

**COMMENTS AND RESPONSES
FY19 UPDATE TO FY16 NJCEP SAVINGS PROTOCOLS**

Stakeholder	Protocol Reference	Comment	Action Taken
New Jersey Division of Rate Counsel	Residential Electrical HVAC	Pg. 17 and 20, 21 . The terms kWh(p) and kW(p) are not inputs and should not be used. The use of Reference #12 for Energy and Demand Savings Factors appears inaccurate.	Corrected as noted.
New Jersey Division of Rate Counsel	General: References	Need to cross check references throughout document. Three different versions of the Mid Atlantic Technical Reference Manual (TRM) are cited.	Reviewed and revised as appropriate.
New Jersey Division of Rate Counsel	Residential Gas HVAC	Page 25 ELFH should have subscript (p)	Corrected as noted.
New Jersey Division of Rate Counsel	Residential Gas HVAC	Page 29, 33: Uniform Energy Factor (UEF) for water heaters unclear description .	Corrected as noted.
New Jersey Division of Rate Counsel	Residential Low Income	Page 37 - "Demand Factor" for low flow showerheads has been reused for faucet aerators	Corrected. Value for faucet aerators is .000134
New Jersey Division of Rate Counsel	General Comments	Typo: URL for Apprise Report has an extra "t"	Corrected as noted.
New Jersey Division of Rate Counsel	Residential New Construction	Page 45: Energy Savings should be in kWh/yr and therms/yr	Corrected as noted.
New Jersey Division of Rate Counsel	Appliance Recycling	Reference to 2016 Version of 6.0 Mid Atlantic TRM out of sync with values on page 62 which are from 2014 Version 4.0 of the Mid-Atlantic TRM	Updated values to correspond to most current reference
New Jersey Division of Rate Counsel	Appliance Recycling	The notation in the algorithm is inconsistent with the notation in the definition of terms and summary of inputs	Corrected as noted.
New Jersey Division of Rate Counsel	Commercial & Industrial	Pages 65-68 Reference should be provided under the Summary of Inputs for LPD(b) and LPD(q)	Inserted References and Removed URL
New Jersey Division of Rate Counsel	Commercial & Industrial	Fuel Savings algorithm on pg. 65 uses undefined and unreferenced variables.	Simplified with delta kW value.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 72: Typo "Ocompe(ff)"	Corrected as noted.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 72: "Typical Applications" table is inconsistent with algorithm shown above bc it does not account for impact on cooling load	Removed table
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 83: Dual Enthalpy Economizers description is unclear and references DOE 2.2. simulations	Moved information to "Summary of Inputs" and reference section with a clearer indication of how DOE 2.2. simulations were used.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 92: Variable Speed Air Compressors - a factor of 0.746 is defined, though not a symbol and not shown in algorithm. It is also defined as kW to HP conversion factor when it is the opposite	Corrected as noted.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 94: Kichen Hoods with VFDs, the reference style in the Summary of Inputs is inconsistent with that used in the rest of the Draft Protocols	Reviewed and corrected throughout
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 95: 5 different sources were used to yield a single value each for ESF and HSF	Reviewed and clarified methodology
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 96-115 Throughout section conventions for presenting inputs and references is neglected.	Revised section.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 119: variable "EF" is defined which presumably should be "EFF"	Corrected as noted.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 120-122 The formula for %SL relies on a variable names "kBtu/hr(q) to represent rated input capacity. This is a confusing variable name. Further the variable is not actually a percent but a decimal as seen in calculations on pages 120 and 122	Corrected inconsistencies in terminology.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 123: Inconsistent definitions %SL	Corrected as noted.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 129: Reference for "deemed savings" is variously noted a MA TRM in Draft Protocols and NY TRM in ERS Memo	Clarified for consistency. MA TRM is correct.
New Jersey Division of Rate Counsel	Direct Install	Page 148 "60" is defined as the conversion factor from hours to minutes but is not included in formula	Corrected as noted.
New Jersey Division of Rate Counsel	Direct Install	Pages 149-151: The Test description for pipe isulation	Formulas updated.
New Jersey Division of Rate Counsel	Direct Install	Page 151 "Deemed Savings Values"	Updated Table Title to reflect content
McGrann Associates	Residential New Construction.	The narrative replacing the User Defined Reference Home table misstates the basis of the savings calculation methodology for this program and removes all guidance for establishing appropriate baselines by which program homes should be measured. This is a fundamental oversight that needs to be corrected	UDRH Table will remain.

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McGrann Associates	Residential New Construction.	Baked in" references to specifically named rating software products are an artifact of the original protocols from almost two decades ago and should be replaced by references to the governing standards for acceptable software, even if a "brand" approval step is required as part of implementation by the program administrator.	UDRH Table will remain.
McGrann Associates	Residential New Construction.	In the MFHR section, a request to remove the fixed reference to a 4-6 story limit under the RNC program, as this is a policy decision rather than a standards or savings calculation one, and should be reconsidered as part of proper alignment of multifamily new construction within NJCEP.	4-6 story reference removed.
McGrann Associates	Residential New Construction.	Corrections to references to underlying codes and standards.	Corrected as noted.
Willdan Energy Solutions	Commercial & Industrial Occupancy Controlled Thermostats	Cooling Energy Savings formula mistake Cooling Energy Savings (kWh) = (((Tc * (H+5) + Sc * (168 - (H+5)))/168)Tc) * (Pc * Caphp * 12 * EFLHc/EERhp)	Formulas updated.
Willdan Energy Solutions	Commercial & Industrial Occupancy Controlled Thermostats	Heating Energy Savings formula mistake Heating Energy Savings (kWh) = (((Th * (H+5) + Sh * (168 - (H+5)))/168)-Th) * (Ph * Caphp * 12 * EFLHh/EERhp)	Formulas updated.
New Jersey Division of Rate Counsel	Calculation of Emission Factors	Include reference for "Statewide Conversion Factors". Specific reference and date should be noted for "statewide conversion factors" for air emissions reductions factors supplied by NJDEP referenced on Pg 14. Consistent and well-defined units in the savings values for each time period and pollutant should also be used.	Emissions factors revised based on more recent data from PJM.
New Jersey Division of Rate Counsel	Appliance Recycling	Page 62: savings estimates for appliance recycling are based on a regression from Mid Atlantic TRM base on HHD and CDD data. Savings for NJ should be calculated using regression and appropriate values for HHD and CDD (see NJ specific data provided by M.Winka)	Reviewed Mid-Atlantic TRM and will maintain numeric values. Values with NJ data yield nearly identical results. Moving to a calculated entry would require additional appliance information not currently collected.
New Jersey Division of Rate Counsel	Commercial & Industrial	HVAC interactive effects as represented here and based on Mid Atlantic TRM are more reasonable than those presented for residential lighting	Residential lighting references Mid-Atlantic TRM.
TrickleStar, Inc.	Measure Life: Residential & Commercial Advanced Power Strips	Measure Life for Advanced Power Strips should be updated based on availability of additional studies. NJBPU noted their own research on this specific measure found two sources quoting four years and two other sources quoting five years for the measure life of Advanced Power Strips. With this new information from California, we hope the NJBPU is comfortable making an incremental adjustment from four years to five years with respect to the measure life of Advanced Power Strips.	Moved to 8 year value based on DEER Database.
New Jersey Division of Rate Counsel	Energy Star Energy Efficient Products	Page 52 Details for Clothes Washers & Dryers lost in footnote. Also Update US EIA 2009 RECs Data to 2015 Data. Move details into body of Protocol and clarify references. Also provide disaggregated savings data for gas and electric water heating and clothes dryers in NJ.	2009 RECS offers data at the state level (New Jersey) while 2015 RECS only offers data at the regional level (Mid-Atlantic). The 2009 data's state-specific data is more reflective of NJ characteristics than more recent regional data.
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 130: URL should be provided for ERS presentation referenced for the Savings Factor for Fuel Use Economizers	Fuel Use Economizer will maintain the status quo pending further analysis, consideration, and public input.
New Jersey Division of Rate Counsel	On-Peak and Off-Peak Hours	Definition of On-Peak and Off-Peak Hours not compatible with PJM. See page 12 of Protocols. Adjusting hours to coincide with PJM will facilitate monetary savings calculations using off peak and on peak pricing information. Adopt PJMs definition of On-peak and Off-Peak Hours. This correction should be reconciled	Revised
New Jersey Division of Rate Counsel	General: Equivalent Full Load Hours (EFLH)	Data for EFLH is based on DOE2.2.model runs that analyze conditions in New York City. Residential homes are categorized as "old, average, and New" without definitions or values for other type of structures. New Jersey Specific model runs needed to verify data from NY to NJ and age-related categories should be established relevant to NJ housing to ensure accuracy when applying the parameter	EFLH will maintain the status quo pending further analysis, consideration, and public input.

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New Jersey Division of Rate Counsel	General: Inactive Measures	Distinguish between EE and DSM measures that are outdated or obsolete and those that are inactive but may become active in the future. Inactive measures and inputs for measuring savings should be updated for planning purposes. <u>Include protocols of inactive that may be used in future programs.</u>	Inactive measures are included in Protocols and have not been removed.
New Jersey Division of Rate Counsel	Energy Star Energy Efficient Products	Page 54 - 60 Insufficient guidance on Baseline for Energy Efficient Lighting Incorporate EISA Phase I Standards . Remove tables and substitute baseline values for various types of lighting.	Revised.
New Jersey Division of Rate Counsel	Energy Star Energy Efficient Products	Page 54-55 HVAC interactive factors from NY TRM raises concerns as the factors appear erroneous and are inconsistent with other sources. Mid Atlantic TRM Version 6 provides more reasonable values	Revised to reflect Mid-Atlantic TRM.
New Jersey Division of Rate Counsel	Commercial & Industrial	Pages 68,73, 74 PA TRM is used as secondary reference along with out of date studies	References have been updated.
McGrann Associates	Commercial & Industrial	C&I tables do not call out multifamily buildings falling under C&I programs, In lieu of a designated multifamily building type, guidance should be provided as to the appropriate category to select	MF EFLH added to C&I electric and gas measures
McGrann Associates	Commercial & Industrial	C&I Electric HVAC, page 106- : No algorithms or values are provided to compare VRFs with standard systems, similar to the addition of ductless minisplits in the residential sections.	Maintain the status quo pending further analysis, consideration, and public input.
McGrann Associates	Commercial & Industrial	Water Heaters (Tank Style), page 155- : Does this protocol apply only to a standalone piece of equipment or would it also apply to a system with a boiler & storage tank or an indirect water heater?	This protocol is for stand alone water heaters. There is currently no C&I protocol for Indirect Water Heaters.
McGrann Associates	Commercial & Industrial	If considering indirect or boiler/tank systems, would the efficiency of the combustion equipment need to be de-rated? What would be the protocol for de-rating?	There is currently no C&I protocol for Indirect Water Heaters.
McGrann Associates	Commercial & Industrial	Is there a methodology for de-rating the efficiency of existing equipment that is significantly older than the assumed baseline of ASHARE 90.1-2007 (i.e. early retirement of old, inefficient equipment that would otherwise remain in use)?	No methodology included. Issue for future consideration.
McGrann Associates	Commercial & Industrial	Prescriptive Boilers/Furnaces, page 162- : a. Regarding the Oversize Factor of 0.8 for both baseline and proposed equipment, this seems reasonable for a proposed piece of equipment but leaves little room to accurately depict the degree to which baseline or existing equipment is oversized. b. Regarding the ΔT Design Temperature difference, the protocols provide a prescribed outdoor design temperature based on project location, but do not specify an indoor design temperature (the KEMA study that the algorithms are derived from uses 65°F). Is this intended to be a variable input or is it simply a data point that was intended to be prescribed but overlooked? A. It would be preferable to have an allowance to use an oversize factor based on measurable site specific conditions. It would also be helpful to have a methodology to account for elimination of redundant boilers/furnaces. This is less of an issue for a prescriptive program such as Smart Start but is a potential problem if the protocol is applied to programs like P4P. B. Clarify if a variable input or prescribed	Algorithm for prescriptive boilers and furnaces revised to incorporate EFLH instead of HDD and Oversize Factor.
McGrann Associates	Commercial & Industrial	Modified HDD Table, page 167 (also see comment #1 above): The table does not include multifamily and the logical building type to use seems to be lodging. However, the adjustment factor for that building type would suggest that the building is only in occupied mode 28% of the time.	MF EFLH added to C&I electric and gas measures
Willdan Energy Solutions	Commercial & Industrial Premium Efficiency Motors	Chilled Water Pump and Hot Water Pump calculations currently use EFLHs. Chilled Water Pump and Hot Water Pump calculations could use CDD and HDD hours, respectively. Fan motors could use typical facility run hours.	Maintain the status quo pending further analysis, consideration, and public input.
Willdan Energy Solutions	Commercial & Industrial Electric Chillers	On Pg 114 Calculation Using IPLV Using EFLH. Recommending using CDD hours for suitable region as IPLV accounts for part load efficiency throughout the year	ERS determined EFLH was appropriate for this measure. No change.

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Willdan Energy Solutions	Commercial & Industrial Occupancy Controlled Thermostats	Assuming 5 days per week for calculations. The facility types this measure is targeting are not limited to 5 days per week of operation. This should be 7 days per week. REMOVE emission factors for CHP and rely on those provided on page 13-14.	Revised to 7 days per week.
New Jersey Division of Rate Counsel	Combined Heat & Power	Page 132: Why are emissions factors provided for CHP applications and not other measures. Electric and gas emission factors provided on page 13-14 can be applied to all measures	Emission factors removed for this measure.
New Jersey Division of Rate Counsel	Residential Gas HVAC	Page 32-33 Draft Protocols provide 2 baselines for instantaneous water heaters. Guidance should be provided on which baseline to be used in which circumstance. The Avg Baseline for NJ should be used in cases where approp. baseline can't be determined.	Baseline is based on the type of existing equipment being replaced. There is no NJ specific data available.
Willdan Energy Solutions	Commercial & Industrial : Lighting Controls	SVG rates are too low. These are the most conservative rates. Rates should be 31% for occupancy savings and 40% for daylight savings. US DOE reference RPI study that shows greater savings, specifically for office buildings. Two studies below show rates greater than the NJCEP protocols. https://energy.gov/sites/prod/files/2015/11/f27/fupwg_fall2015_matour.pdf https://escholarship.org/content/qt9t48j3rj/qt9t48j3rj.pdf?nosplash=5a15a1343cc1cd1318420e6ad21ccdf	Revised to reflect suggested values.
Utilities Working Group	1) Approach to Measure Life	Fault in approach if other jurisdictions used same approach	Approach has been revised to use California Database of Energy Efficient Resources (DEER) for default values. http://www.deeresources.com/
Utilities Working Group	2) Approach to Measure Life	Inconsistent "similar range"	Approach has been revised to use California Database of Energy Efficient Resources (DEER) for default values. http://www.deeresources.com/
Utilities Working Group	3) Difference between Residential and C&I Measure Life	Strive for consistency	Approach has been revised to use California Database of Energy Efficient Resources (DEER) for default values. http://www.deeresources.com/
Utilities Working Group	4) Reliance on past flawed studies	Rely on NJ specific data	Where there was no specific NJ data, ERS reviewed available studies for reference.
Utilities Working Group	5) Clean air Impacts	Use marginal rather than average values	Revised.
Utilities Working Group	6) EFLH for Residential HVAC	Use HDD and CDD	Maintain the status quo pending further analysis, consideration, and public input.
Utilities Working Group	7) Hospital EFLH for lighting	Should not consolidate into one category for hospitals	Revised to break out hospital lighting
Utilities Working Group	8) Missing measures for LI	Protocols should address all existing measures	Two measures added for Low Income. Gas HVAC Repairs and Water Heater Pipe Wrap.
State Energy Office	Measure life for Mini-split	Retain 15 years	Mini-split life has been retained at 15 years.
State Energy Office	Measure Life for Water Heaters	Storage WH - Retain at 10, Instantaneous WH - 15 years maximum	Storage WH Life at 11 years and Instantaneous WH Life at 20 years per DEER. http://www.deeresources.com/
State Energy Office	Measure Life for Water Heaters	Same measures appear on p.4 with different values	Commercial and residential applications will result in different life times due to different operations and different construction. Values from DEER.
State Energy Office	Measure Life for Fuel Cells	Longer life for larger systems	15 year life used for all Fuel Cells. LBNL Report "A Total Cost of Ownership Model for Solid Oxide Fuel Cells in Combined Heat and Power and Power-Only Applications" December 2015
Bloom Energy (Bevan, Mosca & Giuditta)	Measure Life of Fuel Cells	Proposal to Lower Measure Life from 20 yrs to 5 yrs not cross referenced to other TRMs or some explanation as to the drastic reduction for fuel cell measure life. The Recommendation is unjustified and the proposed devaluation is contrary to actions taken in neighboring jurisdictions, and is offered without basis or justification.	15 year life used for all Fuel Cells. LBNL Report "A Total Cost of Ownership Model for Solid Oxide Fuel Cells in Combined Heat and Power and Power-Only Applications" December 2015
Willdan Energy Solutions	Commercial & Industrial Premium Efficiency Motors	Why has this section been deleted? There are many facilities that have old motors not meeting these standards. This section should not be removed.	Motor section has been retained.

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Willdan Energy Solutions	Commercial & Industrial Premium Efficiency Motors	The baseline should not be ASHRAE 90.1 2013, rather it should be the existing motors. Change the baseline to existing motors, if any. Since ASHRAE 90.1 2013 is the baseline of a new construction project, this section is not applicable to new construction projects. There is currently no motor on the market exceed the efficiency of premium motors.	Baseline reference table is appropriate. Premium efficiency motors are based on ASHRAE 90.1 2013 in the second table.
New Jersey Division of Rate Counsel	Measure Life	Measure life, or the expected period over which an individual EE measure can be expected to persist for savings projection purposes, is a crucial input to any calculation of resource savings. Estimating measure life can involve subtle and complex considerations involving assumptions about consumer behavior in both the presence and absence of the EE measure. As technologies and consumer behaviors have changed in many areas, it is essential to review Measure Life Assumptions and update them accordingly. However, Reliance on other jurisdiction Measure Life for comparison is insufficient to justify proposed changes	Approach has been revised to use California Database of Energy Efficient Resources (DEER) for default values. http://www.deeresources.com/
New Jersey Division of Rate Counsel	Commercial & Industrial	Page 66: Summary of inputs generally and incorrectly refers to "Lighting Table by Building Type" in referencing three different tables. Use table numbers here and throughout the document	Maintain the status quo pending further analysis, consideration, and public input.
New Jersey Division of Rate Counsel	General Comments	Long overdue and thorough review. Ideal Opportunity for reorganization and formatting of document. Revise Document for Consistency and readability (See Full Comments)	Many formatting improvements have been incorporated. Others will be considered during future updates.
New Jersey Division of Rate Counsel	General: Equivalent Full Load Hours (EFLH)	Need explanation of EFLH and consolidation of tables/references. Provide explanation of EFLH. Consolidate 8 EFLH tables scattered throughout document	Many formatting improvements have been incorporated. Others will be considered during future updates.
Willdan Energy Solutions	Commercial and Industrial Energy Efficient Construction (C&I)	General: Formulae are typed in plain text. Use the Equation Tool for all formulae.	Maintain the status quo pending further analysis, consideration, and public input.
Willdan Energy Solutions	Commercial and Industrial Energy Efficient Construction (C&I)	General: There is no de-rate factor to account for efficiency losses in older equipment. Add a de-rate factor for older equipment. This factor should be based on the type of equipment and the age of the equipment. Typical equipment that should be covered by these factors are airside HVAC, boilers, and chillers.	Revised to include a methodology based on ASHRAE
Willdan Energy Solutions	Commercial and Industrial Energy Efficient Construction (C&I)	EFLHs not included for all building type verticals. Add recommended EFLH for different verticals based on occupancy and usage characteristics. (For example: A supply fan in a hospital environment serving patient areas typically runs 24x7, whereas the same fan in an office building would only run for 10-12 hours a day.)	Revised to include a methodology based on NYTRM.
Willdan Energy Solutions	Commercial & Industrial : Performance Lighting	Over consolidating building types.	Revised to include a methodology based on NYTRM.
Willdan Energy Solutions	Commercial & Industrial Occupancy Controlled Thermostats	TRC is looking to make this a prescriptive measure. The formula allows for this to be a custom measure. Making this a prescriptive measure would be too restricting as there are so many variables to consider, such as EFLH, Weekly Occupied Hours, AFUE, and EER.	Revised to include a methodology based on NYTRM.
Willdan Energy Solutions	Commercial & Industrial Dual Enthalpy Economizers	Savings per Ton of Cooling System table does not cover hospitals.	Revised to include a methodology based on NYTRM.
New Jersey Division of Rate Counsel	Freeridership : Net-to-Gross Savings	Rate Counsel has noted that programs and measures have been evaluated without a rigorous analysis of the effects of free-ridership and spillover effects which together comprise Net-to-Gross adjustments to determine the portion of savings directly attributable to EE measures. Utilities and CEP have generally relied on an assumption that the two effects cancel each other out resulting in Net-to-Gross ration of 1.0. Rate Counsel submits that the significance of the issue of NTG savings is well recognized by ERS, Rutgers CEEEP and by a 2008 Board Order on the issue. The estimation of NTG requires technical judgement and experience.	Free ridership and other related net effects will be examined further in FY19.

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New Jersey Utilities Association	General Comment - Cost-effectiveness screening	Utilities appreciate the Board's interest in ensuring the ratepayer funded energy efficiency programs are being properly valued, we believe modifications should be considered as part of a more comprehensive effort that also considers the approach to cost effectiveness screening, including non-energy impacts.	Non energy impacts and other related net effects will be examined further in FY19.
New Jersey Utilities Association	Freeridership Memo	Further, there is reference in the Memo to the Center for Energy, Economic, and Environmental Policy (CEEEP), memo, entitled "Estimation of Freeridership and Spillovers (Free Drivers) in NJCEP Protocols" which, as of the date of this writing, has not yet been provided to our member companies.	Free ridership and other related net effects will be examined further in FY19.
McGrann Associates	Freeridership Memo	In Table 1 there appear to be a number of Connecticut and Massachusetts programs listed in the "Program" column as NJCEP programs. It is not clear if these are intended for NJ programs not otherwise listed, extraneous or duplicative.	Free ridership and other related net effects will be examined further in FY19.
McGrann Associates	Freeridership Memo	2. The entry for Residential New Construction addresses LED lighting only – it may be important to clarify that the NTGR is not intended to be applied to total home savings.	Free ridership and other related net effects will be examined further in FY19.
Willdan Energy Solutions	Commercial and Industrial Energy Efficient Construction (Commercial & Industrial)	Comments 15-24: Recommends Additional Measures not covered in NJCEP Protocols. (See Comments)	Maintain the status quo pending further analysis, consideration, and public input.
Tay River Homesmiths, Inc.	Freeridership Memo	1. The chart implies that type of program participation is significant, and makes no mention of client return on investment (ROI). In fact, ROI will probably have the most significant influence on behavior. It's highly likely that as client ROI increases, so would free-ridership rates.	Free ridership and other related net effects will be examined further in FY19.
Tay River Homesmiths, Inc.	Freeridership Memo	2. There are likely myriad other effects that would influence outcomes. For example, the rebound effect, whereby entities consume higher amounts of energy typically in the form of increased comfort or leisure (thermostatic setpoint increase, higher mileage driving, etc.) after having purchased energy saving measures. While there's no consensus, direct rebound effects appear to vary across measures, and frequently average up to 30%. (See http://www.ukerc.ac.uk/asset/3B43125E-EEBD-4AB3-B06EA914C30F7B3E/)	Free ridership and other related net effects will be examined further in FY19.
Bloom Energy (Bevan, Mosca & Giuditta)	General Comments	At this time there is insufficient information to determine why the proposed changes were recommended which complicates Bloom's ability to comment.	Stakeholder input process was extended into 2018
New Jersey Business & Industry Association	General Comments	NJBIA Supports program evaluation and understanding the effectiveness of utilization of ratepayer dollars for state rebates and incentives.	Stakeholder input process was extended into 2018
New Jersey Business & Industry Association	Commercial & Industrial Program Energy Saving Impacts	However, proposed changes may result in steep cuts for C&I Programs. Limited review time and access to data has hampered abilities to fully evaluate the material presented by the date requested. NJBIA does not want to rush to implement changes that could result in measure that really are cost effective from being eliminated because there was not enough data.	Stakeholder input process was extended into 2018
New Jersey Utilities Association	General Comment	In June 2017 ERS was engaged by Rutgers University to evaluate and update the NJCEP Protocols. OCE informed the utilities about the pending study at the June 23, 2017 Utility Work Group meeting. At that time the utilities expressed interest in being engaged in this effort. The following week OCE provided the opportunity for utilities to learn more about the study and offer suggestions regarding specific measures for be reviewed. Numerous utility representatives participated in the conference call with ERS and OCE staff. Unfortunately the collaborative effort did not continue as the study evolved over time.	Stakeholder input process was extended into 2018

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New Jersey Utilities Association	General Comment - Stakeholder Process	ERS Memo presented findings of a comparative measure life study ERS completed as part of its review of the NJCEP Protocols. While other interested parties, such as TRC and Rutgers were given the first draft of the Memo, along with the updates, NJUA member companies were not made aware of its existence until October 25 when the request for comments was issued.	Stakeholder input process was extended into 2018
The Energy Consulting Group Kamson Corporation	General Comment - Measure Life	Some of the proposed changes to the Protocols have the potential to significantly impact our ability to actively participate by lengthening our ROI on the energy efficiency measures we've embraced. For instance, about two years ago our organization submitted scientific evidence that spray foam insulation had a useful life of at least 30 years. At the time, the Protocols had spray foam insulation at 15 years. Subsequently, the Protocols were updated to 30 years at the first regulatory opportunity. These proposed Protocols have gone backward again and are proposing a 20 year useful life for spray foam insulation. In the interest of brevity, this is just one example of why we have concerns.	Approach has been revised to use California Database of Energy Efficient Resources (DEER) for default values. http://www.deeresources.com/
New Jersey Division of Rate Counsel (4-10-18)	General Comment - Winter Coincident Factors	Many of the measures in the Protocols do not have any estimates of winter coincident factors ("CFs"). Given that 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, Rate Counsel strongly recommends that the OCE establish winter CFs for as many measures as possible. This will facilitate offering CEP energy efficiency resources into the PJM RPM capacity market in order to obtain additional funds for the programs.	Maintain the status quo pending further analysis, consideration, and public input.
New Jersey Division of Rate Counsel (4-10-18)	General Comment - Free Riders and Free Drivers	The savings calculations in the 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." Draft Protocols, p. 6. Rate Counsel is aware of many savings protocols in other jurisdictions that include these values, primarily because they are essential for determining the effectiveness of the current program designs. Rate Counsel is also aware of and supports the OCE's consideration to address free riders and free drivers, which was briefly discussed during the Utility Working Group's meeting on March 9th. Rate Counsel recommends that the OCE establish specific timelines to evaluate free riders and free drivers as soon as possible, and share that timeline with stakeholders.	Free ridership and other related net effects will be examined further in FY19. Schedule will be developed and shared.

Stakeholder	Protocol Reference	Comment	Action Taken
New Jersey Division of Rate Counsel (4-10-18)	General Comment - References	<p>The Draft Protocols adopt many values from the Mid-Atlantic Technical Reference Manual ("TRM"), Version 6 (published May 2016), and New York Standard Approach for Estimating Energy Savings, Version 4 (published April 2016). The TRM versions referenced in the Draft Protocols are outdated. The Mid-Atlantic TRM was updated in May 2017 as Version 7.3 New York's TRM was updated in July 2017 (Version 5) and again revised last month (Version 5.1).⁴ Rate Counsel recommends that the OCE review and adopt the values from the latest versions of the TRMs, where applicable.</p>	<p>The following measure references have been updated to the latest TRM versions for the Mid-Atlantic (V7) or NY (V6) TRM.</p> <ol style="list-style-type: none"> 1. Residential electric HVAC 2. Residential gas HVAC 3. C&I electric HVAC systems 4. Fuel use economizers 5. Dual enthalpy economizers 6. Occupancy controlled thermostats 7. Variable frequency drives 8. Gas chillers 9. Prescriptive boilers 10. Prescriptive furnaces 11. Boiler reset controls 12. Low flow faucet aerators and showerheads 13. Pipe insulation 14. C&I performance lighting <p>The following measure references remain on the previous TRM versions and will be reviewed for the next revision of the NJ Protocols.</p> <ol style="list-style-type: none"> 1. Residential ENERGY STAR Lighting 2. Refrigerated Case LED 3. Pre-rinse spray valves 4. Clothes Washers 5. Clothes Dryers 6. Residential ENERGY STAR lighting 7. Appliance Recycling Program
New Jersey Division of Rate Counsel (4-10-18)	General Comment - Data Table Redundancy	<p>Rate Counsel recommended in its November 9, 2017 comments that the Protocols eliminate redundancy and opportunities for error and confusion by moving tables that are presented more than once into appropriate appendices, and pointed out effective full load hour ("EFLH") tables as an example. The Draft Protocols do not reflect this recommendation at least with respect to the EFLH tables. Rate Counsel maintains the same recommendation for the current Draft Protocols.</p>	<p>Reformatting of tables throughout Protocols was beyond ERS scope and will be revisited in the FY19 revisions to the Protocols.</p>
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - T&D Line Loss Factor	<p>The Protocols currently use a single transmission and distribution ("T&D") line loss factor as an average value for energy and peak demand reductions across the entire state. Draft Protocols, p. 14. However, in reality, line losses vary with different voltage levels. In particular, large customers receiving power at high voltage levels experience lower line losses. Other jurisdictions address the issue of various line loss factors. 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 (see full Rate Counsel comment document). Rate Counsel recommends that the OCE obtain line loss factors for different customer classes from the utilities and use those factors in the Protocols where possible.</p>	<p>Maintain the status quo pending further analysis, consideration, and public input.</p>

Stakeholder	Protocol Reference	Comment	Action Taken
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - Avoided Emission Rates	<p>The Draft Protocols provide revised electric emission factors for the years 2014,2015, and 2016. Draft Protocols, p. 15. These emission factors are based on PJM's system marginal on-peak emission factors. Rate Counsel has two concerns with the emission factors presented in the Draft Protocols. First, it is not clear why three years of historical emission rates are provided in the Protocols. The main use of the Protocols is to estimate benefits from the current and future programs. Thus, the emission rates from the most recent year are most relevant to the Protocols and, to avoid confusion, should be the only emission rates provided in the Protocols. However, if, for some reason, historical emission rates are relevant (e.g., to be used for re-evaluating emission impacts from historical CEP programs), the Protocols should clarify the purpose of presenting historical emission rates and indicate which emission rates should be used to evaluate the emission impacts from current and future programs.</p> <p>Second, it is more appropriate to use annual marginal emission rates than on-peak marginal emission rates. Energy savings for CEP 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 for off-peak time periods. 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.</p>	Maintain the status quo pending input from NJDEP and further analysis, consideration, and public input.
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - Residential Lighting Coincident Factor	<p>The Protocols currently use a value of 5 percent as a residential lighting CF based on Vermont's TRM. Draft Protocols, p. 54. Given that New Jersey's load shape is very different from Vermont's, Rate Counsel does not recommend the use of this assumption for the Protocols. Instead, Rate Counsel recommends that the Protocols use the CFs based on a 2014 study prepared by NMR, Northeast Residential Lighting Hours of Use Study. This study evaluated both summer and winter CFs for Northeastern states, including for New York City. Rate Counsel recommends that the OCE develop New Jersey-specific lighting CFs for summer and winter based on data for the downstate New York area. 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 NMR study.</p>	Maintain the status quo pending further analysis, consideration, and public input.

Stakeholder	Protocol Reference	Comment	Action Taken
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - Appliance Recycling	<p>The savings estimates for refrigerator/freezer recycling are currently based on the Mid- Atlantic TRM Version 6. Draft Protocols, p. 82. The same savings estimates-1,098 kWh for refrigerators and 715 kWh for freezers-are found in Version 7 of the Mid-Atlantic TRM.8</p> <p>Version 7 of the Mid-Atlantic TRM also provides the numeric values below as illustrative examples for Maryland using the formulae provided Mid-Atlantic TRM:</p> <p>The formula for refrigerator savings is: $L1kWh = [0.80460 + (Age * 0.02107) + (Pre-1990 * 1.03605) + (Size * 0.05930) + (Single-Door * -1.75138) + (Side-by-side * 1.11963) + (Primary * 0.55990) + (HDD/365.25 * Unconditioned * -0.04013) + (CDD/365.25 * Unconditioned * 0.02622)] * 365.25 * Part Use Factor9$</p> <p>The formula for freezer savings is: $L1kWh = [-D.95470 + (Age * 0.04536) + (Pre-1990 * 0.54341) + (Size * 0.12023) + (Chest Freezer * 0.29816) + (HDDs/365.25 * Unconditioned * -0.03148) + (CDDs/365.25 * Unconditioned * 0.08217)] * 365.25 * Part Use Factor10$</p> <p>The Mid-Atlantic TRM also provides coefficient values for the variables found in the formulae shown above - except for heating degree days ("HDDs") and cooling degree days ("CDDs"). 11 Thus, Rate Counsel recommends that the Protocols adopt the original Mid-Atlantic TRM formulae and use New Jersey-specific HDDs and CDDs data to estimate energy savings from refrigerators and freezers, rather than the numeric values.</p>	<p>Adopting the formulae approach rather than numeric values requires additional data to be collected. Calculating the savings values using NJ HDD and CDD yields results that within 3% of the numeric values. 1,091 kWh and 692 kWh using NJ DD's for refrigerators and freezers respectively, as compared to 1,098 and 715.</p> <p>Protocols will continue using numeric values.</p>
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - Residential HVAC EFLH	<p>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. See Draft Protocols, pp. 31, 34, 35, 37, and 39. The New York EFLH estimates are provided for old, average, and new buildings separately. However, in its March 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 effective estimates for New Jersey are based on Vermont Energy Investment Corporation ("VEIC") estimates, which are "consistent with analysis of PEPCo and LIPA." Draft Protocols, p. 22.</p> <p>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. 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, which includes various types of heating and cooling systems such as gas furnace, ducted heat pumps, and ductless mini-split heat pumps.</p>	<p>Current EFLH values will be maintained pending further analysis, consideration, and public input.</p>

Stakeholder	Protocol Reference	Comment	Action Taken
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - Measure Life	<p>The Draft Protocols propose changes in measure life values, which are summarized in ERS's memo to the OCE titled "NJCEP Protocols- Comparative Measure Life Study and Summary of Measure Change to NJCEP Protocols," dated October 18, 2017. The change proposed for residential insulation is not reasonable. The Draft Protocols propose to reduce the current 30-year life for residential insulation to 20 years based on two data points: 25 years from the Mid-Atlantic TRM and 15 years from Pennsylvania's TRM. This approach has two limitations.</p> <p>First, the Pennsylvania TRM actually states that residential insulation has a measure life of 25 years based on the Massachusetts TRM issued in 2010. However, the Pennsylvania TRM adopts a 15-year measure life for insulation because "PA Act 129 savings can be claimed for no more than 15 years." Second, Massachusetts and New York also use long measure life values for insulation. As indicated above, Massachusetts assumes 25 years for insulation. New York currently uses a 30-year measure life value for insulation. Based on these findings, Rate Counsel recommends that the Protocols keep the current insulation measure life value of 30 years or use a slightly lower value of 25 years consistent with the value used in Massachusetts.</p>	<p>Measure Life approach has been revised to use California Database of Energy Efficient Resources (DEER) for default values. http://www.deeresources.com/ Measure life for insulation is 20 years.</p>
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - Fuel Use Economizer for Commercial Boilers and Furnaces	<p>The Protocols currently use a 13 percent savings factor for fuel use economizer 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. See OCE March Presentation, p. 12.</p> <p>The performance of economizers differs significantly by climate. The New York TRM provides kilowatt-hour ("kWh") savings estimates per unit for different types of commercial buildings. 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.¹⁵ Rate Counsel recommends that OCE take the same approach as found in the Mid-Atlantic TRM. 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.</p>	<p>Current Fuel Use Economizer savings values will be maintained pending further analysis, consideration, and public input.</p>
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - C&I Lighting Hours	<p>The Draft Protocols assume 8,760 hours of lighting operation for hospitals, based on an assumption that hospitals operate year-round. 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.¹⁷ 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.</p>	<p>Recommended lighting hours have been reviewed and updated to align with the Mid-Atlantic TRM V7</p>

Stakeholder	Protocol Reference	Comment	Action Taken
New Jersey Division of Rate Counsel (4-10-18)	Specific Comment - Revisions to Comfort Partners Protocols	<p>The March OCE presentation indicated that four measures would be added to the Protocols for the Comfort Partners low income residential program. However, the proposed changes have not been included in the redlined version of the Draft Protocols. At the March 29th Utility Working Group meeting, South Jersey Gas recommended adding three measures (water pipe wrap, gas furnace tune up, and water heater) to the Protocols and removing water heater wraps. Rate Counsel understands that TRC is currently reviewing proposals for Comfort Partners measures. At this point it is not clear whether the proposals under review by TRC are to add four new measures (consistent with the language in the Utility Working Group presentation slides), add three new measures and delete one, or some other proposals. Rate Counsel will make additional recommendations after reviewing the anticipated revised redline version of the Draft Protocols which reflects the OCE's proposed changes for the Comfort Partners measures.</p>	<p>Per recommendation from Utility Working Group, two measures have been added to the Protocols draft: Gas HVAC Repairs and Water Heater Pipe Wrap.</p>