DELMARVA POWER & LIGHT COMPANY
TESTIMONY OF GEORGE W. POTTS
BEFORE THE DELAWARE PUBLIC SERVICE COMMISSION
CONCERNING AN INCREASE IN GAS BASE RATES
DOCKET NO. 10-

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1. Q: Please state your name and position, and business address.

A: My name is George W. Potts. I am the Vice President, Business Transformation for Pepco Holdings, Inc. (PHI), located at 701 Ninth Street NW, Washington, DC, 20068.

2. Q: What are your responsibilities in your role as Vice President, Business Transformation?

A: I am responsible for the planning, design, and implementation associated with the Blueprint for the Future for Pepco Holdings, Inc. subsidiaries, which include Delmarva Power & Light Company (Delmarva), Potomac Electric Power Company (Pepco) and Atlantic City Electric Company (ACE). In addition, I am responsible for the coordination of our proposed Blueprint for the Future with our overall Smart Grid vision and design. This includes considering how we may alter the manner in which we interact with our customers and perform associated business processes resulting from the introduction of Smart Grid technologies.

3. Q: What is your educational and professional background and experience?

A: I received a B.S. degree in Electrical Engineering from Drexel University in 1976 and joined Delmarva Power & Light Company as an Engineer working on Energy Management System advance power system analysis capabilities. I have served in various management positions with increasing responsibility related to the operation, maintenance and construction of both transmission and

distribution systems, and Information Technology. From 1976 until 1983, I worked in Electric System Operations. From 1983 until 1989, I served as Manager of User Services and Telecommunications in our Information Systems group. From 1989 until 1992, I led the Customer Engineering group and from 1992 until 1995, led the Cable & Transmission Construction and Maintenance groups for the DP&L Northern Region. From 1995 until 1998, I was Manager of Electric System Operations and was promoted to Director in 1998 of that group. In 2002, I served as Director of Renewal investigating future operating models of the utility business. In 2003, I was promoted to Vice President of Strategic Support Services for PHI and in 2007 became the Vice President of Business Transformation.

4. Q: <u>Have you previously testified before any regulatory agencies?</u>

A: Yes. I have appeared before the Delaware Public Service Commission, the Maryland Public Service Commission, and the Public Service Commission of the District of Columbia.

5. Q: <u>What is the purpose of your testimony?</u>

A: The purpose of my testimony is to provide an overview and status of Delmarva's Advanced Metering Infrastructure (AMI) and system integration work from both a regulatory and deployment perspective, including the costs and benefits. I will also identify the vendors associated with the AMI technologies that PHI has selected, describe the capabilities of the selected AMI technologies, provide an update on the AMI activities that PHI's Delmarva Power operating company is conducting in Delaware with particular relevance to the gas distribution business. The source documents for my testimony are Company

records, public documents, and my personal knowledge and experience. In this Application, Company Witness Ziminsky addresses the ratemaking treatment of all aspects of AMI.

6. Q: <u>Who are the vendors of the AMI technologies that PHI has selected?</u>

A: PHI has conducted extensive reviews of AMI technology and through a competitive selection process has entered into contracts with a number of vendors to assist in deploying AMI.

PHI selected Silver Spring Networks (SSN) to provide advanced networking products and services to help PHI build a Smart Grid network. According to SSN's February 1, 2009 press release regarding its contract with PHI: "Silver Spring Networks creates the critical networking infrastructure for the Smart Grid, known as a Smart Energy Network. Based on the Internet Protocol (IP) suite, it addresses the challenges of running multiple applications and devices on a common networking infrastructure using multiple transport technologies, dramatically improving efficiency, lowering costs and ensuring the reliable delivery of services. This smarter, more efficient grid could cut the growth rate of worldwide energy consumption by more than half over the next 15 years and drastically reduce carbon emissions." While the major focus for the Smart Grid is associated with the delivery of electricity, the Company wanted to leverage the Smart Grid infrastructure to benefit the gas delivery customers to avoid the additional costs that could otherwise be associated with the continuation of manual meter reading for the gas meters only throughout New Castle County.

The products being procured from SSN consist of Access Points ("AP"), which are also known as collector radios, and signal repeater devices that together

with the gas and electric meters will create a wireless mesh radio frequency (RF) network. SSN also provides the PHI selected electric meter manufacturers, General Electric and Landis+Gyr with a Network Interface Card ("NIC") that GE and L+G installs inside the meters during the meter production process. SSN also provides a gas Interface Management Unit ("IMU") that includes the NIC for installation on the existing gas meters to record and periodically send gas usage data to the Company's information technology systems for use in billing and other purposes. The NIC houses radios that provide the wireless networking capability for PHI's AMI. Using the NIC, the meter has the capability to communicate with the collector radio. The IMUs are battery operated electronic communication devices which, when installed on each existing Company gas meter, records and stores the data measurements of the meter and periodically transmits the data over the communications infrastructure. The SSN Gas IMUs are programmed to transmit data once per day to a Constantly Powered Device (CPD). This CPD can be an electric meter, a signal repeater, an AP, or a device known as an eBridge which are SSN devices used to communicate with other distribution equipment. Gas IMU's cannot pass their data to another Gas IMU due to being battery powered. If there is data that is needed by the IMU, the technology provides the CPDs with the data that needs to be delivered to the Gas IMU(s). Once an IMU wakes up and transmits it is also looking to see if there is any data need to retrieve from a CPD. If yes, the IMU downloads the data. An example of this type of data exchange would be for a firmware or configuration change. This capability allows the devices to be upgraded remotely with new capabilities and security features as they may be developed to help manage the risk associated with

obsolescence. PHI has successfully performed these over the air firmware and configuration updates in its meter lab and in the field as part of the field acceptance test ("FAT") that was conducted in 2009.

SSN supplies a software license for its UtilityIQTM which is SSN's AMI Network Management application, also referred to as the head-end system. With regard to services, SSN is providing communication network design services, project management, field engineering services and information technology support.

PHI signed a contact for meter exchange services with Scope Services, LLC, a Woman Owned Business Enterprise. Scope has been a contractor serving Pepco, a PHI company, for a number of years providing a variety of meter related services.

7. Q: <u>What are the capabilities of the selected AMI technologies?</u>

A: The combination of AMI technologies Delmarva has selected, when integrated into Delmarva's existing operational and information technology architectures and business processes, will be able to provide automated meter reading of the gas meters. In addition, Delmarva will provide customers with their daily and hourly gas usage data on the "My Account" area of its Web site.

8. Q: <u>Please provide a status of the Regulatory proceedings in Delaware with regard to AMI.</u>

A: The Commission issued Order No. 7420 on September 16, 2008 in Docket No. 07-28. The Commission approved the following policy recommendation in that order:

The Commission approves the diffusion of the advanced metering technology into the electric and natural gas distribution system networks and the Commission permits Delmarva to establish a regulatory asset to cover recovery of and on the appropriate operating costs associated with the deployment of Advanced Metering Infrastructure and demand response equipment.

9. Q. <u>Please provide the status of the AMI deployment in Delaware.</u>

A: Delmarva Power has conducted a field acceptance test of the Silver Spring Networks AMI system in the State of Delaware. The field acceptance test commenced in the first quarter of 2009 and was completed in the fourth quarter of 2009. The field acceptance test was conducted in urban, suburban, and rural areas in two of Delaware's three counties, namely New Castle County and Kent County. The New Castle County acceptance test included devices in the City of Wilmington. The test included about 7,000 electric meters and 500 gas IMUs. PHI retained Enspiria Solutions, LLC to assist with the testing. The objectives of the Field Acceptance Test ("FAT") were:

- To safely conduct the equipment installation in accordance will all applicable PHI safety rules and policies,
- To validate the technical, functional and performance requirements of the selected AMI Technology and the AMI Communication Network back to the head end system by installing and operating approximately seven thousand endpoints in multiple areas across Delmarva Power's Delaware service territory,
- To generate the information required to help make the final decision in the third quarter of 2009 for the full rollout of the AMI system. The rollout commenced in the fourth quarter of 2009 in Delmarva Power's Delaware

jurisdiction for electric meters and consists of about 300,000 electric meters and 130,000 gas modules,

- To not adversely impact the customers involved in the field acceptance test.

PHI also has a project team comprised of internal PHI personnel, personnel from PHI's vendors, and consultants from IBM Global Services that has developed the information technology systems and business processes required to exchange the existing electric meters with AMI meters and in Delaware's case, install gas meter communication modules in large daily volumes, e.g., 1,500 to 3,000 per day. PHI also has a team who planned the physical deployment of communication network and meters and modules that will ultimately use the new deployment process.

During the FAT, the Company found that the Gas IMUs were not performing to contracted specifications. As a result, SSN made some design modifications to the IMU, manufactured the improved product, replaced the initially deployed FAT IMUs, and the FAT was repeated for gas. The gas FAT has been completed and found that the new gas IMUs are meeting or exceeding the established criteria. The gas IMUs are being manufactured and full deployment of gas meters will begin in July 2010 and are expected to be completed in December 2010 or January 2011. Currently approximately 40% of the new electric meters have been installed and this activity is also anticipated to be completed by December 2010 or January 2011.

In addition to preparing for the physical deployment of the AMI system in Delaware, PHI worked with its vendors and IBM Global Services to design, build,

configure, test, integrate and implement selected information technologies and business processes to deliver defined benefits to Delmarva Power's gas customers beginning late in 2010. The table below summarizes the work, which PHI refers to as the Customer Benefits System Integration project:

Functionality	Current State	To Be State	Enabled by	Benefits
Meter Reading	Collect cumulative consumption data once per month in the field through a meter reader	Collect interval consumption data (15 minute or hourly) each day remotely through the AMI network	Smart Meters passing over-the-air data through the wireless communications network	▪ More frequent and timely collection of data allows for more timely billing ▪ Improved reading accuracy minimizes billing anomalies and allows for more accurate calculation of customer bills ▪ Reduced meter reading costs and access issues" ▪ Less intrusive way for utility to collect data ▪ Include processes to verify that the meter is recording properly (Alarms, flags and events)
Web Presentation of Usage Data	Tools for improving residential and commercial customer tools	Granular historical usage information (hourly for AMI electric meters and daily for gas)	Aclara's Load Analysis Module populated on My Account	▪ Enables customers to view detailed consumption information, allowing them to determine how and when they use energy and to develop strategies for lowering their bills ▪ Enables CSRs to view customer data in nearly the same format as the customer
AMI Portal	Limited to monthly historical read data available in C3	More frequent meter reading data, on-demand read, and access to load analysis data via web link	Development of AMI Portal	▪ Improved response to high bill inquiries ▪ Ability to readily obtain meter readings that coincide with customer requested move dates ▪ Improved customer service functionality through more detailed consumption and demand information (customer access to the Aclara Load Analysis Module

10. Q. <u>Please describe the delivery cost reduction benefits from AMI for the gas business.</u>

A: The following testimony reconciles the estimated delivery benefits from AMI that are expected to be realized by Delmarva's gas delivery business after

deployment of the AMI system and associated information technology systems as presented in the Advanced Metering Business Case filed with the Delaware Public Service Commission in Docket 07-28 on August 29, 2007 to the O&M benefits included as reductions to the cost of service as filed in this docket. The table below compares the delivery benefits from AMI from the Advanced Metering Business Case to the cost of service reductions in this docket.

		$ in 000s	$ in 000s
Line No.	Benefit Category	Advanced Metering Business Case	Cost of Service Reductions in This Docket
1	Eliminate Manual Meter Reading Costs	$ 1,157	$ 1,176
2	Improve Billing Activities	186	-
3	Reduce Off-Cycle Meter Reading Labor Costs	57	124
4	Reduce Expenses Related to Theft of Service	36	-
5	Eliminate Hardware, Software, Maintenance and Operations Costs	30	-
6	Reduce Volume of Customer Calls Related to Metering	12	-
7	Reduced Complaint Handling	10	-
8	Total	$ 1,488	$ 1,300

The Company expects to complete the deployment and activation of the AMI system in New Castle County, Delaware in the first quarter of 2011. At that point the company expects to be able to begin realizing the benefit associated with substituting the AMI enabled meter reading for the manual meter reading. The amount of savings expected is $1.2 million. The amount attributed to the "eliminate manual meter reading costs" benefit included as a reduction to the cost of service equals the amount of meter reading expense included in the cost of service and therefore it is slightly different than the estimated amount in the 2007 Advanced Metering Business Case. Similarly, the amount attributed to the "reduce off-cycle meter reading labor costs" benefit, is $124,000 and it is included as a reduction to the cost of service equal to the amount of off-cycle meter reading expense included in the cost of service and therefore it is slightly

different than the estimated amount in the 2007 Advanced Metering Business Case. The total savings of $1.3 million included as a reduction to the cost of service represents 87% of the originally estimated delivery benefits.

Approximately $274,000 in estimated delivery benefits have not been included as reductions to the cost of service in this docket. PHI operates the departments where the benefits are expected to be derived from on an integrated basis with its Maryland and New Jersey jurisdictions. The Maryland and New Jersey public service commissions have not yet approved the diffusion of the AMI technology in their jurisdictions. To have an opportunity to fully realize these additional benefits, PHI needs to have AMI deployed in Maryland and New Jersey. To the extent PHI can partially realize these additional benefits without deployment in the other jurisdictions, they will be recognized in subsequent dockets.

11. Q. <u>Please describe the delivery costs to deploy and operate AMI for the gas business</u>.

A: Below is a table that compares the capital expenditures from the original Advanced Metering Infrastructure Business Case filed with the Delaware Public Service Commission in Docket 07-28 on August 29, 2007 to Delmarva's Current Forecast.

		$ in 000s	$ in 000s
Line No.	Benefit Category	Advanced Metering Business Case	Current Forecast
1	Interface Management Units, including installation cost	$ 9,195	$ 9,669
2	Communication Network, including installation cost	-.	237
3	Information Technology Systems	1,828	2,086
4	Contingency	1,543	574
5	Total	$ 12,566	$ 12,566

The gas IMU costs in the Current Forecast column in the table above are based on the prices received from SSN and Scope Services, the installation contractor. Note that the IMU costs from SSN include the cost of the Silver Spring Networks (SSN) Network Interface Card. The average IMU cost, including installation, across all types of IMUs is $75.56 assuming 127,964 are required. The IMU costs include the cost of the IMU from SSN, and the cost of IMU installation Scope Services, the contractor the Company has engaged to also exchange the existing electric meters with the AMI meters. The Current Forecast's communications network amount are based on the pricing received from SSN for the communication equipment, installation services for the equipment and network engineering design services. The costs of the communication network in New Castle County, Delaware have been allocated to the gas business. The communications network also includes company labor for network engineering and device installation in the field acceptance test plus costs for other materials required to integrate into the Company's communications network. The Current Forecast's AMI network management system and meter data management system include the cost of the software licenses from SSN and Itron, respectively, along with software for web presentment of interval data to customers. The costs also include services from outside consultants and company labor for system integration. The contingency amount in the Current Forecast column was decreased, as compared to the Original Business Case, in order to maintain the overall total estimated costs at $12.6 million. The forecasted number of IMUs in the Current Forecast column was revised from the 111,845 used in the

original business case to 127,964 in the Current Forecast by using the actual May 2010 number of meters.

12. Q: <u>Please describe the incremental on-going O&M expenses associated with the AMI system.</u>

A: The following testimony reconciles the incremental on-going O&M expenses associated with the AMI system that are expected to be incurred by Delmarva's gas delivery business after deployment of the advanced metering infrastructure system and associated information technology systems as presented in the Advanced Metering Business Case filed with the Delaware Public Service Commission in Docket 07-28 on August 29, 2007 to the incremental O&M on-going O&M expenses included as adjustments to the cost of service as filed in this docket. The table below compares the incremental on-going O&M expenses for the AMI system from the Advanced Metering Business Case to the Current Forecast of these costs.

Line No.	Incremental Cost to Operate	$ in 000s Advanced Metering Business Case	$ in 000s Current Forecast
1	Software Maintenance Fees	$ 107	$ 58
2	Hardware Leasing	70	156
3	AMI Operations Personnel	-	28
4	Meter Shop Personnel	-	90
5	Total	$ 177	$ 332

Software maintenance fees include costs for the SSN head-end application and the Itron meter data management system in the contracts with those vendors. The fees also include maintenance fees for database applications. Hardware leasing is for servers and storage. AMI operations personnel are people that operate the AMI system. Meter shop personnel will need to perform new work

associated with installing the IMU on meters in the ongoing periodic testing programs.

In addition, the deferred incremental expenses for which the Company seeks recovery, supports the on-going installation of the AMI project. Specifically, these costs were reasonably incurred in the development of the AMI requirements documents, specifying and procurement of the meter data management system, AMI IMUs and the AMI communications system as well as the overall management of the project. We are seeking recovery here of only the Delmarva Gas portion of these costs.

13. Q: <u>Please describe the cost and benefits of AMI.</u>

A: As depicted in portions of this testimony, the estimated and allocated capital cost to deploy AMI in Delmarva's gas service area is $12.6M for an estimated 127,964 gas meters. This deployment cost includes the initial customer functionality and associated benefits which consists of remote meter reading, web presentation of customer usage data, and an AMI portal for company employees to support customer services. These anticipated benefits, as well as benefits yet to be fully detailed, will be enabled through increased integration between and among existing business systems and processes.

14. Q: <u>Does this conclude your testimony?</u>

A: Yes, it does