



Four Penn Center  
1600 John F Kennedy Blvd.  
Philadelphia, PA 19103  
215-587-1000 Main  
215-587-1444 Fax  
www.postschell.com

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David B. MacGregor

dmacgregor@postschell.com  
215-587-1197 Direct  
215-320-4879 Fax  
File #: 2507-140069

December 27, 2010

E-FILE

Rosemary Chiavetta  
Secretary  
Pennsylvania Public Utility Commission  
Commonwealth Keystone Building  
400 North Street, 2nd Floor North  
P.O. Box 3265  
Harrisburg, PA 17105-3265

**RE: Implementation of the Alternative Energy Portfolio Standards of 2004: Standards for the Participation of Demand Side Management Resources - Technical Reference Manual 2011 Update - Docket No. M-00051865**

Dear Secretary Chiavetta:

Enclosed please find the original Comments of PPL Electric Utilities Corporation in the above-referenced proceeding.

Copies have been provided to the persons in the manner indicated on the certificate of service.

Respectfully Submitted,

  
David B. MacGregor

DBM/jl

Enclosures

cc: Honorable James H. Cawley  
Honorable Wayne E. Gardner  
Honorable Robert F. Powelson  
Honorable Tyrone J. Christy  
Honorable John F. Coleman, Jr.  
Kriss E. Brown, Law Bureau  
Greg Shawley, CEEP

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**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Implementation of the Alternative Energy Portfolio Standards of 2004: Standards for the Participation of Demand Side Management Resources- Technical Reference Manual 2011 Update : : Docket No. M-00051865

**COMMENTS OF  
PPL ELECTRIC UTILITIES CORPORATION**

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

**I. INTRODUCTION**

By Tentative Order entered November 24, 2010, the Public Utility Commission (“Commission”) requested comments on the proposed 2011 update of the Commission’s Technical Reference Manual (“TRM”).<sup>1</sup> The Tentative Order invites comments from interested parties on several changes and additions to the 2010 version of the TRM.<sup>2</sup>

PPL Electric Utilities Corporation (“PPL Electric” or the “Company”) has actively participated in all of the proceedings instituted by the Commission to implement Act 129 of 2008, 66 Pa.C.S. § 2806.1 (“Act 129”). The Company appreciates this opportunity to comment on the Commission’s proposed revisions to the TRM. PPL Electric has organized its comments into two sections: (1) technical comments on the specific modifications that the Commission proposes to make in the 2011 version of the TRM; and (2) factual, legal and policy arguments in opposition to the Commission’s proposal that electric distribution companies (“EDCs”) be

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<sup>1</sup> *Implementation of the Alternative Energy Portfolio Standards Act of 2009: Standards for the Participation of Demand Side Management Resources – Technical Reference Manual Update*, Order entered November 24, 2010, at Docket No. M-00051865. (“Tentative Order”).

<sup>2</sup> *Implementation of the Alternative Energy Portfolio Standards Act of 2009: Standards for the Participation of Demand Side Management Resources – Technical Reference Manual Update*, Order entered June 8, 2010, at Docket No. M-00051865. (“2010 TRM”).

required to apply these 2011 TRM proposals to their existing 2009—2013 Energy Efficiency & Conservation plans (“EE&C plans”).

**II. EXECUTIVE SUMMARY**

The proposed 2011 TRM update should be substantially revised and in any event should not be applied to current Commission-approved EE&C plans. In particular, the proposed reduction in compact fluorescent light bulb (“CFL”) hours of use (“HOU”) from 3.0 to 1.9 hours, has simply no substantial, credible evidence to support the proposed revision. The Tentative Order relies upon a recent California study and a U.S. Department of Energy (“DOE”) study to support this change. The factual situation in California is fundamentally different from Pennsylvania, and there is no credible basis upon which to simply apply the results of that study to PPL Electric. Similarly, the recent DOE study relies on the same California study and on a 2002 DOE study that relied on 1996 data from Oregon and Washington. This information in this study is out of date and again relies on data from geographic areas that are not comparable to Pennsylvania. Results of studies from other states show far higher burn rates for CFLs than California and thereby refute the validity of applying the California analysis to other geographic areas. The Commission itself, in the 2009 TRM update, has specifically recognized that it is not appropriate to rely on data from other states to change CFL burn times in Pennsylvania.

In addition, PPL Electric presents in these comments the results of a PPL Electric specific study which shows that the CFL HOU should, if anything, be increased, and certainly not decreased. The Company’s study found the HOU for all CFLs in the five main rooms of the home was 3.8 hours.

Of equal importance, the Tentative Order, for the first time, purports to not only update the TRM but also to require EDCs to amend their existing Commission-approved EE&C Plans to reflect the proposed TRM revisions. This proposal should be rejected for several reasons.

First, as a factual matter, and as explained in detail below, adoption of the Tentative Order and the unilateral amendment of PPL Electric's EE&C Plan would have a devastating impact on PPL Electric because it would seriously jeopardize the Company's ability to comply with Act 129 compliance requirements and expose it to very substantial potential civil penalties. The Tentative Order acknowledges that applying the TRM update to amend existing EE&C Plans will require "the deployment of additional measures to meet statutorily mandated targets." Tentative Order, p. 5. Given the very prescriptive nature of Act 129, *i.e.*, specific and mandatory conservation requirements, specific and mandatory compliance dates, a hard cap on spending, and the need to develop revised plans and obtain Commission approval thereof in response to the TRM update, it is very unlikely that PPL Electric will be able to comply with Act 129 if the Tentative Order is adopted.

Second, the Tentative Order's purported application of the TRM update to unilaterally amend EE&C Plans is procedurally flawed. The TRM, as repeatedly described by the Commission, is a "guidance" document. It is not a regulation or other binding requirement and cannot have the force of law unless and until it is integrated into a formal amendment to an EE&C Plan. Act 129, Section 703(g)<sup>3</sup> of the Public Utility Code, and the Commission's own prior orders clearly establish the procedures required to amend an EDC's EE&C Plan.<sup>4</sup> The Commission's Tentative Order inappropriately and unlawfully seeks to bypass these procedural requirements and should not be adopted.

Third, PPL Electric specifically and appropriately relied on the 2009 TRM to develop its four-year EE&C Plan. The assumptions in the 2009 TRM, including the deemed savings for

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<sup>3</sup> The Commission "may...after notice and opportunity to be heard...rescind or amend any order made by it." 66 Pa.C.S. § 703(g).

<sup>4</sup> *Petition of PPL Electric Utilities Corporation for Approval of its Energy Efficiency and Conservation Plan*, Order entered October 26, 2009, Docket No. M-2009-2093216.

CFLs (based on 3 hours of use per day per CFL), were central and critical to PPL Electric's EE&C Plan. The changes reflected in the 2011 TRM update would seriously jeopardize PPL Electric's ability to comply with the conservation requirements of Act 129 and expose PPL Electric to potentially significant civil penalties. The effect of the Tentative Order would be to retroactively change PPL Electric's approved EE&C Plan, would adversely affect its substantive rights and therefore would be unlawful. Even if construed as applying prospectively only, the Tentative Order would be unlawful under established principles of detrimental reliance and equitable estoppel.

Fourth, for all of the reasons set forth in these Comments, it would be extremely poor public policy to revise PPL Electric's EE&C Plan in mid-course and thereby seriously jeopardize its ability to comply with the law and be subjected to potentially substantial civil penalties. On these facts, such action would clearly constitute an abuse of administrative agency discretion, would violate PPL Electric's substantive due process rights and result in a taking of property without just compensation.

PPL Electric is not opposed to adding energy conservation measures to the TRM or to TRM updates which are supported by credible evidence. These updates provide important guidance and provide opportunities for PPL Electric to implement measures already in its approved EE&C Plan (but not previously in the TRM) or for PPL Electric to propose changes to its EE&C Plan, both of which will enhance savings to customers and provide more efficient use of customer supplied funds to achieve Act 129 compliance. PPL Electric, however, is opposed and cannot support fundamental and unsupported changes to the deemed savings calculations for conservation measures in the middle of the execution of a Commission-approved EE&C plan which may effectively prevent it from complying with the law. The appropriate course here is to

adopt valid and well supported changes to the TRM and make it clear that they will not apply to already approved plans.

### **III. BACKGROUND**

The energy conservation provisions of Act 129 are unusually prescriptive. They establish mandatory minimum demand and energy conservation reduction requirements; they establish mandatory non-discretionary deadlines for compliance with these requirements; they establish a hard cost cap on the amount each EDC can spend on energy conservation programs; the programs must be cost effective under a total resource cost test; and they impose civil penalties of \$1 million to \$20 million for non-compliance.

Act 129 requires EDCs with at least 100,000 customers to adopt an EE&C plan, approved by the Commission, to reduce electric consumption by at least one percent (1%) of its expected consumption for June 1, 2009 through May 31, 2010. 66 Pa.C.S. § 2806.1(b) and (c). This one percent (1%) reduction is to be accomplished by May 31, 2011. By May 13, 2013, the total annual weather-normalized consumption is to be reduced by a minimum of three percent (3%). Also, by May 31, 2013, peak demand is to be reduced by a minimum of four-and-a-half percent (4.5%) of the EDC's annual system peak demand in the 100 hours of highest demand, measured against the EDC's peak demand during the period of June 1, 2007 through May 31, 2008. 66 Pa.C.S. § 2806.1(d).

EDC EE&C plans are four-year programs designed to achieve these statutory conservation and peak load reduction requirements, by specified dates, within the specified cost cap. Section 2806.1(g) of Act 129 requires that the total cost of any EDC EE&C Plan not exceed two percent (2%) of the EDC's total annual revenues as of December 31, 2006. 66 Pa.C.S. § 2806.1(g). Section 2806.1(f)(2) of Act 129 provides that an EDC that fails to achieve the reductions in energy consumption and peak demand within the statutory time frames shall be

subject to a civil penalty of not less than \$1,000,000 and not exceed \$20,000,000. 66 Pa.C.S. § 2806(f)(2). This section further provides that any penalty paid by an EDC shall not be recoverable from ratepayers. *Id.* Moreover, if an EDC fails to achieve its required reductions in consumption, responsibility to achieve the reductions is transferred to the Commission. 66 Pa.C.S. § 2806.1(f)(2)(ii).

Act 129 requires an EDC to demonstrate that its plan is cost-effective using a total resource cost test (“TRC”) approved by the Commission.<sup>5</sup> 66 Pa.C.S. § 2806.1(a)(3). In implementing this requirement, the Commission determined to use the TRM that was originally developed by the Commission pursuant to the Pennsylvania Alternative Energy Portfolios Standards Act.<sup>6</sup> Specifically, the Commission “initiate[d] a process to update and expand the TRM to provide for additional energy efficient technologies, under Docket No. M 00051865.” *Implementation Order*, p. 13. In order to monitor and verify data collection, quality assurance and the results of each EDC’s EE&C Plan, in the first quarter of 2009 the Commission initiated a process to update and expand the TRM. In addition, the Commission stated “[t]hereafter, the Commission will periodically review and initiate the process to update the TRM as needed. Any such updates will be prospective in nature and applicable to measures undertaken after final approval of any TRM changes.” *Implementation Order*, p. 14.

By Order entered June 1, 2009, the Commission approved the 2009 version of the TRM (“2009 TRM”).<sup>7</sup> In approving the 2009 TRM, the Commission noted that, “the TRM will provide vital guidance to EDCs in developing their EE&C plans.” 2009 TRM Order, p. 9,

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<sup>5</sup> *In re: Implementation of Act 129 of 2008 – Total Resource Cost (TRC) Test (TRC Test Order)* (Order entered June 23, 2009), Docket No. M-2009-2108601.

<sup>6</sup> *Energy Efficiency and Conservation Program Implementation Order*, Order entered on January 16, 2009, at Docket No. M-2008-2069887, pp. 13-14. (“*Implementation Order*”)

<sup>7</sup> *Implementation of the Alternative Energy Portfolio Standards Act of 2009: Standards for the Participation of Demand Side Management Resources – Technical Reference Manual Update*, Order entered June 1, 2009, at Docket No. M-00051865. (“2009 TRM Order”).

(emphasis added). Consistent with the Commission's statement, PPL Electric relied upon the 2009 TRM as guidance to develop its EE&C Plan.

On July 1, 2009, PPL Electric filed its EE&C plan with the Commission in compliance with Section 2806.1 (b)(1)(i) of Act 129 and the Commission's January 16, 2009 *Implementation Order*. PPL Electric's EE&C Plan includes a broad portfolio of energy efficiency, conservation practices and peak load reductions, and energy education initiatives. PPL Electric's portfolio of programs is designed to provide customer benefits and to meet the energy saving and peak load reduction goals set forth in Act 129, all within the cost cap imposed by Act 129. These programs are the key components of a comprehensive electric energy efficiency initiative designed to achieve the 1,146,000 MWh of reduced energy consumption and 297 MW of peak demand reductions required by Act 129.

As approved by the Commission, PPL Electric's 2009-2013 EE&C Plan was required to include measures and programs to achieve PPL Electric's calculated electricity consumption and peak load reduction targets of:

- 1% energy savings by 2011, which is 382,000 MWh;
- 3% energy savings by 2013, which is 1,146,000 MWh; and
- 4.5% peak load reduction by September 30, 2012, which is 297 MW.

In addition, consistent with Section 2806.1(g), PPL Electric's Commission-approved 2009-2013 EE&C Plan is designed to comply with the designated expenditure cap of 2% of 2006 Annual Revenues for each year of the four-year plan, which equates to an average of approximately \$61.5 million per year for four program years and approximately \$246 million for the entire EE&C Plan period.

As noted above, the Commission updated and amended the TRM to fulfill the evaluation process requirements contained in Act 129. *Implementation Order*, p. 13. Consistent with the



Commission's Implementation and 2009 TRM orders, PPL Electric relied on the 2009 TRM as guidance to develop its 2009-2013 EE&C Plan, including the residential CFL and Appliance Recycling programs. PPL Electric's EE&C Plan states that, "[s]avings for most measures in the Plan are drawn from the Commission's TRM." PPL Electric EE&C Plan, p. 41.

PPL Electric's EE&C plan proceeding was a fully-litigated proceeding and included the participation by statutory advocates, the Department of Environmental Protection, customer group and potential competitive service providers ("CSPs") and other interested parties. The Company's EE&C plan filing was approved by the Commission on October 26, 2009 ("2009-2013 EE&C Plan").<sup>8</sup> The 2009 TRM was used by the Commission in evaluating and ultimately approving PPL Electric's 2009-2013 EE&C Plan.

In its *Implementation Order*, the Commission requires EDCs to submit an annual report documenting the effectiveness of their EE&C Plans, the measurement and verification of energy savings, and the evaluation of cost-effectiveness of expenditures. By Secretarial Letter dated June 24, 2010, the Commission directed EDCs to submit their 2010 Act 129 annual report by September 15, 2010. Further, the Commission noted in its order approving PPL Electric's EE&C Plan, that because the Company's Commission-approved 2009-2013 EE&C Plan was approved by Commission order, procedures for rescission and amendment of Commission orders must be followed to amend the order and to assure due process for all affected parties. PPL Electric EE&C Plan Order, pp. 91-92, 66 Pa.C.S. § 703(g) (Notice and opportunity to be heard are required prior to rescinding or amending previously approved Commission orders). Consistent with the Commission's directives, PPL Electric filed its annual report on September 15 and a petition requesting Commission approval to make certain modifications to its EE&C

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<sup>8</sup> *Petition of PPL Electric Utilities Corporation for Approval of its Energy Efficiency and Conservation Plan*, Order entered October 26, 2009, Docket No. M-2009-2093216.

Plan. PPL Electric's petition was subject to an evidentiary hearing and the Administrative Law Judges' Recommended Decision was issued on December 17, 2010.

On November 24, 2010, the Commission issued a Tentative Order proposing modifications to the 2010 version of the TRM. The Commission's 2011 TRM update states that the order "discusses the significant proposed changes contained in the proposed 2011 version of the TRM." Tentative Order, p. 5. Included in the Commission's proposed TRM changes are changes to the savings calculation or measure eligibility requirements for residential CFLs, refrigerator/freezer retirement, other energy conservation measures, and proposed additions to the TRM. *Id.* Further, these revisions, if approved by the Commission, will require EDCs to implement these changes in their currently effective EE&C plans. *Id.* The Commission notes in its Tentative Order that, "[t]he lowering of the deemed savings may require the deployment of additional measures to meet statutorily mandated targets." *Id.*

As discussed more fully below, the proposed modifications to the CFL and refrigerator/freezer deemed savings calculations, and other proposed modifications, clarifications and corrections detailed in the Commission's 2011 TRM update, if approved, would substantially impact PPL Electric's EE&C Plan and seriously jeopardize the Company's ability to meet its Act 129 obligations. For example, if the Commission were to adopt the proposed reduction in burn hours for CFLs from 3.0 hours to 1.9 hours, a 40 % decrease, the estimated energy savings for CFLs will also decrease 40%. If that change were to become effective in program year 3 (June 1, 2011) as currently proposed, it would decrease projected savings in the Company's CFL program by approximately 74,000 MWh/yr (40% of the 186,000 MWh/yr projected CFL savings in program years 3 and 4) with no associated reduction in program costs (the same number of CFLs will be distributed as planned but the resultant savings will be 40%

less). The 74,000 MWh/yr of reductions are equivalent to 6% of the Company's total energy savings compliance target and 12% of the energy savings for the final 2 program years. These are very significant percentages, which if adopted, may effectively preclude PPL Electric from complying with Act 129.

#### **IV. PPL ELECTRIC'S TECHNICAL COMMENTS ON THE 2011 TRM UPDATE**

In this section, PPL Electric will provide specific technical comments on the proposed modifications contained in the proposed 2011 TRM. As noted above, the Commission undertakes an annual review and update of the TRM. PPL Electric supports this process, as it provides necessary guidance to EDCs in identifying new measures that may be added to their existing EE&C plans through established procedures and provides needed clarifications and corrections. Further, the continued updating of the TRM serves to provide the EDCs with a useful tool in preparing for possible future EE&C plans following the conclusion of their existing programs. However, as addressed in Section V below, PPL Electric, for a variety of factual, legal and policy reasons, opposes the immediate and unilateral application of these modifications to its 2009-2013 EE&C Plan.

In this section, PPL Electric has organized its technical comments as follows:

- A. Comments on Proposed TRM Modifications to CFLs and Refrigerator/Freezer Recycling
- B. Comments on proposed addition of measures to the TRM.
- C. Comments on proposed other modifications, clarifications and improvements to the TRM.

#### **A. PROPOSED MODIFICATIONS TO CFL AND REFRIGERATOR AND FREEZER RECYCLING PROGRAMS**

##### **1. 2011 TRM Proposed Modifications**

The Commission's Tentative Order releasing the proposed TRM for comments, "discusses the significant proposed changes contained in the proposed 2011 version of the

TRM.” Tentative Order p. 3. These proposals include revising the baseline data for certain residential CFL lighting and refrigerator/freezer retirement measures. Tentative Order, p. 5. Specifically, the proposed 2011 TRM would reduce the deemed daily hours of operation for the residential CFL measure from 3.0 hours in the 2010 TRM<sup>9</sup> to 1.9 hours in the proposed 2011 TRM update, a reduction of approximately 40%. In support of this change, the Tentative Order relies on a 2010 study.<sup>10</sup> *Id.* In addition, the proposed 2011 TRM would reduce the refrigerator/freezer retirement measure’s annual energy consumption savings from 1,728 kWh in the 2010 TRM to 1,659 kWh, and would add several restrictions to measure eligibility (recycled appliance must be at least 10 years old, cannot be primary appliance, and cannot be replaced with a new appliance). The Commission’s proposed changes to the refrigerator/freezer retirement kWh savings proposed, and presumably the measure eligibility restrictions purportedly “reflect actual data obtained by the EDCs and their contractors, rather than the average of the results from past studies that was used for the 2010 TRM.” *Id.*

In proposing these changes the Commission recognizes that, “[t]he lowering of the deemed savings may require the deployment of additional measures to meet statutorily mandated targets.” *Id.* However, the Commission asserts that the changes are necessary “to ensure that the ratepayers are getting the energy savings, and the associated energy market effects, they are paying for.” *Id.* The Commission requests comments to assess the “tradeoff” between the proposed revisions to the CFL and the refrigerator/freezer retirement kWh and “the possibility

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<sup>9</sup> See Table 4-3 on page 26 of the 2010 TRM at <http://www.puc.state.pa.us/electric/Act129/TRM.aspx>.

<sup>10</sup> On December 17, 2010, the Commission issued an Errata where, for the first time, it references footnote 6-Efficiency Vermont Technical Reference User Manual (July 2008) to support the 1.9 HOU for CFLs. This is somewhat surprising since the Vermont TRM specifies 3.4 HOU for CFLs. The Commission may have intended, but did not, cite to footnote 7- United States Department of Energy, Energy Star CFL Market Profile: Data Trends and Market Insights, prepared by D&R International, September 2010, which suggests 1.9 HOU. The September 2010 DOE study references two other studies (1) a KEMA (2010) “Results from California’s Residential Lighting Metering Study”, a study of the CFL market in California and (2) a 2002 DOE study – US Lighting Market Characterization, Volume 1, a study that relied on lighting values from a 1996 study conducted in Oregon and Washington.

that such adjustments may require greater market penetration to meet mandated goals.” Tentative Order, p. 5.

**a. CFL Hours of Use**

The Company strongly objects to the 1.9 hour burn time proposed for residential CFLs (reduced from 3.0 to 1.9 hours) for several reasons. In support of the Company’s position, attached as Appendix I to these comments is a verified report by PPL Electric’s independent evaluator, The Cadmus Group (“Cadmus”), addressing this issue. (“Cadmus Report”). Following is a summary of the technical deficiencies in the Commission’s proposal to modify the CFL hours of use (“HOU”) calculation in the 2011 TRM:

The recommended value (1.9 hours per CFL) was based upon the DOE’s September 2010 CFL market profile (prepared by D&R International). This document, in turn, cites:<sup>11</sup>

- A study of the CFL market in California published by KEMA in February 2010.<sup>12</sup> (The 2010 KEMA study is discussed below.)
- DOE’s lighting market characterization published in 2002, prepared by Navigant Consulting.

While the 2010 KEMA study for California Public Utilities Commission (“CPUC”) study appears to be reasonably designed (it included the metering of CFLs and incandescent lamps in 1,200 households), it is not reasonable or appropriate to apply the California hours of use (HOU) value to Pennsylvania because of the following fundamental differences between California and Pennsylvania that clearly and significantly impact CFL HOU:

- CFL Saturation and Market Transformation/Maturity. The California utilities have some of the longest running CFL programs in the country, and as a result, California has a significantly higher saturation of CFLs than many others states, including Pennsylvania.

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<sup>11</sup> See: D&R International, 2010.

<sup>12</sup> See: KEMA, 2010.

It is well-established that as CFL saturation increases and market transformation progresses, consumers who have already installed CFLs in high-use sockets begin installing CFLs in a greater variety of locations in the home, including locations with fewer hours of use. Therefore, the average HOU for all CFLs in a house will tend to decrease as saturation increases. Applying the results of a study from a higher saturation state to determine deemed savings from use of CFLs in a lower saturation state is clearly inappropriate. Cadmus Report, p. 3.

- Geography. The CPUC lighting evaluation does not account for annual differences in cloud cover.<sup>13</sup> It is axiomatic that artificial light is used more extensively in regions experiencing less natural light. California has more annual sunshine than many other regions of the country, including Pennsylvania. Cadmus Report, p. 2. Indeed, on average, the major cities in California experience 38 percent more annual sunshine than the major cities in Pennsylvania. *Id.*
- Electricity Pricing. All else equal, a higher cost of electricity will likely cause consumers to use less and more efficient lighting and all else equal would result in fewer hours of use in states with higher retail electric rates. Residential electricity prices in California are 18% to 50% higher than Pennsylvania, which would tend to decrease hours of all lighting, including CFLs.
- Customer Behaviors and Environmental Awareness/Consciousness. Customers in different states or parts of the United States may have different levels of awareness or commitment to environmental issues, including energy conservation. In contrast to Pennsylvania EDC CFL programs that began in 2010, the California's EDCs have some

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<sup>13</sup> Metering for the CPUC study was conducted in the three major IOUs' service areas (PG&E, SCE, and SDG&E); the study did not include any metering in California's northern, i.e., darker and wetter, counties.

of the longest-running CFL programs in the country. California EDCs began promoting CFLs to their residential customers in 1989. Over that time, California has experienced significant increases in consumer awareness of CFLs, CFL availability, and per-household CFL sales, as well the potential effects of these programs in stimulating the supply of and lowering product prices. Cadmus Report, p. 3.

As set forth above, the California study has limited application to Pennsylvania and the Commission should not rely upon it to substantially modify the deemed savings calculations used by Pennsylvania EDCs.

The second study referenced in the 2010 DOE report is a 2002 DOE study.<sup>14</sup> This study also has no application to Pennsylvania. The residential lighting values used in this study were from a 1996 study led by Tacoma Public Utilities (TPU), sponsored by the Bonneville Power Administration. The study relied on metered data to characterize general lighting use in the residential sector Oregon and Washington. The 2002 DOE study itself demonstrates its limitations and why its results cannot be transferred to other states:

- "...the database does not provide information on the type of fluorescent lamps installed."
- "The TPU study data, because it is isolated to one small region of the country and covers a period of only several months, poses an even more serious limitation when extrapolating to the rest of the country than does the XenCAP database [used in the non-residential analysis]."<sup>15</sup>

The lack of data relative to the types of fluorescent lamps installed and the limited scope of the data from Oregon and Washington are two significant flaws in the DOE study and undermine its use to support changes to the deemed savings calculations in Pennsylvania. For the reasons set forth above, the proposed changes in hours of use of CFLs in Pennsylvania based on a California study and a 2002 DOE study based on 15-year old data from a small region in the northwest

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<sup>14</sup> See: Navigant Consulting, 2002.

<sup>15</sup> Navigant, 2002, p. 16.

United States is clearly inappropriate and should not be adopted without substantial further analysis and a Pennsylvania-specific study.

Importantly, the Company's own recent market research indicates that a 1.9 HOU for CFLs in PPL Electric's service territory is not appropriate. In program year 1, the Company's Act 129 independent evaluator (The Cadmus Group) conducted Act 129 telephone surveys with 352 residential customers. Respondents were asked to report the number of CFLs installed in each room. This survey found the Company's customers installed CFLs most frequently in higher use areas, *i.e.*, bedrooms, living rooms, kitchens, family rooms and bathrooms. These results are quite different from the conclusions reached in the DOE Report. The DOE report found that customers did not necessarily install CFLs in higher use sockets, further suggesting there are different customer behaviors in different states.

In addition, the Company also conducted a separate CFL study through the Company's consumer panel with 363 residential respondents participating. This study found an average of 4.6 hours use in kitchens (in kitchens, 32% of the sockets were using CFLs ), and 4.7 hours of use in family rooms (where 35% of the sockets were using CFLs), and 2.2 hours of use in bedrooms (where 35% of the sockets were using CFLs). The average HOU for all CFLs in the five main rooms of the home was 3.8 hours. These HOU are self-reported by the customer and may not be conclusive until confirmed through a more quantitative light logging study. However, the preliminary results clearly show that the Company's customers are installing CFLs in higher use sockets and that the average HOU substantially exceeds the 3.0 HOU in the company's current EE&C Plan. At a minimum, these studies conclusively demonstrate that there is no current factual basis to apply the 1.9 HOU number from the 2010 DOE market profile to PPL Electric's service territory.



Recent studies from other states further support the conclusion that 1.9 HOU for CFLs is not appropriate for Pennsylvania:

- A 2009 GDS Associates study conducted in New England (with 657 installed meters) found an average of 2.8 HOU for CFLs.<sup>16</sup>
- Vermont Energy Investment Corporation's draft document for Ohio specified 2.85 hours of use per day for residential CFLs.
- NEEP's 2010 TRM specifies 2.77 hours per day.
- Vermont Energy Investment Corporation's February 19, 2010 Technical Reference Users Manual for Vermont specifies 3.4 hours of use per day.

For the reasons explained above, further analysis would be required to determine if these conclusions are applicable to Pennsylvania. Hours of use in other states can vary depending on demographics, cloud cover, market maturity, electricity prices, customer awareness and environmental consciousness, and the study method (surveys, logging, etc.). However, these studies clearly demonstrate that it is inappropriate to rely solely on the recent DOE study.

Moreover, this conclusion also is consistent with this Commission's own precedent. Specifically, the Commission has previously rejected requested changes to the CFL HOU based in the TRM where the request was based solely on data from other states.<sup>17</sup> For example, in the Commission's 2009 TRM update, Lawrence Berkeley National Laboratory ("LBNL") recommended a reduction in the hours of use for compact fluorescent lighting ("CFL") from 3.4 hrs/day to 2.0 hrs/day. The Energy Association of Pennsylvania and PECO Energy Company recommended against reducing TRM hours of use for CFLs because LBNL's recommendation

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<sup>16</sup> NMR, RLW Analytics, GDS Associates. *Residential Lighting Markdown Impact Evaluation*. Prepared for Markdown and Buydown Program Sponsors in Connecticut, Massachusetts, Rhode Island, and Vermont. January 2009.

<sup>17</sup> 2009 TRM Order, p. 6.

was not based on data gathered in Pennsylvania. 2009 TRM Order, p. 6. The Commission rejected LBNL's recommendation to reduce the TRM hours of use for CFLs to 2.0 hrs/day. *Id.*

PPL Electric acknowledges the benefit of ensuring that the TRM is kept current.<sup>18</sup> However, the Company does not support the proposed modification to 2011 TRM based on the results of the DOE report that relies heavily on a study completed in California. The Company suggests that the Pennsylvania EDCs conduct a statewide lighting study (logging of hours for CFLs in each specific EDC) to determine the most realistic estimated CFL burn hours for Pennsylvania by December 31, 2011. As an alternative, the Commission can coordinate this statewide lighting study, funded by the EDCs, using the same funding and cost collection mechanisms as the Statewide Evaluator contract. The results of that study would be used to determine the HOU value (or a different HOU value for each year) for residential CFLs effective June 1, 2013. Completing a Pennsylvania-specific CFL HOU study by December 31, 2011 will provide enough time for EDCs to incorporate new CFL savings assumptions in potential future EE&C Plans for post-6/1/13.

## **2. Refrigerator/Freezer Retirement and Recycling**

The Company also does not agree with the proposed changes to refrigerator/freezer retirement and recycling TRM protocol (Section 2.23). Similar to the CFL burn hours discussion, deemed savings per refrigerator/freezer should remain constant for the duration of the EE&C Plan (until 5/31/13). Changes to savings should become effective with the next version of Act 129 EE&C (6/1/13) to allow sufficient time for EDCs to adjust programs.

Regardless of the effective date as discussed above, the Company does not agree with the updated savings estimate proposed in the 2011 TRM. The 2011 TRM references the

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<sup>18</sup> As explained below in Section V, PPL Electric does object to the Commission's proposal to apply the change to the deemed savings calculation for residential CFLs to the Company's 2009-2013 EE&C Plan.

Refrigerator Retirement Savings Calculator<sup>19</sup> on the ENERGY STAR website for the updated savings estimate of 1,659 kWh. The calculator, which aggregates appliance sizes (e.g., 19.0 – 21.4 cubic feet) and ages (e.g. 1993-2000), is an end-user (consumer) tool meant to provide end users with general guidance and information about energy usage and it is not designed as a professional evaluation resource. Specifically, the calculator lacks the detail needed to accurately evaluate an entire appliance program. In addition, no information is provided as the source of the energy savings estimates used by the calculator.

The Company believes the best approach to determining energy savings associated with an appliance recycling program is a statewide (possibly with EDC-specific results) *in situ* metering study since it relies on participating appliances used in customer's homes. Where an *in situ* metering study is not included in an evaluation plan and budget, the Company recommends basing the savings estimate on one of the most robust available appliance consumption databases. Specifically, the Company recommends the California Energy Commission's database.<sup>20</sup> It should be noted that the database utilizes time of manufacture consumption data to reflect degradation in the refrigerator's performance over time and it relies on energy consumption estimates determined using Department of Energy testing protocol. Both add uncertainty, and the latter – as detailed in the cited CPUC report – has been shown to overestimate savings relative to *in situ* metering, given its inability to account for environmental and usage factors.

In addition to changing the deemed savings value for refrigerator/freezer recycling, the 2011 TRM proposes to add the following measure eligibility requirements:

- The refrigerator/freezer must be at least 10 years old

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<sup>19</sup> <http://www.energystar.gov/index.cfm?fuseaction=refrig.calculator>

<sup>20</sup> [http://www.energy.ca.gov/appliances/database/historical\\_excel\\_files/2009-03-01\\_excel\\_based\\_files/Refrigeration/](http://www.energy.ca.gov/appliances/database/historical_excel_files/2009-03-01_excel_based_files/Refrigeration/)

- The refrigerator/freezer must be a secondary unit that is not replaced

The Company does not support those changes because they will restrict participation by customers, potentially reduce energy savings, and are generally impractical to implement. Customers will not necessarily know the age of their refrigerator/freezer, would not always determine it correctly (before pick-up), or would not be willing to look it up (on the label or the ENERGY STAR database) before pick-up. Therefore, customers will likely schedule a pick-up with the appliance recycling contractor only to find out at pick-up that the unit is not eligible. This will inconvenience and frustrate customers, and will likely result in complaints to the EDCs and to the Commission.

There is no feasible way for the Company's independent evaluator or Statewide Evaluator to verify the reported age of the refrigerator without conducting ride-along site visits with the appliance recycling CSP. Those ride-along site visits would be costly, could be viewed negatively by customers, *i.e.*, "why does PPL Electric pay 3 or 4 people to come to my house to pick-up one refrigerator?", and provide limited benefits.

Also, removing a 9 year old refrigerator/freezer does have savings, albeit not as much as an older refrigerator. The Company does not want to discourage customers from recycling a refrigerator that is less than 10 years old. Therefore, it is more prudent to offer incentives for customers to remove and properly recycle any vintage refrigerator rather than have it land-filled, sold in the secondary market, or unnecessarily remain connected to the grid until it is old enough to be recycled. To the extent that a large number of relatively new refrigerators are recycled, those results will be reflected in future TRM savings estimates.

Finally, the appliance recycling CSP may not be able to determine if a refrigerator/freezer was a secondary or primary unit. For example, the customer installs a new refrigerator on

Monday, moves the old one to the garage at the same time, and arranges pick-up of the old refrigerator (for recycling) for the next day. The old refrigerator appears to be “secondary” unit (for 1 day) when, in effect, it was replaced with a new one the day before. Even if the customer reports it as a secondary unit, there is no way for the appliance recycling CSP, the EDC, or the EDC’s independent evaluator to verify this fact.

In addition, the intended purpose of Section 2.29 (Energy Star Refrigerator/Freezer Retirement) is unclear and it appears to duplicate Section 2.23 (Refrigerator/Freezer Retirement and Recycling).

For the reasons set forth above, PPL Electric opposes the proposed modifications contained in the 2011 TRM update to the refrigerator/freezer program.

#### **B. EE&C MEASURES ADDED TO THE TRM**

The Company supports the Commission’s efforts to add new measures to the TRM and has some technical comments to improve these new measures. The proposed new measures are not presently in the 2010 TRM but are already included in one or more EDC’s programs or EDCs may choose to add these measures in the future. Adding these measures to the TRM provides clear direction, uniformity and certainty on how their savings are determined, and provides more savings opportunities for consumers. If these measures are not added to the TRM, savings would have to be estimated using custom measure protocols or these measures could not be offered to customers, thereby reducing the savings opportunity for consumers. Those custom measure protocols would be unnecessarily complex with more costly (for the Company and for the customer who may have to install metering) evaluation, measurement, and verification methods than those required for “standard” measures in the TRM. The custom protocols would also take much longer to approve and process, likely delaying customer’s implementation of

EE&C measures or projects. Therefore, the Company supports adding the following measures to the TRM, but does provide limited comments on certain measures:

- Electric clothes dryer with moisture sensor. No comments.
- Efficient electric water heater. No comments.
- Electroluminescent night light. No comments.
- Furnace whistle. No comments.
- Heat pump water heater. The table in the TRM should be clarified as follows

(changes shown in black line):

Measure Name	Heat Pump Water Heaters
Target Sector	Residential Establishments
Measure Unit	Water Heater
Unit Energy Savings	2,202 <b>kWh for 2.3 Energy Factor</b> , 1,914 kWh for <u>2.0</u> Energy Factor
Unit Peak Demand Reduction	0.202 <b>kW for 2.3 Energy Factor</b> 0.175 kW for <u>2.0</u> Energy Factor
Measure Life	14 years

- Home audit conservation kits. The in-service rate for CFLs provided to residential customers with a home audit conservation kit should be the same as the in-service rate for residential CFLs specified under the “Residential Lighting” section of the TRM -- 84%, not via EDC information gathering which is unnecessarily costly.
- LED night light. No comments.
- Low-flow faucet aerator. Clarify this measure applies to kitchens and bathrooms.
- Programmable thermostat. No comments.

- Room air conditioner retirement. Delete “The hypothetical nature of this measure implies a significant amount of risk and uncertainty in the energy and demand impact estimates” from the end of the first paragraph below the first table. In the “Algorithms” section, the following sentence needs a reference (footnote) after the word “in” (shown in bold below): “The energy and demand impacts are based on corrected ENERGY STAR calculator EFLH values for the ES Room AC measure as shown **in**, and ...” In addition, in Table 2-19, remove references to “lowest EFLH” and “highest EFLH” since no other table in the TRM points out the lowest and highest values in the table.
- Smart strip plug outlets. No comments.
- Residential whole house fans. Add the following table, which is helpful to EDCs, CSPs, and Trade Allies who read the TRM. This type of summary table is currently included in some other TRM measures. The Company suggests adding similar tables to all TRM measures:

Measure Name	Whole house fan
Target Sector	Residential Establishments
Measure Unit	Whole House Fan
Unit Energy Savings	Varies by location (187 kWh/yr to 232 kWh/yr)
Unit Peak Demand Reduction	0 kW
Measure Life	15 years

- Solar water heaters. No comments.
- Water heater pipe insulation. No comments.

- Ductless mini-split heat pumps. The Company recommends several improvements, clarifications, and corrections to the proposed protocol. The Company's proposed changes are reflected in blackline and attached as Appendix 2 to these Comments.
- Fuel switching- electric hot water heater to gas. No comments.
- Fuel switching- heat pump water heater to gas. No comments.
- Fuel switching- electric heat to gas heat. No comments.
- Ceiling and wall insulation. For Residential (ceiling/attic insulation): Table 2-33:
  - 1) Change SEER<sub>ac</sub> Default to 10;
  - 2) Change SEER<sub>ASHP</sub> Default to 10
  - 3) Change HSPF<sub>ASHP</sub> Default to 6.8

Source is Minimum Federal Standard for new Central Air Conditioners/Heat Pumps between 1990 and 2006

These changes conform the SEER and HSPF baselines to the same defaults used for residential programmable thermostats, which assume installation in older homes.

- Refrigerator/freezer recycling with replacement. Clarify that this protocol applies only for programs in which the EDC picks up an old refrigerator, replaces it with a new one, then recycles the old one, or to EDC-sponsored turn-in events. Otherwise, there is no assurance the old unit is properly recycled. This is consistent with the requirements of the room air conditioner recycling (with replacement) protocol.
- Energy Star Televisions. No comments.
- Anti-sweat heater controls. No comments.



- High efficiency refrigerator cases. No comments.
- High efficiency evaporator fan motors for walk-in refrigerator cases. No comments.
- Energy Star office equipment. No comments.
- Beverage machine controls. No comments.
- High efficiency ice machines. No comments.

The Company notes that the savings protocols for the additional measures listed above were established through the Commission's TRM Technical Working Group. That process was collaborative, interactive and effective. The Company recommends that all proposed additions and changes to the TRM use the same TRM Technical Working Group process. Some of the changes proposed for the 2011 (example: reducing the CFL hours of operation and changes to the Appliance Recycling protocol) did not utilize the TRM Technical Working Group. The Company strongly believes that there is no reason for "some" of the measures to use the TRM Technical Working Group while others do not, especially if the TRM Technical Working Group is effective.

### **C. OTHER MODIFICATIONS, CLARIFICATIONS, AND CORRECTIONS TO THE TRM**

To the extent that the Company is able to accommodate and absorb modifications, clarifications and corrections made in subsequent TRM updates, the Company will voluntarily do so. However, the Company's ability to do so will be based upon its ability to implement such changes but remain within the budget and program constraints of its existing EE&C Plan and its ability to continue to meet its Act 129 obligations. However, all of these items should utilize the TRM Technical Working Group process so EDCs can understand the rationale for the changes and work collaboratively with the Statewide Evaluator and