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October 6, 2011

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PA PUBLIC UTILITY COMMISSION
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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 an update on Duquesne Light's Installation, Testing and Rollout of Support Equipment and Software for Duquesne's Smart Meter Program.

Sincerely yours,

Gary A. Jack
Assistant General Counsel

Enclosures

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

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PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Duquesne Light Company
Smart Meter Procurement and Installation Plan
Docket No. M-2009-2123948

**Installation, Testing and Rollout of
Support Equipment and
Software Update Filing to PUC**

October 6, 2011

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Installation, Testing and Rollout of Support Equipment and Software Update Filing to PUC

Introduction

Pursuant to Act 129 of 2008, signed into law by Governor Rendell on November 14, 2008, and the Smart Meter Procurement and Installation Implementation Order (Docket No. M-2009-2092655) issued on June 24, 2009 by the Commission, Duquesne Light submitted a Smart Meter Procurement and Installation Plan (“SMPI Plan” or “Plan”) on August 14, 2009. See *Duquesne Light Smart Meter Procurement and Installation Program, PUC Commission Docket No. M-2009-2123948, August 14, 2009*. This Plan was approved by the Commission on May 11, 2010, and Duquesne Light subsequently submitted an amended Smart Meter Plan on June 10, 2010, to comply with the issues addressed in the PUC’s approval order. See *Smart Meter Plan, Revision 1, Docket No. M-2009-2123948, June 10, 2010*.

Pursuant to the approved Plan, Duquesne committed to specific status update milestones to the Commission, such as the “Installation, Testing and Rollout of Support Equipment and Software” milestone due to the Commission on or about September 30, 2011.

The purpose of this filing update is to outline the equipment testing Duquesne plans to conduct prior to the full deployment of its AMI meters across its entire service territory. Duquesne will create a test environment to test the AMI functionality (hardware, software and communications). This environment will serve as a test bed for functionality experimentation, training of Duquesne staff and enable the proper operational process documentation to be developed for the full rollout of smart meters. This update will also discuss the implementation approach as Duquesne moves from the test environment to full deployment/production of its Smart Meters Program.

In conjunction with the stated filing update and the Plan, Duquesne committed to keep the Commission and parties updated on issues and analysis regarding the Smart Meter program development. This filing is for the stated milestone, and for which we request the Commission and parties review the overall testing and phased approach to the ultimate full implementation of smart meters. This filing is not intended to be Duquesne’s full production deployment plan. The full deployment plan will be presented for approval in Duquesne Light’s November 2011 update and again in its major filing at the end of December 2011. As such, Duquesne is not specifically requesting Commission action on this filing.

Overview

Duquesne plans to deploy an Advanced Metering Infrastructure (“AMI”) system, which will include approximately 612,000 residential and commercial smart meters. The smart meters will communicate with a number of AMI data relays (“Cell Relays”) located throughout Duquesne’s service territory. The data communication path (smart meter to Cell Relay) is referred to herein as Local Area Network (“LAN”). The Cell Relay also requires a means of communication to transport the AMI data to and from Duquesne’s existing fiber optic take out points (via either wireless or wire-line communication linkage). AMI data will then be transferred to the AMI Collection Engine (“CE”) located at the utility office via fiber. The two-way communication path (from Cell Relay to fiber take-out points) is referred to herein as the “Intermediate Backhaul Solution” and the fiber network is considered to be the Wide Area Network (“WAN”).

To analyze, test and mitigate potential technology issues with the AMI system prior to full deployment, Duquesne created a phased testing and rollout approach, as presented herein, which consists of the first three phases identified below, leading to the final full-scale deployment phase (Phase 4). Deployment dates are also identified by phase.

Phased Smart Meters Testing and Rollout Approach

Phase 1 and 2 are designed to identify and mitigate any functional and operational issues before the full-scale deployment of smart meters to customers. Phase 3 is a larger pilot to gauge and evaluate customer acceptance of Smart Meter technology, which will serve to guide Duquesne in during its full meter roll-out.

- **Phase 1 – 52 Smart Meter Proof of Concept (“POC”):** Q4 2011 – Q4 2012

The POC test will include the installation and testing of fifty-two (52) smart meters and its associated AMI infrastructure including cell relays, communications infrastructure and collection engine software. Phase 1 will serve as a test bed to test the AMI system functionality and capabilities, including the meter, communications network, CE, Meter Data Management System (“MDMS”), Customer Care & Billing System (“CC&B”) as well as HAN device functionality and interoperability to ensure that the minimum requirements in the Act are capable of being met.

- **Phase 2 – 5,000 Smart Meter Technology Test:** Q1 2013 – Q4 2013

The Smart Meter Technology Test will further test the AMI system functionality including the meshed communication network or LAN with the larger number of smart meters and Cell Relays communicating throughout the service territory, the backhaul communication with larger throughputs of data to ensure accurate and timely data collection, advanced meter functionality such as remote disconnects/reconnects, dynamic pricing provisioning, and Home Area Network (“HAN”) device integration. This phase will ensure that all of the Smart Meter functionality that Duquesne plans to deliver to its customers during the Phase 3 pilot is thoroughly tested.

- **Phase 3 – 35,000 Smart Meter Customer Pilot:** Q1 2014 - Q4 2014

DLC plans to optimize the investment in Smart Meter technology by creating an enhanced experience for our customers. To that end, Duquesne has engaged the consulting services of the Customer Performance Group (“CPG”) to assist Duquesne with analyzing, researching, and designing a 35,000 Smart Meter Customer Pilot to gauge and evaluate consumer confidence in Smart Meters and what new programs and services will improve their acceptance of AMI technology. This research will be conducted in seven (7) control groups whereby customer behaviors are analyzed to help drive Duquesne’s strategic smart meters initiatives and full scale deployment beginning in 2015.

- **Phase 4 – Full-Scale Deployment and Rollout:** Q1 2015 – TBD

The details of testing Phases 1 through 3 are discussed below:

Phase 1: 52 Smart Meter Proof of Concept

Duquesne realizes the importance of creating a comprehensive test environment prior to full deployment to test the validity of the system (hardware and software), associated communications and processes. The POC test environment includes a test lab, and fifty-two (52) meters divided among the field and lab test areas. The POC will successfully:

- Validate compliance with the stated Act 129 requirements
 - Two way communication between fifty-two (52) of Itron’s Centron Smart Meters and the four (4) Itron Cell Relays and (2) Itron Range Extenders
 - Directly provide customers with information on their hourly consumption
 - Enable Time of Use (“TOU”) and Real Time Pricing (“RTP”) programs

- Effectively support the automatic control of the customer’s electricity consumption
 - Records usage data on at least an hourly basis and delivered to the AMI CE once per day
 - Provide customers with direct access to and use of price and consumption information
- Validate the integration of register and interval data between the OpenWay AMI CE system and upstream systems such as the Oracle MDMS and the CC&B system.
 - The POC testing will align with the implementation of our FOCUS project which includes an Oracle CC&B conversion project.
 - Lab test of various business-driven customer focused applications such as dynamic pricing, HAN equipment and communication, demand response (“DR”), and the remote disconnect/reconnect functionality.
 - Test public and private wireless intermediate backhaul communications options using two (2) towers located in a rural environment (located in Hopewell Township) and the other in an urban location (located in Bellevue). Duquesne will test communications between the Smart Meters and Cell Relays in the LAN as well as backhaul communication between the Cell Relays, fiber take out points and the AMI system’s CE (communication of the WAN and Intermediate Network). Duquesne has engaged SAIC to assist in an intermediate and backhaul communications design and will test the 3.65 gigahertz (“GHz”) frequency range and associated communication radio equipment as well as the 900 megahertz (“MHz”) frequency options. The following will be tested during the POC and during the 5,000 Smart Meter Technology Test.
 - 3.65 Ghz testing equipment
 - (1) base station radio and (1) remote
 - (1) Cell Relay w/ Verizon Modem
 - Antenna / Cable
 - 900 Mhz testing equipment
 - (1) base station radio and (1) remote
 - (1) Cell Relay w/ Verizon Modem
 - Antenna / Cable
 - Supporting Models and Tools
 - (2) Range Extenders
 - RF Propagation Model Tool
 - Spectrum Analyzer

Testing of these capabilities and functions will ensure that Duquesne Light is prepared for deploying meters in new developments and upon customer request at the end of the Grace Period.

Phase I Installations & Rollout

Below provides a high level overview of the installation and rollout of smart meters; however, a full deployment and installation plan will be provided in Duquesne’s November filing update to the Commission.

- **Meters, Cell Relays/Range Extenders:** Duquesne will be responsible for the lab and field installation of the smart meters and Cell Relays and Range Extenders for the POC. All field installed meters deployed with dual meter socket adapters, retaining the customer’s billing meter and adding the Itron OpenWay test meter. Itron will provide the thirty-six (36) residential form 2S meters consisting of four (4) single phase direct connect meters and thirty-two (32) non-direct connect meters as well as sixteen (16) 3-

phase commercial meters. Phase 2 and 3 installations of meters and Cell Relays will be performed by Itron.

- **HAN Devices:** Duquesne will be responsible for the set up of HAN devices in the lab for the POC. It has not yet been determined who will be responsible for the installation of HAN devices in Phases 2, 3, and 4. Itron will provide two (2) Zigbee enabled In-Home Displays (“IHDs”), two (2) smart thermostats, and two (2) Load Control Devices (“LCD”). Other devices may be considered such as OpenPeak IPAD applications, Digi and Energy Hub when Smart Energy Profile (“SEP”) 2.0 is available, however none are included in the POC or pilots at this time.
- **Communication Infrastructure:** Duquesne will be responsible to install the backhaul communication infrastructure required for cell relay communication.
- **POC Software Environment:** Itron will be responsible for the installation and configuration of the OpenWay CE software and assist with the integration of AMI to upstream systems. The software will support up to 100 meters. Phases 2, 3 and 4 will require installation of a production system to accommodate a larger number of meters and Cell Relays. The POC software environment will include the OpenWay CE, OpenWay Reporting System (“ORS”) and the OpenWay Controls (“OWC”) software to allow Duquesne to monitor Cell Relay performance and communication statistics as well as managing changes in configuration and firmware download activities across groups of Cell Relay groups. Itron will install and configure the OpenWay CE software on servers configured in the Duquesne IT Infrastructure facility. The CE deployed for the POC will include Itron’s standard security capabilities. Enhanced security capabilities will be implemented during full deployment. Data collection from the OpenWay CE will be passed to the Oracle MDMS via web services (“WSDL”). The MDMS and CC&B projects currently being implemented in Duquesne’s FOCUS project will be an integral part of this solution.
- **Related IT Equipment:** The CE software infrastructure hardware will reside inside Duquesne’s production Program Office Infrastructure department. Sized for the POC test environment, the hardware will consist of the following components.
 - Three (3) virtual machines hosting the following components:
 - Database Server (Duquesne’s) – Oracle 11g R2
SQL Server 2008 R2 Enterprise x64
 - Application Services - OpenWay CE , ORS and OWC

Phase I Tested Functionality

Detailed tests will be developed during the POC to test the functions identified below.

1. Duquesne will perform initial lab testing to test and affirm acceptable programming and accuracy prior to field deployment.
2. Ensure successful end to end system functionality to support Act 129 requirements.
3. Meter communications. Two-way communication across the AMI infrastructure will be tested to ensure acceptable AMI meter performance

4. Accurate and timely meter reads (scheduled and interactive) and delivery to the CE, and that uploads from the handheld devices, meter pings, and outage notifications are functioning properly
5. Ensure successful CE firmware downloads to the meters, endpoint group configurations, meter management, meter provisioning, load profile data and event logs, reporting and alarms
6. HAN provisioning, integration and communications and device interoperability with the AMI system
7. Disconnect/Reconnect Functionality
8. Dynamic rate provisioning in CE and at the meter level
9. Dynamic rates and usage information availability to customers via IHDs or other methods.
10. Integration of the CE with Duquesne's FOCUS project (MDMS and CC&B) for billing
11. AMI system usability test

Detailed vendor test cases have been provided and will be used for system acceptance testing at each Phase. Specific installation and roll-out plans for Phase 1 will be provided in Duquesne's major filing at the end of the year. A full scale acceptance test will be performed upon successful installation of the AMI system.

Phase 2: 5,000 Smart Meter Technology Test

Phase 2 will include the installation and testing of 5,000 smart meters (residential and commercial) in a production field environment, and will build on the functional requirements testing outlined in Phase 1. The main goal of this phase is to further test the technology and scalability of the system and test the additional requirements outlined in the PUC Smart Meter order.

Phase 2 Installations & Rollout

The installation, rollout and testing processes will be similar to those outlined in for Phase 1. New smart meters, Cell Relays and Range Extenders will be installed. However, the meters will not be installed with dual socket adapters. The CE software utilized during the POC will be replaced with a full production system to handle the 5,000 meter population and will no longer be a test system. This new CE will also have the enhanced security measures that were not in the POC CE software. Specific installation and roll-out plans for Phase 2 will be provided in Duquesne's major filing at the end of the year. Installation and rollout of Phase 2 will closely align with the methods and procedures outlined for Phase 1; however, the installations of meters, Cell Relays and Range Extenders will be performed by Itron.

Phase 2 Tested Functionality

Refer to Tested Functionality for Phase 1 above. In addition, Duquesne will test all the additional PUC Implementation Order requirements and associated advanced Smart Meter features during this phase. Some advanced features may remain a lab test only such as disconnects/reconnects, DR and HAN provisioning and integration. Duquesne may decide to enable these features to a select set of customers.

Phase 3: 35,000 Smart Meter Customer Pilot

Phase 3 will include the installation and testing of 35,000 meters located throughout the service territory (grouped together into seven (7) customer control groups). The details of this pilot have not been finalized; however, it will not be focused on the testing of technology functionality and capabilities but rather on determining how to

maximize customer confidence in Smart Meters along with their acceptance of AMI technology program and services. This will drive Duquesne's strategy for the full-scale rollout beginning in 2015.

Phase 3 Installations & Rollout

Itron will be responsible for the 35,000 smart meters installation as well as the installation of Cell Relays and Range Extenders required ensuring adequate communication. The CE software and back office IT data storage servers utilized during Phase 2 will be upgraded to handle the 35,000 meter population and subsequently to handle the full scale deployment. Specific installation and roll-out plans for Phase 3 will be provided in Duquesne's major filing at the end of the year.

Phase 3 Tested Functionality

The goal of Phase 3 is not focused on the technical functionality testing, but on analyzing customer behavior. The tested functionality listed in Phase 1 and Phase 2 will however be tested for scalability purposes to ensure successful test results remain constant as additional infrastructure and meters are added to the system. In addition, a full system acceptance test will be performed to ensure the system is adequately installed and operating properly end to end. Successful testing of Phases 1, 2 and 3 will ensure Duquesne is ready for the full scale deployment of approximately 120,000 meters per year beginning in 2015.

Conclusion

Duquesne has taken a phased step by step approach to testing, installing, and rolling out its smart meter plan. With this approach, all equipment, software, and design will be tested numerous times with varying circumstances prior to being introduced to customers. Four Phases in total are proposed as part of the overall testing and installation process with each Phase becoming more integrated and larger in size. Duquesne believes this will provide the best overall probability of achieving a successful rollout of its Smart Meter Plan while mitigating any technical and process issues that arise as part of the deployment. A full deployment plan for each Phase will be outlined in Duquesne's major filing to the Commission in December 2011.

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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

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 Installation, Testing and Rollout of Support Equipment and Software for Duquesne's Smart Meter Program 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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Dated: October 6, 2011

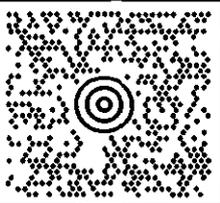
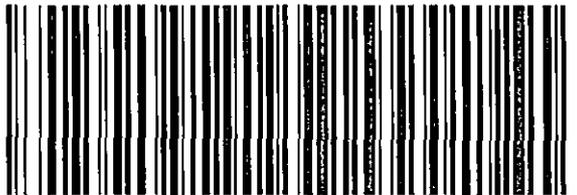
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