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May 31, 2018

Via Hand Delivery and Electronic Mail

Honorable Aida Camacho-Welch, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue
3rd Floor, Suite 314
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Trenton, New Jersey 08625

**Re: Comments of the New Jersey Division of Rate Counsel
CEP Proposed Revisions to NJCEP Protocols**

Dear Secretary Camacho-Welch:

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 second revision (“Draft Protocols”) to the FY16 version of the Clean Energy Program (“CEP”) Protocols (“Protocols”), dated May 10, 2018,¹ which were circulated in red-line form by the BPU’s Office of Clean Energy (“OCE”) to stakeholders for comment along with the OCE’s summary (“OCE May 10 Summary”) of its responses to the stakeholder comments on the initial revision, dated January 12, 2018, to the FY16 version of the Protocols.²

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, Revisions to FY 2016 Protocols, Date: May 10, 2018.”

² See “Comments and Responses to FY19 Update to FY16 NJCEP Savings Protocols” dated May 10, 2018, available at http://njcleanenergy.com/files/file/public_comments/FY18/3c%20-%20NJCEP%20Protocol%20Comments%20and%20Response%20Doc%20v1.pdf.

Enclosed please find original and ten copies of comments submitted on behalf of Rate Counsel in connection with the above-captioned matter. One additional copy of the comments is enclosed. **Please stamp and date the extra copy as ‘filed’ and return it in our self-addressed stamped envelope.**

I. Introduction and Summary

Presently, the Office of Clean Energy (“OCE”) and the Market Managers for CEP’s energy efficiency (“EE”) and renewable energy (“RE”) programs use the current version of the Protocols to Measure Resource Savings to track the energy and demand savings (and RE generation) attributable to CEP EE measures. The within general and specific comments, divided by subject area, reference the Draft Protocols and the OCE May 10 Summary, as well as the OCE’s presentation material entitled “Review of Proposed Revisions to NJCEP Protocols per ERS Report,” dated March 14, 2018 (“March OCE Presentation”). The OCE’s May 10 Summary includes its responses to Rate Counsel’s comments dated April 10 (“Rate Counsel April 10 Comments”) on the initial revision to the FY16 Protocols dated January 12.

II. General Comments

Rate Counsel makes the following comments that apply to the Protocols, in general, as well as the extent to which previous Rate Counsel recommendations have been implemented and comments have been addressed.

A. Winter Coincident Factors

Rate Counsel previously recommended that the OCE establish winter coincident factors (“CFs”) for as many measures as possible.³ However, the OCE May 10 Summary recommended maintaining the status quo, pending further analysis, consideration, and public input. Rate Counsel would like to continue to emphasize the need for estimates of winter coincident factors (“CFs”). As discussed in Rate Counsel’s April 10 Comments, PJM’s capacity market Reliability Pricing Model (“RPM”) now 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 The challenges regarding resource adequacy within the winter in PJM have been outlined in a PJM load forecasting report with zone-specific peak demand requirements. For example, specific PJM zones such as PL and EKPC are expected to have higher winter peaks than summer peaks.⁵ Additionally, according to PJM, the reasons for requiring sufficient planning for resource adequacy within the winter include the increased likelihood of extreme weather events and lack of generation reliability due to wintertime pipeline or fuel constraints.⁶ This indicates that winter resource adequacy is a future constraint. Including the winter CFs will help facilitate offers of CEP energy efficiency resources into the PJM RPM capacity market in order to obtain additional funds for the programs.

³ Rate Counsel April 10 Comments, pp. 2-3.

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>.

⁵ PJM Load Forecast Report, January 2016 pp.18-45, <https://www.pjm.com/~media/library/reports-notice/load-forecast/2016-load-report.ashx>.

⁶ Winter Season Resource Adequacy and Capacity Requirements <http://www.pjm.com/~media/committees-groups/committees/mrc/20161117/20161117-item-09-winter-reliability-requirement-ps-ic-clean.ashx>.

B. Free Riders and Free Drivers

The savings calculations in the Draft Protocols do not reflect the impacts of free ridership and spillover (also known as effects of “free drivers”). These values help assess the effectiveness of EE measures. The current Protocols indicate that “[f]ree riders and free drivers are not addressed in these Protocols.”⁷ Rate Counsel previously recommended that the OCE establish specific timelines to evaluate free riders and free drivers as soon as possible, and that the OCE share that timeline with stakeholders.⁸ In response, the OCE May 10 Summary noted that free ridership and other related net effects will be examined further in FY19 and that a schedule would be developed and shared. Rate Counsel requests that the OCE keep stakeholders informed of study timelines once they have been developed.

C. References

Rate Counsel previously recommended that the OCE review, reference, and adopt the values from the latest versions of the technical reference manuals (“TRMs”).⁹ In response, NJCEP updated 14 measure references. However, six measures (Residential Energy STAR lighting, Refrigerated Case LED, Pre-Rinse Spray Valves, Clothes Washers and Dryers, and Appliance Recycling Programs) continue to refer to the previous TRM versions, per the OCE May 10 Summary. The OCE should provide further clarification regarding its reasons for referencing the earlier version of the TRMs for these specific measures.

⁷ Draft Protocols, p. 8

⁸ Rate Counsel April 10 Comments, p. 3.

⁹ Rate Counsel April 10 Comments, pp. 3-4.

D. Updates

Rate Counsel would like to acknowledge that the OCE has made updates to the references to the most current version of the Mid-Atlantic and New York TRMs for 14 measures, based on Rate Counsel's April 10 Comments.

III. Specific Comments

Rate Counsel's comments on specific issues and sections of the Draft Protocols are presented below.

A. T&D Line Loss Factor

Rate Counsel previously recommended that the OCE obtain the transmission and distribution ("T&D") loss factors for different customer classes from the utilities and use those factors in the protocols where applicable.¹⁰ In response, the OCE recommended that the status quo would be maintained pending further analysis, consideration, and public input.¹¹ Rate Counsel would like to emphasize its concerns with the Draft Protocol's reliance on a single T&D line loss factor, based on an average value, for energy and peak demand reductions across the entire state.¹² As indicated in the Rate Counsel April 10 Comments, line losses vary with different voltage levels. In particular, large customers receiving power at high voltage levels experience lower line losses. Other jurisdictions demonstrate potential methods to address this. Several Pennsylvania utilities, for example, estimate savings from their energy efficiency programs using several different line loss factors, depending on the customer type, as shown in Table 1 below. Similarly, PSE&G in New Jersey developed values for line losses which indicate

¹⁰ Rate Counsel April 10 Comments, p. 4-5.

¹¹ OCE May 10 Summary, p. 8.

¹² Draft Protocols, p. 18.

the losses can be approximately 2.5 percent lower for primary distribution voltages.¹³ This highlights the need for line loss factors to be defined for specific rate classes to accurately account for savings through energy efficiency programs.

Table 1. Line Loss Factors by Several Pennsylvania Utilities

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%

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/pdocs/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.

B. Avoided Emission Rates

The Draft Protocols provide revised electric emission factors for the years 2014, 2015, and 2016.¹⁴ These emission factors are based on PJM’s system marginal on-peak emission factors. The main purpose of the Protocols is to estimate benefits from the current and future programs and thus the emission rates from the most recent year are most relevant. As such, Rate Counsel previously requested a clarification as to why three years of historical emission rates are provided in the Draft Protocols.¹⁵ However, the OCE has maintained the status quo pending input from NJDEP, further analysis and consideration, and public input.¹⁶ If the OCE intends to maintain the status quo and utilize the past three years data instead of the most recent year, Rate

¹³ See PSE&G Rate Class and Loss Factor Information https://www.pseg.com/business/energy_choice/third_party/rate_class.jsp.

¹⁴ Draft Protocols, p. 19.

¹⁵ Rate Counsel April 10 Comments, pp. 5-6.

¹⁶ OCE May 10 Summary.

Counsel requests that the Protocols - at a minimum - clarify which emission factors should be used for estimating future avoided emissions. Rate Counsel further recommends the Protocols clarify the purpose of presenting three years of historical emission rates rather than the most recent year.

Secondly, Rate Counsel previously requested the Protocols use annual average marginal emission rates rather than annual peak marginal emission rates.¹⁷ In reply, the OCE also responded that status quo would be maintained pending input from NJDEP, further analysis, consideration, and public input.¹⁸ Rate Counsel would like to reiterate the importance of using annual average marginal emission rates instead of the peak marginal emission rates. Energy savings for CEP measures are provided in terms of annual energy savings rather than peak and off-peak energy savings. The source document from PJM also provides marginal emission rates from off-peak time periods. Therefore, for the Protocols, Rate Counsel recommends that the OCE develop annual average marginal emission rates by taking the average of the peak and off-peak marginal emission rates, weighted by the number of hours for peak and off-peak as defined by PJM. If status quo is maintained, then Rate Counsel requests that the OCE provide additional support for its decision not to incorporate the annual average marginal emission rates within the Protocols.

C. Residential Lighting Coincident Factor

As previously stated by Rate Counsel in its earlier comments, the Protocols should be updated to use CFs based on a 2014 study prepared by NMR, *Northeast Residential Lighting*

¹⁷ Rate Counsel April 10 Comments, p. 6.

¹⁸ OCE May 10 Summary.

Hours of Use Study.¹⁹ The NMR study evaluated both summer and winter CFs for northeastern states, including for New York City. The Protocols currently use a value of 5 percent as a residential lighting CF based on Vermont's TRM.²⁰ Given that New Jersey's lighting load shape is very different from Vermont's, Rate Counsel does not recommend the use of this assumption for the Protocols. The OCE responded within the OCE May 10 Summary that the status quo would be maintained pending further analysis, consideration, and public input. Rate Counsel continues to emphasize the need for incorporating CFs that are representative of New Jersey-specific lighting characteristics as opposed to the residential lighting CFs based on Vermont's TRM. Rate Counsel further recommends that the OCE develop New Jersey-specific lighting CFs for summer and winter based on data for the downstate New York area from the NMR study. Hourly lighting use for downstate New York, which the OCE can use to identify CFs more suitable for PJM peak periods, are provided in Figure 4-7 of the cited NMR study.

D. Residential HVAC EFLH

The Draft Protocols proposed the use of New York City-specific effective full load hour ("EFLH") data for residential cooling and heating in various parts of the Protocols.²¹ The New York EFLH estimates are provided for old, average, and new buildings separately. However, in its March OCE Presentation, the OCE stated that it found no definitions for classifying the old, average, and new buildings used for the New York estimates. On the other hand, the current

¹⁹ See Rate Counsel April 10 comments, p.6, and the cited NMR Group study, available at: <http://www.neep.org/sites/default/files/resources/Northeast-Residential-Lighting-Hours-of-Use-Study-Final-Report1.pdf>.

²⁰ Draft Protocols, p. 60.

²¹ Draft Protocols, pp. 37, 38, 40, and 41.

effective estimates for New Jersey are based on Vermont Energy Investment Corporation (“VEIC”) estimates, which are “consistent with analysis of PEPCo and LIPA.”²²

Rate Counsel has previously suggested that before making a recommendation to use a different set of assumptions for EFLH, it would be helpful to have a better understanding of the source and basis of the values that are currently being used.²³ If VEIC values are based on a New Jersey study, Rate Counsel recommends that the revised New Jersey Protocols retain the EFLH estimates used in the existing Protocols. Rate Counsel also recommends that the OCE conduct an analysis of EFLH estimates for cooling and heating. The analysis should include various types of heating and cooling systems such as gas furnaces, ducted heat pumps, and ductless mini-split heat pumps. However, the OCE recommended that the current EFLH values would be maintained pending further analysis, consideration, and public input.²⁴ Rate Counsel recommends that if 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.

E. Measure Life

In the initial revision to FY16 Protocols, the OCE proposed to use a measure life of 20 years for residential insulation based on two data points: 25 years from the Mid-Atlantic TRM and 15 years from Pennsylvania’s TRM.²⁵ Rate Counsel previously noted that the actual measure life value referenced in Pennsylvania’s TRM is 25 years, which was based on a value

²² Draft Protocols, p. 231.

²³ Rate Counsel April 10 Comments, p. 8.

²⁴ OCE May 10 Summary, p.10.

²⁵ March OCE Presentation, slide 5; ERS 2017. “NJCEP Protocols – Comparative Measure Life Study and Summary of Measure Changes to NJCEP Protocols, p. 2

used in Massachusetts. Rate Counsel recommended that the Protocols keep the current insulation measure life value of 30 years which is consistent with the value used in New York²⁶ or use a slightly lower value of 25 years consistent with the value used in Massachusetts and Pennsylvania.²⁷

The OCE proposed to maintain the 20-year measure life, but now proposes to use California's savings protocols called the Database of Energy Efficiency Resources ("DEER") as the basis for the measure life.²⁸ In principle, Rate Counsel does not recommend the use of the values from California, especially when measure life values are available from neighboring states. The exception would be if an analysis demonstrates that the value in California DEER is more accurate and appropriate for the New Jersey region. In the case of insulation measure life, it is obvious that neighboring states use long measure life values consistent or close to what New Jersey is currently using. Thus, Rate Counsel reiterates its original recommendation that the Protocols retain the current value or use a 25-year life based on the value consistent with the value used in Massachusetts and Pennsylvania.

F. Fuel Use Economizer for Commercial Boilers and Furnaces

The Protocols currently use a 13-percent savings factor for fuel use economizers for commercial boilers and furnaces. This savings factor is based on studies by Brookhaven National Laboratories for NYSERDA and ConEdison. The Draft Protocols have proposed a 4-percent factor based on a study conducted by ERS using third-party reviews and impact evaluation data.²⁹

²⁶ New York TRM Version 5.1, p. 47.

²⁷ Rate Counsel April 10 Comments, pp. 9-10.

²⁸ OCE May 10 Summary, p.11.

²⁹ OCE March Presentation, p. 12.

The performance of fuel use economizers differs significantly by climate. The New York TRM provides kilowatt-hour (“kWh”) savings estimates per unit for different types of commercial buildings in its Appendix J, pp. 515 – 516. The Mid-Atlantic TRM adjusted the kWh savings value from the NY TRM to be consistent with enthalpy data from New York City and Mid-Atlantic cities.³⁰ Rate Counsel has previously recommended that OCE take the same approach as found in the Mid-Atlantic TRM.³¹ More specifically, the OCE should adjust the New York City value based on New Jersey-specific enthalpy data for inclusion in the Protocols. Alternatively, the Protocols can use the savings values developed by the Mid-Atlantic TRM for Wilmington, Delaware. The OCE responded that it will be maintaining the status quo pending further analysis, consideration, and public input.³² Rate Counsel reiterates its recommendation that the OCE should adjust the savings factor based on New Jersey-specific enthalpy data.

³⁰ Mid-Atlantic TRM Version 7, p. 393.

³¹ Rate Counsel April 10 Comments, p. 10.

³² OCE May 10 Summary, p.11

G. C&I Lighting Hours

Rate Counsel previously recommended that the hospital hours for lighting be updated to reflect the values provided within the New York TRM.³³ The Draft Protocols assume 8,760 hours of lighting operation for hospitals, based on an assumption that hospitals operate year-round.³⁴ While some lighting fixtures at hospitals certainly operate throughout the year, other lighting fixtures are turned off during certain times of the day or year. New York's TRM currently uses 7,666 hours for hospital lighting.³⁵ The New York TRM also stipulates operating hours for many other commercial buildings. Rate Counsel recommends that the OCE review and consider adopting the operating hours for hospital buildings from the New York TRM. Also, Rate Counsel recommends that the OCE review operating hours for other types of buildings and determine whether the data for the other building types should be reflected in the Protocols. The OCE responded that the recommended lighting hours had been reviewed and updated based on the Mid-Atlantic TRM V7.³⁶ However, based on Rate Counsel's review of the Draft Protocols, lighting hours for hospitals remain at 8,760 hours of lighting as opposed to the 7,666 hours for hospitals in the NY TRM.³⁷ Rate Counsel requests that the OCE revise the Draft Protocols to reflect the change to the lighting operating hours as it recommended in the OCE May 10 Summary.

³³ Rate Counsel April 10 Comments, p. 11.

³⁴ Draft Protocols, p. 101.

³⁵ New York TRM Version 5.1, p. 274.

³⁶ OCE May 10 Summary, p. 11.

³⁷ Draft Protocols, p.101.

H. Revisions to Comfort Partners Protocols

The Draft Protocols added savings protocols for two new Comfort Partners program measures: the water pipe heat wrap and gas HVAC repairs.³⁸ Rate Counsel has reviewed the proposed savings protocols for these measures. For the water pipe heat wrap measure, the Draft Protocols proposed savings algorithms based on annual electric and gas savings factors. Using a numeric annual savings factor, would not allow for calculation of savings as a function of varying pipe diameter, types of insulation, temperature differences between water in the pipe and the ambient air, and recovery efficiencies as have been taken into account in the Mid-Atlantic TRM. Rate Counsel requests clarification regarding the reasons for not including formulae that would account for a range of variables in the methodology proposed within the Protocols. A formulaic approach would be consistent with the practices within the Mid-Atlantic³⁹ and New York TRMs⁴⁰. Additionally, based on the recommendations of the OCE's Utility Working Group, a water heater replacement cross reference was suggested as an additional edit to the Comfort Partners Program.⁴¹ Rate Counsel requests clarification on whether this water heater replacement cross reference has been addressed within the Draft Protocols and if so, the location for this cross reference within the Draft Protocols.

For all the foregoing reasons, Rate Counsel respectfully requests that the BPU and the OCE adopt its recommendations for the Protocols.

³⁸ Draft Protocols pp. 53, 56-57

³⁹ Mid-Atlantic TRM Version 7, p.159.

⁴⁰ New York TRM Version 6, p. 46.


⁴¹ Review of Proposed Revisions to NJCEP Protocols per ERS Report, Utilities Working Group Meeting Presentation

Thank you for your consideration of the within comments.

Respectfully submitted,

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