

Briefing on Market Design and Infrastructure Policy Initiatives

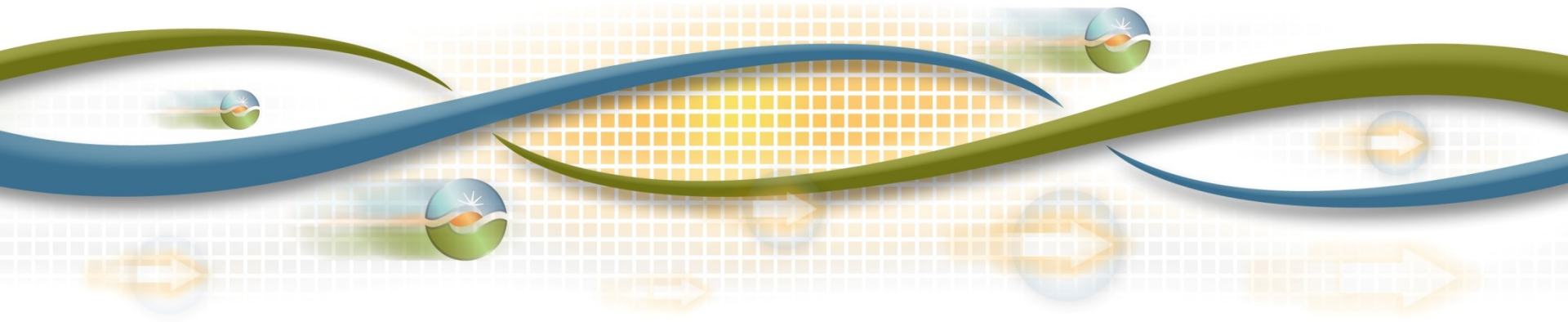
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Board of Governors Meeting

General Session

December 13-14, 2012



Recent FERC Order and stakeholder comments led management to extend the schedule for flexible ramping product.

- ISO delaying implementation of flexible ramping product to focus resources on implementing real-time market structure enhancements.
 - FERC Order 764 provides opportunity to address inefficiencies caused current real-time market structure.
- Market design and infrastructure policy initiative catalog reviewed and prioritized with stakeholders.
 - Stakeholders indicated support for new focus and revised schedule.

FERC Order 764 requires the ISO to offer 15 minute scheduling opportunity for intertie resources.

- Leverage existing functionality to allow 15 minute schedule updates and minimize seams issues:
 - Three settlements market by making 15 minute real-time unit commitment financially binding
 - Significant benefits for renewable resources by providing 15 minute scheduling opportunity closer to real-time
 - Addresses real-time market offset costs
 - Revisit convergence bidding at intertie pricing points
- Proposed schedule:
 - Board decision May 2013
 - Order 764 compliance filing September 2013
 - Implementation spring 2014

Proposed implementation schedule of renewable integration market design changes:

- **Fall 2013**
 - Lower bid floor and bid cost recovery separation, bid cost recovery mitigation measures
- **Spring 2014**
 - FERC Order 764: 15-minute market
 - Dynamic transfers to allow sub-hourly intertie schedules
 - Decremental bids for renewable resource self-schedules
- **Fall 2014**
 - Flexible ramping product
 - Integrating residual unit commitment and integrated forward market

The annual stakeholder initiatives catalog process categorizes and ranks identified market design and infrastructure policy enhancements.

Initiative Status	Initiative Type
Completed (25)	<ul style="list-style-type: none">• Stakeholder process completed (but may still be pending other processes)
In progress (12)	<ul style="list-style-type: none">• FERC-mandated (5)• Non-discretionary (7)
Not yet in progress (45)	<ul style="list-style-type: none">• FERC-mandated (7)• Non-discretionary (2)• Discretionary<ul style="list-style-type: none">• Infrastructure policy (3)• Market design (33)

Stakeholder input and ISO analysis is used to rank discretionary market design initiatives.

- Grid reliability and market efficiency benefits weighed against cost estimates
- Highest ranked discretionary market design initiatives:
 1. Address transient price spikes, real-time imbalance energy offset / real-time congestion offset
 2. Additional constraints, processes or products to address exceptional dispatch (30 minute reserve capacity)
 3. Multi-year forward reliability capacity pricing mechanism
 4. Clearer definitions for how use limited resources such as demand response and storage qualify for resource adequacy
 5. Alternative pricing mechanism

Work has already begun on some of the highly ranked initiatives.

- Address transient price spikes, real-time imbalance energy offset / real-time congestion offset
 - Transmission constraint relaxation parameter change
 - FERC Order 764 market changes
 - Flexible ramping product
- Multi-year forward reliability capacity pricing mechanism
 - CPUC/ISO capacity market forum planned for February 26
- Other high ranked initiatives addressed in annual planning process

Planned and ongoing market design and infrastructure policy initiatives will provide significant improvements.

- Facilitate renewable integration through
 - Enhanced opportunities for renewable resources to schedule and participate in market dispatch
 - Efficiently managing a diverse resource mix of flexible capacity secured based on forecast needs
 - Compensating resources (regardless of technology) for providing flexibility
- Improve quality of market modeling and results to reduce exceptional dispatches
- Continue to improve the generation interconnection process