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May 4, 2012

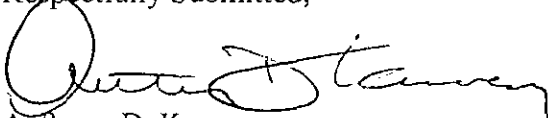
Rosemary Chiavetta
Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
P.O. Box 3265
Harrisburg, PA 17105-3265

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 Nos. M-2009-2123945 and P-2012-

Dear Secretary Chiavetta:

Enclosed please find the Petition of PPL Electric Utilities Corporation 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

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PA PUC
SECRETARY'S BUREAU

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Petition of PPL Electric Utilities Corporation :
for Approval to Modify its Smart Meter : Docket No. P-2012-_____
Technology Procurement and Installation : M-2009-2123945
Plan and to Extend its Grace Period :

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PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

**PETITION OF
PPL ELECTRIC UTILITIES CORPORATION**

I. INTRODUCTION

Pursuant to 52 Pa. Code § 5.41, PPL Electric Utilities (“PPL Electric” or the “Company”) hereby files the above-captioned Petition with the Pennsylvania Public Utility Commission (“Commission”). Herein, PPL Electric requests Commission approval to: (1) implement eight new programs under its Smart Meter Plan; (2) make several adjustments to existing programs under its Smart Meter Plan; and (3) extend the Grace Period by 24 months to give PPL Electric additional time to further test and evaluate the most cost-effective ways to meet the Act 129 requirements, Act 129 of 2008, Oct. 15, P.L. 1592 (“Act 129”).

When the Commission approved PPL Electric’s initial Smart Meter Filing, the Commission authorized PPL Electric to recover the costs of its Smart Meter Programs through a fully reconcilable Smart Meter Rider (“SMR”). Through this Petition, PPL Electric seeks Commission approval to include the costs of the eight new programs in the SMR. PPL Electric has provided early estimates of the costs of these new programs in this filing. However, PPL Electric notes that these estimates are early projections of costs and are subject to change. PPL Electric will include its actual costs for these programs in its SMR when the Company makes the actual expenditures for the programs. In addition, PPL Electric has revised its costs for certain of

its Commission-approved Pilot Programs and also will reflect updated, actual costs for these Programs in its SMR.

PPL Electric submitted its Smart Meter Technology Procurement and Installation Plan (“Smart Meter Plan”) with the Commission on August 14, 2009. In its Smart Meter Plan, the Company explained that it was using the 30-month Grace Period provided by the Commission in its Smart Meter *Implementation Order*¹ to conduct a series of pilot programs and technology evaluations to extend the capabilities of the Company’s current advanced meter system.

On June 24, 2010, the Commission entered an Order approving the Company’s Smart Meter Plan.² In the *Smart Meter Order*, the Commission stated that PPL Electric’s existing meter system did not fully meet Act 129’s requirements. In particular, the Commission stated that PPL Electric should continue to identify, test, develop and implement cost effective ways to directly provide metered usage data to customers. *Smart Meter Order*, p. 22. In addition, the Commission stated that PPL Electric should use its Grace Period pilot programs to develop a plan to be filed with the Commission to fully comply with Act 129. *Smart Meter Order*, p. 24.

Since approval of its Smart Meter Plan, the Company has been implementing its pilot programs as approved by the Commission. Pursuant to the *Smart Meter Order*, the Company has filed annual updates with the Commission, in August of 2010 and August of 2011, advising the Commission of the Company’s progress in implementing its Smart Meter Plan.

Since its August 2011 update filing, PPL Electric has identified several new smart meter programs that it proposes to implement under its Smart Meter Plan. These new projects include:

¹ *Smart Meter Procurement and Installation*, Docket No. M-2009-2092655, *Implementation Order* entered June 24, 2009 (“*Implementation Order*”).

² *Petition of PPL Electric Utilities Corporation for Approval of Smart Meter Technology Procurement and Installation Plan*, Docket No. M-2009-2123945, Order entered June 24, 2010 (“*Smart Meter Order*”).

- 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 Suppliers Project
- Supplier Portal Project
- Improved Validation/Editing/Estimation Process Project
- Outage Duration Project

These proposed projects are discussed in more detail below and in the Addendum to the Company's August 2011 smart meter update filing which is provided as Attachment A to this Petition. The Addendum provides additional details regarding the proposed changes to the Company's Smart Meter Plan, as compared to the Plan submitted in the August 2011 update filing.

In addition to the new projects identified above, the Company proposes to make several adjustments to its Plan to address developments that have arisen since the August 2011 filing. These proposed adjustments include delaying certain programs to allow time for the evaluation of program results or to troubleshoot issues that have arisen during testing. These proposed adjustments are discussed in more detail in the Addendum provided as Attachment A hereto.

After Act 129 was enacted, the Commission issued its *Implementation Order* which provided guidance to electric distribution companies ("EDCs") with respect to their Smart Meter Plans. In the *Implementation Order*, the Commission provided EDCs with a 30-month Grace Period to design and test smart meter technology. In subsequent Orders, the Commission ruled that the *Implementation Order* was a policy statement that provides guidance to EDCs but that the *Implementation Order* did not establish a binding norm. *Joint Petition of Metropolitan*

Edison Company, Pennsylvania Electric Company and Pennsylvania Power Company (collectively, the "FirstEnergy Companies") for Approval of Smart Meter Technology Procurement and Installation Plan, Docket No. M-2009-2123950, Order entered June 9, 2010, p.

13. Consistent with this holding, the Commission granted the FirstEnergy Companies an extension of the 30-month Grace Period for meeting all of the milestones under their respective Smart Meter Plans.

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 certain delays associated with testing and implementing certain pilot programs its Smart Meter Plan. In particular, the Company has experienced certain 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. The Company is in a unique situation as compared to other EDCs because the Company has already installed an advanced metering system throughout its service territory. Therefore, the Company is evaluating ways to meet the Act 129 requirements without a large scale replacement of its system. During the extended Grace Period, the Company will continue to evaluate whether it can meet Act 129's requirements with its current AMI system or whether it needs to replace part or all of its AMI system to meet the Act 129 requirements. Another factor that the Company will consider in this evaluation is the age of its AMI system, including potential meter module failure rates over the next several years. Therefore, the Company is requesting a 24-month extension of its Grace Period. PPL Electric will use this time to continue to identify, test, develop and implement measures that fully meet the Act 129 requirements. Consistent with PPL Electric's *Smart Meter Order*, the Company

anticipates that it will file a revised Smart Meter Plan by June 30, 2014 but no later than December 19, 2014 that fully complies with Act 129.

In support of this Petition, PPL Electric states as follows:

II. BACKGROUND

1. PPL Electric provides electric distribution, transmission and provider of last resort 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 an “electric distribution company” as those terms are defined under the Public Utility Code, 66 Pa. C.S. §§ 102 and 2803.

2. PPL Electric’s attorneys are:

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PPL Electric's attorneys are authorized to receive all notices and communications regarding this filing.

3. Act 129 became effective on November 14, 2008. Act 129 required EDCs to file Smart Meter Plans within nine months after the effective date of the Act.

4. On June 24, 2009, the Commission issued its *Implementation Order*. The *Implementation Order* provided guidance for EDCs on many important Smart Meter issues, including the Plan Approval Process, Smart Meter Deployment, Smart Meter Capabilities, Access to Smart Meters, and Data and Cost Recovery.

5. On August 14, 2009, PPL Electric filed its Smart Meter Plan with the Commission. In its Smart Meter Plan, the Company explained that it had begun a full-scale deployment of an automatic meter reading system in 2002. Beginning in 2005, PPL Electric expanded the capabilities of its automated meter reading system by installing a Meter Data Management System ("MDMS"). PPL Electric explained that its existing smart meter system was able to support all of the capabilities set forth in the Commission's *Implementation Order*. In addition, PPL Electric explained that it proposed to use the 30-month Grace Period to conduct a series of pilot programs and technology evaluations designed to extend the capabilities of its current system.

6. On June 24, 2010, the Commission approved PPL Electric's Smart Meter Plan with several modifications. Of note, the Commission held that PPL Electric's Plan did not provide customers direct access to customer usage data. Therefore, the Commission directed PPL Electric to use the Grace Period to continue to identify, test, develop and implement cost effective means to directly provide metered usage data from the meter to customers so as to effectively support the automatic control of electricity consumption. In addition, the.

Commission directed PPL Electric to develop a Plan, to be filed with the Commission, to fully comply with Act 129. In the *Smart Meter Order*, the Commission also directed PPL Electric to submit annual smart meter plan filings by August 1 of each year.

7. Pursuant to the Commission's June 24 Order, PPL Electric has been implementing its pilot programs. The Company has conducted or is in the process of conducting multiple Pilot Programs during this time including, but not limited to:

- (1) Price and Usage Information Evaluation Pilot – which provided customer usage and pricing notifications through e-mail, text messages and/or telephone calls;
- (2) Load Control Pilot which demonstrated the Company's ability to support automatic load control;
- (3) 15-Minute Interval Data Pilot which tested the ability of the Company's AMI system to retrieve and provide 15-minute interval data;
- (4) Voltage Monitoring Pilot which evaluated the ability to retrieve customer voltage reads at regular intervals; and
- (5) Proactive Outage Detection Pilot which evaluated the ability to better manage outage detection.

These are only a few examples of the Pilot Programs that PPL Electric is implementing.

8. In addition, PPL Electric has filed Annual Updates of its Smart Meter Plan in August of 2010 and August of 2011. PPL Electric also has been conducting biannual stakeholder meetings with interested parties to review and discuss the actions that the Company is taking under its Smart Meter Plan.

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9. Since its August 2011 filing, the Company has identified several new programs and technology evaluations that it proposes to implement to better provide smart meter technology to customers. The Company seeks Commission approval to include these new programs in its Smart Meter Plan.

10. By this Petition, the Company also requests Commission approval to make several adjustments to its Smart Meter Plan to address developments that have arisen since the August 2011 filing. These proposed adjustments include delaying certain pilot programs to allow for further evaluation of pilot results or to troubleshoot issues that have arisen during testing.

11. In addition, the Company requests an extension of the Grace Period to continue to identify, test, develop and implement measures that fully meet the Act 129 requirements. Due to a number of issues, including evaluation of: (1) AMI system limitations, (2) remote connect/disconnect functionality, (3) technical issues in implementing the In Home Display Pilot pilot, (4) new programs described herein, and (5) aging AMI infrastructure, the Company has not definitely determined whether its existing AMI system will fully support the Smart Meter requirements of Act 129. The Company requires further time to determine the most cost-effective way to meet the Act 129 requirements prior to filing a Final Smart Meter Plan. Therefore the Company proposes to use the next 18-24 months to further evaluate these issues before filing its Final Smart Meter Plan with the Commission.

III. REQUESTS FOR RELIEF

A. NEW PROGRAMS

12. During the Grace Period, PPL Electric has been continuously evaluating its Smart Meter Plan and has been looking for ways to enhance smart meter technology for customers. The Company believes its approach is consistent with the requirement in the *Implementation*

Order that the Company's smart meter technology must have the "(a)bility to upgrade these minimum capabilities as technology advances and becomes economically feasible." *Implementation Order*, p. 16. As a result of this evaluation and as a result of new technology, PPL Electric proposes to implement eight new programs under its Smart Meter Plan. These new projects are described in more detail below and in the Addendum provided as Attachment A hereto.

1. VCharge Pilot Project

13. 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.

14. 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.

15. 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.

16. Under its proposed VCharge Pilot Program, PPL Electric intends to work with VCharge to upgrade 350 Residential Thermal Storage (“RTS”) systems to VCharge SmartBricks Systems with embedded submetering, controls and communications.

17. PPL Electric also intends to work with VCharge to provide these customers with a competitive generation rate that allows the customers to purchase low-cost energy in the competitive market. VCharge, functioning as a curtailment service provider, will provide ancillary services to PJM.

18. 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.

19. The estimated cost of the pilot is \$550,000, which includes (a) selection of 350 Rate Schedule RTS customers, (b) \$500 per home rebates for SmartBricks hardware, (c) software and IT programming, (d) evaluation of pilot results, (e) development of an implementation plan, and (f) reporting results and the implementation plan to the Commission.³

20. In the Commission’s Order approving PPL Electric’s Smart Meter Plan, the Commission stated that the Company should continue to evaluate measures to ensure that its smart meter technology will effectively support the automatic control of a customer’s consumption by a customer’s chosen third party. *Smart Meter Order*, p. 23. The VCharge pilot project is consistent with this directive.

³ As noted above, the estimated cost of this program is \$550,000. This is an early projection of the cost for this program, and this cost estimate may change upon actual implementation of the Program. PPL Electric proposes to include the actual costs of this Program and the other Programs described herein in its SMR.

2. Accelerated Supplier Switching (Off-Cycle)

21. 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.

22. 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 regard to *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.

23. PPL Electric currently estimates that the costs for this project will be \$525,000 of which \$50,000 will be spent in 2012 to scope the project and develop an implementation schedule consistent with the direction from the Retail Markets Investigation.

24. One of the requirements of smart meter technology under the Commission's *Implementation Order* is the ability to upgrade minimum capabilities as technology advances. *Implementation Order*, p. 7. As part of this pilot, PPL Electric plans to demonstrate that its smart meter infrastructure can accommodate regulatory changes to better serve customers.

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

25. In compliance with the Commission's Final Order on default service plans issued on December 16, 2011, PPL Electric will file 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. *Investigation of Pennsylvania's Retail Electricity Market: Recommendations Regarding Upcoming Default Service Plans*, Docket No. I-2011-2237952, Order entered December 16, 2011.

26. Prior to offering real-time pricing for mid-size C&I customers, PPL Electric proposes to implement a Project to demonstrate that its smart meter infrastructure can provide all functionality necessary to enable real-time pricing of default service for these customers.

27. Under the Project, PPL Electric will modify financial, customer, billing and meter data management systems and further demonstrate the meter system can support the new regulatory and business requirements.

28. The Company proposes to scope the project in 2012 and deploy changes under the assumption that customer billing could start, in the absence of other considerations, as early as June 2013; i.e., at the conclusion of the Company's current default service plan.

29. The estimated cost of the Project is \$155,000 of which \$60,000 will be spent in 2012 to scope the project and develop an implementation schedule.

30. One of the requirements of smart meter technology under the Commission's *Implementation Order* is the ability to enable real-time price programs. *Implementation Order*, p. 30. PPL Electric already provides real-time pricing to Large C&I customers (greater than 500 kW) taking default service and provides hourly data that permits EGSs to provide real-time pricing to all classes of customers. Under this Project, PPL Electric will evaluate ways to expand this capability to mid-size C&I default service customers.

4. MDM Data Warehouse and Analytics

31. 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.

32. 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. PPL Electric's meter data management system includes two data repositories – one that contains raw data from the meters and one that contains raw data that has been through the validation, editing and estimation process for use in billing and other applications. Both repositories are being queried and updated continuously as part of production processes including meter reading, validation/editing/estimating, and billing. Ad hoc queries for the purposes of analyzing data quality, meter system performance, customer behaviors, and other non-production purposes can disrupt production. Creation of a warehouse outside of the production environment to store a snapshot of the data that is updated periodically rather than continuously will allow for additional use of the data without the risk that production will be jeopardized. The Company proposes to install a data warehouse for meter data beginning in 2012. The total estimated cost of the project is \$1,475,000 of which \$510,000 will be spent in 2012.

33. The Company proposes a phased approach for this project. The first phase of the project would involve installing all required software and hardware for the meter data warehouse. The first phase would provide the Company's business users ad hoc querying capability and reduce the stress on production activities within MDMS. The second phase of the project would involve developing an advanced data analytics environment for meter data.

34. 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.

35. 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 our customers.

5. Faster Data Presentment to Customers and Suppliers

36. The Company currently presents validated customer usage data on the Company's 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.

37. PPL Electric believes that it can present validated customer data on its website sooner than 48 hours, perhaps as soon as 24 hours, by modifying the way that the Company processes and validates data.

38. Therefore, the Company proposes to evaluate the changes needed to its AMI and back office systems to present data to customers on a more timely basis. The Company proposes to scope the project in 2012 and 2013 and potentially deploy changes in 2014 and 2015. The estimated project cost is \$180,000 of which \$10,000 will be spent in 2012 to scope the project, evaluate all AMI and back office systems that would require changes and develop a cost and schedule estimate for the project.

6. Supplier Portal Pilot

39. 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.

40. 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 EGS's 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.

41. The Company proposes to scope the project in 2012 and 2013 and potentially deploy changes in 2014 and 2015. The pilot 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 on the Data Warehouse and Analytics Project described above. The estimated project cost is \$110,000 of which \$10,000 will be spent in 2012 to scope the project, evaluate all AMI and back office systems that would require changes and develop a cost and schedule estimate for the project.

7. Improved Validation/Editing/Estimation ("VEE") Process to Incorporate Outage Data

42. 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 validation/editing/estimation 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 number of requests by EGSs for interval billing data for customers not equipped with MV-90 meters coupled with an increase in EGS TOU offers, seems to indicate that increasing numbers of customers are being billed on hourly rates. The Company believes that the meter data validation process can be improved by integrating outage data from the Company's Outage Management System ("OMS") into that process.

43. The Company proposes to scope the project in 2012 and, if cost effective and feasible, deploy changes in 2013. 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 with times of known outages.

44. The estimated project cost is \$130,000 of which \$10,000 will be spent in 2012 to scope the project. Scoping will include evaluating the most cost effective way to integrate outage data into the meter data validation process and developing a cost and schedule for the project.

8. Outage Duration Pilot

45. In addition to the VEE Outage Pilot discussed above, 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 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.

46. The Company proposes to scope the project in 2012 and potentially deploy changes in 2013 and 2014, consistent with the release of vendor software. The Company plans to 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 be incorporated into the meter data validation and outage analysis processes. The estimated cost of the project is \$185,000 of which \$10,000 will be spent in 2012 to scope the project and develop an implementation schedule for the project.

47. The ability to communicate outages and restorations is one of the capabilities of a smart meter system that was identified by the Commission in its *Implementation Order*. *Implementation Order*, p. 30.

B. PROPOSED ADJUSTMENTS TO EXISTING PILOT PROGRAMS

48. In addition to the new pilot programs described above, PPL Electric proposes to adjust its Smart Meter Plan to address several technical issues that have arisen since PPL Electric made its August 2011 Annual Smart Meter Plan Update filing. These adjustments include delayed implementation of certain pilot programs to address technical issues that have arisen since the Company made its 2011 August update filing and to provide revised cost estimates for certain programs. These adjustments are set forth in more detail in the Addendum that is attached hereto.

C. SMART METER RIDER

49. Under its tariff, PPL Electric is authorized to file for interim revisions of its Smart Meter Rider ("SMR") if it determines that the current SMR will result in a material over or

undercollection of costs, and the Company may request that the revised SMR become effective 30 days from the date of filing.

50. As noted above, PPL Electric seeks Commission approval to include the actual costs of its new Smart Meter Programs in the SMR. PPL Electric believes that the cost changes proposed herein and in the Addendum will not result in a material change in the SMR at this time. Therefore, PPL Electric also will update its proposed SMR charges in its August 1 update filing, consistent with the Company's tariff.

D. REQUEST TO EXTEND THE GRACE PERIOD

51. In its *Implementation Order*, the Commission granted EDCs a 30 month Grace Period for each EDC to assess its needs, select technology, install and test equipment, and establish a detailed deployment schedule. *Implementation Order*, p. 9.

52. In its Smart Meter Plan, the Company proposed to use the 30-month Grace Period to conduct a series of pilot programs and technology evaluations to extend the capabilities of its existing system.

53. In the Commission's Order approving PPL Electric's Smart Meter Plan, the Commission stated that PPL Electric's smart meter system did not fully meet all of Act 129's requirements. Therefore, the Commission directed PPL Electric to use its Grace Period pilot programs to develop a Plan to be filed with the Commission to fully comply with Act 129.

54. PPL Electric was in a unique situation as compared to other EDCs in the Commonwealth. Unlike other EDCs, PPL Electric had already installed an advanced metering system. Therefore, PPL Electric had been evaluating ways to modify its existing advance metering system to meet Act 129's requirements as opposed to replacing its existing system at an estimated cost of \$380-\$450 million.

55. Since the Commission approved the Company's Smart Meter Plan, the Company has been diligently implementing its Smart Meter Plan as well as evaluating additional ways to meet the Act 129 requirements.

56. Certain important pilot programs, such as PPL Electric's In Home Display pilot, have been delayed due to technical issues. In addition, there are several pilots in various stages that will need to be completed in order to fully develop a final plan. The outcome of these pilots along with an aging existing meter population will have a material impact on a meter replacement strategy that will be integral to any final plan. These pilots include the Next Generation Technology, In Home Display Pilot, Remote Disconnect, and On-Board Meter Data Storage. Furthermore, PPL Electric is proposing to implement several new pilots to further test and expand its Smart Meter capabilities in ways not envisioned at the time the original plan was filed which may have an impact on the final plan.

57. Finally, the Commission itself continues to identify functionalities that effectively redefine the capabilities of smart meter infrastructure. In some cases these are new functionalities not addressed in either Act 129 or the *Implementation Order* while, in other cases, they are a more specific requirement which fits within what was a more general requirement in the *Implementation Order*. An example of the former is off-cycle supplier switching which arose in late-2011 in the context of the Commission's investigation into possible enhancements to retail electricity markets. Examples of the latter are (1) the requirement, arising in the retail markets investigation, to provide real-time price default rates to commercial customers with a demand greater than 100kW (which augments the more general "enabling time-of-use-rates and real-time price programs"); and (2) the recent encouragement from the Commission (Joint Statement of Chairman Powelson and Commissioner Witmer at Public Meeting April 12, 2012,

Docket No. M-2012-2289411), for EDCs to undertake the Federal government's "Green Button" initiative to implement standardized presentation 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").

58. Due to these events, PPL Electric believes that it would be reasonable and prudent for the Company to continue to evaluate its pilot results and new technology before filing its Final Plan designed to fully meet the Act 129 requirements.

59. Therefore, PPL Electric requests an extension of its Grace Period until December 19, 2014 to further test and evaluate the most cost-effective ways to meet the Act 129 requirements.

60. After this review, PPL Electric intends to file, by June 30, 2014 but no later than December 19, 2014, a revised Smart Meter Plan with the Commission that fully complies with the Act 129 requirements.

61. PPL Electric believes that customers will benefit from this extension because it will give PPL Electric additional time to test its smart meter functionalities and evaluate the most cost-effective ways to meet Act 129. In addition, customers will not be harmed because they already have many of the benefits of smart meter technology, including automated hourly meter readings, residential and Small C&I TOU programs, RT rates for Large C&I customers, access to usage and price information through the Company's web site, 15 minute data upon request, and net metering.

62. PPL Electric notes that the Commission has ruled that the 30-month Grace Period in the *Implementation Order* is not a binding norm, but rather provided guidance to EDCs for developing Smart Meter Plans. See *Joint Petition of Metropolitan Edison Co, Pennsylvania*

Electric Co., and Pennsylvania Power Co. for Approval of Smart Meter Technology Procurement and Installation Plan, Docket No. M-2009-2123950, Order entered June 9, 2010 at pp. 12-13.

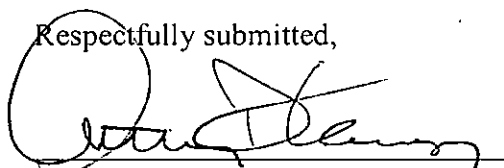
63. In addition, the Commission granted Metropolitan Edison Company, Pennsylvania Electric Company and Pennsylvania Power Company longer than 30 months to meet the milestones under their respective Smart Meter Plans. *Id.*

64. For these reasons, PPL Electric believes that it is reasonable and prudent for the Commission to extend PPL Electric's Grace Period for the Company to continue to evaluate cost effective ways to meet Act 129's requirements.

IV. CONCLUSION

WHEREFORE, for the foregoing reasons, PPL Electric Utilities Corporation respectfully requests that its Petition for Approval to Modify its Smart Meter Technology Procurement and Installation Plan be approved, and that the Company's Grace Period be extended to December 19, 2014.

Respectfully submitted,



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Before the
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PPL Electric Utilities Corporation
Smart Meter Technology Procurement and Installation Plan

**ADDENDUM TO
2011 ANNUAL SMART METER PLAN FILING**

Docket Nos. P-2012-_____ and M-2009-2123945

May 4, 2012

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I. INTRODUCTION

In this filing, PPL Electric Utilities Corporation ("PPL Electric" or the "Company") is submitting an Addendum to its 2011 Annual Smart Meter Plan update filing which was filed on August 1, 2011. The annual update is 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").

In the June 24 Order, the Commission approved the Company's Smart Meter Plan. However, the Commission held that PPL Electric's existing smart meter system does not fully meet all the requirements of Act 129. Therefore, the Commission directed PPL Electric to use its Grace Period pilot programs to develop a plan to be filed with the Commission to fully comply with Act 129. June 24 Order, p. 24. PPL Electric has been submitting updates to its Smart Meter Plan in August of every year after the Commission approved the Company's Plan. In addition, PPL Electric has been continuously working on its Smart Meter Plan, implementing Pilot Programs and reviewing options for improving its Plan as well as evaluating ways to fully comply with the Act 129 requirements.

This Addendum describes several proposed adjustments to the Company's 2011 annual filing. As described herein, certain pilot programs have been delayed as a result of technical issues. PPL Electric also is proposing to implement several additional programs to better meet the Act 129 requirements.

As also explained in the Petition that is being filed with this Addendum, PPL Electric is continuing to evaluate cost-effective ways to expand its metering capability to meet the Act 129 standards. At this point, PPL Electric is uncertain whether its existing AMI system will fully meet the Act 129 requirement and whether its AMI system will need to be replaced due to its age. Therefore, in the Petition, PPL Electric is also requesting to extend its Grace Period to give the Company additional time to consider these issues and to develop a plan to fully comply with Act 129.

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. The Company estimated that it would cost between \$380 and \$450 million to replace its existing AMI system. Therefore, the Company sought to comply with the Act 129 requirements without a large scale replacement of its AMI system. 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.

In its June 24 Order, the Commission approved the Company's Smart Meter Plan. The Commission also required PPL Electric to file annual smart meter filings with the Commission. Pursuant to the Commission's Order, PPL Electric submitted its annual filing on August 1, 2011. Since the filing, PPL Electric has identified 8 new programs that it proposes to implement under its Smart Meter Plan and has several updates to existing Commission-approved programs. Below, PPL Electric explains its proposed modifications to the Smart Meter Plan update filed on August 1, 2011. PPL Electric believes these changes will not result in a material change in the SMR at this time. PPL Electric plans to update its proposed SMR charges in its August 1 filing, consistent with the Company's tariff.

III. DISCUSSION

A. Providing customers with direct access to and use of price and consumption information.

1. Proposal Included in August 2011 Filing

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. However, the Company proposed to pilot other means of electronic access that include alerts on price and/or consumption. In the pilot, customers have the option to receive three different types of messages (1) Price to Compare (PTC), (2) Bill to Date (BTD) Notification, and (3) Abnormal Usage (AU) Notification. Customers will be able to receive the notifications through their choice of email, text message and/or an Interactive Voice Response (IVR) phone call.

- PTC notifications will be sent to enrolled customers each time PPL Electric's PTC changes. The first PTC notifications were sent out in August 2011.
- BTD notifications will be sent to enrolled customers when they exceed their specified threshold for the month. The customers will be able to select a dollar amount that will trigger a notification through their preferred communication channel – email, text

message or an IVR call. The first BTM notifications were sent out in November 2011.

- AU notifications will be 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 initial phase of the pilot was rolled out at the end of 2011. There are currently about 1,290 customers enrolled in PTC, 806 customers enrolled in BTM, and 998 customers enrolled in AU. In the initial phase of the project, Time-of-Use (TOU) customers are excluded from the BTM notifications due to programming limitations.

Overall, the pilot will provide the Company with an opportunity to further define the costs and benefits of sending price and usage messages to customers. The total estimated cost of this pilot is \$337,136 which includes (1) the evaluation in 2010, (2) two pilot phases spanning from 2011 to 2013 (2) software and licensing (3) evaluation of pilot results, (4) establishment of an implementation plan if so indicated by the evaluation, and (5) reporting of results and proposed implementation plan to the Commission.

2. Proposed Adjustments to August 2011 Filing

PPL Electric planned to allow TOU customers to enroll in BTM notifications in 2012 but due to programming issues and a minimal number of customers enrolled in the TOU rate, PPL Electric proposes to adjust its Plan to delay the TOU phase of the project until 2013.

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

1. Proposal Included in the August 2011 Filing

PPL Electric completed a pilot to use the capabilities of the AMI system currently deployed to automatically control individual customer's electric consumption. This was accomplished by installing load control devices on certain customer equipment, including air conditioning systems and water heaters. Preparation for this pilot began in 2010 and the pilot was conducted from July 1, 2011 to September 30, 2011. The Company is in the process of reviewing the pilot results and developing a report on the feasibility, costs, and benefits of automatic control of the customer's electric consumption.

In the August 2011 filing, the Company estimated the cost of the pilot to be \$600,089 which included, (1) establishment of pilot objectives, (2) invitations to customers to participate in the pilot, (3) purchase of 500 load control devices, (4) installation of 170 load control devices, (5) software, programming and licensing, (6) evaluation of pilot results, (7) establishment of an implementation plan if so indicated by the evaluation, and (8) reporting of results and proposed implementation plan to the Commission. Approximately \$36,851 was spent in 2010 to prepare for the pilot, and \$563,238 was projected to be spent in 2011 to conduct the pilot.

2. Proposed Adjustments to the Company's August 2011 Filing

The estimated cost of this pilot has been reduced from \$600,089 to \$468,646. In addition, \$421,795 was spent in 2011 to conduct the pilot and approximately \$10,000 will be spent in 2012 to complete the analysis.

As the Company identified in the August filing, the Company's cost benefit analysis will determine the feasibility of the technology as well as its economic viability. Depending on the outcome of that analysis, wider potential deployment is possible. Because the Company is still completing this analysis, potential implementation in 2012 is very unlikely and, therefore, the Company proposes to adjust its Plan to reflect potential implementation costs of \$8,152,696 from 2013 through 2015 as opposed to the original proposal of 2012 - 2014. The Company plans to file the analysis results in the August 2012 update filing.

3. New Automatic Control Pilot Program

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.

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

1. Proposal Included in August 2011 Filing

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. The pilot will provide customers with an in-home display on which they can view their real-time energy usage while they are in their home. There is the potential for future pilots in this area that would incorporate the ability to control customers’ end-use devices such as thermostats and appliances, but this initial pilot, as scoped, will focus on understanding the technology and benefits of providing customers with direct real-time access to their energy and cost information.

The estimated cost of this pilot was \$433,761 which included (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.

2. Proposed Adjustments to August 2011 Filing

Due to technical issues experienced while testing, the pilot has been delayed. The Company is working closely with their AMI vendor to troubleshoot technical issues and expects to deploy the pilot in the Fall of 2012. Since the start of the pilot has been delayed, potential implementation in 2012 is very unlikely and, therefore, the Company proposes to adjust its plan to defer potential implementation costs of \$4,245,000 from 2012 through 2014 to 2014 through 2016. In addition, the estimated cost of this pilot program has increased to \$504,391. The pilot is expected to run until early 2013. The Company plans to file the analysis results in the August 2013 update filing.

D. 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 to accommodate and be compatible with new standards and protocols. The Company's plan addresses technology advances discussed below.

a. General Obsolescence and Upgrade Issues

1. Proposals Included in the August 2011 Filing

Over the next five years, PPL Electric will 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 coming from the Commission's Retail Market Investigation. The evaluation was completed and resulted in an AMI technology roadmap that will allow the Company to address obsolescence and plan for upgrades.

2. Proposed Adjustments to the August 2011 Filing

The AMI technology roadmap identified seven (7) new projects to continue to enhance the Company's AMI infrastructure.

1. 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 regard to 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.

PPL Electric currently estimates that the costs for this project will be \$525,000 of which \$50,000 will be spent in 2012 to scope the project and develop an implementation schedule consistent with the direction from the Retail Markets Investigation.

2. 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, PPL Electric will file 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. *Investigation of Pennsylvania's Retail Electricity Market: Recommendations Regarding Upcoming Default Service Plans*, Docket No. I-2011-2237952, Order entered December 16, 2011.

Prior to offering real-time pricing for mid-size C&I customers, PPL Electric proposes to implement a Project to demonstrate that its smart meter infrastructure can provide all functionality necessary to enable real-time pricing of default service for these customers.

Under the Project, PPL Electric will modify financial, customer, billing and meter data management systems and further demonstrate the meter system can support the new regulatory and business requirements.

The Company proposes to scope the project in 2012 and deploy changes under the assumption that customer billing could start, in the absence of other conditions, as early as June 2013; i.e., at the conclusion of the Company's current default service plan.

The estimated cost of the Project is \$155,000 of which \$60,000 will be spent in 2012 to scope the project and develop an implementation schedule.

3. 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 total estimated cost of the project is \$1,475,000 of which \$510,000 will be spent in 2012.

The Company proposes a phased approach for this project. The first phase of the project would involve installing all required software and hardware for the meter data warehouse. The first phase would provide the Company's business users ad-hoc querying capability and reduce the stress on production activities within MDMS. The second phase of the project would involve developing an advanced data analytics environment for meter data.

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 our customers.

4. Faster Data Presentation to Customers and Suppliers

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.

PPL Electric believes that it can present validated customer data on its website sooner than 48 hours, perhaps as soon as 24 hours, by modifying the way that the Company processes and validates data.

Therefore, the Company proposes to evaluate the changes needed to its AMI and back office systems to present data to customers. The Company proposes to scope the project in 2012 and 2013 and potentially deploy changes in 2014 and 2015. The estimated project cost is \$180,000 of which \$10,000 will be spent in 2012 to scope the

project, evaluate all AMI and back office systems that would require changes and develop a cost and schedule estimate for the project.

5. 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.

The Company proposes to scope the project in 2012 and 2013 and potentially deploy changes in 2014 and 2015. The pilot 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 on the Data Warehouse and Analytics Project described above. The estimated project cost is \$110,000 of which \$10,000 will be spent in 2012 to scope the project, evaluate all AMI and back office systems that would require changes and develop a cost and schedule estimate for the project.

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

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 validation/editing/estimation 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 coupled with an increase in EGS TOU offers appear to indicate that increasing numbers of customers are being billed on hourly rates. The Company believes that the meter data validation process can be

improved by integrating outage data from the Company's Outage Management System ("OMS") into that process.

The Company proposes to scope the project in 2012 and, if cost effective and feasible, deploy changes in 2013. 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 with times of known outages.

The estimated project cost is \$130,000 of which \$10,000 will be spent in 2012 to scope the project. Scoping will include evaluating the most cost effective way to integrate outage data into the meter data validation process and developing a cost and schedule for the project.

7. Outage Duration Pilot

In addition to the VEE Outage Pilot discussed above, 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 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.

The Company proposes to scope the project in 2012 and potentially deploy changes in 2013 and 2014 consistent with the release of vendor software. The Company plans to 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 \$185,000 of which \$10,000 will be spent in 2012 to scope the project and develop an implementation schedule for the project.

The ability to communicate outages and restorations is one of the capabilities of a smart meter system that was identified by the Commission in its Implementation Order. Implementation Order, p. 30.

b. Telecommunication Substation Modem Project

In 2011, PPL Electric completed the majority of the telecommunications substation modem project. The total project cost between 2009 and 2011 was \$514,494. There is a small amount of carryover work from the project that is expected to cost \$10,000 and will be completed by May 31, 2012.

c. PLC-Based System Enhancements Evaluation

1. Proposal Included in the August 2011 Filing

In the August, 2011 Smart Meter Filing, the Company planned to evaluate, in 2011, adding or replacing equipment to enhance data capture and accommodate new end-use devices. The Company planned to evaluate 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 completed both evaluations. There have been no changes to this recommendation.

2. Proposed Adjustments to the August 2011 Filing

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. Because the results of the evaluation did not clearly confirm the benefits of moving ahead, the pilot approach is proposed 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. This will result in reduced costs in 2012 of \$270,000. The Company will defer \$724,000 for a possible full deployment to 2013 and 2014.

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

1. Proposals Included in the August 2011 Filing

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.

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 400 bi-directional meters in the power line 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 \$177,207. 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.

2. Proposed Adjustments to August 2011 Filing

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 \$57,600 are expected in 2012 to change out an additional 110 small three-phase C&I accounts with generation installed.

F. Smart Meter Rider

Under its tariff, PPL Electric is authorized to file for interim revisions of its Smart Meter Rider ("SMR") if it determines that the current SMR will result in a material over or undercollection of costs, and the Company may request that the revised SMR become effective 30 days from the date of filing.

As noted in the Petition that is being filed with this Addendum, PPL Electric seeks Commission approval to include the actual costs of its new Smart Meter Programs in the SMR. PPL Electric believes that the cost changes proposed herein will not result in a material change in the SMR at this time. Therefore, PPL Electric also will update its proposed SMR charges in its August 1 update filing, consistent with the Company's tariff.

IV. CONCLUSION

As explained above, 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. 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.

Attachment 1

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ATTACHMENT 1

PPL Electric Smart Meter Program Milestone Plan	2010				2011				2012				2013				2014				2015 - 16	
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	2015	2016
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																						
- System Implementation																						
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																						
6 C(4): Open standards and protocols																						
1. In-Home Display/Home Area Network [5]																						
- Evaluate available technologies and requirements																						
- Conduct Pilot with 500 customers																						
- Implementation																						

ATTACHMENT 1

PPL Electric Smart Meter Program Milestone Plan	2010				2011				2012				2013				2014				2015 - 16	
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	2015	2016
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																						
- Potential next generation PLC based system implementation (TWACS 20 Pilot)																						
- Evaluation next generation AMI technologies/Smart Grid integration																						
- Assessment of existing PLC based functionality																						
- Telecommunications Substation Modem evaluation & replacement [6]																						
- Real Time Path Mapping in PLC based system																						
» Evaluate feasibility and potential design																						
» Implement/evaluate results of proof of concept design																						
» Implement full scale																						
- PLC Based System Enhancements [7]																						
a. Consider addition of Modulation Transformer Units(MTU)																						
» Evaluate the benefits for additional MTUs																						
» Implement additional TWACS Trailers																						
b. Consider deployment of SCPA G2 Boards																						
» Evaluate the benefits for new SCPA boards																						
» Install SCPA boards																						
2. Service Extending																						
- Conduct pilot - 500 customers																						
- Implementation																						
3. Prepay Metering																						
- Conduct pilot - 500 customers																						
- Implementation																						
4. Momentary Outage Monitoring																						
- Conduct pilot																						
- Implement recommendations																						
5. Accelerated Supplier Switching (Off-cycle)																						
6. MDM Data Warehouse & Analytics																						
7. Supplier Portal																						
8. V-Charge																						
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																						
6 C(7): Remote programming capability																						
Note: To be demonstrated in conjunction with work to be completed in Section 6 C(5).																						

ATTACHMENT 1

PPL Electric Smart Meter Program Milestone Plan	2010				2011				2012				2013				2014				2015 - 16	
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	2015	2016
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 [8]																						
- 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 extended to 2013.
[2] Implementation delayed from 2012 - 2014 timeframe until 2013 - 2015 timeframe.
[3] Implementation delayed until 2015.
[4] Project extended to perform further benefit analysis before implementation.
[5] Pilot was delayed due to technology issues and resource constraints with outside vendors.
[6] Implementation extended until May 2012.
[7] Implementation of SCPA boards delayed to further evaluate full benefit at 60 add'l subs.
[8] 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	2015	2016	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	\$111,108				\$318,407
2. Faster Data Presentment to Customers and Suppliers								
			\$10,000	\$170,000				\$180,000
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								
			\$10,000	\$120,000				\$130,000
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								
			\$60,000	\$95,000				\$155,000
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	\$10,000					\$468,646
- System Implementation				\$2,787,176	\$2,682,760	\$2,682,760		\$8,152,696
6 C(1): Remote disconnection and reconnection								
1. Remote Disconnect / Reconnect								
- Conduct pilot- 500 customer installations		\$50,075	\$763,502	\$58,008	\$35,000			\$906,585
- Implementation						\$3,545,000	\$3,545,000	\$7,090,000
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				\$89,526	\$160,000	\$35,000		\$284,526
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	\$10,000				\$487,630
- Implementation					\$1,508,333	\$1,368,334	\$1,368,334	\$4,245,001
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)			\$1,522,690	\$1,500,000				\$3,022,690
- Evaluation next generation AMI technologies/Smart Grid integration			\$2,310	\$25,000	\$25,000			\$52,310
- 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	2015	2016	Total
- Real Time Path mapping in PLC based system								
» Evaluate feasibility and potential design			\$10,000					\$10,000
» Implement/evaluate results of proof of concept design								
» Implement full scale			\$145,000	\$39,000				\$184,000
- 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 boards		\$11,332						\$11,332
» Install SCPA boards			\$171,350	\$416,375	\$307,475			\$895,200
2. Service Extending								
- Conduct pilot - 500 customers			\$10,000	\$205,000	\$205,000	\$10,000		\$430,000
- Implementation							\$3,250,000	\$3,250,000
3. Prepay Metering								
- Conduct pilot - 500 customers			\$10,000	\$285,000	\$10,000			\$305,000
- Implementation						\$3,250,000		\$3,250,000
4. Momentary Outage Monitoring								
- Conduct pilot		\$15,725	\$127,220					\$142,945
- Implement recommendations				\$50,000				\$50,000
5. Accelerated Supplier Switching Project (Off-Cycle)			\$50,000	\$475,000				\$525,000
6. MDM Data Warehouse and Analytics			\$510,000	\$965,000				\$1,475,000
7. Supplier Portal Pilot			\$10,000	\$100,000				\$110,000
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			\$152,311	\$10,420				\$162,731
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			\$10,000	\$175,000				\$185,000
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	\$57,600					\$157,141
Program Management	\$395,846	\$306,810	\$333,416	\$333,416	\$333,416	\$333,416	\$333,416	\$2,369,736
Total	\$981,290	\$2,297,632	\$4,993,903	\$8,020,029	\$5,266,984	\$11,224,510	\$8,496,750	\$41,281,098

Attachment 3

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6B(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">• This pilot is intended to assess PPL Electric's ability to provide customers and suppliers with energy usage information in less than 48 hours.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• \$180,000
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 2014 and 2015.

6B(4)

Provide customers with information on their hourly consumption

Pilot/Evaluation	Improved Validation/Editing/Estimation (“VEE”) Process to Incorporate Outage Data <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.
Estimated Cost of Pilot/Evaluation	<ul style="list-style-type: none">• \$130,000
Pilot/Evaluation Plan	<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
High Level Benefits	<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.• The Company’s internal algorithms will more accurately profile interval data by avoiding intervals that occurred during a known outage.• 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.
Potential Implementation	<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	<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"> • \$155,000
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 will implement on a broader scale.

6C(8)

Ability to communicate outages and restorations

Pilot/Evaluation	Outage Duration <ul style="list-style-type: none">• PPL Electric will conduct a pilot to further enhance the use of outage information 2013.• 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">• \$185,000
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.

6C(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">• \$525,000
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• Develop training and documentation for customer service• Implement in accordance with final guidance from Retail Market Investigation
High Level Benefits	<ul style="list-style-type: none">• Improve customer satisfaction and development of retail markets by allowing off-cycle switching (limited to one off-cycle switch per month).
Potential Implementation	<ul style="list-style-type: none">• Implementation would follow guidelines established in the Retail Market Investigation

6C(5)

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

<p>Pilot/Evaluation</p>	<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 Electric Thermal Storage heaters, 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.
<p>Estimated Cost of Pilot/Evaluation</p>	<ul style="list-style-type: none"> • \$550,000
<p>Pilot/Evaluation Plan</p>	<ul style="list-style-type: none"> • Select 350 Rate Schedule RTS customers • 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.
<p>High Level Benefits</p>	<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.
<p>Potential Implementation</p>	<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.

6C(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">• \$110,000
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 <i>additional opportunities and entities</i> that could utilize the data and the secure portal.

6C(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 total estimated cost of the project is \$1,475,000 of which \$510,000 will be spent in 2012 during phase one, and \$965,000 will be spent on 2013 during phase two.
Pilot/Evaluation Plan	<ul style="list-style-type: none">• The Company would take a phased approach to the project.• Phase 1 - Install all required software and hardware for the meter data warehouse.• 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.

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).

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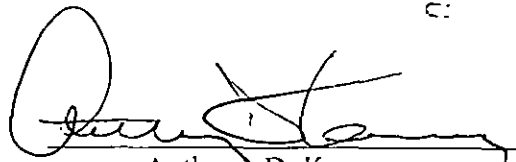
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