

May 11, 2015

VIA EFILE

Rosemary Chiavetta, 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 2016 Update;
Docket No. M-2015-2469311**

Dear Secretary Chiavetta:

Enclosed for filing are the Comments of Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company and West Penn Power Company in the above-captioned matter. The Comments have been served on parties as shown on the attached Certificate of Service.

Please contact me if you have any questions regarding this matter.

Very truly yours,


John L. Munsch

JLM:jss

Enclosure

cc: Certificate of Service

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**Implementation of the Alternative Energy :
Portfolio Standards Act of 2004: : Docket No. M-2015-2469311
Standards for the Participation of :
Demand Side Management Resources- :
Technical Reference Manual 2016 Update :**

CERTIFICATE OF SERVICE

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

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Dated: May 11, 2015



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**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 : **Docket No. M-2015-2469311**
Reference Manual 2016 Update :

**COMMENTS OF METROPOLITAN EDISON COMPANY,
PENNSYLVANIA ELECTRIC COMPANY,
PENNSYLVANIA POWER COMPANY AND WEST PENN POWER COMPANY TO
THE TENTATIVE ORDER REGARDING THE
2016 TECHNICAL REFERENCE MANUAL**

I. INTRODUCTION

On April 11, 2015, the Pennsylvania Public Utility Commission (“Commission”) entered a Tentative Order in the above-referenced matter seeking comments to the proposed updates to the Technical Reference Manual (“2016 TRM”) that will be applied to electric distribution companies’ (“EDCs”) Phase III Energy Efficiency and Conservation (“EE&C”) Plans from June 1, 2016, through May 31, 2021. The Commission directed that comments be submitted within thirty days of the entry date of the Tentative Order, and that reply comments be filed within forty days of the Tentative Order.

The Commission previously adopted an *Energy-Efficiency and DSM Rules for Pennsylvania’s Alternative Energy Portfolio Standard, Technical Reference Manual*¹ to help

¹ *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 EDC Energy Efficiency and Conservation 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”).² The Commission recognized the need to review and update the TRM on a periodic basis and directed the Bureau of Technical Utility Services (“TUS”) to oversee the implementation, maintenance and annual updating of the TRM for Phases I and II. The Commission proposes in its Tentative Implementation Order that the 2016 TRM be applicable for the entirety of Phase III unless a mid-phase update is deemed necessary by the Commission.

Metropolitan Edison Company (“Met-Ed”), Pennsylvania Electric Company (“Penelec”), Pennsylvania Power Company (“Penn Power”) and West Penn Power Company (“West Penn”) (collectively, “the Companies”) appreciate the efforts of the Commission, Staff and Statewide Evaluator (“SWE”) in updating the TRM. In general, the organization and documentation in the Tentative TRM Order and Draft 2016 TRM (“2016 Draft”) is a positive effort and, to improve the TRM, the Companies submit the following technical comments to the Commission’s Tentative TRM Order.

II. COMMENTS ON PROTOCOL DETAILS – RESIDENTIAL MEASURES

The Companies recommend the following corrections or revisions to the details of the residential measure protocols in the 2016 TRM, identified by Section and Table numbers.

² 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, 2015.

Section 2.1, Table 2-2: Energy Star Lighting: The Companies recommend column “e” of Table 2-2 ($Watts_{base}$ post 2020) be removed and replaced with a reference to EISA 2007 legislation which specifies that general service lamps will be required to achieve 45 lm/W by 2020. The values in column “e” appear to correspond with typical current CFL wattages for the lumen range implying a CFL baseline that is inconsistent with EISA 2007 legislation, which is the appropriate federal standard to reference as a baseline.

In addition, footnote 37 in this section shows an example of how to approach cost effectiveness calculations for dual-baseline measures. To clarify that this is not a specification, but simply an example of one alternative method for addressing dual baselines in cost effectiveness calculations, the Companies recommend that the words “approach to” be inserted so that it reads:

Example APPROACH TO cost-effectiveness calculation using column (e): If the LED life is 14.7 years, cost-effectiveness models for 2016 would model the first four years using column (d) as the $Watts_{base}$, and the remaining 10.7 years using the $Watts_{base}$, in column (e).

Section 2.2.1: Electric HVAC: The furnace fan measure is described as a fan retrofit, although the most common way to improve fan efficiency is through the purchase of an efficient air handler/furnace unit. The Companies recommend that the characterization be re-categorized as “efficient furnace fan or air handler retrofit.”

Section 2.2.3: Ductless Mini-Split Heat Pumps: The Oversize Factor (OF) for de-facto space heaters³ listed in Table 2-21 “DHP – Values and References” is 0.6. The Companies recommend this be revised to be 0.85 based on the following support. If the space heaters are providing all of a home’s space heating needs, then the OF factor should be 1.0. A ductless

³ See footnote 58 at 2016 Draft p. 50: “This baseline is for participants with broken-beyond-repair oil heating systems who are heating their homes with portable electric space heaters.”

system has versatility similar to space heaters and one would expect an OF factor of 1.0 would apply. To keep the TRM internally consistent, the OF would be the product of the 1.4 or 1.5 for central systems relative to ductless systems, and the 0.6 for space heaters relative to central systems. This would make the OF value equal to 0.84 or 0.9. To keep things simple yet internally consistent the Companies recommend a minimum value of 0.85 should be used.

III. COMMENTS ON PROTOCOL DETAILS – COMMERCIAL AND INDUSTRIAL MEASURES

The Companies make the following suggested corrections or revisions to the details of the commercial and industrial measure protocols in the 2016 Draft, identified by Section and Table numbers.

Section 3.1.1, Table 3-6: Lighting Fixture Improvements: The Companies recommend revising the hours of use for photocell-controlled lighting to be consistent with hours of use for streetlighting (which are also photocell controlled), as shown in Table 3-7, by specifying a value in the range of 4,070 to 4,300 (e.g., 4,100). Alternatively, the Companies recommend cross-referencing Table 3-7. The value of 3,833 hours for photocell controlled lighting is approximately 8% lower than the hours of use listed in Table 3-7 for streetlighting. Most calculations based on sunrise and sunset times result in 4,000 to 4,200 hours of use for photocells controlled lighting.

Section 3.1.1, Table 3-9: Lighting Fixture Improvements: With regard to the interactive effects (“IF”) for energy and demand, the Companies recommend checking both the IF_{energy} and IF_{demand} values for the three industrial building types – the values appear inconsistent with values associated with other space types and higher than expected. The IF_{energy} cannot be

0.12 for both electric and non-electric space heating, and even the 0.12 for non-electric heat is a severe outlier in the table. The 0.34 value for IF_{demand} is an outlier as well.

With regard to IF values for all other conditioned spaces, the building-by-building differences are insignificant and should be uniform using the simple average for consistency. The Companies' recommended average value for IF_{energy} for facilities with non-electric heating is 0.031. That average has a standard deviation of 0.007 and a coefficient of variation (CV) of 0.2, which suggests that the IF_{energy} distribution is homogeneous. For facilities with electric heating, the Companies' recommended average value for IF_{energy} is -0.14, with a standard deviation of 0.01 and a CV of 0.07. IF_{demand} values have similar distributions supporting the Companies' recommended value of 0.192, with a standard deviation of .029 and CV of 0.15.

The IF_{energy} and IF_{demand} distributions that correspond to the two different heating fuels are so homogeneous that differentiation by building type raises potential for calculation errors based on complexity that are not justified by the value of the differences. It is critical, however, to group by space heat fuel type.

In summary, the Companies recommend that a consistent value of IFs be applied to the following groups of building types: Education, Lodging, Warehouse, Grocery, Health, Institutional/Public Service, Restaurant, Miscellaneous, Retail and Offices:

- Electric Space Heat: IF_{energy} should be -0.14
- Non-Electric Space Heat: IF_{energy} should be 0.031
- All Heating Fuels: IF_{demand} should be 0.192

Section 3.1.2, Table 3-14: New Construction Lighting: The Companies recommend that references to metering in new construction be revised to reference EDC data gathering given uncertainties associated with early occupancy in new construction. In addition, default SVG

savings values shown in Table 3-14 for lighting controls in new construction should be clarified to be default values in the absence of EDC data gathering (e.g., if the space-by-space method is used, then it is known with certainty if a given space is required by code to have occupancy sensors or not.) The values in Table 3-14 would then be used in absence of space-by-space data, or if the whole-building-area method were used, for savings calculations. Additionally, the TRM protocols should clarify that the values in Table 3-14 apply to baseline SVG factors, while the as-built SVG factors should be derived from Table 3-4, or from EDC data gathering.

Section 3.5.4, Evaporator Fan Controllers: This TRM protocol appears to include a 3rd term ($\Delta kWh_{control}$) which relates to incremental savings associated with direct digital controls. The Companies recommend this third term be included only if direct digital controls are used but not apply if direct digital controls are not installed. The savings for evaporator fan controllers are provided by the terms ΔkWh_{fan} and ΔkWh_{heat} . The term $\Delta kWh_{control}$ should be corrected to reference $\Delta kWh_{control}$, and corresponds to direct digital controls. Direct digital controls are a distinct energy efficiency measure according to the source document cited as reference in section 3.5.4.

Section 3.5.8, Table 3-105: Variable Speed Refrigeration Compressor: The Conversion factor 0.445 should have units “ton/HP” instead of “None.” The unit for Tons should be “ton” instead of “Tons.”

Section 3.7.3, Table 3-138: Snack Machine Controls: The value 46 should be 46% for the Energy Savings Factor.

Section 3.7.4, Energy Star Electric Steam Cooker: The formulas for calculating energy savings are confusing and units do not appear to match. The Companies recommend that the formula be changed to the latest ENERGYSTAR calculation.⁴

Section 3.10.1, Table 3-151: Cycling Refrigerated Thermal Mass Dryer: Both the algorithm and Table need amendment for units. The line for “CFM/kW_{dryer}, Ratio of compressor CFM to dryer kW” in Table 3-151 should be inverted and changed to “kW/CFM” so that the algorithm produces the correct unit of kWh savings.

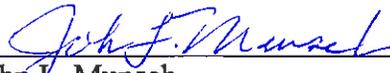
VII. CONCLUSION

The Companies appreciate the opportunity to provide comments on the Commission’s proposed revisions to the Technical Reference Manual and look forward to continuing to work with the Statewide Evaluator, program evaluation group and Commission Staff on this aspect of Act 129 compliance.

Respectfully submitted,

Dated: May 11, 2015.

By:



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⁴ A link to the latest ENERGYSTAR calculation follows:
http://www.energystar.gov/buildings/sites/default/uploads/files/commercial_kitchen_equipment_calculator.xlsx