

## Manual 18B proposed changes

### Section 7: Measurement and Verification Methodologies (~~expires at end of applicable through the 24/25 Delivery Year~~)

The following options are considered acceptable Measurement and Verification methodologies:

#### 7.1 Option A: Partially Measured Retrofit Isolation/Stipulated Measurement

Option A may involve an equipment specific retrofit or replacement, new installation or a system level Measurement and Verification assessment. The approach is intended for measures where either performance factors (such as lighting wattage) or operational factors (such as operating hours) can be measured on a spot or short-term basis during baseline establishment and post-installation periods, or for measures for which a measured proxy variable can, in combination with well-established algorithms and/or stipulated factors, can provide an accurate estimate of the Nominated EE Value and Capacity Performance value.

Option A methodology consists of the following:

1. The factors, parameters and/or variables not measured can be stipulated based on assumptions, analysis of historical data, or manufacturer's data. If a stipulated factor is subject to change over the EE Performance Hours or winter performance hours, the EE Resource Provider shall describe how the changes will be factored into the calculation of the Nominated EE Value or Capacity Performance value.
2. Measuring a variable other than electrical demand (MW) and using that variable in the calculation of the demand reduction value. Measurements can include short-term or long-term end-use metering of a variable such as current (amperage) and voltage to calculate demand, equipment operating status (on/off), equipment operating times, equipment quantities (i.e., number of units installed, cubic feet of insulation installed) or facilities served where the Nominated EE Value or Capacity Performance value per facility is constant.
3. An established correlation between the metered/monitored proxy variable and electrical demand (MW). The EE Resource Provider may establish the correlation by conducting short-term monitoring or a series of spot measurements of both stipulated parameters, and correlating the data sets (e.g., by performing a regression analysis) to determine the functional relationship between the two parameters.
4. Engineering correlations may also be specified using documented engineering algorithms or as part of an engineering simulation.
5. Equipment manufacturer's data, equipment data compiled by a recognized industry group or equipment data compiled as part of a State-sponsored demand side management program (i.e., lighting fixture wattage tables) may be used in combination with the other measurements, variables or factors as described above to calculate Nominated EE Value or Capacity Performance value. Data from a

## Manual 18B proposed changes

manufacturer must be determined in a manner consistent with standards established by a recognized United States government agency or national recognized industrial manufacturing association<sup>7.2</sup>

### **Option B: Retrofit Isolation/Metered Equipment**

Option B involves a retrofit or system-level Measurement and Verification assessment. The approach is intended for retrofits with performance factors and operational factors that can be measured at the component or system level using interval electrical demand meters, as defined in the Measurement Equipment Specifications Section of this Manual, installed on the affected end-use.

Option B methodology consists of the following:

1. Spot or short-term electrical demand measurements can only be used when variations in operations are not expected to change over the commitment years.
2. When temporal variations are expected, electrical demand measurements must be made over a period of time sufficient to represent performance during the EE Performance Hours and winter performance hours and across the commitment years of the resource.
3. This method may be more appropriate when the electrical loads to be impacted by the project are small relative to the building load, a facility does not currently have whole-premise interval metering, or if end-use electrical demand data can be readily obtained from a building energy management or control system.
4. The EE Resource Provider must take into consideration any interactive effects that may alter electrical loads on other end-use equipment being monitored.

### **7.3 Option C: Whole Facility/Regression**

Option C estimates Nominated EE Value and Capacity Performance value by analyzing the overall energy use in a facility and identifying the impact of the implemented measure on total building or facility energy use patterns. The evaluation of whole-building or facility level metered data is completed using techniques ranging from simple billing comparison to multivariate regression analysis.

Option C methodology consists of the following:

1. Nominated EE Value and Capacity Performance value is measured using whole-premise interval meters.
2. Option C is appropriate for measures that cannot be measured directly, such as insulation or other building envelope measures.
3. Option C should not be used if the Nominated EE Value or Capacity Performance value is expected to be small relative to the total facility load, due to the small "signal-to-noise ratio".

### **7.4 Option D: Calibrated Simulation**

## Manual 18B proposed changes

1. Option D involves calibrated computer simulation models of component or whole building demand and energy consumption to determine measure demand and energy reductions. Engineering simulation models (such as DOE-2) can model both residential buildings (homes, apartments and condominiums) as well as more complex commercial buildings. Operational simulations can be used for industrial processes that take into account the specifics of the process addressed by the energy efficiency actions.
2. Both engineering and operational simulations are made more powerful by calibrating these methods to actual kW and kWh data from the site or process being examined, even if these data are available for a monitoring period shorter than or different from the required EE Performance Hours or winter performance hours. Short-term metering and monitoring are methods that produce data that can be used to adjust engineering simulations.
3. This approach is generally termed "calibrated engineering simulations." Linking simulation inputs to baseline and post-installation conditions completes the calibration. Characterizing baseline and post-installation conditions may involve metering performance and operating factors both before and after the retrofit. Long-term whole-building demand and energy use data may be used to calibrate the simulation(s).

### 7.5 Other Acceptable Measurement and Verification Methodologies

The EE Resource Provider may propose alternative methodologies not listed above. The EE Resource Provider proposing alternative methodologies shall demonstrate that the alternative methodologies will be equivalent to one of the accepted methodologies described above, and demonstrate justifiable need for deviation from the acceptable methodologies based on unique project requirements.

In addition to the acceptable methodological approaches described above, several methodological techniques may be applied to one or more of the methods described above. The following describe other acceptable methodological techniques.

#### 7.5.1 Engineering Calculations and Audit Results

The EE Resource Provider may use engineering algorithms to calculate the project's Nominated EE Value during the EE Performance Hours and Capacity Performance value considering

the EE Performance Hours and winter performance hours. Engineering algorithms must

be supplemented with data collected on the energy-consuming equipment effected by the measures.

#### 7.5.2 Load Shape Analyses

The EE Resource Provider may use verifiable measure hourly load shapes to calculate a project's Nominated EE Value during the EE Performance Hours or Capacity Performance value considering the EE Performance Hours and winter performance hours. Measure load shapes must be based on actual metering data, load research, and/or simulation modeling.

## Manual 18B proposed changes

Values for monthly or annual energy reductions (whether from engineering calculations, analysis of billing data, simulation modeling or other means described in this Manual) can be combined with information on verifiable measure load shapes to produce values for electrical demand reduction (MW) during the EE Performance Hours or winter performance hours. Measure load shapes shall be based on actual metering data, load research (current or historic) and/or simulation modeling.

### Section 8: Establishing Baseline Conditions (~~expires~~ applicable through the at end of 24/25 Delivery Year)

#### 8.1 Baseline Requirements for All EE Resources

The EE Resource Provider must describe in its Measurement and Verification Plan how it will satisfy each of the applicable requirements listed below.

1. For projects where the demand reduction results from measures involved variable load equipment or equipment whose operation is time-dependent or weather-dependent, the Baseline Conditions must be calculated for each hour across the EE Performance Hours and winter performance hours.
2. 'Standard' Baseline: For projects in which equipment (whether failed or not) is replaced by a more efficient equivalent or by an alternative strategy for delivering comparable output, the Baseline Condition shall be the nameplate rating of the equipment meeting the level of efficiency required by applicable State code, Federal product efficiency standard, or standard practice, whichever is most stringent, in place at the time of installation, as known at the time of commitment. If there is no applicable State code or federal standard, then standard practice shall be used as the basis for establishing Baseline Conditions and shall be documented in the M&V Plan.
3. 'Current Load' Baseline: For projects in which replacement, modification or removal of equipment and controls in systems or buildings are not planned independently of the Energy Efficiency initiative that is being offered into the RPM Auction or committed to an FRR Capacity Plan, the Baseline Condition is the kW load of the existing equipment across the EE Performance Hours and winter performance hours under pre-retrofit conditions.

For eligibility to use the 'Current Load' Baseline Condition:

1. Document the nature of the project such that it can be reasonably assumed that the replacement, removal or retrofit would not have occurred in the absence of the Energy Efficiency initiative.
2. Replacement of equipment shall be with equipment that is better than the standards in place at the time of installation, as known at the time of commitment. If there is no applicable State

## Manual 18B proposed changes

code or federal standard, then standard practice shall be used as the basis for establishing Baseline Conditions and shall be documented in the M&V Plan.

### 8.2 Requirements for EE Resources Involving New Construction or Major Renovations

For new construction or major renovation Projects, the Baseline Conditions shall be equal to the kW load during the applicable EE Performance Hours and winter performance hours of equipment meeting the level of efficiency required by:

1. Applicable State code or Federal product efficiency standard, or
2. Standard practices, provided the EE Resource Provider can document the standard practices in the M&V Plan, if there are no applicable State codes or Federal product efficiency standards.

## Section 4: Post-Installation M&V Report Components (~~expires~~ applicable through at end of the 24/25 Delivery Year)

### 4.1 Initial Post-Installation M&V Report Components

Post-installation measurement and verification activities are conducted to ensure that proper equipment/systems were installed, are operating correctly, and have the potential to generate the Nominated EE Value and Capacity Performance value of the EE Resource. Verification methods include surveys, inspections, spot measurements, and short-term metering.

An Initial Post-Installation M&V Report must include any updates to the Project Level & Measurement Level Components that were included in the prior Updated M&V Plan.

The Initial Post-Installation Report should include

- Cover page with list of changes/updates contained in the Initial Post-Installation M&V Report
- Details of any changes between the prior Updated M&V Plan and as-built conditions, and any changes to the estimated demand and energy reductions
- Detailed list of installed equipment
- Documentation of all post-installation verification activities (verifying that the equipment/systems were installed and are operating)--
- Documentation of performance measurements conducted to validate the Nominated EE Value and Capacity Performance value of the EE Resource (if applicable in accordance with the approved M&V Plan)
- Detail any changes to the Nominated EE Value and Capacity Performance value of the EE Resource
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## Manual 18B proposed changes

A Post-Installation M&V Report template is available on the Capacity Market (RPM) web page of the pjm website.

### **4.2 Updated Post-Installation M&V Report Components**

An Updated Post-Installation M&V Report should include any updates to the Initial Post-Installation Report or a prior Updated Post-Installation Report.

The Updated Post-Installation Report should include:

- Cover page with list of changes/updates contained in the Updated Post-Installation M&V Report
- Documentation of all post-installation verification activities (verifying that the equipment/systems are still installed and operating)--
- Documentation of performance measurements conducted to validate the Nominated EE Value and Capacity Performance value of the EE Resource (if applicable in accordance with the approved M&V Plan)
- Detail any changes to the Nominated EE Value and Capacity Performance value of the EE Resource.

## Manual 18B proposed changes

### Section 7a: Measurement and Verification Methodologies for “current load” baseline described in Section 8 (effective for 25/26 Delivery Year and thereafter)

The following options are considered acceptable Measurement and Verification methodologies for the current load baseline where Option A is the default methodology:

The ~~EE~~ Energy Efficiency Resource Provider shall only use other options or an alternative Measurement and Verification Methodology if the Provider demonstrates that it is more accurate than default Option A or Option B where Option A is not available. The EE Provider using Option B must provide evidence that any study used is supported by the most recent study which needs to have been conducted within 53 years of the installment period and in the same LDA.

#### 7a.1 Option A (Default): Partially Measured Retrofit Isolation/Stipulated Measurement State or Region Technical Reference Manual

The most current State or ~~r~~Regional ~~TRM~~ technical reference manual, no older than 3 years old at the time of installation, where the Energy Efficiency ~~EE~~ measure was installed shall be used. If there is no applicable State or regional technical reference manual ~~TRM~~, then Option B shall be used. If there is no applicable ~~TRM~~ regional technical reference manual to determine the baseline then Option B shall be used.

Option A may involve an equipment specific retrofit or replacement, new installation or a system level Measurement and Verification assessment. The approach is intended for measures where either performance factors (such as lighting wattage) or operational factors (such as operating hours) can be measured on a spot or short-term basis during baseline establishment and post-installation periods, or for measures for which a measured proxy variable can, in combination with well-established algorithms and/or stipulated factors, can provide an accurate estimate of the Nominated EE Value and Capacity Performance value.

Option A methodology consists of the following:

1. The factors, parameters and/or variables not measured can be stipulated based on assumptions, analysis of historical data, or manufacturer's data. If a stipulated factor is subject to change over the EE Performance Hours or winter performance hours, the EE Resource Provider shall describe how the changes will be factored into the calculation of the Nominated EE Value or Capacity Performance value.

12. Measuring a variable other than electrical demand (MW) and using that variable in the calculation of the demand reduction value. Measurements can include short-term or long-term end-use metering of a variable such as current (amperage) and voltage to calculate demand, equipment operating status (on/off), equipment operating times, equipment quantities (i.e., number of units installed, cubic feet of insulation installed) or facilities served where the Nominated EE Value or Capacity Performance value per facility is constant.

**Commented [KS(1)]:** This edit is non-substantive. The edit conforms to the PJM edit which eliminates 7.5 below, the option for an alternative M&V methodologies.

**Commented [KS(2)]:** This edit is non-substantive.

**Commented [KS(3)]:** Allows for study to serve a reasonable amount of time similar to TRMs.

**Commented [KS(4)]:** This requirement disqualifies state/regional TRM's in widespread use today.

**Commented [KS(5)]:** Non-substantive. Sentence needs a predicate.

**Commented [KS(6)]:** Non-substantive. Tracks previous sentence.

## Manual 18B proposed changes

~~23. An established correlation between the metered/monitored proxy variable and electrical demand (MW). The EE Resource Provider may establish the correlation by conducting short term monitoring or a series of spot measurements of both stipulated parameters, and correlating the data sets (e.g., by performing a regression analysis) to determine the functional relationship between the two parameters.~~

~~4. Engineering correlations may also be specified using documented engineering algorithms or as part of an engineering simulation.~~

~~52. Equipment manufacturer's data, equipment data compiled by a recognized industry group or equipment data compiled as part of a State sponsored demand side management program (i.e., lighting fixture wattage tables) may be used in combination with the other measurements, variables or factors as described above to calculate Nominated EE Value or Capacity Performance value. Data from a manufacturer must be determined in a manner consistent with standards established by a recognized United States government agency or national recognized industrial manufacturing association~~

### 7a.2 Option B: Retrofit Isolation/Metered Equipment

~~A study shall be performed for ~~EE~~Energy Efficiency measures installed in the LDA. ~~Ee~~The Energy Efficiency Provider is required to meter the usage before and after the Energy Efficiency ~~EE~~ is installed to determine the savings. The savings may only be used for installments period within ~~3-5~~ years of the study. The Energy Efficiency ~~EE~~ Provider may use a sample as outlined in the statistical sampling provisions. The Energy Efficiency ~~EE~~ Provider may use whole premise meter or device specific metering as long as it meets the metering standard. If device specific metering is used it must accurately reflect the specific electrical device(s) which are replaced.~~

~~Option B involves a retrofit or system level Measurement and Verification assessment. The approach is intended for retrofits with performance factors and operational factors that can be measured at the component or system level using interval electrical demand meters, as defined in the Measurement Equipment Specifications Section of this Manual, installed on the affected end use.~~

Option B methodology consists of the following:

1. Spot or short-term electrical demand measurements can only be used when variations in operations are not expected to change over the commitment years.
2. When temporal variations are expected, electrical demand measurements must be made over a period of time sufficient to represent performance during the EE Performance Hours and winter performance hours and across the commitment years of the resource.
- ~~3. This method may be more appropriate when the electrical loads to be impacted by the project are small relative to the building load, a facility does not currently have whole premise interval metering, or if end-use electrical demand data can be readily obtained from a building energy management or control system.~~
3. The EE Resource Provider must take into consideration any interactive effects that may alter electrical loads on other end-use equipment being monitored.

**Commented [KS(7):** 4 year eligibility of EE plus install year without having to do a study.



## Manual 18B proposed changes

### **7a.3 Option C: Whole Facility/Regression**

Option C estimates Nominated EE Value and Capacity Performance value by analyzing the overall energy use in a facility and identifying the impact of the implemented measure on total building or facility energy use patterns. The evaluation of whole-building or facility level metered data is completed using techniques ranging from simple billing comparison to multivariate regression analysis.

Option C methodology consists of the following:

1. Nominated EE Value and Capacity Performance value is measured using whole-premise interval meters.
2. Option C is appropriate for measures that cannot be measured directly, such as insulation or other building envelope measures.
3. Option C should not be used if the Nominated EE Value or Capacity Performance value is expected to be small relative to the total facility load, due to the small "signal-to-noise ratio".

### **7a.4 Option D: Calibrated Simulation**

1. Option D involves calibrated computer simulation models of component or whole building demand and energy consumption to determine measure demand and energy reductions. Engineering simulation models (such as DOE-2) can model both residential buildings (homes, apartments and condominiums) as well as more complex commercial buildings. Operational simulations can be used for industrial processes that take into account the specifics of the process addressed by the energy efficiency actions.
2. Both engineering and operational simulations are made more powerful by calibrating these methods to actual kW and kWh data from the site or process being examined, even if these data are available for a monitoring period shorter than or different from the required EE Performance Hours or winter performance hours. Short-term metering and monitoring are methods that produce data that can be used to adjust engineering simulations.
3. This approach is generally termed "calibrated engineering simulations." Linking simulation inputs to baseline and post-installation conditions completes the calibration. Characterizing baseline and post-installation conditions may involve metering performance and operating factors both before and after the retrofit. Long-term whole-building demand and energy use data may be used to calibrate the simulation(s).

### **7.5 Other Acceptable Measurement and Verification Methodologies**

~~The EE Resource Provider may propose alternative methodologies not listed above. The EE Resource Provider proposing alternative methodologies shall demonstrate that the alternative methodologies will be equivalent to one of the accepted methodologies described above, and demonstrate justifiable need for deviation from the acceptable methodologies based on unique project requirements.~~

## Manual 18B proposed changes

In addition to the acceptable methodological approaches described above, several methodological techniques may be applied to one or more of the methods described above. The following describe other acceptable methodological techniques.

### 7.5.1 Engineering Calculations and Audit Results

The EE Resource Provider may use engineering algorithms to calculate the project's Nominated EE Value during the EE Performance Hours and Capacity Performance value considering

the EE Performance Hours and winter performance hours. Engineering algorithms must

be supplemented with data collected on the energy-consuming equipment effected by the measures.

### 7.5.2 Load Shape Analyses

The EE Resource Provider may use verifiable measure hourly load shapes to calculate a project's Nominated EE Value during the EE Performance Hours or Capacity Performance value considering the EE Performance Hours and winter performance hours. Measure load shapes must be based on actual metering data, load research, and/or simulation modeling.

Values for monthly or annual energy reductions (whether from engineering calculations, analysis of billing data, simulation modeling or other means described in this Manual) can be combined with information on verifiable measure load shapes to produce values for electrical demand reduction (MW) during the EE Performance Hours or winter performance hours. Measure load shapes shall be based on actual metering data, load research (current or historic) and/or simulation modeling.

## **Section 8a: Establishing Baseline Conditions**(effective for 25/26 Delivery Year and thereafter)

### **8.1a Baseline Requirements for All EE Resources**

The EE Resource Provider must describe and support in its Measurement and Verification Plan how it will satisfy each of the applicable requirements listed below.

- 4.1.** For projects where the demand reduction results from measures involved variable load equipment or equipment whose operation is time-dependent or weather-dependent, the Baseline Conditions must be calculated for each hour across the EE Performance Hours and winter performance hours.
- 5.2.** 'Standard' Baseline: For projects in which equipment (whether failed or not) is replaced by a more efficient equivalent or by an alternative strategy for delivering comparable output, the Baseline Condition shall be the nameplate rating of the equipment meeting the level of

## Manual 18B proposed changes

efficiency required by applicable State code, Federal product efficiency standard, or standard practice, whichever is most stringent, and in place at the time of installation, ~~as known at the time of commitment~~. If there is no applicable State code or federal standard, then standard practice shall be used as the basis for establishing Baseline Conditions and shall be documented in the M&V Plan and updated in the Post Installation M&V Report. Provider must provide evidence that the most stringent standard and/or practice was used.

- ~~6.3.~~ 'Current Load' Baseline: For projects in which replacement, modification or removal of equipment and controls in systems or buildings are not planned independently of the Energy Efficiency initiative that is being offered into the RPM Auction or committed to an FRR Capacity Plan, the Baseline Condition is the kW load of the existing equipment across the Energy Efficiency EE Performance Hours and winter performance hours under pre-retrofit conditions. ~~This baseline may only be used for retrofit or replacement projects, where the Energy Efficiency EE Provider can demonstrate and provide evidence that the project would not have occurred absent participation in the wholesale market and for which the existing Energy Efficiency EE measure or device that is replaced or retrofitted is still fully operational and expected to be used during the installment window.~~

**Commented [KS(8)]:** Inappropriate to include causality in the determination of current baseline eligibility.

For eligibility to use the 'Current Load' Baseline Condition:

1. Document the nature of the project such that it can be reasonably assumed that the replacement, ~~removal~~ or retrofit would not have occurred in the absence of the Energy Efficiency initiative.
- ~~3.2.~~
4. Replacement of equipment shall be with equipment that is better than the standards in place at the time of installation, as known at the time of commitment. If there is no applicable State code or federal standard, then standard practice shall be used as the basis for establishing Baseline Conditions and shall be documented in the M&V Plan and the Post Installation M&V Report. Provider must provide evidence that the most stringent standard and/or practice was used.

**Commented [KS(9)]:** Inappropriate in the context of current load baseline.

### 8.2 Requirements for EE Resources Involving New Construction or Major Renovations

~~For~~ New construction or major renovation Projects shall use the Standard, ~~the Baseline Conditions shall be equal to the kW load during the applicable EE Performance Hours and winter performance hours of equipment meeting the level of efficiency required by:~~

1. ~~Applicable State code or Federal product efficiency standard, or~~
2. ~~Standard practices, provided the EE Resource Provider can document the standard practices in the M&V Plan, if there are no applicable State codes or Federal product efficiency standards.~~

## Manual 18B proposed changes

### Section 4a: Post-Installation M&V Report Components (effective for 25/26 Delivery Year and thereafter)

#### 4a.1 ~~Initial~~ Post-Installation M&V Report Components

Post-installation measurement and verification activities are conducted to ensure that proper equipment/systems were installed, are operating correctly, and ~~have~~ shall accurately measure the savings for such Energy Efficiency measures; the potential to generate the Nominated EE Value and Capacity Performance value of the EE Resource. The EE Provider must submit the report prior to the Delivery Year, for all installment periods where EE is claimed for such Delivery Year. Verification methods include surveys, inspections, spot measurements, and short-term metering and as listed below.

~~The An Initial~~ Post-Installation M&V Report must use the M&V methodology outlined in the M&V Plan include any updates to the at the Project Level & Measurement Level Components that were included in the prior Updated M&V Plan. The approval of estimate measured savings in the M&V plan may be different from the approval of the actual measured savings included in the Post-Installation M&V Report.

The ~~Initial~~ Post-Installation Report should include

- Cover page with list of changes/updates contained in the Initial Post-Installation M&V Report
- Details of any changes between the prior ~~Updated~~ M&V Plan estimated savings and as-built/installed conditions and associated actual savings, if applicable, and any changes to the estimated demand and energy reductions
- Detailed list of installed equipment by end-use customers, along with evidence that the Energy Efficiency Provider possesses the exclusive authority from the end use customer to aggregate and offer the end use customers' Energy Efficiency benefit associated with the installed equipment.
- Documentation of all post-installation verification activities (verifying that the equipment/systems were installed and are operating). Installation must be validated at each end use customer site. Energy Efficiency EE Provider must be able to provide end use customer specific information for all each installations with a validation that it was installed process.
- Documentation of performance measurements conducted to validate the Nominated EE Value and Capacity Performance value of the EE Resource (if applicable in accordance with the approved M&V Plan)
- Detail any changes to the Nominated EE Value and Capacity Performance value of the EE Resource based on the actual savings.
- Any EE claimed in a border zone or sub-zone LDA (zone or sub-zone LDA that borders a Balancing Authority outside PJM) that is based on the sale or delivery of the EE to the customer must account for the possibility that it was installed outside of such zone or sub-zone LDA and not installed within the zone or sub-zone LDA in PJM in which it is claimed (this is often referred to as "leakage").

**Commented [KS(10):** This is intended to be non-substantive and clarifies that not all individual projects have a verification of actual savings (e.g. standard baseline).

**Commented [KS(11):** Addresses aggregated EE programs in which provider or utility retains the capacity rights.

**Commented [KS(12):** Same as previous. Addresses aggregated EE programs in which provider or utility retains the capacity rights.

**Commented [KS(13):** This type of change can't be done correctly as an MRC initiated change. This is an area that must be addressed through a stakeholder process to allow for aggregations of rebate/retail programs and confirmation of exclusivity with provider.

**Commented [KS(14):** Clarifies that leakage rate is not applied to internal zones not near a border.

## Manual 18B proposed changes

A Post-Installation M&V Report template is available on the Capacity Market (RPM) web page of the pjm website.

### **4a.2 Energy Efficiency sell offer plan officer certification ~~Updated Post-Installation M&V Report Components~~**

~~An Updated Post-Installation M&V Report should include any updates to the Initial Post-Installation Report or a prior Updated Post-Installation Report.~~

~~The Updated Post-Installation Report should include:~~

- ~~• Cover page with list of changes/updates contained in the Updated Post-Installation M&V Report~~
- ~~• Documentation of all post installation verification activities (verifying that the equipment/systems are still installed and operating)~~
- ~~• Documentation of performance measurements conducted to validate the Nominated EE Value and Capacity Performance value of the EE Resource (if applicable in accordance with the approved M&V Plan)~~
- ~~• Detail any changes to the Nominated EE Value and Capacity Performance value of the EE Resource.~~

### PJM ENERGY EFFICIENCY M&V PLAN AND POST-INSTALLATION M&V REPORT -OFFICER CERTIFICATION FORM

Market Participant Name: \_\_\_\_\_ (“Participant”) I, \_\_\_\_\_, a duly authorized officer of Participant, understanding that PJM Interconnection, L.L.C. (“PJM”) and PJM Settlement, Inc. (“PJM Settlement”) are relying on this certification as evidence that Participant meets all requirements for participating in PJM’s Reliability Pricing Model (“RPM”) auctions, as set forth in the PJM Open Access Transmission Tariff (“PJM Tariff”), the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. (“Operating Agreement”), the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region (“RAA”), and in the PJM Manuals, hereby certify that, as of the date of this certification, to my knowledge and belief:

1. I have reviewed Participant’s Energy Efficiency Measurement and Verification Plan and Post Installation Measurement and Verification Report and the information supplied to PJM is true and correct as of the date of this certification

2. I affirm and acknowledge that the Participant has the exclusive legal authority to claim the demand reduction associated with the Energy Efficiency installation(s) that constitute the Energy Efficiency Resource for the applicable Delivery Year

**Commented [KS(15)]:** Captures the intent of changes proposed to the PIMV Report.

## Manual 18B proposed changes

~~3. I affirm that the Energy Efficiency Provider possesses authority to aggregate and offer the end use customers' EE benefit associated with the installed equipment.~~

4. This certification does not in any way abridge, expand, or otherwise modify the current provisions of the PJM Tariff, Operating Agreement and/or RAA, or the Participant's rights and obligations thereunder, including Participant's ability to adjust capacity obligations through participation in PJM incremental auctions and bilateral transactions.

Date: \_\_\_\_\_ By: \_\_\_\_\_

(Signature)

Print Name: \_\_\_\_\_ Title: \_\_\_\_\_

**Commented [KS16]:** Mixes up the end use customer benefit with capacity right, which may never be possessed by the end use customer.