PHIL MURPHY
Governor

SHEILA OLIVER
Lt. Governor

State of New Jersey
DIVISION OF RATE COUNSEL
140 EAST FRONT STREET, 4TH FL
P.O. BOX 003
TRENTON, NEW JERSEY 08625

STEFANIE A. BRAND
Director

June 21, 2019

By Hand Delivery and Electronic Mail
Honorable Aida Camacho-Welch, Secretary
NJ Board of Public Utilities
44 South Clinton Avenue, 3rd Floor,
Suite 314, P.O. Box 350
Trenton, New Jersey 08625-0350

Re: **NJCEP Protocols to Measure Resource Savings for Fiscal Year 2020**
Comments of the New Jersey Division of Rate Counsel on Proposed Revisions

Dear Secretary Camacho-Welch:

Please accept an original and ten (10) copies of these comments on behalf of the New Jersey Division of Rate Counsel ("Rate Counsel") in the above-captioned matter.

We are enclosing one additional copy of the comments. Please stamp and date the extra copy as "filed" and return it in our self-addressed stamped envelope.

Respectfully submitted,

STEFANIE A. BRAND
Director, Division of Rate Counsel

By: _____
Kurt S. Lewandowski, Esq.
Assistant Deputy Rate Counsel

KSL
Enclosure
c: publiccomments@NJCleanEnergy.com
Paul Flanagan, BPU
Sara Bluhm, BPU
Sherri Jones, BPU
B. Scott Hunter, BPU
Anne Marie McShea, BPU
Abe Silverman, Esq. BPU
Rachel Boylan, Esq. BPU
Caroline Vachier, DAG

New Jersey Board of Public Utilities

Clean Energy Program

Proposed Revisions:

Protocols to Measure Resource Savings FY2020

Comments of the New Jersey Division of Rate Counsel

June 21, 2019

The Division of Rate Counsel ("Rate Counsel") would like to thank the Board of Public Utilities ("BPU" or "Board") for the opportunity to present the within comments on the proposed revisions ("Draft Protocols") to the Clean Energy Program ("CEP") Protocols to Measure Resource Savings ("Protocols") circulated in red-line form by the BPU's Office of Clean Energy ("OCE") on June 5, 2019 to stakeholders for comment.[1]

Introduction and Summary

The proposed revisions to the Protocols are limited to FY2020 and focus on several measures that require updates to savings assumptions as well as new measures associated with the Residential Existing Homes program proposed in a recent FY2020 compliance filing.[2] However, Rate Counsel identified several additional issues where the Draft Protocols have not addressed Rate Counsel's previous comments on the proposed FY19 protocols, submitted on May 31, 2018 ("Rate Counsel's 2018 Comments").

Rate Counsel's comments on the Draft Protocols for FY2020 consist of two main sections. The first section addresses several of the major issues raised in the previous comments

[1] The Draft Protocols circulated for comment was entitled: "New Jersey Board of Public Utilities, New Jersey Clean Energy Program, Protocols to Measure Resource Savings, FY2020, Release Date: May 2019."

[2] TRC FY20 CEP Compliance Filing, May 29, 2019.

by Rate Counsel, including: (a) winter coincident factors; (b) free riders and free drivers; (c) source references; (d) transmission and distribution line loss factors; (e) lighting hours for hospitals; (f) residential HVAC equivalent full load hours; (g) measure life; and (h) avoided emissions.

The second section addresses specific new measures or new revisions in the following areas: (a) residential ENERGY STAR room air conditioner; (b) residential ENERGY STAR lighting; (c) Residential Existing Homes Program – air sealing; (d) Residential Existing Homes Program – duct sealing and repair; (e) Residential Existing Homes Program – ductless, mini-ducted, or hybrid heat pump systems; and (f) Hours of Operation and Coincidence Factor by Building Type.

I. Major Issues Raised in Rate Counsel's Previous Comments

a) Winter Coincident Factors

In its previous comments on the proposed FY2019 Draft Protocols, Rate Counsel raised concerns about the lack of winter coincident factors ("CF") in the Protocols and recommended that OCE establish winter CFs for as many measures as possible.[3] PJM's capacity market Reliability Pricing Model ("RPM") requires the owners of capacity resources to provide (or seek from other parties) equal amounts of summer and winter capacity reductions in a given load-serving zone.[4] Including the winter CFs would enable the CEP to offer its energy efficiency resources into the PJM RPM market and obtain additional funds for the programs. However, the Draft Protocols do not address this concern or adopt Rate Counsel's earlier recommendations.

---

[3] Rate Counsel's April 10, 2018 FY19 Draft Protocols Comments, pp. 2-3; Rate Counsel's 2018 Comments, p. 3.

[4] PJM (n.d.) "Seasonal Resources and Aggregation in RPM," pp. 25 and 26. Available at http://www.pjm.com/~/media/committees-groups/subcommittees/drs/20170407/20170407-item-04a-intermittent-resources-in-rpm-training.ashx.

Thus, Rate Counsel reiterates its previous recommendation on this issue. Rate Counsel further recommends that OCE should at least address within the FY20 Protocols its plan to incorporate winter CFs in the near future and provide a schedule for developing and rolling out these factors.

b) Free Riders and Free Drivers

Given that the Protocols do not include the impacts of free ridership and spillover (also known as effects of "free drivers"), Rate Counsel previously recommended that OCE establish specific timelines to evaluate free riders and free drivers as soon as possible.[5] In response to Rate Counsel's 2018 Comments, OCE noted that free ridership and other related net effects would be examined in FY19 and that a schedule would be developed and shared.[6] However, Rate Counsel is not aware of any evaluation study by OCE on this subject scheduled for FY19 or FY20. Thus, Rate Counsel reiterates its earlier recommendation on free riders and free drivers.

c) References

Rate Counsel previously recommended that the OCE review, reference, and adopt the values from the latest versions of the technical reference manuals ("TRM") from other jurisdictions where applicable. Further, Rate Counsel recommended that OCE provide clarification regarding its reasons for referencing the earlier version of the TRMs.[7] The Draft Protocols still adopt many values from the Mid-Atlantic Technical Reference Manual, Version 6 (published May 2016) and Version 7 (published May 2017), as well as the New York Standard Approach for Estimating Energy Savings, Version 4 (published April 2016). These TRM

---

[5] Rate Counsel's April 10, 2018 FY19 Draft Protocols Comments, p. 3; Rate Counsel's 2018 Comments, p. 4.

[6] OCE May 10, 2018. Comments and Responses: FY19 Update to FY16 NJCEP Savings Protocols, p. 7. Available at: http://www.njcleanenergy.com/files/file/public_comments/FY18/3c%20-%20NJCEP%20Protocol%20Comments%20and%20Response%20Doc%20v1.pdf.

[7] Rate Counsel's April 10, 2018 FY19 Draft Protocols Comments, pp. 3-4; Rate Counsel's 2018 Comments, p. 4.

versions are outdated. The Mid-Atlantic TRM was updated in May 2018 as Version 8.[8] New York's TRM was updated a few times since Version 4, and the latest version was issued last month (Version 7).[9] Rate Counsel reiterates its previous recommendation that OCE review and adopt the values from the latest versions of the TRMs where applicable.

d) Transmission and Distribution Line Loss Factors

The current and Draft Protocols use a single transmission and distribution ("T&D") loss factor. Draft Protocols, p. 12. Previously, Rate Counsel raised a concern on this assumption when commenting on the proposed revisions to the FY19 Protocols.[10] Rate Counsel pointed out that line losses vary with different voltage levels, in particular for large customers, and that PSE&G and Pennsylvania utilities use different loss factors for different customer classes. The table below presents line loss factors used by several Pennsylvania utilities. Rate Counsel reiterates its previous concern and recommends that line loss factors be defined for specific rate classes to accurately account for savings through energy efficiency programs.

---

[8] Northeast Energy Efficiency Partnership. 2018. Mid-Atlantic TRM Version 8. Available at https://neep.org/sites/default/files/resources/Mid_Atlantic_TRM_V8_0.pdf.

[9] New York Technical Resource Manual, Version 5.1 - Filed March 15, 2018 (effective January 1, 2018), http://www3.dps.ny.gov/W/PSCWeb.nsf/All/72C23DECFF52920A85257F1100671BDD?OpenDocument.

[10] Rate Counsel's April 10 FY19 Draft Protocols Comments, p. 4-5; Rate Counsel's 2018 Comments, p. 5.

Table 1. Line Loss Factors – Sample of Several Pennsylvania Utilities[11]

Utility	Residential	Small C&I	Large C&I
Met-Ed	9.5%	7.2%	7.2%
Penelec	9.5%	7.2%	7.2%
Penn Power	9.5%	5.5%	5.5%
WPP	9.4%	7.9%	7.9%
PPL	8.8%		4.2%

There is also another issue with the use of a single T&D loss factor for both energy and peak savings. T&D line losses during system peak hours - when generation capacity and T&D investments can be avoided - are considerably higher than losses during off-peak hours because line losses grow quadratically as the overall system load increases.[12] A 2016 study by the Regulatory Assistance Project analyzed in detail how line losses could change based on load levels on the system and noted that "[d]uring the highest critical peak hours (perhaps 5-25 hours per year) when the system is under stress, the losses may be four to six times as high as the average."[13] Thus, Rate Counsel recommends that OCE consider investigating and developing separate, higher T&D loss factors that are applicable for avoided generation capacity and avoided T&D systems.

---

[11] Source: First Energy (2017) First Annual Report to the Pennsylvania Public Utility Commission, Phase III of Act 129, Program Year 8 (November 15, 2017), page 45, available at http://www.puc.pa.gov/pcdocs/1544648.pdf; Statewide Evaluator Annual Report, Act 129 Program Year 8 (February 28, 2018), p. C-32, available at http://www.puc.pa.gov/Electric/pdf/Act129/Act129-SWE_AR_Y8_022818.pdf.

[12] Line losses are proportional to the square of the flow on the lines. See Regulatory Assistance Project (2016): *Valuing the Contribution of Energy Efficiency to Avoided Marginal Line Losses and Reserve Requirements*. p. 4. Available at https://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-eeandlinelosses-2011-08-17.pdf.

[13] Id.

e) Lighting Hours for Hospitals

The current and Draft Protocols assume 8,760 hours of lighting operation for hospitals based on an assumption that hospitals operate year-round. Draft Protocols, p. 85. Rate Counsel previously commented that while some lighting fixtures at hospitals operate throughout a year, other lighting fixtures are turned off during certain times of the day or year. Accordingly, Rate Counsel recommended in its earlier comments on the FY19 revisions that the OCE review and consider adopting the value used in the New York TRM, which assumes 7,674 hours of lighting operation for hospitals.[14] Rate Counsel reiterates this recommendation for the FY20 Draft Protocols.

f) Residential HVAC Equivalent Full Load Hours

For the FY2019 Protocols revisions, the OCE proposed the use of New York City-specific equivalent full load hours ("EFLH") for residential cooling and heating in various parts of the Protocols, but decided to maintain the existing values based on Vermont Energy Investment Corporation ("VEIC") estimates.[15] The references to the VEIC estimates are found throughout the Draft Protocols for several measures, such as Source 1 on page 63, Source 3 on page 75, and Source 3 on page 81.[16] Because the VEIC analysis is not publicly available and it is not clear how relevant and applicable the VEIC estimates are, Rate Counsel recommended the following in its comments on the draft FY19 Protocols:

> "[I]f the current EFLH values are maintained pending further analysis, the OCE should provide additional clarification regarding the source of these values and whether they have been obtained from a New Jersey-specific study and any reasons for their prioritization over the New York City EFLH values."[17]

---

[14] Rate Counsel's 2018 Comments, p. 12.

[15] See OCE FY19 Draft Protocols, pp. 37, 38, 40, and 41; Draft Protocols for the current values.

[16] The full reference included in the Protocols is, "VEIC Estimate. Consistent with analysis of PEPCo and LIPA, and conservative relative to ARI."

[17] Rate Counsel's 2018 Comments, p. 9.

The Draft Protocols do not provide a justification for using the Vermont VEIC estimates for New Jersey. Thus, Rate Counsel reiterates this recommendation for the Draft Protocols.

g) Measure Life

In Appendix A of the Draft Protocols, several measure lives have been added to the Protocols. These include residential solar water heaters, doors, weather stripping, and carbon monoxide alarms, as well as commercial air sealing, insulation, computers, and printers.

The OCE also added weather stripping with a measure life of 15 years. Draft Protocols, Appendix A, p. 195. The Draft Protocols indicate that the source of this measure life is New York's TRM Version 6.1. In turn, in Appendix P, the New York TRM references a GDS study as the source of the measure life for air leakage sealing.[18] The GDS study indicates that the effective life of "Weatherstrip window, door sweep or kit" is five years, one-third of the 15-year life that OCE proposes to use.[19] Rate Counsel recommends that the Protocols use an effective life of five years for weather stripping, consistent with the original source of the New York TRM.

A carbon monoxide alarm is listed in Appendix A of the Draft Protocols with a measure life of seven years. Some carbon monoxide alarm manufacturers claim that their products save energy. However, it appears that the CEP may be promoting these measures strictly for safety rather than for energy savings benefits, since the Draft Protocols do not provide or energy

---

[18] New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs – Residential, Multi-Family, and Commercial/Industrial Measures, Version 6.1, January 31, 2019. Available at http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/72c23decff52920a85257f1100671bdd/$FILE/TRM%20Version%206.1%20-%20January%202019.pdf.

[19] GDS Associates. 2006. *Measure Life Report: Residential and Commercial/Industrial Lighting and HVAC Measures*, Appendix C p. C-6. Available at https://library.cee1.org/system/files/library/8842/CEE_Eval_MeasureLifeStudyLights%2526HVACGDS_1Jun2007.pdf.

savings assumptions or calculations for this measure. Rate Counsel requests that the OCE provide information about eligible carbon monoxide alarms, savings information for this measure, and an explanation of how this measure can yield energy savings.

An effective life of 20 years for insulation in commercial applications has been added to the Draft Protocols.[20] No source of this assumption was provided, although this effective life is consistent with the value that the Protocols indicate for residential insulation. Rate Counsel has concerns with the use of the 20-year measure life. The 20-year effective life for residential insulation traces back to at least the FY16 Protocols. The 20-year measure life in the FY16 Protocols was based on two data points: 25 years from the Mid-Atlantic TRM and 15 years from Pennsylvania's TRM.[21] As Rate Counsel noted in previous comments, Pennsylvania's TRM limited the measure life of insulation because Pennsylvania legislation limits the claim of savings to 15 years.[22,23] The Pennsylvania TRM referenced the measure life value used in Massachusetts, which continues to use a 25-year measure life.[24] Rather than adopting Rate Counsel's recommendation that a longer life be used, the OCE proposed to use California's savings protocols as the basis for a 20-year measure life.[25] Rate Counsel expressed concern about the use of California data for New Jersey in its earlier comments, but the 20-year measure life remains in the current and proposed version of the Protocols - with no data source provided at all. Rate Counsel recommends that the Protocols use an insulation measure life value of 25

---

[20] FY19 Draft Protocols, p. 193.

[21] OCE Presentation to the Utility Working Group, "Review of Proposed Revisions to NJCEP Protocols per ERS Report, March 14, 2018, slide 5; ERS 2017. "NJCEP Protocols - Comparative Measure Life Study and Summary of Measure Changes to NJCEP Protocols, p. 2.

[22] Rate Counsel's April 10, 2018 FY19 Draft Protocols Comments, pp. 9-10.

[23] Pennsylvania TRM, June 2016, p. 180.

[24] Massachusetts TRM, 2019-2021 - Plan Version, October 2018. Available at https://etrm.anbetrack.com/#/workarea/trm/MADPU/RES-BS-I/2019-2021%20Plan%20TRM/version/1?measureName=Insulation.

[25] OCE May 10, 2018 Summary, p.11.

years, consistent with the value used in Massachusetts, for both residential and commercial applications.[26]

The footnote for the effective useful life of computers and printers includes a link to an ENERGY STAR workbook that covers audio/visual, telephony, and television measures. Computers and printers are not covered in this workbook.[27] The OCE should provide the correct link or find a different source for the useful life of these measures.

h) Avoided Emissions

In Rate Counsel's 2018 Comments, Rate Counsel made two recommendations on avoided emissions: (1) the Protocols should use the emission rates from the most recent year for which avoided emissions data are available; and (2) the Protocols should use annual average marginal emission rates rather than annual peak marginal emission rates. The Draft Protocols address both recommendations. Rate Counsel acknowledges and accepts these changes in the Draft Protocols.

II. Specific New Revisions

a) Residential ENERGY STAR Room Air Conditioner

Rate Counsel's recommendations regarding the new Residential ENERGY STAR Room Air Conditioner measure refer to the references found within the footnotes on page 62 of the Draft Protocols and the listed sources on page 63. Rate Counsel recommends adding page numbers to footnotes 22 and 23, as well as Sources 3 and 4.

The sources of the values provided in this section of the Draft Protocols, listed on page 63, contain several instances of incomplete references. As discussed in Section I above, the VEIC analysis for Source 1 does not appear to be publicly available and it is not clear how

[26] Rate Counsel's April 10, 2018 FY19 Draft Protocols Comments, p. 9-10.
[27] Draft Protocols, p. 197.

relevant and applicable the VEIC estimates are for New Jersey. Rate Counsel recommends that the Protocols provide the date the study was published and a URL link to this study. If the study is not currently available online, OCE should make it available online or share it directly with the stakeholders. Source 2 cites a report but does not present an author. Rate Counsel suggests that the Protocols include the author to complete the citation. For Source 3, the hyperlink attached to the URL sends the reader to the correct document, but the link text, when copied to a browser rather than selected, presents the user with an error page. It appears the link may have been updated and should be corrected accordingly in the Protocols.

b) **Residential ENERGY STAR lighting**

In the opening summary for Residential ENERGY STAR Lighting, the Draft Protocols state that the wattage associated with a lamp complies with the Energy and Independence and Security Act ("EISA") of 2007. Draft Protocols, p. 64. The table titled "Standard CFL and LED Lamp Wattage Equivalency" on page 66 of the Draft Protocols shows wattage levels based on Northeast Energy Efficiency Partnership ("NEEP")'s Mid-Atlantic TRM Version 6 published in May 2016. It appears these data are outdated for base wattage levels for calendar year 2020 or FY2020. According to the latest Mid-Atlantic TRM Version 8, the base wattage levels included in the Draft Protocols on the first table on page 66 are for omnidirectional lightbulbs for 2017 to 2019. The EISA's backstop minimum standards - set to take effect starting in 2020 - are generally more stringent than the wattage levels for 2017 to 2019, as shown on Table 2 below. Further, the Mid-Atlantic TRM Version 8 provides base wattage levels for various other types of light bulbs, on pages 31 through 34. Rate Counsel requests that the Draft Protocols update the Residential Lighting section with the latest base wattage data for omnidirectional light bulbs and other types of lighting, found in the Mid-Atlantic TRM Version 8.

Table 2. Base Wattage Levels from NEEP TRM Version 8 for Omnidirectional Medium Screw Base Lamps[28]

	Lower Lumen Range	Upper Lumen Range	2017-2019 WattsBase	2020+ WattsBase
Omnidirectional, Medium Screw Base Lamps (A, BT, P, PS, S or T)	250	309	25	25
	310	749	29	12
	750	1049	43	20
	1050	1489	53	28
	1490	2600	72	46
	2601	3300	150	66
	3301	3999	200	200
	4000	6000	300	300

The values for the hours of use for interior and exterior lighting can also be improved. The Draft Protocols propose to use 1,205 hours for interior lighting and 2,007 hours for exterior lighting as shown for Source 2 in the "Residential ENERGY STAR Lighting" table on page 65. Source 2 references two sources: (1) the *Technical Reference User Manual from Efficiency Vermont* and (2) a study by NMR Group, Inc. titled *Northeast Residential Lighting Hours-of-Use Study*. It is unclear how the two studies were weighted to develop the final values for interior and exterior lighting. Rate Counsel recommends that the Protocols clarify how the two sources were used to develop the lighting use hours. In addition, the NMR study data used in the Draft Protocols do not appear accurate or the best data from that study. Source 2 states that the Draft Protocols use average daily hours of use of 3.3 from Table 3-5, on page 43 of the NMR study, value for Living Space for Upstate New York. Based on a review of this NMR study, Rate Counsel found that

[28] Source: NEEP Mid-Atlantic TRM Version 8, page 31.

Table 3-5 appears on page 46 instead of page 43.[29] Further, Table 3-5 shows values for Downstate New York. The value for Living Space for Downstate New York is 5.1. Because New Jersey is close to Downstate New York, Rate Counsel recommends that OCE consider using the value for Downstate New York. Finally, the Protocols should make it clear how they derived the value for exterior lighting hours of 2,007 hours because the cited NMR study does not provide any values for exterior lighting.

c) **Residential Existing Homes Program – Air Sealing**

The text for the air sealing measure for the Existing Homes Program appears appropriate, but Rate Counsel has several concerns and questions regarding the algorithms, summary of inputs, and sources.

First, in the definition of variables section under the algorithms, there is a definition for "CF" – that is, the Coincidence Factor. Draft Protocols, p. 70. However, this variable is not used in either of the two algorithms proposed for this measure. An algorithm for peak demand savings appears to be missing and should be added.

Next, the summary of inputs section relies on several values from the New York TRM, Version 7. These include the values included in the "Impact per 1,000 ft^2 Table." Rate Counsel was not able to identify these values in the New York TRM and thus request that OCE to provide the page numbers for these values.

Finally, Rate Counsel has comments related to the sources. First, OCE should provide a date for the first source from BG&E on page 71. OCE should also provide a source for the

[29] NRM Group, Inc., 2014: Northeast Residential Lighting Hours-of-Use Study. Available at http://ma-eeac.org/wordpress/wp-content/uploads/Northeast-Residential-Lighting-Hours-of-Use-Study-Final-Report1.pdf.

assumptions documented in footnote 28, as well as any page numbers associated with the source document.

d) **Residential Existing Homes Program – Duct Sealing and Repair**

On page 73 of the Draft Protocols, in the "Residential Duct Sealing and Repair" table in the summary of inputs section, the first two values listed are for boilers. Source 1 referenced and used to support the values for the boilers distinguishes between hot water boilers and steam boilers for both gas-fired and oil-fired boilers. However, the values listed in the table are for hot water boilers according to the original source. Rate Counsel recommends clarifying this distinction within this section to prevent a user from misinterpreting the source data.

This measure section also repeats an incomplete citation Rate Counsel noted above in Section I (f) regarding a source from VEIC. On page 75 of the Draft Protocols, Source 3, lists a VEIC estimate. Without access to this study, Rate Counsel is unable to verify the reasonableness of the proposed value. OCE should provide this study or make it available online.

The Draft Protocols also lack a source for Fuel BTU in the Table titled "Residential Insulation Upgrades" on page 77. Rate Counsel recommends including a source or explaining why a source is not needed for these values.

e) **Residential Existing Homes Program – Ductless, Mini-Ducted, or Hybrid Heat Pump Systems**

The Draft Protocols propose to add savings assumptions for ductless, mini-ducted, or hybrid heat pump systems under the Residential Existing Homes program.[30] The proposed algorithms and assumptions are reasonable, except the EFLHs for heating and cooling (which are address in the first section of this memo) and the CF. The proposed CF is 69 percent based on the Mid-Atlantic TRM Version 8, as indicated on page 81 of the Draft Protocols in reference

[30] Draft Protocols, p. 79

number 2. However, this value is a Maryland-specific value, and not for the PJM peak period according to NEEP TRM. The Mid-Atlantic TRM in fact provides PJM specific CFs, which are 66 percent for central air conditioning ("AC") and 30 percent for room AC. Rate Counsel recommends that the Draft Protocols use the Mid-Atlantic TRM values specific for the PJM peak period and provide a rationale for the use of a selected value based on room AC or central AC, or a combination of these two types of AC systems.

f) **Hours of Operation and Coincidence Factor by Building Type**

The revisions to the Protocols include the following addition to hours of operation and coincidence factor for multi-family building types, under Commercial & Industrial Performance Lighting:[31]

Building Type	**Sector**	**CF**	**Hours**
Multifamily – Common Areas	Multifamily	0.86	5,950
Multifamily – In-Unit	Multifamily	0.59	679
Multifamily – Exterior	Multifamily	0.00	3,338

Hours for operation of LED recessed downlight luminaires for multi-family buildings appear to be provided on pages 22-23 of the Mid-Atlantic TRM, not on p. 25. The annual operating hours listed in the Protocols for in-unit multi-family luminaires (679 hours) and multi-family common areas (5,950 hours) match the Mid-Atlantic TRM values. However, the Mid-Atlantic TRM does not provide values for operation of exterior lighting associated with LED recessed downlight

[31] The footnotes for all three of these new rows in the Protocols reference the NEEP Mid-Atlantic TRM V8, page 25. Draft Protocols, p. 85.

luminaires. The Protocols should clarify the source of the 3,338 hours and provide an explanation as to how this value is appropriate in the context of multi-family exterior lights.

CFs for operation of LED recessed downlight luminaires are provided on p. 25 of the Mid-Atlantic TRM. The Protocol's values for coincident factors for Multi-family common areas and in-unit lamps are consistent with the Mid-Atlantic TRM values. However, the Mid-Atlantic TRM does not provide CFs for exterior lighting associated with LED recessed downlight luminaires. On page 38, the Mid-Atlantic TRM indicates that exterior installations of screw-based LED lamps have a CF of 0.018. The Protocols should consider whether this CF is more appropriate than the value added in the Draft Protocols.