

COMMONWEALTH OF PENNSYLVANIA



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July 20, 2016

Rosemary Chiavetta, Secretary  
PA Public Utility Commission  
Commonwealth Keystone Bldg.  
400 North Street  
Harrisburg, PA 17101

Re: Petition of Duquesne Light Company for  
Approval to Modify its Smart Meter  
Procurement and Installation Plan  
Docket No. P-2015-2497267

Dear Secretary Chiavetta:

Enclosed for filing is the Office of Consumer Advocate's Revised Main Brief in the above-referenced proceeding.

Copies have been served on the parties as indicated on the enclosed Certificate of Service.

Respectfully Submitted,

/s/ David T. Evrard  
David T. Evrard  
Assistant Consumer Advocate  
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Enclosure

cc: Honorable Katrina L. Dunderdale, ALJ  
Certificate of Service  
\*224035

BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of Duquesne Light Company for :  
Approval to Modify its Smart Meter : Docket No. P-2015-2497267  
Procurement and Installation Plan :

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REVISED MAIN BRIEF  
OF THE OFFICE OF CONSUMER ADVOCATE

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DATED: July 20, 2016

**TABLE OF CONTENTS**

I. INTRODUCTION ..... 1

II. PROCEDURAL HISTORY..... 4

III. STATEMENT OF THE QUESTIONS INVOLVED..... 5

IV. BURDEN OF PROOF ..... 6

V. SUMMARY OF ARGUMENT ..... 6

VI. ARGUMENT..... 7

    A. SUMMARY OF DUQUESNE LIGHT’S MODIFIED SMART METER PLAN AND  
DISPUTED ISSUES IN PROCEEDING ..... 7

    B. ADMS ISSUES ..... 8

        1. ADMS Project Approval Issues ..... 8

        2. ADMS Cost Recovery Issues ..... 17

    C. RECOVERY OF BILL READY COSTS ..... 23

    D. INCREMENTAL AMI PROJECT COSTS ..... 24

    E. MISCELLANEOUS ISSUES ..... 25

VII. CONCLUSION..... 27

APPENDIX A: Proposed Findings of Fact, Conclusions of Law and Ordering Paragraphs

**TABLE OF AUTHORITIES**

**Page(s)**

**Administrative Decisions**

Petition of Duquesne Light Company for Approval of Smart Meter Technology Procurement and Installation Plan,  
Docket No. M-2009-2123948 (Order entered May 11, 2010).....2, 3, 4

Petition of Duquesne Light Company for Authorization to Defer Expenses for Accounting Purposes Only,  
Docket No. P-2012-2333760 (Order entered April 17, 2013) .....23

Energy Efficiency and Conservation Program,  
Docket No. M-2008-2069887 (Order entered January 16, 2009).....17

Smart Meter Procurement and Installation,  
Docket No. M-2009-2092655 (Order entered June 24, 2009).....1, 2, 8

**Statutes**

66 Pa.C.S. § 322(a) .....6

66 Pa. C.S. § 2807(f)(7) .....22

66 Pa.C.S. § 2807(g) .....1, 22

**Other Authorities**

Michael J. Sullivan, Josh Schellenberg, and Marshall Blundell, *Updated Value of Service Reliability Estimates for Electric Utility Customers in the United States*, Ernest Orlando Lawrence Berkeley National Laboratory, January 2015 .....16

## I. INTRODUCTION

Act 129 of 2008 (Act 129) took effect on November 14, 2008. Among its provisions, the Act required that within nine months of its effective date all electric distribution companies (EDCs) with more than 100,000 customers had to file with the Pennsylvania Public Utility Commission (Commission) a Smart Meter Technology Procurement and Installation Plan (Smart Meter Plan or Plan).

On June 24, 2009, the Commission issued its Implementation Order<sup>1</sup> which established the standards that the EDCs' Smart Meter Plans must meet. Among other things, the Implementation Order established standards as to the functions that smart meters must be capable of performing and provided guidance on the Commission's expectations for smart meter deployment.

Regarding smart meter functions, Act 129 defines "smart meter technology" as technology, including metering and network communications technology, capable of bidirectional communication that records electricity usage on at least an hourly basis. The technology must provide customers with direct access to and use of price and consumption information. It must also: (i) directly provide customers with information on their hourly consumption; (ii) enable time-of-use rates and real-time pricing programs; (iii) effectively support the automatic control of the customer's electricity consumption by one or more of the following as selected by the customer: the customer's utility, a third party engaged by the customer, or the customer. 66 Pa.C.S. § 2807(g).

In its Implementation Order, the Commission stated that it considered the smart meter capability requirements set out in Act 129 to be minimal requirements. The Commission

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<sup>1</sup> Smart Meter Procurement and Installation, Docket No. M-2009-2092655 (Order entered June 24, 2009) (Implementation Order).

noted that that smart meter technology is capable of supporting “more than demand response and pricing programs.” Implementation Order at 16. Accordingly, the Commission identified nine additional smart meter functions that it directed the EDCs to support through their upgraded technology, beyond those mandated by Act 129. That said, however, the Commission recognized that some of these additional functions may prove not to be cost-effective, that is, that their costs may exceed the benefits they provide. The Commission therefore directed that the EDCs’ Smart Meter Plans identify the costs of meeting each of the nine additional functions it had specified, less any operating or capital cost savings. The Commission stated that “to the extent that an EDC or another party demonstrates that a particular Commission imposed requirement is not cost-effective, the Commission will have the option of waiving a particular requirement for that EDC or all EDCs.” *Id.* at 31.

The instant proceeding involves two of the nine additional functions specified by the Commission, *viz.*, (1) the ability to monitor voltage at each meter and report data in a manner that allows an EDC to react to the information, and (2) the ability to communicate outages and restorations.

Duquesne Light Company (Duquesne or Company) filed its Initial Smart Meter Plan with the Commission on August 14, 2009. The Plan was approved, subject to certain modifications not relevant here, on May 11, 2010.<sup>2</sup>

On July 10, 2010, Duquesne filed a Cost Benefit Analysis in which it provided data related to the nine additional smart meter functions identified in the Implementation Order. On the basis of its analysis, Duquesne tentatively recommended against pursuing four of the additional smart meter capabilities, including voltage monitoring and outage communication.

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<sup>2</sup> Petition of Duquesne Light Company for Approval of Smart Meter Technology Procurement and Installation Plan, Docket No. M-2009-2123948 (Order entered May 11, 2010).

However, Duquesne suggested that the Commission defer ruling on these additional meter capabilities until after the Company submitted its Final Smart Meter Plan.

Duquesne's Final Smart Meter Plan was submitted on June 29, 2012. In that Plan, Duquesne again reviewed the costs and benefits associated with each of the nine additional meter functions identified by the Commission and determined that two of those functions were not cost-effective (the ability to provide 15-minute or shorter interval data and the ability to communicate outages and restorations) and a third (ability to monitor voltage at each meter) required new products which had not yet been developed by the Company's smart meter vendors.

Litigation ensued regarding the Final Smart Meter Plan, but a settlement was reached. In its Order reviewing the settlement,<sup>3</sup> the Commission approved the settlement subject to certain conditions. Among those conditions, Duquesne was directed to provide specific cost effectiveness data to support its decision not to pursue the voltage monitoring and outage communication functions. This data was to be submitted by way of a compliance filing made within 90 days of the entry of the Order.

Duquesne made its compliance filing on August 2, 2013. In that filing, the Company indicated that making accurate estimates of costs and benefits would require additional detailed study and it proposed a three-phase study, the first phase of which – the Strategic Development Phase – would look at distribution operations processes and technology as well as data collection and would develop an implementation roadmap. Duquesne stated that upon the completion of the Phase I study it would petition the Commission for approval to implement specific outage communication, restoration and voltage monitoring capabilities consistent with

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<sup>3</sup> Petition of Duquesne Light Company for Approval of Smart Meter Technology Procurement and Installation Plan, Docket No. M-2009-2123948 (Order entered May 6, 2013).

the information it gathered in the Phase I study. Accordingly, Duquesne sought permission to initiate the study. By Order entered January 9, 2014, the Commission authorized Duquesne to conduct the Phase I study.<sup>4</sup> It is the results of that study that form the basis of the instant proceeding.

## II. PROCEDURAL HISTORY

On August 4, 2015, Duquesne filed the subject Petition to Modify its Smart Meter Plan (Petition), which included the Direct Testimony of three Company witnesses. On August 24, 2015, Duquesne filed Supplemental Direct Testimony for one of its witnesses. On the same day, the Office of Consumer Advocate (OCA) filed an Answer to Duquesne's Petition and subsequently, on September 18, 2015, filed a Notice of Intervention and Public Statement. On September 3, 2015, the Office of Small Business Advocate (OSBA) also filed a Notice of Intervention and Public Statement, and on October 13, 2015, a Petition to Intervene was filed by Citizen Power. The case was referred to the Office of Administrative Law Judge and was assigned to Judge Katrina L. Dunderdale. The judge convened a prehearing conference of the parties on October 13, 2015.

Pursuant to the procedural schedule established at the prehearing conference, Duquesne filed further Supplemental Direct Testimony on November 13, 2015. On December 17, the OCA filed the Direct Testimony of its witness, Stacy L. Sherwood.<sup>5</sup> Rebuttal Testimony was filed by Duquesne on January 21, 2016. The OCA filed Surrebuttal Testimony on February

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<sup>4</sup> Petition of Duquesne Light Company for Approval of Smart Meter Technology Procurement and Installation Plan, Docket No. M-2009-2123948 (Order entered January 9, 2014).

<sup>5</sup> Ms. Sherwood is an Economist with Exeter Associates, Inc. At Exeter, Ms. Sherwood develops utility service assessments, provides bill and rate analysis, and assesses and evaluates the effectiveness of energy conservation and efficiency programs. Prior to joining Exeter, Ms. Sherwood served as a Regulatory Economist with the Maryland Public Service Commission (PSC). At the PSC, she performed analysis on the EmPOWER Maryland energy efficiency and demand response programs, the Exelon Customer Investment Fund, and served as lead analyst for the EmPOWER Maryland limited income programs.

4, 2016. The Company responded with written Rejoinder Testimony on February 11, 2016. Main Briefs were filed by Duquesne, OCA and Citizen Power on March 17, 2016, and Reply Briefs were filed by the same parties on April 7, 2016.

On May 4, 2016, ALJ Dunderdale issued a Post Hearing Order to Reopen the Hearing Record in this case. The Judge called for a post-hearing conference with the parties, which was held on May 24, 2016. At that conference, the pre-existing litigation schedule was suspended and further dates were established. In a Second Post Hearing Order, ALJ Dunderdale directed Duquesne to file Supplemental Direct Testimony specifically addressing four questions the ALJ presented which were intended, in part, to delineate between costs directly related to providing the particular smart meter functionalities at issue in this proceeding and the capabilities that an Outage Management System (OMS) and an Advanced Distribution Management System (ADMS) will provide that are not necessarily related to those smart meter functionalities. Duquesne filed that testimony on June 6, 2016. On June 24, 2016, OCA filed Supplemental Rebuttal Testimony in response to Duquesne's Supplemental Post-Hearing Direct Testimony. Pursuant to the Second Post Hearing Order, a Further Evidentiary Hearing was held on June 30, 2016.

### III. STATEMENT OF THE QUESTIONS INVOLVED

The questions at issue in this case are the following:

- Whether Duquesne's proposed Advanced Distribution Management System (ADMS) is a cost-effective means to provide the additional smart meter functionalities of voltage monitoring and outage communication?
- If ADMS is implemented, whether the costs of ADMS should be recovered through Duquesne's Smart Meter Charge (SMC)?

- Whether the costs of implementing Bill-Ready billing should be recovered through the SMC?

#### IV. BURDEN OF PROOF

In this proceeding, Duquesne is seeking an order from the Commission approving the amendments it has proposed to its previously approved Final Smart Meter Plan. As such, the assignment of the burden of proof in this case falls squarely within the provisions of Section 332(a) of the Public Utility Code, 66 Pa.C.S. § 322(a), which states that the “proponent of a rule *or order* [bears] the burden of proof.” (emphasis added) As the proponent of a specific Commission order, it is Duquesne that carries the burden of proof in this proceeding.

#### V. SUMMARY OF ARGUMENT

Corresponding with the issues identified in Section III above, the OCA argues as follows in this brief:

- The ADMS project proposed by Duquesne in this proceeding is not cost-effective means of implementing the smart meter capabilities of voltage monitoring and outage communication and the Commission should waive the requirement for those capabilities.
- If Duquesne goes forward with implementation of ADMS, recovery of ADMS costs should be sought through a base rate proceeding and not through the Company’s SMC.
- The costs of implementing the Bill-Ready functionality should not be recovered through the SMC; rather, these costs should be borne by Electric Generation Suppliers (EGSs).

## VI. ARGUMENT

### A. SUMMARY OF DUQUESNE LIGHT'S MODIFIED SMART METER PLAN AND DISPUTED ISSUES IN PROCEEDING

In its Petition, Duquesne proposes the following modifications to its Final Smart Meter Plan approved in 2013:

(1) postponement of implementation of Time Of Use/Real Time Pricing and net metering functionalities from 2015 to 2016;

(2) implementation, over a period of five years, of ADMS, which involves, in sequential order, development of an electrical model of the Duquesne system, installation of an Outage Management System (OMS) and finally installation of a Distribution Management System (DMS). Duquesne proposes to do this to meet the Implementation Order's requirement that an EDC's smart meter system have outage communication and voltage monitoring capabilities, two of the nine additional functions listed in the Implementation Order ;

(3) acceleration of the schedule to deploy smart meters such that residential meters will be fully deployed by the end of 2018 and commercial and industrial meters by the end of 2019;

(4) a projected increase in the overall cost of the Plan from \$203 million (as approved in the Commission's May 6, 2013 Order) to \$319 million. Of this increase, \$54 million earmarked for completion of the installation of smart meters and supporting technology.<sup>6</sup> This additional amount includes \$7 million to implement Bill-Ready billing, a sum not previously included in the Plan's estimated cost. An additional \$51 to \$62 million is the

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<sup>6</sup> In this proceeding, the additional \$54 million of non-ADMS related costs are referred to as Advanced Metering Infrastructure or AMI project costs.

estimated cost of installing and implementing the ADMS through 2020. If the top end of this range of ADMS costs is spent, the total cost of the Plan will be \$319 million.

(5) addition of a \$15 million contingency component to its Plan budget to cover changes in scope or requirements, unforeseen cost increases or implementation difficulties. The contingency is not included in the \$319 million estimated Plan cost; and

(6) a request to make repairs, when necessary, to customers' service entrance equipment to allow for safe installation of smart meters.

The issues in dispute in this proceeding arise entirely in connection with modifications (2) and (4) above. The issues are as stated in Section III above.

## B. ADMS ISSUES

### 1. ADMS Project Approval Issues

As noted above, the Commission's Implementation Order directed that an EDC's smart meter technology should support nine functions in addition to those mandated by Act 129. Concerned that some of these additional functions or capabilities might not be cost-effective, the Commission stated as follows:

In order to ensure that these additional smart meter functions are cost-effective, we direct that each smart meter plan filing include cost data that quantifies the costs to meet the minimum requirements set forth in Act 129, ... and the individual incremental costs of each added function, less any operating and capital cost savings.

Implementation Order at 29. The Commission further stated that if an EDC or other party demonstrates that a Commission-imposed smart meter function is shown to be not cost-effective, the Commission would retain the option of waiving that particular requirement for the affected EDC. *Id.* at 31.

In this proceeding, Duquesne presents evidence which it asserts demonstrates that the proposed ADMS project is a cost-effective means of providing the functionalities of voltage monitoring and outage communications, the two smart meter capabilities at issue in this case. The OCA, for its part, offers evidence that the project is not cost-effective and should not move forward as a smart meter project. The OCA submits that as a cost-ineffective project, the Commission should waive the requirement for these functionalities for Duquesne.

Duquesne's contention that ADMS is cost-effective rests on the Cost Benefit Analysis that was performed in connection with the previously mentioned Phase I study.<sup>7</sup> The Direct, first Supplemental Direct Testimony<sup>8</sup> and Initial Post-Hearing Hearing Testimony<sup>9</sup> of Duquesne witness James Karcher explain the results of the study, describe the costs and benefits of the two components of ADMS (Outage Management System – OMS and Distribution Management System – DMS) and set forth Duquesne's reasoning for the position that ADMS is cost-justified. Very specifically, Duquesne estimates the cost of implementing the OMS portion of ADMS to be between \$42.2 and \$51.6 million. Duquesne St. No. 1 at 11. The Company projects that it will experience operational efficiency benefits of \$300,000 per year once the OMS is fully implemented. *Id.* at 7. In addition, based on the study, Duquesne expects that having an OMS in place will result in a five minute reduction in customer average outage duration time on an annual basis. Duquesne estimates that this reduction will lower its

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<sup>7</sup> Duquesne retained the consulting firm DNV GL to conduct the Phase I study. The completed study consisted of four reports: (1) Current State Analysis; (2) Future State Analysis; (3) Outage Management Roadmap and Implementation Plan and (4) Cost Benefit Analysis.

<sup>8</sup> Duquesne Light Statements No. 2 and 2A.

<sup>9</sup> Tr. at 63-124.

customers' outage-related costs by approximately \$6 million per year.<sup>10</sup> Duquesne St. No. 2 at 7. Duquesne refers to these cost savings as “societal benefits.” *Id.* at 10.

Regarding the DMS portion of the ADMS, the Company estimates the cost of the system to be between \$3.8 and \$4.4 million. *Id.* at 14. The Phase I study evaluated two aspects of DMS – Volt/VAR optimization and transformer loading analysis. *Id.* at 12. In terms of benefits, the Volt/VAR optimization feature is expected to yield an electric system benefit of \$2 million per year in capacity demand reduction once the DMS is fully implemented.<sup>11</sup> *Id.* at 13. The transformer loading analysis feature is estimated to achieve an annual benefit of \$285,000 in asset management and overtime savings once fully implemented. *Id.* This yields total benefits from the DMS of \$2.285 million per year.

In evaluating the costs and benefits of the entire ADMS project, Duquesne combined the estimated costs of the OMS (\$42.2 - \$51.6 million) with those of the DMS (\$3.8 - \$4.4 million) to reach a total of \$46 - \$56 million. Duquesne St. No. 2 at 15. Duquesne also pointed out that in addition to these costs, it will incur ongoing operating costs of \$5 million to \$6 million during the implementation phase of the project. *Id.* at 15-16. Over the projected 20-year life of the ADMS system, Duquesne expects the benefits to total \$46.3 million (\$300,000 x 20 years of OMS benefits plus \$2.285 million x 20 years of DMS benefits). *Id.* at 16. It should be noted that the amount of the benefits exceeds the *lower end* of the total cost estimate by only \$300,000, and only if the \$5 million to \$6 million of ongoing operating costs associated with the implementation phase are not considered. Duquesne, however, argues that the societal benefits

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<sup>10</sup> Duquesne St. No 2-R identifies these customer outage-related costs as, among others, lost production for industrial customers, lost sales for commercial customers, and food spoilage and alternative housing costs for residential customers. Duquesne St. No. 2-R at 4.

<sup>11</sup> The capacity demand reduction savings would flow directly to customers in the form of lower bills for the generation portion of their electric bills. Duquesne St. No. 2 at 13.

of \$6 million per year that were identified in the Phase I study, when combined with the other benefits, renders the ADMS project cost-effective. *Id.*; Tr. at 105-121.

OCA witness Sherwood took issue with the Company's conclusion. She identified three concerns with Duquesne's analysis. First, she questioned whether the benefits (other than societal) would actually exceed the ADMS' costs prior to the end of the project life. Second, she identified certain ongoing Operating and Maintenance (O&M) costs which should have been included in Duquesne's analysis. Third, she expressed concern that the \$6 million in annual societal benefits are too uncertain to be utilized as part of the cost-benefit analysis. OCA St. No. 1 at 11.

Regarding Ms. Sherwood's first concern, she questioned whether the ADMS project would indeed be completed at the low end of its projected cost range (thereby allowing projected benefits to exceed the projected costs). She pointed to a statement in Duquesne witness Karcher's Direct Testimony noting that the estimate for OMS was given in a range due to uncertainty about the cost at the current stage of development and that greater accuracy won't be achieved until the project is competitively bid. *Id.*

Ms. Sherwood's second concern involved accounting for ongoing project O&M costs as part the cost-benefit analysis. Duquesne did not include these costs; rather it compared implementation costs only (not ongoing costs) to benefits. Duquesne St. No. 2-R at 8. Ms. Sherwood explained why she thought inclusion of these costs was necessary:

The *Implementation Order* requires that "the deployment and operating costs to be presented shall include a breakdown of all incremental and any associated potential operational and maintenance cost savings for each functionality and configuration." The cost-benefit analysis should reflect the incremental ongoing O&M costs that will be incurred during the period in which benefits are derived; otherwise, the cost-benefit analysis is not accounting for the required incremental costs to achieve those benefits

and does not follow the requirements of the *Implementation Order*. The Company is projecting that the ADMS will generate enough benefits to surpass costs by the conclusion of 2039; however, this comparison excludes costs that will be incurred through 2039, but are beyond the implementation period.

OCA St. No. 1 at 12. (footnotes omitted)

Ms. Sherwood observed that in discovery responses, Duquesne projected ongoing incremental O&M costs for different components of the ADMS. In one instance incremental costs were projected through 2023 and in another, they were projected through 2024. *Id.* at 12-13; *also Id.* Exh. SLS-2. Relying on the Company's characterization of these costs as ongoing, Ms. Sherwood developed a projection of these costs going forward through the life of the ADMS project, to 2039. As part of her projection, she applied a 3 percent escalation factor to the labor portion of these incremental costs through the period. Beginning with 2024 (the last year for which the Company provided data), the incremental O&M costs were \$3.385 million for the year.<sup>12</sup> By 2039, the annual cost reaches \$4.582 million. For the period 2024-2039, the total incremental O&M costs, according to Ms. Sherwood's projection, equal \$78.455 million. *Id.* at 13; *also Id.* Exh. SLS-2. As mentioned, Duquesne did not take these costs into account as part of its cost-benefit analysis. Nor did it include the \$5 million to \$6 million of incremental O&M costs related to the implementation phase of the project (between 2017 and 2020).<sup>13</sup>

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<sup>12</sup> In her Direct Testimony, Ms. Sherwood noted that this estimate was a "low end estimate." She stated:

...I have provided a low end estimate of the projected lifetime incremental O&M costs. I use the term "low end estimate," as it is likely that costly software upgrades and equipment replacement will be required during the life of the project. The Company indicated in response to OCA Interrogatory I-8 that in relation to the ADMS, "...major software upgrades are expected every 2 years with minor updates semi-annually. Hardware refresh is expected to occur every 3 years."

OCA St. No. 1 at 13.

<sup>13</sup> Ms. Sherwood's analysis included these implementation phase O&M costs.

When the ongoing incremental O&M costs are included in the analysis, the cost for the ADMS project rises from the \$46 million to \$56 million estimated by the Company, to nearly \$125 million over the project life. *Id.* at 14; *also Id.* Exh. SLS-3. Comparing this to the projected (non-societal) benefits of \$46.3 million, one can see that the cost of the project substantially outstrips the objective benefits the Company has identified.<sup>14</sup>

This brings us to Ms. Sherwood's third concern with Duquesne's cost-benefit analysis – the question of whether the societal benefits should be relied upon at all to justify the costs of the ADMS project. Ms. Sherwood testified that, “unless the [societal benefits] can be reliably quantified, they should not be used as part of the cost-benefit analysis.” *Id.* at 14. Ms. Sherwood elaborated on this during her testimony at the Further Evidentiary Hearing held on June 30, 2016. Under questioning from Judge Dunderdale, Ms. Sherwood testified as follows:

JUDGE DUNDERDALE: No, that's fine. When a utility is looking into the cost effectiveness of a project or a program which is basically to involve a large up-front investment and then, of course, the utility is to get reimbursed or paid back for that cost, when I'm looking at cost effectiveness in that realm of utilities, what, in general, are the benefits that you would be looking for that you actually would look for; regardless of what the company is telling you, what benefits of that program are you looking for when you are trying to determine cost effectiveness?

[MS. SHERWOOD]: I'm looking for operational improvements, whether that be from the call center or truck rolls. I'm looking for improvements on the customer side. That might be through communications....

JUDGE DUNDERDALE: So, you are looking for how this program benefits how the operations run on the utility side, and then how the customers experience their communications with the company, as well as the service the company is providing?

[MS. SHERWOOD]: That's correct. Those can be quantified. If call times were X or something, or the wait, or sometimes call centers are overloaded, so whether they are actually able to get through to the line.

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<sup>14</sup> It should be noted that according to Ms. Sherwood's analysis, even if the \$6 million of societal benefits are utilized in the evaluation, benefits will not exceed costs until the year 2034.

Those are things that we are looking at. Sometimes, it's reliability. It depends on the project type.

Tr. at 171-172.

Implicit in Ms. Sherwood's observation that determinations of cost-effectiveness should be based on quantifiable operational improvements is recognition that the savings produced by these improvements offset costs that are incorporated in rates in the first instance. This is true of the hard benefits that Duquesne cites for both the OMS and DMS. The \$2.285 million in annual savings related to the OMS and the \$300,000 in annual savings related to the DMS reflect reductions in costs that will flow to the customer either directly or indirectly through the rates they pay Duquesne.

The same cannot be said for the societal benefits Duquesne cites. These savings exist outside of the ratemaking function. Costs related to lost production time, food spoilage, hotel stays during outages are not things that all customers pay for in their rates. As non-system benefits, these cost savings should not be included as part of the cost-effectiveness evaluation conducted by the Commission.

If anything, they should be considered as added benefits, not as a formal part of the cost-benefit analysis. OCA witness Sherwood testified to this at the June 30<sup>th</sup> Further Evidentiary Hearing:

[MS. SHERWOOD]: -- would be because societal benefit, when evaluating cost effectiveness, are more of an adder, and when I have worked on other cases, it was not used as part of the evaluation of the cost-benefit analysis...

JUDGE DUNDERDALE: You characterized it as an adder?

[MS. SHERWOOD]: An added benefit.

JUDGE DUNDERDALE: What does that mean?

[MS. SHERWOOD]: An added benefit as a result of the implementation.

JUDGE DUNDERDALE: So, it's like it's going to be the ice cream on the cake, but we are only going to calculate the benefit of the cake?

In other words, it's something added. You are going to get an additional [benefit] and that would be really sweet, it makes things nice, but we really are only going to count on this lower benefit?

[MS. SHERWOOD]: Right, the ones we can quantify as a hard benefit.

Tr. at 159-160.

The OCA would further note that even in the Phase I study itself, reliable quantification of these benefits is subject to question. Specifically, under the heading Methodology and Approach in the Cost Benefit portion of the study, it states as follows:

In addition to the hard benefits that will be explained in sections 4.1 and 4.3 of this study, the ADMS implementation has the potential to deliver soft benefits that are *difficult to estimate in value*. The soft benefits considered were:

Duquesne St. No. 2A, JTK Exh. 4 at 1. (emphasis added) The study goes on to list a variety of soft benefits, but relevant here is the fact that the list includes the following:

Reduced societal impacts in the amount of approximately \$6 million per year from reduced costs of outages to Duquesne Light consumers. Some examples of societal impacts are lost production time and food spoilage due to loss of electric power.

*Id.*, JTK Exh. 4 at 2. Hence, even the Phase I study recognizes the \$6 million of societal benefits as being “soft” and difficult to quantify.

In rebuttal testimony, Duquesne witness Karcher explained that the \$6 million figure was derived from an analysis performed by the Company's consultant, DNV GL, and that

DNV GL employed proprietary formulas to calculate the benefit figure. Duquesne St. No. 2-R at 4-5. Because the formulas used by the consultant could not be disclosed, Duquesne presented an alternative estimate of societal benefits based on a publicly available model for calculating benefits of reduced outage time. This model is called the Interruption Cost Estimate (ICE) Calculator, developed for the U.S. Department of Energy. *Id.* at 6-7. Using the ICE calculator, Duquesne estimated societal benefits of \$4.2 million three years after OMS implementation, rising to \$5.7 million at the end of 19 years, assuming a 2% annual rate of inflation. *Id.* at 7.

In her Surrebuttal Testimony, OCA witness Sherwood commented on what she viewed as limitations of the ICE model. She stated:

Using the inputs, the model relies upon data sets from customer value of service studies conducted by ten utilities from 1989 through 2012... In particular, the model does not contain any surveys from customers in the Mid-Atlantic and Northeast regions, which is the location of the service territory. The model recognizes that this issue is “particularly troublesome because of the unique population density and economic intensity of the region.”<sup>15</sup> In addition, the surveys tend to focus on time periods during which interruptions were having an impact on the region studied and more than half of the surveys are from over 15 years ago. Finally, the model is designed to estimate the interruption costs for outages that last up to 16 hours and should not be used for major outages. These limitations of the model are concerning, as the assumptions are used to calculate more than half of the benefits expected for the ADMS project.

OCA St. 1-S at 2.

In rejoinder testimony, Mr. Karcher acknowledged ICE’s limitations, indicated that Duquesne offered the ICE calculations as a way of demonstrating “that the estimated societal benefits calculated by the proprietary DNV GL model are reasonable,” and, in light of

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<sup>15</sup> Michael J. Sullivan, Josh Schellenberg, and Marshall Blundell, *Updated Value of Service Reliability Estimates for Electric Utility Customers in the United States*, Ernest Orlando Lawrence Berkeley National Laboratory, January 2015, 48.

ICE's shortcomings, recommended that the Commission look to the "more sophisticated" DNV GL model. Duquesne St. No. 2-RJ at 2.

The OCA views this differently. Rather than serving as a "check" on the results of the Phase I study's calculation of societal benefits, the OCA submits that the limitations of the ICE model serve to reinforce the fact that the reliable calculation of societal benefits is quite difficult to accomplish. Accordingly, in the absence of an ability to reliably quantify these benefits, the OCA submits that they should be excluded from the cost-benefit evaluation. The OCA further notes that the Commission has traditionally not recognized claims of societal benefits in other contexts, such as the analysis of cost effectiveness of energy efficiency programs.<sup>16</sup> *See, Energy Efficiency and Conservation Program*, Docket No. M-2008-2069887 (Order entered January 16, 2009).

As noted above, without inclusion of the societal benefits, the costs of ADMS far exceed the benefits it will produce. As such, the OCA submits that the ADMS project is clearly a cost-ineffective means of achieving the smart meter capabilities of voltage monitoring and outage communication and their requirement should be waived implementation should be waived by the Commission.

## 2. ADMS Cost Recovery Issues

Nevertheless, if Duquesne proceeds with the ADMS project, it proposes to recover the costs of the project through its existing Smart Meter Charge. Duquesne St. No. 3 at 5-6. The OCA would note that Duquesne does not require Commission approval to upgrade its outage management system just as it did not require prior Commission approval to upgrade its Customer Care and Billing System. These types of systems are part of a utility's normal

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<sup>16</sup> Ms. Sherwood refers to this in her Surrebuttal Testimony, OCA St. 1-S at 5.

business operations and upgrading or replacing them is something that occurs in the regular course of doing business, particularly in the face of technological advancements. That said, however, Duquesne *would* need to meet the statutory requirements for recovery through the Smart Meter Charge, a special recovery mechanism established as part of Act 129, if it seeks to recover the costs of the upgrade through that charge. As set forth below, Duquesne has not met this burden.

In both the First and Second Post-Hearing Orders, Judge Dunderdale directed Duquesne to respond to four questions. The first two of those questions were:

- 1) How much of the reasonable and prudent costs of the installation of the OMS and ADMS relate to the voltage monitoring and outage communications capabilities and how much are related to providing the multitude of other functionalities?
- 2) How much of those costs should be recovered through the SMC?

Duquesne's response to the first question was that all of the costs of the ADMS relate to voltage monitoring and outage communication capabilities. Duquesne St. No. 2C at 5; Tr. at 91-92. The Company's response to the second question was that "all of the reasonable and prudent ADMS implementation costs related to voltage monitoring and outage communication capabilities should be recovered through the SMC." *Id.*; *see also* Tr. at 96-98.

Duquesne's position on these points ignores the many functionalities beyond voltage monitoring and outage communication that are provided by ADMS. Additionally, as Judge Dunderdale's questioning shows, the outage system would be upgraded in the normal course of business. For example, Duquesne witness Karcher had the following exchange with the Judge:

JUDGE DUNDERDALE: What if Duquesne Light did not have OMS and DMS as proposed and its roll-out for Smart Meters continued?

[MR. KARCHER]: We would continue to operate through the [Outage Analysis System (OAS)] today. Eventually that system would need to be upgraded somehow. It's pretty old.

JUDGE DUNDERDALE: How old is OAS?

[MR. KARCHER]: I believe that was put in in the 1996 era, but...

JUDGE DUNDERDALE: About that?

[MR. KARCHER]: About that, yeah.

Tr. at 98. This exchange demonstrates that Duquesne has reason to install OMS that is completely independent of the roll-out of smart meters.

Judge Dunderdale had a later exchange with Duquesne witness Pfrommer regarding the relationship between the OAS and OMS:

JUDGE DUNDERDALE: So, a portion of the OMS is just the cost of doing business as a large EDC, but you are testifying that there's also a portion of it that is not, that it's something in addition to providing more than what it would be just to provide safe and reliable service?

[MR. PFROMMER]: It's providing more than we provide today.

JUDGE DUNDERDALE: Right. What you are providing today is what is necessary to provide safe and reliable service, the basic requirement just to do business?

[MR. PFROMMER]: Yes.

JUDGE DUNDERDALE: That's what OAS does, right?

[MR. PFROMMER]: Today; the OMS will allow us to provide better service.

JUDGE DUNDERDALE: Okay, so it provides what OAS does, and...

[MR. PFROMMER]: And more. I'm sorry. Yes.

JUDGE DUNDERDALE: So, some of the answer to my question would be, yes, some of it is just the cost of doing business as an EDC, and some of it is in addition to?

[MR. PFROMMER]: Yes.

JUDGE DUNDERDALE: Because you can still do outage monitoring currently; is that correct?

[MR. PFROMMER]: Yes.

JUDGE DUNDERDALE: Just not as fast and perhaps not as –

[MR. PFROMMER]: Accurately.

JUDGE DUNDERDALE: -- efficiently, right?

[MR. PFROMMER]: Efficiently, right.

Tr. at 145-146.<sup>17</sup>

Again, the inference here is that an upgrade from the OAS to a more efficient and sophisticated OMS is simply part of the cost of doing business as an EDC rendering adequate, safe and reliable service as required under the Public Utility Code.

Another important exchange occurred between the Judge and Mr. Karcher, one that indicated that the OMS has value and utility quite apart from being connected to smart meters:

JUDGE DUNDERDALE: If I'm in a neighborhood that doesn't have Smart Meters, how does OMS benefit that neighborhood?

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<sup>17</sup> A similar exchange occurred between Judge Dunderdale and Mr. Pfrommer with respect to the DMS portion of the ADMS. See, Tr. 146-148. A key portion of that exchange was

JUDGE DUNDERDALE: So, some portion of the DMS is just the cost of doing business, and some portion of the DMS cost is going to be something that we are now adding?

[MR. PFROMMER]: I agree with that.

Tr. at 148

[MR. KARCHER]: Well, one of the benefits of having the OMS – in order to put OMS in, we have to build an electrical model first. Today we don't have an electrical model of our system.

Like I said earlier, we know where our customers are and we know where our circuits are, but we don't have an exact connection between them. Many of our streets have more than one circuit running down them, several circuits that customers can be connected to. So, just by the method today, it's not exact where we know the customers are out of power.

However, with OMS, they would be connected to the model. Even with customers calling in, we would have better reporting and more exact, precise numbers and knowledge of the outage.

Tr. at 75.

These points contribute to a conclusion that some portion, perhaps a large portion, of ADMS costs are unrelated to the costs of establishing the voltage monitoring and outage communication capabilities recommended by the Commission in its Implementation Order and indeed, as set forth above, the ADMS is a cost-ineffective means of achieving these additional functionalities.<sup>18</sup> As was established by the questioning of Judge Dunderdale, these are costs incurred in the normal course of business to provide safe, adequate and reliable service. Tr. at 144-148.

The OCA submits that what is being proposed by Duquesne in this proceeding is essentially an attempt to bootstrap normal operating investment and expenses incurred in the ordinary course of business and recovered through base rates into smart meter costs recoverable through a special mechanism that accelerates recovery and limits opportunity to explore issues of reasonableness and prudence. It is merely fortuity that the Smart Meter Charge is available at the time Duquesne proposes to make needed upgrades to its systems.

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<sup>18</sup> Duquesne did not provide a breakdown of ADMS costs that are smart meter-related and those that are not. As indicated, above, in response to Judge Dunderdale's first question in the Post-Hearing Orders, the Company asserted that all of the costs of ADMS are smart-meter related. Duquesne St. No. 2C at 5; Tr. at 91-92.

Public Utility Code Section 2807(f)(7) addresses the recovery of costs of providing smart meter technology. The definition of “smart meter technology” is provided in 2807(g). It states, in part:

...the term “smart meter technology” means technology, including metering technology and network communications technology capable of bidirectional communication, that records electricity usage on at least an hourly basis, *including related distribution system upgrades to enable the technology.*

66 Pa. C.S. §2807(g). (emphasis added)

Under this definition, only the costs of distribution system upgrades that *enable* metering and network communication technology can be recovered through the Smart Meter Charge. As Duquesne’s testimony at the Further Evidentiary Hearing establishes, the ADMS is not needed to enable the smart meters. The smart meters are capable of working with the OAS. Tr. at 98. Rather it is a cost of doing business, that is, a cost an EDC must incur to provide safe, reliable and adequate service.

As questioning by ALJ Dunderdale demonstrates, the ADMS should not be recovered through the SMC. Rather, if Duquesne goes forward with this project, it should seek recovery in a base rate proceeding.

OCA witness Sherwood further explained the OCA’s reasoning as follows:

The Company is already receiving revenues in base rates to pay for outage and distribution management functions. This is the standard practice for recovering these costs, and any costs associated with the upgrades to these systems should remain in base rates. Additionally, any operating efficiencies and associated cost reductions that accrue as a result of the investment in the ADMS will eventually flow back to customers through base rates.

Additionally, the soft benefits have not been quantified nor has the longevity of those soft benefits been quantified. Recovering the costs of the ADMS project as part of the base rates will allow for the forecasted

soft benefits to be captured through base rates, over the same time period that the costs of the project are being collected through base rates.

OCA St. No. 1 at 16. Indeed, the type of costs being incurred for ADMS are the type of normal, ongoing capital and operating expenses that are traditionally recovered through base rates.<sup>19</sup> Moreover, as discussed above, if a determination of cost-effectiveness is made in this proceeding, it can only be made by incorporating the soft and difficult to quantify societal benefits into the analysis. As Ms. Sherwood points out, given the uncertainty of the societal benefits, the matching over time (via base rates) of the recovery of costs with the occurrence of the benefits, would provide a more appropriate means of recovering ADMS costs given the specific circumstances that apply here. Moreover, as indicated in Ms. Sherwood's Surrebuttal Testimony, the societal benefits appear to inure overwhelmingly to the commercial and industrial classes. OCA St. No. 1-S at 3-4. This raises questions of proper allocation of costs, which can be better addressed in base rates than through the SMC.

Accordingly, the OCA submits that in the event that Duquesne goes forward with implementing ADMS, it should seek recovery of all of the costs of the project through base rates, not the SMC.

### C. RECOVERY OF BILL READY COSTS

As noted earlier, Duquesne's modified Smart Meter Plan seeks approval of an additional \$54 million in costs related to smart meters and smart meter technology that are completely separate from the ADMS project. Included in the \$54 million is \$7 million to implement Bill Ready functionality. Duquesne St. No. 1 at 6. Duquesne proposes to recover these costs from all customers through the SMC.

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<sup>19</sup> See, e.g., Petition of Duquesne Light Company for Authorization to Defer Expenses for Accounting Purposes Only, Docket No. P-2012-2333760 (Order entered April 17, 2013).

The essence of Bill Ready billing is that it enables EGSs to take interval data from customers' smart meters and calculate the generation and transmission charges for special pricing programs that they offer (such as Time Of Use pricing) and then forward those charges to the EDC for inclusion on the EDC bill rendered to the customer. This contrasts with Rate Ready billing under which EGSs provide their rates to the EDC and the EDC calculates customer bills using the EGS' rate multiplied by the monthly consumption. Rate Ready billing offers EGSs no opportunity to make special pricing options available to their customers. At present, Duquesne offers only Rate Ready billing. OCA St. No. 1 at 18. It is clear that being able to provide Bill Ready billing will facilitate the ability of EGSs operating in the Duquesne territory to offer a greater range of products to their customers. Based on this recognition that EGSs are the principal beneficiaries of this functionality, OCA witness Sherwood recommended that the costs of implementing Bill Ready billing be recovered not from customers, but from the EGSs. *Id.*

Seeking recovery of these costs from all Duquesne customers ignores the fact that not all customers shop for their generation supply. Further, not all customers who do shop will avail themselves of the special rates offered by the EGS. Many will prefer to remain on fixed rates that don't vary by time of use. A substantial portion of Duquesne's customer base will derive no benefit from the Bill Ready functionality.

The OCA submits that it is a matter of fundamental fairness in ratemaking that these costs should be borne by the entities that are the predominant beneficiaries of this capability.

#### D. INCREMENTAL AMI PROJECT COSTS

The OCA's position with respect to the \$54 million increase in AMI-related costs (unrelated to ADMS) is that with the exception of the \$7 million earmarked for the Bill Ready

functionality, the increase should be approved by the Commission and recovery permitted through the SMC. OCA St. No. 1 at 16. As noted earlier, these costs will enable Duquesne to complete implementation of the original portion of its smart meter (AMI) technology program. The Direct Testimony of Duquesne witness Brian J. Novicki attributes the increase in AMI-related costs to four areas: additional hardware and software costs, higher than estimated costs for a system integrator vendor, increased internal labor costs and higher than budgeted costs for certain outside services. Duquesne St. No. 1 at 7-8.

#### E. MISCELLANEOUS ISSUES

One aspect of the previously mentioned ICE model for calculating societal benefits resulting from the reduction in duration of electrical outages is that ICE breaks down the customer benefits by rate class. Duquesne's presentation of the ICE results in connection with implementation of ADMS enabled OCA witness Sherwood to make observations about the wide disparity between the costs and benefits of ADMS as it relates to the residential class. Specifically, Ms. Sherwood testified:

There appears to be an imbalance between the cost recovery of [ADMS] and the expected benefits by rate class. As proposed by the Company, at the conclusion of the ADMS project life, more than half of the benefits needed to offset the cost of the ADMS will be from societal benefits. According to DLC's ICE calculator results, only 1.5 percent of the societal benefits will be derived by the residential class.<sup>20</sup> Conversely, based upon the Company's proposed method of cost recovery for the ADMS project, the residential class will be allocated approximately 90 percent of the ADMS costs. Due to the low societal benefits projected for residential customers, the project does not appear to be cost-effective for residential customers.

OCA St. No. 1-S at 4.

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<sup>20</sup> Although the results of the ICE Calculator are not equivalent to the Company's study, the ICE Calculator's results are representative of the how the benefits will be allocated by customer class.

While this cost-benefit disparity for the residential class is indeed striking, the OCA does not raise this issue for the purpose of reopening the question of overall cost allocation vis-à-vis smart meter costs in this proceeding. Rather, the OCA cites this issue as a further example of the cost-ineffectiveness of the ADMS project and further reason that the Commission should not approve the project.

Moreover, the existence of this disparity also lends support to the OCA's position that recovery of these costs should be sought in a base rate proceeding, where the costs and benefits can be thoroughly examined and issues of cost allocation fully addressed. If, however, the Commission authorizes Duquesne to recover ADMS costs through the SMC, the OCA submits that cost allocation under the SMC may need to be addressed to better match costs with benefits.

## VII. CONCLUSION

The OCA submits that Duquesne Light Company has failed to meet its burden of proving that the ADMS project it proposes to implement is cost-effective. In its Implementation Order, the Commission reserved the right to waive the requirement for any of the nine additional smart meter capabilities it imposed if that capability was shown to be not cost-effective. In this proceeding, the ADMS project (proposed as a means of meeting two of the nine additional capabilities) has been shown to be demonstrably cost-ineffective. Unless the Company can return with a cost-effective alternative proposal for implementing the outage communication and voltage monitoring capabilities, the Commission should waive these requirements for Duquesne.

Should the Commission not waive these requirements or should the Company determine to move forward with the ADMS project, the OCA submits that the proper ratemaking treatment is for Duquesne to seek recovery of the project's costs through a base rate case and not the Company's Smart Meter Charge. In a base rate case, all issues of prudence, reasonableness and cost allocation of the project can be examined.

Finally, the OCA submits that the costs of Bill Ready functionality are properly recovered from Electric Generation Suppliers who are the overwhelming beneficiaries of this capability.

Respectfully Submitted,

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## APPENDIX A

### Proposed Findings of Fact, Conclusions of Law and Ordering Paragraphs

#### Findings of Fact

As the party with the burden of proof, Duquesne will propose numerous Findings of Fact, many of which will be related to the aspects of its Petition for Approval to Modify its Smart Meter Plan which are not in dispute in this brief. The OCA, for its part, limits its proposals to the contested portion of the proceeding.

1. The \$6 million of societal benefits identified by Duquesne are too uncertain and speculative to be relied upon for determining the cost-effectiveness of the ADMS project.
2. The ADMS project is not cost-effective as the reliably quantifiable benefits associated with it are substantially outstripped by the project's costs.

#### Conclusions of Law

1. Pursuant to the Commission's Smart Meter Implementation Order, the finding of cost-ineffectiveness of the ADMS project should trigger Commission consideration of whether to waive for Duquesne Light, the Commission-imposed smart meter capabilities related to outage communication and voltage control.
2. Imposition of the costs of Bill Ready billing on Duquesne's customers would be unjust and unreasonable as the benefits they receive from this capability are limited.

Alternatively, if Duquesne goes forward with the ADMS project, the OCA proposes the following conclusion of law:

1. The costs of implementing ADMS are costs incurred in the ordinary course of business for a public utility and are part of providing safe, reliable and adequate service to the public. As such, these costs should be recovered through a base rate proceeding.

CERTIFICATE OF SERVICE

Petition of Duquesne Light Company for :  
Approval to Modify its Smart Meter : Docket No. P-2015-2497267  
Procurement and Installation Plan :

I hereby certify that I have this day served a true copy of the Office of Consumer Advocate's Revised Main Brief upon parties of record in this proceeding in accordance with the requirements of 52 Pa. Code §1.54 (relating to service by a participant), in the manner and upon the persons listed below:

Dated this 20<sup>th</sup> day of July 2016.

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