M18 and M18B Revisions
to Accommodate EE Resource Participation in RPM when EE is reflected in the Peak Load Forecast

Jeff Bastian
Manager, Capacity Market Operations
Market and Reliability Committee
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1.20A Energy Efficiency Resource

Energy Efficiency Resource shall mean a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the periods described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption **that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed**, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention. Annual Energy Efficiency Resources and Base Capacity Energy Efficiency Resources are types of Energy Efficiency Resources.

Reflection of EE in Peak Load Forecast

- Highlighted language of EE Resource definition prevents adverse reliability impact of double-counting energy efficiency measures as a resource in an RPM auction (or FRR Capacity Plan) and again as a load forecast reduction
- Unlike current model, new peak load forecast model **does** reflect energy efficiency measures in the peak load forecast
- To prevent double-counting, an add-back mechanism is necessary in order to accommodate continued EE Resource participation in the capacity market when new peak load forecast model is adopted

- proposed updates to M18 (RPM) and M18B (EE M&V) describe this add-back mechanism and related changes needed to avoid double-counting of EE
  - M18 updates in sections: 2.4.5 (new section), 4.4, 8.7, & 11.2.1
  - M18B updates in sections 1.1, 1.2, & 1.3
- Updates address following aspects of EE Resource participation in the PJM capacity market:
  - Adjustment to RPM Auction Parameters for EE Resources
  - Auction participation eligibility of EE Resources based on EE installation period relative to date of forecast used in auction
  - Adjustment to FRR Entity obligation for EE Resources committed in FRR Capacity Plan
  - Use of available capacity from an EE Resource as replacement capacity

- For each BRA, the reliability requirement of the RTO and each applicable LDA used in the auction clearing will be increased by the UCAP value of EE Resources as per approved EE M&V Plans submitted for the BRA
- For each IA, the reliability requirement of the RTO and each applicable LDA used to determine PJM buy/sell quantities will be increased by the UCAP value of EE Resources as per approved EE M&V plans submitted for that auction, and will be decreased by any uncleared EE Resource UCAP MW quantities from the prior auction conducted for that delivery year

- The time period of an EE installation and the date of the peak load forecast used to develop parameters for an RPM Auction determine eligibility for an EE installation to offer as an EE Resource into that auction
- an EE installation period that is completely contained in the history of the peak load forecast used to develop the parameters for a given RPM auction is not eligible to offer as an EE Resource into that auction since it already fully reflected in the load history
- Proposed Manual 18B updates clarify these eligibility requirements

Adjustment to FRR Entity obligation for EE Resources

- The UCAP Obligation of an FRR Entity is equal to the forecasted peak load served by the entity times the Forecast Pool Requirement (FPR)
- The FRR Entity must commit sufficient capacity in UCAP terms to meet this obligation
- Similar to Auction add-back, the UCAP Obligation of the FRR Entity will be increased by the MW quantity of any EE Resources committed to the FRR Capacity Plan in order to avoid double-counting when new forecast model is employed

- Available capacity from an EE Resource may be utilized to replace the commitment of another EE Resource without limit because the such EE Resource commitments were accompanied by the add-back adjustment that is required to avoid double-counting
- The total available capacity from EE Resources that may be utilized to replace the commitment of non-EE capacity resources is limited to difference in quantity between the EE related add-back of the 3rd IA and the actual cleared EE quantity of the 3rd IA

Appendix

M18 and M18B Revisions
to Accommodate EE Resource Participation in RPM when EE is reflected in the Peak Load Forecast

Jeff Bastian
Manager, Capacity Market Operations
MRC Special Information Session
October 16, 2015

1.20A Energy Efficiency Resource

Energy Efficiency Resource shall mean a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the periods described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption **that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed**, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention. Annual Energy Efficiency Resources and Base Capacity Energy Efficiency Resources are types of Energy Efficiency Resources.

Reflection of EE in Peak Load Forecast

- Highlighted language of EE Resource definition prevents adverse reliability impact of double counting energy efficiency measures as a resource in an RPM auction (or FRR Capacity Plan) and again as a load forecast reduction
- EE Resource participation in RPM auctions (or FRR capacity plans) appropriately reduces the need to procure other resources by the quantity of peak load reduction that the EE Resource is expected to provide by the start of the delivery year when the peak load reduction is not already reflected in the peak load forecast for the delivery year
- Current forecast model does **not** reflect energy efficiency measures in the peak load forecast; new forecast model does reflect energy efficiency measures in the peak load forecast

New Peak Load Forecast Model

- Unlike current model, new peak load forecast model **does** reflect energy efficiency measures in the peak load forecast for each delivery year
- When new peak load forecast model is adopted then an add-back mechanism is necessary in order to accommodate continued EE Resource participation in the capacity market
- Add-back of the proposed EE Resource MW quantity to the forecasted peak load of the relevant delivery year is necessary to avoid under-procurement of capacity commitments due to double-counting of EE Resource MWs when already reflected in the peak load forecast

- Meeting material includes proposed updates to M18 (RPM) and M18B (EE M&V) to describe the changes necessary to avoid double-counting of EE Resource impact on peak load forecast
- Proposed updates impact following aspects of EE Resource participation in the PJM capacity market:
  - Clearing of EE Resources in RPM Auctions
  - Auction participation eligibility of EE Resources - installation period of EE measure relative to forecast used in auction
  - Commitment of EE Resources in FRR Capacity Plans
- Manual 18 changes have been made to the following sections: 2.4.5 (new section), 4.4, 11.2.1
- Manual 18B changes have been made to sections 1.1, 1.2, and 1.3

- Prior to clearing each BRA, the reliability requirement of the RTO and each applicable LDA used in the auction clearing will be increased by the UCAP value of EE Resources as per approved EE M&V Plans submitted for the BRA
  - Planning parameters will be updated just prior to the opening of the BRA to reflect EE Resource participation as per approved EE M&V Plans submitted for the BRA

- Prior to clearing each IA, the reliability requirement of the RTO and each applicable LDA used to determine PJM buy/sell quantities will be increased by the UCAP value of EE Resources as per approved EE M&V plans submitted for that auction, and will be decreased by any uncleared EE Resource UCAP MW quantities from the prior auction conducted for that delivery year
  - Parameters will be updated just prior to the opening of the IA to reflect EE Resource participation as per approved EE M&V Plans submitted for that auction

Example of EE Addback

	BRA	1IA	2IA	3IA	
PJM Reliability Requirement	160,000	163,000	161,000	160,000	
EE Approved in All Plans for Auction	1,500	1,000	800	600	3,900
Uncleared EE from prior Auction	n/a	200	100	100	
Adjusted PJM Reliability Requirement	161,500	163,800	161,700	160,500	
PJM Buy/(PJM Sell)	n/a	3,800	-1,300	-500	
EE Cleared in Auction	1,300	900	700	500	3,400
Non-EE Resources Cleared in Auction	160,200	2,900	-2,000	-1,000	
Cumulative EE Cleared	1,300	2,200	2,900	3,400	
Cumulative Non-EE Cleared	160,200	163,100	161,100	160,100	

- The time period of an EE installation determines whether an installation is eligible to be offered as an EE Resource into an auction for a given delivery year
- Proposed Manual revisions clarify that an EE installation period that is completely contained in the history of the peak load forecast used to develop the parameters for a given RPM auction is not eligible to offer as an EE Resource into that auction since it already fully reflected in the load history
- The table on following slide uses the 2019/2010 Delivery Year to illustrate the auction participation eligibility of an EE Resource based on the Installation Period of the EE Resource relative to the vintage of the peak load forecast used to develop parameters for that auction

Manual 18 & 18B Updates
Auction Participation Eligibility of EE Resource (Cont.)

Auction Participation Eligibility of EE Resource Installation Year for 2019/2020 DY Auctions

	Auction	2019/2020 BRA	2019/2020 1st IA	2019/2020 2nd IA	2019/2020 3rd IA
	Conducted in:	May 2016	Sep 2017	July 2018	Feb 2019
	Peak Load Forecast Vintage	Jan 2016	Jan 2017	Jan 2018	Jan 2019
	Most Recent Complete Install Year included in Load History	2014/2015	2015/2016	2016/2017	2017/2018
EE Resource Installation Year	2015/2016	X			
	2016/2017	X	X		
	2017/2018	X	X	X	
	2018/2019	X	X	X	X

X denotes that the indicated EE Resource Installation Year is eligible to offer into that auction

- The UCAP Obligation of an FRR Entity is equal to the forecasted peak load served by the entity times the Forecast Pool Requirement (FPR)
- The FRR Entity must commit sufficient capacity in UCAP terms to meet this obligation
- When the peak load forecast reflects reduction associated with energy efficiency measures and if the FRR Entity intends to commit EE Resource(s) to it's FRR Capacity Plan, then the UCAP Obligation of the FRR Entity will be increased by the EE Resource MW quantity in order to avoid double-counting of the load reduction associated with the EE Resource