

Reliability Pricing Model RPM Auctions

February 2012

3 Years

20 months

10 months

3 months

May

May be scheduled at any time prior to DY

Sept

July

Feb.

June 1

May 31

EFORd Fixed

Delivery Year

Base Residual Auction

Conditional Incremental Auction
(Effective 12/13 DY)

First Incremental Auction

Second Incremental Auction

Third Incremental Auction

Ongoing Bilateral Market

- Allows for procurement of unit-specific resource commitments required, after accounting for self-supply, to satisfy the region's unforced capacity obligation for a future Delivery Year, less an amount reserved for short-term resources, and less the Preliminary UCAP Obligations of FRR Entities.
- Cost of procurement is allocated to LSEs serving load in the actual Delivery Year through the Locational Reliability Charge.

- Variable Resource Requirement (VRR) curve is the demand curve for the Base Residual Auction
- Individual resource-specific offers are stacked to form the supply curve
- All existing generation resources with Available Capacity must offer into the Base Residual Auction

EXISTING GENERATION RESOURCES

in a party's eRPM resource portfolio that have **Available** Capacity to offer and are **not** offered into the Base Residual Auction for the Delivery Year:

1. Shall be excluded from participation in any and all Incremental Auctions conducted for the Delivery Year
2. Shall be ineligible to serve as an RPM capacity resource on behalf of any entity for such Delivery Year
3. Are prohibited from receiving any RPM capacity revenues for the Delivery Year



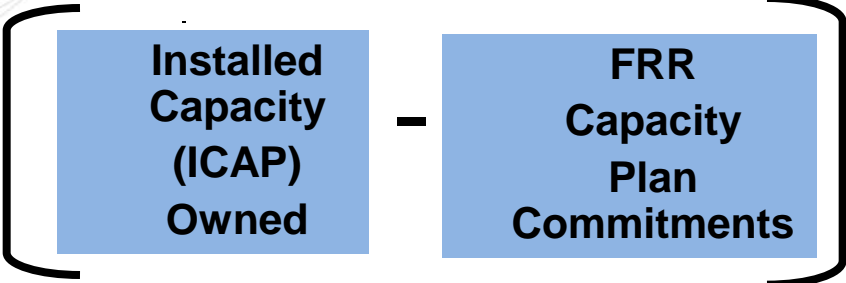
Base Residual Auction – Available Capacity (ICAP) Position

ICAP Owned considers approved CAP MODs and approved unit-specific bilateral sales/purchase.

**Available ICAP
Position For
Generating Unit**

=

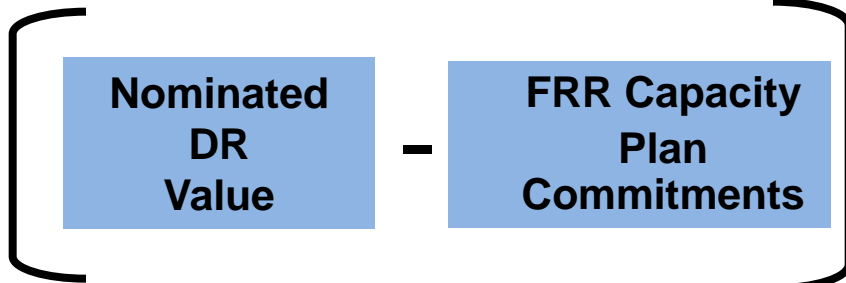
Min Daily Value
for the
Delivery Year



**Available ICAP
Position For
Demand Resource**

=

Min Daily Value
for the
Delivery Year



**Position For
Qualifying
Transmission
Upgrade**

=

Incremental
Import
Capability
Into Sink LDA

Base Residual Auction – Unoffered Capacity (ICAP)

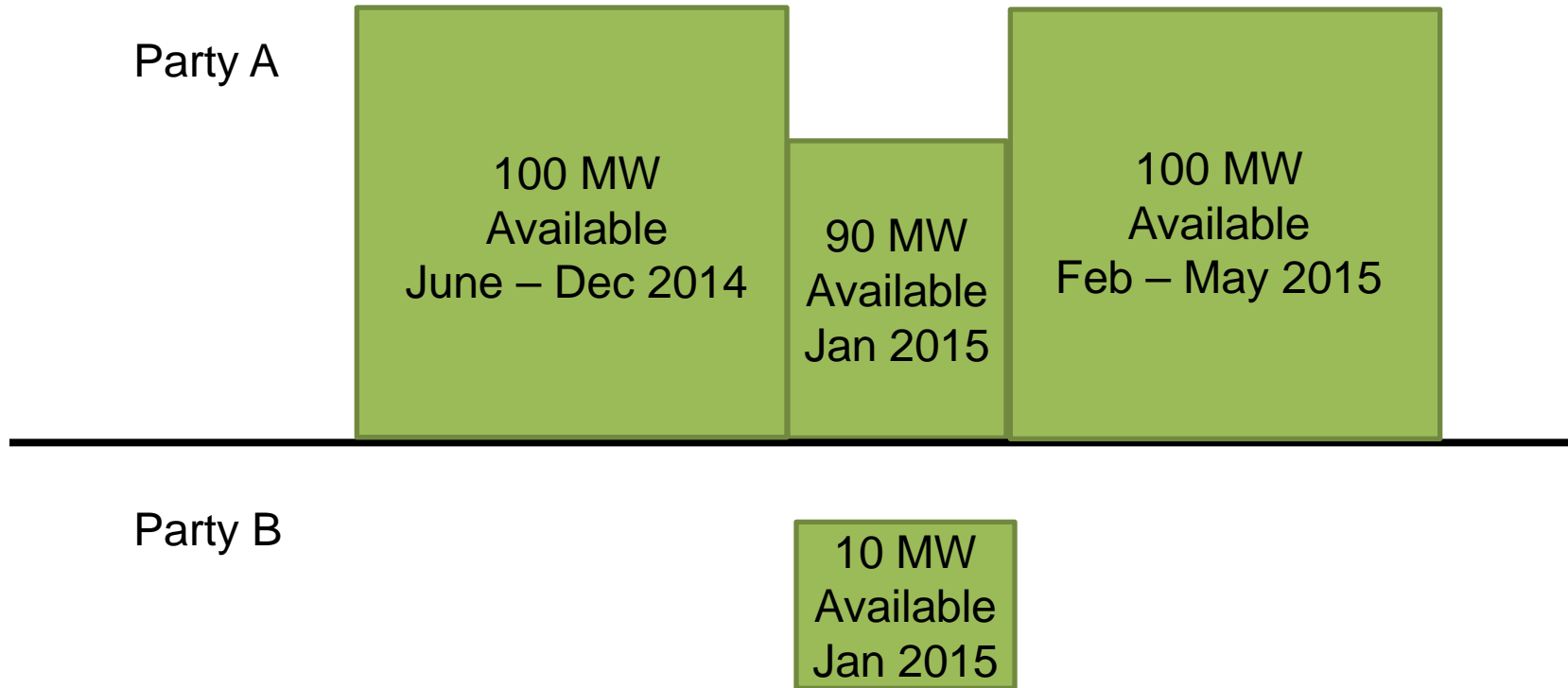
$$\text{Unoffered ICAP for the DY} = \text{Available Capacity in BRA} - \text{Offered MW (ICAP) in BRA}$$

*ICAP from any resource that is not offered into the BRA is classified as “Unoffered Capacity” and **cannot** be sold into any incremental auctions.*

“Unoffered Capacity” may be exported or sold to an FRR Entity for use in an FRR Capacity Plan.

Prior to the Base Residual Auction

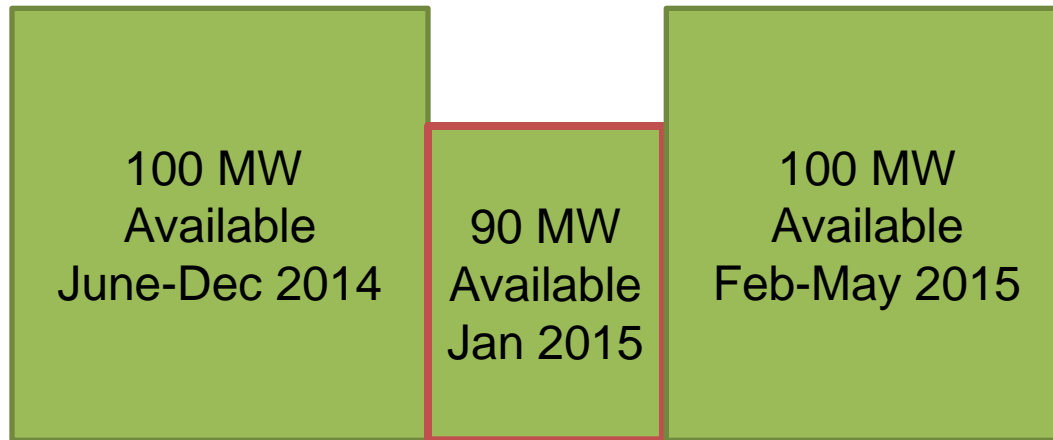
Party A creates a unit specific transaction to Party B for 10 MW of Available capacity for one month of the Delivery Year, and Party B confirms the transaction.



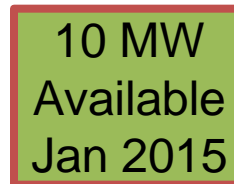
Base Residual Auction

**Party A can offer up to 90 MW in the BRA.
Party B cannot offer in the BRA.**

Party A



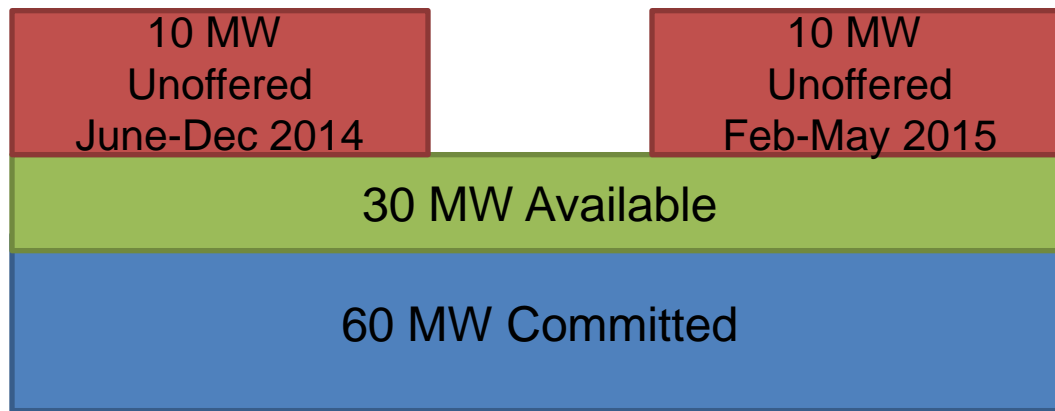
Party B



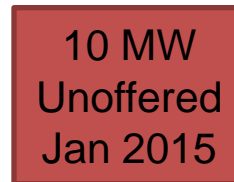
AFTER THE BRA

Party A cleared 60 MW of the 90 MW bid.
60 MW is cleared, 30 MW is available for the entire Delivery Year.
The remaining 10 MW from June-Dec 2014 and Feb – May 2015 become Unoffered.
The 10 MW of Available Capacity in Party B’s portfolio becomes Unoffered after the BRA.

Party A



Party B



- Unit-specific transactions with a start date that does not correspond to June 1 or/and End Date that does not correspond to May 31 will result in installed capacity that may not be offered into the Base Residual Auction
 - A single party does not own the installed capacity for the entire Delivery Year.
 - This installed capacity will be tracked as Unoffered Capacity after the Base Residual Auction.

PJM has developed a Self Scheduling Coordinator (SELFSC) process to enable the installed capacity to be offered into the Base Residual Auction for the Delivery Year. Please see Appendix for more details on process.

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Ongoing Bilateral Market

Incremental Auctions

Conducted after the Base Residual Auction for changes in market dynamics including:

- Increases and Decreases in resource commitments due to reliability requirement adjustments
- Deferred Short-Term Resource Procurement
- Decrease in the value of a capacity resource due to
 - resource cancellation
 - delay
 - derating (CAP MOD decrease)
 - EFORd increase
 - decrease in the nominated value of a Planned Demand Resource/Energy Efficiency Resource
 - delay or cancellation of Qualifying Transmission Upgrade.

- Demand curve(s) for Incremental Auctions are built based on:
 - Locational buy bids submitted by auction participants
 - Possible PJM buy bids to procure increase in Reliability Requirement or Short-Term Resource Procurement Target Applicable Share
 - Possible inclusion of the entire uncleared portion of the updated VRR Curve
- Supply curve for Incremental Auction are built based on:
 - Resource-specific sell offers submitted by auction participants
 - Possible PJM locational sell offer to release commitments
- Supply may include resources or portion of resources that did not clear in prior RPM Auctions, and planned resources or external generation resources that did not meet the eligibility requirements at the time of the prior RPM Auctions
- All existing resources that offered into BRA and have a positive Minimum Available Capacity value must offer into the Incremental Auction

Conditional Incremental Auction

Conducted after the Base Residual Auction only if a Backbone Transmission Upgrade is delayed and results in the need for PJM to procure additional capacity in a LDA to address the corresponding reliability problem.

- Conditional Incremental Auctions may be held if the in service date of a planned Backbone Transmission Upgrade that was modeled in the Base Residual Auction is announced as delayed by Office of the Interconnection beyond July 1 of the Delivery Year for which it was modeled and the delay causes reliability criteria violation.

In the LDA with reliability violation:

- Buy Bid entered by PJM for the amount of MWs required in the LDA to address the reliability criteria violation.
- Individual resource-specific offers from auction participants are stacked to form the supply curve
- Supply may include resources or portion of resources that did not clear in prior RPM Auctions and planned resources that did not meet the eligibility requirements at the time of prior RPM Auctions
- All existing resources that offered into BRA and have a positive Minimum Available Capacity value must offer into the Conditional Incremental Auction

- ✓ RPM Auction Schedule and any deadlines for pre-auction activities are posted on PJM website
- ✓ Available resources unoffered in BRA cannot be offered in the Incremental Auctions or used as replacement resources for the Delivery Year.
- ✓ PJM enters the demand curves in the BRA in the form of the VRR Curves
- ✓ Participants Sell Offers establish the supply curves in the BRA
- ✓ Participants and PJM Buy Bids establish the demand curves in the Scheduled Incremental Auctions
- ✓ Participants and PJM Sell Offers establish the demand curves in the Scheduled Incremental Auctions

Questions?

- Sell Offers for the Base Residual and Incremental Auctions must be submitted in PJM's eRPM system.
 - Must be Resource-Specific
 - From a Generation Unit, Demand Resource, Energy Efficiency, or Quality Transmission Upgrade
 - Only accepted during a fixed bidding window which is open for at least five (5) business days.
 - May not be changed or withdrawn after the bidding window for a Base Residual Auction or Incremental Auction is closed.
 - Smallest Offer MW = .1 MW
 - May be self-scheduled (Offer Price = \$0/MW-day, Min MW = Max MW)

Cleared sell offers and offers receiving Make-Whole payments are binding commitments to provide capacity.

Resource Providers can submit up to 10 Offer Segments

Base Offer Segments

- Up to 10 Segments
- Price-Quantity pairs
- Various Output levels of Resource
- Block Offer Curve
- EFORd submitted by participant for BRA, 1st & 2nd IAs
- EFORd submitted must be \leq greater of EFORd based on 12 months of outage data ending Sept. 30 prior to BRA (i.e., $EFORd_{BRA}$) OR EFORd based on 5 yrs of outage data ending Sept. 30 prior to BRA (i.e., $EFORd_{5yr-BRA}$)
- EFORd determined by PJM for 3rd Auction based on 12 months of outage data ending Sept. 30 prior to DY (i.e., $EFORd_{Final}$)

- **Sell Offer Quantity** in the Base Offer Segment
 - ICAP MW quantity specified
 - Will be converted into an UCAP MW quantity by the sell offer EFORd specified for use in the auction clearing (generation resources)
 - Will be converted into an UCAP MW quantity using the DR Factor & FPR for the auction (DR & EE resources)
 - The sum of all offer segments **can not exceed** the Available ICAP Position on the resource
- **Sell Offer Price** in Base Offer Segment
 - Is in UCAP terms and WILL NOT be converted for use in the auction clearing.

- Demand Resource with potential to qualify as either Limited DR, Extended Summer DR, or Annual DR may submit separate but coupled Sell Offers for each type of resource for which it qualifies at different prices and the auction clearing algorithm will select the Sell Offer that yields the least-cost solution.
- For coupled sell offers, the offer price of Annual DR must be at least \$0.01/MW-day greater than the offer price of a coupled Summer DR offer, and the offer price of a Extended Summer DR offer must be at least \$0.01/MW-day greater than the offer price of a coupled Limited DR offer.

See Appendix for more details on Coupled Sell Offers for Demand Resources.

Offer EFORd entered by participant in BRA, 1st, & 2nd IA.

Company: TEST Auction T: Refresh Status

Planning Period: 2010/2011 Download XML BASE: OPEN

Resource: TEST GEN 1 Download CSV FIRST: CANCELLED

Upload XML SECOND: FUTURE

THRD: FUTURE

Submit Pages: 1 Records: 1 - 1 of 1 matches.

GEN - TEST GEN

Delete EFORd: 0.01238

EFORd Limit: 1.1

New Unit:

Pricing: Available ICAP: 50

Base Offer Segments										
	1	2	3	4	5	6	7	8	9	10
Min MW	10.0	0.0	0.0	(null)	(null)	(null)	(null)	(null)	(null)	(null)
Max MW	10.0	15.0	15.0	(null)	(null)	(null)	(null)	(null)	(null)	(null)
Price	0.00	30.00	50.00	(null)	(null)	(null)	(null)	(null)	(null)	(null)
Scheduling Option	Self Schedule	Flexible Self Schedule	Regular Schedule	(null)	(null)	(null)	(null)	(null)	(null)	(null)

The sum of the Max MW values in each segment cannot exceed the Available ICAP

EFORd Offer Segment eliminated effective 3/27/09.

DEMAND - LIMITED DR

Available ICAP MW

Current 43.1

Base Offer Segments										
	1	2	3	4	5	6	7	8	9	10
Min MW	0.0	0.0	0.0	0.0	(null)	(null)	(null)	(null)	(null)	(null)
Max MW	10.0	10.0	10.0	13.1	(null)	(null)	(null)	(null)	(null)	(null)
Price	0.00	50.00	100.00	150.00	(null)	(null)	(null)	(null)	(null)	(null)
Scheduling Option	Regular Schedule	Regular Schedule	Regular Schedule	Regular Schedule	(null)	(null)	(null)	(null)	(null)	(null)

DEMAND - EXT SUMMER DR

Available ICAP MW

Current 43.1

Base Offer Segments										
	1	2	3	4	5	6	7	8	9	10
Min MW	0.0	0.0	0.0	0.0	(null)	(null)	(null)	(null)	(null)	(null)
Max MW	10.0	10.0	10.0	13.1	(null)	(null)	(null)	(null)	(null)	(null)
Price	0.01	50.01	100.01	150.01	(null)	(null)	(null)	(null)	(null)	(null)
Scheduling Option	Regular Schedule	Regular Schedule	Regular Schedule	Regular Schedule	(null)	(null)	(null)	(null)	(null)	(null)

DEMAND - ANNUAL DR

Available ICAP MW

Current 43.1

Base Offer Segments										
	1	2	3	4	5	6	7	8	9	10
Min MW	0.0	0.0	0.0	0.0	(null)	(null)	(null)	(null)	(null)	(null)
Max MW	10.0	10.0	10.0	13.1	(null)	(null)	(null)	(null)	(null)	(null)
Price	0.02	50.02	100.02	150.02	(null)	(null)	(null)	(null)	(null)	(null)
Scheduling Option	Regular Schedule	Regular Schedule	Regular Schedule	Regular Schedule	(null)	(null)	(null)	(null)	(null)	(null)

The Resource Offer Screen will include a filter to list resources belonging to the CSP defined coupling groups to aide in entering offers.

- Planned capacity resources (generation, DR, and EE Resources) have the ability to nominate a Maximum Post-Auction Credit Exposure (MPCE)
- The Auction will only clear Planned MWs up to the supplier's nominated MPCE

- A supplier must notify PJM that they intend to utilize MPCE
- An MPCE is assigned separately to each Planned Resource
- The sum of the MPCE nominated for each Planned Resource in a party's portfolio may not exceed their total available credit
- Coupled DR Resources may not utilize the Credit Limited Offer Functionality.

See Appendix for more details on Credit-Limited Offers.

- **Maximum MW Offered**
 - Increase in CETL provided by the upgrade
 - Maximum MW, as certified by PJM Transmission Planning Department
 - Must be certified by PJM at least 45 days prior to the Base Residual Auction.
- **Minimum MW offered**
 - Min = max for upgrades that involve a single equipment upgrade
 - Min could be less than max where participant is proposing multiple upgrades or upgrades to several pieces of equipment
- **Source and sink LDAs associated with the upgrade**
- **Price willing to receive in \$/MW-day specified as the price difference between the sink LDA price and the source LDA price**
- **Qualified Transmission Upgrade sell offers have up to 10 segments**

- Self Scheduling allows an LSE to hedge their Locational Reliability Charges by designating their self-supplied resources as self-scheduled to cover their obligation in the BRA.
- If the **self-schedule option** is set:
 - the sell offer price will be set to zero
 - the minimum and maximum amounts specified in the sell offer must be equal.

Self-Scheduling option is available in BRA only.

- Flexible Self-Scheduling allows an LSE with self-supply to manage the quantity uncertainty related to the Variable Resource Requirement and a LSE's capacity obligation.
- Allows an LSE to self-schedule resources up to their resulting capacity obligation and offer any excess into the auction.

Flexible Self-Scheduling option is available in BRA only.

See Appendix for more details on Flexible Self-Scheduling.

Acceptance of the sell offer is based on the party's Available ICAP Position at the opening of the auction's bidding window.

- Only resources with a positive Available ICAP Position will be able to submit a sell offer.
- A Sell Offer is **Rejected**:
 - If Offer violates any “Conditions on Sales by FRR Entities” as presented in the FRR Business Rules
 - If RPM Credit Requirement exceeds the credit available for those sell offers associated with planned resources and external resources without firm transmission.

Participant Buy Bids for Incremental Auctions must be submitted in PJM's eRPM system.

- Buy Bids are only accepted during a fixed bidding window which is open for at least five (5) business days.
- Buy Bids may not be changed or withdrawn after the bidding window for an Incremental Auction is closed.

Cleared Buy Bids are binding commitments to purchase capacity.

A Buy Bid **MUST** specify:

- Quantify of unforced capacity resources desired, in increments of 0.1 MWs
- Maximum price willing to pay for unforced capacity resources in \$/MW-day;
- Desired location (Locational Deliverability Area) for the replacement capacity.
- Desired type of unforced capacity (Annual Resource, Extended Summer DR, or Limited DR) (Effective 2014/2015 DY)

A Buy Bid **MAY NOT** specify:

- Minimum MW amount. The Buy Bid may clear any MW amount equal to or less than the quantity of unforced capacity resources desired in the Buy Bid.

In the event of a delay or cancellation of a Qualifying Transmission Upgrade, the Buy Bid will specify the purchase of capacity resources in the LDA for which the Qualifying Transmission Upgrade was to increase the CETL (Sink LDA).

PJM eSuite - Microsoft Internet Explorer provided by PJM Interconnection

Address: https://testweb.pjm.com/mui/index.htm

Links: eSuite - TST | eSuite - STG | eSuite - Training | eSuite - Prod | Passport | DevTrack | MSET - Test | MSET - Stage | PJM - RPM

SUITE PJM - Valley Forge, Pa. 15:09DST

Navigation: Buy & Sell | Auction Results | Participant Auction Results | Mitigation

Resource Offer | Capacity Bid | Transmission Offer | Self Scheduling

Capacity Bids

Company: **TEST** Auction Type: **THIRD**

Planning Period: **2008/2009** LDA: **ALL**

Buttons: Refresh, Download XML, Download CSV, Upload XML

		Status	
BASE :	CLEARED		
FIRST :	CANCELLED		
SECOND :	CANCELLED		
THIRD :	OPEN		

Capacity Bids

Buttons: Delete, Submit

LDA	Bid Segments										
		1	2	3	4	5	6	7	8	9	10
EMAAC	MW	15.0	30.0	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
	Price	20.00	50.00	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
MAAC+APS	MW	15.0	30.0	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
	Price	5.00	15.00	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
RTO	MW	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
	Price	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
SVMAAC	MW	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)
	Price	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)	(null)

- Ld & Obligation
- Resource Position
- Transactions
- Performance
- Auctions
- Administration
- Upload

TEST
RPMTEST

MW amount bid is in UCAP by LDA

Generation Resources

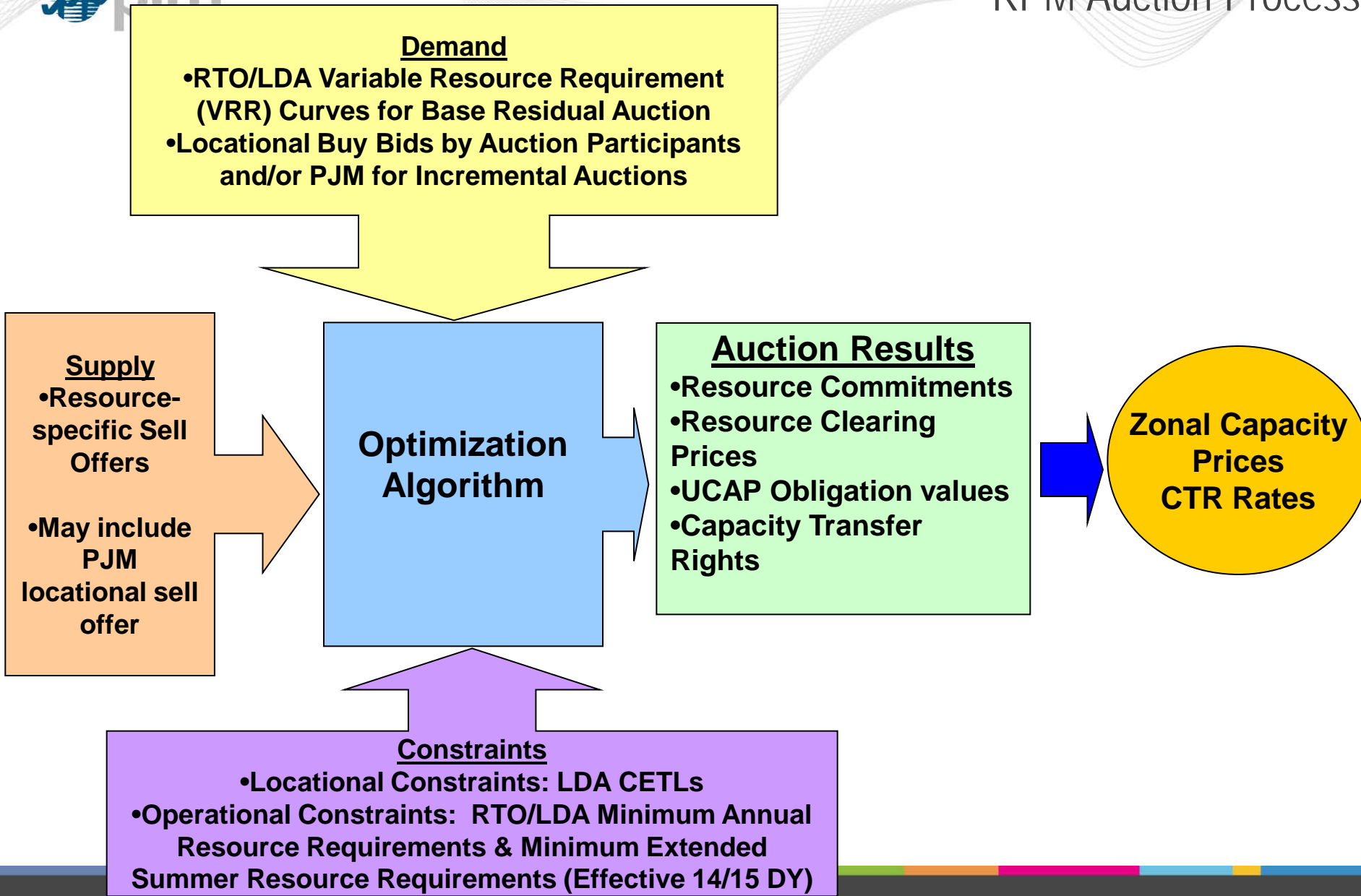
All generation resources that have an RPM Resource commitment must offer into PJM's Day Ahead Energy Market.

Demand Resource

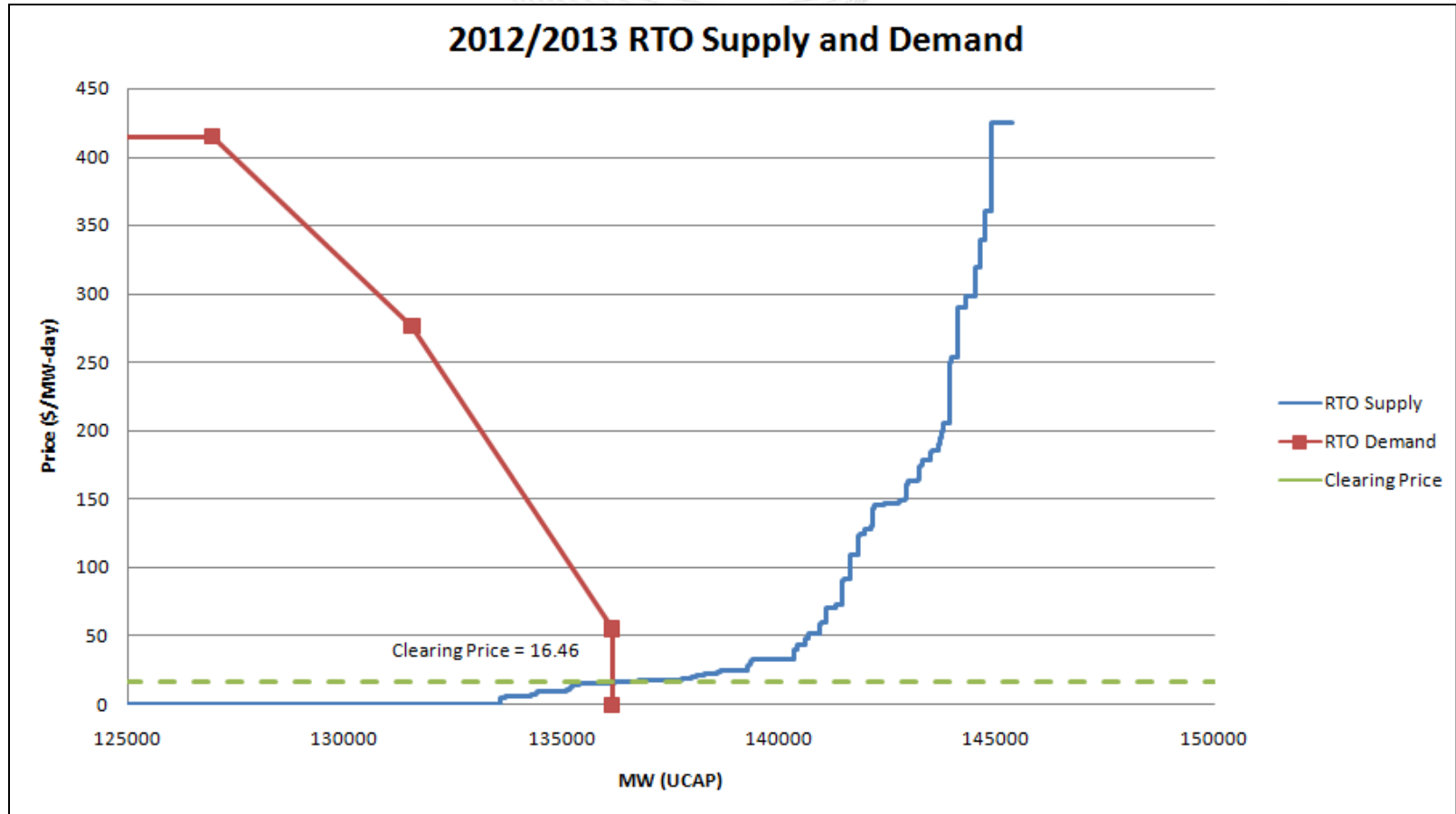
Demand Resources that have an RPM Resource Commitment must be registered in the Full Program Option of the Emergency Load Response Program and thus be available for dispatch during PJM-declared emergency events.

- ✓ Participants with Available Capacity must create Resource Sell Offers via eRPM in order to sell capacity in RPM Auctions
- ✓ Participants who wish to purchase capacity in Incremental Auctions must submit Locational Buy Bids via eRPM in order to purchase capacity
- ✓ Cleared Resource Sell Offers are binding commitments to provide capacity and offer into the PJM Day Ahead Energy Market
- ✓ All Cleared Buy Bids are binding commitments to purchase capacity

Questions?



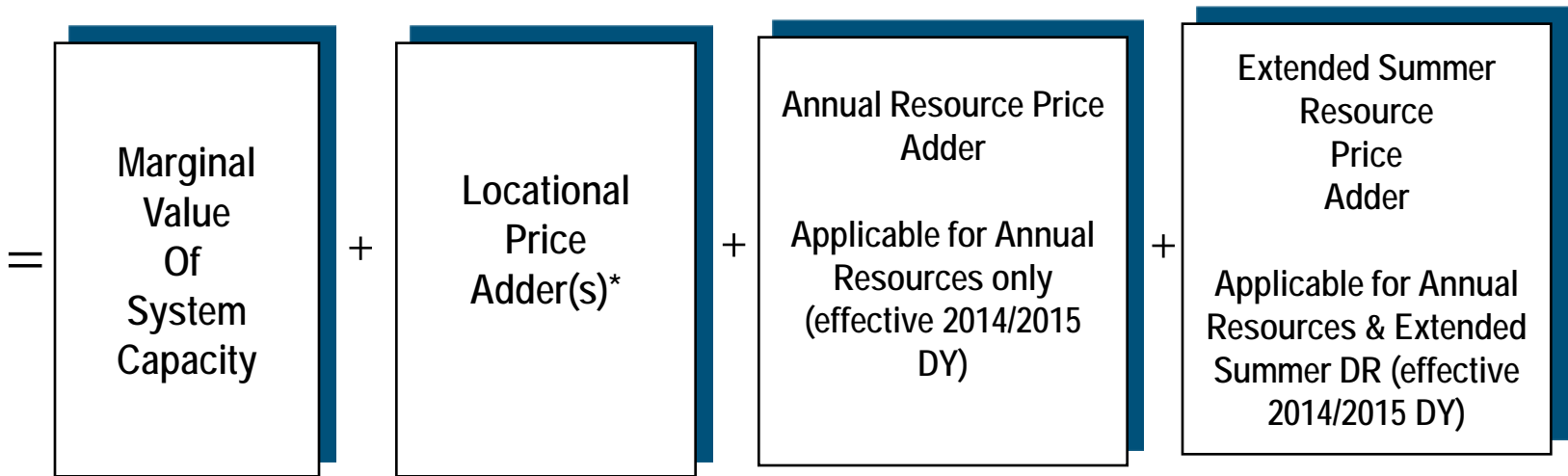
- RPM Auctions use an optimization-based market clearing algorithm.
- This algorithm has the objective of minimizing capacity procurement costs given
 - Supply Offers
 - Demand Curves
 - Locational Constraints
 - Operational Constraints (Effective 2014/2015 DY)
- The clearing price for each LDA is determined by the optimization algorithm.



Clearing determined by the intersection of the supply and the demand curves.

- The Resource Clearing Price (RCP) for Generation Resources, Demand Resources, and EE Resources within each LDA is the sum of :
 - (1) the marginal value of system capacity; (2) Locational Price Adder(s), if any in such LDA;
 - (3) Annual Resource Price Adder, if any in such LDA; and (4) Extended Summer Resource Price Adder, if any in such LDA.

Resource Clearing Price in LDA



**Adder with respect to immediate higher level LDA*

- RCP for Limited DR within the Rest of the RTO is the marginal value of system.

RCP may not be equal to Final Zonal Capacity Price. RCP (price paid to resources) and Final Zonal Capacity Price (price paid by LSEs) are different terms in RPM.

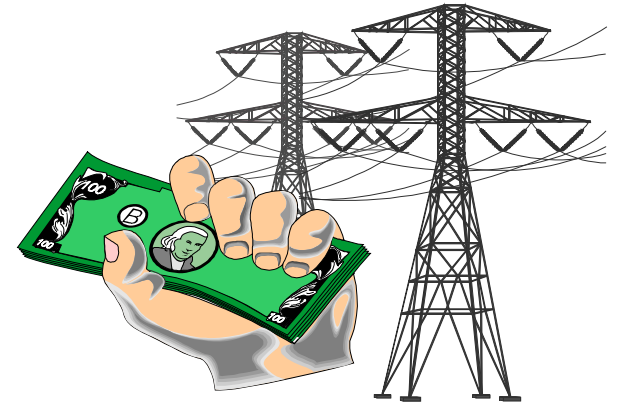
- The clearing price for a Qualifying Transmission Upgrade that clears in the BRA will be:

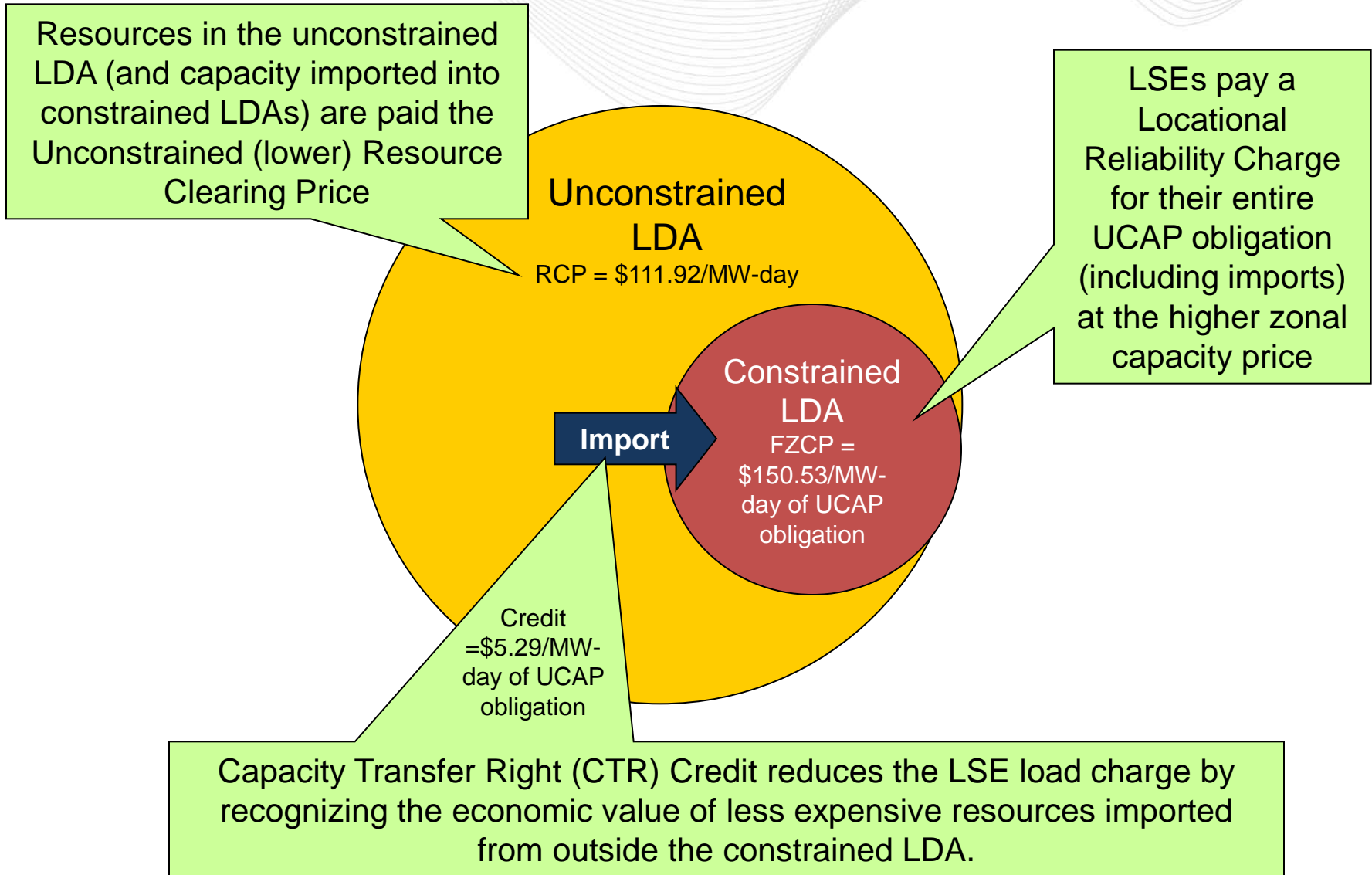
$$\begin{array}{c} \text{Location Price} \\ \text{Adder} \\ \text{of} \\ \text{Sink LDA} \end{array} - \begin{array}{c} \text{Location Price} \\ \text{Adder} \\ \text{of} \\ \text{Source LDA} \end{array}$$

- Resource provider that offered and cleared fewer MWs than the minimum MW specification in the auction would receive a Resource Make-Whole payment.
 - This can occur at most for one resource in each LDA and for one resource in the unconstrained market region.
 - Cleared MW + Make-whole MWs = Min MW
- Make-whole MWs represent binding commitments to provide capacity
- Make-Whole Payment = RCP * Make-whole MWs

- Make-Whole payments in BRA and Conditional Auction will be charged to all LSEs in the LDA via the Final Zonal Capacity Price.
- Make-Whole payments in all 1st, 2nd, and 3rd IA will be charged to all LSEs in LDA via Final Zonal Capacity Price and to buyers of replacement capacity that cleared in the LDA.

***Capacity Transfer Rights are a means...
to allocate the economic value
of transmission import
capability that exists into a
constrained LDA to LSEs.***





- The total amount of CTRs that are allocated to LSEs in an LDA with a binding constraint are equal to:

$$\begin{array}{ccccccc}
 \boxed{\text{Base or Adjusted CTRs (MW)}} & = & \boxed{\text{Base or Adjusted Unforced Capacity Imported}} & - & \boxed{\text{ICTRs (Participant-Funded ICTRs \& Regional Project ICTRs)}} & - & \boxed{\text{Incremental Import Capability from cleared QTU}}
 \end{array}$$

where Base or Adjusted Unforced Capacity Imported = LDA Base or Adjusted UCAP Obligation – LDA UCAP Cleared in BRA and in IAs – LDA Short Term Resource Procurement Target

- Final CTRs (MW) = Adjusted CTRs determined after Final IA
- Final CTRs in the LDA are allocated to LSEs pro rata based on the **Daily Unforced Capacity Obligation** that they serve in zones included in the LDA

The allocated CTRs will be reallocated to LSEs on a daily basis as load switches between retail suppliers within each zone.

Base Economic Value of CTRs determined after Base Residual Auction.

$$\text{Base Economic Value (\$/day)} = (\text{Base CTR MWs}) * (\text{BRA Locational Price Adder, relative to Parent LDA})$$

Adjusted Economic Value of CTRs determined after each scheduled IA.

$$\text{Adjusted Economic Value (\$/day)} = (\text{Adjusted CTR MWs}) * (\text{Weighted Locational Price Adder, relative to Parent LDA})$$

Final Economic Value of CTRs = Adjusted Economic Value of CTRs determined after Final IA

- Weighted Locational Price Adder as a result of RPM Auctions is calculated as follows:

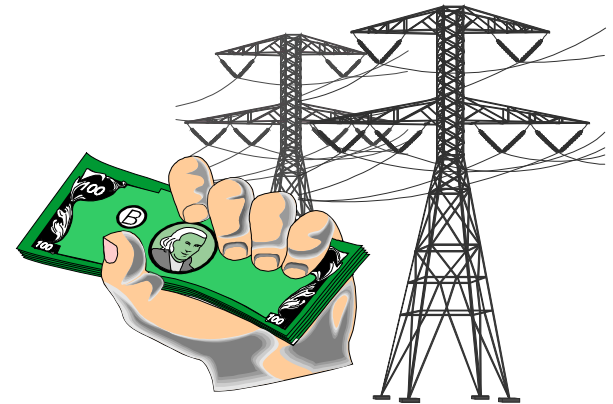
$$\text{Weighted Locational Price Adder} = \frac{\sum_{\text{All Auctions Conducted for DY}} \text{LDA Locational Price Adder} * \text{LDA UCAP MWs Cleared}}{\sum_{\text{All Auctions Conducted for DY}} \text{LDA UCAP MWs Cleared}}$$

Calculation excludes UCAP cleared as replacement capacity.

Incremental Capacity Transfer Rights ...

are allocated in MWs to a New Service Customer (or, for upgrades in PJM queue prior to March 1, 2007, to an Interconnection Customer) obligated to fund a transmission facility or upgrade through a rate or charge specific to such facility or upgrade, to the extent such upgrade or facility increases import capability into an LDA.

“Participant
Funded
Project”
ICTRs



Participants must provide PJM with advance notification of their intent to request Incremental CTRs by the date posted on RPM Schedule of Activities. Incremental CTRs will be certified by PJM at least 45 days prior to BRA.

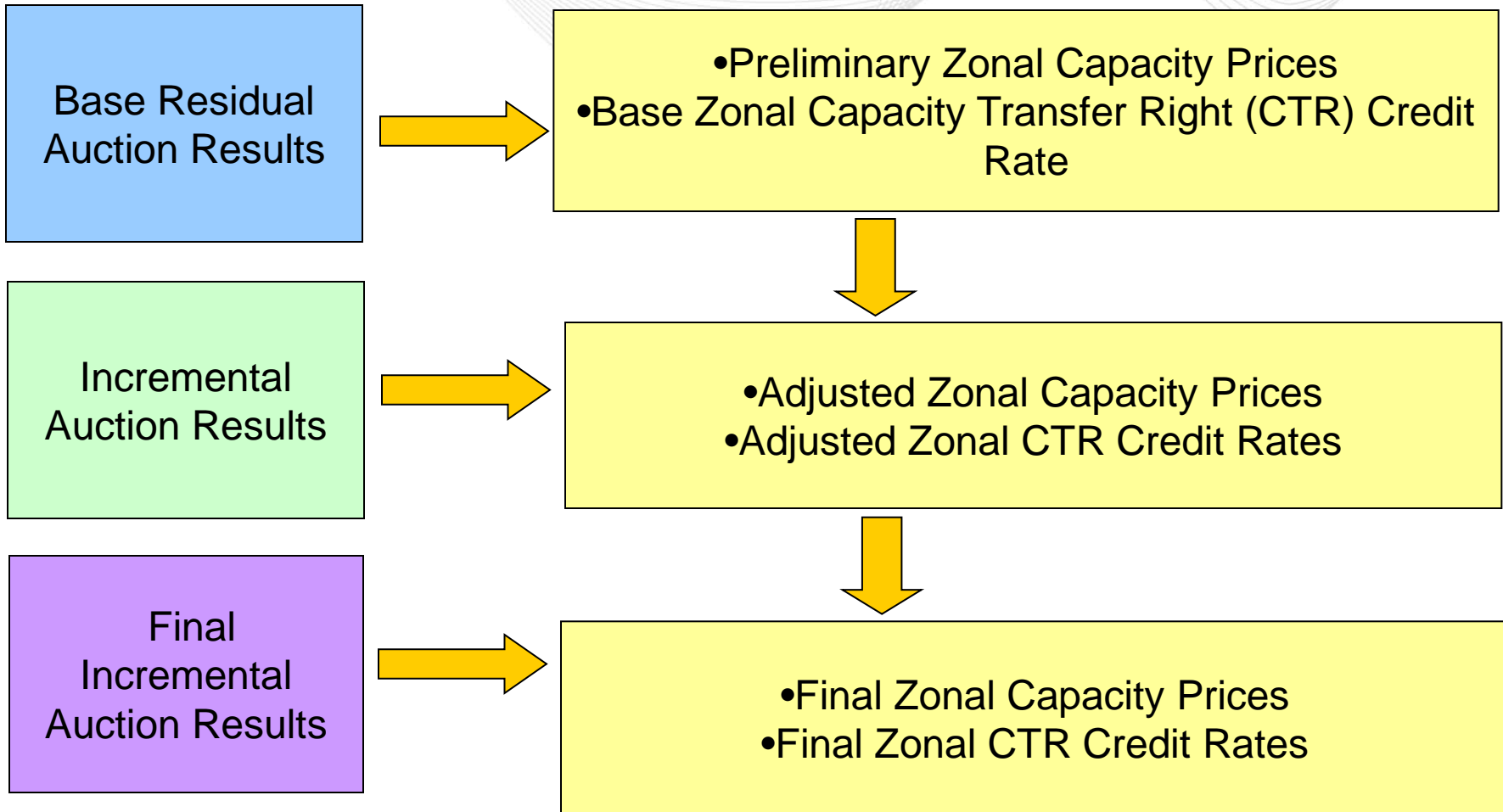
- Effective 12/13 DY, Incremental Rights-Eligible Required Transmission Enhancements are determined and allocated to Responsible Customers.
 - **Incremental Rights-Eligible Required Transmission Enhancements** are RTEP transmission upgrade projects 500 KV or higher. Effective 13/14 DY, below 500 kV upgrades that have a cost allocation to merchant transmission developers and to non-contiguous zones are also eligible for ICTRs.
 - **Responsible Customers** are Network Customers, Transmission Customers with an agreement for Firm Pt-to-Pt Service, or Merchant Transmission Facility Owners that are assigned cost responsibility for a Incremental Rights-Eligible Required Transmission Enhancement
- PJM determines increase in CETL into LDA(s) (i.e, the ICTRs into the LDA(s)) as a result of such enhancements planned for the DY.
- During the DY, each Network Customer (LSE) within a zone will be allocated a share of the zone's Regional Project ICTRs in proportion to customer's share of the zonal NSPL.
 - Allocations may change daily with retail load shifting.

- ✓ Incremental CTRs are effective for thirty years or the life of the facility or upgrade, whichever is less.
- ✓ However, if a customer funds advancement of a network transmission upgrade, the customer will receive Incremental CTRs for the years the upgrade is advanced based on the incremental CETL into a constrained LDA as certified by PJM.
- ✓ ICTRs are reallocated annually to reflect the annual recalculation of Transmission Enhancement Charges under section (c.) of Schedule 12 of OATT.
- ✓ Economic value of ICTRs from RPM Auctions are based on the LDA Locational Price Adders
- ✓ Total ICTRs awarded may not exceed CTRs calculated for such LDA

Rate	Equation	When posted?
Base Zonal CTR Credit Rate (\$/MW-day of obligation)	= Base Economic Value of CTRs allocated to LSEs in a zone from BRA/Base Zonal UCAP Obligation	With BRA clearing results
Final Zonal CTR Credit Rate (\$/MW-day of obligation)	=Final Economic Value of CTRs allocated to LSEs in a zone as determined after the Final IA/Final Zonal UCAP Obligation	With Final IA clearing results
Final CTR Settlement Rate (\$/MW-day of CTRs)	= Final Economic value of CTRs allocated to LSEs in a zone as determined after the Final IA/Final Zonal CTRs allocated to LSEs	With Final IA clearing results
Final Sink LDA ICTR Settlement Rate (\$/MW-day of ICTRs) <ul style="list-style-type: none"> •Participant-Funded Project ICTRs •Regional Project ICTRs 	= Final Economic Value of ICTRs in Sink LDA/Final ICTRs MWs in Sink LDA	With Final IA clearing results

- ✓ All RPM Auctions share the same objective of minimizing capacity procurement costs given supply curves, demand curves, and locational constraints.
- ✓ CTRs are a method of allocating the cost savings of importing less expensive capacity into a higher priced, constrained LDA.
- ✓ Incremental CTRs are allocated in MWs to a new service customer obligated to fund a transmission facility or upgrade if the project increases import capability into an LDA.
- ✓ Regional Project ICTRs associated with Incremental Rights-Eligible Required Transmission Enhancements are allocated to Responsible Customers.

Questions?



Locational Reliability Charge = Daily Zonal UCAP Obligation * Final Zonal Capacity Price

Preliminary Zonal Capacity Prices as a result of BRA are calculated as follows:

Zonal Capacity Price

=

Marginal Value Of System Capacity

+

Locational Price Adder(s)

+

Adjustment For Zonal Make-Whole Payments (if required)

+

Adjustment for adders paid to Annual Resources and Extended Summer DR in LDA(s) in which zone is located (if required)

Effective 2014/2015 DY

For zone in constrained LDA(s)

NOTE: Zonal Capacity Price is a weighted price if Zone includes multiple overlapping LDAs. Weighted average of RCPs for such LDA, weighted by UCAP MWs cleared in such LDA.

Adjusted Zonal Capacity Prices are determined after each Incremental Auction and include the results of BRA and all IAs conducted for the DY.

Adjusted Zonal Capacity Price

$$\begin{aligned}
 &= \text{Weighted Avg. System Marginal Price} + \text{Weighted Avg. Locational Price Adder} + \text{Adjustment For Zonal Make-Whole Payments (if required)} + \text{Adjustment for adders paid to Annual Resources and Extended Summer DR in LDA(s) in which zone is located (if required)} \\
 &\quad \text{(weighted by RTO capacity cleared in BRA and IA(s))} \quad \text{(weighted by LDA capacity cleared in BRA and IA(s))} \\
 &\quad \text{Effective 2014/2015 DY}
 \end{aligned}$$

For zone in constrained LDA(s)

Calculation excludes UCAP cleared as replacement capacity and any resource make-whole charged to buyers of replacement capacity.

- The **Final Zonal Capacity Prices** reflect the final price adjustments that are necessary to account for :
 - potential decreases in nominated values of existing demand resources cleared in the RPM Auctions (i.e., the existing demand resources that requested relief from deficiency charges due to permanent departure of load).

Final Zonal Capacity Prices are calculated such that the:

Payments

Total Payments to :

- Incremental CTR Holders
- Resources cleared in all Auctions, except resources cleared as replacement capacity
- Cleared QTUs
- LSEs receiving CTRs

=

Charges

Total amount of
Locational Reliability Charges
(assessed to loads)

NOTE: The Final Zonal Capacity Price is not net of the Final Zonal CTR Credit Rate.

- ✓ Resource Clearing Price pertains to the price paid to generation resources and Zonal Capacity Price pertains to the price paid by load, not considering CTR credit. The prices may not be equal.

Questions?