



California ISO
Shaping a Renewed Future

**Priority Use of Operating Reserves During
Disturbance Control Standard (DCS) Events
Draft Final Proposal**

**Provided in Support of Stakeholder Process to Consider
Refinement of ISO Market Requirements**

March 14, 2012

Draft Final Proposal for Priority Use of Operating Reserves During Disturbance Control Standard (DCS) Events

1. Introduction and Background

The ISO proposes to prioritize Operating Reserve capacity thereby changing the dispatch order when necessary to recover Area Control Error¹ (ACE) following a potentially Reportable Disturbance. As per the North American Electric Reliability Corporation (NERC) Reliability Standard on Disturbance Control Performance (BAL-002-1):

- Reportable Disturbances are contingencies that are greater than or equal to 80% of the most severe single contingency
- The Balancing Authority shall
 - Activate sufficient Contingency Reserve to comply with the Disturbance Control Standard (DCS)
 - Return (within 15 minutes of a Reportable Disturbance) its ACE to
 - Zero, if pre-disturbance ACE was zero or positive or
 - Its pre-disturbance value, if pre-disturbance ACE was negative
 - Complete the Disturbance Control Recovery within 15 minutes of the start of the Reportable Disturbance.

As a Balancing Authority, the ISO must comply with the above requirements. Failure to do so may result in substantial financial and regulatory penalties on the ISO. The ISO is proposing a change to reduce the risk that it will not be able to recover from a DCS event compared to using the current contingency dispatch that does not differentiate between the capacity dispatched from certified and awarded operating reserves and capacity without awarded operating reserves. The ISO market procures sufficient operating reserves for dispatch in the event of a real-time (RT) supply contingency. Resources certified and awarded to provide operating reserve capacity are certified and obligated to respond within ten minutes.² Accordingly, the ISO proposes to amend the ISO tariff to give priority to energy bids from resources providing operating reserve over energy only bids in response to a DCS contingency event to enhance its capability to meet the Disturbance Control criterion. The ISO anticipates that the priority provided to Operating Reserves in the real-time contingency dispatch would last not more than two ten-minute intervals. Once the ISO has recovered from the

¹ Area Control Error or ACE means the instantaneous difference between net actual and scheduled interchange, taking into account certain factors.

² Tariff-defined Operating Reserve consists of Spinning Reserve and Non-spinning Reserve. Resources providing either product are required to respond within ten-minutes. Resources providing Spinning Reserve are operating and synchronized to the grid. Resources providing Non-Spinning Reserve need not be operating or synchronized. In addition to procured Operating Reserves, in the event of a contingency, other resources that have capability can be utilized to aid in the recovery.

event, the ISO would revert either to the standard real-time contingency dispatch or the real-time economic dispatch.

2. The Reliability Issue

The ISO has observed that energy only resources as a whole do not respond to real-time contingency dispatches as reliably or as quickly as resources with certified and awarded operating reserve. Because the ISO cannot rely on all resources to respond timely in the real-time contingency dispatch, the ISO often overshoots the dispatch target in an attempt to secure sufficient capacity that will respond to mitigate the risk of failing to meet the contingency recovery requirement. Specifically, currently the recovery time can be impeded by how quickly a dispatched resource responds to a contingency dispatch. The slow or lack of response from energy only resources can add to the DCS recovery time, jeopardizing the ISO's capability to recover ACE within 15 minutes.

To recover ACE from a DCS event, the ISO currently utilizes a market functionality known as the ten-minute real-time contingency dispatch (RTCD). As currently designed and implemented, once activated, the RTCD converts contingency only operating reserve into available capacity and considers the energy bids from all resources in order to recover from the contingency. RTCD considers and economically optimizes all energy bids including energy bids from

- The resources providing operating reserves (including contingency only operating reserves) and
- The resources providing energy only capacity

For a resource that is awarded operating reserves and is also providing energy for dispatch, the energy not associated with operating reserves is typically priced at or below the energy associated with the operating reserves because the ISO assigns the awarded operating reserve capacity of a resource to the upper most operating range of the resource. As a result, the RTCD optimized dispatch order is more likely to dispatch energy from resources not explicitly awarded operating reserves capacity. This creates the risk of relying on non-operating reserve capacity to recover from the contingency. In addition, the RTCD action of economically decrementing resources in response to the constrained optimal solution may be undesirable particularly during a DCS event because at the time upward movement is critical for timely recovery³.

Operating reserves capacity is certified to support recovery and restoration of the grid in the event of a contingency since the resource must reach the requested MWs within 10 minutes of being instructed. The resources that are certified to supply operating reserves are subject to random testing and have gone through a certification process at the ISO.

³ Please refer to the [Reference 3 - Lesson Learned – Area Control Error Event](#)

The ISO is also concerned about how NERC/WECC compliance might view a DCS violation if the ISO dispatches energy from energy only capacity rather than energy from operating reserve. These concerns are underscored by a recent “lessons learned” guidance document issued by NERC to the System Operators.⁴ In this guidance document, one recommendation is not to rely on economic dispatch during the recovery period and only returning to an economic electronic dispatch solution when the contingency has been resolved, which the ISO is proposing to do.

3. The proposal

The ISO proposes to modify the RTCD functionality to improve responsiveness to DCS events by prioritizing operating reserve capacity. Tentatively named DCS dispatch or DCSD, the new DCSD functionality will include energy bids from operating reserve capacity as well as energy bids from non-operating reserve capacity to recover from a major DCS event caused by a major disturbance, but will give priority to energy bids from resources with operating reserves over energy only bids. The DCSD will be deployable on a system wide or regional basis. The current RTCD methodology of using economic dispatch for both operating reserves and capacity without operating reserves will be retained and would still be used for non-DCS contingencies.

Price setting during DCSD

The ISO proposes that when utilizing the DCSD mode that the energy bid of the highest priced resource dispatched will be used to set the market price on a system-wide basis without losses or congestion. That is, the ISO is proposing a merit-order dispatch of operating reserve capacity and that the price of the highest priced resource dispatched will establish the market clearing price for all energy in any DCSD interval.

Comments received on the Straw proposal

Comments submitted suggested the ISO use prudent utility practice while meeting its reliability needs: Resources awarded operating reserve (Contingency Reserve under NERC) are procured specifically for the loss of large resources, load forecast errors, forced outages and local area protection. Using these resources is prudent and follows the guidance issued by both NERC and WECC.

Some commenters opposed letting “out-of-market” resources set market wide prices: The ISO is not proposing to use out-of-market resources. The ISO assumes the commenter opposed letting out-of-merit resources to set a market wide price. As discussed above, the DCSD would use in-market resources but prioritize the resources awarded operating reserve over energy only. Then the

⁴ Please refer to the [Reference 3 - Lesson Learned – Area Control Error Event](#)

ISO would dispatch operating reserve in merit order and use the price from the highest price resource to set the market clearing price. Such dispatches are not exceptional dispatches or out-of-market. The ISO is proposing to create merit order stacks—one stack with operating reserves and the other energy only capacity—the ISO is proposing to utilize a merit order dispatch within each stack. While it is possible that operating reserve capacity will have higher energy bid prices than non-operating reserve capacity, the ISO believes that relying on more reliable capacity for one or two ten minute intervals in order to timely recover from a DCS events justifies potentially higher market prices. NERC requires we activate sufficient **Contingency Reserve** to comply with the Disturbance Control Standard or face sanctions for non-compliance.

One stakeholder requested the ISO report back to stakeholders on how often has the ISO used the provision discussed here and what has been the response from the participating generation. The ISO agrees to perform the analysis and present it to the stakeholders during the Market performance and planning forum (MPPF) 12-14 months after the feature is activated in the production environment.

4. Process and Timetable

The proposed time for the stakeholder initiative culminates in taking a policy recommendation to the ISO Board of Governors in May 2012. The table below summarizes the key steps in the stakeholder process with the release of this combined issue paper and straw proposal and ending with the submission of the ISO management to the Board.

✓ February 9, 2012	Issue paper and straw proposal posted
✓ February 16	Stakeholder Conference call
✓ February 24	Comments due
March 14	Draft Final Proposal Posted
March 21	Stakeholder conference call
March 30	Comments due
May 16-17	Board of Governors meeting

5. Conclusion

The ISO will conduct a conference call to review this Draft Final proposal on March 21, 2012 from 01:00 PM to 03:00 P.M PDT. The ISO appreciates stakeholder comments and discussion on the ISO proposal on DCSD. Please send your comments by close of business on March 30, 2012 to DCSEventDispatch@caiso.com.

References:

1. NERC Disturbance Control Performance Standard, BAL-002-X
 - <http://www.nerc.com/files/BAL-002-0.pdf>
 - <http://www.nerc.com/files/BAL-002-1.pdf>
2. WECC Standard BAL-STD-002-0 – Operating Reserves
 - <http://www.wecc.biz/library/Documentation%20Categorization%20Files/Regional%20Standards/BAL-STD-002-0.pdf>
3. Lesson Learned – Area Control Error Event
 - http://www.nerc.com/files/NPCC_Area_Control_Error_Event.pdf