



California Independent
System Operator Corporation

Zonal Procurement of Ancillary Services and Other Day-Ahead Reliability Constraints

Market Surveillance Committee Meeting

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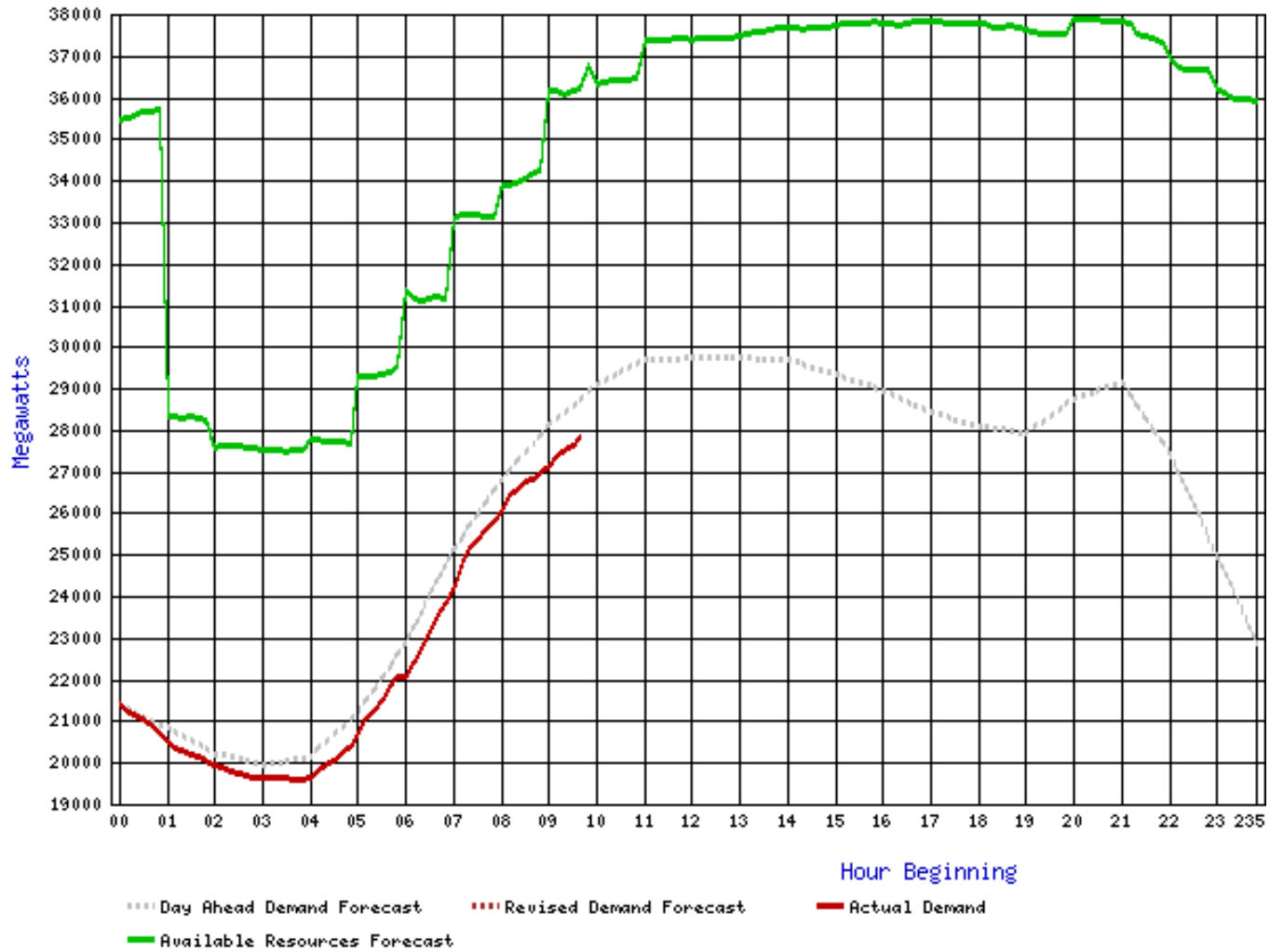
Chairman of the Market Surveillance Committee

Reliability Constraints

- **ISO Operators appear to require pre-specified amounts of unloaded generation capacity at various locations throughout ISO control area**
 - Granularity in demand for unloaded capacity greater than current zonal boundaries
- **Total amount of unloaded generation capacity required (including day-ahead ancillary services purchases) is greater than 7% of day-ahead demand forecast**
 - Conclusion—Operators appear to require more unloaded capacity to operate system than Western Electricity Coordinating Council (WECC) minimum operating reserve requirements
 - Not all of the unloaded capacity is 10-minute responsive
- **Must-offer waiver denial process can also be used to ensure that sufficient capacity at needed locations is on and available to bid into ancillary services market**
 - Generally not the ISO operator's primary reason for denying waivers
 - Whether these units bid into A/S market or not is not critical to reliability
 - Operators want the waiver-denied units available in real-time
 - Waiver-denied generation units are allowed to bid into ancillary services
 - Can receive market-clearing price of ancillary services if capacity is taken in market



May 22, 2006 Graph of Demand, Forecast Demand, and Unloaded Capacity



Reliability Constraints

- **For ISO operators to procure ancillary services on a system-wide basis and obtain locational unloaded capacity necessary to operate system, large amount of generation capacity may need to be issued waiver denials**
 - Issuing a waiver denial requires ISO to pay start-up, no-load, minimum load operating costs and imbalance energy payments to generation owners
 - Potentially expensive way to obtain necessary locational reserves
 - Imposes additional costs on generation unit owners to keep units operating
 - May increase number of times generation unit is started and stopped

Locational Ancillary Services

- **ISO operators should specify locational ancillary services needs and procure to these needs**
 - Higher ancillary services prices at those locations in need of additional reserve capacity is proper economic signal
 - A/S prices near major load centers where it is expensive to site generation versus prices in the middle of the state where it is less expensive to site generation
 - Under MRTU, ancillary services needs could be specified at nodal level
 - Under current zonal design, operators would need to purchase locational A/S out-of-sequence (OOS) and pay as bid
- **ISO operators should have freedom to set aggregate amount of ancillary services requirements above 7% minimum if reliability of grid requires it**
 - Procurement criteria should be as transparent as possible
 - Different rates of responsiveness to suit needs of ISO operators
- **Apply local market power mitigation mechanism (LMPM) to procurement of A/S if certain suppliers have local market power**
 - Extend existing LMPM to A/S market

Locational Ancillary Services

- **Issuing must-offer waiver denials to obtain unloaded capacity introduces a number of market inefficiencies**
 - Sets price for ancillary services too low for areas in need for more reserve capacity and too high in areas that do not need of more reserve capacity
 - Distorts locational investment signals
- **Clear criteria for amount and location of reserves as a function of system conditions will improve market efficiency**
 - Only those generation units actually needed for reserves will be paid for reserves
 - Only those generation units needed for reserves will required to provide reserves

Using Interruptible Loads

- **Large load-serving entities (LSEs) have substantial amounts of MWs in interruptible loads**
 - These loads count towards LSE's resource adequacy (RA) requirement
 - ISO operators have provided evidence that amount that these loads count towards RA is significantly less than nominal amount of interruptible capacity procured by LSEs
- **How and when should interruptible loads be used to provide reserves?**
 - Because virtually all interruptible contracts have maximums on number of times a customer can be interrupted, LSEs should make this determination
 - If LSE makes available to ISO less than its RA requirements in generation, then ISO should assume that remainder is being supplied by interruptible customers
- **ISO should procure ancillary services taking into account how LSEs are able to use interruptible loads**
 - ISO should not purchase additional reserves to make up for fact that a LSE is using interruptible load to provide reserve

Concluding Comments

- **Must-offer waiver denial should not be used to obtain magnitude and locational of unloaded capacity**
 - Only purchase ancillary services needed
 - Limit amount of unloaded capacity
- **ISO operators should have discretion to specify and purchase magnitude of reserves in locations needed to operate system in reliably**
 - Criteria should be clearly specified and transparent as possible
- **LSEs should have flexibility to use interruptible loads to reduce ancillary services needed**
 - Criteria for how interruptible loads are used should be clearly specified and transparent as possible
- **Ancillary services purchases should be subject to LMPM**