

SUMMARY OF TOPICS ADDRESSED IN DRAFT COMMITMENT COST ENHANCEMENTS PHASE 3 TARIFF CHANGES

The CAISO proposes draft tariff changes in the Commitment Cost Enhancements Phase 3 (CCE3) initiative to address the topics summarized below.¹

The CAISO plans to implement the tariff changes in two stages, but contemplates filing the changes in a single tariff amendment filing requesting two different effective dates. Specifically, the CAISO plans to implement the tariff changes related to resource characteristics following the winter release, currently scheduled for February 13, 2018. The CAISO is currently targeting a March 1, 2018 effective date for the resource characteristic-related tariff changes.

For changes relating to use-limited resources and the development of opportunity cost adders for start-up, minimum load, and variable energy costs, the CAISO is proposing an effective date approximately six months after the opportunity cost calculator functionality is released. The six-month time period will allow scheduling coordinators and the CAISO to work with the opportunity cost calculator and to develop negotiated opportunity costs for resources, where appropriate. During this six-month time period, use-limited resources would continue to have the registered cost methodology available, but that option would be retired effective as of the same date the tariff changes related to use-limited resources go into effect.

The CAISO contemplates that the opportunity cost calculator will be also released as part of the winter release scheduled for February 13, 2018. The CAISO is currently targeting a September 1, 2018 effective date for the tariff changes related to use-limited resources.

I. Tariff Changes to Be Implemented in the First Stage of the Initiative

A. Resource Characteristics Provided in the Master File

Currently, the tariff requires the information that a participating generator provides to the Master File regarding the operational and technical constraints of its resources to be accurate and actually based on the physical characteristics of the resources.²

¹ Except where otherwise noted, all of the topics addressed below were originally raised in the CCE3 initiative. Further information regarding the topics is available at <http://www.caiso.com/informed/Pages/StakeholderProcesses/CommitmentCostEnhancementsPhase3.aspx>.

² See existing tariff section 4.6.4. For the sake of clarity, this summary distinguishes among existing tariff provisions (*i.e.*, provisions in the current CAISO tariff), revised tariff provisions (*i.e.*, existing

The CAISO proposes to revise this requirement and similar requirements in other tariff provisions to state that the information the participating generator provides must be accurate, complete, responsive to the CAISO's requests, and actually based on the design capabilities of the resources and their constituent equipment, as reasonably adjusted to reflect degradation in performance over time. The CAISO also proposes to state in the tariff that, where the tariff or a business practice manual provides an additional definition or restriction as to a specific operational or technical restraint provided in the Master File, the information provided to the CAISO as to that constraint must also comply with that additional definition or restriction. The CAISO will reject any proposed or existing information that does not satisfy these requirements, and will also reject a value proposed for inclusion in the Master File that is inconsistent with a participating generator's commitment to provide resource adequacy capacity.³

In addition, the CAISO proposes to allow participating generators to include alternative values in the Master File for certain characteristics of their resources.⁴ Specifically, with respect to maximum daily start-ups, maximum daily number of multi-stage generating (MSG) resource transitions, operational ramp rate values, operating reserve ramp rate values, and regulation ramp rate values, participating generators can provide for inclusion in the Master File alternative values that the CAISO will utilize during normal, non-emergency market operations, and which may be less than or equal to the values based on the resources' design capabilities, subject to the following limitations:

- Maximum daily start-ups must be at least two start-ups per day unless the CAISO permits only one start-up per day in the Master File due to the design capabilities or degradation in performance of a resource operating beyond its useful life.
- Maximum daily number of MSG transitions must be at least two MSG transitions per day unless the CAISO permits only one MSG transition per day in the Master File due to the design capabilities or degradation of a resource operating beyond its useful life.

tariff provisions that the CAISO proposes to revise pursuant to the CCE3 initiative), deleted tariff provisions (*i.e.*, existing tariff provisions that the CAISO proposes to delete pursuant to the initiative), and new tariff provisions (*i.e.*, new provisions that the CAISO proposes to add to the tariff pursuant to this initiative).

³ Revised tariff sections 4.6.4, 4.12.2, 4.13.3, 30.7.3.5; tariff appendix A, revised definitions of "Maximum Daily Start-Ups", "Minimum Down Time", "Minimum Run Time", "Multi-Stage Generating Resources", "Pump Ramping Conversion Factor", "Security Constrained Unit Commitment". The CAISO originally proposed to revise the tariff to address this topic in the Bidding Rules Enhancements (BRE) initiative but subsequently moved the topic to the CCE3 initiative.

⁴ Revised tariff section 4.6.4; tariff appendix A, revised definition of "Maximum Daily Start-Ups". The CAISO originally proposed to revise the tariff to address this topic in the BRE initiative but subsequently moved the topic to the CCE3 initiative.

- Operational ramp rate values must be sufficient to permit the resource to provide its flexible resource adequacy capacity obligation. If a participating generator provides alternative operational ramp rate values for the Master File, the Master File values for operating reserve ramp rates and regulation ramp rates must be values at which the resource is reasonably capable of operating.

The CAISO will utilize alternative Master File values in the CAISO markets and in automated exceptional dispatch tools. However, the CAISO may issue exceptional dispatches based on the design capabilities of a generating unit, regardless of whether the participating generator also provides an alternative value for use in the CAISO markets.⁵

B. Remove Ramp Rates as a Component of Daily Bids

Currently, ramp rates are a component of daily bids for energy, ancillary services, and RUC availability.⁶ The CAISO proposes to revise the tariff to remove all ramp rates (*i.e.*, operational ramp rates, operating reserve ramp rates, and regulation ramp rates) as components of daily bids and to make conforming changes to reflect that its market processes will utilize the ramp rates included in the Master File.⁷

C. Revise the Negotiated Default Energy Bid Process

The tariff currently does not include a process for the CAISO to renegotiate a default energy bid established under the negotiated rate option.⁸

The CAISO proposes to revise the tariff to state that the CAISO may require the renegotiation of such a default energy bid, may review and propose modifications to the default energy bid, and may require the scheduling coordinator to provide updated information to support continuation of the default energy bid.⁹

⁵ Revised tariff section 4.6.4.

⁶ See, *e.g.*, existing tariff section 30.5.2.2.

⁷ Revised tariff sections 8.3.7, 8.4.1.1(b), 30.5.2.2 – 30.5.2.4, 30.5.2.6 – 30.5.2.7, 34.17.1(c), 34.17.5; deleted tariff section 30.7.7; tariff appendix A, revised definitions of “Operating Reserve Ramp Rate”, “Operational Ramp Rates”, “Ramp Rate”, “Regulation Ramp Rate”.

⁸ See existing tariff section 39.7.1.3.1.

⁹ Revised tariff section 39.7.1.3.1.

D. Minor Clarifications

The CAISO proposes to provide clarifications to its tariff to capitalize and more accurately use defined terms, include more descriptive section titles, correct punctuation, and more provide more specific cross-references.¹⁰

II. Tariff Changes to Be Implemented in the Second Stage of the Initiative

A. Definition and Scope of Use-Limited Resources

Currently, the CAISO tariff defines a use-limited resource as a resource that, due to design considerations, environmental restrictions on operations, cyclical requirements, or other non-economic reasons, is unable to operate continuously.¹¹ The tariff also states that specified types of resources are deemed to be use-limited resources and that scheduling coordinators for all other types of resources can submit applications that allow the CAISO to determine whether they are use-limited resources.¹²

The CAISO proposes to replace the existing process under the tariff with a registration and validation process that applies to all resources seeking to demonstrate that they are use-limited resources, and to allow use-limited resources to seek to recover opportunity costs as summarized below.¹³ Pursuant to the new process, in order to be considered a use-limited resource, the scheduling coordinator for a resource must provide sufficient documentation demonstrating that:

- (1) The resource has one or more limitations affecting its number of starts, its number of run-hours, or its energy output due to (a) design considerations, (b) environmental restrictions, or (c) qualifying contractual limitations that meet requirements set forth in the tariff;
- (2) The applicable market process cannot recognize the resource's limitation(s); and
- (3) The resource has the ability to select hours of operation independent of uncontrollable factors.¹⁴

¹⁰ Revised tariff sections 30.4.1.1.2, 30.7.9, 40.6.8(d); tariff appendix A, revised definition of "Multi-Stage Generating Resources".

¹¹ Existing tariff appendix A, definition of "Use-Limited Resource".

¹² Existing tariff section 40.6.4.1.

¹³ New tariff sections 30.4.1.1.6-30.4.1.1.6.1; deleted tariff section 40.6.4.1; tariff appendix A, revised definition of "Use-Limited Resource".

¹⁴ New tariff section 30.4.1.1.6.1.1.

Pursuant to a process set forth in the business practice manual, the CAISO will review the limits and the supporting documentation provided by the scheduling coordinator as well as any translation of indirect limits to determine whether the scheduling coordinator has made the required demonstration.¹⁵

B. Opportunity Cost Methodology

The CAISO proposes to allow a resource that meets the criteria as a use-limited resource to recover any or all of the following types of opportunity costs, provided that the scheduling coordinator can provide sufficient documentation:

- Start-up opportunity costs, defined as the estimated profits foregone by a use-limited resource with a limitation on its number of starts, if the use-limited resource had one less start in the applicable time period.¹⁶ Use-limited resources will receive start-up opportunity costs as an adder to their start-up costs, with the adder not subject to the existing 125-percent proxy cost cap that applies to other types of start-up costs.¹⁷ For use-limited resources that are MSG resources, their transition costs will likewise include a start-up opportunity cost adder not subject to the proxy cost cap.¹⁸
- Minimum load opportunity costs, defined as an adder consisting of the estimated profits foregone by a use-limited resource with a limitation on its number of run-hours, if the use-limited resource had one less run-hour in the applicable time period.¹⁹ Use-limited resources will receive start-up opportunity costs as an adder to their minimum load costs, with the adder not subject to the proxy cost cap.²⁰
- Variable energy opportunity costs, defined as an adder consisting of the estimated profits foregone by a use-limited resource with a limitation on its energy output, if the use-limited resource had one less megawatt-hour of energy output in the applicable time period.²¹ Use-limited resources will

¹⁵ *Id.*

¹⁶ Tariff appendix A, definition of new term “Start-Up Opportunity Costs”.

¹⁷ Revised tariff sections 30.4.1.1.1(a), 30.4.1.1.2(a), 30.7.9(c). As summarized below, the CAISO proposes to retire the existing registered cost cap in stage two of this initiative. Therefore, the existing 150-percent registered cost cap will also be retired.

¹⁸ Revised tariff section 30.4.1.1.5; tariff appendix A, revised definition of “Transition Cost”.

¹⁹ Tariff appendix A, definition of new term “Minimum Load Opportunity Costs”.

²⁰ Revised tariff sections 30.4.1.1.1(a), 30.4.1.1.2(a), 30.7.10.1.

²¹ Tariff appendix A, definition of new term “Variable Energy Opportunity Costs”. The CAISO also proposes to add to tariff appendix A the new term “Opportunity Costs,” defined as start-up opportunity costs, minimum load opportunity costs, or variable energy opportunity costs.

receive variable energy opportunity costs as an adder to their default energy bids under the variable cost option.²²

A scheduling coordinator for a use-limited resource may seek to establish such opportunity costs for any limitation(s) that satisfy the requirements covered under item (1) in the preceding section of this summary, apply for period(s) longer than the time horizon considered in the applicable day-ahead market process, and can be reflected in a monthly, annual, and/or rolling 12-month period.²³

Based on the documentation submitted, the CAISO will evaluate whether it can model the limitation(s) for which the use-limited resource seeks to recover opportunity costs under its opportunity cost calculation methodology. If the CAISO cannot model one or more such limitations, the opportunity costs for such limitations will instead be established by a negotiated process similar to the process for negotiated default energy bids. The CAISO's determination of whether an opportunity cost will be calculated or negotiated will remain in place unless and until: (1) the scheduling coordinator submits updated documentation contained in a new request to recover an opportunity cost that requires the CAISO to change its existing determination; or (2) the scheduling coordinator demonstrates that negotiation of an opportunity cost is required because the results of calculating an opportunity cost are inadequate.²⁴

The following types of use-limited resource capacity is not eligible for an opportunity cost adder under the new tariff provisions: the capacity of a condition 2 RMR unit, a reliability demand response resource, regulatory must-take capacity, and any other type of use-limited resource to the extent it has a limitation that satisfies the relevant requirements but applies for a period less than or equal to the time horizon considered in the day-ahead market.²⁵

With respect to use limitations that the CAISO can model, no more frequently than each month the CAISO will calculate opportunity costs for the use limitations using a calculation methodology set forth in the tariff. Under the methodology, each calculation of opportunity costs will equal the estimated profits if the use-limited resource had one less unit of starts, run-hours, or energy output, whichever is applicable, in the future time period of the validated limitation, taking into account a ten percent margin with regard to the limitation of the Use-Limited Resource that is most likely to be reached. The CAISO will provide the results of the calculations or updated calculations for a use-limited resource to its scheduling coordinator.²⁶

²² Revised tariff section 39.7.1.1; new tariff section 39.7.1.1.4.

²³ New tariff section 30.4.1.1.6.1.2.

²⁴ *Id.*; new tariff section 30.4.1.1.6.3.

²⁵ New tariff section 30.4.1.1.6.1.2.

²⁶ New tariff sections 30.4.1.1.6.2-30.4.1.1.6.2.2.

If the CAISO cannot model a use limitation, the CAISO will request in the negotiation process that the scheduling coordinator provide the CAISO with a proposed opportunity cost methodology along with documentation supporting the methodology and a proposed schedule for updating opportunity costs under the methodology. The CAISO will either approve the submitted methodology or enter into good-faith negotiations with the scheduling coordinator to establish an agreed-upon methodology and the schedule for updating the opportunity costs.²⁷

In addition, generated bids for energy will include opportunity costs.²⁸

C. Retire the Registered Cost Methodology

The tariff currently states that scheduling coordinators for resources that are not use-limited resources will be subject to the proxy cost methodology for their start-up costs, minimum load costs, and transition costs, while scheduling coordinators for use-limited resources can elect on a 30-day basis to be subject to either the proxy cost methodology or the registered cost methodology for such costs.²⁹

The CAISO proposes to retire the registered cost methodology and to make conforming changes to the tariff provisions that reference it.³⁰

III. Table of Proposed Tariff Changes

The following table lists in numerical order, by topic, the proposed tariff changes summarized above:

Tariff Section(s)	Topic(s) Addressed in Tariff Changes
4.6.4	Resource characteristics provided in the Master File
4.12.2	Resource characteristics provided in the Master File
4.13.3	Resource characteristics provided in the Master File
8.3.7	Remove ramp rates as a component of daily bids
8.4.1.1(b)	Remove ramp rates as a component of daily bids

²⁷ New tariff section 30.4.1.1.6.3.

²⁸ Revised tariff section 40.6.8(d).

²⁹ Existing tariff section 30.4.

³⁰ Revised tariff sections 27.7.1, 30.4, 30.4.1.1.3, 30.4.1.1.5, 30.5.2.4, 30.7.9(b)-(c), 30.7.10.1; deleted tariff sections 30.4.1.2, 39.6.1.6 – 39.6.1.7; tariff appendix A, deleted definitions of “Projected Proxy Cost” and “Registered Cost”.

Tariff Section(s)	Topic(s) Addressed in Tariff Changes
27.7.1	Retire the registered cost methodology
30.4	Retire the registered cost methodology
30.4.1.1.1(a)	Opportunity cost methodology
30.4.1.1.2	Provide a minor clarification
30.4.1.1.2(a)	Opportunity cost methodology
30.4.1.1.3	Retire the registered cost methodology
30.4.1.1.5	Opportunity cost methodology; retire the registered cost methodology
30.4.1.1.6 through 30.4.1.1.6.1.1	Definition and scope of use-limited resources
30.4.1.1.6.1.2 through 30.4.1.1.6.3	Opportunity cost methodology
30.4.1.2	Retire the registered cost methodology
30.5.2.2 and 30.5.2.3	Remove ramp rates as a component of daily bids
30.5.2.4	Remove ramp rates as a component of daily bids; retire the registered cost methodology
30.5.2.6 and 30.5.2.7	Remove ramp rates as a component of daily bids
30.7.3.5	Resource characteristics provided in the Master File
30.7.7	Remove ramp rates as a component of daily bids
30.7.9(b)	Retire the registered cost methodology
30.7.9(c)	Opportunity cost methodology; retire the registered cost methodology
30.7.9 (flush language)	Provide a minor clarification
30.7.10.1	Opportunity cost methodology; retire the registered cost methodology
34.17.1(c)	Remove ramp rates as a component of daily bids

Tariff Section(s)	Topic(s) Addressed in Tariff Changes
34.17.5	Remove ramp rates as a component of daily bids
39.6.1.6 through 39.6.1.7	Retire the registered cost methodology
39.7.1.1	Opportunity cost methodology
39.7.1.1.4	Opportunity cost methodology
39.7.1.3.1	Revise the negotiated default energy bid process
40.6.4.1	Definition and scope of use-limited resources
40.6.8(d)	Provide a minor clarification
Appendix A, definition of “Maximum Daily Start-Ups”	Resource characteristics provided in the Master File
Appendix A, definition of “Minimum Down Time”	Resource characteristics provided in the Master File
Appendix A, definition of “Minimum Load Opportunity Costs”	Opportunity cost methodology
Appendix A, definition of “Minimum Run Time”	Resource characteristics provided in the Master File
Appendix A, definition of “Multi-Stage Generating Resources”	Resource characteristics provided in the Master File; provide a minor clarification
Appendix A, definition of “Operating Reserve Ramp Rate”	Remove ramp rates as a component of daily bids
Appendix A, definition of “Operational Ramp Rates”	Remove ramp rates as a component of daily bids
Appendix A, definition of “Opportunity Costs”	Opportunity cost methodology

Tariff Section(s)	Topic(s) Addressed in Tariff Changes
Appendix A, definition of "Projected Proxy Cost"	Retire the registered cost methodology
Appendix A, definition of "Pump Ramping Conversion Factor"	Resource characteristics provided in the Master File
Appendix A, definition of "Ramp Rate"	Remove ramp rates as a component of daily bids
Appendix A, definition of "Registered Cost"	Retire the registered cost methodology
Appendix A, definition of "Regulation Ramp Rate"	Remove ramp rates as a component of daily bids
Appendix A, definition of "Security Constrained Unit Commitment"	Resource characteristics provided in the Master File
Appendix A, definition of "Start-Up Opportunity Costs"	Opportunity cost methodology
Appendix A, definition of "Transition Cost"	Opportunity cost methodology
Appendix A, definition of "Use-Limited Resource"	Definition and scope of use-limited resources
Appendix A, definition of "Variable Energy Opportunity Costs"	Opportunity cost methodology