



**FERC Order 764 Market Changes
Intermittent Resource Protective Measures
Draft Final Proposal**

August 15, 2013

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I. Introduction

The ISO Board of Governors approved the ISO's FERC Order No. 764 Market Changes proposal on May 15, 2013 that further prepares the ISO real-time market to better support the participation of intermittent resource in the ISO markets. The FERC Order No. 764 related changes proposed by the ISO provide a superior framework for scheduling intermittent resources in the real-time market, providing greater flexibility closer to real-time for such resources to limit their exposure to real-time energy imbalance changes associated with their uncontrollable variability. The new market structure significantly reduces the exposure to real-time imbalances thereby eliminating the need for the protection against exposure to hourly charges for uninstructed imbalance energy offered under the current Participating Intermittent Resource Program (PIRP).

Some owners of intermittent resources that do not have the ability to reduce their output maintain that these resources will have greater risk of undesirable real-time energy settlement under the new FERC Order No. 764 market structure. To address their concerns, this paper describes a proposal for "protective measures." These protective measures would enable resources that meet specified limited criteria to continue to be settled under the current PIRP monthly netting methodology for a maximum of three years.

The ISO's intent is that these protective measures would create a transition period for intermittent resources that face real-time market energy settlement risk that cannot be mitigated because they are unable to respond to ISO dispatch instructions to reduce output. This transition period would allow resource owners time to adapt to the new market. For example, they could upgrade intermittent resources based on older technology to current technology that is able to respond to ISO dispatch instructions, or they could develop different contractual arrangements with their counterparties.

The ISO proposes that these protective measures only last for a three-year transition period. While the ISO recognizes there is potentially a need for providing time for some resources to transition to the new market, it will be important for all resources to eventually transition to the new market design. As the ISO's FERC Order No. 764 market design changes recognize, it is vital that intermittent resources be able to reduce output during over-generation conditions. This is needed for the ISO to be able to integrate the large amounts of intermittent resources that need to come online to meet California's renewable resource goals.

The ISO will discuss the approach described in this paper with stakeholders as part of a stakeholder process and then present its final proposal to its Board of Governors at their September meeting. The schedule for the stakeholder process is described further below.

II. Changes to straw proposal

- Modified the "old technology" eligibility criteria to greater than 50% of the resource must be comprised of technology that is unable to curtail.

- The resource does not have the option to choose to be under the protective measurement settlement on an annual basis. Resources that select the protective measure settlement and are found to meet the eligibility criteria will be settled for the entire transition period based upon the protective measure.
- Resources must request protective measures within 30 days of the effective date of the FERC Order No. 764 market design tariff. The request and approval will be posted on the ISO website.
- The protective measure settlement will be in place for three years from the effective date of the FERC Order No. 764 market design tariff.

III. Background

The ISO's current market design provides for the real-time market to dispatch and settle energy in five-minute intervals at prices calculated for each five-minute interval. The current PIRP schedules and settles intermittent resources as follows:

- The resource self-schedules its forecast output for each hour in the real-time market at 90 minutes before the beginning of the hour. This self-scheduled amount is deemed to be instructed imbalance energy and is settled in each hour at the average five-minute locational marginal price (LMP).
- Deviations from these hourly forecasts are deemed to be uninstructed imbalance energy, are netted over each month, and the net deviation is settled at the output-weighted average of the five-minute LMPs.

Under the new FERC Order No. 764 market design, intermittent resources will be scheduled and settled as follows:

- Resources will be scheduled at their forecast output in 15-minute intervals at 37.5 minutes prior to the start of each interval. These forecast-based scheduled amounts will be settled in each 15-minute interval at 15-minute market LMPs.
- Deviations from these 15-minute forecasts and 5-minute dispatches will be instructed imbalance energy and will be settled at 5-minute market LMPs.
- Differences between the 5-minute dispatch and the metered energy will be uninstructed imbalance energy and will be settled at 5-minute market LMPs.
- The new market design also provides for intermittent resources to submit economic energy bids so that a resource can be dispatched to a level less than its maximum forecast output in either the 15-minute or 5-minute market if the LMP is less than the resource's bid. This feature will be important when prices are negative due to system over-generation conditions because under these conditions the ISO market will charge a resource for its energy production.

The ISO analyzed the effect of the FERC Order No. 764 methodology on intermittent resources as compared to the PIRP settlement under the current market. This is summarized in the Figure 1 below that compares the settlement for six current PIRP resources.

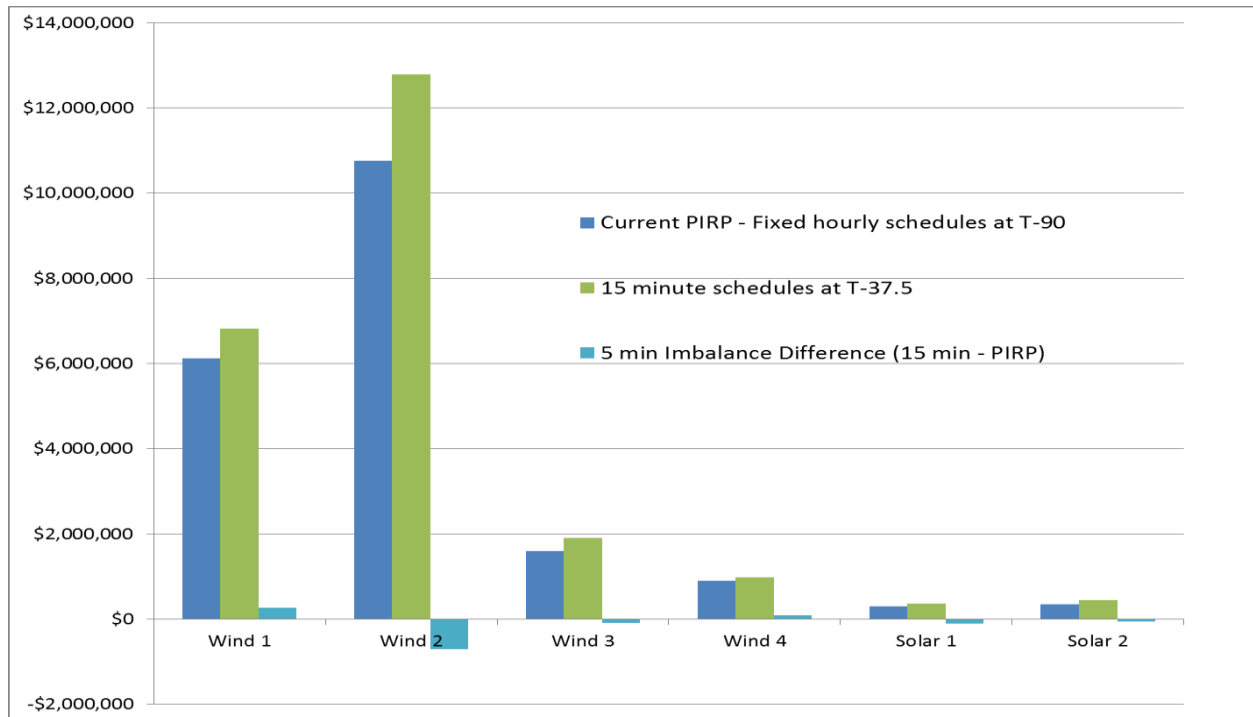


Figure 1 - Real-time Market Revenue Comparison (July 2011 – June 2012) using persistence as a proxy for 15-minute forecast

As Figure 1 shows, intermittent resources generally will be paid more in the real-time market under the FERC Order No. 764 market design than under the current market design and PIRP settlement. This is because:

- A large portion of the resources’ output will be settled in the 15-minute market using a more accurate and granular forecast than that used to establish hourly schedules under the existing PIRP.
- Unlike the hourly schedule under the existing PIRP that is priced using the 5-minute LMPs to calculate the average hourly price, 15-minute schedules will be priced at the 15-minute LMP.
- These 15-minute LMPs will be less volatile and less likely to be negative than 5-minute LMPs. In addition, only a relatively small quantity of energy will be settled at 5-minute LMPs under the new market design.

Finally, the settlement under the FERC Order No. 764 market should be much more advantageous than shown in Figure 1 because:

- Figure 1 was created using a forecast that was merely a resource's output at 37.5 minutes prior to the interval. An actual forecast would predict the change in the resources output that will occur in the upcoming 37.5 minutes.
- Figure 1 assumes no ability to respond to dispatch instructions. Consequently, the chart shows resources will be paid more in the real-time market under the FERC Order No. 764 market changes even without the ability to respond to dispatch instructions.

When the ISO Board of Governors approved the FERC Order No. 764 market design during its May 2013 meeting, some resource owners maintained that their resources would be disadvantaged under the new market design because their intermittent resources lacked the ability to respond to dispatch instructions to produce less energy than its forecast maximum output. The ISO Board of Governors directed ISO management to investigate whether limited protective measures for intermittent resources are appropriate, and to make a recommendation at the September 2013 Board of Governors meeting. If the protective measures are approved by the Board of Governors, the protective measures will be submitted to FERC as part of the ISO's FERC Order No. 764 proposal to be filed in November 2013.

Subsequently, the ISO issued market notices on May 16, 2013 and May 30, 2013 requesting information regarding intermittent resources for which market participants were considering requesting protective measures. The ISO received information from 24 market participants for resources accounting for approximately 2,000 MW of capacity. The ISO then had discussions with those market participants to understand the characteristics of these resources and the terms of any bilateral contracts these resources had for their output. The information gained during these discussions led to the ISO's proposal for protective measures described in this paper.

IV. Proposed Protective Measures

This section describes the proposed protective measures for qualifying intermittent resources under the initial operation of the ISO's new FERC Order No. 764 market design.

Qualifying Criteria

As described above, the proposed FERC Order No. 764 market design provides a superior framework for scheduling intermittent resources and provides incentives for intermittent resources to reduce their output in response to grid conditions as signaled by market prices. This response is vital to the ability of the ISO to integrate the large amounts of intermittent resource needed to meet California's environmental goals. Consequently, to not unduly undermine these incentives, and to only address situations in which a market participant would be unduly burdened during the transition to the new market design, the proposal is that only resources that meet the following limited criteria would be eligible for the protective measures:

1. Greater than 50% of the resource is composed of old technology that is unable to curtail output without significant investment.

- Dispatch, control, and telemetry or metering needs only would not qualify
 - Turbine replacement would qualify
2. There are not options under a bilateral contract to mitigate real-time energy settlement risk.
 - Qualifying Facilities (QFs) 20 MW or less are not eligible.
 - Any bilateral contract (i.e. PPA) must specify resource is directly or indirectly responsible for costs based on ISO market real-time energy settlement.
 3. During the term of the transition period, the resource owner will seek a long-term PPA and/or will upgrade the intermittent generator so that it can respond to ISO dispatch instructions.
 4. The resource owner must sign an affidavit certifying the resource meets all criteria (items 1 through 3) above.

The ISO proposes to limit the protective measures to resources with greater than 50% older technology for which the underlying design of the resource prevents it from responding to ISO dispatches. The ISO believes that it would potentially unduly burden resource owners to have to immediately make improvements such as replacing turbines. However, extending protective measures to resources that merely need to install dispatch, control, or telemetry systems would undermine the incentive to respond to dispatch instructions that the FERC Order No. 764 market design is intended to provide. The ISO does not believe that these more moderate upgrades will be unduly burdensome.

The ISO proposes to limit the protective measures to resources that do not have options under a bilateral contract to mitigate the risk of adverse settlement of energy in the ISO real-time market. QFs with a maximum output less than or equal to 20 MW would not qualify for protective measures because these resources are eligible to enter into a contract with a CPUC-regulated investor-owned utility that will provide protection from adverse energy settlement in the ISO's market.¹ Resources that are not responsible for costs based on ISO market real-time energy settlement would not be eligible for protective measures as they would not be affected by the market design changes.

Protective Measure Settlement

The ISO proposes the protective measures consist of a real-time market settlement that is the same as the existing settlement under PIRP.

¹ In December 2010, the California Public Utility Commission (CPUC) issued an order approving a global settlement agreement between the investor-owned utilities, CHP resources, ratepayer advocates, and the CPUC staff over a number of qualifying facility and combined heat and power to settle a number of issues outstanding in various CPUC proceedings, which included retention of mandatory purchases from QF facilities 20 MWs or less. (D.10-12-035)

PIRP requires the resource to provide meteorological data in order for the ISO's forecast service provider to develop a resource specific forecast. QFs currently do not provide meteorological data; therefore, when their QF contract expires, in order to request protective measures, the resource must complete the PIRP certification process, including the ability to provide meteorological data, so that the existing settlement under PIRP can be calculated. Only after the PIRP certification process is completed will a QF resource be settled according to the existing PIRP method.

Specifically, a resource under the protective measure would be settled as follows:

- An hourly schedule will be set using a 90 minute in advance forecast.
- The resource's hourly schedule based on its 90-minute in advance forecast will be settled at the simple average of the 5-minute LMPs.
- The deviations between the resource's actual energy output and the hourly schedule will be netted over each month. This amount will be settled at the output-weighted average of 5-minute LMPs over the month.

Some parties have argued that the protective measures should consist of the resource receiving the FERC Order No. 764 market 15-minute settlement, with deviations from the 15-minute schedules netted over the month. The ISO does not believe this would be appropriate as a protective measure, as it would undermine incentives for resource owners to upgrade resources so that they are dispatchable rather than depend on protective measures.

Protective Measure Settlement Allocation

The difference between the real-time market settlement of any resource under the protective measure and the settlement that would have occurred under the FERC Order No. 764 market design will be allocated to in the same manner as the existing PIRP settlement, which is to net negative deviations. This amount may be a payment or a cost to net negative deviations.

The ISO had previously stated that it was considering allocating the protective measure settlement amounts to the load serving entity with a PPA with the resource. The ISO has determined that allocation to net negative deviations is more appropriate because (1) resources that are eligible for protective measures may be resources coming off QF contracts that do not have a PPA with a load serving entity, and (2) the resource requesting the protective measure may be responsible for costs based on ISO market real-time energy settlement, but the load serving entity with the PPA with the resource may be the scheduling coordinator for the resource. Since the ISO settles market transactions with scheduling coordinators, if the costs of the protective measure were allocated to the load serving entity under the circumstances described in (2), then the costs of the protective measure would be allocated to the same scheduling coordinator that would be receiving the protective measure.

The protective measures and cost allocation add to the complexity and costs of implementing the Order No. 764 changes. Because of the need to comply with FERC's Order No. 764 in a

reasonably timely manner, the ISO cannot delay the implementation of the market design changes that are necessary to accommodate the 15-minute scheduling required by the Commission's order. Therefore, while the ISO will strive to provide these financial adjustments soon after the start of the new market, the resource's settlement will be trued up in later settlements after go live. Any adjustments will be subject to the FERC interest rate, as already provided in the ISO tariff.

Duration of Protective Measures

The ISO proposes that the duration of the protective measures will be three years from the effective date of the tariff provisions implementing the Order No. 764 market design changes or until a new PPA is signed for the resource, whichever comes first. The intent of the protective measures is to provide a transition period for a resource meeting the criteria for a protective measures to be able to adapt to the new market, such as developing the capability to respond to dispatch instructions.

Process to Request Protective Measures

The ISO proposes that resources, meeting all eligibility requirements above, must request protective measures within 30 days of the effective date of FERC Order No. 764 market design changes. If a resource will meet the eligibility requirements within the three year transition period, the resource must provide the date that resource meets the eligibility requirement and also request protective measures within the 30 days of the effective date of FERC Order No. 764 market design changes.

The ISO will post on its website the requests received and the disposition of the requests.

V. Next Steps

The schedule for the stakeholder process to finalize the protective measure is as follows.

Date	Event
August 15, 2013	Draft Final Proposal Posted
August 22, 2013	Stakeholder Call
August 29, 2013	Stakeholder Comments Due on Draft Final Proposal
September 12, 2013	Present proposal for decision at September Board of Governors Meeting

The ISO will discuss this draft final proposal with stakeholders during a call to be held on August 22, 2013. Stakeholders should submit written comments by August 29, 2013 to Order764@caiso.com.