California Independent System Operator Corporation

January 16, 2013

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20246

Re: California Independent System Operator Corporation
Docket No. ER13-69-___

Response to the December 10, 2012 Letter Regarding ISO Tariff Amendment

Dear Secretary Bose:

On October 10, 2012, the California Independent System Operator Corporation ("ISO") filed proposed tariff revisions to implement an alternative mode of the real-time contingency dispatch in the ISO markets, referred to as the real-time disturbance dispatch.[1] On December 10, 2012, Commission Staff issued a letter indicating that additional information is required by the Commission to evaluate the ISO's submittal.

The ISO submits this response to Staff's December 10 letter.[2] The ISO respectfully requests that the Commission accept the October 10 filing with the support of the additional information included in this response, effective March 18, 2013 – 61 days from the filing of this response.

I. Responses to Requests for Additional Information

The ISO provides the following response to each of Staff's requests as follows:

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[1] Capitalized terms not otherwise defined herein have the meanings set forth in Appendix A to the ISO tariff and in the October 10 filing.

[2] On January 9, 2013, the ISO requested an extension, until January 16, to file this response, which the Commission granted on January 10.

1. Request No. (1):

CAISO stated that in "most cases" during four of the six days studied, energy-only resources provided less than 50 percent of the amount of requested response. CAISO also indicates that "in a small number of cases" operating reserves awards did not respond to contingency dispatch instructions. [(A)] Please indicate the number of times each type of resource successfully responded to a dispatch instruction, and the number of times and, [(B)] if known, the reason each type of resource failed to successfully respond to the dispatch instruction over the six-day period.[3]

Response to Request No. (1):

For ease of reference, the ISO has broken down this request into subparts (A) and (B).

Response to Request No. (1)(A) –

Table 1 below shows the responsiveness of the resources with certified and awarded operating reserves ("operating reserve capacity") and the resources without awarded operating reserves ("energy-only capacity") that the ISO dispatched by the real-time contingency dispatch on each of the six days the ISO studied:[4]

Table 1

Date	Response by operating reserve capacity	Response by energy-only capacity	Successful response by operating reserve capacity	Successful response by energy-only capacity
Mar. 22, 2011	76%	-22%	1 out of 2 resources	2 out of 7 resources
Mar. 24, 2011	89%	55%	3 out of 3 resources	0 out of 2 resources
Mar. 26, 2011	73%	4%	2 out of 2 resources	0 out of 1 resources
June 30, 2011	83%	24%	10 out of 19 resources	1 out of 3 resources
May 30, 2012	106%	-8%	3 out of 3 resources	0 out of 3 resources
Sept. 3, 2012	78%	25%	6 out of 8 resources	2 out of 3 resources

[3] December 10 letter at 2 (citations omitted).

[4] For purposes of the comparison between operating reserve capacity and energy-only capacity, the ISO removed resources providing regulation from the data set.

The second and third columns of Table 1 list the percentages of response to the ISO's instructions for real-time contingency dispatch on each of the six days by resources with operating reserve awards and by resources without operating reserve awards. Each percentage was calculated by dividing the actual aggregate amount of change in output (measured in megawatts (MW)) for the resources that responded on the listed day, by the aggregate amount of change in resource output directed by the ISO in its dispatch instructions (measured in MW) for those resources on that day. These percentages show that resources with operating reserve awards responded to the ISO's instructions during the six days studied with much greater consistency than did resources without operating reserve awards.[5]

Specifically, the percentages in the second column indicate that response by resources with operating reserve awards ranged from 73% to 106%. In contrast, the percentages in the third column indicate that response by resources without operating reserve awards was well below 50% on five of the six days studied, with the percentages on two of those days actually being negative (*i.e.,* in aggregate responding in the opposite direction from the aggregate amount of dispatch directed by the ISO). The large differences between the percentages in column two and column three for each day demonstrate that resources with operating reserve awards responded much more reliably than resources without operating reserve awards.

The fourth and fifth columns of Table 1 list the numbers of resources with operating reserve awards and resources without operating reserve awards that successfully responded to the ISO's instructions for real-time contingency dispatch on each of the six days. A resource's MW response was deemed successful if, on the listed day, the resource responded in the direction (increasing output for more MW, or decreasing output for fewer MW) instructed by the ISO and also met one or both of the following criteria: (a) the actual MW amount of movement in output by the resource, divided by the MW amount of movement in output directed by the ISO, was 90% or more; and/or (b) the resource's post-dispatch MW output was 95% or more of the MW amount of output directed by the ISO. In contrast, a resource's response was not considered successful for purposes of Table 1 if it failed to meet the criteria for a successful response described above.

Further, the ISO offers additional factual information for one day – March 22, 2011. On that day, Table 1 indicates that of the two resources with operating reserve awards, one provided a successful response and the other did not. However, the resource with an operating reserve award that did not provide a successful response nevertheless provided 55 MW pursuant to the ISO's dispatch instruction, which was approximately

[5] The ISO statements in support of the October 10 filing were based on subject matter review of the performance results for the six days and their conclusions based on that review. In response to Request No 1, the ISO performed a study of the six days using specific criteria, as described, and aggregated certain data. As a result, the study conclusions are somewhat different from the ISO's earlier conclusions based on subject matter review, but nonetheless both analyses indicate that resources with operating reserve awards performed better than resources without operating reserve awards.

76% of the requested dispatch amount. On the other hand, four of the five resources without operating reserve awards that did not provide a successful response provided none (0 MW) of the requested dispatch amount, and the fifth resource moved in the opposite direction of the dispatch. Moreover, the two resources without operating reserve awards that provided a successful response did so by complying with *decremental* dispatch instructions (*i.e.*, instructions to decrease output).[6] Because the current mode of the ISO's contingency dispatch performs an economic dispatch, resources are incremented and decremented economically.[7] One benefit of the proposed new disturbance dispatch mode of the contingency dispatch is that it will not perform an economic dispatch and, therefore, will not decrement resources. Resources will only be moved incrementally to help ensure timely recovery from contingencies.

Response to Request No. (1)(B) –

The ISO does not know the reason(s) why specific resources failed to respond successfully to dispatch instructions over the six-day period. The ISO has, however, identified certain reasons why resources with non-spinning reserve[8] may not always be capable of responding fully to a contingency dispatch, and has already taken the following corrective actions to address these reasons:

- Previously, the communication of contingency dispatch instructions may not have been as timely as necessary for certain off-line resources to respond. More recently, however, the ISO has reduced the time it takes for its software to communicate contingency dispatch instructions to all resources. The ISO implemented this enhancement as part of the fall 2012 release of upgrades to its markets and operations software. This can improve the likelihood that off-line resources will be able to meet the contingency dispatch operating targets the ISO sets based on resource start-up times.

- The ISO was previously issuing only dispatch instructions to resources with non-spinning (as well as spinning) reserve, and was not issuing start-up instructions to those resources. As of the fall 2012 release**,** the ISO began issuing separate start-up instructions and dispatch instructions to resources with non-spinning reserve. This change should also improve the likelihood that off-line resources providing non-spinning reserve will be able to meet their dispatch operating targets.

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[6] This explains why the aggregate response for the resources without operating reserve awards was negative on March 22, 2011.

[7] Resources can also be decremented to manage constraints.

[8] Appendix A to the ISO tariff defines operating reserve as the combination of spinning reserve and non-spinning reserve required to meet reliability standards. In this filing, references to ancillary services mean operating reserve only, unless otherwise specified.

- To help ensure that resources certified to provide ancillary services are complying with ISO dispatch instructions, the ISO is preparing to launch unannounced ancillary services testing through its software.[9]

With respect to resources without certified operating reserve capacity and resources with certified operating reserve capacity that do not have operating reserve awards, the ISO believes there are two general reasons why those resources fail to respond successfully to contingency dispatch instructions. First, some scheduling coordinators for resources without operating reserve awards do not maintain the same degree of readiness to comply with contingency dispatch instructions because they do not have an obligation to provide operating reserve. Resources with an award, on the other hand, have an obligation to provide the ten-minute response and must be ready to respond. Second, resources – particularly resources without certified operating reserve capacity – may have manual processes that delay their responses to ISO dispatch instructions. For example, the ISO may send an electronic dispatch instruction through its automated dispatch system to a scheduling coordinator, but the communication between the scheduling coordinator and the resource operator may be manual rather than automated.

2. Request No. (2):

CAISO stated that the six days it cites as support represent the comprehensive set of data from all of the days relevant to the disturbance dispatch proposal because they were the only days on which CAISO experienced major contingencies. Please explain and provide the MW levels of the major contingencies that occurred on the six days that were evaluated. If possible, please provide the amount of MW without providing any information that CAISO deems as confidential or resource-specific data.[10]

Response to Request No. (2):

In selecting each of the days studied, the ISO used two criteria: (1) the size of the contingency occurring on the day must have been large enough to meet the proposed minimum threshold for deploying the real-time disturbance dispatch; and (2) ISO operations must have found it challenging to recover from the contingency occurring on the day. In other words, the ISO selected days on which contingencies occurred that were especially suitable for use of the new real-time disturbance dispatch, had it been available.

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[9] On a limited basis, the ISO has implemented unannounced ancillary services testing via verbal instructions.

[10] December 10 letter at 2 (citation omitted).

Table 2 below shows the MW levels and explains the causes of those major contingencies that occurred on the six days the ISO evaluated.

Table 2

Date	Level of major contingency	Cause of major contingency
Mar. 22, 2011	743 MW	Unplanned outage of Four Corners generating units 4 and 5
Mar. 24, 2011	597 MW	Unplanned outage of Mountain View generating units 3 and 4
Mar. 26, 2011	1107 MW	Unplanned outage of Diablo Canyon generating unit 2
June 30, 2011	1000 MW	Overload of California-Oregon Intertie due to loss of Pacific DC Intertie
May 30, 2012	655 MW	Unplanned outage of Moss Landing generating units 1 and 2
Sept. 3, 2012	260 MW[11]	Unplanned outage of Encina generating unit 5

The information in Table 2 is based on publicly available information.[12]

3. Request No. (3):

CAISO indicated that it has become increasingly concerned that it may not be able to continue to meet the NERC [North American Electric Reliability Corporation] Reliability Standard on Disturbance Control Performance or BAL-002-1 based on its experience with energy-only resources during major contingency events. [(A)]Please explain whether the perceived deficiencies with energy-only resources are limited to major contingency events or whether energy-only resources routinely fail to adequately respond during all uses of RTCD [real-time contingency dispatch. [(B)] Also, in your

[11] At the time of this contingency, the ISO was experiencing a low area control error (approximately -250 MW). With the loss of the 260 MW Encina unit, the contingency appeared to be larger – approximately 560 MW – than the loss of the generating unit. The actual 260 MW Encina contingency would not qualify for the new real-time disturbance dispatch mode assuming a minimum threshold of 300 MW.

[12] The ISO publishes a generator outage report on a daily basis that is available to the public. The daily report identifies the name of the resource, the MW capacity of the resource and the MW that are not available, and whether the outage is planned or unplanned. The report is available at: http://www.caiso.com/market/Pages/OutageManagement/UnitStatus.aspx. The ISO also publishes publicly available transmission outage information on its OASIS that is accessible by clicking on the Transmission link. This report identifies outage requests by name of facility and proposed derate.

explanation, please indicate how much capacity CAISO had to over procure during the past 12 months.[13]

Response to Request No. (3):

For ease of reference, the ISO has broken down this request into subparts (A) and (B).

Response to Request No. (3)(A) –

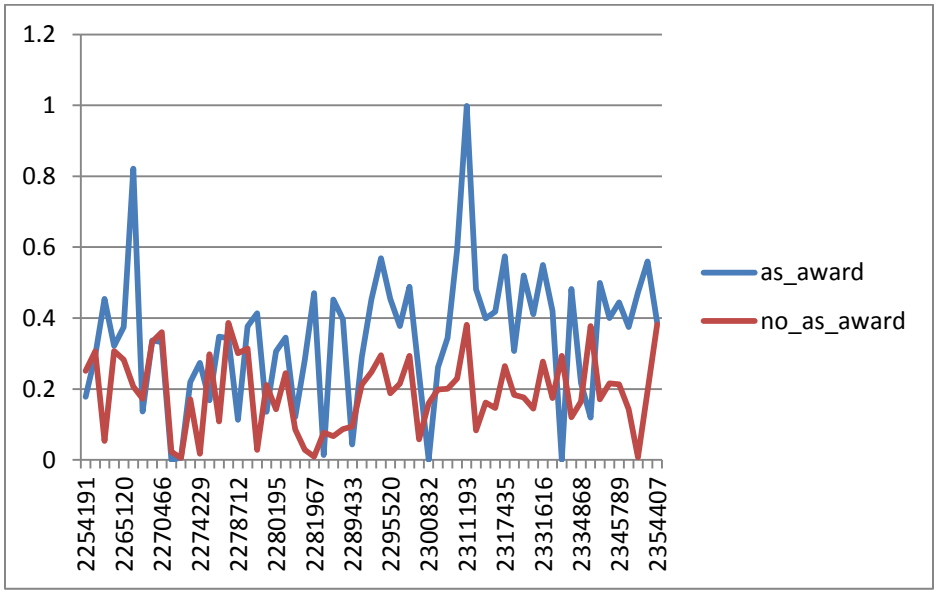
In response to this question, the ISO evaluated data from the past 12 months (*i.e.*, in 2012). Overall, resources with operating reserve awards responded with greater reliability to ISO dispatch instructions to address both major contingencies and non-major contingencies than did resources without operating reserve awards. Charts 1, 2, and 3 below depict this difference in the responsiveness over the past 12 months.[14] Specifically, these charts illustrate the total incremental response by resources with operating reserve awards and by resources without operating reserve awards that received incremental dispatch instructions.

[13] December 10 letter at 2.

[14] For purpose of the analysis shown in Charts 1, 2, and 3, the ISO included resources with regulation up awards and assumed that these resources fully performed. The ISO allows regulation to substitute for operating reserve in the ISO's procurement process, and therefore it is reasonable to include resources with regulation up awards in the system-wide performance analysis reflected in Charts 1, 2, and 3. In contrast, the analysis for the six cases discussed in response to Request No. (1) concerned performance by individual resources, and therefore resources with regulation awards were removed from that evaluation. The premise for both assumptions is that resources providing regulation and operating under automatic generation control ("AGC") fully perform and should be eliminated from the comparison of resources with operating reserve awards and resources without operating reserve awards. For the study of the 2012 data, the only feasible option was to assume 100% performance for resources providing regulation. Charts 1, 2, and 3 also do not include resources that provided negative adjustments – either by following a decremental award or by making negative deviations. Further, Charts 1, 2, and 3 do not include over-response by resources. For example, if a resource received an incremental dispatch instruction for 100 MW, but responded by providing 120 MW, its response was counted as 100 MW in the charts.

Chart 1 shows the difference in responsiveness between resources with operating reserve awards and resources without operating reserve awards during major contingencies, which are defined as events that required 300 MW or more of capacity to address.

Chart 1



In Chart 1 (and in Charts 2 and 3), the numbers along the horizontal axis of the chart are the ISO's identification numbers for the contingency dispatches performed in 2012, and the numbers along the vertical axis of the chart measure the responsiveness of the resources with operating reserves to the ISO's dispatch instructions (calculated by dividing the total incremental response by the total incremental dispatch). As shown in Chart 1 (and in Charts 2 and 3), the blue line depicting the responsiveness of resources with operating reserve awards is generally above the red line depicting the responsiveness of resources without operating reserve awards, which reflects the generally greater responsiveness of resources with operating reserve awards to contingency dispatches.

Chart 2 shows the difference in responsiveness between resources with operating reserve awards and resources without operating reserve awards during non-major contingencies, which are defined as contingences that required less than 300 MW of capacity to address.

Chart 2

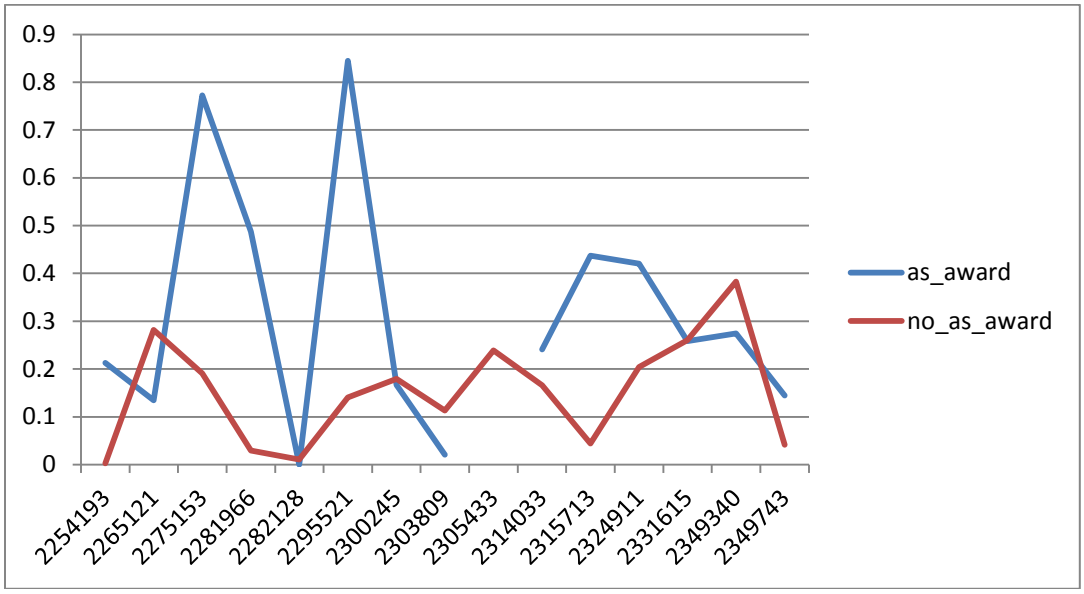
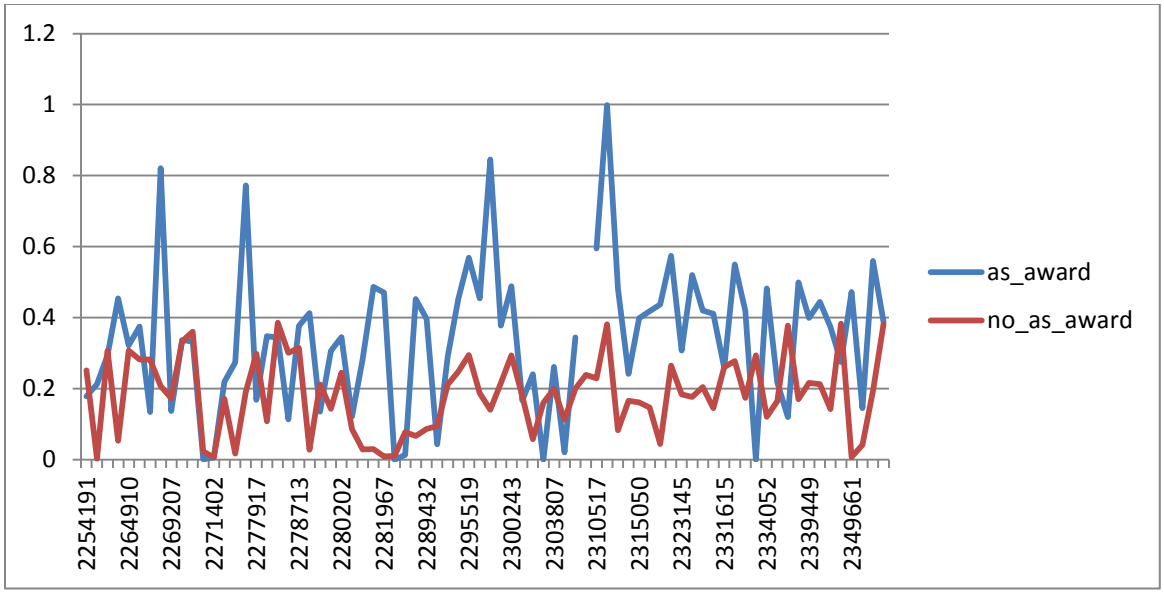


Chart 3 combines the data depicted in Charts 1 and 2 to show the difference in responsiveness between resources with operating reserve awards and resources without operating reserve awards during both major and non-major contingencies.

Chart 3



In summary, all three charts show that resources with operating reserve awards generally responded more reliably to ISO dispatch instructions during both major contingencies and non-major contingencies in 2012 than did resources without operating reserve awards.

Response to Request No. (3)(B) –

As explained in the October 10 filing, because the ISO cannot rely on all resources to respond timely to a contingency dispatch, the ISO often overshoots its dispatch target (*i.e.*, dispatches more resources than would otherwise be needed) in an attempt to secure sufficient capacity to ensure that it meets the contingency recovery requirement of NERC Reliability Standard BAL-002-1.[15] Thus, the ISO dispatches additional resources to ensure that it can meet the contingency recovery requirement. The ISO does not track the amounts of energy it dispatches for the specific purpose of anticipating under-performance by resources without operating reserve awards. However, ISO operations personnel generally use a performance factor of approximately 50% to account for the anticipated under-performance of such resources. For example, if a major contingency is 500 MW, ISO operations will adjust the real-time forecast by approximately 750 MW to take into account the anticipated under-performance of resources without operating reserve awards. The amount of energy that

[15] Transmittal letter for October 10 filing at 3.

is over-procured by the ISO reflects this performance factor as well as adjustments to the contingency reserve amount based on other factors, such as whether demand is increasing or decreasing and the amount of time required for the procurement of the resources needed to timely address a contingency.

4. Request No. (4):

CAISO's proposal for RTDD [real-time disturbance dispatch] uses a 300 MW threshold which CAISO claims is approximately equal to 80 percent of the most severe single contingency for the San Diego sub-region in California. CAISO also stated that it would not object to adopting a 480 MW threshold as a target unless fact-specific circumstances would require it to use a different threshold. [(A)] Please describe and include the MW value of the single most severe contingency in the San Diego sub-region and all other sub-regions in California. [(B)] Please explain why the use of a 300 MW or a 480 MW threshold for all regions is appropriate. Specifically, please explain why a threshold value based on the smallest sub-region of California is appropriate for other sub-regions in which the most severe single contingency is larger. [(C)] If CAISO generally adopted a 480 MW threshold, what types of fact-specific circumstances would it evaluate to determine whether a different threshold should be used?[16]

Response to Request No. (4):

For ease of reference, the ISO has broken down this request into subparts (A), (B), and (C).

Response to Request No. (4)(A) –

In this response, the ISO provides MW thresholds for the service territories of the three original participating transmission owners based on 80% of the single largest contingency.[17] In addition, the ISO provides MW thresholds for the defined ancillary service regions and sub-regions based on the single largest contingency. The single largest contingency is not a fixed value and can change based on the availability of resources and contingencies.

For the SDG&E service territory, the single most severe contingency is the loss of the Otay Mesa unit, which has a capacity of approximately 600 MW and is the single largest

[16] December 10 letter at 2-3 (citations omitted).

[17] The three original participating transmission owners are San Diego Gas & Electric Company ("SDG&E"), Southern California Edison Company ("SCE"), and Pacific Gas and Electric Company ("PG&E"). In the October 10 filing, the ISO did not use the term region or sub-region to refer to any regional definition in the ISO tariff, although it used the service territory of SDG&E" to establish the proposed minimum threshold.

generator within that service territory. When the Otay Mesa unit is in service, the 80-percent-contingency value is approximately 480 MW.

In the SCE service territory, the single most severe contingency is the loss of one of the San Onofre Nuclear Generating Station ("SONGS") units, which has a capacity of approximately 1125 MW and is the single largest generator within that service territory. SONGS is not currently in service. If the ISO were to establish a minimum threshold based on 80 percent of the loss of SONGS, the resulting minimum threshold value would be approximately 900 MW. With SONGS currently out of service, the single most severe contingency would be the loss of the second largest generator within the SCE service territory, the High Desert unit, which has a capacity of approximately 830 MW. Therefore, the resulting minimum threshold value would be approximately 664 MW.

In the PG&E service territory, the single most severe contingency is the loss of the Diablo Canyon unit, which has a capacity of approximately 1150 MW and is the single largest generator within that service territory. If the ISO were to establish a minimum threshold based on 80 percent of the loss of the Diablo Canyon unit, the resulting minimum threshold value would be approximately 920 MW. If the ISO were to establish a minimum threshold for its entire system based on the largest minimum threshold for any service territory, Diablo Canyon would also establish the threshold value for the ISO on a system-wide basis.

If, instead of basing the single most severe contingency on the service territory of an original participating transmission owner as described above, the ISO were to base the single most severe contingency on the ancillary service regions and sub-regions defined by ISO tariff section 8.3.3, the 80-percent-contingency value for each of the ancillary service regions and sub-regions would be the following:

- For the System Region, the Expanded System Region, the North of Path 26 Sub-Region, the Expanded North of Path 26 Sub-Region, the South of Path 15 Sub-Region , and the Expanded Path of 15 Sub-Region , the single most severe contingency would be the loss of the Diablo Canyon unit, which has a capacity of approximately 1150 MW. The 80-percent-contigency value for that amount of MW capacity would be approximately 920 MW.

- For the North of Path 15 Sub-Region and the Expanded North of Path 15 Sub-Region, the single most severe contingency would be the loss of the Delta Energy Center, which has a capacity of approximately 880 MW. The 80-percent-contingency value for that amount of MW capacity would be approximately 704 MW.

- For the South of Path 26 Sub-Region and the Expanded South of Path 26 Sub-Region, the single most severe contingency would be the loss of the High Desert unit, which has a capacity of approximately 830 MW. The 80-percent-

contingency value for that amount of MW capacity would be approximately 664 MW.

Response to Request No. (4)(B) –

The use of a minimum threshold value is appropriate because it will give ISO operations the maximum amount of flexibility they need to address any major contingency that may occur. In this regard, the ISO is proposing the same flexibility for the real-time disturbance dispatch that it has for the existing mode of contingency dispatch. In establishing the proposed 300 MW threshold, the sole purpose was to define a trigger for ISO operations to have the option to use either mode of contingency dispatch.

Existing tariff authority for the current mode of contingency dispatch set forth in ISO tariff section 34.3.2 states that "[t]he CAISO Operator may activate the Operating Reserve identified as Contingency Only *either on a resource-specific basis or for all such resources*" (emphasis added). Proposed tariff section 34.3.2.2, which was provided in the October 10 filing, includes similar language. This means that in either mode of contingency dispatch ISO operations can flag the contingency reserves that are capable of responding to the specific contingency without regard to any defined region or activate all contingency reserves. The decision will not be based on the location of the contingency in a defined region. For example, the existence of an extremely large contingency that meets a system-wide threshold does not necessarily require the activation of all contingency reserves to address that contingency. Only those resources capable of meeting the reliability need should be activated. Activating resources that are not capable of meeting the reliability need is not helpful in responding to a contingency and could potentially make it more difficult to respond to the contingency.

Moreover, contingency resources capable of responding to a particular contingency may be located in more than one service territory or ancillary service region. For example, to address a contingency in the South of Lugo area, specific resources in both the SDG&E and SCE service territories may be needed to respond, although not all contingency resources in those service territories would be capable of responding due to the regional nature of the contingency and constraints. The same type of issue would arise if the ISO were to use a threshold based on the single most severe contingency based on the ancillary service regions and sub-regions. For example, the Southern California Import Transmission path ("SCIT")[18] is within two ancillary service sub-regions. ISO operations would not be able to resolve the contingency just by relying on operating reserves within the ancillary services sub-regions. Reserves in the San Diego area would also be needed. Moreover, some operating reserve resources within the ancillary services sub-regions would not be capable of resolving the contingency and might contribute to a SCIT overload.

[18] SCIT is comprised of five separate paths: the Pacific DC Intertie, Midway-Vincent, the Intermountain Power Project DC Line, West of River, and North of Lugo.

Further, a single minimum threshold value provides a clear trigger for ISO operations to consider whether to use the real-time disturbance dispatch or the existing contingency dispatch authority. Use of a single clear trigger will make it easier for ISO operations to timely make that decision based on the various data is must evaluate, such as resource outages and new resources becoming available.

The ISO favors a 300 MW minimum threshold over a 480 MW minimum threshold, because the 300 MW threshold provides greater flexibility to determine when to deploy the disturbance dispatch mode. Further, in some circumstances, the loss of a resource with a capacity of 300 MW or more located in the SDG&E service territory can lead to an overload of a transmission path. On a high-load day, the loss of that resource can even lead to an overload of a transmission path in excess of an Interconnection Reliability Operating Limit ("IROL"), thereby resulting in a violation of NERC reliability requirements.[19] The risk of such an overload would arise from the loss of Encina generating unit 4 or 5, because those units located in the San Diego service territory have capacities of 300 MW and 330 MW, respectively. Therefore, the 300 MW minimum threshold will serve as an important reliability tool to deploy and prioritize operating reserve capable of addressing a contingency.

Response to Request No. (4)(C) –

If the ISO were to generally adopt a 300 or 480 MW threshold for the real-time disturbance dispatch, the ISO would evaluate fact-specific circumstances to determine whether to use the existing mode of contingency dispatch or use the new real-time disturbance mode to address a contingency. The main considerations include the combination of the following factors: the size of the contingency, the mandated recovery time for the contingency, and the number of resources capable of meeting the reliability need by timely responding to the ISO's dispatch instructions. For example, the combination of an 800 MW contingency, a mandated 15-minute recovery time, and a small number of resources capable of meeting the reliability need would dictate use of the real-time disturbance dispatch. On the other hand, the combination of an 800 MW contingency, a mandatory 30-minute recovery time, and a large number or resources capable of meeting the reliability need might or might not require use of the real-time disturbance dispatch, depending on the fact-specific circumstances.

5. Request No. (5):

[(A)] Why are the non-qualified resources not responding appropriately to their dispatch instructions? [(B)] Are these resources being dispatched outside of their physical capabilities? [(C)] Alternatively, are these resources being dispatched within their physical limits and not responding for some other reason? [(D)] What penalties are currently in place to discourage a resource from not following dispatch instructions in

[19] *See* NERC Reliability Standard TOP-007-0 (entitled "Reporting System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) Violations").

such an event? [(E)] Finally, although these non-responsive, energy-only resources are not dispatched to provide operating reserves in a particular hour, is it true that these resources are also not certified to provide operating reserves and 10-minute dispatch response?[20]

Response to Request No. (5):

For ease of reference, the ISO has broken down this request into subparts (A), (B), (C), (D), and (E).

Response to Request No. (5)(A) –

Please see the response to Request No. (1)(B).

Response to Request No. (5)(B) –

The ISO does not dispatch any resources outside of their physical capabilities, unless the ISO inadvertently does so either (i) because a resource has provided inaccurate information to the ISO regarding its physical capabilities or (ii) due to a market software limitation.

As to reason (i), resources participating in the ISO markets are required to provide the ISO with accurate information regarding their operational and technical constraints.[21] The ISO includes the information provided by resources in the Master File and performs system modeling and dispatch based on that information. The ISO software is designed to dispatch resources consistent with the information on physical capabilities that the resources provide to the ISO.

As to reason (ii), during the first several months after implementation of the ISO's nodal market design in April 2009, the ISO market software did not always honor resource constraints, such as resources' forbidden operating ranges. Since then, however, such incidents have been reduced with improvements in the ISO's software as well as market and tariff enhancements such as those for multi-stage generators.

Response to Request No. (5)(C) –

The only reasons why a resource might be dispatched beyond its physical capabilities are explained in the response to Request No. (5)(B).

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[20] December 10 letter at 3.

[21] *See* ISO tariff sections 4.6.4, 4.12.2.

Response to Request No. (5)(D) –

As discussed below, the ISO tariff does not currently authorize any penalties to discourage a resource from not responding appropriately to a dispatch instruction for real-time contingency dispatch. However, the ISO may refer a resource's non-response to the Commission if it constitutes a market violation. Also, the ISO will assess uninstructed imbalance energy payments for deviations from dispatch instructions, although such payments are not penalties. Further, a non-responsive resource may be liable for penalties imposed on the ISO by the WECC.

The ISO's Rules of Conduct require compliance with operating orders issued by the ISO, and the ISO is obligated to refer any suspected violation of that requirement to the Commission.[22] But the Rules of Conduct also specify that deviation from a dispatch instruction issued by the ISO's automated dispatch system will not constitute such a violation.[23] The automated dispatch system is used to issue dispatch instructions in order to address contingencies such as those described in the October 10 filing. Therefore, deviation from automated dispatch instructions to address such contingencies does not constitute a violation of the Rules of Conduct.

The ISO could, however, refer to the Commission a deviation from a dispatch instruction issued by the automated dispatch system if it constituted a market violation, which is defined in the ISO tariff as a tariff violation, violation of a Commission-approved order, rule, or regulation, market manipulation, or inappropriate dispatch that creates substantial concerns regarding unnecessary market inefficiencies.[24] Such a referral could ultimately result in penalties imposed by the Commission.

In addition, the ISO tariff requires each resource to:

- Comply with a dispatch instruction immediately upon receipt, unless otherwise stated in the dispatch instruction;
- Respond to all dispatch instructions in accordance with good utility practice;
- Meet voltage criteria in accordance with the ISO tariff;
- Meet any applicable operational ramp rates;

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22 ISO tariff sections 37.2.1, 37.8.2.

23 ISO tariff section 37.2.1.1.

24 ISO tariff appendix A (definition of market violation); ISO tariff appendix P, section 11.

- Respond to dispatch instructions for ancillary services within the required time periods, and, in the case of participating generators providing regulation, respond to automatic generation control from the energy management system; and

- Respond to a dispatch instruction within the time frame (if any) stated in a dispatch instruction.[25]

With regard to these requirements, the ISO tariff states that:

> If a resource is unavailable or incapable of responding to a Dispatch Instruction, or fails to respond to a Dispatch Instruction in accordance with its terms, the resource shall be considered to be non-conforming to the Dispatch Instruction unless the resource has notified the CAISO of an event that prevents it from performing its obligations within thirty (30) minutes of the onset of such event . . . . If the resource is considered to be non-conforming as described above, the Scheduling Coordinator for the resource concerned shall be subject to Uninstructed Imbalance Energy as specified in Section 11.5.2 and Uninstructed Deviation Penalties as specified in Section 11.23.[26]

Pursuant to these tariff provisions, scheduling coordinators for resources that do not comply with dispatch instructions would be subject to uninstructed imbalance energy payments under tariff section 11.5.2, but such payments are not penalties. Also, the ISO tariff does not currently authorize the assessment of any uninstructed deviation penalties under section 11.23.[27]

If the ISO determines that non-compliance of a resource with an operating order or dispatch instruction from the ISO, or with any other applicable technical standard under the ISO tariff, causes or exacerbates system conditions for which WECC imposes a penalty on the ISO, then the scheduling coordinator for the resource will be assigned that portion of the WECC penalty which the ISO reasonably determines is attributable to such non-compliance, in addition to any other penalties or sanctions available under the ISO tariff.[28]

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[25] ISO tariff sections 34.11.1.

[26] ISO tariff section 34.11.2.

[27] ISO tariff section 11.23 ("Effective December 1, 2004, the CAISO shall not charge any Uninstructed Deviation Penalties pursuant to this Section 11.23 until FERC issues an order authorizing the CAISO to charge Uninstructed Deviation Penalties pursuant to this section."). The ISO has not requested and the Commission has not issued such an order.

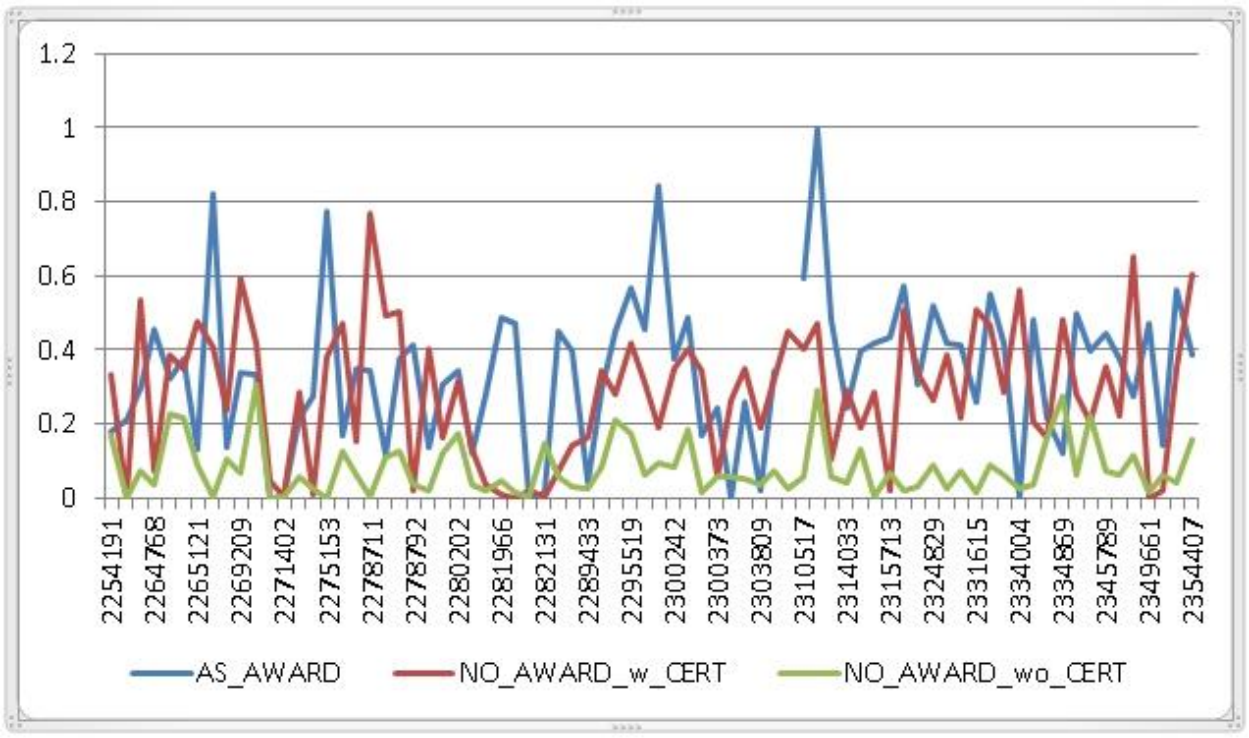
[28] ISO tariff section 14.7.

Apart from the possibility of penalties, resources with operating reserve awards have significant incentives to comply with contingency dispatch instructions. If ancillary services capacity – including operating reserve capacity – that receives an ancillary service award or self-provided ancillary services capacity provided from a resource is undispatchable capacity, unavailable capacity, or undelivered capacity during the relevant settlement interval, then payments for the ancillary service capacity will be rescinded.[29]

Response to Request No. (5)(E) –

Resources without operating reserve awards include resources with certified operating reserve capacity as well as resources with no certified operating reserve capacity. Chart 4 below shows the responsiveness of the following three types of resources to the ISO's dispatch instructions for addressing contingencies in 2012: (1) resources with operating reserve awards (depicted with a blue line), (2) resources with certified operating reserve capacity but without awards (depicted with a red line), and (3) resources with no certified operating reserve capacity and, by definition, without operating reserve awards (depicted with a green line).

Chart 4



[29] ISO tariff section 8.10.8. *See also* ISO tariff section 11.10.9 (setting forth settlement provisions for rescission of payments for ancillary services capacity).

6. Request No. (6):

Under the proposed RTDD, resources will be dispatched in a different order than under RTCD. Please explain how resources responding to a contingency event under RTDD will still be deliverable. Please also explain if transmission capacity in any of the regions in California will limit the deliverability of these resources.[30]

Response to Request No. (6):

The ISO anticipates that all resources responding to a contingency event under the real-time disturbance dispatch will be deliverable (*i.e.*, capable of responding to the contingency) – in part because, under the ISO's proposal, the ISO can deploy the functionality on a sub-regional basis to ensure that resources with operating reserve awards are in the same region and, thus, are capable of being deliverable. The tariff authority to deploy the real-time disturbance dispatch on a sub-regional basis is based on the existing authority to deploy the real-time contingency dispatch by activating contingency reserve on a resource-specific basis or by activating all contingency reserves in an automated process, as discussed above in the response to Request No. (4)(B). Accordingly, under either the contingency dispatch or the disturbance dispatch mode, the ISO operator can select the contingency resources that are able to respond to the contingency. Thus, the deliverability of each resource subject to the real-time disturbance dispatch will be preserved.

7. Request No. (7):

Please provide an estimate of the cost impact if the six major contingency events cited had been solved via the RTDD rather than using the existing RTCD that is currently in use. Please provide an estimate for the impact on market prices and cost to load.[31]

Response to Request No. (7):

This response provides an estimate of the cost impact for the six major contingency events, had the contingency events been solved via the proposed real-time disturbance dispatch ("RTDD") rather than using the existing mode of the real-time contingency dispatch ("RTCD"). As depicted in Table 3 below, the ISO estimated the cost impact by calculating the difference between the total generation energy cost to serve load[32] in the RTDD (shown in the third column of Table 3) and the total generation energy cost to

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30 December 10 letter at 3.

31 December 10 letter at 3.

32 Request No. (7) asks for the estimated impact on cost to load of using the real-time disturbance dispatch in place of the real-time contingency dispatch. The best measure of estimated cost impact that the ISO can provide is generation cost to serve load, as shown in Table 3.

serve load in the RTCD (shown in the second column of Table 3). Totaling the amounts in the fourth column of Table 3 indicates that the total cost impact for the six major contingency events would have been less than $50,000.

Table 3

RTCD event Date	RTCD 10-minute economic energy dispatch cost	RTDD 10-minute economic energy dispatch cost	Difference between RTDD cost and RTCD cost
Mar. 22, 2011	$6,706	$10,197	$3,490
Mar. 24, 2011	$3,717	$4,614	$897
Mar. 26, 2011	$12,651	$14,527	$1,876
Jun. 30, 2011	$12,497	$44,130	$31,632
May 30, 2012	$1,689	$2,169	$480
Sept. 3, 2012	$7,575	$18,807	$11,232
Total			$49,607

As shown in Table 4 below, to estimate the impact on market prices during the major contingency events, the ISO compared the RTCD system marginal energy cost ("SMEC") and the locational marginal prices ("LMPs") at the three default load aggregation points ("DLAPs") with the RTDD price, which is the price of the highest dispatched energy bid in the RTDD. Table 4 indicates that if there were no major congestion in the market, the RTDD price would generally be higher than the RTCD prices, because the RTDD will first dispatch resources with operating reserve awards in merit order and will then dispatch resources without operating reserve awards in merit order. However, if there were significant congestion in the market, as indicated by differences in the DLAP prices, then it is also possible for the RTDD price to be lower than the RTCD prices, because the RTDD does not model transmission constraints. For example, the September 3, 2012 case reflects significant congestion between SCE and the rest of the ISO market, and as a result the SCE price spiked to approximately $1,714 in the RTCD (see the fourth column of Table 4), which also raised the SMEC to approximately $873 (see the first column of Table 4) while the price in the rest of the ISO was approximately $150 or less (see the third and fifth columns of Table 4). The RTDD price for this case is $500 (see the sixth column of Table 4), which is higher than the RTCD LMPs in PG&E and SDG&E but lower than the RTCD LMPs in SCE and the system-wide SMEC.

Table 4

RTCD event Date	RTCD SMEC	RTCD PG&E DLAP price	RTCD SCE DLAP price	RTCD SDGE DLAP price	RTDD uniform market price
Mar. 22, 2011	$73.89	$67.59	$73.63	$74.80	$749
Mar. 24, 2011	$53.28	$60.40	$52.93	$53.48	$75.38
Mar. 26, 2011	$259.89	264.78	$254.91	$259.63	$749
Jun. 30, 2011	$259.62	$255.21	$262.32	$268.10	$999
May 30, 2012	$37.09	$38.10	$36.26	$36.52	$44.68
Sept. 3, 2012	$873.30	$102.72	$1,713.51	$151.16	$500

II. Request for Modified Effective Date

In the October 10 filing, the ISO requested an effective date of December 11, 2012 for the proposed tariff changes. Because that effective date is no longer possible, the ISO requests that the Commission make the tariff changes effective March 18, 2012 – 61 days after the date of this response.[33]

III. Communications

Communications regarding this filing should be addressed to the same individuals that were designated to receive service in the underlying October 10 filing, namely:

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IV. Service

The ISO has served copies of the instant filing upon all parties in the above-referenced proceeding. The ISO has also served copies of this filing on the California Public Utilities Commission, the California Energy Commission, and all parties with effective Scheduling Coordinator Service Agreements. In addition, the ISO is posting the filing on its website.

[33] The December 10 letter (at 4) explained that this response will constitute an amendment to the October 10 filing.

V. Conclusion

The ISO respectfully requests that the Commission accept this response as fully providing the additional information requested in the Commission Staff's December 10, 2012 letter. The Commission should accept the October 10, 2012 tariff amendment, as supplemented by this response, as just and reasonable and make it effective as of March 18, 2013.

If there are any further questions or comments, please contact the undersigned.

Respectfully submitted,

/s/ Bradley R. Miliauskas

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cc: Kimberly Vendryes, Commission Staff