

# Draft Final Proposal for Design of Convergence Bidding



Margaret Miller Senior Market Design and Policy Specialist

**MSC/Stakeholder Meeting** 

September 18, 2009

#### **Meeting Objectives**

- To review policy and invite input on key implementation and policy features for virtual bidding
  - Draft Final Proposal posted on September 14 at: http://www.caiso.com/1807/1807996f7020.html

 Written comments are requested by close of business October 2 to:

mmiller@caiso.com



# A number of key elements were added to the Draft Final Proposal

- SC certification
- Updated cost allocation proposal for IFM and RUC Tier 1 Uplift
- GMC charges for convergence bidders
- Proposal for CB at the interties
- Credit proposal updated to calculate nodal reference prices
- Updates to CRR settlement rule
- Proposal for bid volume limits
- Results of initial RUC testing



# The ISO proposes that convergence bidding be implemented at the nodal level

- With 10% position limits per market participant to be phased out over the course of a year
  - 10% limit in place for first 8 months
  - 50% limit months 9 through 12
  - After 12 months no limit
  - No limits on hubs or LAPs
- Including LAPs, interties and trading hubs

Market Participants continue to be divided on the issue of granularity of virtual bids



# Position limits would be set based on the following criteria:

Generation Nodes	Load Nodes	Scheduling Points
Tied directly to the capacity of the generator	Either by maximum MW amount that flows over that node over a period of time, or by the MWh volume of the peak withdrawal at each node	MW value would be based on 10% of the rated capacity of the intertie.



# There are three types of safeguards proposed for virtual bids

- Bid volume limits
  - Addresses software limitation on <u>number of bids the system can</u> handle
- Position limits (lifted after 1 year)
  - Addresses the potential exercise of market power at a specific node
- Locational MW constraints
  - These limits will only be used when AC solution is not attainable

The ISO is committed to achieving an AC solution with the inclusion of virtual bids



#### Timing of credit check versus bid volume check

- Credit check occurs upon submission of virtual bids and looks at reference price and MW
- Volume limits checked at the close of the Day-Ahead Market (10:00 a.m.)
- SCs with unused bids available will be reallocated to those who need them on a pro-rata basis
- SCs still over the bid volume limit will have bids extra rejected on a first in first out basis



### **Convergence Bid Volume Rules**

#### Convergence Bid Volume Rules

- Each SC is initially allocated an equal share of virtual bids.
- At the close of the IFM submittal process, the CAISO will check if any SCs have used less than their limit. If so, any "extra" available bids will be reallocated on a pro-rata basis.
- At the completion of the re-allocation process, bids in excess of its volume limits will be subject to rejection based on a "last in, first out" rule.

#### Example

SCID	Limit	Submitted	"Extra"	Re- Allocation	Rejected
SC 1	2,500	3,500		300	700
SC 2	2,500	6,500		1,200	2,800
SC 3	2,500	2,000	500		
SC 4	2,500	1,500	1,000		



#### Credit / Convergence Bid Volume Process



#### **Changes to Pre-IFM Process**

- Maintain the MPM/RRD run, but use Bid-in Demand rather than forecasted Demand
  - Virtual bids may impact the market power of physical bids
  - Aligns bid mitigation with the IFM
  - LECG recommendation and FERC directive to use Bid-in Demand



# Initial testing performed on RUC to identify issues of compatibility with RUC and convergence bidding

#### Tests simulated:

- large quantities of virtual supply displacing physical supply in the IFM
- effect of nodal virtual demand changing the distribution of load clearing the IFM and thus altering the IFM supply schedule going into RUC.
- Results discussed with stakeholders on the August 27 conference call and are included as Attachment C
- Initial testing showed no anomalous or extreme RUC results in terms of quantities and costs of RUC capacity or RUC prices.
- Additional testing will be performed on RUC once the ISO has a system in place to submit virtual bids under market simulation conditions



# Comparison of Costs and Limits on Virtual Bids

	Min	Admin Fees	Transaction Fees	BCR Uplift Fees	Bid Limitations
PJM	.01	Yes \$.045 per cleared bid	\$.06 per bid segment	Yes	<ol> <li>Ability to impose SC Daily Limit 3000 bid/offer segments</li> <li>Credit limits</li> <li>Nodal limits as needed</li> </ol>
NYISO	1 MW for first bid segment	Yes	<ul> <li>\$.10 per submitted virtual bid regardless of segments</li> <li>\$.05 for cleared bids (credited 50%)</li> <li>Sliding scale based on SCUC performance (min .03 – max \$1.00)</li> </ul>	Yes	<ol> <li>Total Volume 2X Generation Capacity at Location</li> <li>Soft Bid Volume Cap</li> <li>Credit Limits</li> </ol>
MISO	0.1MW	Yes .085 per cleared bid	No transaction fees	Yes	<ol> <li>Daily Virtual MW Limit can be imposed</li> <li>Credit Limits</li> </ol>
ISO- NE	1 MW	Yes \$.06 per cleared bid	\$.005 per bid segment	Yes	<ol> <li>Bid limits unknown</li> <li>Credit Limits</li> </ol>
CAISO	1 MW California ISO	Yes .065 to .085 per gross MWH	No transaction fee	Yes	<ol> <li>Credit Limits</li> <li>Bid volume limits</li> <li>Position limits</li> <li>Nodal limits as needed</li> </ol>

# Stakeholder process to address information release issues will launch in October

- ISO needs to take a broader look at information release now that new market design is in place
- Will address information release issues for physical as well as virtual bid data



# **Discussion on MPM Issues**

Eric Hildebrandt





## **Convergence Bidding on the Interties**



Market Surveillance Committee / Stakeholder Meeting September 18, 2009

#### **Design Principles**

#### Intertie schedules cannot violate scheduling limits

- NERC and WECC standards require this
- Operators need this certainty to run the grid reliably
- Virtual and Physical bids must clear against each other to set one price per pricing node
  - Just as is the case for internal transactions, virtual bids on the interties must be able to offset physical bids in order to be meaningful market instruments



#### **Proposal Overview**

- Two constraints will be enforced in the scheduling run
  - Constraint [1] is that  $PI+PE \leq limit$
  - Constraint [2] is that  $(PI+VI) + (PE+VE) \le limit$ .
- In the pricing run, only constraint [2] will be enforced
  - This will yield prices that reflect the interaction of physical and virtual
  - Physical results from the scheduling run will act as un-priced constraints in the pricing run
- Constraint [1], which exists in the market software today
  - Ensures compliance with applicable WECC and NERC standards
- A tagging requirement may be necessary
  - This will be evaluated in a separate Stakeholder process



#### Some numerical examples...

The following slides show examples of how various scheduling run scenarios play out in the pricing run

For these examples, we start with the following:

- Internal load is 110 MW
- Sign convention: Imports are negative
- The scheduling limit in both the import direction is -100 MW, and is 100 MW in the export direction



#### Case A: No congestion

[1] -0 + 0 < 100, not binding

[2] -(0 + 0) + (0 + 0) < 100, not binding





# Case B, ex. 1: Physical and P+V congestion in the same direction

[1] -100 + 0 = -100, binding in the import direction

[2] -(100 + 200) + (0 + 200) = -100, binding in the import direction



# <u>Case B, ex. 2</u>: Physical and P+V congestion in opposite directions

[1] -100 + 0 = -100, binding in the import direction

[2] -(100 + 10) + (0 + 210) = 100, binding in the export direction



### Case C, ex. 1: Virtuals create congestion

[1] -0 + 60 = 60, not binding

[2] -(0 + 0) + (60 + 40) = 100, binding in the export direction



California ISO

### Case C, ex. 2: Virtuals create congestion

[1] -100 + 0 = -100, not binding – degenerate case

[2] -(100 + 0) + (0 + 0) = -100, binding in the import direction



#### Case C, ex. 3: Virtuals create congestion

[1] -0 + 100 = 100, not binding – degenerate case

[2] -(0 + 0) + (100 + 0) = 100, binding in the export direction



### Case D, ex. 1: Virtuals relieve congestion

[1] -100 + 0 = -100, binding in the import direction [2] -(100 + 10) + (0 + 200) = 90, not binding



### Case D, ex. 2: Virtuals relieve congestion

[1] -100 + 0 = -100, binding in the import direction [2] -(100 + 10) + (0 + 200) = 90, not binding



### **Tagging Requirement**

- The ISO is considering a tagging requirement for physical intertie schedules
- There could be incentives to engage in implicit virtual bidding when virtual bidding is available although prices will discipline this behavior
- The tagging requirement will be considered as part of a subsequent stakeholder process as discussed at the July 9<sup>th</sup>, 2009 stakeholder meeting





# **Cost Allocation for Convergence Bids**



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### GMC for Convergence Bidding Proposal

- SMCR, Forward Schedule and Market Usage (DA) service charges applicable to Convergence Bidding
- However, current billing units poorly aligned with convergence bidding
- Proposal
  - SMCR unchanged Applies to any CB choosing to be a SC
  - Create new service charge to recover Forward Energy and Market Usage (DA)
  - Billing Units: Gross MWh
  - Rate: \$0.065 \$0.085. Consistent with other ISOs. Exact rate to be established in the 2011 GMC Extension stakeholder process beginning January 2010.



## Average Dollars of BCR Uplift





## Obligation for Virtual Demand to pay IFM Tier 1 Uplift

- Allocate IFM Tier 1 Uplift to virtual demand when system wide virtual demand is positive.
- Obligation for virtual demand based on how much additional unit commitment was driven by net virtual demand that resulted in IFM clearing above what was needed to satisfy measured demand
- Allocated to SCs with a positive net virtual demand position



# IFM Tier 1 Uplift Formulas



IFM		\$ IFM Uplift			
Tier 1 Rate	=	$\Sigma_i$ (Max (0, IFM Demand <sub>i</sub> – SS Supply <sub>i</sub> )) + MAX(0,VD <sub>sw</sub> - VS <sub>sw</sub> ) + Min(0, PD <sub>sw</sub> - AD)			



# Obligation for Virtual Supply to pay RUC Tier 1 Uplift

- Extent CAISO forecast ≤ actual load RUC Tier 1 Uplift paid by net virtual supply and underscheduled load
- Extent CAISO forecast > actual load RUC Tier 1 paid by measured demand by ratio share
- Allocate RUC Tier 1 Uplift to virtual supply when system wide net virtual supply is positive
- Virtual Supply obligation to pay RUC Tier 1 Uplift would be based on pro-rata share of the total obligation as determined by their total (net) virtual supply bids



#### **RUC Tier 1 Uplift Formulas**





#### Proposal for Real-Time Bid Cost Recovery

- Costs related to bid cost recovery for short-start units started in Real-Time as a result of a RUC schedule will be allocated to net virtual supply and underscheduled load
- These costs would now be allocated through RUC Tier 1 Uplift rather than through Real-Time BCR Uplift
- Costs attributed to other factors that result in Real-Time uplift will continue to be allocated to Measured Demand until two-tier charge is developed



#### **Next Steps**

- Stakeholder comments due by close of business October 2
- ISO may make changes to proposal based on discussion today
  - If so, market notice will be sent with new comments deadline
- Implementation working group conference calls scheduled bi-monthly September to December
- Board of Governors meeting October 29,30

