

# Memorandum

**To:** ISO Board of Governors  
**From:** Petar Ristanovic, Vice President of Technology  
**Date:** August 18, 2011  
**Re:** **Briefing on Market Initiatives Release Plan**

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***This memorandum does not require Board action.***

## EXECUTIVE SUMMARY

Software deployments are typically avoided during the summer months due to high load conditions and the need to focus on system operations without changes. Management has proceeded with making measured changes that are critical to resolving market conditions. As an example, ISO staff developed and deployed a change in August for a dynamic ramp rate in ancillary service procurement that will ensure that resources that are awarded ancillary services are optimized and deliverable.

The primary focus of the technology team is on the fall 2011 release, which is progressing as planned with design and development of the *Credit Reform in Organized Energy Markets*, *Reliability Demand Response Product* and *72-Hour Residual Unit Commitment*. Staff has added the changes associated with the *Dynamic Transfers* interim solution and *Grouping Constraints* to the fall 2011 release.

Looking ahead to the spring of 2012, Management plans for the *Regulation Energy Management* initiative to allow for non-generation resource, such as storage, to provide regulation service and other functionality to support the integration of renewable resources to be ready in this timeframe. Management also initiated work on the implementation of *Enhancements in Local Market Power Mitigation*.

Beyond the spring 2012 release, Management will continue to implement the policy required to evolve the market and respond to market performance metrics. Considerable discussion is occurring with the stakeholder community on enhancing aspects of the day-ahead and real-time markets. Further, staff is preparing our systems for the integration of renewable resources and the incorporation of distributed energy resources. The capital budget forecast will pace what we are able to delivery over the next three to five years.

## **THE RELEASE PLAN**

### ***Production update***

As a follow-up on prior initiatives, Management is monitoring and enhancing *Multi-Stage Generator Modeling* and *Convergence Bidding*.

#### *Multi-Stage Generator Modeling*

There are currently seventeen multi-stage generator resources modeled in the market and the ISO anticipates that two more will be activated in August 2011. Management is pursuing further enhancements to *Multi-State Generator Modeling* and continued discussion with stakeholders with intent to bring a final proposal to the Board in October. Management is targeting deployment of three of these enhancements before year end and will activate them as we gain tariff authority.

#### *Convergence Bidding*

Intertie points modeled as market scheduling limits were not held to the correct limits by the dual intertie constraint functionality and nine intertie locations were suspended from virtual bidding. ISO staff resolved this issue on July 20, 2011.

### ***Fall 2011 release***

The fall 2011 release, targeted for October 1, 2011, is a major release with significant new functionality in scope to address policy changes that have already completed the stakeholder process.

#### *Credit Reform in Organized Energy Markets*

On October 21, 2011, FERC issued "Order 741 - Final Rule Regarding Credit Reforms in Organized Wholesale Electric Markets". In this ruling FERC requires each ISO and RTO to submit a compliance filing including tariff revisions to improve the management of risk and the subsequent use of credit in the organized wholesale electric markets or to demonstrate that its existing tariff already satisfies these regulations. We are aiming to implement process and system changes to ensure compliance with these two FERC mandates by October 1, 2011. Among these requirements are:

1. Shorten both the billing period and the period for payment to no more than seven days each.
2. Eliminate unsecured credit in all firm transmission rights or equivalent markets, including the ISO's congestion revenue rights markets.

In conjunction with these changes, management proposed additional improvements to the settlements timeline which will further accelerate payments and credits due to recalculations. We prefer to combine these efforts to gain the efficiencies of software design, development and testing. The stakeholder process for the additional settlements timelines changes concluded and the Board approved the proposal in July. Staff posted technical specifications, BPM changes and the market simulation plan. Software development is complete and testing is underway. Staff plans to begin market simulation on August 15, 2011.

### *Grouping Constraints*

Management is pursuing an enhancement in *Grouping Constraints* that will reduce exceptional dispatch or dispatch blocking by recognizing sequencing constraints and other parameters across resources. Staff published a technical bulletin to satisfy stakeholder questions. Software changes are complete and testing is underway. This feature is targeted for the fall release with market simulation in late August through mid-September.

### *Dynamic Transfers – interim solution*

This feature will allow the ISO to use the most recent available telemetry reporting of the resource's output as its expected deliverability and real-time dispatch for the next dispatch interval. Current implementation assumes the internal dispatch shall be fixed at the state estimator solution for non-compliant resource or the resource without a bid; the external dispatch shall be the last compliant dispatch for non-compliant resource and zero for the resource without a bid. The new feature will echo back the most recent telemetry as the external instruction (dispatch operating target) allow the resource to get the dispatch instruction closer to its variable output unless there is some constraints such as congestion or over-generation that would prevent the persistent dispatch at the most recent telemetry. This feature will improve the intermittent resource modeling. Management filed the tariff for the interim solution on July 27, 2011 requesting effective date of November 1, 2011. It is also targeted for the fall release.

### *Reliability Demand Response Product*

The *Reliability Demand Response Product* is a wholesale demand response product that enables compatibility with, and integration of, existing retail emergency-triggered demand response programs into the ISO market and operations, including newly configured demand response resources that have a reliability trigger and desire to be dispatched only under particular system conditions.

The development of the market changes for the *Reliability Demand Response Product* is complete and testing is underway. The vendor responsible for changes in the demand response system is behind schedule and staff has adjusted the market simulation and deployment plans accordingly. Staff published the implementation plan and market simulation plan to engage market participants for the start of market simulation on August 22, 2011 for the market functionality. An additional week of market simulation was added in September for full end-to-end validation using the demand response system. The code deployment will occur on October 1, 2011 for the market functionality and on October 11, 2011 for the demand response system; however the tariff effective date will be in the spring of 2012.

### *72-Hour Residual Unit Commitment and Integrated Forward Market and Residual Unit Commitment*

The *72-hour Residual Unit Commitment* is intended to improve economic efficiency and reliability by extending the unit commitment process to 72 hours, rather than the current process of 24 hours. It will automate extremely long start process that economically commits the extra long start units for the trade days after the next day. The development of the base functionality is complete and testing is underway. The market simulation schedule has been adjusted to reduce risk by separating this functionality from the credit reform and settlement timeline

changes. The revised deployment date is with the October monthly release on October 11, 2011.

## **December 2011 Monthly Release**

### *Grid Management Charge Rate Structure Change*

Management is also implementing the change in the grid management charge rate structure which will be achieved by year end. Staff completed the business requirements and worked with the software vendor to design the system changes for congestion revenue rights rates. Additionally, staff will ensure that business processes and procedures are updated to reflect the new rate structure.

### *Generation of Bids for Non-Resources Specific Resource Adequacy*

Suppliers of resource adequacy capacity have the obligation to bid that capacity into the ISO market. The ISO therefore has tariff authority to insert generated bids for resource adequacy resources that fail to bid into the market. There are gaps in this process, however, when it comes to the case of system or import resources that are not resource-specific but do have resource adequacy contracts (non-resource specific resource adequacy resources). Through this project, the ISO will implement the established policy with non-resource specific resource adequacy to allow the proper enforcement of the resource adequacy capacities for those non-resource specific resource adequacy resources.

Since resource capacity is planned on an annual basis, Management is targeting deployment of the necessary process and system changes in December 2011. Management is proceeding with a simplification to limit the functionalities only to enforce the bidding requirement based on hourly resource adequacy and facilitate hourly resource adequacy display for operations this year and the remaining scope would be achieved next year. Management filed tariff language and the software changes are in progress. Market participants have raised several questions regarding the implementation which have been addressed through a frequently asked questions document.

### *Flexible Ramping Nomogram*

The implementation of a new *Flexible Ramping Nomogram* in the market optimizations will help ensure sufficient ramping capability is available to meet conditions in the five-minute market interval when conditions have changed from the assumptions made during the prior procurement procedures. Enforcement of the nomogram can produce opportunity costs for resources that resolve the constraint. A stakeholder process to address how to appropriately compensate resources that resolve the constraint will conclude in August and be presented to the Board for decision. Staff is working on the software development and testing to make the necessary changes to support the compensation component. Management anticipates deploying the revised flexible ramping nomogram prior to year end or in early 2012.

## **Spring 2012 release**

### *Regulation Energy Management*

*Regulation Energy Management* is a proposed market enhancement to the rules the ISO uses for procuring regulation services. This enhancement will allow new types of storage resources,

such as batteries and flywheels, to provide regulation service. Implementing regulation energy management will lead to increased participation in the ancillary service market by energy storage and demand response resources and will support the integration of additional renewable resources. *Regulation Energy Management* also allows new storage technologies to provide regulation energy over a continued sustained period. Staff made significant progress in defining the non-generator resource model for regulation energy management and engaged our vendor in the software design. Additionally, the business requirements have been shared with market participants to facilitate their understanding of this new model. The target deployment is the spring 2012 release.

#### *Enhancements in Local Market Power Mitigation*

Management plans to simplify and improve the design for local market power mitigation in accordance with FERC mandate to address issues with the current design. Staff completed the stakeholder process which received approval by the Board in July 2011. Staff is currently working with the vendor on the software design. Staff is also planning the test cases and market simulation required to be able to report back to the Board on the impact of these enhancements with and without the dynamic competitive path assessment.

#### *Release 2 – Three Years after MRTU*

The spring 2012 release timeframe will mark three years after new market deployment and four mandated market functions will need to be assessed in parallel with the evolving market and product needs related to renewable integration. Given feedback from market participants during the renewable integration market and product review stakeholder process to address these issues more holistically, management may seek to defer one or more of these items. These items include:

- 1) *Export of ancillary services* explores how to build the reservation of transmission capacity into the market optimization so that market participants who might have an obligation to supply ancillary service energy in real-time to neighboring control areas can serve this obligation;
- 2) *Bid cost recovery for units over multiple days* resolves instances in which a resource's run time crosses over from one operating day into the next;
- 3) *Two tier real-time uplift* responds to stakeholder concerns regarding the single tier approach and they have requested a two tier charge similar to day-ahead bid cost recovery where the first tier would allocate costs based on cost causation principles; and
- 4) *Scheduling and Logging for ISO of California to Scheduling Infrastructure Business Rules* interface will address the current situation where the bidding interface extends bids and generates bids without taking outage information that was submitted in the outage interface into account. This will result in bids created over and above a unit's entire operating range even in those circumstances where the scheduling coordinator has submitted an outage derate. Management solicited stakeholder comments on the current need for this functionality and concluded that it is no longer a priority. Based on this input, Management may seek approval from FERC to eliminate this requirement.

- 5) *Residual unit commitment self schedules* is another item identified for implementation in this timeframe and staff is assessing the impact of this change with the overall changes being proposed through the *Renewable Integration Market and Product Review Phase 2*.
- 6) *Multi-Segment Ancillary Services Bidding* is an item where the ISO is directed to file a report with the FERC that addressed the potential benefits of including multi-segment ancillary services bidding in the market design . Management will make a compliance filing that reports on the current status.

The *Renewable Integration Market and Product Review Phase 1* has identified two areas of implementation: enhancements to the Participating Intermittent Resource Program and changes in the bid floor cap. The impact assessment of these two efforts is in progress. Staff will monitor these impacts as the stakeholder process continues leading to decision at the October Board meeting.

### ***Fall 2012 release***

#### *Data Release Phase 3*

*Data Release Phase 3* is the final phase of an initiative established in 2009 to address the request of market participants to review ISO data release and accessibility policy following the implementation of the new market design. The objective is to release data which will enable market participants to better understand market results and participate more effectively in the ISO market. Phase 3 will address additional market data which will further improve overall market efficiency, and was approved at the May Board meeting. Implementation planning is underway with likelihood that deployment will be in the fall of 2012 in conjunction with a market results redesign effort.

### ***Spring 2013 release***

Other market initiatives, such as full scope of *Dynamic Transfers*, are being added to the release plan, populating the spring 2013 release timeline for full functionality. *Dynamic Transfers* policy explores the issues central to the potential expansion of ISO dynamic transfer scheduling policy. Staff is completing the business requirements for the *Dynamic Transfers* market design.

## **LOOKING FORWARD**

Management is committed to maintaining high quality and timely releases to satisfy these objectives, working with market participants to achieve the greatest value for investments made in evolving our systems, processes, and people to meet this challenge.