



# Manual 18 (PJM Capacity Market) Revisions for Enhanced Aggregation Filing



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MIC Meeting  
April 12, 2017

- Conforming revisions for Enhanced Aggregation Filing (Docket ER17-367)
  - PJM filed revisions to OATT and RAA on November 17, 2016
  - FERC Order issued on March 21, 2017
- Revisions to clarify existing business processes or practices
- Revisions needed to change eLRS to DR Hub throughout manual
- Minor revisions to correct grammar, spelling, punctuation, incorrect section or document references
- Revisions summarized in spreadsheet titled “Summary of M18 Revisions for Enhanced Aggregation (ER17-367)”

## Filing included modifications to OATT and RAA to:

- 1) Enhance Capacity Performance aggregation rules
  - Effective January 19, 2017
- 2) Establish winter Capacity Interconnection Rights for eligible resources
  - Effective January 19, 2017
- 3) Modify Demand Resource Measurement & Verification Rules
  - Effective June 1, 2017

- First read at April 12, 2017 MIC Meeting
- First read and endorsement at April 27, 2017 MRC
- Publish M-18 Revisions by end of April 2017 in advance of 2020/2021 BRA in May 2017

- Update business rules for Aggregate Resources
- Implement Seasonal Capacity Performance Resources
  - Winter CIRs for eligible resources
- Update Sell Offer requirements
- Update auction clearing process to accommodate Seasonal Capacity Performance Resources
- Update Nominated DR Value calculation and measurement of actual load reduction for FSL/GLD customer on Capacity Performance registration

- Allow Intermittent, Capacity Storage Resources, DR, EE, and environmentally limited resources that are located in different LDAs to form an Aggregate Resource
  - Aggregate Resource will be modeled in smallest modeled LDA common to underlying resources
- Total committed quantity on Aggregate Resource allocated to underlying resources on monthly basis and updated no later than last day of month preceding delivery month
  - Quantity allocated to an individual resource cannot exceed the CIR value/UCAP value of the individual resource
  - If total committed quantity on Aggregate Resource increases/decreases due to replacement capacity transactions, must increase/decrease the the allocation of commitment to the underlying resources by a commensurate amount

- Performance of an Aggregate Resource for a given PAH is based on the net of the performance of the individual underlying resources that were required to perform during the PAH (i.e. the resources located in the PAH area)
- The Non-Performance Charge Rate for an under-performing Aggregate Resource is based on the rate associated with the LDA in which the under-performing underlying resources are located weighted by the under-performance MW quantity of such resources
- The stop-loss of the Aggregate Resource is based on the Non-Performance Charge Rate associated with the LDA in which the Aggregate Resource was modeled in the RPM Auction



# Seasonal Capacity Performance Resources (Effective 2020/2021 Delivery Year)

## Summer-Period CP Resources

- Summer Period DR
- Summer Period EE
- Capacity Storage Resource
- Intermittent Resource
- Environmentally-Limited Resource

- Available June-October & May of DY (summer-period)
- If clear, Auction Credit & commitment for summer-period only

## Winter-Period CP Resources

- Capacity Storage Resource
- Intermittent Resource\*
- Environmentally-Limited Resource\*

\*May request additional CIRs for winter-period for DY and offer additional ICAP value in winter-period

- Available November-April (winter-period)
- If clear, Auction Credit & commitment for winter-period only



## CP Offer Segment (Annual)

- Specify Min & Max MW offered & offer price
- Up to 10 segments
- Each segment clears independently
- MWs offered/cleared for entire DY

## Seasonal CP Offer Segment (Summer or Winter)

- Specify Max MW offered & offer price (flexible offer)
- Up to 10 segments
- Each segment clears independently
- MWs offered/cleared for entire seasonal period

GEN - PJMTST GENERATOR WF

EFORd: 0  
 Max Offer EFORd: 0  
 New Unit Pricing:

Available ICAP MW			
	Annual	Summer	Winter
Current	13	13	40
Max	13	13	40
Min	13	13	40

		1	2	3
Capacity Performance (Annual)	Min MW	8.0	0.0	(null)
	Max MW	8.0	5.0	(null)
	Price	50.00	75.00	(null)
Scheduling Option		Regular	Regular	(null)
Self Supply		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Capacity Performance (Seasonal) [Select Control] - Winter	Max MW	20	7	(null)
	Price	60.00	80.00	(null)
Self Supply		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Total MWs offered across CP Offer segments  $\leq$  Annual Max Available ICAP**

**Total MWs offered across all segments  $\leq$  Seasonal Max Available ICAP**

**All sell offer segments are separate and independent of each other and all segments may potentially clear the auction. NOT COUPLED OFFERS**

- Auction clearing algorithm will clear all annual CP sell offers, summer-period CP sell offers, and winter-period CP sell offers simultaneously to minimize bid-based cost of satisfying the reliability requirements of the RTO and each modeled LDA subject to all applicable requirements and constraints, including:
  - LDA CETL values (same as today)
  - Total cleared summer-period sell offers must exactly equal total cleared winter-period sell offers across the entire RTO (new constraint to ensure that seasonal CP sell offers clear to form annual CP commitments)

- Equal matching of cleared opposite-season sell offer quantities is not enforced at the LDA level; however, only equally matched quantities of opposite-season sell offers within an LDA are considered as satisfying the LDA's reliability requirement
  - Unmatched cleared quantities are effectively “moved” to the next higher level constrained LDA until a match is found
  - Only the equally matched cleared quantity within each LDA may receive that LDA's price (within this group, those resources with the lowest sell offer price will receive the LDA price; and remaining cleared capacity is effectively moved to the next higher level constrained LDA for price determination purposes)

## CP Offer Segments (Annual)

- Cleared MWs & Make-whole MWs are binding commitments for entire DY
- Commitments in LDA where resource is modeled
- Receive Resource Clearing Price (RCP) in LDA where resource is modeled
- Receive Daily Auction Credit for entire DY

## Seasonal CP Offer Segments (Summer)

- Cleared MWs are binding commitments for summer period of June-Sept & May of DY
- Commitments in LDA where resource is modeled
- Receive RCP applicable to Seller's summer-period sell offer and is reflective of Locational Price Adder determined as a result of seasonal matching process and any make-whole price (if make-whole payment required).
- Receive Daily Auction Credit for June-September & May of DY

## Seasonal CP Offer Segments (Winter)

- Cleared MWs are binding commitments for winter period of November-April of DY
- Commitments in LDA where resource is modeled
- Receive RCP applicable to Seller's winter-period sell offer and is reflective of Locational Price Adder determined as a result of seasonal matching process and any make-whole price (if make-whole payment required).
- Receive Daily Auction Credit for November-April of DY



# Update Nominated DR Value calculation for FSL/GLD customer on CP registration

FSL Customer  
(2017/2018 – 2019/2020 DYs)

- Nominated DR Value = lesser of: (a)  $PLC - [Summer\ FSL * loss\ factor]$  or (b)  $[Winter\ Peak\ Load * Winter\ Weather\ Adjustment\ Factor - Winter\ FSL] * loss\ factor$
- Nominated DR Value effective for entire DY

FSL Customer  
(Effective 2020/2021 DY)

- Nominated DR Value for summer-period =  $PLC - [Summer\ FSL * loss\ factor]$
- Nominated DR Value for non-summer period = lesser of: (a)  $PLC - [Summer\ FSL * loss\ factor]$  or (b)  $[Winter\ Peak\ Load * Winter\ Weather\ Adjustment\ Factor - Winter\ FSL] * loss\ factor$
- If registration indicates Summer-Period DR Only, Nominated DR Value for non-summer period = 0

GLD Customer  
(2017/2018 – 2019/2020 DYs)

- Nominated DR Value = lesser of: (a)  $summer\ GLD\ amount * loss\ factor$  or (b)  $winter\ GLD\ amount * loss\ factor$
- Nominated DR Value effective for entire DY
- Nominated DR Value shall not exceed PLC

GLD Customer  
(Effective 2020/2021 DY)

- Nominated DR Value for summer-period =  $summer\ GLD\ amount * loss\ factor$
- Nominated DR Value for non-summer period = lesser of: (a)  $summer\ GLD\ amount * loss\ factor$  or (b)  $winter\ GLD\ amount * loss\ factor$
- If registration indicates Summer-Period DR Only, Nominated DR Value for non-summer period = 0
- Nominated DR Value for both summer & non-summer period shall not exceed PLC

- CSP determines Winter Peak Load based on customer's peak load between hours ending 7:00 EPT through 21:00 EPT on each of PJM defined 5CP days from December through February two Delivery Years prior to the DY for which registration is submitted
- PJM calculates and posts Zonal Winter Weather Adjustment Factor.



# Measurement of Actual Load Reduction for CP Registration

<b>Actual Load Reduction (MW) =</b>		
	<b>FSL Customer</b>	<b>GLD Customer</b>
PAH in Summer Period (June-Oct & May of DY)	$PLC - [\text{hourly metered load} * \text{loss factor}]$	Lessor of (a) $[\text{Comparison load} - \text{hourly metered load}] * \text{loss factor}$ or (b) $PLC - [\text{hourly metered load} * \text{loss factor}]$  <i>Summer load reduction only recognized if <math>[\text{hourly metered load} * \text{loss factor}] &lt; PLC</math></i>
PAH in Non-Summer Period (November-April of DY)	$[\text{Winter Peak Load} * \text{Zonal Winter Weather Adjustment Factor} * \text{loss factor}] - [\text{hourly metered load} * \text{loss factor}]$	Lessor of (a) $[\text{Comparison load} - \text{hourly metered load}] * \text{loss factor}$ or (b) $[\text{Winter Peak Load} * \text{Zonal Winter Weather Adjustment Factor} * \text{loss factor}] - [\text{hourly metered load} * \text{loss factor}]$  <i>Non-summer load reduction only recognized if <math>[\text{hourly metered load} * \text{loss factor}] &lt; \text{Winter Peak Load} * \text{Zonal Winter Weather Adjustment Factor} * \text{loss factor}</math></i>