BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

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 1, 2009

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Q. Please state your full name and business address.

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

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

A. I am testifying on behalf of PPL Electric Utilities Corporation ("PPL Electric" or the "Company").

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

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

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

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

Q. What is your educational background?

A. I hold a doctoral degree in regional science from the School of Urban Studies and Planning at Portland State University, and a Bachelor's degree in social science research from the University of Oregon.

Q. Please describe your professional experience.

A. Since 1985, I have worked in the energy utility industry in various capacities, including as a researcher, consultant, teacher, and utility manager. With the assistance of my staff, I have provided technical advice and planning consultation to energy utilities on matters related to resource planning, load forecasting, load research, market assessment, energy efficiency, demand response, portfolio assessment, and performance measurement. Before joining The Cadmus Group, I was Vice President for consulting at Kema Consulting. I served as the director of Energy Information Systems, responsible for measurement and verification at Chevron Energy Solutions (formerly PG&E Energy Services) from 1997 to 2000. Prior to that, I served as a principal in the consulting firm of Barakat & Chamberlin, where I led the firm's impact evaluation and assessment practice area. I also worked for four years as Manager of Planning and Assessment for Central Maine Power Company ("CMP"), where I was responsible for planning and evaluation of the company's DSM programs. While at Central Maine, I co-chaired the Maine Collaborative, representing investor-owned utilities in the state. Before joining CMP, I was the manager of Western Operations for ERC International, where I was responsible for utility DSM program evaluations. I was also an adjunct assistant professor at Portland State University from 2000 to 2005, where I co-founded the graduate program in Applied Energy Economics and taught courses in energy planning and regulation.

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

A. No. I have, however, presented testimony in other jurisdictions, including Maine, Iowa, Washington, and Nevada.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide support for and information regarding PPL Electric's proposed Act 129 Energy Efficiency and Conservation ("EE&C") Plan ("Plan"). Specifically, my testimony identifies the Company's performance requirements under Act 129 of 2008 ("Act 129"); discusses how the proposed EE&C Plan will meet those requirements; describes how the proposed EE&C Plan was developed; and, finally, explains that the Plan is in full compliance with Act 129.

Q. What was your role in preparation of PPL Electric's proposed EE&C Plan?

A. I --and the staff of The Cadmus Group working under my direct supervision-- designed individual programs in the proposed Plan and constructed the portfolio. I oversaw all technical analyses and calculations regarding the savings, costs, and benefits for the individual measures and for the programs that constitute the proposed portfolio.

Q. Are you sponsoring any exhibits in the filing?

A. Yes. As Mr. Cleff explains in his direct testimony, he and I are co-sponsoring PPL Electric's EE&C Plan, which has been identified as PPL Electric Exhibit No. 1. Within that exhibit, I am primarily responsible for and am sponsoring Sections 2, 3 and 8. Mr. Cleff is primarily responsible for and is sponsoring Sections 1, 4, 5, 6 and 9.

Q. How is your testimony organized?

A. I will begin by describing how PPL Electric's annual energy saving targets, peak load reduction targets, and allowed expenditures were calculated. I will then describe how the Company's proposed EE&C Plan is designed to meet these targets and satisfy the requirements of the Act.

Q. What are PPL Electric's annual performance goals for energy savings, peak load reduction and allowed expenditures over the course of the Plan, as mandated by the Act?

A. Sections 28061.1 and 28062.2 of Act 129, as discussed in the Commission's January 16, 2009 Implementation Order, direct utilities to reduce their retail customers' total electric consumption cost-effectively by at least one percent (1%) by May 31, 2011, and by three percent (3%) by May 31, 2013, as measured against the Company's forecasted sales from June 1, 2009, to May 31, 2010. For PPL Electric, these targets represent 382,000 MWh of energy savings by 2011 and 1,146,000 MWh by 2013. The Act and the Commission's Implementation Order also direct utilities to reduce by the year 2012 their customers' peak demand by 4.5 percent, relative to the average top 100 hours of the utility's load during June, July, August, and September 2007. For PPL Electric, this target represents 297 MW. The Act and the Commission's Implementation Order further mandate that these targets be achieved at a cost of no more than two percent (2%) of the utility's 2006 revenues for each program year, which equates to $61.5 million annually, or $246 million over the course of the Plan.

Q. How do these performance goals compare to energy efficiency performance standards set in other jurisdictions and savings achieved by utilities in other states?

A. The conservation targets established by the Act are aggressive compared to recent energy-efficiency resource standards ("EERS") adopted in most other states and relative to what has been achieved by programs considered to be successful. Indeed, in states with EERS at the same level as those required by the Act or higher, targets are allowed be met through additional mechanisms such as codes and standards (e.g., California); transmission and distribution efficiency improvements (e.g., Washington); or both (e.g., Minnesota) to supplement savings from utility-sponsored programs.

A recent study by the American Council for an Energy-Efficient Economy ("ACEEE") shows in 2006, the latest year for which data are available, only three states (Rhode Island, Vermont and Connecticut) achieved annual savings of one percent (1%) or greater.[1]

Achieving the Plan's conservation target of approximately 1,146,000 MWh with a budget of $246 million over the course of the plan yields an allowance of less than $0.19 per first-year kilowatt hour savings on average. The application of the expenditure cap thus limits the number of comparatively high-cost, but also high-impact, measures that could be incorporated in the portfolio.

[1] The 2008 State Energy Efficiency Scorecard, Maggie Eldridge et. al., ACEEE Report E086.

The peak load reduction goals pose an additional challenge, since the established targets have to be met during the 2012 summer, well before the Plan's full deployment in 2013. Thus, the timing of peak load reduction targets may not allow coincident peak impacts of conservation measures implemented after September 2012 through May 31, 2013, to be counted toward the target. This requirement imposes additional costs, since a significant part of the target has to be met through relatively expensive peak load curtailment programs, further straining the Plan's budget.

The experience of developing the Plan indicated that conservation targets and peak load reduction goals, though aggressive, are individually achievable. However, achieving the two targets simultaneously under the expenditure cap presented a complex analytic problem, requiring a difficult balancing of program options and making trade-offs among a large number of conservation measures.

Q. Do you believe it is feasible for PPL Electric to reach the participation levels needed to meet the energy efficiency and peak load reduction targets?

A. Yes. PPL Electric has made every effort to construct a robust and creative portfolio of conservation and load management programs, relying on lessons learned from exemplary program design practices in the industry. The proposed portfolio, once implemented, is expected to fully meet all of the requirements of the Act and also to meet the established targets. In fact, the proposed portfolio currently exceeds the 2011 and 2013 conservation targets by a small margin.

Q. Please describe how the proposed portfolio of programs is designed to meet the energy saving targets established by the Act.

A. The proposed portfolio consists of a comprehensive suite of 11 conservation programs designed to offer technical assistance, financial incentives, and education to all major customer classes, with customized programs targeting the low-income and institutional segments.

Q. Pleases describe how the proposed portfolio of programs is designed to meet the peak load reduction target established by the Act.

A. Peak load reduction targets will be met through peak-coincident impacts of conservation programs and demand response programs. Implementation of programs in the Plan is expected to produce 322 MW of peak savings, exceeding the 297 MW target by 25 MW (8.4%). Peak-coincident impacts of energy- efficiency programs account for 131 MW (41%) and demand response programs account for 191 (59%) of the projected demand savings. The plan offers three demand response options to PPL Electric's customers. They consist of direct load control (residential and small C&I sectors), time-of-use tariffs (residential, small C&I and large C&I), and load curtailment (large C&I).

Q. How was the portfolio constructed?

A. The portfolio was developed in five steps as follows:

1. Calculate energy and peak load reduction targets and the budget for the Plan.

2. Compile a comprehensive list of energy-efficiency and conservation measures and practices from various sources including the Technical Reference Manual ("TRM") and secondary sources for measures not in the TRM.
3. Determine life-cycle costs, savings, and avoided cost benefits for each measure to compute the measure's cost effectiveness from a total resource cost ("TRC") perspective.
4. For each program in the portfolio, calculate program-level savings. Spread the aggregate, plan-level savings for each program over the four-year Plan cycle to set annual participation levels and saving targets.
5. Balance the portfolio by altering the number of participants iteratively to create a reasonable mix of programs that meets all requirements of the Act.

Q. After you identified a group of potential programs, how did you choose which ones to include in the Plan?

A. Programs selections were based primarily on the expected market potential, cost effectiveness, and ensuring that an equitable balance of measures was available to all customer classes. Market potential was determined based on the results of the "Potential for Energy Efficiency, Demand Response, and Onsite Solar Energy in Pennsylvania," published May 1, 2009, by the ACEEE[2] and the experiences of other utilities with similar programs.

[2] The study was carried out with funding from the Pennsylvania Department of Environmental Protection, the U.S. Department of Energy, and the U.S. Environmental Protection Agency.

Q. Does the proposed Plan meet the Commission's TRC Test?

A. Yes. The Plan as a whole and all of the individual programs in the Plan are cost-effective according to the TRC guidelines established in the Commission's Secretarial Letter. PPL Electric's analysis indicates a TRC benefit-to-cost ratio of nearly 2.5 for the proposed portfolio.

Q. Does the proposed Plan comply with the spending limitations in Act 129?

A. Yes. The projected total cost of the Plan is $246 million, which equals the $246 million expenditure cap.

Q. Does the proposed Plan meet the requirement of the Act that the customer class that receives the benefit from specific measures will pay the cost of those measures?

A. Yes. As discussed by Mr. Kleha in his direct testimony, the direct cost of each measure will be assigned to the class of the customer who implements that measure. General or administrative type costs that apply system-wide to all programs will be allocated using an allocation factor equal to the percentage of the EE&C Plan costs directly assigned to each customer class to the total of EE&C costs directly assigned to all customer classes.

Q. Does the proposed Plan meet the Act's requirement that at least 10 percent of the savings be achieved from government and nonprofit entities?

A. Yes.

Q. Does the proposed Plan meet the low income saving targets?

A. Yes. Programs available to the low-income customers account for six percent (6%) of

the savings in the portfolio, which is equal to the low-income customers' share of PPL Electric's 2009-2010 forecast sales.

Q. Does the proposed Plan provide a detailed description of each program in the Plan and calculation of benefits and costs?

A. Yes. The Plan follows the format outlined in the template issued by the Commission by Secretarial Letter dated May 7, 2009 at Docket No. M-2008-2069887. All programs in the Plan were evaluated for cost effectiveness according to the procedures outlined in the letter concerning the TRC test and algorithms defined in the Standard Practice Manual.

Q. How does PPL Electric propose to track and monitor the performance of the proposed portfolio of programs?

A. Activities for all programs in the portfolio will be tracked and monitored through an Energy Efficiency Management Information System, which the Company intends to develop and deploy through a CSP. This system will provide PPL Electric with the capability to record activities and transactions related to the implementation of the plan, monitor activities as they occur, analyze performance, monitor savings and expenditures, and report the results. This system will also be designed to provide the necessary information for audit by the statewide EE&C Plan evaluation contractor. The Company is currently developing a complete set of specifications for the tracking system, and it expects to solicit proposals from qualified vendors once the features and capabilities of the system are fully specified.

Q. Does the proposed Plan contain procedures for quality assurance and measurement and verification of performance of the proposed programs?

A. Yes. The Plan incorporates rigorous procedures for tracking the performance of programs in the Plan, assuring quality of service and verification of savings. The Plan describes procedures for on-going monitoring of program activities through a planned Energy Efficiency Management Information System. The Plan also describes the process for quality assurance through sample-based inspection of measures after they are installed, so as to ensure equipment quality, proper installation, and operation. Although the actual methodology for impact evaluations will be determined by the statewide EE&C Plan Evaluator, PPL Electric will make every effort to ensure that all necessary data for conducting impact evaluations will be available through the planned tracking system. The Company also plans to issue a request for proposals to hire an independent measurement and verification contractor for conducting impact evaluations of its programs.

Q. Please describe any factors that, in your judgment, may jeopardize PPL Electric's ability to meet its targets under the Plan.

A. PPL Electric has made every effort to ensure the Plan's goals will be achieved through well-conceived market communication and outreach strategies, appropriate incentive mechanisms, and efficient deployment. To account for uncertainties inherent in a project plan of this type, the conservation targets are set to exceed the requirements of Act 129 in both 2011 and 2012.

However, as in any plan of this scope, uncertainties remain. PPL Electric recognizes that the Plan's ability to meet the projected targets is ultimately a function of consumers' ability and willingness to participate in the proposed programs. This, in turn, is influenced by a number of factors, particularly macro-economic conditions, which may inhibit consumers' investment in energy-efficiency and conservation measures. Such cost barriers to participation are likely to be especially severe in the commercial and industrial markets where the implementation of energy-efficiency projects can involve sizable initial capital investment and significant lead time. Significant barriers also exist in the new construction markets due to the recent slowdown in construction activity. Finally, the timeline for the Plan's implementation poses considerable logistical and administrative challenges, particularly in regard to peak load reduction goals.

Q. Does this conclude your direct testimony?

A. Yes.