

Capacity Performance Training

March 16, 2015

- Provide Capacity Market Sellers with information necessary to participate in the Reliability Pricing Model (RPM) under a Capacity Performance design
- Focus on updates to RPM that impact participation in 2018/2019 Delivery Year Base Residual Auction
- Discuss Capacity Performance Transitional Incremental Auctions for 2016/2017 & 2017/2018 Delivery Years

- Training is targeted to Capacity Market Sellers
 - Generation Owners
 - Curtailment Service Providers
 - Energy Efficiency Providers
- Training developed for those that have an understanding of the current Reliability Pricing Model design

- Training developed based on PJM Capacity Performance filing (ER-15-623), dated December 12, 2014.
- Filing proposed a number of reforms to ensure that resources committed to meet the PJM Region's reliability needs will deliver the promised energy and reserves when called upon in emergencies.
- PJM requested an effective date of April 1, 2015.
- Additional Capacity Performance Training session scheduled on April 15, 2015 will include any necessary updates to the Capacity Performance design as a result of a FERC Order.

- Introduction to Capacity Performance (CP)
- Qualifications for CP & Base Capacity Products
- Must Offer & Market Power Mitigation
- Aggregate Resources
- Submitting Coupled Sell Offers
- Non-Performance Assessment
- CP Transition Incremental Auctions

Introduction to Capacity Performance

- New capacity products
 - Capacity Performance (CP)
 - Base Capacity
- Transition to Capacity Performance
 - Base Capacity and CP for 2018/2019 and 2019/2020 DYs
 - CP only starting 2020/2021 DY
 - CP Transition Incremental Auction for 2016/17 and 2017/18 DYs

- New capacity product
- Capacity Performance Resource shall provide energy and reserves when called upon by PJM during emergencies during entire Delivery Year
- Subject to new Non-Performance Charge
- Eligible to offer into RPM Auctions effective 2018/2019 Delivery Year*
- Sole capacity product beginning 2020/2021 Delivery Year

**Generation Capacity Performance Resources may offer into proposed Transitional Incremental Auctions for 16/17 & 17/18 Delivery Years.*

- Redefined summer capacity product
- Base Capacity Resources are those capacity resources which provide enhanced assurance of delivery and reserves during hot weather operations
- Subject to Non-Performance Charge only when they fail to perform under emergency conditions during June through September
- Eligible to offer into RPM Auctions for 2018/2019 & 2019/2020 Delivery Years only

- Replace Limited and Sub-Annual Resource Constraints with Base Capacity Demand Resource Constraint and Base Capacity Resource Constraint
- Replace Limited Resource Price Decrements and Sub-Annual Resource Price Decrements with Base Capacity Demand Resource Price Decrement and Base Capacity Resource Price Decrement
- Eliminate the Short-Term Resource Procurement Target (i.e., 2.5% Holdback)
- Eliminate the DR Factor in calculating the UCAP value of DR & EE Resources
- Include forced outages that are outside management control (OMC) in the calculation of pool-wide average EFORd and individual resource EFORd

- Replace Limited and Sub-Annual Resource Constraints with Base Capacity Demand Resource Constraint and Base Capacity Resource Constraint.
- **Base Capacity Demand Resource Constraint** – maximum amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources that may clear in RPM Auctions for the Delivery Year
- **Base Capacity Resource Constraint** – maximum amount of Base Capacity Demand Resources, Base Capacity Energy Efficiency Resources, and Base Capacity Generation Resources that may clear in RPM Auctions for the Delivery Year
- Constraints still determined for PJM Region and each modeled LDA
- Base Capacity Demand Resource Constraint & Base Capacity Resource Constraint effective only for 2018/2019 & 2019/2020 Delivery Years.

Constraints posted with 18/19 DY BRA Planning Parameters
<http://www.pjm.com/~media/markets-ops/rpm/rpm-auction-info/2018-2019-planning-period-parameters-proposed-cp-filing-provisions.ashx>

- Replace Limited Resource Price Decrements and Sub-Annual Resource Price Decrements with Base Capacity Demand Resource Price Decrement and Base Capacity Resource Price Decrement.
- **Base Capacity Demand Resource Price Decrement** is difference between clearing price for Base Capacity Demand Resources & Base Capacity Energy Efficiency Resources and the clearing price for Base Generation Capacity Resources and represents cost to procure additional Capacity Performance Resources or other Base Capacity Resources out of merit order when the Base Capacity Demand Resource Constraint is binding.
- **Base Capacity Resource Price Decrement** is the difference between clearing price for Base Capacity Resources and Capacity Performance Resources and represents cost to procure additional Capacity Performance Resources out-of-merit when Base Capacity Resource Constraint is binding.
- Base Capacity Demand Resource Price Decrement & Base Capacity Resource Price Decrement effective only for 2018/2019 & 2019/2020 Delivery Years.

- Replace minimum requirement of Impact Study Agreement to Facilities Study Agreement for planned generation greater than 20 MW (effective 2019/2020 DY)
- Revised definition of Existing Generation used for must-offer requirement and mitigation purposes: no longer includes resources that are not yet in-service but cleared an auction
- Retain current RPM Auction Credit Rates for planned Base Capacity Resources and propose new RPM Auction Credits Rates for planned Capacity Performance Resources

- Retain current RPM Auction Credit Rates for planned Base Capacity Resources and propose new RPM Auction Credits Rates for planned Capacity Performance Resources

Auction Credit Rate	Current RPM Auction Credit Rates (apply to planned Base Capacity Resources)	Proposed RPM Auction Credit Rates (apply to planned Capacity Performance Resources)
Pre-BRA	greater of (i) \$20/ MW-day or (ii) .3 * RTO Net CONE (in \$/MW-day), times the number of days in the Delivery Year.	greater of (i) 0.5*PJM RTO Net CONE (\$/MW-day) or (ii) \$20/MW-day, times number of days in the DY.
Post-BRA	greater of (i) \$20/MW-day or (ii) .2 *applicable BRA RCP (\$/MW-day), times the number of days in the Delivery Year.	greater of the following daily rates, times number of days in DY: <ul style="list-style-type: none"> \$20/MW-day 0.20 times applicable BRA RCP (\$/MW-day) Lesser of (i) 0.5*RTO Net CONE or (ii)1.5*RTO Net CONE (in ICAP terms) minus the applicable BRA RCP.
Pre-IA	greater of (i) 0.3* RTO Net CONE or (ii) 0.24 times the applicable BRA RCP (\$/W w-day), or (iii) \$20 per MW-day, times the number of days in the Delivery Year.	greater of (i) 0.5*RTO Net CONE (\$/MW-day) or (ii) \$20/MW-day, times number of days in the DY.
Post IA	greater of (i) \$20/MW-day or (ii) 0.2 * the applicable IA RCP, but no greater than the pre-clearing Incremental Auction Credit Rate for such Incremental Auction, times the number of days in the Delivery Year.	greater of the following daily rates, times number of days in DY: <ul style="list-style-type: none"> \$20/MW-day 0.20 times applicable IA RCP (\$/MW-day) Lesser of (i) 0.5*RTO Net CONE or (ii)1.5*RTO Net CONE (in ICAP terms) minus the applicable IA RCP.

Qualifications for CP & Base Capacity

Capacity Performance - Capacity resource must be capable of sustained, predictable operation that allows the resource to be available throughout the Delivery Year to provide energy and reserves whenever PJM determines an emergency condition exists.

Base Capacity - Capacity resource that is not capable of sustained, predictable operation that allows the resource to be available throughout the entire Delivery Year; however, the resource is capable of providing enhanced assurance to provide energy and reserves during hot weather operations.

Requirement	Limited DR	Extended Summer DR	Annual DR	Base Capacity Demand Resource (18/19 & 19/20 DY only)	Capacity Performance Demand Resource (Effective 18/19 DY)
Availability	Any weekday, other than NERC holidays, during June – Sept. period of DY	Any day during June- October period and following May of DY	Any day during DY (unless on an approved maintenance outage during Oct. - April)	Any day during June-September of DY	Any day during DY (unless on an approved maintenance outage during Oct.-April)
Maximum Number of Interruptions	10 interruptions	Unlimited	Unlimited	Unlimited	Unlimited
Hours of Day Required to Respond (<i>Hours in EPT</i>)	12:00 PM – 8:00 PM	10:00 AM – 10:00 PM	Jun – Oct. and following May: 10 AM – 10 PM Nov. – April: 6 AM- 9 PM	10:00 AM – 10:00 PM	Jun – Oct. and following May: 10 AM – 10 PM Nov. – April: 6 AM- 9 PM
Maximum Duration of Interruption	6 Hours	10 Hours	10 Hours	10 Hours	No limit

Current Limited, Extended Summer, & Annual DR product definitions eliminated effective 2018/2019 DY.

- Amount of non-summer load reduction provided is to be measured using the same Customer Baseline Load (CBL) methodology currently employed for measuring load reductions in the energy market.
- DLC programs may continue to use the control signal as measurement of non-summer load reduction
- No change in measurement of load reduction during the summer months (June-September)

Energy Efficiency Resource Product Type Requirements

Product-type	Load Reduction Provided	Requirement	Nominated EE Value
Base Capacity EE	During summer peak season	Provide a permanent, continuous reduction in load during the defined EE Performance Hours that is not reflected in the peak load forecast prepared for the Delivery Year.	Average demand reduction during EE Performance Hours
Capacity Performance EE	During summer and winter peak seasons	Provide a permanent, continuous reduction in load during the EE Performance Hours that is not reflected in the peak load forecast prepared for the Delivery Year. It also must have an expected average load reduction during defined winter hours.	Average demand reduction during EE Performance Hours, not to exceed average demand reduction during winter hours.

EE Performance Hours are defined as the hours ending 15:00 through 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year, that is not a weekend or federal holiday.

Winter Hours are hour ending 8:00 through 9:00 EPT and hours ending 19:00 through 20:00 EPT during all days from January 1 through February 28, inclusive, of such Delivery Year, that is not a weekend or federal holiday.

Must Offer & Market Power Mitigation

- All Existing Generation Capacity Resources must-offer available UCAP MWs into all RPM auctions, including external generation capacity that has CIL exception
- Includes generation not yet in-service but has cleared a prior auction; CP filing eliminates must-offer requirement for such resources unless in-service at start of auction
- Excludes generation resources committed to FRR Capacity Plan
- Must-offer exceptions meeting specified requirements permitted with request submitted no later than 120 days prior to auction

- Participation is voluntary for resource providers with:
 - External generation (without Capacity Import Limit exception);
 - Planned generation (includes new units and upgrades to existing unit not yet in service) unless cleared in prior auction under current rules;
 - Existing and Planned Demand Resources;
 - Energy Efficiency Resources;
 - Qualifying Transmission Upgrades.

- All Generation Capacity Resources that are capable or can reasonably become capable of qualifying as CP must be offered as CP (including external Generation Capacity Resources with CIL exception)
- Intermittent Resources, Capacity Storage Resources, Demand Resources and EE Resources are categorically exempt from CP must-offer requirement
- Exceptions are permitted if seller can demonstrate that resource is reasonably expected to be physically incapable of meeting CP requirements with such request submitted no later than 120 days prior to auction

- A Generation Capacity Resource having a CP must-offer requirement may submit a coupled sell offer as both a CP and a Base Capacity Resource with price difference reflective of cost necessary to qualify as CP
- A Generation Capacity Resource having a CP must-offer requirement and an accepted CP market seller offer cap above Net CONE must submit a coupled sell offer as both a CP and a Base Capacity Resource if offering above Net CONE

- Intermittent Resources and Capacity Storage Resources must offer their full UCAP value into each auction but are exempt from requirement to offer as CP
- Such resources may offer as CP all or any portion of their UCAP value that qualifies as CP with remaining portion offered as Base Capacity
- The quantity of UCAP value that may qualify as CP for such resources may be based on expected output during summer and winter peak conditions

Intermittent Resources are generation capacity resources with output that can vary as a function of its energy source, such as wind, solar, landfill gas, run of river hydroelectric power and other renewable resources.

Capacity Storage Resources shall mean any hydroelectric power plant, flywheel, battery storage, or other such facility solely used for short term storage and injection of energy at a later time.

Wind Resource	
Nameplate Capacity	100 MW
UCAP Value (CIRs)	13 MW
Weighted average output during expected performance hours in DY	26 MW

Expected performance hours:

- Winter: hours ending 6 -9 & 18-21 in months of January & February.
- Summer: hours ending 15-20 in months of June, July, & August.

Example wind resource could reasonably offer from 0 MW to 13 MW as CP with any residual UCAP value offered as Base Capacity.

Solar Resource	
Nameplate Capacity	100 MW
UCAP Value (CIRs)	38 MW
Weighted average output during expected performance hours in DY	20 MW

Expected performance hours:

- Winter: hours ending 6 -9 & 18-21 in months of January & February.
- Summer: hours ending 15-20 in months of June, July, & August.

Example solar resource could reasonably offer from 0 MW to 20 MW as CP with any residual UCAP value offered as Base Capacity.

- DR Resources that meet the CP DR product requirements are eligible to offer as CP but are not required to offer as CP
- EE Resources that meet the CP EE product requirements are eligible to offer as CP but are not required to offer as CP
- Such Resources may offer as CP, or as Base Capacity or submit a coupled sell offer for both

Aggregate Resources

- Capacity Resources which may not, alone, meet the requirements of a Capacity Performance product, may combine their capabilities and offer as a single aggregate resource.
- Applies to Intermittent Resources, Capacity Storage Resources, Demand Resources, and Energy Efficiency Resources only
- Resources being combined must be located in the same LDA and reside in a single Capacity Market Seller account
- Seller may offer the Aggregate Resource as Capacity Performance at a UCAP value that is representative of a capacity performance product (not to exceed the UCAP value of the individual resources that make up the aggregate)

Wind Resource	
Net Maximum Capacity	100 MW
UCAP Value (CIRs)	13 MW
Weighed average output during expected performance hours in DY	26 MW

Solar Resource	
Net Maximum Capacity	100 MW
UCAP Value (CIRs)	38 MW
Weighed average output during expected performance hours in DY	20 MW



Aggregate Resource	
UCAP Value	51 MW
Weighted average output during expected performance hours in DY	46 MW

- As individual resources, total CP MW capability was 33 MW
- As an Aggregate, CP MW capability is 46 MW

- Market Seller that intends to create an Aggregate Resource must submit a written email request to rpm_hotline@pjm.com at least two weeks prior to the opening of the RPM.
- Requests must specify:
 - ✓ Capacity resources that are being combined to form the Aggregate Resource
 - ✓ Installed capacity owned on each generation resource
 - ✓ Nominated DR Value for each Demand Resource
 - ✓ Nominated EE Value for each EE Resource
 - ✓ Requested UCAP value for Aggregate Resource
- Requests should include explanation of how aggregation allows one or more of the resources that are being combined to realize a higher level of CP (in UCAP MWs) than the individual resources could provide themselves, and supporting data for the CP level of the aggregate resource
- PJM will review requests and provide notification to Market Seller of the UCAP value approved for the Aggregate Resource.
- PJM will model the Aggregate Resource in the eRPM system for the relevant Delivery Year.
- Once Aggregate Resource is modeled, the Market Seller will not be able to offer into RPM Auction or transact bilaterally for the relevant Delivery Year those individual resources that make up the Aggregate Resource.

Coupled Sell Offers

Submitting Coupled Capacity Performance and Base Offers (Effective 2018/2019 and 2019/2020 DY)

- All resources that can qualify as Capacity Performance may submit separate but coupled CP and Base Sell Offers with a price difference reflective of the cost to qualify as CP
- The auction will only clear one of the products (at most) in a coupled Sell Offer and will choose the product that results in the least-cost solution for the system (equivalent to clearing in manner that results in the greatest “profit” for the seller)
- A coupled Capacity Performance Sell Offer price must exceed the Base Sell Offer price by at least \$0.01/MW-Day
- All coupled Sell Offers must use the Regular Schedule option and cannot specify a Maximum Post-Auction Credit Exposure (MPCE)
- The sum of the MAX MW for each Segment in a Coupled Sell Offer cannot exceed the total Available ICAP MW on the resource

- Participants may submit coupled Sell Offers on the eRPM Resource Offer screen by entering offer data in both the Capacity Performance and Base cells of a single Offer Segment
- The below example represents three coupled Sell Offer segments
 - Segment 1: Coupled Sell Offer of 100 MW
 - Segment 2: Coupled Sell Offer of 50 MW
 - Segment 3: Coupled Sell Offer of 25 MW
- Each coupled Sell Offer segment is cleared independently of one another
- A non-coupled Sell Offer can be submitted by only entering offer data for one of the products within the Offer Segment

GEN - PJM RESOURCE - Annual

EFORD: **null**

Max Offer EFORD: **0.00196**

New Unit Pricing: ☐

MPCE: **null**

EFORD Segment
EFORD Limit: null

Min MW	(null)
Max MW	(null)
Price	(null)

Available ICAP MW

Current	175
Max	175
Min	175

		Offer Segments									
		1	2	3	4	5	6	7	8	9	10
Capacity Performance	Min MW	0	0	0	(null)	(null)	(null)	(null)	(null)	(null)	(null)
	Max MW	100	50	25	(null)	(null)	(null)	(null)	(null)	(null)	(null)
	Price	\$250	\$300	\$350	(null)	(null)	(null)	(null)	(null)	(null)	(null)
Base	Min MW	0	0	0	(null)	(null)	(null)	(null)	(null)	(null)	(null)
	Max MW	100	50	25	(null)	(null)	(null)	(null)	(null)	(null)	(null)
	Price	\$249.99	\$275	\$300	(null)	(null)	(null)	(null)	(null)	(null)	(null)
Scheduling Option		Regular Schedule	Regular Schedule	Regular Schedule	(null)	(null)	(null)	(null)	(null)	(null)	(null)
Self Supply		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The current DR coupling process will no longer be used and DR resources will not need to be modeled separately for each product.

Non-Performance Assessment

- New Performance Assessment that replaces DR Event Compliance for Demand Resources, and replaces Peak-Hour Period Availability Assessment & Peak Season Maintenance Compliance for generation
- Assesses performance of capacity resources during emergency conditions
- Applies to both Base Capacity Resources and Capacity Performance Resources
- Base Capacity Resources exposed to Non-Performance Charges only for performance during Emergency Actions in summer months

- Compare a resource's Expected Performance against Actual Performance for each Performance Assessment Hour
- Performance Assessment Hours delineated by PJM's declaration of Emergency Actions
- Demand Resource's performance will be evaluated if dispatched during Performance Assessment Hour
- Evaluate performance and calculate shortfall/excess for each Performance Assessment Hour separately
- Shortfall subject to Non-Performance Charge
- Excess (Bonus Performance) may be eligible for Performance Credit

Performance is assessed for each hour (or partial hour) that PJM declares the following actions:

- Pre-Emergency Load Management Reduction Action
- Emergency Load Management Reduction Action
- Primary Reserve Warning
- Maximum Emergency Generation, Maximum Emergency Generation Action Trans
- Emergency Voluntary Energy Only Demand Response
- Voltage Reduction Warning
- Manual Load Dump Warning
- Manual Load Dump Action

Emergency Action shall mean any emergency action for locational or system-wide capacity shortages that either utilizes pre-emergency mandatory load management reductions or other emergency capacity, or initiates a more severe action, including but not limited to, a Voltage Reduction Warning, Voltage Reduction Action, Manual Load Dump Warning, or Manual Load Dump Action.

Expected Performance vs. Actual Performance

		Summer Performance Assessment Hour (June - Sept)		Non-Summer Performance Assessment Hour	
Resource Type	Product	Expected Performance	Actual Performance	Expected Performance	Actual Performance
Generation/Storage	Capacity Performance	Committed UCAP * Balancing Ratio	Metered Energy Output + Reserve/Regulation Assignment	Committed UCAP * Balancing Ratio	Metered Energy Output + Reserve/Regulation Assignment
Generation/Storage	Base	Committed UCAP * Balancing Ratio	Metered Energy Output + Reserve/Regulation Assignment	Committed UCAP * Balancing Ratio; <i>0 for Performance Shortfall calculation</i>	Metered Energy Output + Reserve/Regulation Assignment
Demand Response	Capacity Performance	Committed ICAP	Load Reduction + Reserve/Regulation Assignment	Committed ICAP	Load Reduction (CBL Method) + Reserve/Regulation Assignment
Demand Response	Base	Committed ICAP	Load Reduction + Reserve/Regulation Assignment	0	Load Reduction (CBL Method) + Reserve/Regulation Assignment
Energy Efficiency	Capacity Performance	Committed ICAP	PJM Approved Post-Installation Load Reduction	Committed ICAP	PJM Approved Post-Installation Load Reduction
Energy Efficiency	Base	Committed ICAP	PJM Approved Post-Installation Load Reduction	N/A	N/A
Qualifying Trans. Upgrade (QTU)	Capacity Performance	Committed UCAP	Committed UCAP if In-Service; otherwise 0	Committed UCAP	Committed UCAP if In-Service; otherwise 0
Energy Only Resources	N/A	0	Metered Energy Output + Reserve/Regulation Assignment	0	Metered Energy Output + Reserve/Regulation Assignment
Energy Imports	N/A	0	Net Energy Import	0	Net Energy Import

$$\text{Balancing Ratio} = \frac{\text{Total Generation \& Storage Actual Performance} + \text{Net PJM Energy Imports} + \text{DR Bonus Performance}}{\text{Total Generation \& Storage Committed UCAP}}$$

- Non- Performance Charge Rate is based on yearly Net CONE (Capacity Performance Resources) or yearly Resource Clearing Price (Base Capacity Resources) and a small divisor (i.e., an assumed 30 Emergency Action hours per year).
- Non-Performance Charge Rate for CP Resources (\$/MWh) = $[\text{LDA Net CONE (\$/MW-day)} * \text{number of days in Delivery Year}]/30$
 - If LDA Net CONE = \$300/MW-day, the Non-Performance Charge Rate = $[\$300/\text{MW-day} * 365 \text{ days}]/30 = \$3,650/\text{MWh}$
- Non-Performance Charge Rate for Base Capacity Resources (\$/MW-hr) = $[\text{Weighted Average Resource Clearing Price (\$/MW-day)} \text{ for such resource} * \text{number of days in Delivery Year}]/30$

- Stop-Loss provision limits the total Non-Performance Charges assessed
- Limits maximum charges for calendar month and for a calendar year
 - Capacity Performance Resources:
 - For a month, the maximum Non-Performance Charge is $0.5 * \text{Net CONE} * \text{UCAP commitment on the resource}$
 - For a year, the Non-Performance Charge is $1.5 \text{ Net CONE} * \text{UCAP commitment on the resource}$
 - Base Capacity Resources
 - For year, the maximum Non-Performance Charge = total capacity revenues due to resource for Delivery Year

- Non-Performance Charges will be distributed to resources (of any type, even if not Capacity Resources) that perform above expectations
- Bonus Performance will be assigned a share of the collected Non-Performance Charge revenues based on the ratio of its Bonus Performance to total Bonus Performance from all resources for the same Performance Assessment Hour
- All performance from a resource with no capacity commitment is considered Bonus Performance

Emergency Action called for entire RTO during Summer period

- Sample capacity resources below dispatched to their full MW capability except:
 - GEN RES 1 is backed down 30 MW by PJM for a transmission constraint
 - GEN RES 2 and 4 are on Partial and Full Forced Outages respectively
- Applicable LDA Net CONE (ICAP): \$300/MW-day; WARCP: \$150/MW-day
- Non-Performance Charge Rate for Capacity Performance Resources: \$3,650/MWh
- Non-Performance Charge Rate for Base Resources: \$1,825/MWh
- Generation & Storage Balancing Ratio: 80%

Resource	Product	Committed MW	Expected Performance	Actual Performance	Notes	Exempt MW	Performance Shortfall	Charge Rate (\$/MWh)	Total Charges (\$)	Bonus Performance	Total Credits (\$)
GEN RES 1	CP	125.0	100.0	95.0	Dispatched down 30 MW for transmission constraint	5	0.0			0.0	
GEN RES 2	CP	125.0	100.0	44.0	Partial Forced Outage		56.0	\$ 3,650.00	\$204,400.00	0.0	
GEN RES 3	CP	100.0	80.0	100.0			0.0			20.0	\$55,480.00
GEN RES 4	Base	80.0	64.0	0.0	Full Forced Outage		64.0	\$ 1,825.00	\$116,800.00	0.0	
DR RES 5	CP	30.0	30.0	28.0			2.0	\$ 3,650.00	\$7,300.00	0.0	
DR RES 6	Base	20.0	20.0	25.0			0.0			5.0	\$13,870.00
EE RES 7	CP	20.0	20.0	15.0			5.0	\$ 3,650.00	\$18,250.00	0.0	
GEN RES 8	Energy	0.0	0.0	100.0			0.0			100.0	\$277,400.00
							127.0		\$346,750.00	125.0	\$346,750.00

Emergency Action called for entire RTO during Winter period

- Sample capacity resources below dispatched to their full MW capability except:
 - GEN RES 1 is backed down 30 MW by PJM for a transmission constraint
 - GEN RES 2 and 4 are on Partial Forced Outages
- Applicable LDA Net CONE (ICAP): \$300/MW-day; WARCP: \$150/MW-day
- Non-Performance Charge Rate for Capacity Performance Resources: \$3,650/MWh
- Non-Performance Charge Rate for Base Resources: N/A
- Generation & Storage Balancing Ratio: 77%

Resource	Product	Committed MW	Expected Performance	Actual Performance	Notes	Exempt MW	Performance Shortfall	Charge Rate (\$/MWh)	Total Charges (\$)	Bonus Performance	Total Credits (\$)
GEN RES 1	CP	125.0	96.2	95.0	Dispatched down 30 MW for transmission constraint	1.2	0.0			0.0	
GEN RES 2	CP	125.0	96.2	75.0	Partial Forced Outage		21.2	\$ 3,650.00	\$77,380.00	0.0	
GEN RES 3	CP	100.0	77.0	100.0			0.0			23.0	\$77,036.47
GEN RES 4	Base	80.0	61.6	50.0	Partial Forced Outage		N/A			0.0	
DR RES 5	CP	30.0	30.0	25.0			5.0	\$ 3,650.00	\$18,250.00	0.0	
DR RES 6	Base	20.0	0.0	1.0			N/A			1.0	\$3,349.41
EE RES 7	CP	20.0	20.0	15.0			5.0	\$ 3,650.00	\$18,250.00	0.0	
GEN RES 8	Energy	0.0	0.0	10.0			0.0			10.0	\$33,494.12
							31.2		\$113,880.00	34.0	\$113,880.00

- CP Transition Incremental Auctions to be conducted for 2016/2017 & 2017/2018 Delivery Years to procure Capacity Performance Resources in quantities up to 60% and 70% of updated RTO Reliability Requirement, respectively.
- No locational requirements will be modeled.
- Final Zonal Capacity Prices used to assess LSE Locational Reliability Charges will reflect the cost to procure capacity for LSEs in all auctions for DY, including CP Transition IAs

	Amount to be procured	Offer Window Opens	Offer Window Closes	Results Posted
2016/2017 CP Transitional IA	95,097 MW	Mon., April 27, 2015 at 12:00 AM EPT	Tues., April 28, 2015 at 4:00 PM EPT	Thurs., April 30, 2015 after 4:00 PM EPT
2017/2018 CP Transitional IA	112,176 MW	Mon., May 4, 2015 at 12:00 AM EPT	Tues., May 5, 2015 at 4:00 PM EPT	Thurs., May 7, 2015 after 4:00 PM EPT

- Participation is voluntary
- Any generation resource that can meet the qualifications of a Capacity Performance Resource may be offered, regardless of whether it is already committed to provide capacity for relevant Delivery Year.
- External generation resources that have a CIL exception prior to opening of the auction may offer into these auctions. Such resources are eligible only if the resource is reasonably expected to be pseudo-tied by the applicable Delivery Year.
- Planned generation resources that have an executed Interconnection Service Agreement prior to the opening of the auction may offer into such auction.

	Clearing Price & Market Seller Offer Cap	
2016/2017 CP Transitional IA	50% of RTO Net CONE	\$165.27/MW-day
2017/2018 CP Transitional IA	60% of RTO Net CONE	\$210.83/MW-day

- Clearing price for each CP Transition IA will be set by the marginal resource offers when PJM procures the target amount of Capacity Performance Resources.
- If the target amount of CP resources is not cleared, the clearing price will equal the clearing price cap.

CP Transition IA Auction Credits (\$/day) =

MWs Cleared * CP Transition IA Clearing Price (\$/MW-day)

Generation resources cleared in CP Transition IA with prior commitments in 2016/2017 or 2017/2018 Delivery Years:

- Receive CP Transition IA Auction Credits based on MWs cleared in the CP Transition IA.
- If prior commitments in 2016/2017 DY, BRA and/or First IA Auction Credits for such resource will be reduced. The MWs cleared in the BRA and/or First IA will be reduced by MWs cleared in the CP Transition IA.
- If prior commitments in 2017/2018 DY, BRA Auction Credits for such resource will be reduced. The MWs cleared in the BRA will be reduced by MWs cleared in CP Transition IA.

- MWs cleared in CP Transitional IAs are CP commitments
- Resources with CP commitments are subject to the Non-Performance Assessment/Bonus Performance Credits for CP commitments
- Non-Performance Charge Rate & Stop Loss (maximum Non-Performance Charge exposure) is reduced during Transition DYs

Transition DY	Non-Performance Charge Rate (\$/MWhr)	Monthly Stop Loss (\$)	Annual Stop Loss (\$)
2016/2017	$= 0.50 * [(RTO \text{ Net CONE} * 365 \text{ days}) / 30 \text{ hours}]$ $= 0.50 * [(\$311.72 / \text{MW-day} * 365 \text{ days}) / 30 \text{ hours}]$ $= \$1896.30 / \text{MWhr}$	$= 0.25 * RTO \text{ Net CONE} * 365 \text{ days} * \text{UCAP committed}$ $= 0.25 * \$311.72 / \text{MW-day} * 365 \text{ days} * \text{UCAP committed}$ $= \$28,444.45 / \text{MW} * \text{UCAP committed}$	$= 0.75 * RTO \text{ Net CONE} * 365 \text{ days} * \text{UCAP committed}$ $= 0.75 * \$311.72 / \text{MW-day} * 365 \text{ days} * \text{UCAP committed}$ $= \$85,333.35 * \text{UCAP committed}$
2017/2018	$= 0.60 * [(RTO \text{ Net CONE} * 365 \text{ days}) / 30 \text{ hours}]$ $= 0.60 * [(\$331.54 / \text{MW-day} * 365 \text{ days}) / 30 \text{ hours}]$ $= \$2,420.24 / \text{MWhr}$	$= 0.3 * RTO \text{ Net CONE} * 365 \text{ days} * \text{UCAP committed}$ $= 0.3 * \$331.54 / \text{MW-day} * 365 \text{ days} * \text{UCAP committed}$ $= \$36,303.63 / \text{MW} * \text{UCAP committed}$	$= 0.9 * RTO \text{ Net CONE} * 365 \text{ days} * \text{UCAP committed}$ $= 0.9 * \$331.54 / \text{MW-day} * 365 \text{ days} * \text{UCAP committed}$ $= \$108,910.89 / \text{MW} * \text{UCAP committed}$