Memorandum

To: ISO Board of Governors

From: Keith Casey, Vice President, Market and Infrastructure Development

Date: March 19, 2015

Re: Decision on commitment cost enhancements phase 2

This memorandum requires Board action.

EXECUTIVE SUMMARY

At their September 2014 meeting, the Board of Governors approved a set of targeted market rule changes for generator commitment costs to improve market efficiency and reliability during natural gas price spikes. The proposal included a provision to allow a subset of resources currently considered as use-limited to reflect opportunity costs in their start-up and minimum-load bids through the use of the registered cost option, which allows bids up to 150 percent of the resource's calculated start-up and minimum load costs.

In this proposal, Management seeks Board approval to narrow the scope of resources considered "use-limited" which are eligible to include an opportunity cost in their start-up and minimum load bids. Currently, the definition of use-limited resources includes all resources that are not able to participate in the ISO's market with a 24/7 must-offer obligation. This includes qualifying facilities and wind and solar resources for example. The reliability services initiative is creating categories of resources that will be exempt from the 24/7 must-offer obligation. Thus, as a result of these changes, the ISO proposes to clarify that only resources eligible for an opportunity cost will be provided use-limited status and to clarify that opportunity costs reflect the revenue that would be lost if the resource cannot be utilized in the market at the times it is most valuable. The substance of the definition is otherwise unchanged and the limitation, which provides the basis for an opportunity cost, must be based on environmental, design or other non-economic reasons. Finally, Management also proposes to simplify the calculation of multi-stage generator transition costs and treat these costs similar to generator start-up costs. Transition costs reflect the costs a multi-stage generator, such as a combined cycle generation plant that uses a combination of gas turbines and steam generators, incurs when moving from one configuration to another.

Management proposes the following motion:

> ***Moved, that the ISO Board of Governors approves phase 2 of the commitment cost enhancements proposal, as described in the memorandum dated March 19, 2015; and***
>
> ***Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposed tariff change.***

DISCUSSION AND ANALYSIS

Background

The tariff defines a "use-limited resource" as "[a] resource that, due to design considerations, environmental restrictions on operations, cyclical requirements, such as the need to recharge or refill, or other non-economic reasons, is unable to operate continuously." Limitations cannot be economic in nature such as due to a contract provision. All hydro, participating load, and demand response resources are automatically "deemed" use-limited and qualifying facilities and wind and solar were generally considered use-limited.

The ISO originally developed the use-limited resource category to recognize that some resource adequacy resources have limitations that prevent them from being able to offer in the market as full must-offer resources. Full must-offer resources must bid into the market each day and hour of the week they have an offer obligation. In the event the resource fails to provide a bid, the ISO will automatically generate bids to meet their must-offer obligation. Use-limited resources, on the other hand, are not similarly available. Instead, their scheduling coordinators submit use-limitation plans and bid the resources accordingly. The ISO does not generate bids on behalf of such resources.

Although the ISO originally developed the use-limited resource category for resource adequacy purposes, the ISO modified this definition to also apply to non-resource adequacy resources. Use-limited resources have the right to bid up to 50 percent of their calculated startup-up and minimum load cost to reflect their opportunity costs. The ISO recognized that non-resource adequacy resources that otherwise meet the definition of a use-limited resource should also be eligible to bid their opportunity costs. If a use-limited resource has the ability to include its opportunity costs in its bids, then it should be able to bid in all hours.

During its September 2014 meeting, the Board approved market rule changes to allow only use-limited resources to remain on the "registered cost" commitment

cost bidding option to accommodate opportunity costs in their commitment cost bids. The registered cost option allows use-limited resources to bid up to 150 percent of calculated costs versus the lower 125 percent cap under the alternative "proxy cost" option. Under the proposal approved by the Board, the registered cost option is to be retained until the ISO can explicitly calculate opportunity costs for use-limited resources.
Although Management proposed a methodology for calculating opportunity costs for use-limited resources, stakeholders requested that Management take more time to finish developing the opportunity cost methodology. As a result, Management plans to propose an opportunity cost methodology to the Board in September. In the meantime, use-limited resources can continue to use the registered cost commitment cost bidding option to reflect opportunity costs – subject to the four proposed enhancements to the use-limited definition described below.

This proposal also addresses multi-stage generator transition costs. Multi-stage generators differ from typical generators because they have different configurations, each with different minimum and maximum output levels and operating characteristics. Like other generators, multi-stage generators incur start-up costs. But unlike typical generators, multi-stage generators can transition between configurations and also incur costs when transitioning into a configuration with a higher maximum capacity. Transition costs are very similar to start-up costs, but the ISO currently accounts for transition costs differently than start-up costs and does not allow resources to bid these costs in the same manner as start-up costs. The proposal described below outlines new provisions to calculate transition costs in a similar manner to start-up costs.

Proposed enhancements for the use-limited resource definition

Management proposes the following four modifications and clarifications to the use-limited resource definition.

- The term "use-limited resource" will change to "use-limited capacity," recognizing that a resource may not always be use-limited or may only have a portion of its capacity that is use-limited. For example, some air permits limit a resource's run time only during the summer months. Therefore, the resource would have use-limited capacity during the summer only.

- Clarify the existing limitation that use-limitation status may not be based on economic limitations by explicitly stating that limitations on the resource's operation must be derived from a statute, regulation, ordinance, court order, or the resource's design, and that the ISO market's optimization cannot automatically account for the opportunity costs.

For example, an environmental restriction may limit a resource's run time over a single month to only 200 hours. However, the ISO market's optimization only considers a single day at most. Currently, the ISO optimization does not take into account that dispatching a resource in the current day may restrict its ability to run later in the month. If the resource is economic, the market could potentially keep it on for 200 hours consecutively rather than dispatching it in the 200 hours during the month when prices and system need is the highest. When the resource runs in lower-priced hours, it incurs an opportunity cost. Therefore, use-limited resources, by definition, have opportunity costs.

Third, all regulatory must-take and qualifying facility capacity that is considered regulatory must-take will no longer be included in the definition of use-limited capacity. These resources are not eligible for an opportunity cost because, for example, the availability of the capacity is dictated by their PURPA contract obligations and their commitment to their host industrial processes. The Reliability Services initiative will continue to exempt these resources from bid insertion rules.

- Fourth, variable energy resources will no longer be considered use-limited capacity. A resource with an intermittent fuel source cannot be optimized to run only during the most profitable hours. It can only run when the energy source is available. Therefore, these resources do not inherently have opportunity costs that need to be accounted for under the use-limited category. The Reliability Services initiative will continue to exempt these resources from bid insertion rules.

Proposed enhancements for the calculation of transition costs

Management proposes the following two enhancements for the calculation of transition costs.

- First, the ISO will calculate transition costs in a similar manner as for start-up costs for typical generators. This includes consideration of certain costs such as major maintenance adders, as appropriate. By aligning the calculation of transition costs and start-up costs, Management recognizes that the transition cost is a form of start-up cost specific to multi-stage generators.

- Second, the ISO will allow scheduling coordinators to bid transition costs in the same manner that proxy and registered costs are currently bid into the market.

These two enhancements greatly simplify the current calculation of transition costs and provide more clarity for market participants.

POSITION OF THE PARTIES

Stakeholders generally support the enhancements to the use-limited resource definition and overwhelmingly support the proposed changes to the transition cost calculation. Certain stakeholders have concerns for specific resources currently designated as use-limited resources that may lose such status under the new definition.

The Market Surveillance Committee supports Management's proposal. The Market Surveillance Committee has provided a draft opinion on Management's proposal and will be voting on the opinion at its March 23, 2015 meeting.

The Department of Market Monitoring also supports Management's proposal. The DMM report is included with the March Board materials as an informational report. Both the MSC and DMM have encouraged the ISO to develop the opportunity cost adder as soon as possible.

The following addresses stakeholder positions raised during the stakeholder process. A detailed stakeholder comment matrix is attached.

Position 1: Some market participants would like to use contract limitations as a basis for obtaining (or retaining) use-limited resource status because they have signed power purchase agreements with start-up limitations. These market participants are asking to remain use-limited for a transition period. As stated below in more detail, economic reasons such as contract limitations have never been a basis for obtaining use-limited status.

Response: The ISO's practice of not allowing economic, including contract-based, limitations precedes the enhancements proposed today. This is a long-standing ISO tariff provision and practice detailed in the business practice manual since 2009.[1] Recently signed contracts that limit the operation of the resource adequacy resources in question have done so while the current tariff and business practice manuals have been in effect. Proposed changes to the use-limited resource definition do not change this specific provision. Therefore, Management does not see a need for a transition period for these contracts as a result of the proposed clarifications to the use-limited resource definition. In addition, Management notes that but for the contractual limitations, the resources of concern do not have any other operational limitations. The resources are physically capable of satisfying the default resource adequacy obligations. Although costs may increase for resources that are dispatched more frequently, the ISO and the Department of Market Monitoring have taken steps over the last year to ensure that the resources can reflect these costs in their commitment cost bids to improve cost recovery. This is particularly the case for major

[1] See Business Practice Manual for Reliability Requirements, March 27, 2009, version 1, pages 41-42. The manual is currently on version 24.

maintenance costs related to increased dispatch. Finally, allowing contractual limitations to dictate use limitations could erode the ISO's ability to ensure reliability, and encourage similar arrangements in the future.

Position 2: Some stakeholders have concerns that the ISO's storage modeling capabilities may not appropriately capture the operating characteristics of non-pumping storage resources. These stakeholders request default use-limited resource status. Similarly, some stakeholders have requested an exemption from bid insertion for all storage resources.

Response: Management understands that to effectively dispatch storage resources, the ISO must have models that can accurately account for their operational constraints (i.e., number of cycle times allowed in a given period). However, simply providing default use-limited resource status to storage resources will not resolve these issues. Use-limited resource status provides resources with the ability to provide commitment costs that ensure they are dispatched efficiently within their use limitations. Storage resources do not incur commitment costs. Therefore, the provisions provided to use-limited resources would not address the operational constraints of storage resources. To address storage resources' operational dispatch constraints, Management will be starting a new stakeholder initiative in April to clarify what modeling and market functionality is currently available to reflect storage resources' operational constraints. If this review reveals that enhancements to storage modeling or policy are needed, they will be addressed in this stakeholder initiative. This will ensure that storage resources can be effectively dispatched in the ISO market.

As this technology matures and as the ISO improves upon its storage modeling capability, non-pumping storage can apply for use-limited resource status in the future. However, there is no value in setting these resources as default use-limited today. The reliability services initiative will exempt non-generating resources, pumped hydro, and use-limited storage resources from bid insertion.

CONCLUSION

Management recommends the Board approve the commitment cost enhancements proposal described in this memorandum. The enhancements to the definition of use-limited resources provide clarity to existing rules, improve the ISO's processes, and support the reliability services initiative in enhancing reliability. The transition cost improvements will improve market efficiency by aligning costs more appropriately with start-up costs and providing greater transparency to market participants.