

Multi-Stage Generating Resource Reference Document January, 2013

Introduction

This reference document has been compiled for generators that fall under the definition described above. The intent of this document is to provide comprehensive instructions for new multi-stage generating (MSG) resources.

On February 16, 2012 the ISO Board of Governors approved the “Post-emergency bid cost recovery elements.” The purpose of this initiative was refine bid cost recovery rules to eliminate opportunities for participants to inequitably inflate bid cost recovery payment. As a result:

...resources that have operating characteristics that are most accurately and efficiently modeled using the multi-stage generating resource functionality be required to be registered as multi-stage generating resources by spring of 2013.¹

The following resource types fall into this category:

- Combined cycle resources
- Resources with multiple operating regions with hold- or off-times after a transition through a forbidden operating region
- Generating units with multiple operating ranges which a forbidden operating region would prevent the resource from providing the amount of awarded ancillary service capacity.

Timeline

- Market simulation opportunities will continue to be available to market participants on an ongoing basis. Simulated settlement may be arranged through marketsim@caiso.com.
- No later than April 15, 2013, market participants must submit a production MSG resource data template (RDT) for each of their resources that fall into the categories listed above that are not yet registered as MSG resources. Note that processing of the MSG RDT takes 16 business days from the time its approval. Market participants should build in time for any iteration needed to refine the RDT.

¹ Memorandum to the ISO Board of Governors, Decision on Post-Emergency Bid Cost Recovery Elements, <http://www.caiso.com/Documents/Decision-Post-EmergencyBidCostRecoveryElements-MemoFeb2012.pdf>



- The ISO will work with market participants to schedule the transition of their resources to MSG status so that the MSG status is effective no later than June 1, 2013.
- To facilitate a smooth transition from non-MSG to MSG for both the ISO and market participants, market participants are encouraged to arrange for their MSG status to take effect in coordination with a planned maintenance outage.
- Considering the time required for creating an MSG model definition and related operational training, market participants are also encouraged to submit RDTs as soon as possible and not wait until April 15, 2013 deadline.

For information on the logistics associated with the elements of this timeline, links are provided in this document. Market participants may also contact their client representatives for additional information.

Background

In 2006, FERC ordered the ISO to:

... continue working with software vendors to develop an application that will accurately detail the constraints of combined cycle units..."²

As a result, in December 2010 the ISO implemented the multi-stage modeling functionality to optimize the commitment and dispatch of generating units that have multiple operating configurations.

The details of the MSG market design development process can be found at the following link on the ISO website:

<http://www.caiso.com/informed/Pages/StakeholderProcesses/CompletedStakeholderProcesses/MultiStageGeneratingUnitModeling.aspx>

The Bidding and mitigation of commitment costs design development process impacted MSG with regard to transition costs:

<http://www.caiso.com/informed/Pages/StakeholderProcesses/CompletedStakeholderProcesses/BiddingMitigationCommitmentCosts.aspx>

Additionally the ISO Board of Governors approved enhancements to the MSG functionality in October of 2011. Details of these enhancements are outlined on the following ISO webpage:

<http://www.caiso.com/informed/Pages/StakeholderProcesses/Multi-StageGenerationEnhancements.aspx>

² Paragraph 573 of FERC/s September 21, 2006 *Order on MRTU*.

As mentioned in the introduction, the post-emergency bid cost recovery initiative resulted in MSG becoming mandatory for resources that fall into certain categories. The process that led to this decision are described in the Post-Emergency Bid Cost Recovery Filing Review documents that can be accessed via the following link
<http://www.caiso.com/informed/Pages/StakeholderProcesses/PostEmergencyBidCostRecoveryFilingReview.aspx>

Business Requirements Specifications

Business Requirements Specification for MSG Enhancements (August 18, 2009)
<http://www.caiso.com/Documents/Multi-StageGeneratorResources-ExternalBusinessRequirementSpecification.pdf>

Business Requirements Specification for MSG Enhancements (January 27, 2012)
http://www.caiso.com/Documents/BusinessRequirementsSpecification-Multi-StageGenerationEnhancementsVersion1_3.pdf

Business Requirements Specification for MSG Phase 3 (June 15, 2012)
http://www.caiso.com/Documents/BusinessRequirementsSpecificationVersion1_1-Multi-StageGenerationEnhancementsPhase3.pdf

System Interfaces

The following webpage provides information regarding application access. An updated version of this document will be provided in the coming months will more specific API interface information:

<http://www.caiso.com/participate/Pages/ApplicationAccess/Default.aspx>

Registration for MSG Resources

In order to be compliant with the changes approved in the post-emergency bid cost recovery filing, MSG registration will be mandatory for the resource types outlined above. This section provides links to assist in registering resources with multiple operating configurations to be modeled as MSG resources in the master file.

Multi-Stage Generating Resource Registration Guidebook (includes specific FOR to MSG conversion information in Section 4):

<http://www.caiso.com/Documents/Multi-StageGenerator-RegistrationGuideBook-Draft.pdf>

Multi-stage Generator Configuration Group Registration Request Form

<http://www.caiso.com/Documents/Multi-stage%20generator%20registration>

MSG Resource Data Template (RDT):

<http://www.caiso.com/Documents/MSG%20Registration>

Operational Requirements

The ISO conducted a number of presentations regarding the operational requirements for MSG resources. These presentations have been combined and updated into one document entitled Multi-stage Generation Model Overview and can be found at the following link:

<http://www.caiso.com/Documents/Multi-stage%20generation>

Submitting Outages

There are some specific guidelines to help MSG resources utilize SLIC to enter outages. The information on slides 64-68 of the following presentation is helpful:

http://www.caiso.com/Documents/Presentation-Multi-StageGeneratingUnitModelingWorkshop20-April-2010_Update_.pdf

Settlements

MSG resources are settled in the same manner as all other generators with one exception - their transition costs are considered in bid cost recovery.

The following links will help users determine the charge codes that are applicable for MSG resources:

The ISO Charge Code Matrix is located at:

<http://www.caiso.com/market/Pages/Settlements/Default.aspx>. This table can be filtered to show the charges codes applicable to generation.

The BPM Configuration Guide for Bid Cost Recovery (charge code 6620) is in the BPM for Settlements and Billing located at this address: <https://bpm.caiso.com/bpm/bpm/list> . Scroll down to the configuration guide entitled “Cost Recovery” and expand the group. Look for the most current version of “CG CC 6620 Bid Cost Recovery Settlement”.

CAISO Tariff

This link is to the conformed fifth replacement CAISO tariff. Some helpful sections are listed below:

<http://www.caiso.com/Documents/Conformed%20fifth%20replacement%20CAISO%20tariff%20as%20of%20April%2018,%202012>

Section 9.7 – Multi-Stage Generating Resource Outages

Section 11.8 – Bid Cost Recovery

Section 27.8 – Multi-Stage Generating Resources

Section 30.4.2 – Transition Costs

Section 30.5 – Supply Bids

Section 30.7 – Bid Validation

Appendix AA – Transition Plan for Multi-Stage Generating Resources

Business Practice Manuals (BPM)

The following Business Practice Manuals (BPM) contain information related to MSG resources:

Business Practice Manuals link

<http://www.caiso.com/rules/Pages/BusinessPracticeManuals/Default.aspx>

Market Instruments

Section 4 – Bid Requirements

Section 5 – Energy Bids

Section 5.1.4.3 Multi-Stage Generating Resources (Real-Time Economic Bids for Supply)

Section 5.1.5.1.5 – Multi- Stage Generating Resources (Real-Time Self Schedule Bids for Supply)

Section 6.1 – Procurement of Ancillary Services

Section 7 – Residual Unit Commitment Availability Bids

Section 8.1.1 – Day-Ahead Market

Section 8.2 – Day-Ahead Market Validation

Attachment H – Transition Costs for Multi-Stage Generator Resources

Market Operations

Section 2.1.5 – Multi-Stage Generating Resources

Section 2.2.1 – Energy

Section 2.4.5 – Scheduling Coordinator Responsibilities

Section 2.5.2 – Bids

Section 4.3 - Ancillary Services Procurement

Section 4.5 – Ancillary Services Considerations

Section 4.6 – Ancillary Services Certification and Testing Requirements

Section 6.1.9 – IFM Initial Conditions

Section 6.5 – Market Power Mitigation

Section 6.6 – Integrated Forward Market

Section 7.2.3.6 – Respond to Commitment & Dispatch Instructions – Trajectory Data

Section 7.3.13 - Accept Hourly HASP & Real-Time Market Inputs – Resource Capacity Constraints

Section 7.5.3 – HASP Inputs

Section 7.6 – Real-Time Unit Commitment

Section 7.6.3 – Real-Time Unit Commitment Constraints & Objectives

Section 7.11 – Exceptional Dispatch