

Interdependencies of Market and Operational Changes to Address Resource Performance and Gas Dependency

Introduction

The ISO is pursuing market and operational changes to address risks identified in the Strategic Planning Initiative associated with unit performance and gas dependency. This document summarizes the issues each initiative seeks to address and how the interplay of the changes improves power system reliability and market efficiency. These changes address four areas of concern: **1) filling information gaps** with better and timely information to manage the power system; **2) enhancing market mechanics** to better enable resource performance; **3) improving market incentives** for resources to perform; and **4) procuring sufficient reserves** for reliability. The proposed actions comprise a comprehensive plan to address near- and long-term risks to the power system caused by increased dependency on natural gas and variable performance of resources.¹ The following table itemizes recent ISO proposals and illustrates the areas of impact for each.

ISO Action	1. Filling Information Gaps	2. Enhancing Market Mechanics	3. Improving Market Incentives	4. Procuring Sufficient Reserves
Increase information sharing with pipelines	January 2013			
Accelerate timing of Day-Ahead Energy Market and Reserve Adequacy Analysis	By June 2013			
Improve resource auditing rules	June / September 2013			
Enhanced consultation process for reference levels and offer reviews		October/November 2012		
Enable updates to energy offers in intra-day period		December 2014		
Enable hourly granularity for certain energy offer parameters		December 2014		
Implement sub-hourly settlements		~2015		
Make Demand Resource Capacity Resources eligible for energy payments			June 2012	
Increase Reserve Constraint Penalty Factor for Thirty-Minute Operating Reserves			June 2012	
Update Shortage Event triggers			October 2013	
Change penalties for failure-to-activate and reserve in Forward Reserve Market			October 2013	
Integrate Demand Response into the energy markets			June 2017	
Update Forward Capacity Market Performance Incentives			February 2014	
Increase reserve quantities in real-time, day-ahead, and in Forward Reserve Market				June 2012/ summer 2013
Create Reserve Constraint Penalty Factor for replacement reserves				October 2013
<p>Red: Completed, Green: 2013/2014, Blue: After 2014. Dates are effective dates (future dates are targets). Dark: action has direct impact on the problem; Light: action has indirect impact on the problem.</p>				

The ISO has already taken actions to address each of the four main problem areas. These efforts, shown in red in the table, will improve operations in the near term. These near-term actions are not sufficient, however, to fully address multi-faceted performance and gas dependency issues. Other

¹ The average response rate for New England's non-hydro generation resources was less than 60% of the amount requested during the 36 largest system contingency events of the bulk power system over the last three years.

enhancements are necessary, but will take more time to implement. Some require significant changes to software and settlement rules. Others—like strengthening of Forward Capacity Market (FCM) performance incentives—will not begin to impact performance for several years due to the forward nature of capacity commitment periods. The ISO expects to implement the proposals shown in green this year or the next, while the proposals shown in blue will take additional time. In addition, the ISO has identified the urgent need to address its growing concerns about the availability and flexibility of resources in the upcoming winter (2013/14), and future winters, until the FCM performance incentives are in place. The process to determine solutions to this critical reliability need for next winter is underway now.

Despite the varying implementation timeframes, the proposed actions and rule changes complement or build on one another. For example, changes that improve the mechanics of how and when suppliers make energy offers will enable improved performance, especially if coupled with stronger incentives to perform. Some of the longer term proposals, such as FCM performance incentives, are directionally consistent and more comprehensive than near-term changes, such as the change in the Shortage Event trigger. Several actions—such as changing the timing of the Day-Ahead Energy Market and Reserve Adequacy Analysis (DAM/RAA), improving auditing rules, and updating energy offers—address more than one area of concern. Certain short-term actions—such as the need to procure more reserves because of resource non-performance—can be easily recalibrated later to reflect any improvement in resource performance as a result of other rule changes.

Taken together, these actions comprise a comprehensive plan to address near- and long-term risks to the power system caused by increased dependency on natural gas and inconsistent resource performance. The proposed actions will better enable system operators to manage the wholesale power grid in the short-term and to achieve the same result more efficiently through market improvements in the longer-term.

1. Filling Information Gaps

To address the immediate need for better and timely information in order for the ISO to efficiently and consistently rely on the right resources, the ISO has taken—or will soon take—several actions.

- **The ISO altered its Information Policy to enable the ISO to share the scheduled and real-time output of specific gas generators with the region’s gas pipelines.** This change will heighten reliability by conveying—both to the ISO and gas pipeline operators—more accurate information about unit availability and operational capabilities. The Federal Energy Regulatory Commission (FERC) has accepted this proposed change on an interim basis to be effective from January 24, 2013 through April 30, 2013.
- **The ISO has proposed accelerating the deadlines for the DAM and RAA (currently 4:00 p.m. and 10:00 p.m.).** This change will provide more timely information for the ISO to commit long lead-time resources in advance of the morning load pick-up and will provide RAA schedules to gas units before the close of the gas trading day. The proposal has been filed with FERC—along with an alternative proposal from the New England Power Pool (NEPOOL)—and is expected to be in place by June 2013.
- **The ISO has enhanced its audit rules so the information available to the ISO reflects proven, historical performance.** Moreover, new rules allow the ISO to audit key operating parameters, such as a unit’s start-up time. Auditing of these parameters will improve information used for dispatch, thereby enhancing system reliability. The auditing changes related to reserve capability and generating capacity will be implemented, respectively, in the spring and fall of 2013.

2. Enhancing Market Mechanics

The ISO has taken—or will soon take—several actions to improve the mechanics of how and when suppliers make energy offers to increase the ability of resources to perform.

- **Enhanced consultation process for reference levels and offer reviews.** The ISO's Internal Market Monitor (IMM) issued a memo clarifying the ISO's process for evaluating participants' resource offers based on anticipated intraday natural gas purchases, which improves market mechanics by improving resource owners' ability to reflect their expected real-time operating costs. This, in turn, improves both market price signals and incentives to perform. The October memo was discussed with Market Participants in November 2013.
- **The ISO has proposed accelerating the deadlines for the DAM and RAA (currently 4:00 p.m. and 10:00 p.m.).** By issuing DAM commitments at 12:30 p.m. and RAA commitments by 4:00 p.m., gas unit owners will have more time to make fuel arrangements during the business day when trading desks are still open. The proposal is expected to be in place by June 2013.
- **The ISO is proposing to change the market rules to allow participants to update their offers in real-time to reflect changing fuel costs.**² Intra-day updates to offers will allow participants to better reflect actual fuel or other operational costs, improving market pricing and incentives to perform. This change is expected to be effective by December 2014.
- **The ISO is proposing to change the market rules to allow participants to submit certain supply offer parameters with hourly granularity.** This will enable participants to better reflect operational limits and costs that vary throughout the day, which will improve market pricing and incentives to perform. This change is expected to be effective by December 2014.
- **The ISO is evaluating the feasibility of sub-hourly settlement for dispatchable resources in the real-time markets.** This change would improve the incentives for better resource performance in response to ISO dispatch instructions, especially by flexible resources in response to rapidly changing system conditions such as contingencies. This change could be effective in 2015.

3. Improving Market Incentives

The low response rate of resources, on average, during contingency events in recent years and consistent, year-round issues with fuel availability indicate that performance incentive mechanisms in the ISO markets need to be strengthened. Providing incentives to perform, will also substantially improve the authenticity of information contained in the offers so that the ISO can appropriately rely on the data when making commitment and dispatch decisions. The ISO has identified a number of ways to improve incentives in several markets.

- **The ISO filed rule changes that provide energy market payments to Demand Resources providing capacity when they are dispatched.** This improves the incentive for Demand Resources to deliver during a capacity deficiency event. These changes were put into effect June 2012.
- **The ISO raised the Thirty-Minute Operating Reserves (TMOR) Reserve Constraint Penalty Factor (RCPF) from \$100 to \$500.** The \$100 RCPF limited the ISO's software from re-dispatching resources to provide adequate reserves, resulting in manual intervention

² The ISO will also make conforming changes to the Net Commitment Period Compensation (NCPC) payment rules to complement the ability for participants to modify their offers throughout the operating day.

by control room operators and depressed reserve prices. Raising the RCPF to \$500 allows the software to re-dispatch in nearly all conditions, thereby improving efficiency and price signals. This was implemented June 2012.

- **The ISO is proposing to change the definition of an FCM Shortage Event to ensure that penalties are triggered consistent with the risk to the power system.** The current rules subject a capacity resource to a penalty when it fails to perform during a Shortage Event, which occurs when ten-minute reserves are short for thirty minutes. Under the new proposal, the ISO is evaluating having events also be triggered when the system is experiencing a deficiency in Total Reserves for thirty or more minutes. This enhancement will better align system conditions with capacity requirements and improve incentives to perform under the current structure before the FCM Performance Incentives can be enacted. This change is expected to become effective in October of 2013.
- **The ISO is proposing to revise performance incentives for resources with Forward Reserve Market (FRM) obligations.** To enhance the incentives for participants to meet their FRM obligations, the ISO is improving the trigger for measuring resource performance to meet TMOR obligations under the Forward Reserve ‘Failure-to-Activate’ Penalty. The ISO is also modifying the Forward Reserve ‘Failure-to-Reserve’ Penalty Rate to better reflect replacement costs when FRM obligations are not met. The ISO expects that these changes will become effective in October 2013.
- **The ISO will integrate Demand Resources directly into the energy markets.** This will allow Demand Resources to be dispatched based on their energy offers and not solely as part of a capacity deficiency event (i.e., Operating Procedure 4 (OP-4)), which will improve market pricing and efficiency for all resources. This is scheduled for June 2017.
- **The FCM Performance Incentives project will replace existing Shortage Event penalties with much stronger incentives tied to resource performance during critical system conditions.** This change will strengthen the incentives for participants to make investments and change operational practices in ways that will improve resource availability when system needs are greatest. These changes are expected to be effective in February 2014—in time to conduct the ninth Forward Capacity Auction (FCA-9) for the 2018 Capacity Commitment Period.

4. Procuring Sufficient Reserves

Many of the projects outlined above will help to improve the ability of and incentive for participants to have their resources perform and this will better enable system operators to manage the system. But, some of the actions will not be implemented for a few years or more. The ISO needs to procure reserves based on realistic measures of actual performance and is pursuing initiatives to that end.

- **The ISO has improved its method to more precisely calculate the quantity of real-time ten-minute reserves to procure in real-time and day-ahead by taking the historical performance of resources into account.** This improved measurement has increased the amount of reserves available and meets applicable reliability standards, which has improved system reliability. This was implemented June 2012. The ISO has proposed to apply a similar non-performance factor to the Forward Reserve Market ten-minute reserve requirement for the summer of 2013.
- **The ISO is proposing to increase the real-time, day-ahead, and Forward Reserve requirement for thirty-minute operating reserves to reflect Replacement Reserves.** To better ensure that there is sufficient capability to manage various uncertainties throughout the operating day, the ISO is proposing to procure an additional amount of TMOR as Replacement Reserves.

The RCPF applicable to Replacement Reserves would be below the current \$500 level for TMOR. This change would be effective in October 2013.

Conclusion

These actions, along with other measures that will be identified in the next few months, should substantially address concerns about resource performance and gas dependence. In many cases, short-term actions are being taken to improve reliability in advance of the implementation of the longer-term actions, which provide more complete solutions. In general, the short-term approach is conceptually consistent with the longer-term proposal. Many of these actions also address multiple issues and complement one another. While additional actions may be identified going forward, the changes described in this document are expected to significantly improve the reliability of the New England power system and the efficiency of the markets.