BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PETITION OF PECO ENERGY	**:**	
COMPANY FOR APPROVAL OF ITS	**:**	
SMART METER TECHNOLOGY	**:**	**DOCKET NO. M-2009-2123944**
PROCUREMENT AND INSTALLATION	**:**	
PLAN	**:**	

VOLUME II OF II

PECO EXHIBIT 1

SMART METER TECHNOLOGY PROCUREMENT AND INSTALLATION PLAN

August 14, 2009

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1. Executive Summary

PECO Energy Company ("PECO" or the "Company") is proposing to implement a smart meter technology procurement and installation plan pursuant to the requirements of Act 129 of 2008. PECO refers to this as its "Smart Meter Plan." This document describes PECO's Smart Meter Plan and how PECO intends to implement it.

PECO's Smart Meter Plan calls for the design, procurement, deployment, and operation of inter-related smart meter systems. These systems will ensure that PECO meets the program requirements of the Pennsylvania Public Utility Commission ("Commission" or "PUC"), including all of the smart meter functional capabilities enumerated in the Commission's Implementation Order. *See Smart Meter Procurement and Installation,* Docket No. M-2009-2092655 (order entered June 24, 2009) ("Implementation Order"). PECO is not seeking a waiver at this time for any of the non-statutory requirements.[1]

While the design and deployment of Smart Metering systems is complex and costly, PECO has endeavored to develop a prudent and well-structured Smart Meter Plan to manage cost and risk. This Plan mitigates cost risks through a disciplined procurement process that leverages purchasing power across Exelon operating units. The Plan mitigates technology risk through various levels of acceptance testing. The Plan mitigates organizational and business process risk through reasonably paced initial and universal deployment phases. Finally, the Plan mitigates customer risk by implementing an initial dynamic pricing and customer acceptance program to educate customers and gain insight into how customers will utilize new pricing options.

[1] PECO has filed an Energy Efficiency and Conservation Plan ("EE&C Plan") with the Commission containing both energy efficiency and demand response programs. See Docket No. M-2009-2093215. Those programs are not dependent on PECO's Smart Meter Plan.

PECO proposes to implement this Smart Meter Plan using a two-phase process (see Plan Approval Process Timeline below). The first phase ("Phase One") will focus on the selection of the Smart Meter technology to be deployed, the implementation of a meter data management system ("MDMS") and other information technology ("IT") investments, the testing and validation of the Smart Meter technology and the deployment of the advanced metering infrastructure ("AMI") communication network (see Table 1). Phase One also involves the deployment of Smart Meters in controlled quantities and the development and implementation of a program to test dynamic pricing and customer acceptance. The second phase ("Phase Two") will complete the deployment of Smart Meters across the PECO service territory.

PECO's Smart Meter Plan will be implemented through three major filings for PUC approval with the Commission (see Table 2) and a separate, but contemporaneous, grant application with the U.S. Government pursuant to the American Recovery and Reinvestment Act ("ARRA" or "Stimulus Act"). First, PECO is making an initial filing with the Commission to establish its Smart Meter Plan and gain approval for its Smart Meter technology procurement processes, including the procurement of an initial quantity of AMI meters, AMI network, communications networks, MDMS, Middleware, and System Integration investments. Second, PECO plans to file in June 2010 for Commission approval of an initial dynamic pricing and customer acceptance program. Third, PECO will file in 2012 for approval of a universal meter deployment plan for its remaining customers.

In conjunction with its Act 129 filing to the Commission, PECO also is seeking a federal Stimulus grant. On August 6, 2009, PECO filed a Smart Grid Investment Grant with the Department of Energy for $200 million to mitigate the net costs of PECO's Phase One smart meter investment costs and to enable the acceleration of the deployment of PECO's Smart Meter

system. Stimulus Act funding would allow for an expanded initial deployment of up to 600,000 meters and universal deployment in 10 years.

As discussed in the Implementation Order, electric distribution companies ("EDCs") are entitled to recover reasonable and prudent costs of providing smart meter technology less any savings in operating expenses and capital costs realized by the EDC from deploying the smart meter technology. EDCs may also seek recovery of stranded costs through an accelerated depreciation schedule. The costs of PECO's Smart Meter Plan have been carefully estimated. The preliminary cost estimate for Phase One of PECO's Smart Meter Plan for an initial deployment of 100,000 meters is $210 million and $290 million for 600,000 meters, with a range of $125 to $225 million and $210 to $300 million, respectively. Preliminary cost estimates for the full implementation of the Smart Meter Plan range from $500 million to $550 million.

PECO seeks approval from the Commission for all of the Plan's Phase One costs. In 2012, PECO intends to seek approval from the Commission to recover costs for the universal meter deployment. The Company is proposing to recover the net costs of its Smart Meter Plan through a reconcilable surcharge under Section 1307 of the Public Utility Code.

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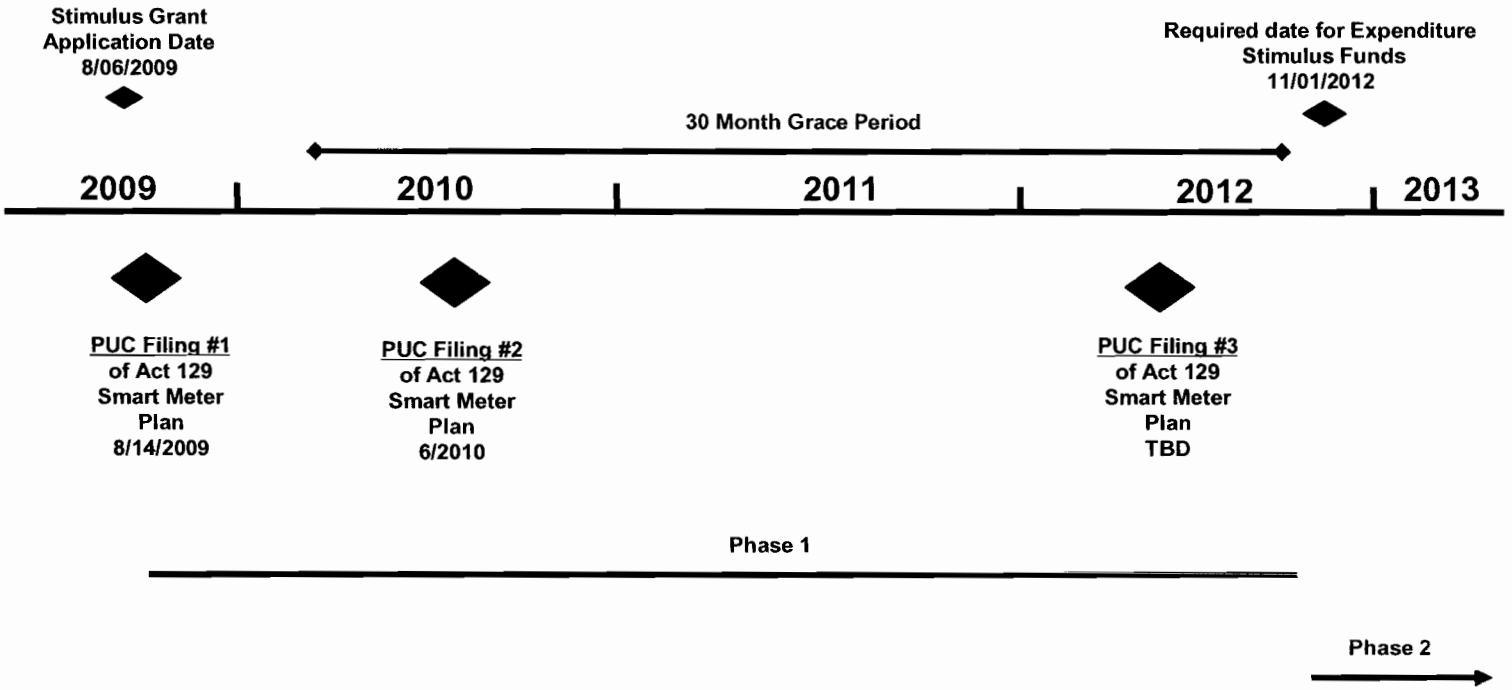
Plan Approval Process Timeline



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2. The PECO Smart Meter Plan

Act 129 requires EDCs to file with the Commission, by August 14, 2009, a smart meter technology procurement and installation plan. The Act defines minimum smart meter technology capabilities and provides for cost recovery of all prudent and reasonable costs. In June 2009, the Commission issued an Implementation Order detailing plan requirements, including key milestones that should be addressed. The Implementation Order describes Smart Meter Plan functional requirements, some of which are not enumerated in the Act. The Implementation Order allows EDCs to request waivers of the non-statutory requirements that are not cost-effective. The Implementation Order also provides for a 30-month grace period for installation of a smart meter network and guidance on EDC smart meter technology cost recovery.

PECO has developed a Smart Meter Plan that is consistent with the requirements of Act 129 and the Implementation Order. The Plan supports all of the key smart meter technology capabilities identified by the Implementation Order. PECO does not seek a waiver at this time of any of the non-statutory requirements set forth in the Commission's Order.

2.1 AMI System Components Overview

A complete AMI system is comprised of several component subsystems. The table below defines the key categories of components that form an AMI system.

Table 1: AMI System Component Definitions

Term	Definition
AMI Network	Comprised of: 1) Network components (collectors, routers, and repeaters) that connect smart meters to the AMI Host computers via higher capacity communications transport technologies 2) AMI Host, which are computers that act as the network controller.
Communications Network(s)	Comprised of: 1) Core Foundation Network, which is a higher capacity transport from the AMI Network to the AMI Host 2) Additional communications solutions that bridge between the AMI Network and the Core Foundation Network when necessary.
MDMS	The Meter Data Management System which: 1) Serves as a repository for meter interval usage data and meter event data. 2) Performs validation, editing, and estimating (VEE) operations on raw data to allow it to be used for billing purposes.
Middleware	Standard software components that manage the integration of: 1) The AMI Host with the MDMS 2) The MDMS with IT "Back Office" systems to perform customer billing, outage management, and other critical business functions.
System Integration	IT professional services that are engaged in the analysis, design, build, test, and deploy phases of the integration of the AMI Host, MDMS, Middleware, and IT back office systems.
Meters	The physical smart meter end points that are used to record and store interval usage data and events and communicate to the AMI Network.

2.2 PECO's Smart Meter Plan Development

To develop the Smart Meter Plan, PECO undertook a disciplined and detailed assessment of various technology and deployment options to meet Act 129 and Implementation Order

requirements. Many alternative technology and deployment options were identified and analyzed, from adaptation of the AMR system currently in use by PECO to a complete replacement of PECO's AMR systems with new AMI technology.

PECO's Plan development process included designating functional work teams and subject matter experts, as well as coordination with PECO's energy efficiency and conservation ("EE&C") working team and subject matter experts on distribution system communication enhancements. The Plan development process was supported by consultants with unique expertise and knowledge in the development of Smart Meter strategies and systems, and involved internal workshops, stakeholder review sessions, an AMI technology symposium in Harrisburg, and workshops with several leading AMI system vendors. In addition, PECO's current meter operations outsourcing contractor was consulted to identify transition issues. The resulting Smart Meter Plan reflects this extensive research, assessment and outreach effort.

Ultimately, this examination revealed that PECO's current AMR system would not meet the Act 129 and Implementation Order requirements. The examination also identified certain common elements which form the core of PECO's Smart Meter Plan: (a) the deployment of a new two-way AMI network that enables Smart Meter functionality, (b) the creation of the information technology systems and information handling capabilities to support this network and the expanded data flow, including MDMS, (c) the purchase and installation of the new Smart Meters required to initiate the customer deployment of the Smart Metering technology, and (d) the importance of educating customers about dynamic pricing options.

2.3 PECO's Smart Meter Plan Schedule and Phasing

PECO proposes to implement its Smart Meter Plan in two phases. The first phase -- Phase One -- will begin with a thorough technology contracting process to select, negotiate, and

contract for the discrete elements that will make up PECO's Smart Meter technology. Phase One also will include the setup and technology acceptance testing of the selected new AMI technology to ensure proper performance of the technology prior to broader deployment. Once the technology acceptance testing is complete, an initial dynamic pricing and customer acceptance program will be launched to test dynamic pricing options, educate customers about those options, and collect data from customer experience with dynamic pricing. Finally, Phase One will provide for the deployment of the new AMI network across the PECO service territory and the initial installation of Smart Meters. The pace and number of Smart Meters in the Phase One deployment will be affected directly by the availability of Stimulus grant funds to finance accelerated deployments. At a minimum, Phase One will include the procurement and deployment of 100,000 meters, but this figure may be increased up to 600,000 meters if full requested Stimulus funds are received.

PECO's goal is to begin implementing Phase One in late 2009. Specifically, PECO expects to begin procurement activities immediately following the first Commission filing and projects the design work on the MDMS will begin in late 2009. Once approved by the Commission, the MDMS application and system will be installed and is expected to be operational by the summer of 2011. In order to achieve the most cost-efficient procurement of the supporting IT systems, PECO intends to leverage the competitively sourced MDMS, Middleware, and Systems Integration providers currently supporting the development of Exelon's AMI programs. Leveraging this MDMS platform will help ensure that PECO's aggressive implementation schedule can be achieved.

PECO projects technology acceptance testing of the AMI communications network will begin in late 2010. IT system, metering, and AMI network technology acceptance testing is

expected to take approximately 12 months. Full AMI network deployment will begin in late 2011, and the network is expected to be fully operational by early 2012, in advance of the end of the 30-month grace period. PECO's goal is to deploy the field AMI communications network in a way that will allow customers throughout the service territory to access Smart Meter capabilities. This is necessary to accommodate the Act 129 requirements to deploy Smart Meters upon customer request or in new construction after the conclusion of the grace period.

During Phase Two of PECO's Smart Meter Plan, Smart Meters will be installed throughout the PECO service territory where meters were not changed out during Phase One. The specific schedule of the deployment for the remaining Smart Meters is not finalized at this time and will be based, in part, on the lessons learned from Phase One and the outcome of PECO's Stimulus grant application. If DOE fully funds PECO's grant request, PECO will deploy up to 600,000 Smart Meters during Phase One, thus reducing the number of meters remaining to be changed out during universal deployment. PECO plans to finalize deployment in a separate filing with the PUC towards the end of the 30-month grace period established in the Implementation Order.

2.4 Future Elements of PECO's Smart Meter Plan

Implementing such a complex technology and deployment program as contemplated in PECO's Smart Meter Plan represents a significant organizational commitment and large investment. While the core elements of PECO's Smart Meter Plan have been determined, certain details have not been finalized. In the interest of diligence and prudency, PECO is deferring some decisions (see Table 2), including:

- The selection of the specific Smart Meter technology to be deployed. This includes the specific AMI network as well as the compatible Smart Meters that interface with

the network. As discussed above, this selection forms a critical part of Phase One of PECO's Smart Meter Plan. A comprehensive procurement process will support the selection of the AMI and Smart Meter technology vendors.

- The timing and planning for universal change-outs of AMR electric meters with Smart Meters. The specifics of this aspect of Phase Two of the Plan will be influenced by access to Stimulus grant funds; actual cost experience of deploying, operating and maintaining the new Smart Meter network and associated IT systems; considerations for potential stranded assets arising out of transitioning from PECO's current AMR System; and PECO's operational capacity to manage the mass deployment.
- The business ownership structure to be employed. PECO currently uses a managed services outsourcing agreement for its meter reading services. Under this agreement, the outsourcing contractor owns and maintains the communications network. PECO currently intends to own its AMI system, but is evaluating options for the operation and maintenance of the network.

PECO is also evaluating what will be done with respect to gas meters, as the gas meters are currently supported by the AMR metering system. To the extent that PECO deploys new gas meters, those procurements, the associated costs and cost recovery will be addressed in a separate proceeding.

2.5 Commission Filings and Other Approval Actions

PECO anticipates implementing Phases One and Two of it Smart Meter Plan with three major Commission filings and a separate Stimulus grant application to the Department of Energy. Phase One of PECO's Smart Meter Plan will be implemented through the first two

major Commission filings, as well as through the Stimulus grant application submitted on August 6, 2009. Phase Two will be launched through the third Commission filing.

PECO's Stimulus grant application requests funding for its MDMS, AMI network and initial meter deployment. DOE expects to notify potential grantees of its decisions before the end of 2009. The table below summarizes the specific approvals sought from the Commission for each phase.

Table 2: Commission Filings and Approvals

Filing and Approximate Date	Phase of Smart Meter Plan	Approvals sought
Filing 1: Smart Meter Technology Procurement and Installation Plan, 8/14/09	Phase One	PECO seeks Commission approval of its Smart Meter Technology Procurement and Installation Plan, including: • AMI Network • Communication Network • MDMS • Middleware • Systems and Integration • Initial Deployment of up to 600,000 Smart Meters • Cost Recovery Mechanism
Related Approvals, Q4 2009	Phase One	PECO will seek Commission approval of proposed contracts with MDMS, Middleware, and Systems Integration vendors
Related Approvals, Q1 2010	Phase One	PECO will seek Commission approval of proposed contracts with AMI technology vendors
Filing 2: Initial Dynamic Pricing and Customer Acceptance Program, 6/2010	Phase One	PECO will seek Commission approval of programs to implement initial dynamic pricing options, educate customers and assess customer acceptance of dynamic

		pricing programs
Filing 3: Universal meter deployment schedule, 2012	Phase Two	PECO will seek Commission approval of Smart Meter universal meter procurement and deployment

PECO has proposed the foregoing approach to meet PUC deadlines and ensure both an orderly process and risk mitigation associated with Smart Meter technology deployments. Consequently, the Phase One MDMS system implementation and the selection and technology acceptance testing of the AMI network must proceed without delay. Phase One also will allow PECO to design and implement, through a collaborative process described in Section 5.6, initial dynamic pricing options, and a program to educate customers about those options and collect data about customer experience with dynamic pricing. Finally, Phase One ensures that PECO can validate the performance and reliability of the new Smart Meter technology and become proficient in the use of the new AMI system prior to its wider use for large numbers of PECO customers.

For Phase Two, PECO will evaluate the lessons learned from Phase One to develop its universal meter deployment proposal. Specifically, the initial deployment stage will inform Phase Two decisions concerning the appropriate design and pace of the mass deployment. Also, given the ongoing evolution of AMI technology, PECO's proposed two-phase approach enables it to take advantage of Smart Meter product improvements prior to final, large-volume purchases, and to explore cost-saving purchase opportunities at the corporate level. Since the Smart Meters represent as much as 85-90% of the capital costs associated with the AMI system (not counting IT investments), cost savings resulting from a larger purchase may be significant. See Section 6.2 below.

2.6 Vendor Selection and Contracting Process

PECO will engage in a careful and thorough process to select the vendors who will support the implementation of the Smart Meter Plan. A disciplined, competitive selection and contracting process is important as PECO anticipates that several different contracts will be executed, including the following scopes of work: (1) purchase, design, install and train support for the AMI network; (2) build out PECO's communications network to link the AMI network to PECO's data center; (3) install Smart Meters; and (4) support program management. In addition, PECO anticipates that it will negotiate and amend existing contracts in order to: (1) license, install, configure and support the MDMS; (2) implement and support IT "Middleware"; and (3) support system integration activities.

As an initial step in this process, PECO has conducted workshops with some of the key vendors of Smart Metering technology. These workshops are described in detail in Section 2.9 of this Plan. In addition, as further detailed in Section 5.2, PECO intends to leverage the competitively sourced MDMS, Middleware, and System Integration providers currently supporting the development of Exelon's AMI programs.

2.7 IT Systems Deployment and Integration Overview

A critical part of PECO's Smart Meter Plan is the successful implementation of the IT Systems Plan described in Section 5.3. The IT System Plan represents a large investment, occurs early in the process, and must be completed in time to support PECO's customers using Smart Meters. This last item is of particular importance to PECO's initial Commission filing; without timely approvals it may not be possible to make the necessary changes, including the installation of the MDMS, in a timeframe sufficient to meet other components of the Plan.

The IT Systems Plan is a multi-phase program within the Smart Meter Plan, involving five successive "releases" of IT systems. The first release includes the installation, commissioning and integration of a MDMS. The second release will include the necessary integration of the MDMS and PECO's Customer Information Systems to enable accurate and effective billing. The third release of the intended IT systems implementation involves the development of web presentment, data analytics capabilities, and any needed changes to PECO's EDI transaction capabilities. As part of the fourth release of the IT System implementation, the remote customer control and in-home display aspects of the Smart Metering technology will be enabled. Finally, in the fifth planned release, the further integration and modification necessary to integrate the MDMS to PECO's outage management system and other operational support systems will be completed.

2.8 Consistency with Industry Standards

It is important that PECO's Smart Meter Plan and its selected technologies meet best practices and industry standards. There is a proliferation of standards, which affects all levels of the AMI and Smart Meter system, from the physical layer of hardware, to the transport, network and application layers involving interaction of software systems. Many standards have already been developed which influence the design of the Smart Meter itself. Some provide guidance on the communication to and from the network and the meter, while others address the growing issues around security and access.

Part of the growing interest in standards is to ensure that "open" standards and systems are broadly deployed. This will enable vendors, utilities and third parties to access innovative products and capabilities, providing ever-increasing and valuable communication and data services. At the same time, the emphasis on "open" standards has also energized concerns

around security of the metering systems.

Current commercial vendors and utility stakeholders are working through several industry and governmental bodies to develop common standards for "open" systems communications. One of the most important current efforts is being conducted by the National Institute of Standards and Technology (NIST). The Energy Independence and Security Act of 2007 (EISA) authorized NIST to establish and publish an interoperability framework for the smart grid. PECO is participating in this effort. NIST aims to establish a framework of concepts, principles, processes and models that will help promote the interests of smart grid interoperability across the entire spectrum of smart grid devices, uses and users. Once NIST completes its work, the Federal Energy Regulatory Commission intends to institute a rulemaking to review and, hopefully, adopt the NIST standards and protocols as may be necessary to "insure smart-grid functionality and interoperability in interstate transmission of electric power, and regional and wholesale electricity markets."[2]

By Fall 2009, the NIST process is expected to deliver (a) smart grid architecture; (b) priorities for interoperability and cyber security standards; (c) an initial set of standards to support implementation; and (d) plans to meet remaining standards as needed. The initial list of standards is included in the table below.[3]

PECO is fully supportive of this effort, and PECO will incorporate all applicable inter-operability, security, and performance standards as called for in the PUC Implementation Order and any applicable published standards generated by the NIST effort described above.

[2] EISA Section 1305(d).

[3] NIST recognizes that these standards will require further development and that many additional standards and specifications are needed to achieve interoperability of Smart Grid devices and systems.

Table 3: Initial List of NIST Standards

Standard	Application
AMI-SEC System Security Requirements	Advanced metering infrastructure (AMI) and Smart Grid end-to-end security
ANSI C12.19/MC1219	Revenue metering information model
BACnet ANSI ASHRAE 135-2008/ISO 16484-5	Building automation
DNP3	Substation and feeder device automation
IEC 60870-6 / TASE.2	Inter-control center communications
IEC 61850	Substation automation and protection
IEC 61968/61970	Application level energy management system interfaces
IEC 62351 Parts 1-8	Information security for power system control operations
IEEE C37.118	Phasor measurement unit (PMU) communications
IEEE 1547	Physical and electrical interconnections between utility and distributed generation (DG)
IEEE 1686-2007	Security for intelligent electronic devices (IEDs)
NERC CIP 002-009	Cyber security standards for the bulk power system
. NIST Special Publication (SP) 800-53, NIST SP 800-82	Cyber security standards and guidelines for federal information systems, including those for the bulk power system
Open Automated Demand Response (Open ADR)	Price responsive and direct load control
OpenHAN	Home Area Network device communication, measurement, and control
ZigBee/HomePlug Smart Energy Profile	Home Area Network (HAN) Device Communications and Information Model

2.9 Smart Meter Vendor Workshops

To ensure that PECO had a proper understanding of the Smart Meter vendor marketplace, workshops were held with a number of key Smart Meter solution providers. The workshops included technical discussions and commercial topics, including high-level cost estimates for the implementation of a complete Smart Meter solution that complies with Act 129 and meets

PECO's needs across its service territory.[4] During the workshops, the AMI and Smart Meter vendors provided detailed information about technology solutions and estimated costs. Vendors also discussed preferred commercial terms. As a result of the workshops, PECO concluded that the Smart Meter vendor community can support PECO's technical requirements and that viable options exist to implement Smart Meter technology in PECO's service territory. Thus, the workshops were successful in affirming PECO's technical assessments and providing PECO with vendor-based pricing to be used in PECO's financial planning. Finally, the workshops confirmed that PECO could not use its current AMR system to meet all of the PUC's smart meter requirements.

[4] These workshops were held at PECO's Philadelphia main office building from June 2, 2009 through June 5, 2009. Four hours were provided for each workshop with the format consisting of vendor presentations with follow-up question and answer sessions.

3. PECO's Current Metering Systems

PECO currently utilizes a radio frequency ("RF") network to remotely read most of its electric and gas meters. This AMR system is a one-way communication system whereby the meter's radio communicates to the fixed, pole-mounted radio network, which in turn feeds data to a centralized, remote control point. This network is owned, operated and maintained by Landis+Gyr ("L+G"), PECO's outsourcing meter reading and meter operations contractor. Today, 1,788,000 of PECO's electric and 531,000 of PECO's gas meters are operated under this network.[5] The network is often referred to as the "Cellnet" network because Cellnet was the name of the original company that developed, sold and supported the system.[6]

In addition to those meters operated as part of the Cellnet network, approximately 12,000 electric meters are read by a vehicle-based metering system in those parts of PECO's service territory where the fixed radio network is cost-prohibitive to install and maintain. These meters are located in York County, Pennsylvania and in other distant areas of PECO's service territory. Secondly, PECO operates and maintains an MV-90 telephone-based electric metering system for approximately 1,600 large electric commercial and industrial customers (3,200 "MV-90" meters).

In addition to these vendor systems, PECO's internal staff supports various meter reading and meter operation activities. PECO's staff is responsible for adding meters and customers to the PECO system, dealing with customer "churn" as customers move or leave the system, and managing the outsourcing contractor L+G. It also manages the MV-90 system.

[5] The number of actual meters varies from month to month based on new construction growth and other factors. The values reported here are estimated rounded to the nearest 1000s.

[6] PECO entered into a long-term agreement for construction and operation of its AMR network with Schlumberger RMS and Cellnet Data Systems ("Cellnet") for Cellnet's proprietary AMR technology. Schlumberger later sold the Cellnet company assets to a third party who in turn sold the company to Landis+Gyr in 2006.

L+G manages a field services organization that ensures the maintenance and support of the AMR network, AMR meters and AMR gas modules. It also provides manual meter reads for those meters not covered by the AMR fixed network.

PECO owns some of its electric and all of its gas meters. The balance of the electric meters and all of the AMR electric and gas radios are owned or otherwise provided by L+G . This ownership structure is an important element of the current AMR outsourcing arrangement and has important organizational and cost implications that PECO must consider in the timing and pace of the transition to AMI and Smart Meter systems.

PECO installed its AMR network from 1999 to 2003. The deployment and use of this system has enabled PECO to outsource its manual meter reading by way of a long-term managed services contract; has improved read accuracy; and has increased the number of actual versus estimated reads. At the time of its deployment, PECO's AMR network was "state of the art" and reflected PECO's commitment to thought and technology leadership within the electric and gas utility industry. It continues to provide effective and reliable metering services.

In sum, PECO has successfully implemented and managed the AMR outsourcing approach and this has led to many operational benefits, including cost reductions associated with the elimination of manual meter reading. Table 4 below identifies the metering and meter operation benefits PECO has already realized through its AMR implementation.

Table 4: AMR System Benefits

AMR System Capability	AMR System Benefits Descriptions
Remote Meter Reading	• daily readings obtained for all meters read through the AMR system • reduced estimated customer bills • Web presentment of customer interval data
Outage Detection	• identify outages as they occur • verify that power has been restored
Theft Detection and Tamper Notification	• dispatch field personnel quickly to investigate and repair tampered meters • minimizes electric service theft
Advanced Data Analysis	• supports electric load and usage studies • supports improved maintenance programs

Although PECO's AMR system is robust, it cannot support the suite of smart meter functionalities required by Act 129 and the Implementation Order. In addition, the current system has limitations affecting the design of PECO's proposed EE&C programs. A new infrastructure is necessary to deliver required functionalities and support future EE&C efforts. Therefore, PECO has planned to install a new AMI infrastructure.

4. Description of PECO's Proposed Smart Meter System

4.1 Introduction & Overview

PECO's Smart Meter Plan is designed to comply with Act 129 and the Implementation Order in a way that optimizes functionality, costs, schedule, organizational capacity, vendor capacity, and the mitigation of associated risks in each area. PECO is confident that its Plan meets Act 129 requirements and balances these considerations in a way that protects PECO's customers and investors.

The Implementation Order identified various capabilities – including several required by Act 129 – that smart meter technology should support. The goal of PECO's Smart Meter Plan is to incorporate *all* of these capabilities, beginning with the implementation of a Smart Meter system starting in 2010. The Plan is to first deploy the core IT systems needed to support Smart Meter integration, complete AMI technology acceptance testing in 2011, and put the Smart Meter communications network layer in place by early-2012, with deployment of individual Smart Meters to follow.

PECO's Smart Meter system will be comprised of several inter-dependent, coordinated systems, including:

- An AMI network
- Communications networks
- A MDMS to process and manage Smart Meter data
- Middleware
- System Integration, and
- Smart Meters

4.2 Current Capabilities of Smart Meter Vendors and Systems

PECO surveyed currently offered Smart Meter and AMI systems to determine commercially available and leading edge vendor capabilities. Most of the capability requirements described in the Implementation Order are base capabilities of commercially available Smart Meter systems. Some of the remaining capabilities represent options or enhancements to Smart Meter AMI systems, but none represent capabilities that are in the research stage of development.

It is important to note that some of the capabilities identified in the Implementation Order are enabled indirectly through other system capabilities. For example, "[a] minimum of hourly reads delivered at least once per day"[7] is enabled on all systems to meet a variety of Time-of-Use ("TOU"), Demand, Critical Peak Pricing ("CPP") and interval measurement needs and requirements.

These capabilities will provide the basis for PECO's vendor selection process as it seeks a specific vendor AMI solution. Of greatest importance and priority will be ensuring compliance with Act 129 and Commission Implementation Order requirements. Furthermore, PECO anticipates that all of the "base" system capabilities will be included in its eventual selection.

4.3 Transition from PECO's Current AMR System

PECO evaluated whether the current AMR system was capable of meeting the Act 129 and Implementation Order requirements. In addition to technical considerations, commercial and contractual services considerations were reviewed and will be important in the planning for careful transition to any new Smart Meter system.

[7] Implementation Order at 16.

4.4 Making Data Available to Customers

Act 129 requires that the Smart Meter Technology provide customers with direct access to and use of price and consumption information. It also requires that customers be provided with information on their hourly consumption and that the system enable time-of-use rates and real time pricing programs.

An important consideration is the specific means that energy use and pricing data will be made available to customers, from what source, the level of validation or quality of the data, the frequency of transmission, and the nature of customer interaction with the data. The answers to these questions will depend on the specific purposes served by the information and will not be known until PECO collects the data from its initial dynamic pricing and customer acceptance program.

To ensure that it can evaluate various in-home networking options, PECO will equip each of the Smart Meters with a Home Area Network (HAN) radio. The Zigbee Smart Energy Profile communications protocol is a leading HAN protocol used in Smart Meters today and is supported by the NIST standards activity.

PECO's initial EE&C Plan is not dependent on the Smart Meter technology. Future EE&C programs, however, may consider leveraging AMI networks and Smart Meter capabilities in a variety of ways. This may include AMI network-based direct load control of air conditioners and hot water heaters, "super peak" TOU rate structures, real time pricing and critical peak pricing programs, and peak time rebate programs.

5. Implementation Plan

5.1 Overview and Key Milestones

PECO's Smart Meter Plan will be implemented in two complementary phases. Phase One will include all technology and vendor selection activities, IT Systems implementation, technology acceptance testing, AMI Network deployment, and deployment of initial Smart Meters. Phase One will also include PECO's initial dynamic pricing and customer acceptance program. Phase Two of PECO's Smart Meter Plan will include the universal deployment of Smart Meters. The timeline of the significant steps in this Smart Meter Plan is depicted in the chart attached as Appendix 1. The schedule for the completion of the universal deployment is not indicated in the timeline.

Table 5: Key Activities in PECO's Smart Meter Plan

Phase	Activity	Description	Start Date	End Date
One	Technology Selection and Contracting	Vendor Selection, Negotiation, Contracting	Aug 2009	Apr 2010
One	IT Systems	Analyze, Design, Build, Test, Deploy 5 System Releases	Sep 2009	Jan 2012
One	Technology Acceptance Testing	Procure, Deploy, Shop Test, Field Test, Acceptance of AMI and Smart Meter Technology	Sept 2010	Sep 2011
One	Deployment of AMI Network	Procure and install the new AMI network across all PECO service territory	Oct 2011	Mar 2012
One	Initial Meter Deployment	Procure and install the initial Smart Meters	Oct 2011	Aug 2012
One	Develop and Launch Initial Dynamic Pricing and Customer Acceptance Program	Implement initial dynamic pricing options, educate customers and assess customer acceptance of dynamic pricing programs	Dec 2011	Dec 2013

Two	Universal Deployment	Begin universal deployment of Smart Electric Meters	Aug 2012	TBD[8]

PECO's Smart Meter Plan addresses the specific activities required for successful design, procurement, testing and deployment of Smart Meter technologies, including a plan for meeting the following milestones (as required by the Implementation Order):

Table 6: Implementation Order Milestones

Implementation Order Milestone	Smart Meter Plan section
Assessment of needs and technological solutions	Section 5.2 Technology Selection and Contracting
Selection of technologies and vendors	Section 5.2 Technology Selection and Contracting
Establishment of network designs	Section 5.4 Technology Acceptance Testing
Establishment of plans for training personnel	Section 5.5 Initial System Deployment
Establishment of plans for installation, testing and rollout of support equipment and software	Section 5.3 IT Systems Deployment and Integration Plan
Installation, testing and rollout of support equipment and software.	Section 5.3 IT Systems Deployment and Integration Plan
Establishment of plans to design, test and certify EDI transaction capability consistent with this order.	Section 5.3 IT Systems Deployment and Integration Plan
Establishment of plans for installation of meters consistent with the rollout requirements described below.	Section 5.5 Initial System Deployment & Section 5.7 Universal Deployment of Smart Meters

PECO's Smart Meter Plan is supported by a project plan that considers all the pertinent aspects of this complex program. The project plan also supports PECO's application for ARRA Stimulus grant funds.

[8] The end date for universal deployment of Smart Meters is expected to be no later than 15 years from plan approval. Implementation Order, p. 15. However, if PECO receives full funding of its federal Stimulus grant application, PECO will advance the schedule of Smart Meter deployment and complete universal deployment within 10 years.

5.2 Technology Selection and Contracting

Implementation activities associated with Phase One of the Smart Meter Plan will begin with the conducting of a thorough technology selection and contracting process to properly assess the needs and technological solutions available. PECO's planned procurement process will select, negotiate, and contract for the discrete elements that will make up PECO's Smart Meter technology (see Table 1). PECO anticipates several different contracts will support Plan implementation, including:

- A contract with a leading AMI system provider for the purchase, design, installation, initialization and training support for the AMI network. This contract will include a contract for system software support.
- Contracts necessary for PECO to complete the communication network. This network will enable the AMI communication network to link to PECO's data center.
- Contracts with leading Smart Meter manufacturers for the provision of AMI network-compatible Smart Meters.
- Various contracts for the installation of Smart Meters from time to time. The duration and nature of these contracts will depend on the pace and volume of the Smart Meter initial and universal deployment plans.
- Contracts to support the program management of the Smart Meter Plan. This may include, for example, the provision of consulting, program management, or other organizational "change management" services.
- An amended contract with Exelon's selected MDMS provider for the licensing, installation, configuration, and on-going support of its MDMS.

- An amended contract with PECO's current provider for the implementation and on-going support of PECO's IT system "middleware" that will serve as a PECO enterprise information "bus" for the management and integration of the various IT applications and metering information.
- An amended contract for systems integration activities.

In order to achieve the most cost-efficient procurement of the supporting IT systems, PECO intends to leverage the competitively sourced MDMS, Middleware, and Systems Integration providers currently supporting the development of Exelon's AMI programs. This approach provides cost savings through "re-use" of System Integration components (i.e., integration of MDMS and CIS (Customer Information System) data, use of enterprise-wide application platform), thus eliminating the need to purchase and develop two independent systems to support Exelon's AMI systems. In addition, ongoing operations and maintenance expenses would be reduced through a common enterprise license, lower contract costs for technical support, and lower internal project and general management costs. Through direct negotiations with these suppliers, PECO will seek to amend the Exelon agreements to integrate the PECO requirements to support Smart Meter deployment while also securing volume-based cost discounts as a result of an Exelon-wide approach.

In addition to facilitating the base Smart Meter Plan, this leveraged procurement strategy will also enable an accelerated deployment schedule of Smart Meters in the event that PECO's federal Stimulus application is successful. By implementing the proposed procurement approach, PECO will mitigate cost risks associated with increased demand for AMI systems.

PECO anticipates concluding these negotiations and filing its amended contracts with the Commission for approval by late 2009 (see Table 2).

PECO expects to begin procurement activities for the selection and contracting of AMI and Smart Metering technologies immediately following the filing of its Smart Meter Plan with the PUC. This process will utilize Exelon's established procurement processes to ensure fair, reliable, and prudent acquisition of Smart Metering technology and equipment. This process will begin with the compilation of the current functional requirements into more detailed technical requirements. These specifications will be informed by the functional requirements contained in the Implementation Order as well as those reviewed as part of PECO's internal and vendor workshops. These technical requirements will be supplemented with specific commercial requirements to form the basis of the vendor selection and contracting.

PECO anticipates selecting the preferred Smart Meter Technology and vendors by the beginning of the first quarter of 2010, at which point it will enter into final negotiations to secure a contract for the supply of AMI network and Smart Meter system components. These agreements are expected to include AMI network equipment, initial set of Smart Meters, Smart Gas Modules (testing samples), and support for configuration of its system software. PECO expects to execute contingent agreements with its selected vendors by the end of Q1 2010. These contracts then will be submitted to the PUC for approval prior to PECO's placement of firm purchase orders. Once PECO has received PUC approval for its selected technology and contractual commitments, purchase orders will be placed for acceptance test quantities and initial deployment. The quantity of meters to be purchased for initial deployment will be determined by the outcome of PECO's ARRA Stimulus grant application, but is expected to range between 100,000 and 600,000 AMI meters.

Of special note is the potential for longer delivery times due to the anticipated increased demand for Smart Meters from ARRA-funded Smart Grid projects. If this occurs, PECO's Smart Meter Plan schedule may be affected and require revision.

5.3 IT Systems Deployment and Integration Plan

A critical part of PECO's Smart Meter Plan is the deployment and integration of IT systems. PECO has developed a detailed process to implement IT applications, integrate those applications into PECO's systems to support the data flow from the Smart Metering technology, and retain existing IT functionalities. This activity represents a large investment, occurs early on in the process, and must be completed in time to support those PECO customers using Smart Meters.

The critical path aspect of the IT Systems implementation is due to the fact that no Smart Meter can be installed in a customer's socket until it can be read, processed by the data acquisition application, passed successfully to PECO's billing system, and properly rendered as an accurate electricity bill. Thus, the new systems (MDMS), and any changes to legacy systems and integrations required to install, activate, and bill from new Smart Meters, must be implemented before deployment of Smart Meters begin. Secondly, the supporting applications used to track and post meter installations and support necessary EDI transactions will also need to be in place to support any significant deployment of Smart Meters.

PECO's IT System plan grew out of an AMI Information System assessment performed as part of the development of this Plan. This assessment provided a high-level overview of PECO's IT systems and their required integrations. The IT System plan grew out of these considerations and is in and of itself a multi-phase program consisting of five distinct system releases. The structure and timing of these releases is aimed at ensuring that PECO retains all

operational functionality and benefits currently available from its AMR system.

5.4 Technology Acceptance Testing

In order to ensure that all technology installed onto PECO's grid system is properly tested and verified prior to widespread deployment, PECO has incorporated a disciplined technology acceptance test into this Smart Meter Plan. This acceptance test will include two distinct testing regimens.

The first will involve the type testing of any new metering equipment to be used on the PECO system. This includes extensive meter shop testing and validation of the accuracy, reliability and performance of the meter as a revenue metering instrument and as compliant with all applicable ANSI metering standards.

The second will involve the setup and closely controlled testing of the selected new AMI technology to ensure proper performance of the technology prior to expanded installation and customer acceptance testing. Following the completion of initial network designs, test criteria will be developed and measurement strategies determined to effectively validate the network design and performance. This acceptance test will include a small subset of the AMI network and a small number of sample Smart Meters. This initial AMI network setup will be fine-tuned for performance and monitored during a specified duration to verify its performance characteristics and compliance to Act 129 functionality, technical specifications, and PECO standards.

Once the performance and reliability of the new Smart Meters and the AMI communications system can be verified, PECO will formally accept the technology and launch initial system deployment. PECO expects to conduct the meter bench testing following the confirmation of meter vendor contracts. The field technology acceptance testing is expected to follow this shop testing, the completion of the first two IT System development releases, and the

receipt of the equipment from the AMI and Smart Meter vendors. PECO expects to complete this testing activity by the third quarter of 2011.

5.5 Initial System Deployment

After PECO formally "accepts" the system, PECO will install the AMI network equipment required to blanket the service territory with AMI network coverage. Once again, the delivery capacity of the AMI vendor may impact the pace for this stage of Phase One deployment. Assuming current delivery lead times remain unchanged, PECO anticipates completing the deployment of the AMI communications network across the service territory in the first quarter of 2012.

PECO's goal is to establish the AMI communications network in a way that will allow customers throughout the service territory to get Smart Meter capabilities regardless of location. This approach is necessary to accommodate the Act 129 requirement to deploy Smart Meters after the grace period upon customer request or wherever new construction may occur.

Prior to deployment of the AMI Network, PECO will conduct an assessment of business readiness and required training necessary for any anticipated new business processes to be implemented into PECO operational groups.

Following the completion of the deployment of this AMI network, PECO will begin the replacement of its current AMR meters with Smart Meters. Depending on the success of PECO's ARRA grant application, PECO expects to deploy up to 600,000 Smart Meters as part of this initial deployment. This quantity of meters will support an initial dynamic pricing and customer acceptance program that forms the final part of Phase One of PECO's Smart Meter Plan.

5.6 Initial Dynamic Pricing and Customer Acceptance Program

PECO will initiate a collaborative process with interested statutory advocates,

government entities, technology providers and other stakeholders to design the content of its initial dynamic pricing and customer acceptance program with the goal of rolling out this program beginning in the fourth quarter of 2011. The purpose of the program is to implement initial dynamic pricing options, including real-time pricing, and to educate customers about the new dynamic pricing options. PECO believes the program will provide valuable insights into how customers are likely to utilize dynamic pricing.

5.7 Universal Deployment of Smart Meters

Phase Two of PECO's Smart Meter Plan underlies the universal installation of Smart Meters across PECO's service territory. The pace of this deployment will be influenced by the availability of federal Stimulus grant funds to finance some of the initial accelerated deployments, and by consideration of potential stranded assets and transition costs associated with PECO's current AMR system. PECO will communicate and seek approval of its plans for this second phase of deployment in a separate filing with the Commission toward the end of the 30-month grace period established by the Implementation Order.

At the conclusion of the grace period, PECO's service territory will have been covered by the AMI network, and the technology will have been fully tested and proven. These prudent and diligent steps are planned in order to provide PECO and its customers with verification of the efficacy of its universal deployment plan.

Finally, PECO expects to maintain the greatest leverage with suppliers for containing the future costs of anticipated large-scale purchases of Smart Meters. As such, PECO will explore possible purchasing synergies.

5.8 Customer requests for interval data and Smart Meters prior to Universal Deployment

PECO will be able to provide interval data to customers during the 30-month grace period upon customer request using its existing Cellnet AMR systems or its existing MV-90 interval data system for commercial & industrial ("C/I") accounts. In addition, upon customer request, PECO intends to provide direct access to the customer's interval data to third parties via EDI transactions of the data currently available from its existing Cellnet AMR system and any additional Advanced Read Services it is able to procure. Commercial and industrial customers will continue to have the options of pulse outputs from existing MV-90 meters or interval data as currently provided.

If a customer requests that a Smart Meter be installed after the grace period but prior to universal deployment, PECO will charge the customer a fee based on the incremental cost of the meter installation itself. There may be additional costs to reflect design of the selected AMI technology.

It is important to note that replacing a MV-90 capable meter with a Smart Meter is quite complex. Therefore, if a customer requests such a replacement after the grace period and prior to universal deployment, PECO will perform an individual cost estimate for that customer. PECO expects to detail its general plans for the future replacement of the MV-90 system and the C/I meters supported by this system as part of its mid-2012 filing.

6. Costs

6.1 Summary of Smart Meter Plan Costs

PECO's Smart Meter Plan has developed careful cost estimates of the various phases of the Smart Meter program. The expected costs for Phase One are summarized in the schedule below:

Table 7: Smart Meter Plan Initial Deployment Costs

	Initial Deployment (100,000 meters)						
	2010		2011		2012		
	O&M	Capital	O&M	Capital	O&M	Capital	Total
AMI Costs							
Meters and Installation	$ -	$ -	$ -	$ 17	$ -	$ -	$ 17
Network Communication System	-	-	1	52	-	-	53
IT Applications and Support	-	36	12	58	12	4	122
Management and Internal Labor	1	-	5	-	4	-	10
Customer Acceptance Testing	-	-	3	-	10	-	13
Total Initial Deployment Costs	**$ 1**	**$ 36**	**$ 22**	**$ 127**	**$ 26**	**$ 4**	**$ 215**
Stranded Costs:							
Accelerated Depreciation	3		3		-		5
Other Stranded Costs			-		-		1
Total Stranded Costs	**$ 3**	**$ -**	**$ 3**	**$ -**	**$ -**	**$ -**	**$ 6**
Total Costs	**$ 4**	**$ 36**	**$ 24**	**$ 127**	**$ 26**	**$ 4**	**$ 221**

	Expanded Initial Deployment (EID)[1]						
Adjustments for Expanded Deployment:							
Additional 500,000 meters	$ -			$ 8		$ 69	$ 77
Savings on installation of 100,000 meters	-			(2)		-	(2)
Total EID Costs	**$ 1**	**$ 36**	**$ 22**	**$ 133**	**$ 26**	**$ 73**	**$ 290**
Requested Stimulus Grant[2]		**$ 18**	**$ 11**	**$ 66**	**$ 10**	**$ 36**	**$ 143**
EID Net of Stimulus	**$ 1**	**$ 18**	**$ 11**	**$ 66**	**$ 15**	**$ 36**	**$ 148**
Stranded Costs:							
Accelerated Depreciation[3]	14		14		14		42

Other Stranded Costs					0				3				3	
Total Stranded Costs for EID	**$**	**14**	**$**	**-**	**$**	**14**	**$**	**-**	**$**	**17**	**$**	**-**	**$**	**45**
Total Costs for EID	**$**	**15**	**$**	**18**	**$**	**25**	**$**	**66**	**$**	**32**	**$**	**36**	**$**	**193**

(1) Expanded Initial deployment is contingent on PECO's full receipt of a DOE matching Stimulus grant

(2) Stimulus grant will be recorded as contribution in aid of construction for capital expenditures or a reduction in O&M expense and is taxable income.
(3) Assumes a ten-year mass deployment timeframe

Numbers may not add due to rounding.

6.2 Process of Gathering Assumptions for the Financial Model

PECO gathered cost inputs through many channels of interaction with the Exelon and PECO organizations beginning in April 2009. Additionally, PECO management -- working with the Technical, Regulatory, Legal and other teams -- refined the core assumptions of the financial model.

The PECO technology evaluation team gathered cost data from prior PECO and Exelon efforts as well as from several workshops with AMI vendors during the first week of June 2009. PECO also gathered cost inputs from the PECO and Exelon Information Technology team to support the cost inputs for its proposed System Integration, MDMS, and Middleware IT investments. In addition, these costs took into account vendor input and data gathered from Exelon's recent RFP and vendor selection process on ComEd's behalf.

Cost inputs also were gathered from the Exelon Supply organization and from the PECO operations group responsible for the current L+G outsourcing and metering operation. This effort included evaluating the organizational impact of an "own and operate" business structure assumption on the current PECO organization. This evaluation helped determine the operations staffing assumptions used in the financial model. Finally, PECO financial assumptions, cost

inputs, and cost treatments were gathered from the PECO Finance group.

Average meter and installation costs were used in the analysis due to the indicative pricing that PECO received during the vendor workshops. In other areas, such as the AMI Network and IT Applications and Support, where indicative pricing is less certain due to pricing dynamics and the level of customization required, PECO used conservative cost estimates for the analysis. It is appropriate to rely on the higher end of the range where there is uncertainty as to pricing dynamics and customization is required in much of the IT work. Cost estimates will be refined through a competitive vendor selection and contracting process. PECO will update the Commission on its cost estimates gathered during this process.

The cost of the initial AMI deployment (e.g. Phase One) of 100,000 AMI meters is expected to be $215 million with a range of $125 to $225 million depending on equipment, installation and IT development costs as well as the meter and installation costs for the initial meters deployed. However, if PECO's Stimulus request is granted in full, PECO will increase its initial meter deployment from 100,000 to 600,000 meters. The additional meter purchases would increase the estimated initial deployment cost to $290 million with a range of $210 million to $300 million based on the same cost variance ranges used above. The requested grant would reduce the PECO-funded portion of the expenditures, net of stimulus funds, to $148 million for capital and operating and maintenance costs.

The AMI network communication system is estimated to cost between $25 and $55 million, with an initial estimate of $53 million at the high end of the range. This cost includes approximately $31 million for the AMI communication network, $9 million for the core foundation communication network, $8 million for the network design and implementation and $6 million for the upfront cost of the AMI system software license. (The core foundation

communication network provides for connectivity between the AMI communication network and PECO's high bandwidth fiber communication network.) AMI network costs estimates are based on inputs from PECO's vendor workshops with the exception of the core foundation network, which was estimated by PECO for an RF WAN backhaul capable of supporting the AMI data communication. The majority of the AMI communication equipment will be depreciated over a 15-year useful life, with the exception of the software license and a small amount of computer hardware that will be depreciated over a five-year period.

The IT applications and support component of the AMI Infrastructure of $75 to $125 million, with an initial estimate of $122 million, represents approximately one-half of PECO's initial deployment expenditures. The MDMS is expected to cost approximately $26 million to deploy, while the Middleware component of the IT systems is expected to cost an additional $21 million. In addition, IT operational and maintenance expenditures during the deployment period (e.g. Phase One, 2010 through 2012) of approximately $24 million are expected to be incurred for software license maintenance fees for MDMS and Middleware and data storage costs. Finally the System Integration portion of the project is expected to cost approximately $51 million. Systems integration ensures that the MDMS, Middleware system, and AMI communication system software can communicate with each other and with the PECO internal systems that support customer service and billing, outage management, geographical information (GIS), energy suppliers and service providers, and other enterprise resource management and financial systems. The cost for the IT investment was estimated based on inputs from Exelon's Supply and IT organizations based on historical costs of similar projects. The capitalized IT investments will be depreciated over a useful life of five years.

The Smart Meters are expected to cost $10 to $20 million for the initial deployment of

100,000 meters, with an initial estimate of $17 million. This cost includes expenditures to purchase the Smart Meters, including an integrated remote connect switching device in each meter, with a range of $116 to $144 per meter and a mid-point of $130 per meter. The cost also includes installation costs of approximately $38-$40 per meter. The cost of AMI electric meters are based on inputs from the vendor workshops as an "all in" average, including the remote connection switch, the home area network (HAN) radio and an extended warranty of 60 months. The estimated prices are assumed to include or otherwise support the functional requirements included in the PUC's Implementation Order. The installation costs are based on PECO's current charges from its subcontractor to perform most electric field installation work on a limited installation basis.

If PECO receives full Stimulus grant funding for its Smart Meter project, PECO intends to increase the number of meters purchased and deployed during Phase One up to 600,000. This increases the meter costs by a range of $70 million to $85 million, with a mid-point of $77 million. The per unit installation cost of the AMI meters is reduced in a larger deployment scenario from $39 per meter to $24 per meter, yielding approximately $2 million in savings on the initial 100,000 meters. Smart Meters are expected to be depreciated over a fifteen-year useful life.

The cost to administer the initial dynamic pricing and customer acceptance program is estimated to be $13 million, with a range from $10 million to $15 million. These costs include software for advance web presentment, in-home technology, project management (including research, evaluation, project design and planning), incentives and communication.

The final portion of the Phase One cost estimate involves $10 million of management and internal employee cost with a range of $5 million to $15 million. These costs represent costs to

supervise deployment activities and keep the projects on track and on budget, and the costs are based on PECO's assessment of the number of full time employees required to manage a project of this magnitude and IT production support at an average all - in cost per employee.

6.3 Accelerated Depreciation and Stranded Costs

To the extent that PECO deploys smart meters sooner than required to replace failures of its existing AMR meters and meter communication modules, it will incur accelerated depreciation on these existing meters and modules. The total estimated accelerated depreciation on the initial deployment of 100,000 and 600,000 meters is $5 million and $42 million, respectively. The total amount of accelerated depreciation will depend on the final timeline for universal deployment of the new AMI meters.

The company may also incur stranded costs related to the fees it pays, or will be required to pay, L+G for the existing AMR system. The benefits of full Stimulus funding ($143 million) far exceeds the amount of total accelerated depreciation and stranded costs incurred by expanding the initial deployment to 600,000 meters ($39 million).

6.4 Total Project Costs

PECO's total cost to offer Smart Meters to all of its customers, including the AMI network and IT infrastructure as mentioned above will vary primarily due to the speed of full deployment; however, vendor selection and the final cost negotiation will also impact the price of the project. We estimate full deployment costs to range from $500 million to $550 million depending on the speed of the universal deployment of Smart Meters. This range does not reflect any funding Stimulus. If PECO receives requested federal funds, the amount, net of tax, will be applied against the spending as a contribution in aid of construction or reduction in O&M expense and will enable PECO to increase the speed of its smart meter deployment.

In addition to the AMI and Smart Meter costs mentioned above, PECO will incur additional costs for its current AMR electric meters until the AMI network and IT systems are fully deployed.[9]

6.5 Avoided Costs

As noted previously, PECO currently incurs costs to replace its AMR meters upon a meter's failure, either directly or through its contract with L+G. Should PECO replace its AMR meters with new Smart Meters upon failure, the Company will not incur these costs to purchase and install an AMR meter. Once the AMI communication network is in place and the MDMS can support the billing activities, PECO plans to replace any failed AMR meter with a new AMI Smart Meter.

6.6 Benefits of Smart Meter Deployment

PECO's initial deployment of Smart Meters (e.g. Phase One) will better enable customers to take advantage of dynamic pricing programs to be offered by PECO. This will further enable customers to reduce usage during high-cost periods or shift usage to lower-cost periods. Shifting usage from peak periods not only benefits the customer through a lower bill, but it may also reduce overall energy prices in the market. Additionally, the reduced usage can provide environmental benefits through lower emissions of pollutants as generating stations will produce less energy.

Often the deployment of an AMI communications system and Smart Meters leads to operational benefits as costs are eliminated from the meter reading and meter operations departments of the utility. In PECO's case, PECO realized many operational benefits with the deployment of its current AMR meters from 1999 to 2003, including elimination of manual

[9] PECO also serves gas customers using its AMR gas modules and will continue to incur fees, or will incur additional costs, to maintain the gas network or convert the gas modules to the new AMI system.

meter reading, improvements in operations and meter maintenance, ability to receive daily and on-request meter readings and the receipt of interval data, power factor and peak demand for commercial customers. The additional operational benefits to be realized from the deployment of AMI and Smart Meters are due primarily from the inclusion of the remote connect functionality as discussed below.

Furthermore, deployment of a smart meter system at this time may result in the receipt of federal Stimulus grant money, which will further reduce the costs to customers.

6.7 Cost and Benefits of Remote Connect Functionality

Inclusion of the remote connect functionality in the Smart Meters adds approximately $35 in cost to each meter, based on the information received in PECO's vendor workshops. Most current AMI and Smart Meter systems are deployed with this feature. If fully deployed in PECO's 1.6 million meter population below 200 amps, this functionality adds $57 million to the cost of the project (included in the meter cost estimates above). (The feature is only available for single-phase meters with a rating below 200 amps.) Once fully deployed, the remote connection functionality is expected to generate up to $13 million in annual savings to PECO. Of that amount, approximately $7 million is in operational savings and about $6 million is in societal savings. The net present value ("NPV") of the remote connect functionality over 15 years of deployment is $4 million in the base case of the initial deployment and $17 million in the case of expanded deployment based on the receipt of federal Stimulus grant money. The NPV is displayed in Exhibit APK-2 to the testimony of Ann P. Kelly. Also depicted in Exhibit APK-2 are the net annual revenue requirements of the remote connect functionality. The investment shows a net benefit to customers, when societal and operational benefits are included, after about three years into the deployment.

The cost of the remote connection feature is included in the cost of the meters and will be reflected in the Smart Meter surcharge. The operational benefits of this functionality include avoided connection costs and reduced charge - offs. As these savings are difficult to track, PECO proposes to calculate the cost recovery charge using an agreed upon savings amount, which will not be reconciled.

In addition to those operational benefits, the remote connection feature also provides societal benefits that automatically flow through to the benefit of customers and that are not reflected in the calculation of recoverable costs. These include a reduction in unbilled charges, due to the ability to disconnect hard-to-reach meters that currently have continuous service, and avoided reconnection charges. The societal benefits flow through to customers through lower reconnection fees or reduced purchased power costs in the case of continuous service. Because these benefits automatically flow through to customers, they are not reflected in the 1307 surcharge. At the time of a base rate case, the operational benefits of this functionality would be rolled into base rates, while the societal benefits would continue to flow through to customers automatically.

In summary, PECO estimates that the benefits received from the remote connection feature will fully offset the cost incurred to purchase the functionality, once meters are installed and operating as expected.

7. Cost Recovery

7.1 Recovery Method

Act 129 provides that a utility is entitled to full and current recovery of the costs associated with implementation of a Smart Meter system net of any operational savings of the system. The Act allows recovery through a reconcilable surcharge under Section 1307 or through base rates with costs deferred between rate cases. The decision on cost recovery methodology rests with the utility.

The Company is proposing to use a Section 1307 mechanism to recover the net cost of its Smart Meter program. Use of the Section 1307 mechanism will provide full and current recovery of its costs during the implementation and deployment of the meters and associated AMI network, communications networks, MDMS, Middleware and System Integration. Under the Section 1307 mechanism, the Company will project the costs to be recovered over the ensuing year to establish the surcharge. A Section 1307 mechanism is reconcilable and, therefore, requires tracking actual cost versus actual revenue collection with adjustments made in subsequent filings. The actual monthly revenue will be compared to actual monthly costs to determine any over or under recovery. PECO Statement No. 5 describes in detail the calculation of the surcharge and the reconciliation process. Specifically Exhibit ABC-2 provides an example of how the surcharge is calculated. Included in the example is how the capital and expenses associated with the Plan are converted into revenue requirements for recovery through the Section 1307 surcharge.

PECO's proposed Smart Meter Cost Recovery Rider, provided in PECO Exhibit ABC-3, will establish a non-bypassable charge to apply to the bills of all customers whether they purchase default service from PECO or purchase generation from an electric generation supplier.

It is important to note that while PECO is proposing to use a Section 1307 mechanism to achieve full and current recovery during the implementation of the Smart Meter Plan, once the system is fully deployed, it would be appropriate to roll all meter-related costs into base rates.

7.2 Recoverable Costs

Costs included in the Section 1307 mechanism will include the meters and installation, communications network, IT applications and support, management and internal labor, customer acceptance testing, and other administrative costs such as the cost of plan approval and development. The revenue requirements associated with these items are recoverable and include all operation and maintenance expense, as well as depreciation, return on, and taxes associated with capital investment net of any operational benefits or avoided costs plus any stranded costs for the above items.

To the extent that the Company receives a federal Stimulus grant, the grant will offset the investment or recoverable expenses. As discussed in PECO Statement No. 5, such grant money for capital will be treated as contributions in aid of construction (CIAC) for ratemaking purposes. Grant money for allowable expenses will be credited to recoverable expenses. Similar to CIAC, the grant money is taxable and added to the rate base. A complete description of recoverable cost is contained in PECO Statement No. 5.

While PECO is proposing to use a Section 1307 mechanism to achieve full and current recovery during implementation of the Smart Meter Plan, once the system is fully deployed, ongoing costs will be appropriately incorporated into base rates. Furthermore, PECO is considering unbundling all meter and meter reading expenses from base rates in its next rate case and including them in the Section 1307 charge. When Smart Meters are fully deployed, costs would be rolled back into base rates.

7.3 Rate Design

PECO's proposed Smart Meter Cost Recovery Rider, provided in PECO Exhibit ABC-3, will establish a non-bypassable charge to apply to the bills of all customers, whether they purchase default service from PECO or purchase generation from an electric generation supplier. The charge will be collected on an equal dollar per customer basis within each rate class. For billing purposes, the incremental charge will be added to the current fixed distribution charge.

7.4 Cost Recovery Procedure

A preliminary Section 1307 surcharge would be filed on August 30 of each year to be effective on January 1 of the following year. A final Section 1307 surcharge filing would be made on October 1, permitting an evidentiary hearing, if necessary, prior to the January 1 effective date.

7.5 Cost Allocation

In accordance with the Commission's Implementation Order, costs are to be allocated to those who benefit from the system, or if that cannot be determined, costs are to be allocated on a reasonable basis. PECO maintains that allocating costs on a fair and reasonable basis to all customers is the appropriate course of action. Such allocation primarily will be on a customer basis for the supporting systems. In the case of the actual meters, the costs will be directly assigned to the appropriate rate classes, as different meters for the classes may have different costs. Additional detail on cost recovery and cost allocation may be found in PECO Statement No. 5.

PECO

APPENDIX 1

PECO Smart Meter Plan Implementation Timeline