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July 1, 2010

VIA OVERNIGHT MAIL

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120

Re: Duquesne Light Company Petition for Approval of Smart Meter Procurement and Installation Plan
Docket No: M-2009-2123948

Dear Secretary Chiavetta:

Enclosed for filing please find one (1) original and three (3) copies of Duquesne Light Company's Cost Benefit Analysis, being filed as contemplated pursuant to Duquesne Light's Smart Meter Procurement and Installation Plan, approved by the Commission on May 11, 2010.

Please contact me if you have any questions.

Sincerely yours,

Erin H. Creahan
Senior Attorney

Enclosures

cc: Service List (via Electronic Mail and United States First Class Mail)

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Duquesne Light Company	:	
Smart Meter Procurement	:	**Docket No. M-2009-2123948**
And Installation Program	:	

COST BENEFIT ANALYSIS OF DUQUESNE LIGHT COMPANY FOR *ADDITIONAL SMART METER CAPABILITIES*

Duquesne Light Company ("Duquesne" or "Duquesne Light" or "Company") hereby files this Cost Benefit Analysis, pursuant to its Smart Meter Procurement and Installation Plan ("SMPI Plan") filed on August 14, 2009, which was approved as detailed in a Commission Order dated May 11, 2010. Duquesne Light has analyzed the additional smart meter capabilities set forth in the Commission's June 18, 2009 Implementation Order, and based upon this analysis, provides its recommendations for the capabilities that the smart meters should possess.

I. Introduction

On October 15, 2008, Governor Rendell signed into law Act 129 of 2008, which took effect on November 14, 2008 and, *inter alia*, mandated a smart meter procurement and installation program. See 66 Pa.C.S. § 2807(f), et seq. ("Act 129"). Act 129 provides, among other things, that each Pennsylvania EDC with at least 100,000 customers is required to file a smart meter technology procurement and installation plan with the Commission for approval within nine months after the effective date of Act 129, or by August 14, 2009. Id. at § 2807(f)(1), (6).

Under Act 129, smart meter technology is defined as "technology, including metering technology and network communications technology capable of bidirectional

communication, that records electricity usage on at least an hourly basis, including related electric distribution system upgrades to enable the technology." Id at 2807(g). Act 129 specifically sets forth that the technology utilized by an EDC must "provide customers with direct access to and use of price and consumption information." The technology shall also: (1) [d]irectly provide customers with information on their hourly consumption[;] (2) [e]nable time-of-use rates and real-time price programs[;] [and] (3) [e]ffectively support the automatic control of the customers electricity consumption by [either] (i) the customer; (ii) the customer's utility; or (iii) a third party engaged by the customer or the customer's utility." Id. Following the passage of Act 129, the Commission adopted an Implementation Order regarding smart meters, outlining its guidance for an EDC's Smart Meter Procurement and Installation program pursuant to Act 129. The Implementation Order recognized that the smart meter capabilities set forth in Act 129 are minimal requirements, and provided additional capabilities that the Commission believes should be included in smart meters, subject to a further cost-benefit review, including:

1- Ability to remotely disconnect and reconnect;

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

3- On-board meter storage of meter data that complies with nationally recognized non-proprietary standards such as ANSI C12.19 and C12.22 tables;

4- Open standards and protocols that comply with nationally recognized non-proprietary standards, such as IEEE 802.15.4;

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

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

7- Ability to remotely reprogram the meter;

8- Ability to communicate outages and restorations; and

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

Implementation Order, p. 16 and 29-30. The Implementation Order recognizes that some of the requirements for smart meters outlined go beyond the minimum requirements set forth in Act 129. Id. at 17, 29. In order to ensure that these additional smart meter capabilities are cost-effective, and that the costs do not exceed any benefit that such capabilities provide, the Implementation Order directs that each smart meter plan filing include cost data that quantifies the costs to meet the minimum requirements set forth in Act 129, the costs to meet all of the requirements set forth in Section C of the Implementation Order, and the individual incremental costs of each added capability, less any operating and capital cost savings. Id. Upon review of such analysis, the Commission may waive the additional requirements imposed by the Implementation Order. Id. at 17, 31.

In Duquesne Light's Plan, as approved by the Commission, Duquesne Light committed to file the required cost benefit analysis on or before July 1, 2010, providing a "breakdown of incremental costs and savings for deployment and operating costs for functionality and configuration of [the] additional requirements [set forth in the

Implementation Order]." Petition of Duquesne Light Company for Approval of Smart Meter Procurement and Installation Plan, p. 11.

II. Cost Information and Cost/Benefit Analysis

Duquesne Light has conducted its cost and cost/benefit analysis as originally proposed in its SMPI Plan, and approved by the Commission. Duquesne provides information for the meter and system costs for the minimum requirements set forth in Act 129, as well as cost and benefits/savings information for the additional capabilities identified in the Commission's Implementation Order. Note that the following estimated cost and benefit data only includes the utility smart meter, surrounding infrastructure and Duquesne Light systems. An estimate of costs beyond the meter, such as Home Area Networks and related devices and systems, which would result in costs to customers, are not part of this filing or Duquesne's approved plan. Further, it is important to recognize that with respect to benefits, Duquesne is starting from a different point than other EDCs in the smart meter evolution, as a result of having previously deployed Automated Meter Reading (AMR) across its zone in 1996; thus, many of the benefits of smart meters have already been recognized. While the Company does not anticipate any meaningful additional operational savings by replacing the existing AMR system with smart meter technology, as it moves through the process of system design, vendor selection and testing, the Company will be better equipped to identify other possible cost savings opportunities.

Duquesne requests that the Commission consider deferring a ruling on smart meter capabilities at this time, as Duquesne believes that the Commission will be in a better position to make a ruling on these issues once Duquesne (and other utilities) files

its full plan with all technologies and costs based on actual numbers and vendor proposals on December 31, 2011. That filing will have detailed technical and cost information, and we believe the Commission may be better able to make an informed decision at that time.

In compliance with Act 129, Duquesne Light plans to replace its existing automated meter reading (AMR) system with an advance metering infrastructure (AMI) system that leverages smart meter technology. Duquesne initially analyzed smart meters with the minimum capabilities set forth in Act 129 by surveying the marketplace and talking with vendors who offer such products, as well as by surveying utilities in other states that have already implemented smart meter programs. Most vendors are reluctant to share this competitive cost information, and additional and more concrete cost information will be revealed during the future competitive bid processes that Duquesne Light will conduct. However, based upon this preliminary analysis, Duquesne Light estimates that the meter and system costs to procure and enable meters throughout its service territory with the minimum Act 129 requirements will cost in the range of $152 to $262 million, which includes approximately $38 million in pre-deployment expenditures during the 30 month grace period.[1] This estimated budget is limited to the costs to implement the minimum Act 129 requirements.[2] Incremental costs to be incurred as a result of adoption of all of the additional requirements set forth in the Commission's

[1] Duquesne will have a better sense of the total project budget once it completes various steps during the Grace Period, namely assessment of technological solutions and network design, to be completed in late 2010 and early 2011. Duquesne will provide a refined project budget and cost estimate in its proposed Supplemental Filing on December 31, 2011.

[2] 66 Pa.C.S. § 2807(g) requirements, as reiterated in the Implementation Order, include: bidirectional data communications; recording usage data on at least an hourly basis once per day; providing customers with direct access to and use of price and consumption information; providing customers with information on their hourly consumption; enabling time-of-use rates and real-time price programs; and finally, supporting the automatic control of the customer's electric consumption.

Implementation Order will increase this range, as detailed below, to $195 to $325 million, or an increase of $43 million to $63 million.

Duquesne Light has conducted the analysis of the additional capabilities set forth in the Implementation Order in an effort to determine which capabilities are cost effective, and thus should be included in the meters ultimately selected for system-wide deployment.

Based on input from leading AMI solution vendors, and review of smart meter implementations at utilities in California and Texas, many of the additional capabilities are already part of the smart meter and base system architecture. In other words, there are not significantly different versions of smart meters offered for sale by different vendors. However, the meter is only the first part of the analysis. To actually implement several of these additional capabilities would necessitate significant infrastructure and system upgrades at significant cost. In other words, with several of the capabilities, you cannot just examine the smart meter itself. You have to look at all of the systems communicating with the meters and examine the effects of the capabilities on those systems.

Duquesne has proposed conceptually a comprehensive smart meter program made up of the following components:

- Smart meters on every premise;
- Communications network with ample coverage based on future studies of Duquesne's topology and meter density as well as sufficient bandwidth based on forecasted data requirements;

- Meter data management (MDM) and collection applications to gather, validate, edit, estimate, transform and deliver cleansed consumption and other advanced metering data to the Company's customer information and outage management systems as well as to customer and third party system;
- Replacement of back office systems that communicate, store and process advanced metering data.

The chart below provides a summary of the Implementation Order additional requirements at issue. It lists the projected incremental costs, where those costs will be incurred in the proposed AMI Solution, and Duquesne's recommendation on whether the additional capability should be adopted by the Commission at some point.

#	Requirement	Smart Meter	Network	MDM and Collections	Back-office Systems	DLC Recommendation
1	Ability to remotely disconnect and reconnect	$19-25 million	$0	$0	$500K- $1 million	Reject *
2	Ability to provide 15-minute or shorter interval data to customers, EGSs, third-parties and an RTO on a daily basis, consistent with the data availability, transfer and security standards adopted by the RTO	$0	$2.5-$4 million	$2-3 million	$0	Implement **
3	On-board meter storage of meter data that complies with nationally recognized non-proprietary standards such as ANSI C12.19 and C12.22 tables	$0	$0	$0	$0	Implement
4	Open standards and protocols that comply with nationally recognized non-proprietary standards, such as IEEE 802.15.4	$3-$6 million	$0	$0	$500K-$1 million ***	Implement
5	Ability to upgrade these minimum capabilities as technology advances and becomes economically feasible	Unknown	Unknown	Unknown	Unknown	Reject ****
6	Ability to monitor voltage at each meter and report data in a manner that allows an EDC to react to the information	$0	$0	$0	$16-$24 million	Reject
7	Ability to remotely reprogram the meter	$0	$0	$0	$0	Implement
8	Ability to communicate outages and restorations	$0	$0	$0	$16-$24 million ***	Reject
9	Ability to support net metering of customer-generators	$0	$0	$0	$0	Implement

* Duquesne does not support this capability territory-wide, but does support it for high turnover areas or hard-to-access meters. See Section 1, below.

** Duquesne supports this for customers wanting this service but not for all customers. See Section 2, below.

***This is the same $500,000-$1 million as reflected in response to requirement 1, and the same $16-$24 million as that reflected in requirement 6.

****Duquesne will utilize its best effort to upgrade as advances become achievable. However, it cannot predict and may not be able to upgrade.

Detail for these costs and recommendations are included below, where each additional capability is separately analyzed.

1. Ability to remotely disconnect and reconnect

Description of Capability

Remote disconnect and reconnect functionality enables utilities to "turn-off" or "turn-on" a customer's service at the meter without a physical visit to the premise. In smart meter deployments, this capability is accomplished through additional hardware integrated within the meter that can be accessed through firmware. This capability is only available for single-phase meters having a 240 volt service with a rating of 200 amps or less. The utility can remotely instruct meters equipped with this additional hardware to physically disconnect or reconnect the service by sending a signal to the meter's firmware through the advanced metering communications network.

Incremental Costs

Based upon Duquesne's analysis, there is an incremental hardware cost to provide the capability to remotely disconnect and reconnect of approximately $35 to $45 per meter. To include this additional hardware component in all of the company's 545,696 meters that can be equipped with this capability, Duquesne would incur an incremental cost in the range of $19 million to $25 million. In addition to per meter costs, Duquesne would incur costs to revise its business processes and implement necessary system changes to provide remote disconnect and reconnect functionality. These incremental costs are estimated in the range of $500K to $1 million.

Benefits/Savings

There are both current and potential benefits of providing the capability for remote disconnect and reconnect functionality as part of an advanced metering infrastructure (AMI) solution. The current benefits include the automation of manual tasks that require Duquesne to make trips to the meter in today's environment. The potential benefits include leveraging remote disconnect and reconnect functionality for future opportunities that the Company may pursue related to pre-paid metering and energy efficiency.

In 2009, Duquesne performed 43,600 physical "turn-offs" (customer requested termination of service) and 72,594 physical "turn-ons" (customer requested restoration of service) at customer premises at an approximate cost of $15 per request. By eliminating these visits to the meter, the Company can reallocate these resource costs and gain efficiency improvements that will enable our workforce to better manage the workload related to customer requested and Credit & Collection service orders. Further efficiency improvements would be realized by streamlining the process for disconnect and reconnect work associated with hard-to-access meters. These situations create an additional drain on company resources as numerous attempts are made to gain access. In addition to these efficiency improvements, there are also benefits to automating this work related to customer satisfaction for quicker turnaround of disconnect and reconnect related requests as well a reduction in unbilled charges on inactive accounts with hard-to-access meters.

Duquesne does not currently offer prepaid metering or energy efficiency programs that would benefit from this remote disconnect and reconnect capability, but the company understands that there could be potential benefits.

Duquesne's Position On Adding Remote Reconnect and Disconnect

When choosing which optional capabilities to include within a smart meter, providing the capability for remote disconnect and reconnect functionality has the greatest impact on the final cost of the meter. Therefore, utilities need to have the flexibility to only select this option for meters where it is cost effective to deploy this capability. Those sites are likely to be university housing and apartments, with frequent renter changes, and sites that are difficult to access either due to location, physical hazards, or other factors. Duquesne feels that in its current environment, it is not cost effective or beneficial to deploy this capability territory-wide; however, it is cost effective if deployed in meters on premises with high customer turnover or in meters that are located in hard-to-access areas. However, Duquesne recognizes that at the time of our smart meter deployment, the Company will also need to factor in the potential benefits of this capability in relation to the high cost of replacing the meter in the future. Duquesne requests that when the appropriate time arises for the Commission to make a decision on this capability, that it grant utilities the flexibility to deploy the remote disconnect and reconnect capability in meters where this option is cost effective. Duquesne would not recommend that it be mandated territory-wide at this point.

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

Description of Capability

As part of the minimum requirements of Act 129, smart meters must record usage data on at least an hourly basis once per day and provide customers with information on their hourly consumption. Section 2807(g). Smart meters are capable of recording, storing and reporting usage data at 1-minute intervals. The interval period is a programmable capability within the meter's firmware. Customer, utility and RTO applications require consumption data at different levels of granularity based on various demand response programs, complex rate structures and ancillary services. However, while the capability exists in the meters, a utility EDC would need to install the appropriate communications network and systems in order to support and utilize the data.

Incremental Costs

Based on Duquesne's analysis to date, there are no incremental meter costs to record and temporarily store sub-hourly interval data at the meter. However, the costs to communicate usage data to utility collection applications and store and process usage data within utility meter data management (MDM) systems increases incrementally based on the amount of data. Duquesne would incur incremental costs in the range of $2.5 to $4 million to build a network capable of communicating 15-minute interval data on a daily basis as opposed to hourly interval data. In addition, Duquesne would incur incremental costs in the range of $2 to $3 million to store and process up to one year of 15-minute interval data within the Company's MDM and collections systems as opposed

to hourly interval data. In summary, providing the capability for 15 minute as opposed to hourly interval data will result in incremental costs in the range of $4.5 to $7 million.

Benefits/Savings

Based on Duquesne's knowledge of current industry programs, rate structures and RTO requirements, the Company does not feel that there are meaningful benefits to collecting sub-hourly interval data for residential and small commercial customers at this time. There could be some benefit to medium and large commercial and industrial customers, but Duquesne has found that only a limited number of such customers request this data. Duquesne understands that there could be potential benefits when it comes to future demand response programs.

Duquesne's Position on Providing Less Than Hourly Data

Since there are no incremental smart meter costs to enable the capability of 15 minute or shorter interval data for customers, EGSs, third parties and an RTO on a daily basis, Duquesne recommends that it be adopted as a capability in the meter. Network, storage and processing costs are incremental costs (but are not meter based) and increase based upon the amount of data. Duquesne does not object to incurring these costs so long as the customers causing these incremental costs also pay for such costs. As such, if the Commission adopts this capability, Duquesne will recommend that its initial communications network and MDM systems be sized based on the interval data requirements projected during the first few years. If these requirements grow over time, Duquesne can make incremental investments to increase the size of its communications network and MDM systems to accommodate this unpredictable growth.

3. On-board meter storage of meter data that complies with nationally recognized non-proprietary standards such as ANSI C12.19 and C12.22 standards

Description of Capability

As utilities go through the process of considering and purchasing AMI options that make the most sense for their budget, objectives, and service territories, a natural consideration is how well different pieces of the selected infrastructure will coordinate with each other, particularly if those different pieces have been manufactured by various vendors. The C12.19 standard provides a common data structure for use in transferring data to and from utility end devices, typically meters. The C12.19 standard was approved after considerable cooperative effort among utilities, meter manufacturers, automated meter reading service companies, ANSI, NEMA, IEEE, Utilimetrics, and other interested parties. The ANSI C12.22 open standard defines how to transmit standardized tables of meter data across wired or wireless networks using various transports such as Internet Protocol. C12.22 is the standard defining the transport of C12.19 table data over networked connections. The standard presents common structures for encoding data in communication between end devices (meters, home appliances, ANSI C12.22 nodes) and utility enterprise collection and control systems using binary codes and Extensible Markup Language (XML) content. These standards have resulted in a common means for communication among industry participants.

Incremental Costs

Based on Duquesne's analysis, and because of this agreed upon communications protocol, there are no additional meter or network costs for on-board meter storage of

meter data to comply with nationally recognized non-proprietary standards such as ANSI C12.19 and C12.22 tables.

Benefits/Savings

Interoperability allows utilities to use multiple communication networks or change communications technologies without modifying the meter. Therefore, open standards such as ANSI help protect the investment that utilities make in smart meters and allow utilities to evolve their systems over time.

Duquesne's Recommendation With Respect to On-Board Meter Storage Capability

Duquesne supports on board meter storage of meter data that is in compliance with nationally recognized non-proprietary ANSI standards, as it will promote interoperability of AMI components. Therefore, it is Duquesne's position that this particular capability is cost effective and should be implemented as part of our smart meter solution.

4. Open standards and protocols that comply with nationally recognized non-proprietary standards, such as IEEE 802.15.4

Description of Capability

The most widely accepted option for providing direct access to and use of price and consumption information, which is a minimum requirement of Act 129, is for utilities to deploy smart meters based on open standards and protocols that comply with nationally recognized non-proprietary standards, such as IEEE 802.15.4. Otherwise utilities would have to allow customers or third parties to connect their equipment directly to the meter, which violates security best practices.

IEEE 802.15.4 is a communication standard for low rate wireless personal area networks (LR-WPANs). ZigBee is a communications specification for a suite of high

level open communication protocols using small, low-power digital radios that comply with the IEEE 802.15.4 standard. As part of an advanced metering infrastructure (AMI) solution, ZigBee has the ability to link smart meters with devices such as thermostats, household appliances, HVAC, pool pumps, water heaters, lighting systems and other household or building systems in order to facilitate a home area network (HAN) on the customer's side of the meter. According to IndustryWeek on-line magazine, ZigBee is a global wireless standard which enables industry participants to focus on their products rather than engineering country-by-country or state-by-state products. There are other communication protocols based on the IEEE 802.15.4 standard, but Duquesne's research and investigation with meter and communication system vendors indicates that ZigBee appears to be the most commonly used technology as part of smart meters. It is Duquesne's position that ZigBee is the preferred communications specification for its AMI project based on this research and evaluation.

Incremental Costs

There is an incremental cost for open standards and protocols that comply with standards, because although some smart meter vendors include ZigBee technology in the base cost of their meters, others offer it as an option. The cost for ZigBee technology as an option ranges from $5 to $10 per meter. This could result in a total incremental cost to Duquesne in the range of $3 million to $6 million based on 600,000 meters, depending on meter vendor selection. In addition to per meter costs, Duquesne will incur costs to revise its business processes and implement necessary system changes to provide this capability. These incremental costs are estimated in the range of $500K to $1 million.[3] Duquesne recommends incorporation of ZigBee technology in all of its smart meters

[3] This is the same $500K to $1 million that is identified in requirement number 1.

because it is a secure and widely accepted solution for meeting the direct access minimum requirement of Act 129.

Benefits/Savings

Open standards and protocols promote collaboration among utilities, smart meter vendors and downstream manufacturers, which could reduce or eliminate interoperability costs absent such a standard. Many of the energy efficiency and demand response program benefits contemplated as part of smart meter solutions will be facilitated through direct sharing of information with customers utilizing home area networks. Open standards and protocols that comply with nationally recognized non-proprietary standards will make it easier for manufacturers to enter the HAN market and provide consumers with a multitude of affordable controls.

Duquesne's Recommendation on Open Standards and Protocols

Despite the estimated increased meter costs of $3 to $6 million, and the system costs of $500K to $1 million, Duquesne feels that this particular requirement is necessary to meet the minimum requirement of enabling direct access to use of price and consumption information of Act 129 and should be implemented as part of our smart meter solution so that customers will be provided information.

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

Description of Capability

This capability is whether existing equipment can adopt or be modified to incorporate new capabilities as technology advances. All of the Smart Meter requirements that are part of Act 129, 66 Pa. C.S. § 2807(F), (G), will be met as part of the initial deployment of the meters and implementation of the supporting Advanced

Metering Infrastructure (AMI), as well as some of the additional requirements in the Commission's June 18, 2009 Implementation Order. The Company will make its best efforts to implement an AMI that is flexible, expandable, and can meet protocols and functionality known and measurable at this time. No one can predict future needs, future technologies, or the costs and benefits of such needs and technologies.

Incremental Costs

Based on Duquesne's analysis to date, in some cases there are no additional meter or network costs to implement firmware upgrades to meet a new capability as technology advances and becomes economically feasible, and in other cases there will be incremental costs when meeting these capabilities, involving either additional hardware or software components. At some point it will be impossible to adopt a new capability absent a complete change out of the meters and systems. Given that future technologies and needs are unknown and immeasurable at this time, it is impossible to determine what the future costs will be to accommodate such advances.

Benefits/Savings

There are obvious benefits to having the ability to upgrade minimum capabilities as technology advances, but these capabilities and associated benefits are unknown.

Duquesne's Recommendation on the Ability to Upgrade Minimum Capabilities

It is important that Duquesne's AMI solution provide some capability to upgrade functionality to meet new capabilities as technology advances and becomes economically feasible. Thus, while Duquesne is working with vendors and making its best effort to purchase an AMI system that is flexible and upgradable, it is impossible to predict future technological advances, thus limiting the ability for Duquesne Light to address this

additional requirement in this respect. As a result, the Commission should recognize that the Company cannot predict future technological advances and costs, and thus should not set specific regulations or mandates on the ability to upgrade beyond the base system that is ultimately installed. Therefore, Duquesne does not recommend adoption of this standard.

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

Description of Capability

Voltage monitoring enables a utility to monitor and report power interruptions, over/under voltage alarms, and power reliability status throughout their distribution system, or at critical commercial and industrial customers. The utility can also produce accurate reliability reporting data for internal and regulatory use. The monitoring is contained in the smart meter and is controlled by the meter's firmware. The monitoring can be controlled on-site or remotely and programmed or reprogrammed via the communications network.

Incremental Costs

Based on Duquesne's analysis to date, there are no additional smart meter costs to provide the capability to monitor voltage at each meter and report the data. However, beyond the meter is quite different. In order for Duquesne to react to smart meter voltage information, however, the Company would need to replace the current outage analysis system (OAS) with a significantly more comprehensive outage management system (OMS). In addition, Duquesne would need to implement an electrical network model as part of the OMS replacement project. The total cost of the OMS and electrical network model project is significant and estimated from $16 million to $24 million.

Benefit/Savings

There are potential benefits related to voltage monitoring. At a high level, these benefits include the application of voltage profiling at a customer, transformer and device level to discern the health of an entire circuit; proactive correction of customer voltage issues; improved voltage control; pertinent information for reducing voltage when needed to maintain distribution system reliability; and more efficient system utilization.

Duquesne's Recommendation on Ability to Monitor Voltage

The capability to monitor voltage at each meter and report data is part of the base smart meter itself. Therefore, there is no additional cost at the meter. While this function will be included in the meter for no incremental cost, there are significant costs to the other systems. In order to realize the benefits of this functionality, Duquesne would be required to incur integration costs in the range of $16 million to $24 million to replace its current OAS with the required OMS and supporting electrical network model, and to change business practices to utilize the data received from this capability. Therefore, although the smart meter will provide the capability to monitor voltages, the Company does not recommend adoption of the standard for implementation, as the benefits at this point do not outweigh the costs.

7. Ability to remotely reprogram the meter

Description of Capability

The configuration parameters used to control all of the advanced functions and capabilities of a smart meter are established through firmware within the meter. Firmware is the software that interfaces between the meter's hardware and the network application; in other words, the firmware is the component that enables the meter to

perform its designated functions. This firmware can be reprogrammed at the meter or remotely through the communications network. Remotely reprogramming the meter allows the utility to upgrade the firmware or make configuration changes to the meter's functions without necessitating a physical visit to the meter. Some functions controlled by this firmware include the type of data captured along with how often and how much data is captured and stored. Additional advanced functions include setting limits or thresholds for events to be triggered by the meter to monitor energy flow. The bi-directional data communications capabilities of a smart meter and network allow the utility to upgrade the firmware as fixes or new features are released by the meter vendor as well as quickly adjust the meter's configuration parameters to meet the changing needs of the customer or the entire energy system.

Incremental Costs

Based on Duquesne Light's analysis to date, there are no additional meter or network costs to provide the capability to remotely upgrade the meter's firmware or configuration parameters. Any process change costs would be incurred in an effort to meet the minimum requirements of the Act, and thus are not considered incremental.

Benefits/ Savings

Reprogramming meters without necessitating a physical visit will save Duquesne anywhere from $25 to $30 per trip. In the smart meter environment where every customer has a meter with firmware, there will be significantly more instances that require the utility to reprogram the meter than in the current environment where only the population of 30,000 C&I meters are capable of configuration parameter changes. Having the capability to reprogram the meter for a firmware upgrade across the entire

population of 600,000 smart meters will save Duquesne in the range of $15 to $18 million per reprogramming upgrade as compared to physically visiting each meter.

Duquesne's Recommendation on Remote Reprogramming

The benefits of providing the capability to remotely reprogram smart meters rather than necessitating a physical visit to the meter when implementing firmware upgrades as well as new or changed functionality far outweighs any process change costs that the utility would incur from a control perspective. Further, such process change costs will be incurred in an effort to meet the minimum requirements of Act 129, and thus are not incremental costs. Therefore, Duquesne's position is that this particular capability is cost effective, will benefit Duquesne Light as well as its customers, and should be implemented.

8. Ability to communicate outages and restorations

Description of Capability

Smart Meters transmit a real-time "last gasp" notification when detecting a power outage and also notify the utility when the power is restored based on user-defined configurable parameters. These outage and restoration alerts, which can be assimilated into automated processes more rapidly than customer trouble calls, give utilities the opportunity to improve the performance and capabilities of their outage management systems (OMS). By getting better information quicker, the OMS and its operators are in a better position to manage resources, prioritize work and deliver critical information to customers about power outages.

Incremental Costs

Based on Duquesne's analysis to date, there are no additional meter costs to provide the capability to communicate outages and restorations at the meter. However, in order for Duquesne to utilize this capability, the Company will need to redesign existing outage management business processes which will require replacement of our current outage analysis system with a significantly more robust OMS. In addition, Duquesne will need to implement an electrical network model as part of the OMS replacement project. The total cost of the OMS and electrical network model project is estimated to be in the range of $16 million to $24 million.

Benefits/Savings

At this point in our analysis, Duquesne has not conducted a comprehensive study to justify the replacement of our back-office operational outage analysis system (OAS). A utility could potentially realize tangible and intangible benefits by supplementing customer reported and SCADA outage data within its OMS with smart meter outage and restoration real-time alerts. These benefits include enhanced outage and detection and reporting; enhanced performance indices; shorter response times for restoration efforts; and improved public relations through increased awareness and communication of outage restoration progress.

Duquesne's Recommendation on Communication of Outages and Restoration

The ability to communicate outages and restorations is part of the base smart meter system. While this capability will be included in the meter for no incremental cost, in order to realize the benefits of this capability, Duquesne would be required to incur costs in the range of $16 million to $24 million to replace its current OAS with the

required OMS and supporting electrical network model, and to change business practices to utilize the data received from this capability.[4] Therefore, although the smart meter will provide the capability to communicate outages and restorations, the Company does not recommend adoption of the standard for implementation, as the benefits at this point do not outweigh the costs.

9. Ability to support net metering of customer-generators

Description of Capability

Net metering is achieved using a single, bi-directional meter that can measure and record the flow of electricity in either direction. The meter runs forward to register energy delivered to the customer and backwards for excess energy generated by the customer. Net excess generation (NEG) is carried forward and credited to the customer's next bill at the full retail rate. The utility must provide this meter if a customer's existing meter does not meet these requirements. If a customer agrees, a dual-meter arrangement may be substituted for the bi-directional meter.

Incremental Costs

Based on Duquesne's analysis to date, there are no incremental meter, network or system costs to provide the capability to support net metering of customers. Since Duquesne Light currently uses bi-directional meters for residential net metering customers and nets the consumption within the MV-90 system for C&I net metering customers with dual-meter arrangements, there will also be no additional costs to integrate the smart meter data within the Customer Information System (CIS).

[4] This is the same incremental cost that is identified in capability number six, ability to monitor voltage, not in addition to such cost.

Benefits/Savings

Currently Duquesne must manually read the bi-directional meters used to support net metering for residential customers at a cost in the range of $4 to $5 per meter. The deployment of smart meters with the capability to support net metering for the existing 38 residential customers that utilize net metering will enable Duquesne to automate these reads for an annual savings of approximately $2,100.

Duquesne's Position on this Added Capability

Although the benefits of supporting net metering of customer-generators are small, there are no additional costs to provide this capability. Therefore, Duquesne feels that this particular requirement is cost effective and should be implemented.

III. Conclusion

Duquesne Light has reviewed each of the additional capabilities as set forth in the Implementation Order. This analysis reviewed the meter capabilities, however, the analysis must go beyond the meter and examine whether the capabilities can be provided absent replacement of the network, collections, MDM and back office systems. Based on this review, several capabilities should not be mandated at this time: remote disconnect and reconnect, ability to upgrade as technology advances, voltage monitoring, and communication of outages and restorations. (Duquesne Light believes that remote disconnect and reconnect should be permitted for those premises where it is cost effective to implement, but not mandated territory-wide). As demonstrated above, Duquesne estimates that the meter and system costs to procure and enable meters throughout its service territory with the minimum Act 129 requirements will cost in the range of $152 to $262 million. This range will increase to $195 to $325 million if all of these additional

capabilities are required. Duquesne's analysis indicates that this cost is not justified at this time by any potential benefits to incorporate those four capabilities. The remaining five capabilities should be adopted in Duquesne's view.

Duquesne Light respectfully requests that the Commission consider its recommendations made here, but should consider deferring from ruling on these matters until the Company submits its entire plan on or before December 31, 2011. At that time, Duquesne believes that the Commission will be better able to make a determination on the additional requirements, when it reviews the detailed technology solutions, bid prices, and other information to be submitted. While the Commission may feel that the Company needs guidance on these requirements prior to vendor selection, Duquesne does not believe that it needs a decision on the capabilities prior to the competitive bid process, and that more information would be helpful to the Commission in deciding this issue.

Duquesne Light appreciates the opportunity to provide information on this matter.

Respectfully Submitted,

David G. Wolfe

David Wolfe, Director, Technology

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Dated: July 1, 2010

Duquesne Light Company
Smart Meter Procurement and
Installation Plan- Cost Benefit
Analysis

Docket No. M-2009-2123948

VERIFICATION

I, David Wolfe, state that I am authorized to make this Verification on behalf of Duquesne Light Company, being a Director, Technology, and that the facts and information set forth in the Cost Benefit Analysis of Duquesne Light Company for Additional Smart Meter Capabilities are true and correct to the best of my knowledge, information and belief, and that I expect to be able to prove the same at any hearing held in this matter. I understand that the statements herein are made subject to penalties relating to unsworn falsification.

7-1-2010

Date

David G. Wolfe

David G. Wolfe

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DUQUESNE LIGHT COMPANY	:	
Smart Meter Procurement and	:	Docket No. M-2009-2123948
Installation Program	:	

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the Cost Benefit Analysis of Duquesne Light Company in the above-referenced proceeding 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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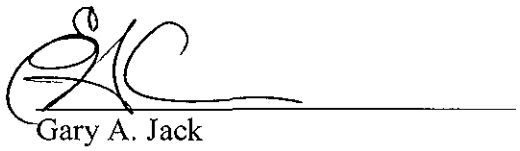

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Dated: July 1, 2010

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