



California ISO
Your Link to Power

California Independent
System Operator Corporation

Convergence Bidding Design Framework

**Farrokh A. Rahimi and David Withrow
Market and Product Development, CAISO**

**Market Initiatives Stakeholder Meeting
August 17, 2006**

Summary of Work to Date

- **Work-in-progress draft white paper posted**
 - Reviewed at July 18-19 Market Initiative
 - Reviewed at August 8 MSC Meeting

- **Updated draft posted August 14**
 - includes stakeholder comments received since July 18-19 stakeholder meeting
 - Outlines initial options for design elements

Convergence Bidding: General Stakeholder Input

- **EPIC Merchant Energy**
 - CAISO should design and implement virtual market with Release 1.
 - Virtual bidding increases competitiveness of DA market
- **Pacific Gas & Electric**
 - Generally supportive, but with appropriate monitoring and cautious rollout
- **Southern California Edison**
 - Don't implement until MRTU has demonstrated proper functioning for a period.
 - Appropriate oversight must be in place
 - Potential asymmetry with CPUC rules for IOUs

Convergence Bidding: General Stakeholder Input

- **Williams Power Company**
 - CAISO should be expected to implement virtual bidding as soon as practicable
 - VB reduces risk and and enhances market liquidity

- **WPTF**
 - VB should remain a high-priority item for release immediately following Release 1.



Proposed Approach for Continuing Design

- **Identify major design elements, each with one or more possible options**
- **Focus on top two or three major design elements, with the expectation that resolution on other elements will more easily follow**
- **Establish criteria for selection of recommended option for each design element, with a view to their internal compatibility**
- **The collection of the recommended options for different design elements defines the overall CB design**

Design Elements and Relevant Options

- **Measures to deter implicit virtual bidding (IVB)**
 - Option 1: None. Count on Explicit Virtual Bidding
 - Option 2: MMIP Protocols
 - Option 3: High penalties for real-time schedule changes with no CB tag
 - Other options?

Design Elements and Relevant Options (Cont'd)

- **Spatial granularity of virtual bids**
 - Option 1: Zonal (EZ Gen hubs and/or LAPs)
 - Sub-option 1a: LAPs for both virtual supply and virtual demand
 - Sub-option 1b: EZ Gen hubs for both virtual supply and virtual demand
 - Sub-option 1c: EZ Gen Hubs for virtual supply and LAPs for virtual demand
 - Option 2: Nodal
 - Option 3 (New based on MSC input): Same spatial granularity for virtual and actual (physical) bids [LAP for virtual demand and nodal for virtual supply]
 - Option 4: Other (e.g., sub-LAPs commensurate with tiered CRR nominations or step 3 of the LAP clearing problem mitigation?)



Design Elements and Relevant Options (Cont'd)

- **Choice of zonal virtual bid distribution factors**
 - Option 1: Same distribution factors for virtual and actual (physical) schedules in the relevant market (likely different distribution factors in DA and RT)
 - Option 2: Fixed distribution factors for both DA and RT (from distribution factors library)
 - Option 3: Use DA physical distribution factors for both DA and RT virtual bids
 - Other options?



Design Elements and Relevant Options (Cont'd)

■ **Market Power Mitigation Measures**

- Option 1: No mitigation for virtual bids
- Option 2: Limit number of virtual bids per SC and number of bid segments per virtual bid
- Other Issues:
 - Any changes needed in pre-IFM (MPM RRD)?
 - How to treat virtual bids if pre-IFM is based on bid-in demand?



Design Elements and Relevant Options (Cont'd)

■ Pricing and Unit Commitment

- Option 1: Maintain current restriction on the pool of units for IFM as determined in pre-IFM
- Option 2: Lift restriction on the pool of resources for IFM

■ Bid price-quantity provisions

- Option 1: Allow only priced virtual bids (no price taker VB)
- Option 2: Allow both price taker and priced virtual bids
- Option 3: (If both zonal and nodal VB allowed) allow only priced virtual bids for zonal VB, but only price taker virtual bids for nodal VB.
- Other options?

Design Elements and Relevant Options (Cont'd)

■ Credit and Collateral

– Collateral requirements

- Option 1: Constrain VB participation based on credit posting (VB quantity times proxy clearing price)
- Option 2: Revise SC credit requirements based on the introduction of CB in CAISO markets
- Option 3: Constrain VB participation initially; then move to a more conventional credit policy

– Proxy clearing price for collateral computations

- Option 1: Reference clearing price based on some percentile (97%?; 50%; other) of the highest actual price during the previous 90 days (or a different period?).
- Option 2: Other?

Design Elements and Relevant Options (Cont'd)

■ Cost Allocation

- IFM and RUC Unit Commitment cost allocation
 - Option 1: Exempt virtual bids from unit commitment cost allocations
 - Option 2:
 - Include DA virtual demand bids (along with actual demand) as billing determinants for DA Unit Commitment uplift cost allocation
 - Include DA virtual supply bids (along with under scheduled demand) as billing determinant for RUC cost allocation
- Ancillary Service cost allocation
 - Option 1: Exempt VB from A/S cost allocation
 - Option 2: Exempt VB from Tier 1 A/S cost allocation (based on User Rate), but not from A/S neutrality cost allocation (including both virtual supply and virtual demand)

Evaluation Criteria for Design Options

- **Consistency with previously approved policies and design elements**
- **Level of functionality (responsiveness to market needs)**
- **Simplicity and ease of implementation**
 - CAISO
 - Market Participants
- **Market efficiency impact**
- **Market power mitigation and gaming concerns**
- **Other?**

Proposed Next Steps

- **Concentrate primarily on the following design elements to start with:**
 - Spatial granularity of virtual bids
 - Choice of distribution factors for DA and RT virtual bids
 - Market power mitigation measures
 - Target date: Work out recommended option for each by mid-September for inclusion in Board memo for October
- **Follow up with other design elements**
 - Target date: Work out recommended option for all by mid-November for inclusion in Board memo for December