201	\$ 14,823	\$ 15,670	\$ 29,965	\$ 38,615	\$ 40,615	\$ 37,278	\$ 36,986	\$ 40,843	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 323,491
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 514	\$ 443	\$ 483	\$ 424	\$ 422	\$ 463							\$ 2,729
5	\$ 17,594	\$ 18,124	\$ 16,777	\$ 16,201	\$ 14,823	\$ 15,670	\$ 29,451	\$ 38,172	\$ 40,152	\$ 36,854	\$ 36,564	\$ 40,380	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 320,762
ACTUAL EXPENSES																			
6	\$ 19,235	\$ 21,147	\$ 18,348	\$ 29,214	\$ 23,045	\$ 43,488	\$ 22,867	\$ 255	\$ 11,444	\$ 9,820	\$ 13,121	\$ 13,703							\$ 225,687
7	\$ 19,235	\$ 21,147	\$ 18,348	\$ 29,214	\$ 23,045	\$ 43,488	\$ 22,867	\$ 255	\$ 11,444	\$ 9,820	\$ 13,121	\$ 13,703	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 225,687
8	\$ (1,641)	\$ (3,023)	\$ (1,571)	\$ (13,013)	\$ (8,222)	\$ (27,618)	\$ 6,584	\$ 37,917	\$ 28,708	\$ 27,034	\$ 23,443	\$ 26,677	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 95,075

(1) Gross Receipts Tax Factor (1-.058)

(2) This category, which is designated as Smart Meter Plan Expenses, reflects the revenue requirement associated with the Smart Meter Plan's capital and operating costs.

PPL ELECTRIC UTILITIES CORPORATION
 SMART METER RIDER COLLECTION RECONCILIATION
 Large Commercial and Industrial
 Report For The Period July 1, 2011 to December 31, 2012

Line No.	(A) July	(B) August	(C) September	(D) October	(E) November	(F) December	(G) January	(H) February	(I) March	(J) April	(K) May	(L) June	(M) July	(N) August	(O) September	(P) October	(Q) November	(R) December	(S) Total	
ACTUAL REVENUES																				
1	\$ 138	\$ 141	\$ 137	\$ 142	\$ 140	\$ 142	\$ 197	\$ 276	\$ 282	\$ 280	\$ 281	\$ 276								\$ 2,432
2	\$ 8	\$ 8	\$ 8	\$ 8	\$ 8	\$ 8	\$ 12	\$ 16	\$ 17	\$ 17	\$ 17	\$ 16	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 143
3	\$ 130	\$ 133	\$ 129	\$ 134	\$ 132	\$ 134	\$ 185	\$ 260	\$ 265	\$ 263	\$ 264	\$ 260	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,289
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9	\$ 9	\$ 10	\$ 9	\$ 9	\$ 10								\$ 56
5	\$ 130	\$ 133	\$ 129	\$ 134	\$ 132	\$ 134	\$ 176	\$ 251	\$ 255	\$ 254	\$ 255	\$ 250	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,233
ACTUAL EXPENSES																				
6	\$ 136	\$ 175	\$ 133	\$ 170	\$ 165	\$ 200	\$ 102	\$ 76	\$ 103	\$ 67	\$ 108	\$ 103								\$ 1,538
7	\$ 138	\$ 176	\$ 133	\$ 170	\$ 185	\$ 200	\$ 102	\$ 78	\$ 103	\$ 67	\$ 108	\$ 103	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,538
8	\$ (6)	\$ (42)	\$ (4)	\$ (35)	\$ (33)	\$ (66)	\$ 74	\$ 175	\$ 152	\$ 187	\$ 147	\$ 147	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 855

(1) Gross Receipts Tax Factor (1-.059)

(2) This category, which is designated as Smart Meter Plan Expenses, reflects the revenue requirement associated with the Smart Meter Plan's capital and operating costs.

Smart Meter Program
Monthly Revenue Requirement

	7/31/2011	8/31/2011	9/30/2011	10/31/2011	11/30/2011	12/31/2011	1/31/2012	2/29/2012	3/31/2012	4/30/2012	5/31/2012	6/30/2012	
Residential													
Rate Base													
Net Plant	\$ 1,187,094	\$ 1,230,333	\$ 1,293,537	\$ 1,556,312	\$ 1,613,257	\$ 1,709,045	\$ 1,731,761	\$ 1,849,810	\$ 1,953,054	\$ 2,041,037	\$ 2,172,931	\$ 2,369,737	
ADIT	(242,738)	(258,859)	(276,375)	(407,000)	(432,750)	(473,279)	(472,479)	(473,557)	(476,219)	(480,496)	(487,598)	(499,453)	
Rate Base	944,356	971,474	1,017,162	1,149,313	1,180,506	1,235,766	1,259,282	1,376,253	1,476,835	1,560,541	1,685,333	1,870,284	
Return On Investment ¹	0.6892%	6,508	6,695	7,010	7,921	8,136	8,517	8,679	9,485	10,178	10,755	11,615	12,890
Income Taxes ²	46.2231%	2,975	3,095	3,240	3,661	3,761	3,937	4,012	4,384	4,705	4,971	5,369	5,958
O&M		69,213	86,469	62,974	122,626	72,920	205,029	128,975	(30,060)	45,050	44,177	54,493	49,226
Deferred Income Tax Expense		30,601	21,664	23,060	136,168	31,294	46,072	(799)	1,078	2,662	4,277	7,102	11,855
Depreciation Expense		6,878	7,554	7,889	8,838	9,774	10,251	10,011	10,459	11,134	11,728	12,406	13,391
Residential Revenue Requirement	\$	\$ 116,176	\$ 125,477	\$ 104,173	\$ 279,214	\$ 125,885	\$ 273,806	\$ 150,877	\$ (4,654)	\$ 73,729	\$ 75,908	\$ 90,986	\$ 93,320

Small C&I

Rate Base													
Net Plant	\$ 217,264	\$ 236,095	\$ 249,477	\$ 271,557	\$ 285,164	\$ 295,999	\$ 298,300	\$ 312,451	\$ 326,355	\$ 338,310	\$ 357,551	\$ 384,633	
ADIT	(33,383)	(36,660)	(40,328)	(45,998)	(52,479)	(60,269)	(60,411)	(60,785)	(61,379)	(62,198)	(63,436)	(65,335)	
Rate Base	183,882	199,436	209,149	225,559	232,685	235,730	237,889	251,666	264,976	276,112	294,115	319,298	
Return On Investment ¹	0.6892%	1,267	1,375	1,441	1,555	1,604	1,625	1,640	1,734	1,826	1,903	2,027	2,201
Income Taxes ²	46.2231%	579	635	666	719	741	751	758	802	844	880	937	1,017
O&M		10,043	12,528	9,144	17,734	10,576	29,601	18,574	(4,486)	6,281	4,236	6,840	6,367
Deferred Income Tax Expense		5,831	5,000	5,391	7,394	8,204	9,514	141	374	594	819	1,238	1,899
Depreciation Expense		1,515	1,609	1,706	1,812	1,920	1,997	1,755	1,811	1,899	1,981	2,079	2,220
Small C&I Revenue Requirement	\$	\$ 19,235	\$ 21,147	\$ 18,348	\$ 29,214	\$ 23,045	\$ 43,488	\$ 22,867	\$ 255	\$ 11,444	\$ 9,820	\$ 13,121	\$ 13,703

Large C&I

Rate Base													
Net Plant	\$ 1,329	\$ 1,507	\$ 1,628	\$ 1,823	\$ 1,924	\$ 1,992	\$ 1,991	\$ 1,982	\$ 1,972	\$ 1,962	\$ 2,063	\$ 2,052	
ADIT	(187)	(203)	(224)	(257)	(299)	(355)	(356)	(357)	(358)	(359)	(362)	(365)	
Rate Base	1,142	1,304	1,404	1,566	1,625	1,637	1,635	1,625	1,614	1,603	1,701	1,687	
Return On Investment ¹	0.6892%	8	9	10	11	11	11	11	11	11	12	12	
Income Taxes ²	46.2231%	4	4	4	5	5	5	5	5	5	5	5	
O&M		94	124	74	98	81	102	73	47	74	38	75	70
Deferred Income Tax Expense		21	28	33	45	54	68	1	1	1	3	3	
Depreciation Expense		10	10	11	12	13	13	12	12	12	12	12	
Large C&I Revenue Requirement	\$	\$ 136	\$ 175	\$ 133	\$ 170	\$ 165	\$ 200	\$ 102	\$ 76	\$ 103	\$ 67	\$ 108	\$ 103

Total

Rate Base													
Net Plant	\$ 1,405,687	\$ 1,467,935	\$ 1,544,642	\$ 1,829,693	\$ 1,900,345	\$ 2,007,036	\$ 2,032,052	\$ 2,164,243	\$ 2,281,381	\$ 2,381,308	\$ 2,532,545	\$ 2,756,423	
ADIT	(276,308)	(295,721)	(316,927)	(453,255)	(485,528)	(533,903)	(533,246)	(534,699)	(537,956)	(543,053)	(551,396)	(565,153)	
Rate Base	1,129,379	1,172,214	1,227,715	1,376,438	1,414,816	1,473,133	1,498,805	1,629,544	1,743,425	1,838,255	1,981,149	2,191,270	
Return On Investment	7,784	8,079	8,461	9,486	9,751	10,153	10,330	11,231	12,016	12,669	13,654	15,102	
Income Taxes	3,558	3,734	3,911	4,385	4,507	4,693	4,775	5,191	5,554	5,856	6,311	6,981	
O&M	79,350	99,121	72,192	140,458	83,578	234,733	147,622	(34,479)	51,405	48,451	61,408	55,663	
Deferred Income Tax Expense	36,454	26,692	28,484	143,607	39,552	55,654	(657)	1,453	3,257	5,097	8,343	13,757	
Depreciation Expense	8,403	9,173	9,606	10,662	11,707	12,261	11,778	12,261	13,044	13,722	14,498	15,623	
Total Revenue Requirement	\$	\$ 135,548	\$ 146,799	\$ 122,655	\$ 308,598	\$ 149,095	\$ 317,494	\$ 173,847	\$ (4,322)	\$ 85,276	\$ 85,795	\$ 104,215	\$ 107,126

1. The Annual Return on Investment is 8.27%.
2. The Income Tax rate through July 2011 was 45.7086%.

PPL ELECTRIC UTILITIES CORPORATION
INTEREST EXPENSE ON SMART METER RIDER
OVER/(UNDER) COLLECTIONS BY MONTH

Line No.	Month	(A) Interest Rate	(B) Weighting Factor	(C)		(D)		(C)		(D)	
				Total		Residential		Small Commercial and Industrial		Large Commercial and Industrial	
				Over/(Under) Collection Total (1)	Interest on Over/(Under) Collection						
1	July 2011	6.00%	24/12	\$ (8,911)	\$ (803)	\$ (7,264)	\$ (654)	\$ (1,641)	\$ (148)	\$ (6)	\$ (1)
2	August 2011	6.00%	23/12	\$ (9,929)	\$ (894)	\$ (8,864)	\$ (618)	\$ (3,023)	\$ (272)	\$ (42)	\$ (4)
3	September 2011	6.00%	22/12	\$ (9,084)	\$ (817)	\$ (7,509)	\$ (676)	\$ (1,571)	\$ (141)	\$ (4)	\$ -
4	October 2011	6.00%	21/12	\$ (205,050)	\$ (18,454)	\$ (192,001)	\$ (17,280)	\$ (13,013)	\$ (1,171)	\$ (36)	\$ (3)
5	November 2011	6.00%	20/12	\$ (42,830)	\$ (3,855)	\$ (34,575)	\$ (3,112)	\$ (8,222)	\$ (740)	\$ (33)	\$ (3)
6	December 2011	6.00%	19/12	\$ (188,905)	\$ (17,002)	\$ (161,021)	\$ (14,492)	\$ (27,818)	\$ (2,504)	\$ (66)	\$ (6)
7	January 2012	6.00%	18/12	\$ 130,185	\$ 11,717	\$ 123,527	\$ 11,117	\$ 6,584	\$ 593	\$ 74	\$ 7
8	February 2012	6.00%	17/12	\$ 479,116	\$ 40,725	\$ 441,024	\$ 37,487	\$ 37,917	\$ 3,223	\$ 175	\$ 15
9	March 2012	6.00%	16/12	\$ 341,681	\$ 27,335	\$ 312,821	\$ 25,026	\$ 28,708	\$ 2,297	\$ 152	\$ 12
10	April 2012	6.00%	15/12	\$ 245,323	\$ 18,400	\$ 218,102	\$ 16,358	\$ 27,034	\$ 2,028	\$ 187	\$ 14
11	May 2012	6.00%	14/12	\$ 203,169	\$ 14,222	\$ 179,579	\$ 12,571	\$ 23,443	\$ 1,641	\$ 147	\$ 10
12	June 2012	6.00%	13/12	\$ 226,632	\$ 14,732	\$ 199,808	\$ 12,988	\$ 26,677	\$ 1,734	\$ 147	\$ 10
13	July 2012	6.00%	24/12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
14	August 2012	6.00%	23/12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
15	September 2012	6.00%	22/12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
16	October 2012	6.00%	21/12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
17	November 2012	6.00%	20/12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
18	December 2012	6.00%	19/12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
19	Total			\$ 1,161,397	\$ 85,306	\$ 1,065,627	\$ 78,715	\$ 95,075	\$ 6,540	\$ 695	\$ 51

(1) From Schedule B, Line 8 for the respective month.

PPL ELECTRIC UTILITIES CORPORATION
 SMART METER RIDER COLLECTION RECONCILIATION
 E-FACTOR COLLECTION BALANCE
 Report For The Period July 1, 2011 to December 31, 2012

Line No.	Month	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
		Total		Residential		Small Commercial and Industrial		Large Commercial and Industrial	
		(Refund)/ Recovery	Over/(Under) Balance (1)	(Refund)/ Recovery	Over/(Under) Balance (1)	(Refund)/ Recovery	Over/(Under) Balance (1)	(Refund)/ Recovery	Over/(Under) Balance (1)
1	Balance - June 30, 2011 (2)	\$ -	\$ (29,181)	\$ -	\$ (23,136)	\$ -	\$ (5,937)	\$ -	\$ (108)
2	January 2012	\$ 2,944	\$ (26,237)	\$ 2,421	\$ (20,715)	\$ 514	\$ (5,423)	\$ 9	\$ (99)
3	February 2012	\$ 2,740	\$ (23,497)	\$ 2,288	\$ (18,427)	\$ 443	\$ (4,980)	\$ 9	\$ (90)
4	March 2012	\$ 2,491	\$ (21,006)	\$ 2,018	\$ (16,409)	\$ 463	\$ (4,517)	\$ 10	\$ (80)
5	April 2012	\$ 1,968	\$ (19,038)	\$ 1,535	\$ (14,874)	\$ 424	\$ (4,093)	\$ 9	\$ (71)
6	May 2012	\$ 1,844	\$ (17,194)	\$ 1,413	\$ (13,461)	\$ 422	\$ (3,671)	\$ 9	\$ (62)
7	June 2012	\$ 2,004	\$ (15,190)	\$ 1,531	\$ (11,930)	\$ 463	\$ (3,208)	\$ 10	\$ (52)
8	July 2012	\$ -	\$ (15,190)	\$ -	\$ (11,930)	\$ -	\$ (3,208)	\$ -	\$ (52)
9	August 2012	\$ -	\$ (15,190)	\$ -	\$ (11,930)	\$ -	\$ (3,208)	\$ -	\$ (52)
10	September 2012	\$ -	\$ (15,190)	\$ -	\$ (11,930)	\$ -	\$ (3,208)	\$ -	\$ (52)
11	October 2012	\$ -	\$ (15,190)	\$ -	\$ (11,930)	\$ -	\$ (3,208)	\$ -	\$ (52)
12	November 2012	\$ -	\$ (15,190)	\$ -	\$ (11,930)	\$ -	\$ (3,208)	\$ -	\$ (52)
13	December 2012	\$ -	\$ (15,190)	\$ -	\$ (11,930)	\$ -	\$ (3,208)	\$ -	\$ (52)

(1) Calculated using Line 1, Columns (B), (D), (F) or (H) less the (Refund)/Recovery for the respective month in Columns (A), (C), (E) or (G) respectively.

(2) The over/(under) collection, including applicable interest, at June 30, 2011, as set forth on Schedule A, Line 8 for the respective rate group, of the 2011 Annual Smart Meter Plan filing dated August 1, 2011, at Docket No. M-2009 2123945.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of § 1.54 (relating to service by a participant).

VIA E-MAIL AND FIRST CLASS MAIL

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Date: August 1, 2012



Anthony D. Kanagy