

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**Amended Petition of PPL Electric Utilities for
Approval of its Energy Efficiency and Conservation Plan
Under Act 129 of 2008**

Docket No. M-2009-2093216

PPL Electric Utilities Corporation

Statement No. 2

Direct Testimony of M. Hossein Haeri, PhD.

Date: July 31, 2009

1 **Direct Testimony of M. Hossein Haeri, PhD.**

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

3 A. My Name is Hossein Haeri, and my business address is 720 SW Washington Street,
4 Portland, OR 97205.

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6 **Q. On whose behalf are you presenting testimony in this proceeding?**

7 A. I am testifying on behalf of PPL Electric Utilities Corporation (“PPL Electric” or the
8 “Company”).

9
10 **Q. By whom are you employed and in what capacity?**

11 A. I am employed by The Cadmus Group, Inc., as a principal.

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13 **Q. What are your duties as a principal of The Cadmus Group?**

14 A. I am responsible for leading the Utility Planning and Assessment practice area within the
15 firm’s Energy Services Group.

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17 **Q. Have you previously testified as a witness before the Pennsylvania Public Utility
18 Commission?**

19 B. Yes. I submitted in support of PPL Electric Utilities’ petition for approval of its Energy
20 Efficiency and Conservation Plan under Act 129 of 2008 (Docket No. M-2009-2093216).

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

1 A. The principal purpose of my testimony is to support and provide information regarding
2 PPL Electric's amended filing of its Act 129 Energy Efficiency and Conservation
3 ("EE&C") Plan ("Plan"). The amended filing revises the initial estimates of Total
4 Resource Cost (TRC) reported in the Company's July 1, 2009.

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6 **Q. Are you sponsoring any exhibits in the filing?**

7 A. Yes. I am co-sponsoring PPL Electric's Amended EE&C Plan, which has been identified
8 as PPL Electric Exhibit No. 1. Within that exhibit, I am primarily responsible for and am
9 sponsoring all revisions in Sections 2, 3 and 8.

10

11 **Q. What was your role in preparation of PPL Electric's initial and revised TRC**
12 **calculations?**

13 A. I—and the staff of The Cadmus Group working under my direct supervision— carried
14 out all calculations in accordance with our understanding of the guidelines established in
15 the Commission's original January 15, 2009 and subsequent revisions in the June 28,
16 2009 orders.

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18 **Q. Please explain the reason for revisions to TRC calculations.**

19 A. The TRC calculations in the initial filing were based on the methods and assumptions set
20 forth in the Commission's January 2009 Implementation Order. The amended TRC
21 calculations reflect changes in avoided costs and their effect of TRC benefit-to-cost ratios
22 based on the revised methodology for calculating avoided costs as outlined in the

1 Commission's June 28, 2009 Order regarding Implementation of Act 129 of 2008 – Total
2 Resource Cost (TRC) Test (Docket No. M-2009-2108601).

3
4 **Q. How did the methodology and assumptions for calculating avoided costs change**
5 **between the initial January 15, 2009 Order and the June 28, 2009 Order and what**
6 **effect did these changes have on the TRC benefit-to-cost ratios in the PPL Eclectic's**
7 **EE&C portfolio?**

8 A. Changes in TRC were entirely the result of revised avoided electricity supply
9 costs, including reductions in transmission, distribution, and generation (including
10 capacity) (GTD) costs, which constitute the basis for determining the monetary value of
11 energy and capacity savings resulting from implementation of the EE&C Plan. The
12 revised methodology for calculating avoided cost in the Commission's June 28, 2009
13 changed the initial methodology in four components of avoided costs: 1) generation price
14 assumptions in each of the first, second and third 5-year periods for fifteen years, 2)
15 treatment of gross receipts taxes, 3) calculation of transmission charges, and 4) valuation
16 of avoided capacity. Specific changes in each of these areas are summarized in Table 1,
17 below.

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19 **Table 1: Summary of Changes to Avoided Cost Components**
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Component	Base Case	Amended Case
Generation Prices – first 5-year period	NYMEX values obtained June 2, 2009. Missing on-peak values for 2014 were estimated by adjusting 2014 off-peak prices by the ratio of 2013 on-peak to off-peak prices.	NYMEX prices from May 28, 2009
Generation Prices – second 5-year period	EIA AEO low-price case costs.	NYMEX gas prices from May 28, 2009 adjusted as directed

		in Order.
Generation Prices – third 5-year period	EIA AEO low-price case costs.	EIA AEO low-price case (no adjustment) costs.
Transmission (included ancillary charges) and Distribution Prices	Transmission and distribution prices in the original filing were not escalated.	Transmission and distribution prices in the amended filing are escalated after 2010 using the U.S. Bureau of Labor and Statistics (BLS) industry index for Electric Power Generation.
Gross Receipts Tax	5.9%	Removed in accordance with the Order.
Capacity Costs – first and second 5-year periods	PJM base residual auction results are used through 2012. After 2012, prices were escalated using the consumer price index of 2.1%.	PJM base residual auction results are used through 2012. After 2012, prices were escalated using the U.S. Bureau of Labor and Statistics (BLS) industry index for Electric Power Generation of 8.45%.
Capacity Costs – third 5-year period	PJM base residual auction results are used through 2012. After 2012, prices were escalated using the consumer price index of 2.1%.	Assumed to be a component in the EIA AEO low-price case generation costs.

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Q. How did the revised methodology affect the TRC calculations?

A. Table 2, below, shows a comparison of the initial and revised avoided costs for the small commercial and industrial, large commercial and industrial, and the residential customer sectors. As can be seen, the revised mythology caused the avoided costs to decrease during the first five years and to increase during the second five years on average for all three customer sectors.

Table 2: Comparison of the Initial and Revised Avoided Costs

<i>Program Year</i>	Small Commercial and Industrial		Large Commercial and Industrial		Residential	
	<i>Original Filing</i>	<i>Amended Filing</i>	<i>Original Filing</i>	<i>Amended Filing</i>	<i>Original Filing</i>	<i>Amended Filing</i>
Year 1	\$65.47	\$60.21	\$54.87	\$50.24	\$81.08	\$74.89
Year 2	\$73.85	\$62.88	\$63.25	\$52.56	\$89.46	\$78.08
Year 3	\$76.33	\$71.55	\$65.73	\$60.36	\$91.94	\$88.04
Year 4	\$77.97	\$76.72	\$67.29	\$64.58	\$93.71	\$94.59
Year 5	\$79.61	\$80.39	\$68.70	\$67.23	\$95.68	\$99.77

Year 6	\$81.50	\$116.86	\$70.65	\$102.59	\$97.50	\$137.88
Year 7	\$83.77	\$119.71	\$73.17	\$104.24	\$99.37	\$142.51
Year 8	\$86.56	\$122.80	\$75.97	\$106.02	\$102.17	\$147.53
Year 9	\$89.72	\$125.95	\$79.12	\$107.75	\$105.33	\$152.76
Year 10	\$92.89	\$129.31	\$82.30	\$109.58	\$108.50	\$158.39
Year 11	\$95.99	\$107.62	\$85.40	\$86.22	\$111.60	\$139.16
Year 12	\$98.62	\$112.83	\$88.03	\$89.62	\$114.23	\$147.03
Year 13	\$100.98	\$118.02	\$90.39	\$92.85	\$116.59	\$155.10
Year 14	\$103.60	\$123.70	\$93.01	\$96.41	\$119.21	\$163.92
Year 15	\$105.99	\$129.43	\$95.40	\$99.83	\$121.60	\$173.05
Year 16	\$105.99	\$135.57	\$95.40	\$103.47	\$121.60	\$182.87
Year 17	\$105.99	\$142.41	\$95.40	\$107.60	\$121.60	\$193.70
Year 18	\$105.99	\$149.33	\$95.40	\$111.59	\$121.60	\$204.96

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Q. What was the effect of the revised avoided cost calculations on the economic performance of PPL Electric’s portfolio as measures by TRC benefit-cost ratios?

A. The revised methodology led on average to an increase in avoided costs over the 15-year period, hence increasing the monetary benefits of the portfolio and improving its economic performance. The effects of revisions in avoided costs on the benefit-to-cost ratios for individual programs in PPL Electric’s portfolio and the portfolio as a whole are shown in Table 3. As shown, the TRC results improved for all programs in the portfolio and the TRC benefit-cost ratio for the entire portfolio improved by approximately 12 percent, increasing from about 2.7 to slightly over 3.0 on average across all programs.

Table 3: Comparison of TRC Benefit-Cost Ratios

Program	Customer Sector	Original Filing	Amended Filing
Efficient Equipment Incentive Program	Residential	2.19	2.61
Energy Assessment & Weatherization Program	Residential	1.00	1.23
Compact Fluorescent Lighting Campaign	Residential	4.16	4.83
Appliance Recycling Program	Residential	7.96	9.85

ENERGY STAR® New Homes	Residential	1.08	1.38
Renewable Energy Program	Residential	1.25	1.52
Direct Load Control Program	Residential	0.96	0.97
Time of Use Rates	Residential	3.56	3.63
Energy Efficiency Behavior & Education	Residential	3.28	3.66
Low-income WRAP	Low-Income	0.64	0.79
E-Power Wise	Low-Income	1.19	1.42
Compact Fluorescent Lighting Campaign	Low-Income	4.09	4.75
Direct Load Control Program	Low-Income	0.96	0.97
Time of Use Rates	Low-Income	3.55	3.62
Efficient Equipment Incentive Program	Small Commercial and Industrial	2.81	3.33
Compact Fluorescent Lighting Campaign	Small Commercial and Industrial	3.81	4.37
Commercial and Industrial Custom Incentive Program	Small Commercial and Industrial	2.56	3.02
HVAC Tune-up Program	Small Commercial and Industrial	5.44	5.84
Direct Load Control Program	Small Commercial and Industrial	0.95	0.97
Time of Use Rates	Small Commercial and Industrial	3.15	3.21
Efficient Equipment Incentive Program	Large Commercial and Industrial	2.78	3.11
Commercial and Industrial Custom Incentive Program	Large Commercial and Industrial	2.08	2.32
Load Curtailment Program	Large Commercial and Industrial	2.81	2.90
Efficient Equipment Incentive Program	Government/Non-Profit	2.51	2.96
Commercial and Industrial Custom Incentive Program	Government/Non-Profit	2.62	3.08
HVAC Tune-Up Program	Government/Non-Profit	5.57	5.97
Renewable Energy Program	Government/Non-Profit	0.89	1.09
Direct Load Control Program	Government/Non-Profit	0.93	0.95
Time of Use Rates	Government/Non-Profit	3.18	3.24
Load Curtailment	Government/Non-Profit	2.89	3.01

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Q. Are there any additional changes in specific assumptions that may have an effect on the TRC benefit-cost calculations?

A. Since the initial filing PPL Electric’s EE&C Plan on July 1, 2009, new data became available indicating an error in calculation of line-loss factors used in calculating the

1 source energy savings of the portfolio. In its initial filing, the Company had used the
2 same line-loss factor of 8.52 percent for the residential, small commercial and industrial
3 and large commercial and industrial sectors. As shown in Table 4, the correct line loss
4 factors are 8.33 percent in the residential and small commercial and industrial sectors and
5 4.12 percent in the large commercial and industrial sector.

6 Further analysis indicated the revised line-loss factors resulted in decreasing the
7 portfolio's TRC benefit-cost ratio by no more than 2 percent. Given this negligible
8 effect, the Company did not incorporate these changes in its revised TRC calculations
9 insure a direct comparison of TRC calculations between the initial and amended filings
10 resulting solely on changes in the Commission's revised methodology for calculating
11 avoided costs.

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13 **Table 4: Initial and Revised Line-Loss Factors**

Line-Loss Calculation	Residential	Small Commercial and Industrial	Large Commercial and Industrial
Original and Amended Filings	8.52%	8.52%	8.52%
Updated	8.33%	8.33%	4.12%

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

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19 **A. Yes.**