California Independent
System Operator Corporation

July 29, 2010

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: California Independent System Operator Corporation
Docket No. ER10-____- 000

Amendments to California ISO FERC Electric Tariff to Determine Appropriate Transition Costs for Use by Multi-Stage Generating Resources

Dear Secretary Bose:

Pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d, and Part 35 of the Federal Energy Regulatory Commission's (FERC or the Commission) regulations, 18 C.F.R. Part 35, and in compliance with Order No. 714 regarding electronic filing of tariff submittals,[1] the California Independent System Operator Corporation (ISO) hereby submits for filing the attached amendments to its Fifth Replacement FERC Electric Tariff. This tariff amendment establishes a methodology for the determination and mitigation of Transition Costs, which the ISO will provide to Multi-Stage Generating Resources for their transition from one operational configuration to another if committed by the ISO. This new functionality will enable the ISO to model and dispatch generation resources taking into consideration the alternative operational modes of resources such as combined cycle units. The ISO is seeking to implement the Multi-Stage Generating Resource functionality on October 1, 2010. To ensure adequate time to make the necessary adjustments in the event that the Commission does not fully accept the proposed tariff amendments, the ISO requests that the Commission rule on the instant filing by September 27, 2010.

I. EXECUTIVE SUMMARY AND BACKGROUND

[1] *Electronic Tariff Filings*, Order No. 714, FERC Stats. & Regs. ¶ 31,276 (2008).

On May 27, 2010, the ISO filed an amendment to its tariff necessary for the implementation of the ISO's new Multi-Stage Generating Resource functionality.[2] This will enable the ISO's market software to accurately model the unique operational and economic parameters of resources such as combined cycle generating units that have multiple operating or regulating ranges.[3] The current market design lacks the ability to sufficiently recognize the alternative operating and regulating ranges of such resources, which limit their ability to operate in only one of those ranges at any particular point in time. The new market functionality will also enable the various ISO market optimization processes to consider several configuration-based features of Multi-Stage Generating resources such as the feasible transition times and transition paths from one mode to another, as well as the configuration-based start-up and minimum load costs, just as it does for all generating resources at the resource level. In addition, the ISO proposed in the May 27 filing that Multi-Stage Generating Resources will have the ability to recover the cost of transitioning from one configuration to another, in addition to the configuration-specific start-up and minimum load costs, as part of the ISO's existing bid cost recovery mechanism.

The May 27 filing did not, however, establish a methodology for calculating and mitigating Transition Costs because the determination and mitigation of Transition Costs was being considered as part of a separate, broader stakeholder process addressing all forms of commitment costs for all types of resources.[4] Through this recently completed stakeholder process, the ISO and stakeholders produced a well-balanced proposal for Multi-Stage Generating Resources that provides just and reasonable compensation for transitions between configurations, while preventing economic withholding from the ISO markets. This final proposal on Transition Costs is now before the Commission in the instant filing.

The ISO proposes that Transition Costs be submitted to and verified by the ISO as part of the same monthly cycle currently in place for start-up and minimum load costs. Transition Costs would be based largely on verifiable heat inputs associated with start-up costs and operating characteristics for the resource. Scheduling Coordinators would be permitted to submit a dollar value to reflect the costs of each upward transition (*i.e.*, a transition from a lower configuration to a higher configuration) as well as a heat input value to reflect the quantity of fuel used for each downward transition. Each value

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[2] *See California Independent System Operator Corporation*, Docket No. ER10-1360, Amendments to California ISO FERC Electric Tariff to Include Multi-Stage Generating Resource Modeling.

[3] As described in the May 27 filing, due to their design, some generating resources have ranges between the overall minimum and maximum operating levels of the resource in which the resource cannot operate and through which it must be transitioned. Each distinct operating range is referred to as a configuration. Units with such constraints are known as Multi-Stage Generating Resources. Examples of such resources are combined-cycle units which are comprised of multiple generation resources, large thermal generators that require the operation of auxiliary equipment (*e.g.*, feed water pumps or additional boilers), and certain types of hydro-electric generation plants.

[4] The other aspects of commitment costs that were addressed in the stakeholder process are planned for implementation in 2011 and will be addressed in subsequent tariff filings with the Commission.

will be validated and registered in the ISO's Master File for a minimum of thirty days for use in the ISO markets and will be further indexed to the daily Gas Price Index during actual market runs. This will allow a Multi-Stage Generating Resource a just and reasonable opportunity to recover all appropriate costs associated with the transition of a unit from one operating configuration to another.

To ensure against any adverse economic bidding behavior, the ISO will apply two rules for potentially mitigating Transition Costs submitted to the ISO. When submitted to the ISO for registration in the Master File, the Transition Cost values for upward transitions will be mitigated according to the following two rules. These rules have been designed to ensure resources are also appropriately compensated for less identifiable costs of transitioning from one configuration to another.

1. For registered transitions in which the ISO would be dispatching or committing a resource from an off-line to an on-line configuration, the ISO will verify that the sum of the Transition Costs along the unidirectional registered upward transition path cannot exceed 125 percent of the proxy start-up cost of starting up directly into the target configuration plus 10 percent. If the Scheduling Coordinator has identified the registered configuration into which the resource would be transitioned as one into which the unit would be able to start-up directly, the lower bound for the Transition Costs will be set to $0. On the other hand, if the Scheduling Coordinator has identified the registered configuration as one into which the resource is not able to start-up directly, the lower bound for the sum of the Transition Costs will be 100 percent of the proxy start-up costs plus 10 percent.

2. For registered transitions in which the ISO would dispatch or commit a unit that is already on-line to transition to an upward configuration, the sum of the Transition Costs on the transition path must be between 100 percent and 125 percent of the costs of transitioning directly from the lower to the higher configuration.

The ISO proposes that these two rules will not apply to any transition from a higher configuration to a lower one. However, Scheduling Coordinators could submit heat input values for such downward transitions and such values would have to reflect the unit's operating characteristics accurately.

In the instant filing, the ISO also proposes certain rules for determining whether the Transition Costs should be provided for any commitment period. As is the case for minimum load costs for all resources, the ISO proposes to utilize a tolerance band to determine whether a Multi-Stage Generating Resource has reached the minimum output (PMin) of the target configuration for an upward transition, or the maximum output (PMax) of the target configuration for a downward transition. In addition, the ISO proposes that for each relevant settlement interval, if the unit's output is within the tolerance band, then the unit will be deemed to have completed its transition and will have its Transition Costs included in the relevant bid cost recovery calculation as of the settlement interval in which the resource has transitioned to its target configuration.

Implementation of the Multi-Stage Generating Resource functionality, which is planned for October 1, 2010, is expected to create several significant market and operational improvements for both the ISO and market participants. For example, the functionality will permit the ISO's optimization software to take advantage of the inherent flexibility of Multi-Stage Generating Resources, creating a more optimal dispatch. Automatically accounting for the operating constraints of such units will also reduce the incidence of manual interventions, such as Exceptional Dispatch or unit de-rates, to protect from infeasible dispatches. In addition, the implementation of this functionality fulfills the Commission's requirement that the ISO develop more robust modeling of resources such as combined cycle resources.[5] The proposal in the instant filing is feasible for implementation within this time frame and provides Multi-Stage Generating Resources just and reasonable compensation for transitions resulting from ISO dispatches as of the start of this new functionality.

II. DISCUSSION

A. Proposed Rules for the Submission and Calculation of Transition Costs

In its May 27 filing the ISO proposed to define Transition Cost as "the dollar cost per feasible transition associated with a given MSG Configuration . . . ." Transition Costs are thus defined with reference to two configurations – the "from" configuration and the "to" configuration. While these Transition Costs are intended to be based in large part on the heat input values that underlie the resources' start-up costs, these dollar costs are not intended to be the specific fuel costs associated with moving to a higher point on a unit's output curve. A generating resource invariably will consume more fuel as it produces a higher level of megawatt output, and therefore, it is expected that as a Multi-Stage Generating Resource moves to a higher configuration it naturally will consume greater levels of fuel, thereby resulting in a higher input value. Such costs, however, are not considered to be Transition Costs even if they are associated with a transition to a higher configuration. Rather, Transition Costs in the context of the Multi-Stage Generating Resources functionality are intended to include those costs that relate directly to, or are associated with, the physical equipment switching that must occur to transition the resource to a new configuration. Such costs may include fuel, but may also include other costs such as the increased maintenance costs associated with such transitions. Therefore, through the recently completed stakeholder process, the ISO concluded that Transition Costs should continue to be based on a dollar value, not necessarily representative of the cost of fuel for increasing output on a resource's output curve. Accordingly, in the instant filing, the ISO continues to propose, consistent with the previously submitted proposed definition of Transition Costs in the May 27 filing, that Scheduling Coordinators be permitted to submit upward Transition Costs in the form of a dollar value that can encompass more than just the fuel cost for such transitions.

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[5] *Cal. Indep. Sys. Operator Corp.*, 116 FERC ¶ 61,274, P 573 (2006).

The ISO also proposes that Transition Costs, similar to start-up costs, be indexed to the Gas Price Index. For reasons related to such indexing, Scheduling Coordinators must also submit a value referred to as the Transition Costs index. Scheduling Coordinators will derive this value by dividing the cost by the monthly Gas Price Index that is posted on the day that the Transition Costs are submitted.[6] Scheduling Coordinators may also submit heat input values for downward transitions.

The ISO proposes that Scheduling Coordinators may submit such Transition Costs on the same cycle that currently applies to the submission of start-up and minimum load costs for all resources. As currently reflected in Section 30.4 of the ISO's tariff, such costs may only be changed every thirty days. The ISO thus proposes to modify Section 30.4 to reflect that the same thirty-day period will apply to Transition Costs.[7] As part of the registration process described in proposed Section 30.4.2, to submit their Transition Costs, Scheduling Coordinators will submit the Transition Costs, the Transition Cost index values calculated by dividing the costs by the monthly gas price index, and the fuel input associated with the starting of each configuration from offline. Through the registration process, the ISO will provide a spreadsheet for the Scheduling Coordinators to use that will both calculate the lower and upper boundaries for allowable values based on the mitigation rules described below in Section II. B and identify during this registration and verification process any submitted Transition Costs that are outside of the boundaries. Because the two verification rules discussed below apply only to the upward Transition Costs, the submitted spreadsheet will identify the dollar per Thousand Thousand British Thermal Unit (MMBTU) values that have been cleared through the mitigation rules discussed below. The downward Transitions Costs will be based strictly on the heat input value and therefore, the spreadsheet will only contain the submitted heat input values. Exhibit No. ISO-1, included in this filing in Attachment D, provides an example of how the Transition Costs spreadsheet will be created and verified for these purposes. Step two of that exhibit provides an example of the submitted Transition Costs dollar amounts for the upward transitions and the heat input value, if submitted, for the downward transitions.

Once a unit begins operation as a Multi-Stage Generating Resource, through the operations of the ISO market processes, both upward and downward Transition Costs will be indexed to the daily Gas Price Index to minimize Multi-Stage Generating Resources' exposure to fuel price risk. Because, as discussed above, the majority of

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[6] Some Scheduling Coordinators have questioned the need to submit the implied fuel burn if deriving it is a simple exercise in arithmetic. While the calculation is not complicated, the ISO's general practice is not to alter Master File values submitted by Scheduling Coordinators. Following this practice helps ensure that Scheduling Coordinators retain as much control as feasible over the data that will be used by the ISO's systems.

[7] The May 27 filing explained that fundamental changes to a Multi-Stage Generating Resource's characteristics could only be made at set landmarks on the calendar. Some such characteristics related to transitions. The filing, however, did not include Transition Costs among the characteristics that could only be changed at set points. *See* proposed Section 27.8.3. Accordingly, this 30-day lock-in period is consistent with the May 27 filing.

Transition Costs will be related to fuel, this proposal strikes a reasonable balance between finding a precise way of capturing fluctuations in Transition Costs and finding a feasible methodology for capturing such fluctuations. While the indexing of Transition Costs in this way is not a perfectly precise index insofar as some Transition Costs are not related to the cost of fuel, the Gas Price Index provides a known and measurable value for an approximation of such fluctuations. Therefore, the ISO proposes that the ISO update upward Transition Costs on a daily basis through the ISO's bidding and validation processes by multiplying the Transition Cost index by that day's Gas Price Index. Because downward Transition Costs are submitted as a heat input value, they can be directly indexed to the Gas Price Index. As part of its daily bid validation process in running the markets, the ISO will multiply the heat input value by the daily Gas Price Index to derive a dollar value for the downward Transition Costs. These daily indexing requirements are reflected in proposed Section 30.4.2.

The registration and validation requirements of Transition Costs are similar to the existing processes for start-up and minimum load costs and the daily validation processes are also consistent with the ISO's indexing of start-up costs to the Gas Price Index.[8] These procedures enable Scheduling Coordinators to shape their Transition Costs to capture reasonable costs incurred for the transition of resources to upward configurations and allow the ISO to validate their reasonableness based on the rules discussed in Part II. B, below. Through the stakeholder process, stakeholders expressed no concerns regarding this registration process and the treatment of Transition Costs on the same monthly election timeline currently in place for start-up and minimum load costs. While certain stakeholders questioned the need for the submission of both the Transition Cost dollar value and the Transition Cost index, the ISO's proposal ensures the ISO's submission of accurate values in the Master File and does not pose a substantial hurdle for Scheduling Coordinators, whom simply will be required to divide their Transition Costs by the monthly Gas Price Index in place when the costs are being submitted. Therefore, the ISO's proposal regarding Transition Costs registration and verification offers a just and reasonable approach, largely consistent with the ISO's current start-up and minimum load cost procedures.

B. Proposed Mitigation of Transition Costs

After careful consideration of the need to mitigate Transition Costs through the recent stakeholder process, in collaboration with both the ISO's Department of Market Monitoring (DMM) and the Market Surveillance Committee (MSC), the ISO concluded that certain mitigation verification rules are necessary to ensure that the Transition Costs do not produce adverse market outcomes. The ISO identified the concern that unmitigated Transition Costs could be used by a Scheduling Coordinator to economically withhold their resource's output by structuring their Transition Costs to keep a configuration from being dispatched to or from a particular configuration. Specifically, DMM found that some Transition Cost bid data submitted to the ISO for purposes of market simulation suggested that Transition Costs could be "lumped" at

[8] *See* Section 30.4 of the ISO Tariff.

one (or more) configuration changes, thereby preventing the selection of the optimal configuration.[9] Similarly, there is a concern that downward Transition Costs could be lumped at the unit's higher configurations to prevent a unit from being dispatched downward. This again could prevent the unit from being dispatched down and result in excessive bid cost recovery payments as well as inefficient dispatch.

The rules should, therefore, be designed to prevent the potential for such strategic bidding of Transition Costs that would result in excessive bid cost recovery payments and market dispatch and pricing inefficiencies. While the ISO recognizes that it conceivably could verify after the fact whether such Transition Costs are consistent with the overall fuel input and operating characteristics of an individual plant, the ISO determined it is virtually impossible to confirm whether any submitted Transition Costs truly reflect the lesser identifiable costs such as the maintenance associated with a particular transition. Therefore, the ISO determined it necessary to develop rules that ensure that the submitted Transition Costs do not create such adverse incentives and lead to excessive payments for such activity. At the same time, the ISO recognizes that any rules adopted for such mitigation should also ensure that Scheduling Coordinators be provided a reasonable opportunity to recover the less identifiable transition related costs. The mitigation rules proposed by the ISO meet both these goals by eliminating the possibility of "lumpy" Transition Costs that are disproportionate to the unit's other Transition Costs for other configurations. Moreover, this proposal was supported by the DMM, the MSC, and stakeholders participating in the stakeholder process preceding this filing. The widespread support is an indication of its reasonableness in addressing the need for mitigation while providing just and reasonable compensation for such transitions.

The ISO proposes two validation rules that would apply in the registration and validation of Transition Costs as discussed above and as reflected in proposed Section 30.4.2. In applying the first mitigation rule, the ISO would verify that for registered transitions in which a Multi-Stage Generating Resource would be moved from its off-line state to an on-line configuration, the sum of the Transition Costs along the start-up or transition path does not exceed 125 percent of the proxy start-up cost of starting up directly into the targeted configuration plus a 10 percent adder to that proxy start-up cost. For MSG Configurations that the Scheduling Coordinator has identified as one in which a Multi-Stage Generating Resource is capable of direct start-up, the ISO will verify that the sum of the submitted Transition Costs along the start-up path or transition path is not lower than zero dollars. On the other hand, if the Scheduling Coordinator has not identified a MSG Configuration as one that the resource is capable of starting up into directly, then the ISO will verify that the sum of the submitted Transition Costs are not less than 100 percent of the proxy start-up costs plus a ten percent adder to the proxy start-up costs.

[9] *See* Comments Submitted by the California ISO Department of Market Monitoring at: http://www.caiso.com/2781/2781d67c59960.pdf.

This first rule is largely rooted in the proxy start-up costs, which the ISO will calculate solely for the purposes of applying this first rule because the proxy start-up cost will be calculated based on the heat input MMBTU values associated with the proxy or registered start-up costs by the Scheduling Coordinator for the resource's configurations as required in Section 30.4. The fuel input will be multiplied by the monthly Gas Price Index to arrive at the proxy start-up cost values. Then the ISO will add ten percent to this value to determine whether this value meets the requirements in rule one. Step 1 of the example provided in Exhibit No. ISO-1 provides an illustration of this calculation for a resource with four configurations. In deriving the proxy start-up costs, Scheduling Coordinators would not be permitted to use the registered start-up costs for the purposes of validating Transition Costs against this first rule. On the other hand, Scheduling Coordinators would be permitted to do so for the start-up costs used for commitment at the configuration level. It is important to note that this 10 percent adder is only relevant for the purposes of this first rule and does not apply as part of the start-up costs for purposes of commitment or bid cost recovery.

The ISO will also apply a second mitigation rule to the submitted Transition Costs. Under the second mitigation rule, the ISO will limit Transition Costs for instances in which a unit that is already on-line would be committed or dispatched into a higher configuration (*i.e.*, an upward transition). In such instances, the ISO will verify that the sum of the Transition Costs on the transition path is between 100 percent and 125 percent of the costs of transitioning directly from the lower to the higher configuration. This rule ensures that any incremental steps to the target configuration are at least as costly as the direct transition to that configuration.

Both of the above stated rules are reflected in proposed Section 30.4.2 and would be applied in the initial registration and validation of the Transition Costs and when modified thereafter. Once validated as consistent with these two rules, the ISO will index the submitted values to the daily Gas Price Index as discussed above in Part II. A.

The ISO does not propose to mitigate downward Transition Costs. Although downward transitions sometimes require fuel burn as the resource changes to a different, lower output configuration, these values are generally small. More often than not, downward transitions are costless. Because of the disparity in the magnitude of downward and upward Transition Costs, the use of the above-described rules to bound all transitions (both upward and downward) would require a wide range be allowed in which Transition Costs could be specified. Such a wide range would enable participants to strategically distribute their Transition Costs in such a way as to economically withhold output, and this would be antithetical to the purpose and design of the bounding rules. To avoid this outcome, the ISO proposes that the two rules be used only for the validation of upward Transition Costs which capture the vast majority of costs associated with moving from one configuration to another, and that the downward transitions be dealt with more simply by requiring a heat input value for the infrequent cases in which fuel burn is required for a downward transition. As is already the case with the fuel input values submitted by Scheduling Coordinators for starting up

a generating resource to its PMin, the fuel input values for downward transitions will be reviewed upon submission to the ISO and are subject to existing provisions which mandate that Scheduling Coordinators submit factually accurate information on the operating characteristics of their resources.[10]

This first mitigation rule addresses the concerns identified through the stakeholder process and discussed above regarding the need to balance the potential lumpiness of Transition Costs submitted by Scheduling Coordinators and the opportunity to recover proper compensation for such transitions. While this rule first ensures that the submitted Transition Costs are rooted in the proxy start-up costs, which are calculated using the fuel input value submitted for each MSG Configuration, it also provides for a 10 percent adder to the proxy start-up costs which expands the opportunity to recover costs that are not associated primarily with fuel input.

The ISO's proposal to set the lower bound to zero dollars for configurations for which the resource has been identified as capable of starting up is reasonable because the Transition Cost lumpiness problem discussed above is not a concern where the configuration in question is capable of being started-up directly. In such cases, the market optimization can move directly to the configuration identified as being capable of starting up rather than utilizing the intermediate transitions. This rule, therefore, prevents Scheduling Coordinators from economically withholding by submitting lumpy Transition Costs along the transition path to the start-able configuration. Furthermore, releasing the 100 percent lower bound for configurations identified as capable of being started-up can only provide the market with lower cost transitions. This aspect of the rule also addresses a concern identified by stakeholders and the MSC during the stakeholder process with regards to the 100 percent lower boundary.[11] The concern is that a strict 100 percent rule would give Multi-Stage Generating Resources less bidding flexibility than is provided to simple units with only start-up costs, and this inflexibility may harm their ability to compete to supply energy as well as overall market efficiency. The ISO's proposal to provide a lesser lower bound of zero in such instances addresses this concern and treats such Multi-Stage Generating Resources no less favorably than simple resources in this regard.

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[10] *See* Section 37.5 of the ISO Tariff. During the stakeholder process, market participants and DMM requested that the ISO ensure that the heat input values submitted would reflect the operating characteristics of a unit. Heat input values are provided today for start-up calculations for all generating units and will also be submitted as such for Multi-Stage Generating Resources. The ISO will continue to utilize its existing process in validating the submitted input values for start-up costs and will do the same for the purposes of the Transition Costs proposed in the instant filing. Upon submission of start-up cost and Transition Cost heat input values, the ISO reviews the values. If the ISO determines that the submitted values are outside of an expected range or if they are changed with unusual frequency, the ISO requests additional substantiating information from the Market Participant. If that information raises any concern that the heat input values were falsely submitted, the questionable heat input values are referred to the ISO's DMM for further inquiry as a potential submission of false information. This process has proven to work for the validation of such operating characteristics thus far and if in the future this process does not continue to be effective, the ISO will re-evaluate its procedures.

[11] *See* MSC Opinion at: http://www.caiso.com/27d5/27d5d9a829ec2.pdf.

The 100 percent and 125 percent lower and upper boundaries were also selected by the ISO to ensure that these values both provided a proper smoothing mechanism to the lumpiness issue as well as provided an opportunity for recovery of the resources' associated Transition Costs. In the first instance, in consideration of DMM's studies conducted based on Transition Costs submitted for the purposes of market simulation, the ISO was able to ensure that the boundaries were set at levels that limited the lumpiness concerns. Initially, the ISO proposed higher upper limits and lesser lower limits of 150 and 50 percent respectively. However, DMM verified that if the resources were also allowed the flexibility of moving costs within the transition matrix, the ISO should reduce the upper bound limit of 150 percent to help prevent economic withholding. DMM subsequently confirmed that the ISO's currently proposed values based on the new proxy cost plus 10 percent adder and narrower lower and upper bound percentages of 100 percent and 125 percent, respectively, provided sufficient smoothing out of such costs. Based on its evaluation of submitted Transition Costs for resources participating in market simulation, DMM found the bid rules to be more effective in preventing "lumped" bids in such a way that would result in market inefficiencies.

The ISO also conducted its own analysis to evaluate that the boundaries were sufficiently broad to ensure that resources could recover non-fuel input costs for transitions. The ISO evaluated the same data submitted by Market Participants thus far and was able to establish that the majority of costs submitted by stakeholders up to that point were consistent with the experience and expectations of ISO engineering and market experts in the operation of Multi-Stage Generating Resources. Having received data for over thirty such resources as part of market simulation readiness during the time this proposal was being developed, the ISO was able to conduct an analysis of the distribution of these costs. The analysis confirmed that the ISO's proposed ranges for the two Transition Cost bounding rules were appropriately set to provide Scheduling Coordinators an opportunity to recover Transition Costs. The ISO provided stakeholders with a spreadsheet model by which they were able to evaluate the extent to which they could capture their Transition Costs given the recommended bounds of the Transition Cost rules.[12] The ISO received no feedback indicating that the bounds were problematic from stakeholders' perspective. Finally, the ISO recognizes that actual market experience with these values after the ISO commences operations with the new Multi-Stage Generating Resource functionality may require an adjustment to ensure that the twin goals of smoothing out the lumpiness of costs and ensuring adequate recovery of such costs are both met. The ISO will evaluate these values as appropriate over time and will submit any necessary changes for the Commission's approval, where appropriate.

[12] This spreadsheet model is available at: http://www.caiso.com/23d9/23d9c75e22ab0.html#27cbddd035020 (available under the heading "Proposed Multi-Stage Generating Transition Cost Rules").

In preparation for the start of the Multi-Stage Generating Resource functionality on October 1, 2010, the ISO will be registering Transition Costs for resources that have commenced the registration process as of August 2, 2010, consistent with the pending tariff language before the Commission in Docket No. ER10-1360. The ISO anticipates that Scheduling Coordinators and the ISO will be capable of finalizing the Transition Costs registration during the month of September, in anticipation of Commission approval of the subject proposal. However, in the event that the ISO and the Scheduling Coordinators are not able to complete this registration process by October 1, 2010, the ISO proposes that the applicable Transition Costs be set to zero dollars for the first month or until the Scheduling Coordinator submits and the ISO successfully validates alternative Transition Costs. This approach will permit a resource that has begun the registration process on time and has otherwise successfully been registered as a Multi-Stage Generating Resource to participate as such as of October 1, 2010.[13]

This overall approach to mitigation does not dictate the specific nature or components of the costs associated with each individual transition. Instead, it takes a "top down" approach to constraining costs within the transition matrix. The rationale for the proposed top down design is twofold – it provides operators of Multi-Stage Generating Resources the freedom to accurately describe their Transition Costs while enabling the ISO to avoid onerous validation of costs for each transition. Within the boundaries provided by the rules, market participants can determine the distribution of costs across the various transitions associated with their specific units.

The proposed Transition Costs determination and mitigation strikes the proper balance between ensuring that, based on the fuel input values, Transition Costs do not result in infeasible and inefficient market outcomes, while also providing Scheduling Coordinators a reasonable opportunity to recover unidentifiable but justifiable costs associated with transitioning between configurations. This proposal was widely supported by stakeholders as it largely addressed the concerns raised through the stakeholder process. The Commission should accept the proposed rules as filed, thereby enabling the ISO to implement these Transition Costs measures as of the start of this new functionality on October 1, 2010.

C. Treatment of Transition Costs under Bid Cost Recovery

The May 27 filing proposed tariff language establishing that for the purposes of the bid cost recovery mechanism, Transition Costs will be treated similarly to other commitment costs such as startup and minimum load costs. The transmittal letter also explained that the ISO had reached resolution on two other Transition Cost details related to bid cost recovery but that because those details were so closely intertwined with the ongoing commitment costs stakeholder process, the ISO would wait to file the

[13] This $0 Transition Cost fall back is proposed only for the first month that the new functionality is in place. Beyond that time, if an existing Multi-Stage Generating Resource attempts to change its existing validated Transition Costs in a manner that violates either of the two rules, then the old Transition Costs will stay in effect until valid upward Transition Costs have been submitted and verified by the ISO.

tariff amendments related to those issues. Through the instant filing, the ISO now offers tariff language to effectuate those earlier policy decisions.

The first detail relates to how Transition Costs will apply within an eligible commitment period. The proposed amendments in Section 11.8 dictate that a Multi-Stage Generating Resource's Transition Costs will be eligible for bid cost recovery for the settlement intervals in which the resource reaches the PMin of the target configuration. As an example, consider a one-hour commitment period with six 10-minute intervals. If a resource with a 60 minute transition from configuration 1 to configuration 2 does not reach the PMin of configuration 2 until the fourth 10-minute interval, then the Transition Costs will only be considered for bid cost recovery for the fourth, fifth, and sixth intervals of that commitment period. In this example, the net effect is that the total Transition Costs would be allocated to the fourth, fifth, and sixth intervals of that hour, and to the first, second and third intervals of the subsequent hour if the resource were not shut-down for the intervals in the subsequent hours. The application of this eligibility rule can be further illustrated with a simple numerical example. For the same resource, consider submitted and verified Transition Costs for the transition from configuration 1 to configuration 2 of $120. Assuming the resource was either not dispatched for the next interval, or shut down for whatever reason, the resource's eligibility for the Transition Costs would be $60. This figure is calculated in the following manner. The $120 in Transition Costs is apportioned equally to each of the six intervals in that commitment period. This yields a figure of $20 per interval. That $20 per interval is then applied to the three intervals in which the resource was actually in configuration 2. The determination as to when the resource transitioned to configuration 2 would be based on the meter reading and application of the tolerance band.

The ISO recognizes this rule for applying Transition Costs is different from the rule that is used to determine whether a resource is eligible for start-up costs. A resource is eligible for start-up costs if the resource started at any time during the commitment period.[14] However, for this purpose Transition Costs are more akin to minimum load costs because the payment is not just for starting-up (or starting a transition), but for having completed the start-up (or the transition) and being ready to provide energy in the new status. The ability to provide energy (or provide it in the higher configuration) is the intent of the ISO's optimization having made the decision to dispatch a unit from off-line or for transitioning a Multi-Stage Generating Resource to a higher configuration.

The second detail relates to how the ISO will determine whether a unit has completed a transition into a new configuration. The proposed amendments in Section 11.8 indicate that, as is the case with minimum load, the ISO will apply a tolerance band in determining whether or not the resource has completed a transition to a new configuration. The tolerance band will be determined based on the PMax of the resource, rather than any individual configuration's PMax. For this reason, the size of

[14] *See, e.g.,* Section 11.8.2.1.1 of the ISO Tariff (describing recovery of start-up costs in the IFM).

the tolerance band will be the same across all configurations. The tolerance band will be applied to both the PMax and PMin of each configuration so that it is in effect in the case of both upward and downward transitions. As an example, without this tolerance band, a unit that transitions from one configuration up to the PMin of another configuration could otherwise end up not being paid at all for intervals in which it was running slightly under the target configuration's PMin. It is important to note, that this tolerance band will apply only for determining whether a transition was completed. It will not apply to energy output. As is the case now, Scheduling Coordinators will not be paid for energy that is not delivered. The ISO believes the existing defined Tolerance Band is appropriate for this purpose and proposes the application of the same Tolerance Band already used for other purposes in the ISO markets.

IV. STAKEHOLDER ENGAGEMENT AND POLICY DEVELOPMENT PROCESS

The process of developing this proposal involved significant input and collaboration from stakeholders. The resulting proposal reflects this collaboration and is broadly supported by stakeholders. An example of how the proposal developed based on stakeholder feedback can be seen in the treatment of downward Transition Costs. The decision to have Scheduling Coordinators submit such costs as heat input values as opposed to dollar values was done to balance market monitoring concerns about "lumpiness" with the desire of stakeholders to accurately express and recoup those costs, and the need to have the market optimization consider such costs in arriving at least-cost dispatch solutions.

As discussed above, the ISO also received important feedback from both the MSC and DMM. On June 4, 2010, the MSC adopted an opinion, attached herein as Attachment C, offering its view of the ISO's Revised Straw Proposal on commitment costs. In its opinion, the MSC supported the ISO's effort to treat Transition Costs in a broadly similar manner to other commitment costs. The MSC's major observation was that the version of Rule 1 for mitigating Transition Costs that was included in the Revised Straw Proposal required the sum of Transition Costs along the start-up path to always be at least 100 percent of the Proxy Start-up costs for a configuration, whether or not the target configuration was start-able. As discussed above, the MSC noted that this restriction was inconsistent with the general treatment of start-up costs in that units choosing the proxy cost option can submit daily start-up bids anywhere between zero and the proxy cost. The ISO agreed with this observation and, based in part on this reason, the ISO amended Rule 1 to only impose the 100 percent minimum for non-start-able configurations.

DMM also has been engaged actively in the policy development process for Transition Costs, submitting numerous written comments on the progression of the ISO's commitment costs proposals. As discussed above, DMM's comments, analysis, and observations were instrumental in shaping various elements of the proposal. Moreover, stakeholders generally supported DMM's recommendations.

One area of stakeholder concern has dealt with the timing of the Transition Cost development process relative to the implementation timeline of the larger Multi-Stage Generating Resource functionality. Some stakeholders have expressed concern that the Transition Costs development process happened too late in the Multi-Stage Generating Resource functionality implementation cycle. The ISO believes that because the Transition Cost proposal is well supported, its implementation is relatively straightforward, and the overall implementation of the Multi-Stage Generating Resource functionality is proceeding relatively well, there is little or no impact to the success or schedule of the Multi-Stage Generating Resource functionality initiative due to the timeline for developing Transition Costs policy. Timely Commission approval of the ISO's proposal will facilitate implementation of the Multi-Stage Generating Resource functionality. Market participants and the ISO are currently expending great effort to ensure the timely implementation of that functionality. Any substantial modification of the proposed treatment of Transition Costs too close to the intended start date may disrupt those efforts and threaten the planned October 1 implementation date. For this reason, the ISO respectfully requests an order by the Commission by September 27, 2010, so that the ISO and market participants may evaluate any necessary changes resulting from the Commission's decision on the instant filing.

In order to make a timely filing without the need to request expedited treatment or a waiver of the sixty day notice requirements under the FPA, the ISO conducted the tariff stakeholder process prior to obtaining ISO Board of Governors approval for this proposal on July 26, 2010. The tariff stakeholder process started on July 12, 2010, with the ISO's posting of its first draft tariff language. On July 21, 2010, two parties submitted comments, to which the ISO posted a response on July 23, 2010 as well as modified tariff language incorporating their requested changes. On July 23, 2010, the ISO conducted a stakeholder meeting to review the tariff language, the questions and answers, answer any verbal questions, as well as inform participants of its next steps towards making the instant filing. The tariff language was for the most part supported by participants and no concerns were raised during this time with the overall policy approach.

V. DESCRIPTION OF TARIFF CHANGES

The following table reflects the proposed amendments to the Tariff that are covered by the instant filing.

Tariff Section	Relevant CRR Enhancement
11.8.2.1.7.1	Adding additional detail to describe the applicability of IFM Transition Costs.
11.8.3.1.4.1	Adding additional detail to describe the applicability of RUC Transition Costs.
11.8.4.1.7.1	Adding additional detail to describe the applicability of RTM Transition Costs.
30.4	Modifying existing language to provide similar treatment of registration and verification of Transition Costs on the same 30-day cycle provided for start-up and minimum load options.
30.4.1.1	Adding detail to describe how selection of Proxy Cost Option will apply to MSG Configurations
30.4.1.2	Adding detail to describe how selection of Registered Cost Option will apply to MSG Configurations.
30.4.2	New Section to provide details regarding the registration, verification, and daily indexing of Transition Costs.

VI. EFFECTIVE DATES

The ISO respectfully requests that the tariff amendments, contained in the instant filing, be approved and given an effective date of October 1, 2010. As described above and in the ISO's filing seeking approval of the Multi-Stage Generating Resource functionality, a methodology for calculating Transition Costs is a necessary element of implementing the Multi-Stage Generating Resource functionality. The ISO plans to go live with the functionality for the October 1, 2010 Trade Date. For this reason, the ISO respectfully requests an order from the Commission as soon as practicable, and no later than September 27, 2010, so as to allow time to delay implementation of the Multi-Stage Generating Resource functionality in the event of an adverse Commission ruling on the instant filing.

VII. COMMUNICATIONS

Communications regarding this filing should be addressed to the following individuals. The individuals identified with an asterisk are the persons whose names should be placed on the official service list established by the Secretary with respect to this submittal:

Anthony Ivancovich
Assistant General Counsel-
Regulatory
Anna A. McKenna*
Senior Counsel - Regulatory
David Zlotlow*
Counsel – Regulatory

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System Operator Corporation
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VIII. SERVICE

The ISO has served copies of this transmittal letter, and all attachments, on the California Public Utilities Commission and the California Energy Commission, and all parties with effective Scheduling Coordinator Service Agreements under the ISO Tariff. In addition, the ISO is posting this transmittal letter and all attachments on the ISO website.

IX. ATTACHMENTS

The following documents, in addition to this transmittal letter, support the instant filing:

Attachment A	Revised ISO Tariff Sheets – Clean
Attachment B	Revised ISO Tariff Sheets – Blackline
Attachment C	California ISO Market Surveillance Committee "Opinion on Changes to Bidding and Mitigation of Commitment Costs"
Attachment D (Exhibit No. ISO-1)	Example of Registration and Verification of Costs

X. CONCLUSION

For the foregoing reasons, the ISO respectfully requests that the Commission approve this tariff amendment as filed. Please contact the undersigned if you have any questions concerning this matter.

Respectfully submitted,

/s/David S. Zlotlow

Anthony Ivancovich
Assistant General Counsel- Regulatory
Anna A. McKenna
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Attorneys for the California Independent System Operator Corporation

Attachment A – Clean Tariff

Multi-Stage Generating Resource Transition Costs Tariff Amendment

California Independent System Operator Corporation

Fifth Replacement FERC Electric Tariff

11.8.2.1.7.1 IFM Transition Costs Applicability

Within any eligible IFM CAISO Commitment Period determined pursuant to the rules specified in Section 11.8.1.3, the CAISO shall apply the IFM Transition Costs for the Settlement Intervals in which the Multi-Stage Generating Resources reaches the Minimum Load amount of the MSG Configuration to which the Multi-Stage Generating Resource is transitioning, subject to the Tolerance Band.

* * *

11.8.3.1.4.1 RUC Transition Costs Applicability

Within any eligible RUC CAISO Commitment Period determined pursuant to the rules specified in Section 11.8.1.3, the CAISO shall apply the RUC Transition Costs for the Settlement Intervals in which the Multi-Stage Generating Resources reaches the Minimum Load amount of the MSG Configuration to which the Multi-Stage Generating Resource is transitioning, subject to the Tolerance Band.

* * *

11.8.4.1.7.1 RTM Transition Costs Applicability

Within any eligible RTM CAISO Commitment Period determined pursuant to the rules specified in Section 11.8.1.3, the CAISO shall apply the RTM Transition Costs for the Settlement Intervals in which the Multi-Stage Generating Resources reaches the Minimum Load of the MSG Configuration to which the Multi-Stage Generating Resource is transitioning, subject to the Tolerance Band.

*** * ***

30.4 Election For Start-Up Costs And Minimum Load Costs

Scheduling Coordinators for Generating Units and Resource-Specific System Resources may elect on a thirty (30)-day basis either of the two options provided below (the Proxy Cost option or the Registered Cost option) for specifying their Start-Up Costs and Minimum Load Costs to be used for those resources in the CAISO Markets Processes. Unless the Scheduling Coordinator has registered Start-Up Costs and Minimum Load Costs in the Master File in accordance with the Registered Cost option, the CAISO will assume the Proxy Cost option as the default option. Scheduling Coordinators for Multi-Stage Generating Resources may also register with the CAISO their Transition Costs on a thirty (30)-day basis.

30.4.1 Start-Up and Minimum Load Costs

30.4.1.1 Proxy Cost Option

For natural gas fired resources, the Proxy Cost option uses fuel-cost adjusted formulas for Start-Up Costs and Minimum Load Costs based on the resource's actual unit-specific performance parameters. The Start-Up Costs and Minimum Load Costs values utilized in the CAISO Markets Processes will be these formulaic values adjusted for fuel-cost variation on a daily basis as calculated pursuant to a Business Practice Manual. Start-Up Costs also include the cost of auxiliary power calculated using the unit-specific MWh quantity of auxiliary power used for Start-Up multiplied by a resource specific electricity price. Minimum Load Costs also includes operations and maintenance costs as provided in Section 39.7.1.1.2. For all other resources, this option shall be based on the relevant cost information of the particular resource, which will be provided to the CAISO by the Scheduling Coordinator and maintained in the Master File. In the event that the Scheduling Coordinator for a unit does not provide sufficient data for the CAISO to determine the unit's Proxy Costs, the CAISO will assume that the unit's Start-Up Costs and Minimum Load Costs are zero. If a Multi-Stage Generating Resource elects the Proxy Cost option, that election will apply to all the MSG Configurations for that resource. The Proxy Cost values for Multi-Stage Generating Resources will be calculated for each specific MSG Configuration.

30.4.1.2 Registered Cost Option

Under the Registered Cost option, the Scheduling Coordinator may register values of its choosing for Start-Up Costs and Minimum Load Costs in the Master File subject to the maximum limit specified in Section 39.6.1.6. For a resource to be eligible for the Registered Cost option there must be sufficient information in the Master File to calculate the Proxy Cost option. The Start-Up Cost and Minimum Load Cost values utilized in the CAISO Markets Processes will be these pre-specified values and will be fixed for a minimum of 30 days in the Master File unless (a) the resource's costs, as calculated pursuant to the Proxy Cost option, exceed the Registered Cost option, in which case the Scheduling Coordinator may elect to switch to the Proxy Cost option for the balance of any 30-day period, or (b) the Start-Up Costs and Minimum Load Costs in the Master File exceed the maximum limit specified in Section 39.6.1.6 after this minimum 30-day period, in which case they will be lowered to the maximum limit specified in Section 39.6.1.6. If a Multi-Stage Generating Resource elects the Registered Cost option, that election will apply to all the MSG Configurations for that resource. The cap for the Registered Cost values for each MSG

Configuration will be based on the Proxy Cost values calculated for each MSG Configuration, which are also subject to the maximum limit specified in Section 39.6.1.6.

30.4.2 Transition Costs

Scheduling Coordinators may register and the CAISO will validate Transition Costs for Multi-Stage Generating Resources as described below. Once accepted by the CAISO, such Transition Costs will apply until modified and will apply for a minimum of thirty (30) days. Scheduling Coordinators may change their Transition Costs pursuant to the time line that applies to changes to the Master File. During the registration process, the Scheduling Coordinator shall submit a dollar value for each upward Transition Cost, including a Transition Costs index which consists of the Transition Costs dollar value divided by the applicable monthly Thousand Thousand British Thermal Units (MMBtu) Gas Price Index on the day that the Scheduling Coordinator is registering the Transition costs value with the CAISO. At the time of registration, the CAISO will validate that the upward Transition Costs dollar value and the Transition Costs index are consistent. The CAISO will further validate the upward Transition Costs dollar values using the two rules described below, and will include the validated values in the Master File. The Scheduling Coordinator shall also submit a fuel input value, which consists of a quantity of natural gas in MMBtu, for each downward MSG Transition such that the fuel input value accurately reflects the operating characteristics of the Multi-Stage Generating Resource, which the CAISO may reject if perceived to be inconsistent with such characteristics. Through the Bid validation process in the CAISO Markets, the CAISO will adjust both the downward and upward Transition Costs by the daily Gas Price Index when Scheduling Coordinators submit Bids into the CAISO Markets for Multi-Stage Generating Resources to calculate the Transition Costs per the submitted Bid. For the first thirty (30) days following the effective date of this provisions, if the CAISO is not able to validate the Transition Costs amounts submitted by the Scheduling Coordinator for a Multi-Stage Generating Resource prior

Rule 1: The CAISO will constrain the Transition Costs along each of the feasible, unidirectional MSG Transition paths from Off to each MSG Configuration such that their sum is between one-hundred (100) percent and one-hundred twenty five (125) percent of the MSG Configuration's proxy Start-Up Cost value plus ten (10) percent; where the MSG Configuration's proxy Start-Up Cost value is determined using the same methodology provided in Section 30.4.1.1 except that the CAISO will use the monthly Gas Price

Index as opposed to the daily value. If the Scheduling Coordinator flags an MSG Configuration as able to Start-Up as part of its registration requirements in Section 27.8, the CAISO will use a value of $0 as the lower bound for the MSG Transition paths up to the MSG Configuration flagged as able to Start-Up.

Rule 2: The CAISO will validate that the sum of Transition Costs for incremental MSG Transitions along a feasible, unidirectional path between two MSG Configurations is between one-hundred (100) percent and one-hundred twenty five (125) percent of the Transition Cost associated with the direct transition to the target MSG Configuration.

* * *

Attachment B – Blacklines

Multi-Stage Generating Resource Transition Costs Tariff Amendment

California Independent System Operator Corporation

Fifth Replacement FERC Electric Tariff

* * *

11.8.2.1.7.1 IFM Transition Costs Applicability

Within any eligible IFM CAISO Commitment Period determined pursuant to the rules specified in Section 11.8.1.3, the CAISO shall apply the IFM Transition Costs for the Settlement Intervals in which the Multi-Stage Generating Resources reaches the Minimum Load amount of the MSG Configuration to which the Multi-Stage Generating Resource is transitioning, subject to the Tolerance Band.

*** * ***

11.8.3.1.4.1 RUC Transition Costs Applicability

Within any eligible RUC CAISO Commitment Period determined pursuant to the rules specified in Section 11.8.1.3, the CAISO shall apply the RUC Transition Costs for the Settlement Intervals in which the Multi-Stage Generating Resources reaches the Minimum Load amount of the MSG Configuration to which the Multi-Stage Generating Resource is transitioning, subject to the Tolerance Band.

* * *

11.8.4.1.7.1 RTM Transition Costs Applicability

Within any eligible RTM CAISO Commitment Period determined pursuant to the rules specified in Section 11.8.1.3, the CAISO shall apply the RTM Transition Costs for the Settlement Intervals in which the Multi-Stage Generating Resources reaches the Minimum Load of the MSG Configuration to which the Multi-Stage Generating Resource is transitioning, subject to the Tolerance Band.

* * *

30.4 Election For Start-Up Costs And Minimum Load Costs

Scheduling Coordinators for Generating Units and Resource-Specific System Resources may elect on a thirty (30)-day basis either of the two options provided below (the Proxy Cost option or the Registered Cost option) for specifying their Start-Up Costs and Minimum Load Costs to be used for those resources in the CAISO Markets Processes. Unless the Scheduling Coordinator has registered Start-Up Costs and Minimum Load Costs in the Master File in accordance with the Registered Cost option, the CAISO will assume the Proxy Cost option as the default option. Scheduling Coordinators for Multi-Stage Generating Resources may also register with the CAISO their Transition Costs on a thirty (30)-day basis.

30.4.(1 Start-Up and Minimum Load Costs

30.4.1.1) Proxy Cost Option

. For natural gas fired resources, the Proxy Cost option uses fuel-cost adjusted formulas for Start-Up Costs and Minimum Load Costs based on the resource's actual unit-specific performance parameters. The Start-Up Costs and Minimum Load Costs values utilized in the CAISO Markets Processes will be these formulaic values adjusted for fuel-cost variation on a daily basis as calculated pursuant to a Business Practice Manual. Start-Up Costs also include the cost of auxiliary power calculated using the unit-specific MWh quantity of auxiliary power used for Start-Up multiplied by a resource specific electricity price. Minimum Load Costs also includes operations and maintenance costs as provided in Section 39.7.1.1.2. For all other resources, this option shall be based on the relevant cost information of the particular resource, which will be provided to the CAISO by the Scheduling Coordinator and maintained in the Master File. In the event that the Scheduling Coordinator for a unit does not provide sufficient data for the CAISO to determine the unit's Proxy Costs, the CAISO will assume that the unit's Start-Up Costs and Minimum Load Costs are zero. If a Multi-Stage Generating Resource elects the Proxy Cost option, that election will apply to all the MSG Configurations for that resource. The Proxy Cost values for Multi-Stage Generating Resources will be calculated for each specific MSG Configuration.

30.4.1.(2) Registered Cost Option

. Under the Registered Cost option, the Scheduling Coordinator may register values of its choosing for Start-Up Costs and Minimum Load Costs in the Master File subject to the maximum limit specified in Section 39.6.1.6. For a resource to be eligible for the Registered Cost option there must be sufficient information in the Master File to calculate the Proxy Cost option. The Start-Up Cost and Minimum Load Cost values utilized in the CAISO Markets Processes will be these pre-specified values and will be fixed for a minimum of 30 days in the Master File unless (a) the resource's costs, as calculated pursuant to the Proxy Cost option, exceed the Registered Cost option, in which case the Scheduling Coordinator may elect to switch to the Proxy Cost option for the balance of any 30-day period, or (b) the Start-Up Costs and Minimum Load Costs in the Master File exceed the maximum limit specified in Section 39.6.1.6 after this minimum 30-day period, in which case they will be lowered to the maximum limit specified in Section 39.6.1.6. If a Multi-Stage Generating Resource elects the Registered Cost option, that election will apply to all the MSG Configurations for that resource. The cap for the Registered Cost values for each MSG

Configuration will be based on the Proxy Cost values calculated for each MSG Configuration, which are also subject to the maximum limit specified in Section 39.6.1.6.

30.4.2 Transition Costs

Scheduling Coordinators may register and the CAISO will validate Transition Costs for Multi-Stage Generating Resources as described below. Once accepted by the CAISO, such Transition Costs will apply until modified and will apply for a minimum of thirty (30) days. Scheduling Coordinators may change their Transition Costs pursuant to the time line that applies to changes to the Master File. During the registration process, the Scheduling Coordinator shall submit a dollar value for each upward Transition Cost, including a Transition Costs index which consists of the Transition Costs dollar value divided by the applicable monthly Thousand Thousand British Thermal Units (MMBtu) Gas Price Index on the day that the Scheduling Coordinator is registering the Transition costs value with the CAISO. At the time of registration, the CAISO will validate that the upward Transition Costs dollar value and the Transition Costs index are consistent. The CAISO will further validate the upward Transition Costs dollar values using the two rules described below, and will include the validated values in the Master File. The Scheduling Coordinator shall also submit a fuel input value, which consists of a quantity of natural gas in MMBtu, for each downward MSG Transition such that the fuel input value accurately reflects the operating characteristics of the Multi-Stage Generating Resource, which the CAISO may reject if perceived to be inconsistent with such characteristics. Through the Bid validation process in the CAISO Markets, the CAISO will adjust both the downward and upward Transition Costs by the daily Gas Price Index when Scheduling Coordinators submit Bids into the CAISO Markets for Multi-Stage Generating Resources to calculate the Transition Costs per the submitted Bid. For the first thirty (30) days following the effective date of this provisions, if the CAISO is not able to validate the Transition Costs amounts submitted by the Scheduling Coordinator for a Multi-Stage Generating Resource prior to the effective date of this provision, the applicable Transition Costs for this first month shall be $0.

Rule 1: The CAISO will constrain the Transition Costs along each of the feasible, unidirectional MSG Transition paths from Off to each MSG Configuration such that their sum is between one-hundred (100) percent and one-hundred twenty five (125) percent of the MSG Configuration's proxy Start-Up Cost value plus ten (10) percent; where the MSG Configuration's proxy Start-Up Cost value is determined using the

same methodology provided in Section 30.4.1.1 except that the CAISO will use the monthly Gas Price Index as opposed to the daily value. If the Scheduling Coordinator flags an MSG Configuration as able to Start-Up as part of its registration requirements in Section 27.8, the CAISO will use a value of $0 as the lower bound for the MSG Transition paths up to the MSG Configuration flagged as able to Start-Up.

Rule 2: The CAISO will validate that the sum of Transition Costs for incremental MSG Transitions along a feasible, unidirectional path between two MSG Configurations is between one-hundred (100) percent and one-hundred twenty five (125) percent of the Transition Cost associated with the direct transition to the target MSG Configuration.

* * *

Attachment C – California ISO Board of Governors Memo
Multi-Stage Generating Resource Transition Costs Tariff Amendment
California Independent System Operator Corporation
Fifth Replacement FERC Electric Tariff

California Independent
System Operator Corporation

Memorandum

To: ISO Board of Governors

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

Date: July 16, 2010

Re: **Decision on Modifications to Bidding Provisions for Commitment Costs**

This memorandum requires Board action.

EXECUTIVE SUMMARY

Shortly after the implementation of the new market, several suppliers identified issues related to the inefficient start-up and commitment of certain generation resources. In response, Management commenced a two phased stakeholder process to resolve these issues. Phase one, which was completed last year, resulted in rule changes to significantly reduce the time restrictions for changing start-up and minimum load costs from six months to thirty days. In phase two of this initative, Management proposes to: 1) further refine start-up and minimum load calculations and bidding rules and 2) apply mitigation rules for multi-stage generation transition costs.

> ***Moved, that the ISO Board of Governors approves the proposed tariff change regarding modifications to bidding provisions for commitment costs as detailed in the memorandum dated July 16, 2010; 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.***

BACKGROUND

At the start of the new market, generating units were evaluated for unit commitment by the market optimization based on their start-up and minimum load cost elections that were required to be in place for six months. Under these rules, a market participant could elect either a registered cost option or a proxy cost option for their start-up and minimum load bids. Under the proxy cost option, a unit's start-up and minimum load values are calculated daily by the ISO based on formulas that adjust for fuel costs using daily gas prices. On the other hand if a market participant selects the registered cost option, the unit owner provides specific values for start-up and minimum load that remain fixed for the selection period. The submitted values under this option cannot be greater than 200% of the projected proxy costs, which are calculated by the ISO on a monthly basis using future gas price indices.

Within the first few months of the new market, many market participants expressed concerns that their resources were being committed more frequently than good utility practice would dictate and were frequently held at minimum operating levels only to be de-committed one day and re-committed the next. Market participants observed that this caused extra wear and tear on their generating units, used up fixed numbers of unit start-ups and emissions allocations, and made it difficult for unit owners to recoup their operating costs.

While some of these cycling issues were due to generation and transmission outages and to extensive self-scheduling at the start of the new market, the ISO recognized that the market software was also contributing to this problem and that the software needed some fine-tuning and corrections. In addition, the ISO also recognized that market participants needed greater flexibility to manage their resources. To further address these concerns, the ISO launched a two-phased approach to enhancing market participants' options for electing start-up and minimum load cost compensation. The first phase, which was implemented in July 2009, significantly shortened the period in which scheduling coordinators could modify their start-up and minimum load elections between the registered and proxy cost options from six months to 30 days.

The second phase, which generated this proposal, provided the ISO and stakeholders the opportunity to further refine start-up and minimum load cost compensation. While the policy change resulting from the first phase of the initiative revised the timing of cost option elections, the calculations of those cost options themselves are revised through this second phase to better capture cost components of start-up and minimum load. Additionally, through this renewed initiative, the ISO and stakeholders have developed bidding rules that will be applied to multi-stage generating resources' transition costs.

Multi-stage generating resources are capable of operating in multiple output ranges due to their generating technology. The most common example of this is a combined cycle generator which is capable of operating under different turbine configurations. For example, a 2x1 combined cycle resource is comprised of two gas turbines, and one steam turbine. Even this relatively simple multi-stage generating resource can operate in one of a number of configurations at a given time: one gas turbine, two gas turbines, one gas turbine and the steam turbine, and both gas turbines and the steam turbine. The multi-stage generator modeling

functionality, which is scheduled to be launched on October 1, 2010, will enable market participants with multi-stage generators to bid in the various configurations of those units separately. Associated with transitions between any of the various configurations are transition costs. The mitigation of transition costs is included as an important component of this proposal as they could otherwise potentially be used strategically to withhold a multi-stage generating resource's capacity.

PROPOSAL

In this initiative, ISO staff worked with stakeholders to develop refinements to start-up and minimum load calculations and enhanced bidding options, and also formulated market power mitigation rules for multi-stage generator transition costs.

The changes to start-up and minimum load are designed to improve the extent to which these parameters capture the costs of starting up a generating unit and running it at its minimum load level. In so doing, the market optimization will make more efficient dispatch decisions and market participants will be better able to recoup the costs associated with starting a generating unit and running it at its minimum output level.

Management proposes the following modifications to the start-up and minimum load parameters:

General changes to start-up and minimum load cost rules

- Allow market participants to independently elect the proxy cost option or the registered cost option for their start-up and minimum load costs. The current election applies to both start up and minimum load costs. These elections would still be fixed for 30 days;

- Enable market participants to submit bids on a daily basis for start-up and minimum load values when they have elected the proxy cost option . The bids must be limited to a minimum of zero to a maximum of the calculated proxy value. Under the current rules, no daily bidding is allowed;

- Evaluate the default operations and maintenance values that are used in the proxy calculation for minimum load every three years. Currently the default O&M values for minimum load are fixed and no review cycle is specified; and

- Change the natural gas delivery point to Citygate from Border for Southern California to better reflect the price of delivered natural gas when calculating start-up, minimum load and transition costs under the proxy cost option.

Rules for Transition Costs

In addition to the changes to start-up and minimum load, Management proposes market power mitigation rules to mitigate the potential for strategic use of multi-stage generator transition costs to withhold capacity of those units. Just as start-up and minimum load costs figure into commitment decisions, transition costs figure into the optimization's decisions to move a multi-stage generator resource from one configuration to another. For this reason, transition costs must be constrained appropriately, while still providing enough flexibility for these complex resources to express the costs associated with moving between configurations. The market power mitigation rules developed for transition costs through this stakeholder initiative are summarized below:

- The first rule (Rule 1) limits the magnitude of the transition costs from offline to a certain configuration. The rule states that the sum of the transition costs for a multi-stage generator resource cannot exceed 125% of the cost associated with starting directly to the highest MW configuration (proxy cost value +10%);

- The second rule (Rule 2) is designed to limit transition costs between configurations such that the cost of moving from one configuration to another is between 100 and 125 percent of the direct transition to the highest MW configuration; and

- Costs associated with downward transitions (higher MW output configuration to a lower MW output configuration) will not be subject to Rule 1 and Rule 2. Rather, multi-stage generator units can submit a heat input value (fuel quantity) which is used to calculate the downward transition costs.

POSITIONS OF THE PARTIES

In the written comments, there were several common issues brought forward by stakeholders as described below. Stakeholder comments are further detailed in the stakeholder matrix which is *Attachment A* to this memo. The formal opinion from the Market Surveillance Committee is included as *Attachment B.*

Independent election of either the proxy or registered option for start-up and minimum load cost calculations

Comments submitted by stakeholders as well as the Market Surveillance Committee were uniformly supportive of this change. The change will enable participants to elect the proxy cost option, which is indexed to the gas price index, for minimum load costs while electing the registered cost option, which is governed only by a cap of 200% of the proxy cost option, for start-up costs.

Dynegy and NCPA/SVP expressed support for inclusion of an opportunity costs component for the proxy start-up calculation for environmentally use-limited resources. RRI Energy Services, Inc. and SCE requested that the ISO develop a fixed component to the start-up proxy cost calculation methodology through which they could recoup "per start" O&M costs. Given the flexibility associated with the independent election of proxy or registered cost options for start-up and minimum load, Management concluded that these more complex changes – for which there was not broad support among stakeholders – are not warranted at this time. Market participants are not required to provide justification for their registered cost value, which is restricted only in that it must be less than or equal to 200% of the calculated proxy cost option. Thus, if the per MWh O&M element of minimum load is insufficient to recoup their O&M costs, the registered cost option can be selected so that larger O&M costs associated with starting and/or running a resource at minimum load can be recouped.

Daily bidding of start-up and minimum load for costs calculated using the proxy cost calculation methodology provided those bids are between $0 and the calculated proxy value

This functionality was requested and strongly supported by stakeholders.

Dynegy advocated for unrestricted daily bidding of start-up and minimum load costs that would be subject to dynamic mitigation using the same methodology used for energy bids. Implementing daily bidding of start-up and minimum load in this manner would require significant changes to the market optimization through the inclusion of the dynamic mitigation of start-up and minimum load costs. Without broader support and evidence of the need to do so, Management does not propose such functionality at this time. The Department of Market Monitoring and the Market Surveillance Committee are in agreement with this approach.

Rebenchmarking of default O&M values every three years

Stakeholder feedback through the first phase of the initiative indicated the need to recover higher O&M costs related to unit start-up. As part of the initial straw proposal for the second phase of the initiative, ISO staff suggested for consideration the methodology PJM has employed for participants to submit detailed O&M cost accounting for their generating resources to the ISO. There was little support for this option, and stakeholders did not want this option to supplant the option currently available to negotiate a higher O&M value as part of developing a negotiated default energy bid.

Since the negotiated O&M rate has not been sought by any market participants, and there was not broad support for submitted O&M values as they have in PJM, we conclude that the current per MWh O&M default values used in the proxy minimum load calculations are not insufficient. Those participants who have contractural arrangements that include per-start O&M costs are encouraged to take advantage of the proposed ability to elect the registered cost option for start-up costs, while employing the proxy cost option for minimum load costs which are more dependent on fuel prices.

Change to the natural gas delivery point price used for generating resources south of Path 15

Stakeholders were supportive of the proposal to replace the Southern California Border natural gas delivery point price with the City Gate price for generating units south of Path 15. Use of this index will better reflect the cost of delivered natural gas in Southern California.

Dynegy, RRI and Wellhead brought up additional concerns with respect to natural gas pricing. Those issues included the need to recoup intra-state transportation charges, differences between day-ahead and real-time natural gas prices and the balancing charges associated with real-time deviations from day-ahead energy schedules, and costs resulting from operational flow orders. Although these may well be costs that participants may legitimately seek to recoup, support for these sporadic costs was not broad enough for Management to recommend the complex implementation of mechanisms to capture these costs.

Upward multi-stage generator transition costs will be bound by two rules; heat input values will be submitted for downward transition costs

Throughout the policy initiative, stakeholders provided invaluable feedback to help refine the transition cost bounding rules. Since this is a new approach to cost mitigation, there were many questions and clarifications, examples, and subsequent revisions before Management arrived at the final policy recommendation. This element of the proposal in particular has benefited from the collaborative and supportive participation of stakeholders. Stakeholders are supportive of this proposal.

RECOMMENDATION

Management requests Board approval of this proposal for modifications to bidding provisions for commitment costs. The mitigation rules for multi-stage generating resources' transition costs will be filed with the Federal Energy Regulatory Commission and implemented as part of the multi-stage generation design in October 2010, whereas the changes to start-up and minimum load are targeted for implementation by Fall 2011.

Attachment A

Stakeholder Process: Modifications to Bidding Provisions for Commitment Costs

Summary of Submitted Comments

Stakeholders submitted three rounds of written comments to the ISO on the following dates:

- Round One: April 16, 2010
- Round Two: May 21, 2010
- Round Three: June 28, 2010

This matrix summarizes comments provided on the *Revised Straw Proposal*, which were due May 21, 2010, and comments on the *Draft Final Proposal*, which were due June 28, 2010.

Stakeholder comments are posted at: http://www.caiso.com/2078/2078908392d0.html

Other stakeholder efforts include:

- Market Surveillance Committee Meeting: March 19, 2010
- Stakeholder Conference Call: March 24, 2010
- Stakeholder Conference Call: May 13, 2010
- Stakeholder Conference Call: June 21, 2010

Management Proposal	CERS	CPUC	Dynegy	NCPA and SVP	NRG	PG&E	RRI	SCE	Wellhead	DMM	Management Response
Independent election of proxy or registered cost option for start-up and minimum load	No comment	No comment	Supports	No comment	Supports	Supports	No comment	Supports	Supports	Strongly supports	Implementation is targeted for the Fall 2011 release
Daily bidding of proxy start-up and minimum load between $0 and the calculated proxy cost value	No comment	No comment	Supports	No comment	Does not object	Supports	No comment	No comment	No comment	Supports	Implementation is targeted for the Fall 2011 release
No more frequent bidding of commitment costs other than the above	No comment	No comment	Does not support Encourages the ISO to explore	No comment	Does not support Recommends daily bidding up to registered cost	Supports	No comment	Supports Recommends a fixed component to proxy SU	No comment	Supports	Without significant changes to the market in order to guard against the potential exercise of market power, this change is not advisable
No fixed component of proxy commitment costs	Does not support Encourages ISO to consider this change	No comment	Does not support Encourages ISO to consider this change	No comment	No comment	Supports	Does not support	Does not support Strongly supports having a fixed component of proxy start-up	No comment	Supports	Independent election of proxy/registered for start-up/minimum load should address this need. Also, if O&M costs were significantly different from the default O&M adders, we would expect to see use of the negotiated O&M option, which to-date has not been employed
Re-benchmark default O&M values every 3 years (proxy minimum load)	No comment	Supports	Supports	No comment	No comment	Supports	Does not support removal of bid-in O&M from proposal	No comment	Supports	Supports	The first re-benchmark is targeted for April 2012 (3 years from the launch of the new market)

Management Proposal	CERS	CPUC	Dynegy	NCPA and SVP	NRG	PG&E	RRI	SCE	Wellhead	DMM	Management Response
Replacement of SoCal Border gas price with SoCal CityGate price (proxy start-up and minimum load, transition costs)	No comment	Supports	Supports	No comment	Strongly supports However, use of indexed gas is a flawed concept	Supports	Supports	Supports Requests clarity	Supports	Supports	The SoCal CityGate price will be used for transition costs, and for proxy start-up and minimum load calculations, and for determining the cap for registered start-up and minimum load upon implementation which is targeted for Fall 2011. All other calculations will continue to use the SoCal Border price
No change to adder for natural gas transport, no compensation for operational flow order costs or day-ahead/real-time gas price differentials (proxy start-up and minimum load, transition costs)	No comment	No comment	Does not support Requests a firm timeline for reevaluation of these changes	No comment	Does not support Believes that cost recovery methodologies should be developed to compensate for costs associated with day-ahead versus real-time gas price differentials	No comment	Does not support Supports a 10% adder to cover natural gas transport -or- resource-specific natural gas transport adder	No comment	Does not support Believes that cost recovery methodologies should be developed to compensate for costs associated with operational flow orders and day-ahead versus real-time gas price differentials	Supports future development of functionality to capture these costs Does not support an adder	An adder is not an efficient manner to capture these costs. The ISO agrees that it is reasonable to pursue cost recovery for natural gas transport costs and costs associated with operational flow orders. The ISO encourages stakeholders to pursue adding a market initiative to the catalog of potential future enhancements.

Management Proposal	CERS	CPUC	Dynegy	NCPA and SVP	NRG	PG&E	RRI	SCE	Wellhead	DMM	Management Response
No opportunity costs component of proxy start-up	No comment	No comment	Does not support Encourages the ISO to further discuss and consider incorporating opportunity costs into proxy start-up	Does not support Opportunity costs for use-limited resources should be incorporated into proxy calculations	Prefers daily start-up/minimum load bidding to this element of the proposal	Strongly supports	No comment	No comment	No comment	Supports the inclusion of opportunity costs, but does not feel the proposed approach should be pursued at this time	Without significant support for this methodology for opportunity cost calculations, nor an alternative proposal, we feel that this functionality is not an appropriate market enhancement at this time
Upward multi-stage generating resource transition costs bounded by 2 rules	Recommends fixed component of transition costs	Conditionally Supports	Does not object	No comment	No comment	Supports Appreciates changes to address startability of configurations	No comment	Supports Recommends fixed component of transition costs Questions re configuration hierarchy	No comment	Generally supportive Recommends robust validation of transition costs, status, and operating parameters	The ISO commits to monitoring submitted heat input values for configuration start-ups
Downward multi-stage generating resource transition costs	Recommends fixed component of transition costs	Conditionally Supports	No comment	No comment	No comment	Conditionally supports	No comment	Conditionally supports	No comment	Generally supportive Recommends robust validation	The ISO commits to monitoring submitted heat input values for downward transitions

Attachment D – Exhibit No. ISO-1

Multi-Stage Generating Resource Transition Costs Tariff Amendment

California Independent System Operator Corporation

Fifth Replacement FERC Electric Tariff

The following 4 steps provide an example of the application of the proposed Multi-Stage Generating Resources transition costs submission and validation of submitted Transition Costs for upward and downward transitions for a Multi-Stage Generating Resource that has four registered MSG Configurations.

STEP 1: **The Scheduling Coordinator will will submit the proxy start-up values for each configuration as provided in their election for Registered Costs or Proxy Cost options to which the ISO will a 10% adder.**

Configuration Proxy Start-Up Costs – For validation of rule 1 ONLY				
Configuration	**Start-able**	**Heat Input (MMBtu)**	**Monthly GPI ($/MMBtu)**	**Cost + 10%**
Start Up (1)	Y	2,500	5	$ 13,750
Start Up (2)	N	3,000	5	$ 16,500
Start Up (3)	Y	5,000	5	$ 27,500
Start Up (4)	N	6,000	5	$ 33,000

STEP 2: **The Scheduling Coordinator will submit dollar values for the transition costs in the highlighted cells in the matrix below. Note that if the resource has a heat input associated with a downward transition, it can also submit that value to the ISO.**

To Configuration

From Configuration	0	1	2	3	4
0		$ 13,750	$ 16,500	$ 27,500	$ 33,000
1 (start-able)	-		$ 5,000	$ 9,500	$ 21,000
2	-	Heat Input		$ 6,500	$ 18,000
3 (start-able)	-	Heat Input	Heat Input		$ 14,000
4	-	Heat Input	Heat Input	Heat Input	

STEP 3: **The ISO will validate the submitted Transition Costs pursuant to the two proposed rules as demonstrated below. The highlighted cells illustrate that all the entries pass the validation rules.**

RULE 1					
Path	Start-able	Lower Bound	Upper Bound	Calculated Value	Percentage
0.1.2	N	$ 16,500	$ 20,625	$ 18,750	114%
0.1.3	Y	$ -	$ 34,375	$ 23,250	68%
0.1.2.3	Y	$ -	$ 34,375	$ 25,250	73%
0.1.4	N	$ 33,000	$ 41,250	$ 34,750	105%
0.1.2.4	N	$ 33,000	$ 41,250	$ 36,750	111%
0.1.3.4	N	$ 33,000	$ 41,250	$ 37,250	113%
0.3.4	N	$ 33,000	$ 41,250	$ 41,500	126%
0.2.3	Y	$ -	$ 34,375	$ 26,000	76%
0.2.4	N	$ 33,000	$ 41,250	$ 34,500	105%
0.2.3.4	N	$ 33,000	$ 41,250	$ 37,000	112%

RULE 2				
Path	Lower Bound	Upper Bound	Calculated Value	Percentage
1.2.3.4	$ 21,000.00	$ 26,250.00	$ 25,500.00	121%
1.3.4	$ 21,000.00	$ 26,250.00	$ 23,500.00	112%
1.2.4	$ 21,000.00	$ 26,250.00	$ 23,000.00	110%
2.3.4	$ 18,000.00	$ 22,500.00	$ 20,500.00	114%
1.2.3	$ 9,500.00	$ 11,875.00	$ 11,500.00	121%

STEP 4: **That Transition Cost index submitted along with the validated Transition Costs will be pulled from the Master File by the ISO's Scheduling Infrastructure and Bidding Rules system, which will be multiplied by the daily Gas Price Index, and that product will be used by the market optimization for the purpose of determining whether or not a transition is economic, as well as for the calculation of Bid Cost Recovery amounts.**

	SIBR CALCULATIONS						
	Transition	Transition Cost	Monthly GPI ($/MMBtu)	Implied Heat Input (MMBtu)	Daily GPI ($/MMBtu)	Daily TC Value	
1-Oct	1.2	$ 5,000	5	1,000	4.8	$	4,800
	1.3	$ 9,500	5	1,900	4.8	$	9,120
	1.4	$ 21,000	5	4,200	4.8	$	20,160
	2.3	$ 6,500	5	1,300	4.8	$	6,240
	2.4	$ 18,000	5	3,600	4.8	$	17,280
	3.4	$ 14,000	5	2,800	4.8	$	13,440
2-Oct	1.2	$ 5,000	5	1,000	5.2	$	5,200
	1.3	$ 9,500	5	1,900	5.2	$	9,880
	1.4	$ 21,000	5	4,200	5.2	$	21,840
	2.3	$ 6,500	5	1,300	5.2	$	6,760
	2.4	$ 18,000	5	3,600	5.2	$	18,720
	3.4	$ 14,000	5	2,800	5.2	$	14,560