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March 12, 2010

VIA OVERNIGHT UNITED PARCEL SERVICE

James J. McNulty, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120

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

Dear Secretary McNulty:

Enclosed for filing are an original and sixteen (16) copies of Comments of Metropolitan Edison Company, Pennsylvania Electric Company and Pennsylvania Power Company pursuant to the Commission's Tentative Order regarding revisions to the Technical Reference Manual entered February 2, 2010, in the above-captioned docket.

Please date stamp the additional copy and return it to me in the enclosed, postage-prepaid envelope. Please contact me if you have any questions regarding this matter.

Very truly yours,

Bradley A. Bingaman /dm

Bradley A. Bingaman

dlm
Enclosures

c: As Per Certificate of Service

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

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

COMMENTS OF METROPOLITAN EDISON COMPANY, PENNSYLVANIA ELECTRIC COMPANY AND PENNSYLVANIA POWER COMPANY

I. INTRODUCTION

On January 28, 2010, the Pennsylvania Public Utility Commission ("Commission") adopted a Tentative Order in the above-captioned proceeding proposing revisions and recommended changes to the existing Technical Reference Manual ("TRM") which is being used to help validate savings and provide support for the implementation of Act 129 of 2008 ("Act 129")[1]. The Tentative Order was subsequently entered by the Commission on February 2, 2010. A notice seeking comments to the Tentative Order and proposed revisions to the TRM appeared in the *Pennsylvania Bulletin* of February 20, 2010, 40 Pa. B.1057, and invited interested parties to submit comments on the proposed TRM within 20 days and reply comments within 35 days.

The Commission previously adopted an *Energy-Efficiency and DSM Rules for Pennsylvania's Alternative Energy Portfolio Standard, Technical Reference Manual*[2] to help

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[1] 66 Pa. C.S. 2806.1.

[2] *Implementation of the Alternative Energy Portfolio Standards Act of 2004: Standards for the Participation of Demand Side Management Resources – Technical Reference Manual Update*, Docket No. M-00051865 (Order entered October 3, 2005).

implement the Alternative Energy Portfolio Standards Act ("AEPS Act"), 73 P.S. §§ 1648.1 – 1648.8. Subsequently, the protocols for measurement and verification of energy savings and load reduction impacts associated with Electric Distribution Company ("EDC") Energy Efficiency and Conservation ("EE&C") Plans developed to meet the requirements of Act 129 were vetted through a collaborative process and specified in an updated TRM that was adopted in an Order in May 2009 (the "2009 TRM")[3]. The Commission recognized the need to review and update the TRM on an annual basis and directed the Bureau of Conservation, Economics and Energy Planning ("CEEP") to oversee the implementation, maintenance and periodic updating of the TRM in accordance with EE&C program requirements pursuant to Act 129. This Tentative Order initiated the annual update of the TRM.

The Tentative Order presents proposed revisions and recommended changes to the 2009 TRM that were developed by GDS Associates, the Statewide Evaluator ("SWE"), with input from a technical working group ("TWG") which was formed to provide guidance to the SWE in clarifying savings measurement protocols and plans recommending improvements to the existing TRM and other aspects of the EE&C program.

Metropolitan Edison Company ("Met-Ed"), Pennsylvania Electric Company ("Penelec") and Pennsylvania Power Company ("Penn Power") (collectively "the Companies") remain committed to Pennsylvania's successful achievement of the goals of Act 129, and the furtherance of credible evaluation, measurement and verification ("EM&V") supporting those goals. The Companies continue to support the development and improvement of the TRM and have been working closely with the SWE, the TWG and Commission Staff to address the complex and

[3] The TRM was adopted as a component of the EE&C Program in accordance with the Commission's Energy Efficiency and Conservation Program Implementation Order ("Implementation Order") entered on January 16, 2009, at Docket No. M-2008-2069887.

detailed technical issues related to EM&V. The Companies respectfully submit the following comments in the above-captioned docket in response to the Commission's invitation for comments regarding the proposed amendments and revisions to the TRM.

II. COMMENTS

Given the level of detail and number of proposed revisions to the TRM, the Companies are offering their Comments to the proposed revisions to the TRM in two ways. First, the Companies' Comments set forth herein generally provide higher-level feedback and recommendations to the proposed revisions to the TRM. Second, the Companies have included an Attachment to the Comments, in outline format, providing numerous detailed suggestions and proposed edits offered to clarify and clean up certain areas of the proposed TRM.

The Companies offer the following general comments and recommendations to the revised TRM:

1. Given the remedial nature of many of the proposed amendments, the Companies generally support applying amendments to the TRM retroactively, with the exception of the issues discussed in the Companies' Comments at Nos. 2 and 3 below.

The 2009 TRM was developed and adopted consistent with a compressed timeframe that did not lend itself well to providing an adequate amount of time and process for input from interested and affected parties. Therefore, many of the currently proposed revisions reflect appropriate and important clarifications or corrections that will improve the TRM by making it more clear, more consistent and more manageable. Therefore, despite the clear commitment in the TRM itself regarding the "prospective" application of any revisions, the Companies generally support the retroactive application of the proposed revisions (noting the exceptions set forth at

Nos. 2 and 3 below) with the adoption of the Companies' additional recommendations provided in the Attachment to these Comments.

2. The TRM should continue using the Standard Lighting Fixture Table for Smaller Lighting Projects.

The Companies support the continued use of a standard reference table in Appendix C for Commercial and Industrial ("C/I") lighting fixtures. The Companies recommend adding a simple clarification that would allow EDCs to also use manufacturer documentation to support fixture wattages rather than the standard wattages from the expanded table.

Of concern to the Companies are the proposed changes to the TRM that delete the "deemed" wattage reductions associated with certain lighting types as defined in Table 12 – Prescriptive Lighting Savings Table – of the 2009 TRM, and would require all lighting projects to be documented in the same manner, irrespective of size. While such revisions may increase precision, they will also effectively preclude the use of a simple streamlined lighting incentive program and application process for smaller lighting applications.

Table 12 from the 2009 TRM served as the basis for several EDCs' EE&C plans, including the Companies' plans. As a result, lighting program designs and participation applications have already been launched that rely on Table 12 of the 2009 TRM[4] for both quantification of kWh and kW savings for each application, and as the basis for the incentives available as cited in the Companies' EE&C Plans approved by the Commission.

Changing the TRM to require the use of Appendix C for all lighting projects would reverse the Commission's direction in its Implementation Order without an apparent remedy, would be misplaced, and could negatively impact the implementation of EE&C plans previously

[4] See "Standard Lighting" incentive forms posted at http://www.energysavepa-business.com for the Companies' lighting program.

approved by the Commission and being implemented by the Companies. While the Companies support the use of Appendix C for larger projects (i.e., over 20 kW of load reduction), the Companies strongly suggest that Table 12 from the 2009 TRM be maintained in the 2010 TRM (either as an additional table in Appendix C or in the body of the TRM) in order to enable a standard, prescriptive lighting table to continue to streamline and simplify processes for smaller C/I lighting projects. The Companies further recommend that the Commission direct that evaluation work be performed to support updates to Table 12 based on a review of actual market data gathered during the first and second years of implementation supporting adoption in the upcoming 2011 TRM.

3. The Commission should restore and preserve the option of standard savings protocols for electric chillers as articulated in the 2009 TRM.

For similar reasons as stated above, the Commission should restore and preserve the option of standard savings protocols for electric chillers as articulated in the 2009 TRM. The updated TRM completely removes the Electric Chillers section from the 2009 TRM. Rather than abandon the algorithms altogether for loosely defined custom processes, the Companies recommend, at a minimum, restoring the basic algorithms (including references to baselines, standards, etc.) and address the SWE's concern about the use of averages and the variability of EFLH or CF between applications by describing applications that can use standard values and describing alternative processes for determining parameters for non-standard applications (e.g., building simulation or other).

The Companies' Plans and incentive levels for chillers, as approved by the Commission, were based on the savings defined in the 2009 TRM. While chiller incentives are pending launch by the Companies at this time, the uncertainty associated with the proposed change would

require the Companies to revisit their planned standard incentives for chillers, as approved by the Commission, and assess the impacts on savings and incentive levels, as well as processes for review and approval of each chiller application as a custom project. As with the proposed deletion of Table 12 for lighting, this change effectively undoes an approved component of the Companies' approved EE&C Plans.

4. The TRM should strive to adopt a consistent, limited set of building types.

The Companies support the use of standardized values for "partially deemed" protocols and generally commend the SWE and the TWG's support for the recommended values. While revisions to C/I lighting were discussed within the TWG, time did not allow recommended revisions to C/I HVAC and motors to be vetted through the same process. The Companies' evaluator believes that the recommendations represent a large body of work by the SWE performed in a consistent, well-documented and clear manner. Certain specific items and limited problematic values (some of which warrant technical review, and others which appear to involve transcription errors between backup documents and/or tables in the TRM) are outlined in the Companies' detailed comments attached hereto and can be addressed on a timely basis through this TRM comment and review process.

In addition, a recommendation that would likely have emerged from additional time to support a more thorough vetting process is the use of a limited, consistent and standard set of building types with operating parameters that vary enough to warrant distinction between them. The use of a consistent, limited set of building types has the advantages of simplifying project documentation and limiting the potential for errors of interpretation that customers or their contractors may make in completing the requisite forms.

For example, the fifty-nine building types presented in Tables 6-19 and 6-20 simply represent too many building types for HVAC. Given the level of effort required to perform a review to consolidate the tables, and given the benefits of using supported standardized values, the Companies endorse the retroactive adoption of the revised protocols in the 2010 TRM but also encourage the Commission to provide direction to review and consolidate building types to support a consistent, limited set to be utilized in the 2011 TRM.

5. The Companies recommend that the Commission adopt the detailed suggestions and proposed edits to the TRM as set forth in the Attachment to these Comments.

Included in the Attachment to the Companies' Comments, in outline format, are numerous detailed suggestions and specific proposed edits offered to clarify and clean up certain areas of the proposed TRM. The Companies generally suggest that the TRM should be revised to include the following:

- Clarifications supporting evaluation processes and protocols, such as defining the role of the SWE (i.e., that references to "Administrator" in the TRM also generally describe the roles of the SWE and Commission Staff under Act 129), and clarifying that references to "Coincident Peak Demand Savings" apply to load reductions during the top 100 hours;
- Additional language associated with demand response programs in order to clarify important impacts and protocols;
- Corrections and the clean up of typographical errors or lesser language included in the published TRM; and
- Changes to certain Table values and other technical issues as identified by the Companies' evaluator.

To the extent Commission staff is interested, the Companies are available and willing to discuss and explain in further detail any of the proposed changes and edits set forth in the Attachment.

III. CONCLUSION

The Companies commend the Commission's efforts to provide clear direction relative to the evaluation of program impacts in the TRM and to support the expedient implementation of Act 129. Additionally, the Companies appreciate the opportunity to provide comments on the Commission's proposed revisions to the TRM.

Respectfully submitted,

Dated: March 12, 2010

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ATTACHMENT

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

Detailed Suggestions and Proposed Edits of Metropolitan Edison Company, Pennsylvania Electric Company and Pennsylvania Power Company

In addition to the general Comments of Metropolitan Edison Company ("Met-Ed"), Pennsylvania Electric Company ("Penelec") and Pennsylvania Power Company ("Penn Power"), the Companies offer the following additional detailed suggestions and proposed edits regarding the proposed revisions to the TRM set forth in the Tentative Order at the above-captioned docket. These specific recommendations and changes are generally presented in the sequence of the sections of the revised TRM. Given the number of suggestions and level of detail, the Companies are providing the following recommendations with limited explanation. The Companies have discussed and will continue to communicate with the Statewide Evaluator ("SWE") regarding the technical recommendations. The Companies are available and willing to provide any supplemental support or further explanation for their suggestions and proposed edits, as needed, to the SWE or Commission staff.

1. What additional changes or additions to the TRM should be considered?

a. Add Dusk-to-Dawn Lighting to Table 6-6 using EFLH = 4,300 and CF=0.

b. Add language clarifying Demand Response programs (see Item No. 4 below).

2. Section 1 – Introduction

a. §1.2 - Add a sentence to clarify that references to "energy savings" address annual energy savings unless explicitly clarified (i.e., "Unless otherwise indicated, references to energy savings address annual energy savings.").

b. §1.2 – Add a definition of the SWE. Add clarifying language that references the "Administrator" relative to AEPS and that also generally describes the role of the SWE and Commission Staff for purposes of Act 129.

c. §1.7 – Add clarifying language defining the start-up year as "… the year of project completion as accepted by the EDC and verified by the evaluator, SWE and Administrator, and lasting…."

d. §1.9 – Clarify that coincidence factors ("CFs") applied to Coincident Peak Demand Savings also apply to the top 100 hours.

e. §1.15 - Add a reference to Appendix B which describes the significant role of the SWE, approval processes for measures not in the TRM, discussion of "Deemed", "Partially Deemed" and "Custom" measures and interim approval processes. In addition, the roles the SWE and Commission staff play in approving interim and

custom protocols is important, and should be clearly articulated or cross-referenced in the body of the document.

3. **Section 6 - C/I Electric Efficient Construction**

a. §6.2.5.2 - Table 6-1 "Hours of Use Groups Required per Building Type" references a minimum number of "use groups" in a given facility. The Companies recommend that these be amended to reference "guidelines" rather than "requirements". The Companies support articulating requirements supporting locating the systems in question (e.g., by building, floor and "use group"). However, there should be documented exceptions to the rule, as some facilities or projects (e.g., large warehouses, retail or grocery stores, etc.) may only include portions of their facilities and have savings entirely associated with a single group type.

b. Table 6-6

i. The Companies support the correction to the prescriptive lighting algorithm restoring and requiring interactive effects, use of standard operating hours and CF for building types, and references to standardized look-up tables for fixtures. These revisions should be applied retroactively.

ii. Add Dusk-to-Dawn Lighting @ 4,300 EFLH and 0% CF to Table 6-6.

c. Table 6-7

i. References to the "Expanded Prescriptive Lighting Wattage Table" should include "in Appendix C".

ii. The required use of Appendix C, while it increases accuracy, effectively eliminates deemed savings related to prescriptive lighting, increases the documentation burden for applications and negatively impacts participation and savings. As discussed in the Companies' general Comments, a cross reference to Appendix C should be added, as well as the restored Prescriptive Lighting Table 12 from the 2009 TRM (with appropriate renumbering).

d. §6.3 Motors

i. Review building use types for potential consistency with Lighting Table 6-6 (or vice versa).

ii. The reference to "Commercial Buildings" in Table 6-12 should be clarified to enable stipulated hours of use for industrial customer applications that are consistent with the Building Types and Motor Usage Groups in Table 6-12 (e.g., office buildings on industrial properties). The intent of Table 6-12 is to address similar motor *applications* rather than exclude eligibility of industrial customers generally.

iii. Review of the EFLH and CF values by the Companies' evaluator showed a number of discrepancies (e.g., cooling tower EFLH is the same for all building types). The Companies suggest these be discussed directly

between the SWE and EDC evaluators in support of a global resolution pursuant to the following comments:

1. The cooling tower fan hours of operation in Table 6-12 seem to be 1,032 for all building types. However, in Appendix F the cooling tower fan hours of operation vary with building type and are typically much longer than 1,032 hours. The Companies recommend using the hours of operation listed in Appendix F for the cooling tower fans. In this way, the same underlying assumptions that inform the VFD savings calculations will inform cooling tower fan motor operating hours. This will result in a coherent TRM that is easier to update in future years.

2. The HVAC fan operation hours for Hospitals are 7,243 hours. In the Companies' experience these hours are nearly 8,760. The DEER database in California also uses 8,760 for fan hours in hospitals.

3. Review of motor operating hours has found that in some instances the motor operating hours used in the VFD ESF calculations (Appendix F) are not consistent with the motor operating hours listed in Appendix E. For example, the assumptions used to determine the Heating Hot Water Pump operating hours are different between Appendix E and F.

iv. The requirement "… motors with variable speeds, variable loading, or industrial applications, Custom Measure Protocols and Measurement and Verification Plans are required" effectively requires, for motors programs, an M&V plan as a participation application requirement. This is an undue burden on participants and will materially impede participation. The Companies encourage the Commission to support a better balance between implementation and evaluation requirements in this instance.

e. §6.4 VFD

i. As discussed in the Companies' general Comments, the Commission should review building use types for potential consistency with Lighting Table 6-6 (or vice versa) for the 2011 TRM.

f. §6.6 HVAC Systems

i. §6.6.1.2 and 3 should reference SEER (where available) for energy impacts and EER for demand impacts.

ii. Remove "measured" from the sentence before Table 6-17.

iii. As discussed in the Companies' general Comments, the Commission should direct the review of building use types for potential consistency with Lighting Table 6-6 (or vice versa) for the 2011 TRM.

iv. Table 6-18: The baseline for Footnote 49 should reference ASHRAE 90.1-2004 (rather than 2007) as clearly articulated in §6.1. This table

should be revised to be consistent with Table 6.1.8 in the ASHRAE Std 90.1-2004. See suggested corrections to the table below.

Table 6-18: HVAC Baseline Efficiencies

Equipment Type	Baseline
Unitary HVAC/Split Systems	
≤ 5.4 tons	~~13~~**12.0** SEER
> 5.4 to <11.25 tons	10.1 EER
>≥ 11.25 to <20 tons	9.5 EER
>≥ 20 to <63.33 tons	9.3 EER
>≥ 63.33 tons	9**.0** EER
Air-Air Heat Pump Systems (cooling)	
≤ 5.4 tons:	~~13~~**12.0** SEER
> 5.4 to <11.25 tons	9.9 EER
>≥ 11.25 to <20 tons	9.1 EER
≥ **20 tons** ~~21 to 30 tons~~	8.8 EER
Water Source Heat Pumps (cooling)	

v. The Coincidence Factor of 67% is an undocumented estimate. The Companies suggest the TRM be flexible so that better supported values can be utilized when such are available.

g. §6.6.1.2 – The Heat Pump Algorithm is missing a formula for Demand Savings. The Commission should either clarify that the same formula used for Central AC also applies to Heat Pumps or restate the formula.

h. Electric Chillers:

i. As indicated in the Companies' general Comments, the Commission should restore and preserve the option of standard savings protocols for electric chillers as articulated in the 2009 TRM.

4. Section 7 - Demand Response (DR)

a. Relocate the following paragraph from Section 7.1 to Section 7.0:

"The required application information is the minimum requirement for submitting a program. If a submitter relies on PJM protocols for participation in the PJM market, the PJM methodology will be accepted as a reporting method."

i. This relocation is necessary because, as currently written, the PJM option applies only to Commercial and Industrial Applications. PJM protocols are also available for residential demand response programs. By relocating the paragraph, the protocol would properly apply to both residential applications as well as commercial and industrial applications.

b. In Section 7.1, the second sentence appears to relate to Alternative Energy Credits (AECs) and, if so, should be shaded grey pursuant to the shading convention as specified in Footnote 11 on Page 5 of the draft TRM. Also, the second sentence should be modified to include demand response measures: "An application must be submitted, containing adequate documentation fully describing the energy efficiency or demand response measures installed or proposed and an explanation of how the installed facilities qualify for AECs." Also in Section 7.1, the Companies suggest modifying No. 6 to delete "per measure" data and rely on per facility data in the list of required information and to read as follows:

> *"6 Estimated demand reduction value (kW) including supporting documentation (i.e., engineering estimates or documentation of verified savings from comparable projects)."*

c. In Section 7.2, Residential Applications, the Companies suggest inserting new paragraphs introducing this section as follows:

> *Load reductions from demand response resources will vary by type of resource, number of units, nature of control (e.g., level of cycling, use of temperature reset or dynamic algorithms), duration of control, time, temperature, and other factors.*
>
> *The tables and formulas in this section may be supplemented by PJM protocols found in PJM Manuals 18 and 19. More specifically, load reductions associated with conventional cycling strategies for central air conditioners or heat pumps, and domestic water heating may be based on research conducted for PJM, including the following study: Lawrence Berkeley National Laboratory, "Deemed Savings Estimates for Legacy Air Conditioning and Water Heating Direct Load Control Programs in PJM Region," April 2007.*
>
> *Finally, measurement protocols may be adopted based on load research conducted in Pennsylvania and in other jurisdictions with similar program and participation characteristics.*

d. In Section 7.2.2, Definition of Terms, the Companies suggest changing line three to read:

> *"Hours = Number of hours."*

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true and correct copy of the foregoing document upon the individuals listed below, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

Service by overnight United Parcel Service, as follows:

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