Comments of Powerex Corp.
CAISO Contingency Reserve Cost Allocation

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Powerex appreciates the opportunity to provide these comments on the CAISO’s April 29, 2014 “Contingency Reserve Cost Allocation Straw Proposal” (“Straw Proposal”). The new BAL-002-WECC-2 standard, which will go into effect October 1, 2014, changes the calculation of the contingency reserves that CAISO must maintain. Powerex agrees the CAISO Tariff needs to be modified to reflect the new standard.

Powerex’s comments are focused on three broad topics. First, the Straw Proposal appears to contain two notable errors. It makes a mathematical error, which results in the proposed cost allocation being inconsistent with the new WECC standard. And the Straw Proposal also appears to misstate both the currently-effective WECC standard and the current CAISO Tariff by implying that the use of firm rather than non-firm transmission service external to the CAISO is relevant to the determination of required contingency reserves. It is not, and the suggestion in the Straw Proposal is contradicted by prior CAISO statements, statements on the stakeholder call, and the CAISO Tariff itself.

Second, the Straw Proposal appears to eliminate the existing provisions that directly compensate Scheduling Coordinators that import energy for the beneficial effect of reducing the CAISO’s need to procure contingency reserves. The cost allocation for contingency reserves must be consistent with cost causation, which requires both charges and credits consistent with each SC’s impact on the CAISO’s total required contingency reserves and the associated procurement costs.

Third, the Straw Proposal would eliminate distinctions between “firm”, “non-firm” and “unit contingent” imports for purposes of determining the CAISO’s total required contingency reserves and each SC’s allocation of costs. Eliminating the principal financial incentive to deliver firm energy to the CAISO should be expected to result in a significant increase in interruptible imports, with increased real-time curtailment of those deliveries. To protect against non-delivery of interruptible imports, CAISO will likely need to procure additional capacity—such as through additional residual unit
commitment and/or flexible ramping constraint levels. Under the current design, these increased costs will be borne primarily by loads. Powerex therefore recommends that CAISO convene a new stakeholder process to address this imminent issue.

1. The Straw Proposal Contains Errors Regarding the Calculation of Contingency Reserve

   a. The Straw Proposal Does not Correctly Apply the New WECC Standard

   The Straw Proposal correctly states that the new BAL-002-WECC-2 standard requires BAs to maintain contingency reserves equal to the greater of (a) the most severe single contingency; or (b) “the sum of three percent of hourly integrated Load (generation minus net actual interchange) plus three percent of hourly integrated generation (generation minus station service.”)

   1

   The Straw Proposal cites the CAISO design principle of allocating the cost of reserves to measured demand, and thus “the proposed calculation of an SC’s reserve obligation will be 6% of (metered load + exports) minus 3% of imports.”

   2

   This is an incorrect application of the CAISO design principle, however, and will lead to excessive levels of contingency reserve costs being allocated. While it may be that costs attributable to generation are allocated to load and exports, it is not the case that generation is equal to load plus exports, which is the arithmetic identity used in the Straw Proposal. Instead, generation is equal to load plus exports minus imports.

   3

   The corrected formulation of the BAL-002-WECC-2 requirements, expressed in terms of metered load, imports and exports, is as follows:

   \[
   \begin{align*}
   \text{Contingency Reserve} &= 3\% \times (\text{Generation}) + 3\% \times (\text{Load}) \\
   &= 3\% \times (\text{Load} + \text{Exports} - \text{Imports}) + 3\% \times (\text{Load}) \\
   &= 6\% \times (\text{Load}) + 3\% \times (\text{Exports}) - 3\% \times (\text{Imports})
   \end{align*}
   \]

   Powerex requests that CAISO modify its proposed formula for the allocation of contingency reserve costs in the next version of the proposal.

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   1 Straw Proposal at 4.

   2 Straw Proposal at 4.

   3 This assumes losses are ignored. If they are not ignored, then an additional term equal to 3% of losses may need to be added to the final equation.
b. The Straw Proposal Incorrectly Implies that the Current Contingency Reserve Calculation Distinguishes Between Firm and Non-Firm Transmission Service External to the CAISO

The Straw Proposal observes that “[t]he new standard does not require distinctions for the fuel source of generation serving the load or whether imports/exports are utilizing firm/non-firm transmission external to the ISO.” Powerex agrees that the new standard does not require such a distinction, but the statement suggests that the current standard does draw that distinction. This suggestion is misleading and ultimately incorrect, as recognized by CAISO itself on multiple occasions.

First, the Straw Proposal is plainly contradicted by CAISO’s prior statement, in another stakeholder process, that “[t]he ISO only requires firm transmission for imports or exports of ancillary services.”

Second, CAISO staff recognized on the stakeholder conference call on May 6, 2014 that the calculation of contingency reserves has nothing to do with the firmness of transmission.

Third, the CAISO Tariff makes no reference to the firmness of transmission service in its description of the calculation of contingency reserve obligations. Under the existing CAISO Tariff, the required contingency reserves increase by “one hundred (100) percent of any Interruptible Imports.” The Tariff defines Interruptible Import as “Non-firm Energy sold into the CAISO Balancing Authority Area from a resource located outside the CAISO Balancing Authority Area which by contract can be interrupted or reduced at the discretion of the seller.” Nothing in the definition of Interruptible Import refers to the firmness of transmission service, and hence transmission service is irrelevant to the Tariff’s determination of contingency reserve obligations.

It is regrettable that the Straw Proposal would contribute to confusion on this topic. Powerex requests that CAISO set the record straight in the next version of the proposal by clarifying that the calculation of CAISO’s required contingency reserves both today,

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4 Straw proposal at 4.

5 CAISO response to comments on the Full Network Model Expansion Third Revised Straw Proposal, at 20 (emphasis added).

6 ISO Tariff at § 11.10.3.2.

7 ISO Tariff, Appendix A ("Master Definition Supplement"), definition of “Interruptible Import” (emphasis added).
and under the CAISO’s application of the new BAL-002-WECC-2 standard is not affected by whether an import or export utilizes firm rather than non-firm transmission service external to the CAISO. Powerex requests that the CAISO also clarify that the appropriate use of any of the CAISO’s three energy products is not affected by the firmness of the transmission service external to the CAISO.

2. Cost Causation Requires that Imports Be Compensated for Reducing the Contingency Reserve Requirement in the CAISO BAA

The Straw Proposal describes the current determination of an SC’s obligation of contingency reserves as follows:

An SC’s reserve obligation is 7% of (metered load + firm exports – firm imports + non-firm imports) minus 2% of (hydro generation + unit contingent imports from hydro generation – unit contingent exports from hydro generation). The obligation cannot be less than zero.\(^8\)

The new formula proposed in the Straw Proposal also contains the provision that “[t]he obligation cannot be less than zero,” giving the appearance that this is merely a continuation of the existing Tariff. Such an appearance is misleading, however, as the Straw Proposal misstates the current Tariff. Sections 11.10.3 and 11.10.4 of the CAISO Tariff address Spinning and Non-Spinning Reserve, respectively. Both sections contain the following provision:

If the Scheduling Coordinator’s Operating Reserve Obligation … is negative, the SC may be entitled to a credit rather than a charge.\(^9\)

The Straw Proposal therefore conceals that it is proposing a major change to the current Tariff through its requirement that “[t]he obligation cannot be less than zero” under the new standard.

Under both the currently-effective and the new WECC standards, and also under the current CAISO Tariff, imports of energy into the CAISO can reduce the total contingency reserves that CAISO must procure. This is most easily seen using the new BAL-002-WECC-2 requirement:

\[
\text{Contingency Reserve} = 3\% (\text{Generation}) + 3\% (\text{Load})
\]

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\(^8\) Straw Proposal at 4 (emphasis added).

\(^9\) CAISO Tariff at 11.10.3 and 11.10.4.
Since imports reduce the need for generation within the CAISO BAA, they consequently reduce the required contingency reserves within the CAISO BAA.\textsuperscript{10} While the formula is different, this same general relationship exists under the current WECC standard and the current CAISO Tariff. The current CAISO rules appropriately compensate imports for reducing the required contingency reserves, and the Straw Proposal offers no justification for eliminating that compensation.\textsuperscript{11}

To achieve efficient market outcomes, the existing framework that permits SCs’ contingency reserve obligation to be less than zero, and hence receive compensation for reducing the CAISO’s contingency reserve requirement, \textit{must} be retained. If importers are not compensated for reducing the CAISO’s contingency reserve requirement, then the CAISO’s markets will not lead to the least cost commitment and dispatch of physical resources.

Consider the typical market scenario in which CAISO receives energy bids from both internal generation and from imports. CAISO selects which bids to accept based on, among other factors, their bid price. But an import and an internal generator with identical bids do not impose identical costs to the grid if they are selected. If the generator is selected, it will increase the CAISO’s contingency reserve requirement by 3\% (with the costs allocated to SCs with load and/or exports). If the import is selected, however, there will be no increase in generation, and hence no increase in the contingency reserves that CAISO must procure and pay for. Indeed, the impact on contingency reserve requirements would make it optimal for CAISO to accept imports even if they are more expensive than internal generation bids; how much more expensive will be generally determined by the savings of not having to procure additional contingency reserve. Making the efficient selection between internal generation (which increases contingency reserve requirements) and imports (which do

\textsuperscript{10} As explained in the Straw Proposal, the contingency reserve requirement is based on the larger of two criteria: (a) the loss of the most severe single contingency; and (b) the calculation based on generation and load. It is Powerex’s understanding that, for the CAISO BAA, the second criterion is generally larger, and hence determines the contingency reserve requirements.

\textsuperscript{11} The Straw Proposal does provide that a Scheduling Coordinator “can submit inter-SC trades for ancillary services obligations,” suggesting that a negative obligation credit could be sold, on a bilateral basis, to another SC with a positive obligation. This would be similar to the framework that existed before MRTU. In order for an out-of-state supplier to realize compensation for the contingency reserves it holds at its source BAA, the supplier will first need to find an SC with a liability for contingency reserve costs (i.e., principally an SC serving load within the CAISO), and then negotiate a price for the transfer of the contingency reserve obligation credit. The negotiated price will inevitably be below the cost of the avoided contingency reserve requirement to incent a counterparty to enter into the transaction. The CAISO has provided no justification as to why it would want to revert to this pre-MRTU process which is both cumbersome and inefficient.
not) is currently achieved by the CAISO market design, which “unbundles” energy and the requirement to procure reserves. Loads, for example, pay both the LMP at their location and also are charged separately for the cost of contingency reserve (and other costs related to reliability, such as for residual unit commitment and the cost of the flexible ramping constraint). The LMP in the CAISO design is an “energy-only” price, with contingency reserve obligations unbundled. An import is not an “energy-only” product, however. As explained above, under both the current and new WECC standards, imports and exports affect the CAISO’s requirement for carrying contingency reserves. Is it therefore both appropriate and necessary for efficiency that imports and exports both be respectively credited and charged for their impact on CAISO’s contingency reserve costs, separate and apart from LMP-based settlements for the energy that flows under the transaction.

Returning to the example of choosing between an import bid and an internal generator bid, this choice can be efficiently made on the basis of bids alone if – and only if – the SC offering the import knows it will be compensated separately for reducing the CAISO’s cost of contingency reserves. This will allow the SC to reduce the bid price for the import, thus reflecting the “energy-only” component, since the contingency reserve attribute will be compensated separately. This outcome cannot be achieved, however, if an SC is denied compensation for imports that reduce CAISO’s contingency reserve carrying obligations, as appears to be contemplated in the Straw Proposal.

Powerex requests that CAISO clarify in the next version of the Straw Proposal that an SC’s hourly requirement for operating reserves can be negative, consistent with the current tariff.

3. The New BAL-002-WECC-2 Standard Raises Additional Issues that CAISO Should Address through a New Stakeholder Process

Under the current CAISO market design, Scheduling Coordinators offering imported energy into the CAISO markets identify the energy as “Firm,” “Non-Firm,” or “Unit Contingent.” These different energy products currently result in different operating reserve obligations, and thus are settled differently. In practice, this different settlement

12 The Straw Proposal would deny direct settlement compensation to imports, but appears to permit inter-SC trades, which could conceivably be used to monetize the import’s reductions to contingency reserve requirements. Such a design introduces significant uncertainty regarding the compensation that an import will actually obtain, or if it will be able to find a willing counterparty in the first place. This uncertainty undermines the unbundling of compensation discussed above, and hence undermines market efficiency. A similar design was in place prior to MRTU, and should not be resurrected.

14 Additional product types are “Dynamic” and “Wheel”, but are beyond the scope of these comments.
treatment results in “Non-Firm” imports being paid less than “Unit Contingent” imports, which in turn are paid less than “Firm” imports.

The CAISO Tariff includes a definition of “Non-Firm” or “Interruptible Imports”, discussed above, whereby the seller has discretion to not deliver on the award. Unfortunately, the Tariff does not define either “Firm” or “Unit Contingent” energy, though the usage of those terms indicates that the circumstances under which a seller may fail to deliver on those awards are much narrower. This is broadly consistent with the general use of similar terms in the industry.

The Straw Proposal explains that the new WECC standard removes references to whether imports or exports are firm or non-firm. Consequently, the existing settlement difference between the three current CAISO energy products, which is based on differing operating reserve costs, will be eliminated, and all three products will be paid the same. Critically, there will therefore no longer be any reason for a market participant to supply firm energy to the CAISO, as the additional costs associated with providing firm energy will not result in additional compensation.

The CAISO should therefore expect significant deterioration in the delivery performance of import awards. Simply put, there are real costs associated with setting aside sufficient generating capacity to ensure a firm import can be delivered. Under a market design that pays firm and non-firm energy the same price, as the Straw Proposal contemplates, it would be irrational for a seller to incur those costs. By failing to differentiate between firm and non-firm energy imports, CAISO will inevitably attract only the lesser product, and must be prepared to experience significant delivery failures on import awards. To protect system reliability, CAISO will need to commit additional capacity in its residual unit commitment process, and likely also need to increase its flexible ramping capacity requirements (through procurement of additional flexible ramping constraint and/or flexible ramping product). Both of these measures will increase costs, which under the existing market design will be borne almost entirely by load.

15 CAISO Tariff at Appendix A, (definition of “Interruptible Import”).

16 See, e.g., CAISO Tariff at §§ 11.10.3.2 and 11.10.4.2 (“…firm purchases from outside the CAISO [BAA]…”), § 11.10.5 (“… firm imports.”), § 30.5.2.4 (“… Energy categorized as Interruptible Imports (non-firm imports)…”), Appendix M at § 1.5.4 (“The CAISO will treat dynamically scheduled Energy as a resource contingent firm import.”), CAISO Tariff § 11.7.3 (providing a definition of “firm power”, but limited “for the purposes of this Section 11.7.3,” which relates to Metered Subsystems). A “white paper” from 2007 on the CAISO website also discusses “unit contingent” imports, though the force and effect of a “white paper” is not clear. See http://www.caiso.com/Documents/WhitePaper-CAISOe-TagRequirements-ContingencyReserveTracking.pdf
Therefore, while this stakeholder process can be concluded upon (i) correcting the contingency reserve formula; and (ii) continuing to permit an individual SC’s reserve obligation to be less than zero, the implementation of the new BAL-002-WECC-2 standard materially changes the incentives for the delivery performance of imports, raising additional issues that CAISO will need to address. Powerex strongly recommends that CAISO promptly convene a new stakeholder process to address these issues.

In particular, the new stakeholder process will need to address the critical interaction between delivery performance of imports and the costs that CAISO will incur to ensure reliable service. Either CAISO must require a high degree of delivery performance by imports, or it must ensure that the cost of integrating frequently-curtailed imports is allocated appropriately. The current market design does neither of these things.

There are several approaches that CAISO should consider:

First, CAISO could eliminate the undefined “firm” and “unit contingent” energy product categories, leaving all imports to be offered as non-firm. CAISO would then ensure imports, consistent with their ability to not deliver, are allocated a portion of the CAISO’s costs associated with reliability commitments, consistent with cost causation.

CAISO already recognizes that virtual supply—which is known to not deliver physical energy and hence will not be available to meet load—may economically displace physical supply sources, and consequently increase the additional capacity committed by CAISO through its RUC process. CAISO appropriately allocates a portion of the RUC costs to virtual supply, consistent with cost causation. CAISO has similarly recognized that uncertainty regarding whether a resource will physically perform is a driver of its flexible ramping constraint costs, and allocates 25% of those costs to gross negative deviations of resources (i.e., supply shortfalls). It would be entirely consistent and appropriate to extend these cost allocation principles to allocate the costs associated with all actions that the CAISO takes to accommodate imports that fail to deliver according to their awards.

Second, CAISO could, alternatively, ensure imports do not increase the need for additional internal capacity or flexibility commitments by requiring high levels of delivery performance. This would require CAISO to set out clear performance requirements for imported energy, develop administrative charges or penalties to encourage compliance with those requirements, and make persistent or deliberate failures to perform subject to enforcement action or referral. The experience of NYISO is instructive in this regard. NYISO expressly requires that imports into its BAA be firm energy backed by capacity.
at the source BAA.\textsuperscript{17} If an import fails to be delivered other than for circumstances outside the seller’s control, the seller is subject to a so-called “financial impact charge.”\textsuperscript{18}

By requiring that Scheduling Coordinators selling imported energy into the CAISO markets have sufficient resources to support delivery and also lack the discretion to interrupt that delivery, CAISO can avoid the need to incur and allocate additional reliability-related costs for these imports. This option does, however, require CAISO to clearly define what is required in terms of delivery performance, and to monitor and enforce compliance with those requirements.

\textit{Third}, CAISO could consider a combination of the above approaches. This would restore the current option to import different energy products, with an appropriate allocation of the costs associated with CAISO’s use of each product. Again, clear definitions and performance requirements must be established to ensure CAISO actually receives the energy product it pays for, since there will be an obvious incentive for importers to reduce their costs by declaring imports as “firm” that actually fall short of that term’s definition.

While addressing the above issues may be complex, a failure to address them is an open invitation for most or all imports sold into the CAISO markets as of October 1, 2014 to be declared as non-firm, with the seller having the discretion to fail to procure sufficient resources to deliver and to curtail such deliveries at the last minute for any reason, including in favor of a better market opportunity elsewhere. Under the existing market rules, the costs associated with committing additional internal capacity and flexibility to accommodate import delivery failures will not be borne by the imports at all, and instead will be borne primarily on CAISO loads. Powerex believes such an outcome would be inefficient, inequitable, and unsustainable, and looks forward to working with CAISO on the proposed new stakeholder initiative to address these issues.


\textsuperscript{18} NYISO Tariff at § 4.5.3.2.