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Gary A. Jack
Assistant General Counsel

August 12, 2011

VIA E-FILING

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

**Re: Petition of Duquesne Light Company for Approval of its
Energy Efficiency and Conservation and Demand Response Plan
(Petition for Approval of Modifications to its Demand
Response Programs)
Docket No. M-2009-2093217**

Dear Secretary Chiavetta:

Please find enclosed for filing Duquesne Light Company's Direct Testimony in the above-referenced proceeding.

If you have any questions, please do not hesitate to contact me.

Sincerely yours,



Gary A. Jack

Enclosures

cc: All Parties listed
on the Certificate of Service

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**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Docket No. M-2009-2093217

Duquesne Light Company

Statement No. 1

Direct Testimony of David Defide

August 12, 2011

1 **Q. Please state your name and business address.**

2 A. My name is Dave Defide. My business address is 411 7th Avenue, Pittsburgh, PA
3 15219.

4
5 **Q. By whom are you employed and in what capacity?**

6 A. I am Manager of Energy Efficiency and Demand Response Programs for
7 Duquesne Light Company (“DLC,” “Duquesne” or “Company”).

8
9 **Q. Please state your educational and professional qualifications.**

10 A. I received a Bachelor of Arts in Administration and Management in 1994 from
11 LaRoche College. In 1997, I received a Master of Business Administration from
12 Robert Morris University. I have been working for the Company since August
13 2009 as the Manager of Energy Efficiency and Demand Response Programs and I
14 manage a staff of three professionals. Prior to my work with Duquesne, I was the
15 Chief Finance/Operating Officer for Conservation Consultants, Inc. for ten years.
16 Prior to working for Conservation Consultants, I worked as the Finance Director
17 and Special Assistant to the Executive Director for the Housing Authority City of
18 Pittsburgh. Prior to this position, I worked for National City Bank as an
19 Operations Supervisor.

20

21 **Q. What is the purpose of your testimony?**

1 A. The purpose of my testimony is to provide background information on
2 Duquesne's Energy Efficiency and Conservation and Demand Response Plan
3 ("EE&C Plan") and the Company's obligations under Act 129 of 2008 ("Act
4 129"). Additionally, I will explain the current status of our EE&C Plan and why
5 we are seeking certain modifications to our demand response ("DR") programs. I
6 also will provide information regarding the other witnesses in this proceeding
7 including their areas of expertise.

8

9 **Q. Are you sponsoring any exhibits to the filing?**

10 A. Yes. I am sponsoring the following Exhibits:

11 Exhibit DWD-1 DLC Compliance Requirements -- *Energy Consumption and*
12 *Peak Demand Reduction Targets Order*, Docket No. M-2008-2069887 (March
13 30, 2009). This exhibit shows Duquesne's demand reduction target of 113 MW.

14 DWD-2 Proposed Energy Efficiency Programs for the Transfer of Demand
15 Response Funding. This exhibit shows which energy efficiency programs will
16 receive funds from the demand response budgets and describes the programs.

17

18 **Q. Please describe the other witnesses who will be testifying on behalf of**
19 **Duquesne Light.**

20 A. Tom Crooks, Director of Energy Efficiency at MCR Performance Solutions, will
21 address the Total Resource Cost ("TRC") calculations for the Company's demand
22 response programs. Larry Barrett, President of Barrett Consulting, will address
23 the demand response programs, including the Residential and Small/Midsize
24 commercial and industrial ("C&I") air conditioner cycling program, the Large

1 C&I load curtailment program and why and how the Company plans to expand
2 the Large C&I DR program.

3

4 **Q. Please describe your current responsibilities as the Manager of Energy
5 Efficiency and Demand Response.**

6 A. As the Manager for Energy Efficiency and Demand Response Programs, I am
7 responsible for overseeing the implementation of the Company's EE&C Plan and
8 ensuring that Duquesne is in compliance with the required reductions mandated
9 under Act 129.

10

11 **Q. What are Duquesne's Act 129 demand reduction requirements?**

12 A. Duquesne's overall demand reduction goal to be met is 113 megawatts ("MW") in
13 the summer (June-September) of 2012. See Exhibit DWD-1, which is the PUC
14 order setting the goal.

15

16 **Q. How did Duquesne propose to achieve the demand reduction requirements in
17 its original EE&C filing?**

18 A. When Duquesne filed its EE&C Plan on June 30, 2009, it projected a total of 199
19 MW of demand reductions in order to create a buffer over the required goal of
20 113 MW. Duquesne projected to achieve 37 MW from demand response
21 programs and 162 MW demand reductions from the energy efficiency programs.
22 Of the projected 37 MW from demand response programs, approximately 26.2
23 MW were projected to come from the Residential and Small/Midsize C&I DR

1 program and approximately 10.8 MW were projected to come from the Large
2 C&I DR program.

3
4 **Q. Please describe the original EE&C Plan's demand response programs.**

5 A. Duquesne proposed and had approved as part of its original EE&C Plan
6 Residential and Small/Midsize C&I DR programs that cycle customer air
7 conditioning units on and off during peak demand periods. Under a 50% load
8 cycling strategy, the programs would not totally interrupt air conditioning during
9 a load cycling period, but rather cycle the units off for 50% of the time the unit
10 would otherwise be expected to operate. Program costs would include marketing
11 and enrolling participants, installing and maintaining switches installed on or near
12 the outdoor condensing unit, operating communication networks to the switches,
13 handling customer service calls and issues, measuring performance, and paying an
14 incentive of \$32 per year per participating air conditioner customer. The
15 residential cycling program proposed the installation of more than 15,000 load
16 cycling switches from 2010 to May 2012 to be installed on air conditioners and
17 possibly electric water heaters. The total budget for this program, including
18 incentives, was \$2,928,071. The Small/Midsize C&I DR program proposed the
19 installation of approximately 4,800 load cycling switches, with a total budget of
20 \$992,200, including incentives. The combined budget for these two DR programs
21 was \$3,920,271.

22 In the Commission-approved EE&C Plan, the Large C&I DR program
23 targeted approximately 50 participants ramping up to the summer of 2012.

1 Participants would curtail their load upon special request and would be paid
2 incentives based on recorded reductions in peak load. The total budget for this
3 program was \$556,656, including incentives. At the time of the filing, the
4 expected MW reduction for this program was 10.8 MW. At the time of the
5 original EE&C Plan, the TRC for the Residential and Small/Midsize C&I DR
6 programs was 1.4, while the TRC for the large C&I DR program was 4.4.

7
8 **Q. Please describe what changed since the original EE&C filing.**

9 A. First, since the time of filing in 2009, Duquesne has gained more experience.
10 Also the rules affecting demand reduction measurement have been
11 clarified/changed. Duquesne now knows that its energy efficiency programs will
12 not produce the results projected for demand reduction. The projected 162 MW is
13 now expected to be only 56 MW. This is due to several reasons. First,
14 commercial and industrial customers have not enrolled and adopted energy
15 efficiency (“EE”) programs to date as quickly as we expected. While the
16 residential customers responded more than Duquesne expected (mainly through
17 the purchase of compact florescent lights (“CFLs”)), the corresponding load
18 reduction of residential CFLs is much lower than that of commercial and
19 industrial EE programs.

20 A second problem is the timing of having to achieve the DR reductions by
21 the summer 2012. That means that the EE programs in the last three quarters of
22 2012 (through May 2013) cannot be counted toward the overall 113 MW demand
23 reduction goal.

1 Also, there have been significant uncertainties about the measurement and
2 verification protocols applicable to demand response programs. Duquesne
3 estimated the amount of demand reduction it could achieve from energy
4 efficiency programs at the time of the filing in June 2009 based upon the
5 established protocols at the time. Measurement of DR reductions had not been
6 finalized by the Commission which has affected Duquesne's original projections.
7 Duquesne made some original estimates on likely DR outcomes that are now too
8 high in light of current protocols.

9
10 **Q. Has the cost effectiveness of the residential DR plan been a factor?**

11 A. Yes, the cost effectiveness of the Residential and Small/Midsize C&I DR
12 programs has deteriorated significantly. Duquesne now only expects to achieve 5
13 MW of peak shaving for a cost of \$3.9 million for these two programs. The TRC
14 has dropped to 0.03 for the programs due to benefits dropping in terms of the
15 expected load reduction per A/C unit and higher than expected costs.

16
17 **Q. What about the expected benefits for the large DR program?**

18 A. While the Residential and Small/Midsize C&I program deteriorated, the Large
19 C&I DR program's anticipated results have improved greatly from the original
20 filing. Duquesne originally expected to achieve only 10.8 MW for the budget
21 amount of \$556,656; now it expects to achieve 40 MW for that same approved
22 budget amount, with a TRC today of 1.37. As a result, Duquesne filed a request

1 with the Commission to modify its current demand response programs to further
2 its ability to meet the overall 113 MW goal.

3

4 **Q. Please summarize the Company's original proposal to modify its current**
5 **demand response programs.**

6 A. Duquesne originally proposed to eliminate the Residential and Small/Midsize
7 C&I air conditioning cycling programs due to a lack of cost effectiveness. The
8 Company proposed to transfer the residential DR program leftover budget to the
9 energy efficiency programs, subject to stakeholder input and a future filing with
10 the Commission for approval. Duquesne also proposed to expand the Large C&I
11 DR program from 10.8 MW to up to 60 MW in order to achieve the statutory
12 reduction targets. Duquesne originally was proposing to shift the freed-up
13 Small/Midsize C&I DR budget into the Large C&I DR program budget in order
14 to achieve the extra MW needed to meet the demand reduction targets.

15

16 **Q. Are you still proposing these changes?**

17 A. The Company realizes that some Residential and Small/Midsize C&I customers
18 may wish to participate in a demand reduction program and the Company's
19 proposal would eliminate a demand reduction program for them. To date,
20 approximately 1,000 residential customers have expressed an interest to
21 participate in the residential air conditioner cycling program. Although we have
22 not received interest from small and midsize C&I customers yet, we will keep
23 the program open to their participation as well and expect some participation from

1 those customers. Additionally, Duquesne also has approximately 115 residential
2 customers enrolled in a prior air conditioner cycling program that it would carry
3 forward into this program as enrollees. Therefore, the Company is revising its
4 proposal to scale back the Residential and Small/Midsize C&I DR program, rather
5 than completely eliminate it. Duquesne acknowledges that there is some value in
6 providing its Residential and Small/Midsize C&I customers with a demand
7 response program option. However, the DR programs should not be funded at the
8 current approved budget levels because of the lack of cost effectiveness.
9 Duquesne's revised proposal seeks Commission approval to modify the scope of
10 these programs by lowering the budget for the Residential and Small/Midsize
11 C&I air conditioner cycling DR program from the current budget levels of
12 \$2,928,071 and \$992,200 respectively to a combined budget of \$1,100,000. The
13 costs of the program will be divided between residential and small & midsize
14 customers for cost recovery purposes based on the actual number of residential
15 customers and small & midsize customers enrolled in the program. Duquesne
16 proposes to transfer the remaining budgeted amounts for these two programs to
17 the Company's Residential and Small/Midsize C&I energy efficiency programs,
18 as described in more detail in Exhibit DWD-2.

19
20 **Q. Please explain how the funding level was determined for the revised small
21 and midsize C&I DR program.**

22 A. The \$1.1 million funding level was determined by reviewing the cost of
23 equipment, installation, software and hosting, call center, operations, and program

1 management for those customers expressing an interest in participating plus a
2 buffer of about 300 possible future enrollee customers for a total of about 1,500
3 customers.

4
5 **Q. Would the revised proposal also affect the Large C&I curtailable load**
6 **program?**

7 A. Yes, the Company needs to meet its goals and believes it can acquire up to 60
8 MW of load reduction from large C & I customers at a reasonable cost of the
9 present budget (\$556,656) and additional funding of approximately \$300,000.

10
11 **Q. How would the Company fund the approximate \$300,000 needed to expand**
12 **the Large C&I curtailable load program?**

13 A. As noted in Duquesne's original proposal to change this program in its Petition
14 filed May 9, 2011, the Company estimates that it can achieve a total of 40 MW by
15 spending the full amount of the approved budget of \$556,656 for this program.
16 To assist in obtaining the additional 20 MW of demand reductions, Duquesne
17 proposes to shift approximately \$300,000 from the Company's existing Large
18 C&I energy efficiency programs. This change in budget will not affect the Large
19 C&I customers' rates since the funds are coming from other Large C&I programs,
20 as opposed to its filed amendment which proposed to move funds from a different
21 customer class such as the Small/Midsize C&I. With the shift of funds coming
22 from the same customer class, this will not change the surcharge paid by Large
23 C&I customers.

1 The funds to be derived from Large C&I energy efficiency programs
2 would be based on the type of customer that elects the demand reduction service.
3 For example, if metals industry customers utilize the additional 20 MW demand
4 reduction program, the funds needed would come from the metals energy
5 efficiency program. Or if the customer for a part of the expanded 20 MW DR
6 program was a hospital, the funds for the demand reduction additional program
7 would come from the medical sector of the Large C&I energy efficiency budget.
8 The transfer from energy efficiency to the Large C&I budget would be based on
9 actual costs.

10
11 **Q. Please explain what will happen to the original Residential DR budget.**

12 A. The Company will transfer the difference between the original budgeted amount
13 for its Residential DR programs and the amount to be allocated to residential
14 customers due to their participation in the revised DR program to the Company's
15 Residential EE programs. More specifically, the funds not used for the
16 Residential DR program shall be transferred to the following Residential EE
17 programs/measures: a new Behavioral Modification and Education Program,
18 School Energy Pledge Program, and Residential Rebate Programs. Exhibit DWD-
19 2 provides more detail and sets limits for the amounts to be transferred to each
20 energy efficiency plan. A new program, the Behavioral Modification and
21 Education Program has been successful with PPL Electric and is a new program
22 Duquesne would like to add. Additionally, some funding will be reserved for the

1 upcoming EE stakeholder collaborative to seek their input and preferences before
2 deciding the appropriate funding program.

3
4 **Q. Please explain what will happen to the original Small C&I DR budget.**

5 A. Likewise, Duquesne Light will transfer the difference between the original
6 budgeted amount for its Small/Midsize C&I DR program, less the amount
7 allocated to the Small and Midsize C&I class due to its customer participation, to
8 the Company's Small/Midsize C&I EE programs. More specifically, the
9 budgeted funds not used for the Small and Midsize C&I DR program shall be
10 transferred equally to the following Small/Midsize C&I energy efficiency
11 programs/measures: (a) Small/Medium Commercial Umbrella Program; (b)
12 Small/ Medium Industrial Umbrella Program; (c) Small/Medium
13 Retail/Restaurant Program; (d) Small/Medium Education Program; and (e)
14 Small/Medium Mixed Industry Program. These are all of the Small/Midsize EE
15 programs except for the Small Office program, which is adequately funded.

16
17 **Q. Do you believe the revised proposal will permit Duquesne to achieve the MW
18 reductions it needs to comply with Act 129?**

19 A. Yes. The demand reductions, including those derived from EE programs, have
20 been very difficult to achieve except for those from the Large C&I sector.
21 Without these necessary changes, I feel certain that the Company will fall short of
22 the demand reduction requirements.

23

1

2 **Q. Is there anything else you would like to add?**

3 A. Yes, I would like to emphasize that Duquesne is making these changes in its
4 EE&C Plan not only to meet mandated reduction requirements, but to ensure that
5 it is using ratepayer dollars in the most prudent manner possible. Duquesne
6 believes the proposed changes are in the best interests of its customers. The
7 funding available for EE&C programs is limited, and the proposed changes to the
8 EE&C programs will use these funds in a much more productive manner which
9 will benefit customers by providing them with cost effective opportunities to
10 reduce or shift electricity consumption.

11

12 **Q. Does this complete your direct testimony?**

13 A. Yes.

**PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA. 17105-3265**

Public Meeting held March 26, 2009

Commissioners Present:

James H. Cawley, Chairman
Tyrone J. Christy, Vice Chairman
Robert F. Powelson
Kim Pizzingrilli
Wayne E. Gardner

Energy Consumption and Peak Demand
Reduction Targets

Docket No. M-2008-2069887

ORDER

BY THE COMMISSION:

Governor Edward Rendell signed Act 129 of 2008 (“the Act” or “Act 129”) into law on October 15, 2008. The Act took effect 30 days thereafter on November 14, 2008. Among other things, the Act created an energy efficiency and conservation program, codified in the Pennsylvania Public Utility Code at Sections 2806.1 and 2806.2, 66 Pa. C.S. §§ 2806.1 and 2806.2. Pursuant to 66 Pa. C.S. § 2806.1(a), the Commission, on January 15, 2009, adopted an energy efficiency and conservation program which requires electric distribution companies (EDCs) to adopt and implement cost-effective energy efficiency and conservation plans to reduce energy consumption and peak demand.

The reductions in energy consumption, as set forth under Section 2806.1(c), are as follows:

(1) By May 31, 2011, total annual weather-normalized consumption of the retail customers of each electric distribution company shall be reduced by a minimum of 1%. The 1% load reduction in consumption shall be measured against the electric distribution company's expected load as forecasted by the commission for June 1, 2009, through May 31, 2010, with provisions made for weather adjustments and extraordinary loads that the electric distribution company must serve.

(2) By May 31, 2013, the total annual weather-normalized consumption of the retail customers of each electric distribution company shall be reduced by a minimum of 3%. The 3% load reduction in consumption shall be measured against the electric distribution company's expected load as forecasted by the commission for June 1, 2009, through May 31, 2010, with provisions made for weather adjustments and extraordinary loads that the electric distribution company must serve.

66 Pa.C.S. § 2806.1(c)(1) and (2).

In addition to these energy consumption reduction requirements, Section 2806.1(d) sets forth the following with regard to reductions in electric demand:

(1) By May 31, 2013, the weather-normalized demand of the retail customers of each electric distribution company shall be reduced by a minimum of 4.5% of annual system peak demand in the 100 hours of highest demand. The reduction shall be measured against the electric distribution company's peak demand for June 1, 2007, through May 31, 2008.

66 Pa.C.S. § 2806.1(d)(1).

CONSUMPTION FORECAST

In its Implementation Order adopted January 15, 2009, the Commission stated its intent to complete the consumption forecasts by March 26, 2009. Thus, the Commission directed each EDC to file with the Commission its consumption forecasts by February 9, 2009, along with a listing of assumptions used in calculating the forecast, supporting data, a description of the weather normalization methodology and any other supporting documentation. The Order allowed for comments to be filed concerning the forecasts through February 24, 2009 with reply comments due no later than March 6, 2009. No comments or reply comments were filed.

Table 1 summarizes the EDCs' consumption forecasts, as submitted, and the associated consumption reduction goals of 1% and 3% as required by statute:

Table 1. Energy Consumption Forecasts and Act 129 Mandated Consumption Reductions as Measured in Megawatt-Hours			
EDC	Forecast	1% Reduction	3% Reduction
Duquesne	14,085,512	140,855	422,565
Met-Ed	14,865,036	148,650	445,951
Penelec	14,399,289	143,993	431,979
Penn Power	4,772,937	47,729	143,188
PPL	38,214,368	382,144	1,146,431
PECO	39,386,000	393,860	1,181,580
West Penn	20,938,650	209,387	628,160
Total	146,661,792	1,466,618	4,399,854

We have reviewed the EDCs' consumption forecasts in conjunction with those contained in 2008 Annual Resource Planning Reports and the January 2009 PJM Load Forecast Report and found them comparable.

Upon consideration of the key assumptions used by the EDCs in preparing their individual forecasts of sales to retail customers for the period of June 1, 2009 through May 31, 2010, we find the forecasts to be reasonable and are, therefore, accepted by the Commission for the purpose of developing plans for attaining the 1% and 3% consumption reduction targets.

PEAK DEMAND

The Implementation Order also directed each EDC to file by February 9, 2009, its hourly peak load data for the period June 1, 2007 through May 31, 2008, as well as the average of hourly loads for the 100 hours of highest load for June 1, 2007 through May 31, 2008 and for June 1, 2007 through September 30, 2007. As this peak demand data will be used to establish the target each covered EDC must meet, it is critical that this data also be available early in 2009 so that EDCs can develop a plan to meet their peak demand reduction targets.

The Commission stated on Page 21 of the Implementation Order:

“[It] believes that focusing the EE&C program efforts on the summer peak period will provide the greatest benefit and be more cost effective. Therefore, to determine the targeted peak demand savings each EDC must meet in the year ending May 31, 2013, the Commission adopts the use of four-and-a-half percent of the EDC’s average of the 100 highest peak hours during the summer months of June, July, August and September in 2007.”

Table 2 sets forth the average of the highest 100 hourly loads for June 1, 2007 through September 30, 2007, as filed by the EDCs, and the associated 4.5% reduction targets:

Table 2. Average Historical Peak Loads and Act 129 Mandated Peak Demand Reductions as Measured in Megawatts		
EDC	Load	4.5% Reduction
Duquesne	2,518	113
Met-Ed	2,644	119
Penelec	2,395	108
Penn Power	980	44
PPL	6,592	297
PECO	7,899	355
West Penn	3,496	157
Total	26,524	1,193

We have reviewed the EDCs' historical peak load data in conjunction with the PJM hourly load data and load data set forth in the 2008 Annual Resource Planning Reports and found them comparable.

The EDCs filed their historical system demand associated with retail sales customers and adjusted out any system demand contribution to the peak associated with wholesale load for the period of June 1, 2007 through September 30, 2007. With this adjustment, we find the average historical peak loads and associated reduction levels to be reasonable and are, therefore, accepted by the Commission for the purpose of developing plans for attaining 4.5% demand reduction targets.

CONCLUSION

Pursuant to 66 Pa. C.S. § 2806.1, we find that the energy consumption forecasts and peak load data as submitted by the EDCs are reasonable and appropriate for the development of plans to fulfill the energy and peak load reduction requirements of the Commission's energy efficiency and conservation program established by Commission Order, entered January 16, 2009, at Docket No. M-2008-2069887.

THEREFORE,

IT IS ORDERED:

1. That the energy consumption and peak demand reductions, as set forth above, are approved for the purpose of the development of the EDCs' energy efficiency and conservation plans.

2. That each EDC shall utilize the energy consumption and peak demand reductions, as set forth above, in the development of its energy efficiency and conservation plan required by 66 Pa. C.S. § 2806.1(b).

3. That copies of this Order be served on the Office of Consumer Advocate, Office of Small Business Advocate, Office of Trial Staff, all jurisdictional electric distribution companies and interested parties.

BY THE COMMISSION

James J. McNulty
Secretary

(SEAL)

ORDER ADOPTED: March 26, 2009

ORDER ENTERED: March 30, 2009

Residential Energy Efficiency Programs/Measure(s):

1. Transfer up to \$850,000 from Residential DR to Residential EE for the following new measure under Residential Energy Efficiency.

Duquesne Light will pilot a new Behavioral Modification and Education program to 50,000 high use customers. This pilot will reach the highest 20% of users. These customers will receive Home Energy Reports. The Home Energy Reports will engage customers and motivate them to save energy by translating energy information into relevant, actionable insights. Reports are customized for each household based on user profiles. Customers can evaluate their energy consumption in comparison to that of similar homes. The Behavioral Modification and Education program contractor will select similar homes based on factors such as square footage, dwelling type and geographic considerations. Utilizing the behavior science technique of comparing people to their peers has proven to drive action. The selected contractor will build customer profiles by combining utility data with independently sourced demographic and geographic data. These profiles provide the foundation for targeted, relevant energy efficiency recommendations. This individualized information can maximize the likelihood that customers will take action. Additional options can include web portal access for each household, interactive channel that includes e-mail and text messaging.

2. Transfer up to \$250,000 from Residential DR to Residential EE for the existing Schools Energy Pledge Program,

Duquesne Light proposes to transfer up to \$250,000 to the schools program. This program has been greatly successful to date. The additional funding would allow additional schools to participate in the program. This program provides a conservation kit for each participating family.

3. Transfer up to \$500,000 from Residential DR to Residential Energy Efficiency Rebate Program, to specifically focus on appliance rebates

To build upon the success of the upstream CFL discount program, Duquesne Light proposes to create in store awareness of the residential rebate program that will focus on energy efficient appliances and other energy efficient product rebates. The store network will include over 50 retailers within the service territory that sell eligible rebated products. Store personnel will be trained on the rebate programs and eligibility requirements. These promotions will be highly visible and encourage a broad range of customer participation. Stores will be visited regularly to ensure that trained sales staff is available to answer and promote rebate participation. The cost to implement this awareness is up to \$500,000.

4. Any remaining funds should be subject to stakeholder input and collaborative decision making. If no clear preference is established the remaining fund will be transferred to the residential energy efficiency rebate program to support the additional efforts to increase participation in the rebate program. These funds would be used as incentives for customers.

All existing residential energy efficiency program/measures pass the TRC and are cost effective.

Small/Midsized Energy Efficiency Programs/Measure(s):

1. Transfer from Small/medium C&I DR to Small/medium C&I Energy Efficiency.

Any remaining funds from the small/medium C&I DR program should be transferred equally among the following programs:

- (a) Small/Medium Commercial Umbrella Program
- (b) Small/ Medium Industrial Umbrella Program
- (c) Small/Medium Retail/Restaurant Program
- (d) Small/Medium Education Program
- (e) Small/Medium Mixed Industry Program

All existing commercial and industrial energy efficiency program/measures pass the TRC and are cost effective

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Docket No. M-2009-2093217

**Duquesne Light Company
Statement No. 2**

Direct Testimony of Larry B. Barrett

August 12, 2011

1 **I. INTRODUCTION**

2 **Q. Please state your full name and business address.**

3 A. My name is Larry B. Barrett. My business address is P.O. Box 60429, Colorado Springs,
4 Colorado, 80960.

5
6 **Q. Please state your employer, your title and your responsibilities.**

7 A. I am President of Barrett Consulting Associates, Inc, and for purposes of this engagement
8 I am partnering with MCR Performance Solutions in meeting the objectives of the Act
9 129 filing for Duquesne Light Company (“Duquesne”). In particular, my expertise lies in
10 the development and implementation of demand response (“DR”) programs as described
11 in my subsequent testimony.

12
13 **Q. Please state your educational and professional qualifications.**

14 A. I earned a Bachelor of Arts in economics from Kalamazoo College in 1964 and then a
15 Masters of Arts in natural resources economics from the University of Michigan in 1966.
16 I worked for seven years for the U.S. Government, first as an economist with the air
17 pollution control division of the U.S. Environmental Protection Agency, and then as a
18 budget analyst for the U.S. Office of Management and Budget. As a senior budget
19 analyst I was responsible for budget, legislative and regulatory analysis of energy
20 conservation and renewable energy programs of the U.S. Department of Energy. I
21 worked for Potomac Electric Power Company for 14 years, including the last eleven
22 years as the Manager of the Energy Management Division. I managed as many as 80
23 people responsible for planning, implementing and evaluating over two dozen programs

1 in energy efficiency and demand response, including direct load control programs for
2 residential and curtailable load control programs commercial/industrial accounts. Since
3 1989, I have served as an independent consultant in planning, implementing and
4 evaluating programs for energy efficiency, demand response and renewable energy. I
5 have served over 100 clients including leading research institutes, electric utility trade
6 associations, electric and natural gas utilities for municipal, cooperative and investor
7 owned companies, original equipment manufacturers, energy service companies,
8 curtailment service providers, and government agencies. I have published over 60
9 articles, made over 30 presentations to professional groups, and contributed to three
10 books. I served on the Editorial Board of the Encyclopedia of Energy Engineering and
11 Technology.

12
13 **Q. Have you previously testified as a witness before the Pennsylvania Public Utility**
14 **Commission (“PUC” or “Commission”)?**

15 A. Yes, I previously testified as a witness in an earlier phase of this proceeding. In addition,
16 I have testified before the Maryland Public Service Commission, and the District of
17 Columbia. I have been active in the Association of Energy Services Professionals, the
18 Association of Energy Engineers, the Association of Professional Energy Managers, and
19 the Colorado Renewable Energy Society. I have served as lead author for two policy
20 papers on demand response for the Peak Load Management Alliance.

1 **Q. What is the purpose of your testimony?**

2 A. My testimony will focus on the development and status of the Company's demand
3 response programs in its Energy Efficiency and Conservation and Demand Response
4 Plan ("EE&C Plan"). First, I will discuss the Residential/Small and Midsize Commercial
5 & Industrial ("C&I") air conditioner cycling DR program. Second, I will address the
6 Large C&I curtailable load program.

7

8 **Q. Please describe your involvement in Duquesne's EE&C Plan.**

9 A. I partnered with MCR Performance Solutions to assist Duquesne develop its original
10 EE&C Plan. Part of the portfolio of programs in that EE&C Plan includes DR programs
11 for each customer class: Residential, Small/Midsize C&I, and Large C&I. Additionally,
12 I have been assisting Duquesne with implementing the DR programs, including the
13 request for proposal ("RFP") process and program implementation.

14

15 **Q. Please summarize your testimony?**

16 A. On May 9, 2011, Duquesne filed a petition to modify its EE & C Plan. In particular,
17 Duquesne asked that the Commission approve a proposed change to the direct load
18 control programs to eliminate the Residential and Small/Midsize C&I DR response
19 programs. Duquesne also asked to increase the curtailable load demand response
20 program for Large commercial and industrial customers.

21 However, based upon the Company's review of the Answers filed in response to
22 its Petition, and on discussions with the parties to reach an amicable resolution to this
23 proceeding, Duquesne has revised its proposal. More specifically, Duquesne now

1 proposes to operate the direct load control program for Residential and Small/Midsize
2 commercial and industrial customers, but at a reduced scale. Further, Duquesne proposes
3 to expand the curtailable load program for Large C&I customers from an initial target of
4 10.8 MW to at least 40 MW and the ability to obtain an additional 20 MWs of reductions.
5 Thus, Duquesne revised proposal provides for the potential of 60 MW of enrolled
6 capacity in the Large C&I DR program. Both the direct load control and the curtailable
7 load programs will operate only in the summer of 2012. This is because the systemwide
8 target load reduction for Duquesne is mandated only for the summer of 2012 under Act
9 129.

10
11 **Q. What exhibits are provided?**

12 A. Exhibit LBB – 1 summarizes the direct load control program for Residential and
13 Small/Midsize C&I customers.

14 Exhibit LBB – 2 summarizes the curtailable load program for Large C&I accounts.
15

16 **II. PROPOSED MODIFICATIONS TO THE EE&C PLAN**

17 **A. Duquesne’s Existing Residential and Small/Midsize Demand Response**
18 **Programs**

19 **Q. What are demand response programs?**

20 A. Duquesne is undertaking demand response programs consistent with the definition of the
21 Federal Energy Regulatory Commission (“FERC”) in its Assessment of Demand
22 Response & Advanced Metering: Staff Report of August 2006 as “changes in electric
23 usage by end-use customers from their normal consumption patterns in response to
24 changes in the price of electricity over time, or to incentive payments designed to induce

1 lower electricity use at time of high wholesale prices or when system reliability is
2 jeopardized.”

3
4 **Q. What process was followed in selecting the programs?**

5 A. First, a review was conducted of current and prospective demand response programs.
6 Attention was focused on incentive-based demand response, such as direct load control
7 and curtailable load control. Time-based rates, such as time-of-use pricing and critical
8 peak pricing, were not considered because programs were being developed under other
9 proceedings of the Commission. After examining the general potential for demand
10 response, programs were recommended covering each customer class: Residential,
11 commercial and industrial. The size and scope of the demand response programs took
12 into account a major commitment to energy efficiency and conservation programs in the
13 plan by Duquesne.

14
15 **Q. What demand response programs were proposed?**

16 A. Three demand response programs were proposed. A residential program was proposed to
17 install direct load control switches on air conditioning systems and electric water heaters.
18 The same technology was proposed for Small and medium-sized C&I customers with
19 qualifying air conditioning systems. For Large C&I customers, a curtailable load
20 program would encompass all types of end-uses that are able to contribute to peak load
21 reductions.

22

1 **Q. Please describe Duquesne's Commission-approved residential demand response**
2 **program?**

3 A. The residential direct load control program targets single-family owner-occupied homes
4 in the service territory of Duquesne. All participation will be voluntary. An advanced
5 switch will be installed which features an adaptive algorithm for greater load reductions
6 as compared to the standard switch. With a standard switch, each participant receives the
7 same curtailment minutes, regardless of how many minutes the air conditioner may have
8 been running. With an adaptive algorithm, each unit is turned off to equalize the impact
9 in terms of how many minutes the unit had been operating. Thus some units may be
10 cycled off more than other units, but run-times will be reduced more equally.

11
12 **Q. What cycling strategy is proposed for purposes of analysis?**

13 A. For purposes of analysis, a cycling strategy of 50% was assumed, which means the air
14 conditioner usage will be reduced by half during the cycling event if it is operating 100%
15 of the time. Cycling was estimated to be 48 hours per summer season in a typical
16 summer, defined as June through September.

17
18 **Q. Will electric water heaters qualify for the program?**

19 A. Yes. Electric water heaters were analyzed for the Duquesne program, even though the
20 penetration is small at about 10% of all homes. There will be some load reduction from
21 electric water heaters, although not as much per unit as with central air conditioners. To
22 economize on the installation costs, electric water heaters will be admitted to the program

1 where the homeowner also agrees to air conditioner cycling, so that switches may be
2 installed at the same time on both the air conditioner and the water heater.

3
4 **Q. How will participants benefit?**

5 A. There will be no charge to the participants in the program. Instead, participants will
6 receive a credit on their electric bill. For each central air conditioning unit, the credit is
7 anticipated to be \$8 per summer month, or \$32 for the summer season defined as June,
8 July, August, and September. A credit of \$2.50 per summer month or \$10 per season will
9 be offered for each electric water heater.

10
11 **Q. What was the expected load reduction benefit and financial cost to Duquesne?**

12 A. The original plan was to recruit participants for the summers of 2010, 2011, and 2012.
13 The number of units recruited were expected to cumulate to in excess of 15,000 units
14 with a load reduction potential of 18.6 MW. The program budget was \$2,928,071.

15
16 **Q. Please describe Duquesne's Commission-approved Small and Midsize commercial
17 demand response program?**

18 A. The Small and Midsize C&I demand response program would incorporate the same type
19 of switches as in the residential direct load control program. Eligible customers would
20 include those with central air conditioning featuring residential types of units that are
21 often found in small office and retail facilities. Also eligible will be larger packaged
22 terminal units and rooftop air conditioning units found in Small/Midsize commercial and
23 industrial facilities, including office, retail, restaurant and light manufacturing. An

1 advantage of this market sector is that one facility may contain multiple air conditioning
2 units which will be eligible for participation and thereby help economize on marketing
3 and installation costs. Participants will receive incentive payments per unit installed at
4 the rate of \$8 per summer month per air conditioning unit.

5
6 **Q. What was the expected load reduction benefit and financial cost to Duquesne?**

7 A. The number of air conditioning units recruited over three seasons was expected to exceed
8 1,600 units with an estimated load reduction of 7.8 MW. The proposed budget was
9 \$992,200.

10
11 **Q. How had the plan proceeded for the direct load control program?**

12 A. It was expected that one or more Conservation Service Providers (“CSPs”) would be
13 selected to implement the programs under a competitive bidding process. On March 9,
14 2010 a Request for Proposal was issued for both programs. Bidders could respond for
15 one program or both programs. Two bids were received on April 7, 2010. Both bids well
16 exceeded the budget for the programs. Only one bid fully responded to the scope of the
17 programs.

18
19 **Q. How was the situation handled?**

20 A. Of the two bids received, one bidder was preferable because of several advantages. It
21 would deploy a technology that was well proven in the marketplace. It had much greater
22 experience in demand response, including marketing, program management, data
23 tracking and reporting, and customer service. The communications system would reach a

1 broader population of prospective participants more cost-effectively. Discussions ensued
2 with the preferred bidder, Comverge Inc. (“Comverge”), to stay close to the filed budget.

3 Also to stay within the budget, it was determined to not enroll a significant
4 number of participants or pay incentives for the summers of 2010 and 2011. However,
5 no agreements have been signed with Comverge to fully implement the direct load
6 control program as of the date of this filing.

7
8 **Q. What were the implications of the smaller program?**

9 A. One implication of the lower expected reductions of MW demand was that it appeared it
10 would be difficult to achieve the necessary 113 MW of demand reduction needed for the
11 4.5% reduction required by Act 129. The cost-effectiveness of the direct load control
12 program has deteriorated, relative to other programs. In particular, the curtailable load
13 control program for Large C&I accounts was more cost-effective for in achieving
14 demand response targets while the direct load control program had become very cost
15 ineffective due to high expense and low returns. In addition, a transfer of funds from the
16 direct load control program to energy efficiency programs appeared to be more cost
17 effective at achieving demand reductions than trying to achieve reductions directly
18 through a DR program.

19
20 **Q. Why did Duquesne file a petition to reprogram funds?**

21 A. Duquesne filed a petition on May 9, 2011 to eliminate the direct load control programs
22 for the Residential and Small/Midsize commercial customers. The funds would be re-
23 allocated to more cost-effective programs. In particular, more funds would be made

1 available to residential efficiency programs and to the Large C&I curtailable load control
2 program.

3
4 **Q. What is the current status of Duquesne Residential and Small/Midsize C&I DR**
5 **programs?**

6 A. Duquesne started marketing the direct load control program in March 2011. The
7 newsletter in the monthly bill explained the program and encouraged customers to learn
8 more, as well as express their interest in enrolling in the program. As of early August,
9 2011, approximately 1,000 customers have expressed over the telephone an interest in
10 enrolling in the program. No Small/Midsize C&I customers have elected to participate in
11 the program at this time.

12 Although Duquesne is pleased to have received the interest of these residential
13 customers and the Company believes it is important to make the direct load control
14 program available to these customers, the level of interest is far below the estimated
15 targets contained in its current EE&C Plan. Therefore, Duquesne has determined to
16 continue to offer the direct load control programs to Residential and Small/Midsize C&I
17 customers but at a level commensurate with the level of interest in these programs.

18
19 **Q. How does Duquesne propose to proceed?**

20 A. Based upon the current level of customer interest and discussions with the parties to this
21 proceeding, Duquesne now proposes to maintain and implement its previously approved
22 direct load control programs on a reduced scale to accommodate about 1,500 units. It
23 would encompass residential air conditioners and electric water heaters, as well as to air

1 conditioning units in Small/Midsize C&I accounts. The expected cost of the program at a
2 reduced scale is \$1.1 million. The expected load reduction will be about 1 MW.

3 Rather than eliminate the direct load control programs, Duquesne now requests
4 that these programs be scaled back in recognition of the current level of customer
5 interest, program costs, and expected demand reductions. Duquesne believes that there is
6 some value in providing a demand response program option to Residential and
7 Small/Midsize commercial and industrial customers. The programs are expected to
8 operate as originally proposed, but at a reduced scale in participation and load reduction.

9
10 **Q. How will funds be reallocated?**

11 A. The remaining funds of approximately \$2.8 million will be reallocated to the energy
12 efficiency programs. In particular, the funds will be added to the budgets of the energy
13 efficiency programs for Residential and Small/Midsize commercial and industrial
14 customers. Duquesne witness Defide addresses the how the Company proposes to
15 allocate these funds to these programs in Exhibit DWD-2.

16
17 **B. Duquesne's Existing Large C&I Curtailable Load Program**

18
19 **Q. Please describe the Commission-approved curtailable load program for Duquesne's
20 Large C&I customers?**

21 A. For Large C&I customers, a curtailable load program would target end-uses of electricity
22 that are able to contribute to peak load reductions. Target facilities will be those with

1 over 300 kilowatts (kW) in peak demand. Load reductions may be achieved by reducing
2 or shifting electricity usage in any applicable end-use.

3 Participating facilities would be enrolled in advance of the 2012 summer season
4 with a target load reduction for each facility. Facilities would be called upon during peak
5 hours to reduce load based on a few hours notice. Facilities would be paid for
6 performance on the basis of the load reduction for each curtailment event. The program
7 would be offered through one or more PJM Conservation Service Providers acting as a
8 CSP. If needed, Duquesne would step in as a CSP. The CSPs and enrolled customers
9 would be expected to invest in necessary equipment for monitoring, controlling,
10 communicating and documenting load reductions. Facilities would also be permitted to
11 participate in the demand response programs of PJM.

12
13 **Q. What were the target goals of the Large commercial/industrial curtailable load**
14 **program?**

15 A. The goal for the curtailable load program was to enroll 10.8 MW of capacity for load
16 reductions. The budgeted cost for the program including administration, operations, and
17 incentives was \$556,656.

18
19 **Q. What was the time frame for implementing the curtailable load program?**

20 A. The initial plan was to implement the program in stages by recruiting about 3.6 MW or
21 about one third of the 10.8 MW by each of the summers of 2010, 2011 and 2012. The
22 summer period is defined as June 1 through September 30.

23

1 **Q. How has the plan proceeded?**

2 A. A competitive process was designed to select one or more PJM Conservation Service
3 Providers acting as Curtailment Service Providers. A Request for Proposal was issued by
4 Duquesne on March 9, 2010 for the curtailable load program. Bids were requested by
5 April 7, 2010. Only one bid was received. It was from a large CSP specializing in load
6 curtailment programs.

7 During discussions with the CSP Duquesne learned that the CSP had the
8 capability and willingness to recruit more MWs. Specifically, the CSP had the capability
9 to enroll 40 MWs of load reduction in the program for the original budget. In addition,
10 the opportunity exists for the Company to achieve an additional 20 MWs for a total of 60
11 MW in capacity for load curtailment, subject to additional funding of approximately
12 \$300,000.

13
14 **Q. What is the current situation?**

15 A. Duquesne and the CSP have reached agreement to proceed with the new target of 40
16 MW. The CSP has agreed to try to assist Duquesne in securing the additional 20 MWs.
17 If it appears the CSP will not meet the initial target of 40 MW, Duquesne will step in to
18 try to fill the gap up to 60 MW. No curtailment events were undertaken in the summers
19 of 2010 and 2011 in order to provide more funds to underwrite load reductions in the
20 summer of 2012.

21

22

23

1 **Q. What are the merits of increase in the target for the Large C&I program?**

2 A. The Duquesne target for peak load reduction under Act 129 is 113 MW. By recruiting
3 more capacity from Large C&I customers under the curtailable load program, there is a
4 greater chance that the target will be reached. Moreover, it appears that an increase in the
5 curtailable load program will be needed to reach the target.

6
7 **Q. How would the increase be funded?**

8 A. The target of 40 MW will be sought within the original budget of about \$556,000. An
9 additional amount, expected to be about \$300,000, is being requested to achieve another
10 20 MW. If the added load reduction can be achieved for less than \$300,000, it will not
11 all be spent. I expect to be able to achieve the additional 20 mw of curtailable load
12 reduction for approximately \$300,000 because there are more than 60 MW of load
13 reduction potential participating in PJM wholesale economy markets in the territory of
14 Duquesne.

15
16 **Q. What are your conclusions?**

17 A. There is an opportunity to significantly increase the target load reductions under the
18 curtailable load program to 60 MW with a modest allocation of funds from the Large C &
19 I energy efficiency programs. The direct load control program for Residential and
20 Small/Midsize commercial and industrial customers will continue to be offered, but at a
21 reduced scale as a more cost-effective use of funds and a greater opportunity to achieve a
22 net increase in demand reductions through energy efficiency programs. While demand
23 reductions have been more difficult to achieve than originally expected, with these

1 modifications noted, I would expect the Duquesne overall demand reductions achieved to
2 be approximately 120 MW for energy efficiency demand reductions (59 MW) and
3 demand response reductions (61 MW) in furtherance of Duquesne trying to meet the 113
4 MW goal for the summer of 2012.

5

6 **Q. Does this conclude your testimony?**

7 A. Yes.

8

Direct Load Control Programs	Totals
Original Demand Savings (MW)	26.4
Budget Constrained Demand Savings (MW)	5.0
Reallocated Demand Savings (MW)	1.0
Original Budget	\$3,920,071
Reallocated Budget	\$1,100,000

Curtailed Load Program	Totals
Original Demand Savings (MW)	10.8
Current Demand Savings (MW)	40.0
Reallocated Demand Savings (MW)	60.0
Original Budget	\$556,656
Reallocated Budget	\$856,656

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Docket No. M-2009-2093217

Duquesne Light Company

Statement No. 3

Direct Testimony of Thomas Crooks

August 12, 2011

1 **Q. Please state your name and business address?**

2 A. My name is Thomas Crooks. My business address is 3161 Cameron Park Dr.,
3 Cameron Park, CA 95682.

4
5 **Q. By whom are you employed and in what capacity?**

6 A. I am employed by MCR Performance Solutions, LLC. I am a Director and lead
7 of the Energy Efficiency practice.

8
9 **Q. Please state your educational and professional qualifications.**

10 A. I have been employed at MCR Performance Solutions for three years where my
11 responsibilities include performing energy efficiency potential forecasting,
12 program planning, program quality assurance, developing program
13 implementation statements of work for contractor implemented programs and
14 participating in contract negotiations for numerous electric utility clients. Prior to
15 joining MCR Performance Solutions, I was employed for 5 years at Navigant
16 Consulting, Inc. There, I worked in the energy efficiency field under contract to
17 the California Public Utilities Commission, the California Energy Commission, as
18 well as local governmental agencies forecasting the impacts of energy efficiency
19 and demand response, developing research and development road maps and
20 implementing a program testing prototype energy efficiency programs. Prior to
21 joining Navigant Consulting, I was employed by Southern California Edison for
22 ten years where I managed the planning and implementation of commercial,
23 industrial and agricultural audits and incentive energy efficiency programs. I

1 supervised a staff managing sub-contractor implementation of energy efficiency
2 programs serving the commercial, industrial and residential customer sectors. I
3 hold a Bachelor of Science in the Industrial Process Division at the Oregon State
4 Institute of Technology.

5
6 **Q. What is the purpose of your testimony?**

7 A. As Mr. Defide explained, the purpose of this testimony is to address the Total
8 Resource Cost (“TRC”) calculations for the Company’s demand response
9 programs.

10
11 **Q. Are you sponsoring any exhibits to the filing?**

12 A. Yes. I am sponsoring the following Exhibits:

13 TC-1: TRC Calculation for the Residential and Small/Midsize C&I DR
14 program

15 TC-2: TRC Calculation for the Large C&I DR program

16
17 **Q. Are you familiar with Duquesne’s Act 129 EEC & DR Plan?**

18 A. Yes, MCR Performance Solutions was the winning bidder in an RFP for
19 development of the Plan and therefore is uniquely positioned to provide
20 background and support for the Demand Response portion of the Plan and the
21 calculations using the Total Resource Cost (“TRC”) test for as filed and what has
22 attributed to the changes in the TRC and the programs that necessitated this
23 Petition. As Mr. Defide stated Duquesne projected a total of 199 MW of demand
24 reductions in order to create a buffer over the required goal of 113 MW. Of the

1 projected 37 MW to be achieved from demand response programs, approximately
2 26.2 MW were projected to come from the Residential and Small/Midsize C&I
3 DR program and approximately 10.8 MW were projected to come from the Large
4 C&I DR program. These were based upon the forecast and the known
5 information at the time of the original filing. Certain issues such as the protocol
6 for measurement of demand response programs were unknown.

7
8 **Q. Please explain the relationship between energy efficiency programs and**
9 **demand response programs as originally filed in the EEC & DR Plan.**

10 A. At the time of the filing, the then current Commission regulations prohibited
11 EDCs from counting Demand Response (“DR”) program contracted capacity
12 toward mandated demand reductions. Given uncertainty over how DR programs
13 would be permitted to contribute toward achieving the mandated reductions, there
14 was a significant focus on developing EE programs, which can be reliably
15 credited to achieving mandated reductions.

16
17 **Q. What was the TRC test results for the as filed and approved demand**
18 **response programs in Duquesne’s EE&C Plan?**

19 A. At the time of the original EE&C Plan, the TRC for the Residential and
20 Small/Midsize C&I DR programs was 1.4, while the TRC for the Large C&I DR
21 program was 4.4.

22
23 **Q. What are the TRC tests currently and why did they change so drastically?**

1 A. Currently the TRC has dropped from 1.4 to 0.03 for the Residential and
2 Small/Midsize C&I DR programs due to higher costs than anticipated in the
3 original filing and lower benefits due to lower capacity costs and lower predicted
4 results. For the Large C&I DR program, Duquesne originally expected to achieve
5 only 10.8 MW for the budget amount of \$556,656; now it expects to achieve 40
6 MW for that same approved budget amount. Furthermore, program
7 implementation has been delayed due to uncertainties about the measurement and
8 verification protocols applicable to demand response programs and the need to
9 focus monetary resources on reductions for the measurement period --- the
10 summer of 2012. As a result, implementation benefits will only be achieved for
11 the summer of 2012, the critical period for measurement and performance.

12 In the meantime, the value of electric capacity and energy on the
13 wholesale markets has deteriorated dramatically, adversely impacting both the
14 program benefits as well as program costs. The TRC for the Large C&I DR
15 program has dropped to 1.37 but is still above 1.0 and is cost effective.

16
17 **Q. On January 12, 2011 a Secretarial Letter was issued to clarify issues**
18 **associated with demand response programs for the EDCs. What was the**
19 **purpose of that letter?**

20 A. The purpose of the Secretarial Letter was to clarify that the PJM measurement and
21 verification ("PJM M&V") protocols for the PJM economic demand response
22 programs, in effect for the PJM delivery and planning year beginning in June
23 2012 through May 2013, will be used as a basis for the Act 129 Statewide

1 Evaluator's measurement and verification for Act 129 load curtailment
2 performance. This confirmed the methodology that demand response was to be
3 measured which was unclear at the time the Plan was designed and developed.
4

5 **Q. Would you briefly explain how PJM programs affect the TRC calculations?**

6 A. PJM's capacity market model, called the Reliability Pricing Model ("RPM") is
7 based on making capacity commitments three years ahead, and is designed to
8 create long-term price signals to attract needed investments in reliability in the
9 PJM region. All Pennsylvania electric distribution companies ("EDCs") utilize
10 the RPM to meet their specific capacity obligations. Duquesne is in a unique
11 position compared to other EDCs. Energy and capacity costs are higher in eastern
12 Pennsylvania than in western Pennsylvania. The DLC zonal capacity values
13 reflect the relative absence of transmission system congestion costs, not
14 applicable for many other Pennsylvania EDCs. The pricing that comes out of the
15 RPM affects the way that the TRC is calculated. The auction results go into the
16 benefit side of the TRC calculation. See Exhibit TC-1. When the auction results
17 are lower, like they are in the DLC zone, as compared to other EDC zones such as
18 PECO, then the TRC is lower because a large portion of program benefits – the
19 avoided cost of capacity and energy – is much lower in Duquesne than PECO.
20

21 **Q. Did you examine the Final Order for the 2011 Total Resource Cost Test**
22 **issued by the Commission on July 28, 2011 and what conclusions have you**
23 **drawn?**

1 A. Yes, the conclusions are that no changes to the methodologies employed in
2 calculation of the TRCs are necessary.

3

4 **Q. How does the TRC Order affect the TRC calculations?**

5 A. The TRC Order confirms that Duquesne's method of calculating the TRC is
6 correct. The Commission also accepted treatment of payments to CSPs or DR
7 program participants in the TRC test as costs that should be factored into the TRC
8 calculation.

9

10 **Q Please explain how you calculated the TRCs.**

11 A: Exhibits TC-1 and TC-2 describe the TRC calculation for the Residential and
12 Small/Midsize DR and the Large C&I DR program. The TRC calculations are
13 performed in a manner consistent with the July 28, 2011 Commission TRC Order.

14

15 **Q. Do you believe Duquesne's TRC Calculation is accurate?**

16 A. Yes. TRC test ratios for different EDCs may vary significantly from each other
17 due to different costs (TRC denominator) and variations in the value of avoided
18 utility capacity and energy benefits (TRC numerator). Second, as stated above,
19 the Commission, in its TRC Order, acknowledged that the treatment of DR
20 payments to CSPs and participants from EDCs was unclear at the time of original
21 EE&C Plan filings in 2009. Since that time, the Commission concluded that the
22 way Duquesne treats DR payments is correct. EDCs with similar DR programs to
23 Duquesne will have completely different TRCs if and when these EDCs do not

1 include payments to participants as costs within the TRC calculation.
2 Additionally, comparing Duquesne to other larger utilities, with a much larger
3 customer base, will change the resulting TRC of similar DR programs. This is
4 because there are very large fixed costs associated with rolling out a Residential
5 and Small/Midsize C&I DR program. Much of that is due to communication
6 infrastructure that is required to send the signals to disconnect air conditioning
7 load and to restart that load. The variable costs of serving a particular customer is
8 not nearly as significant as these large fixed costs. For example, PPL and PECO
9 have a much larger customer base to spread those fixed costs over than a much
10 smaller utility like Duquesne. This difference has a large impact on the total
11 benefits of such a program. PECO can garner many more load reductions for the
12 same fixed cost than Duquesne.

13
14 **Q. Do you have any other support for your TRC test calculation?**

15 A. Yes, Duquesne's treatment of costs, benefits and effective program periods
16 remain in compliance with the Commission's Order approving Duquesne's EE&C
17 Plan. The Commission stated in that Order that, "for the purposes of Act 129 cost
18 recovery, at this time, we shall allow demand response CSPs to enter into
19 contracts up to, but not beyond, November 30, 2013." (Duquesne Order at 85).
20 Duquesne is not authorized to recover costs beyond the current program period
21 and has therefore limited the scope of its planning horizon to that period. The
22 Duquesne Residential and Small C&I DR programs will not operate in the
23 summer of 2011 and were only intended to operate in June through September

1 2012 since the overall EE&C Plan ends May 31, 2013. Therefore, all savings and
2 a majority of the costs of the program are contained in one year.

3

4 **Q. What are your conclusions?**

5 A. TRC values declined significantly for the programs approved in the EE&C Plan,
6 however given the current regulatory obligation and desire to provide a DR
7 program for each customer class, the position as discussed in Duquesne's
8 collective testimony to offer a scaled back Residential and Small C&I DR
9 program is reasonable and prudent. Therefore even given the low TRC value for
10 the Residential and Small C&I DR program, I conclude that the revised
11 modifications to the overall EE & DR plan are supported by detailed analysis
12 provided in this testimony and confirmed by orders from the PA PUC. The Large
13 C&I DR program is cost effective and should be utilized to the greatest extent
14 possible as there is no better or more cost efficient way to garner needed demand
15 reductions.

16

17 **Q. Does this conclude your written testimony?**

18 A. Yes it does.

19

TRC Formulae

The formulae for the net present value (NPV_{TRC}), the benefit-cost ratio (BCR_{TRC}), and the levelized costs are:

$$\begin{aligned} NPV_{TRC} &= B_{TRC} - C_{TRC} \\ BCR_{TRC} &= B_{TRC}/C_{TRC} \\ LC_{TRC} &= LCRC/IMP \end{aligned}$$

The B_{TRC} , C_{TRC} , $LCRC$, and IMP terms are defined as follows. The first summation in the B_{TRC} equation should be used for conservation and load management programs. For fuel substitution programs, both the first and second summations should be used.

Terms

- 1) UAC_t : Utility avoided supply costs in year t
- 2) TC_t : Tax Credits in year t
- 3) UAC_{at} : Utility avoided supply costs for the alternative fuel in year t
- 4) PAC_{at} : Participant avoided costs in year t for alternate fuel devices

The petition does not address a fuel substitution program and no tax credits are applicable, variables 2-4 and not applicable. This is a one year program where costs and benefits occur in the program year, no effective discounting of either applies as shown below:

$$B_{TRC} = \sum_{t=1}^N \frac{UAC_t + TC_t}{(1+d)^{t-1}} + \sum_{t=1}^N \frac{UAC_{at} + PAC_{at}}{(1+d)^{t-1}}$$

$$B_{TRC} = \sum_{t=1}^N \frac{127,576 + 0}{(1+0.069)^{t-1}} + \sum_{t=1}^1 \frac{0 + 0}{(1+d)^{t-1}}$$

$$B_{TRC} = \frac{127,576}{1}$$

Terms:

- 1) PRC_t : Utility program costs in year t
- 2) PCN_t : Net Participant Costs
- 3) UIC_t : Utility increased supply costs in year t

Customers are not subject to costs associated with participating in programs addressed in this petition. Additionally, the utility does not incur increased supply costs associated with program addressed in the petition (applicable to fuel substitution programs). Accordingly formula variables 2 and 3 and not applicable herein.

$$C_{TRC} = \sum_{t=1}^N \frac{PRC_t + PCN_t + UIC_t}{(1 + d)^{t-1}}$$

$$C_{TRC} = \sum_{t=1}^N \frac{3,920,272 + 0 + 0}{(1 + 0.069)^0}$$

$$C_{TRC} = \sum_{t=1}^N \frac{3,920,272}{1}$$

$$BCR_{TRC} = B_{TRC}/C_{TRC}$$

$$B_{TRC}/C_{TRC} = 127,576/3,920,272$$

$$B_{TRC}/C_{TRC} = .03$$

Source of inputs follow:

Source of formula inputs have been revised to reflect DLC Zonal RPM planning period action results for 2012-2013 \$16.46/MW-Day instead of the previous \$27.73 taken from the 2013-2014 RPM planning period. This change revises project TRC test ratio from 0.04:1 to 0.03:1.

Calendar	2009												2010												2011												2012												2013				
	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5									
Months	2009 - 2010												2010 - 2011												2011 - 2012												2012-2013																
RPM Planning Period	2009 - 2010												2010 - 2011												2011 - 2012												2012-2013																
RPM Auction Price	\$104.82												\$174.00												\$110.00												\$16.46																
Act 129 Program Years	PY1 2009												PY2 2010												PY3 2010																								PY4 2010				
EE&C DR Plan DR Programs																																																					
Current Plan																																																					

Residential / Small Commercial DR Cost-Effectiveness Calculations

		<u>Unit</u>	<u>Extended</u>	
		<u>Benefits</u>	<u>Benefits</u>	
Converge Cost	\$3,734,283			
DLC Cost	\$185,989			
Total Cost	\$3,920,272			
kW Reduced	5,000	\$6.01	\$30,039.50	5000
kWh Saved	361,248	\$0.27	\$97,536.96	
Participants	7,526			
			\$127,576.46	
Benefits Assumptions				
Capacity	PJM Base Residual Auction Results 2012-2013 (\$/MW-Day)			\$16.46
			(\$/MW-Year)	\$6,007.90
			\$/kW-Year	\$6.01
Energy	Based on State of Market Report for PJM \$/MWh		\$/MWh	\$270
	(average price for top 100 hours)		\$/kWh	\$0.27
TRC test Ratio	Benefits	\$127,576		
	TRC Costs	\$3,920,272		
	TRC test Ratio	0.033		

TRC Formulae

The formulae for the net present value (NPV_{TRC}), the benefit-cost ratio (BCR_{TRC}), and the levelized costs are:

$$\begin{aligned} NPV_{TRC} &= B_{TRC} - C_{TRC} \\ BCR_{TRC} &= B_{TRC}/C_{TRC} \\ LC_{TRC} &= LCRC/IMP \end{aligned}$$

The B_{TRC} , C_{TRC} , $LCRC$, and IMP terms are defined as follows. The first summation in the B_{TRC} equation should be used for conservation and load management programs. For fuel substitution programs, both the first and second summations should be used.

Terms

- 1) UAC_t : Utility avoided supply costs in year t
- 2) TC_t : Tax Credits in year t
- 3) UAC_{at} : Utility avoided supply costs for the alternative fuel in year t
- 4) PAC_{at} : Participant avoided costs in year t for alternate fuel devices

The petition does not address a fuel substitution program and no tax credits are applicable, variables 2-4 and not applicable. This is a one year program where costs and benefits occur in the program year, no effective discounting of either applies as shown below:

$$B_{TRC} = \sum_{t=1}^N \frac{UAC_t + TC_t}{(1+d)^{t-1}} + \sum_{t=1}^N \frac{UAC_{at} + PAC_{at}}{(1+d)^{t-1}}$$

$$B_{TRC} = \sum_{t=1}^1 \frac{722,271 + 0}{(1+0.069)^{1-1}} + \sum_{t=1}^1 \frac{0 + 0}{(1+d)^{t-1}}$$

$$B_{TRC} = \frac{722,271}{1}$$

Terms:

- 1) PRC_t : Utility program costs in year t
- 2) PCN_t : Net Participant Costs
- 3) UIC_t : Utility increased supply costs in year t

Customers are not subject to costs associated with participating in programs addressed in this petition. Additionally, the utility does not incur increased supply costs associated with program addressed in the petition (applicable to fuel substitution programs). Accordingly formula variables 2 and 3 and not applicable herein.

$$C_{TRC} = \sum_{t=1}^N \frac{PRC_t + PCN_t + UIC_t}{(1 + d)^{t-1}}$$

$$C_{TRC} = \sum_{t=1}^N \frac{527,672 + 0 + 0}{(1 + 0.069)^0}$$

$$C_{TRC} = \sum_{t=1}^N \frac{527,672}{1}$$

$$BCR_{TRC} = B_{TRC}/C_{TRC}$$

$$B_{TRC}/C_{TRC} = 722,271/527,672$$

$$B_{TRC}/C_{TRC} = 1.37$$

Source of inputs follow:

Avoided costs reflect PJM DLC Zonal RPM Base Residual Auction planning period results for 2012-2013 of \$16.46/MW-Day applicable for the PA Act 129 DR period June 2012 through September 2012 as shown in the following table:

Calendar	2009												2010												2011												2012					2013				
	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5		
Months	2009 - 2010												2010 - 2011												2011 - 2012												2012-2013									
RPM Planning Period	2009 - 2010												2010 - 2011												2011 - 2012												2012-2013									
RPM Auction Price	\$104.82												\$174.00												\$110.00												\$16.46									
Act 129 Program Years	PY1 2009												PY2 2010												PY3 2010												PY4 2010									
EE&C DR Plan DR Programs																																														
Current Plan																																														

Large C&I DR Cost-Effectiveness Calculations

		Unit Benefits	Extended Benefits
ENERNOC Cost	\$500,000		
DLC Cost *	\$27,672		
Total Cost	\$527,672		
kW Reduced	40,000	\$13.74	\$549,471
kWh Saved	640,000	\$0.27	\$172,800
Participants	40		
			\$722,271

Benefit Assumptions

T, D & Ancillary Services	\$/MW-Day	\$21.18
PJM Base Residual Auction Results 2012-2013	\$/MW-Day	\$16.46
Total Avoided Capacity Costs	\$/MW-Day	\$37.64
	\$/MW-Year	\$13,737
	\$/kW-Year	\$13.74
State of Market Report for PJM for peak hours	\$/MWh	\$270
(average price for top 100 hours)	\$/kWh	\$0.27

TRC Test Ratio

Benefits	\$722,271
TRC Costs	\$527,672
TRC Test Ratio	1.37

* Plan Table 6A

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of Duquesne Light Company's Direct Testimony 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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