

RPM Energy Efficiency (EE) FAQs

General Questions:

1. What are the typical energy efficiency (EE) projects and which EE projects do not qualify as an EE Resource in RPM?

Typical EE projects are installation of lighting, refrigerators, air conditioners, motors, weatherization, and process improvements that exceed then current building codes, appliance standards, or relevant state or federal standards. Installations that do not involve permanent replacement of devices and installations that are user controlled or dispatchable do not qualify as an EE Resource in RPM. Examples of EE projects that do not qualify as an EE Resource include: reducing load by switching off devices, energy conservation (change of behavior) with no identified controls, load shift (e.g., user controlled, programmable thermostats or thermal energy storage), generation (e.g., Behind-the-Meter Generation— such as back-up generation, solar, wind, or cogeneration); and conversion to natural gas. Some of these projects may qualify as Demand Resources in the PJM Capacity Market.

2. May an EE Resource Provider aggregate EE installations at different end-use customer sites?

An EE Resource Provider may aggregate EE installations across different end-use customers in the same zone (or same sub-zone if EE Resource is to be modeled as located in DPL South or PSEG North) provided such installations occur during the same period of time from June 1 to May 31. The aggregate of the EE installations must be greater or equal to 0.1 MW in order for the EE Resource Provider to participate in the PJM Capacity Market.

3. How is an EE Resource defined?

An EE Resource is an EE project(s) or portions of EE project(s) in a zone (or sub-zone in the case of DPL South and PSEG North) that represent the installation of energy efficiency during a defined period of time from June 1 to May 31. An EE Resource Provider's EE installations in a zone (or sub-zone) during defined June 1 to May 31 periods must be modeled as separate EE Resources in the eRPM system in order for PJM to keep track of an EE Resource's eligibility. A Resource Provider may create a single EE Resource that represents all EE installations in a zone (or sub-zone) during the defined installation period or create multiple EE Resources to represent different types of EE projects that are being installed in a zone (or sub-zone) during the same defined installation period. Section 1.3 of Manual 18 provides more details on modeling an EE Resource in the PJM Capacity Market.

4. How do I know which Delivery Years my EE Resource is eligible to participate in RPM Auctions or be committed to FRR Capacity Plans?

The time period of an EE installation determines whether an installation is eligible to be a capacity resource for a Delivery Year. Section 1.2 of Manual 18 includes tables that list June – May installation periods and the eligible Delivery Years that the EE installation may participate in RPM Auctions or be committed to FRR Capacity Plans. EE installations from June 2007 - May 2008, June 2008 - May 2009, and June 2009 - May 2010 are eligible to participate for less than four Delivery Years. The EE Resource may participate in the RPM Auctions for the Delivery Years in which the EE Resource is eligible. Eligibility for an EE Resource to participate in a RPM Auction is not dependent on whether or not the EE Resource offered or cleared in a prior DY's RPM Auction.

RPM Energy Efficiency (EE) FAQs

5. If my EE Resource cleared in an RPM Auction for a Delivery Year will my EE Resource automatically be offered into and clear in RPM Auctions for the next three Delivery Years?

An EE Resource that cleared in an RPM Auction will not automatically be offered into and clear in a subsequent DY's RPM Auctions. The EE Resource Provider must submit an Updated M&V Plan and explicitly submit an offer for the EE Resource into a subsequent RPM Auction. The EE Resource will only clear if the EE Resource's sell offer price is less than or equal to the relevant LDA's Resource Clearing Price as determined in the market clearing process.

6. When is an EE Resource considered an "Existing" EE Resource that is not subject to an RPM Credit Requirement?

An Existing EE Resource is an EE Resource with a PJM approved Initial Post-Installation M&V Report. If PJM has only granted a "conditional approval" of the Initial Post-Installation M&V Report pending the EE Resource Provider's submittal of actual measurement data by October 1 of the Delivery Year the EE Resource is initially committed, the EE Resource will not be considered existing until PJM has reviewed and approved the Nominated EE Value of the EE Resource based on the actual measurement data.

7. How do I know if I have the "capacity rights" to offer the EE installation associated with an end-use customer?

An EE Resource Provider must first confirm with the end-use customer that the end-use customer does not have an explicit agreement with another EE Resource Provider to offer the EE installation into the PJM Capacity Market. The EE Resource Provider should also check with the end-use customer to determine whether there were any external sources of the funds required to provide the claimed EE quantity. The source of such funds may be intending to claim the EE capacity value as a result of providing the funding. An EE Resource Provider may check with the electric distribution company that is serving the end-use customer and/or the State commission for any regulations that may prevent transfer of capacity rights associated with EE installations that were supported by a program offered by the electric distribution company. The electric distribution company may have paid a rebate for installing EE devices and retain the capacity rights associated with the EE installations.

8. How does PJM prevent two different EE Resource Providers from claiming the same end-use customer EE installation?

Based on Post-Installation M&V Report submittals, PJM may identify that two different EE Resource Providers are claiming the same end-use customer EE installation. Prior to approving the two EE Providers' Post Installation M&V Reports, PJM would request documentation (contract, utility tariff or rider, letter from end-use customer, etc.) that supports an EE Resource Provider's claim to the capacity rights of the EE installation. Based on the documentation submitted, PJM would determine which EE Resource Provider can claim the EE installation in their Post-Installation M&V Report. This approach is similar to the approach that PJM uses when two CSPs are claiming the same end-use customer site as DR.

9. If there are no changes to my Initial M&V Plan, am I required to submit an Updated M&V Plan prior to an RPM Auction for which my EE Resource will be offered?

RPM Energy Efficiency (EE) FAQs

Prior to any RPM Auction that such EE Resource is eligible to offer and plans to offer, the EE Resource Provider must submit a M&V Plan (an “Initial” M&V Plan if this is the first time that the EE Resource is being offered or an “Updated” M&V Plan if the EE Resource was offered in a prior RPM Auction). Even if there are no changes to your prior approved M&V Plan submittal for such EE Resource, you are still required to submit an Updated M&V Plan (indicating that there were no changes) prior to the next RPM Auction that such EE Resource will be offered.

10. What is the scope of an Initial M&V Plan?

An Initial M&V Plan must be submitted to PJM for EE Resources that are being offered into an RPM Auction for the first time. The M&V Plan is a document that defines project-specific M&V methods that will be used to determine and verify the Nominated EE Value (i.e. the demand reduction) resulting from an EE Resource. The M&V Plan must clearly document the Nominated EE Value of each EE Resource covered in the M&V Plan.

PJM has posted an Initial EE M&V Plan template that outlines the minimum requirements of an M&V Plan to assist in the development of plans at <http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/ee-initial-mv-plan-template.ashx>. See Manual 18B for more details on the development of an acceptable M&V Plan.

11. What is the scope of an Updated M&V Plan?

Updated M&V Plans include updates to the Nominated EE Value(s) of previously offered EE Resource(s) and may also include the initial inclusion of the Nominated EE Value(s) of new EE Resource(s) (that are of the same installation type of the previously offered EE Resource(s)) that are now eligible to participate in the relevant RPM Auction. The Nominated EE Value of a previously offered EE Resource may increase due to additional installations planned during the defined installation period that were not reported in the prior M&V Plan. Section 3.3 of Manual 18B includes the requirements of Updated M&V Plans.

12. May we view EE M&V Plans or Post-Installation M&V Reports submitted by other EE Resource Providers as sample plans or reports?

PJM will not release EE M&V Plans that have been submitted to PJM by EE Resource Providers. PJM treats a Resource Provider’s M&V Plans and Post-Installation M&V Reports as confidential information. PJM has posted an Initial EE M&V Plan template to assist in the development of plans at <http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/ee-initial-mv-plan-template.ashx>.

13. May an EE Resource that did not participate in an RPM Auction receive capacity value for use as replacement capacity if the EE Resource Provider submits and gains PJM’s approval of a Post-Installation M&V Report?

An EE Resource Provider must have submitted and received PJM approval of their EE M&V Plan prior to an RPM auction. Just submitting a Post-Installation M&V Report does not satisfy the requirement of having an approved EE M&V Plan.

Per Manual 18, available capacity from an EE Resource may be used as replacement capacity for another EE Resource in the EE Resource Provider’s account. This assumes that the EE Resource

RPM Energy Efficiency (EE) FAQs

(being used as replacement capacity) has been recognized by PJM as having value through the submittal and an approval of both an EE M&V Plan and a Post-Installation M&V Report.

14. What is the approximate cost of an M&V Audit Charge?

Since EE Resource participation in the PJM Capacity Market began with the 2011/2012 Delivery Year, historical data on PJM's M&V Audit Charges is not available yet to provide approximate costs of an M&V Audit Charge. Actual audit charges per EE Resource will likely vary depending on the complexity of the EE Resource and the underlying EE installations that are being audited.

Per Manual 18B, PJM will provide documentation regarding the cost of the audit no later than two months after the completion of such audit. PJM will assess an M&V Audit Charge to an EE Resource Provider no later than the third billing month after the completion of audit.

Coincident Factor Questions:

15. What is Coincident Factor and how is it used in determining the Nominated EE Value of EE installations?

When electrical devices (lighting, air conditioners, refrigerators, etc.) are replaced by more efficient devices, the gross reduction in demand can be calculated by the difference between the full demand before and after the retrofit. Full demand is the demand when all the devices are operating, including the compressors in the case of air conditioner or refrigerator. Full demand can be calculated from the manufacturer's equipment specifications (e.g., wattage of lighting or equipment nameplate ratings). If the devices operate continuously during the EE Performance Hours, the Nominated EE Value would be the gross demand reduction adjusted for transmission system losses. Since most devices do not operate continuously through the EE Performance Hours, a Coincident Factor (CF) must be applied. The Coincident Factor is the fraction of the EE Performance Hours a specific type of electrical device operates. The Coincident Factor is measured by using "time loggers" connected to a sample of the devices. The Coincident Factor is used to estimate the Nominated EE Value of a specific type of EE installation from the gross demand reduction of such installation.

Nominated EE Value = [(Gross demand of original devices * CF of original devices) – (Gross demand of replacement device * CF of replacement devices)] * EDC loss factor

The Coincident Factor is often not different before and after the retrofit. In this case, the same CF is applied to both the original and replacement devices.

16. Does PJM publish Coincident Factors for different EE installation types and customer sectors for use by EE Resource Providers in their Initial/Updated M&V Plans?

PJM does not publish Coincident Factors for use by EE Resource Providers in their Initial/Updated M&V Plans. An EE Resource Provider may use estimates of Coincident Factors from other industry sources for use in the Initial/Updated M&V Plan; however, it is expected that an EE Resource Provider submits actual measurements of the Coincident Factors for use in a Post-Installation M&V Report. Examples of industry sources for estimated Coincident Factors include:

"Coincidence Factor Study-Residential and Commercial & Industrial Lighting Measures"-*Spring 2007*, Prepared for New England State Program Working Group (SPWG) by RLW Analytics

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RPM Energy Efficiency (EE) FAQs

http://www.puc.nh.gov/Electric/Monitoring%20and%20Evaluation%20Reports/National%20Grid/116_RLW_CF%20Res%20C&I%20ltg.pdf

“Coincidence Factor Study-Residential Room Air Conditioners”- June 2008
Prepared for Northeast Energy Efficiency Partnerships” New England Evaluation and State Program Working Group by RLW Analytics

http://www.puc.nh.gov/Electric/Monitoring%20and%20Evaluation%20Reports/National%20Grid/117_RLW_CF%20Res%20RAC.pdf

“Mid-Atlantic Technical Reference Manual Version 1.0 – May 2010,
Prepared by Vermont Energy Corporation (VEIC), Facilitated and Managed by Northeast Energy Efficiency Partnerships

http://neep.org/uploads/EMV%20Forum/EMV%20Products/Mid%20Atlantic%20TRM_V1d_FINAL.pdf

17. May we use industry-published Coincident Factors in Post-Installation M&V Reports?

PJM expects actual measurement of the Coincident Factors for the EE installation types and the relevant customer sector(s) to be reported in a Post-Installation M&V Report. Ideally such measurements should be made during the summer prior to the Delivery Year that the EE Resource is initially committed. If available, the measured Coincident Factors must be used in the Initial Post-Installation M&V Report to be submitted 15 days prior to the start of the Delivery Year that the EE Resource is initially committed. If actual measurements of the Coincident Factors are not available for use in this Initial Post-Installation M&V Report, PJM may “conditionally” approve the Initial Post Installation M&V Report provided that actual measurements are made during the first summer the EE Resource is committed to RPM or FRR, and the measurement results are submitted to PJM for review via the rpm_hotline@pjm.com by October 1 of the Delivery Year the EE Resource is initially committed. In this case, there is the risk of the Nominated EE Value of the EE Resource calculated based on measured Coincident Factors being less than the Nominated EE Value of the EE Resource calculated in Initial Post-Installation M&V Report. If the Nominated EE Value of the EE Resource calculated based on actual measurement data is less than the Nominated EE Value calculated in the Initial Post-Installation M&V Report, a Capacity Resource Deficiency Charge for the commitment compliance shortfall will be assessed retroactively from June 1 of the Delivery Year to May 31 of the Delivery Year.

An EE Resource Provider may use measured Coincident Factors in their Post-Installation M&V Report that are sourced from an industry-published study (e.g., a study sponsored by the State to measure Coincident Factors for use by all EE Resource Providers in the State or sub-region) only if the EE Resource Provider confirms that the sample size of such a study included actual measurements of EE installation types in the same zone(s) as those of the EE Provider’s EE Resource(s). The EE Provider must substantiate in their Post-Installation M&V Report that the Coincident Factors measured in the industry-published study can reasonably be applied to their EE Resource.

18. What is the minimum time period of measurement that is acceptable to determine the demand reduction or Coincident Factors during the EE Performance Hours?

The Nominated EE Value is the average demand reduction during the defined EE Performance Hours
DOCs #601490v9

Last Update: March 30, 2011

RPM Energy Efficiency (EE) FAQs

in a Delivery Year. The EE Performance Hours are between the hour ending 15:00 Eastern Prevailing Time (EPT) and hour ending 18:00 EPT during all days from June 1 through August 31, excluding weekends or federal holidays. Ideally, measurements made during the entire EE Performance hours are used to calculate the average demand reduction over the EE Performance Hours. If there is little variation in the demand pattern during the EE Performance Hours, a shorter time period of measurement may be performed during June 1 through August 31. An EE Resource Provider must provide justification in their M&V Plan for the use of a time period of measurement that does not encompass the entirety of the EE Performance Hours.

19. Can Coincident Factors measured prior to the first Delivery Year that the EE Resource is committed or Coincident Factors measured in the summer of the first Delivery Year that the EE Resource is committed be used for the subsequent Delivery Years Post-Installation M&V Reports for such EE Resource?

If it is reasonable to assume that there will not be changes in the usage pattern of the EE installation in a four year period for the underlying end-use customers, the measured Coincident Factors that were reported in the Initial Post-Installation M&V Report or reported to PJM by October 1 of the Delivery Year the EE Resource was first committed may be used in subsequent Delivery Years Post-Installation M&V Reports. If the usage pattern may change during the four year period that the EE installation is eligible (e.g., the usage pattern of EE installation associated with a large industrial process may change due to changes in economy and production schedules), additional measurement activities must be scheduled and the Coincident Factor updated in subsequent Delivery Years Post-Installation M&V Reports.

Although it may be acceptable for measurement activities to be scheduled and conducted only once for an EE Resource, verification activities must be scheduled and conducted prior to each Delivery Year that the EE Resource is committed.

20. Can Coincident Factors measured in one PJM Zone be used for other PJM Zones?

PJM requires that an EE Resource Provider make measurement(s) of demand reduction(s) or Coincident Factor(s) that are representative of the population of EE installations that constitute the EE Resource. However, a Coincident Factor for a specific EE installation type (e.g. residential lighting) measured for a specific EE Resource may be applicable to a different EE Resource (even if such EE Resource is located in another zone) if the EE Resource Provider can substantiate in their Post-Installation M&V Report that it is reasonable to apply the measured coincident factor data from one EE Resource located in a PJM Zone to another EE Resource located in a different PJM Zone (e.g., the population and the equipment usage pattern of the EE installation type for the two EE Resources are similar). For example, Coincident Factors measured for an EE installation type (such as interior residential lighting and refrigerator replacement) in one PJM zone may be transferable to another PJM zone. Coincident Factors measured for an EE installation type that is weather sensitive such as an HVAC retrofit may not be transferable. If measured coincident factor data is used from a different PJM zone, the EE Resource Provider must identify in their Post-Installation M&V Report any differences (e.g., usage time schedules, temperature and humidity conditions) that exist between different PJM zones and make the necessary adjustments to the Nominated EE Value.

21. Appendix A of Manual 18B illustrates calculation of demand reduction of weather sensitive load at Zonal WTHI Standard. Should this same method be applied in measuring the Coincident Factors for efficient air conditioner retrofits?

When the demand that is being reduced using EE devices is weather sensitive, Coincident Factor measurement made on cool days or on hot days does not reflect the value that corresponds to

RPM Energy Efficiency (EE) FAQs

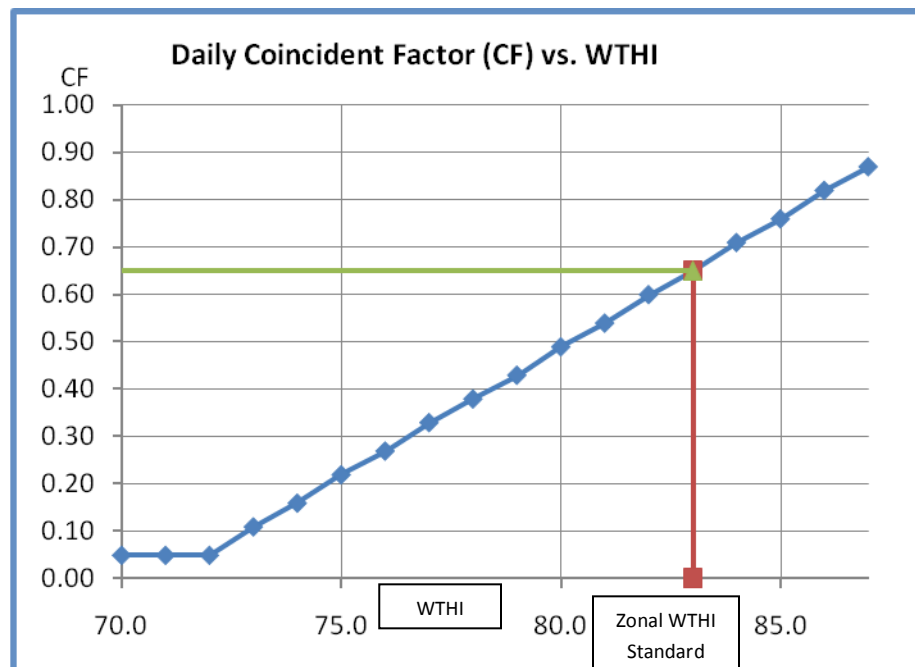
standard weather conditions applicable to the PJM's peak load forecasts. The procedure described in Appendix A of Manual 18B should be used to „weather normalize“ the Coincident Factor for use in calculating the Nominated EE Value for weather sensitive load.

For each day during the defined EE Performance Hours, an EE Resource Provider must make measurements to determine the daily Coincident Factor (fraction of time the air conditioner runs during the EE Performance Hours) and calculate the Weighted Temperature Humidity Index (WTHI) for the day. The equations to calculate daily WTHI are provided in Appendix A in M-18B.

These measurements provide a relationship between the Daily Coincident Factor and the daily WTHI. The Coincident Factor to be used in calculating the Nominated EE Value is the value corresponding to the Zonal WTHI Standard. Zonal WTHI Standards are posted at the link below:

<http://www.pjm.com/planning/resource-adequacy-planning/~media/planning/res-adeq/load-forecast/20100308-weather-standards-for-use-in-load-management-certification.ashx>

For illustration, the relationship between Daily Coincident Factor and Daily WTHI is shown in the chart below. The Coincident Factor for use in calculating the Nominated EE Value would be 0.65 at Zonal WTHI of 83 in the chart below.



Nominated EE Value Calculation Questions:

22. How do we select between “Standard” and “Current Load” Baselines for calculating the Nominated EE Value of an EE installation?

Section 8.1 (2) of Manual 18B describes the “Standard” Baseline. “Standard” Baseline condition would be the rating of the equipment meeting the level of efficiency as required by State code, Federal product efficiency standard, or standard practice, whichever is more stringent at the time of installation, as known at the time of commitment. It may or may not be the specification of the existing devices. Standard Baseline is typically used in EE programs that involve a rebate to end-use

RPM Energy Efficiency (EE) FAQs

customer who is replacing a failed or old appliance and trying to decide between a „standard“ appliance vs. a „better-than-standard“ appliance. In this case, the appliance would have been replaced anyway even without the EE rebate and the existing appliance would not continue to operate.

Section 8.1 (3) of Manual 18B describes the “Current Load” Baseline. If it can be documented that the replacement of equipment or devices would not have occurred in the absence of the EE project (in other words, equipment or devices being replaced still have useful life and replacement occurred only because of the EE savings initiative), the Current Load Baseline can be used. EE activities in case of low-income households are common examples. The Current Load Baseline is the KW load of existing equipment across the performance hours under pre-retrofit conditions. In this case, specification for the existing devices may be used to estimate the Baseline.

In the case where the Standard Baseline applies and the Current Load Baseline actually results in a lower demand reduction than would result if the Standard Baseline was used, the EE Resource Provider must use the Current Load Baseline to determine the EE demand reduction.

23. How is precision calculated when different types of EE installations are combined into one EE Resource?

Only EE installations in the same Zone (or sub-zone if EE Resource is to be modeled as located in DPL South or PSEG North) and same installation period can be aggregated into an EE Resource.

The Coincident Factor for each type of EE installation (by customer sector) may have been measured separately with different precision values. The Nominated EE Value and the error for each type of EE installation are calculated using the appropriate Coincident Factor. These Nominated EE Values and the errors are combined for all EE installations that are aggregated into the EE Resource to determine the aggregate Nominated EE Value (a simple sum) and the aggregate error (sum of squares) to determine the overall precision of the distinct EE Resource. An EE Resource’s Nominated EE Value must have statistical accuracy and precision equal to or better than 10% relative precision at one-tailed 90% confidence level (equivalent to two-tailed 80% confidence level). In sample design and measurement, the EE Resource Provider may spend more effort on measuring an EE installation type with higher Nominated EE Value and estimate the associated Coincident Factor with higher precision. The Coincident Factor measurement may be at a lower precision for EE installation type with lower Nominated EE Value as the lower precision does not typically affect the aggregate EE Resource precision.

Section 9 of Manual 18B provides more details on statistical significance. An example of estimating precision for an EE Resource that consists of aggregated EE installations is located on the RPM Auction User Information web page under the “Energy Efficiency Material” heading.

24. Is there a precision requirement for verification activities?

Verification activities must be conducted to provide evidence that the EE equipment/systems were installed and still operating. Verification activities may include sample surveys or on-site inspections. The sampling design for verification should meet a 10% relative precision at one-tailed 90% confidence level (equivalent to two-tailed 80% confidence level), the same statistical accuracy and precision standard that applies to measurement activities.