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June 16, 2008

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

Re: California Independent System Operator Corporation
Docket No. OA08-12-___

Dear Secretary Bose:

The California Independent System Operator Corporation ("CAISO")[1] hereby submits an original and five copies of this filing to comply with the Federal Energy Regulatory Commission's ("Commission") May 16, 2008 "Order Accepting Compliance Filing, as Modified"[2] pertaining to the non-transmission planning requirements of Order No. 890.[3] Two additional copies of this compliance filing are also provided to be date stamped and returned to the messenger.

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[1] Capitalized terms not otherwise defined herein have the meanings set forth in the CAISO's existing OATT ("CAISO Tariff") and the CAISO's Market Redesign and Technology Upgrade ("MRTU") Tariff.

[2] *California Independent System Operator Corporation,* 123 FERC ¶ 61,180 (2008) ("May 16 Order").

[3] *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, 72 Fed. Reg. 12,266 (Mar. 15, 2007), FERC Stats. & Regs. ¶ 31,241 (2007) ("Order No. 890"), *order on reh'g*, Order 890-A, 73 Fed. Reg. 2984 (Jan. 16, 2008), FERC Stats. & Regs. ¶ 31, 261 (2007) ("Order No. 890-A"), *reh'g pending.*

I. BACKGROUND

On February 16, 2007, the Commission issued Order No. 890, which adopted a number of changes to the Open Access Transmission Tariff ("OATT") requirements of Order No. 888.[4] The Commission declined to exempt Independent System Operators from the compliance obligations of Order No. 890. It required Independent System Operators to submit compliance filings that either (1) contain tariff provisions that conform with the requirements of Order No. 890, or (2) demonstrate that their Commission-approved tariff provisions are consistent with or superior to the provisions of the revised *pro forma* OATT.[5] Pursuant to Order No. 890, the CAISO submitted its compliance filing in the above-referenced proceeding on October 11, 2007 ("October 11 Compliance Filing"). In addition, on April 15, 2008, the CAISO submitted a filing in Docket Nos. OA08-12 and OA08-62 to comply with Order Nos. 890 and 890-A ("April 15 Order No. 890-A Compliance Filing").

In the May 16 Order, the Commission accepted the CAISO's October 11 Compliance Filing with certain modifications and directed the CAISO to make a further compliance filing within 30 days of the order. The instant filing is intended to comply with the Commission's directives in the May 16 Order.

The instant filing contains the following: (1) a demonstration that the CAISO has filed language in its MRTU Tariff that satisfies the Order No. 890 requirement that non-generation resources be permitted to participate in the Ancillary Services markets; (2) a demonstration that the CAISO has filed tariff language in its MRTU Tariff that satisfies the creditworthiness requirements of Order No. 890; (3) Appendix FF to the CAISO Tariff and Appendix M to the MRTU Tariff (as substitutes for Attachment J as contemplated in the May 16 Order), which set forth the required provision for addressing parallel flows; (4) revisions to Appendix L to the CAISO Tariff to (a) reflect additional detail regarding the CAISO's specific mathematical algorithms for calculating available transmission capacity ("ATC"), and a link to the location on the CAISO Website containing those algorithms, (b) request a waiver from the requirements related to the transmission reserve margin ("TRM") methodology and capacity benefit (CBM") practices because the CAISO does utilize those measures, and (c)

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[4] *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, FERC Stats. & Regs. ¶ 31,036 (1996), *order on reh'g*, Order No. 888-A, FERC Stats. & Regs. ¶ 31,048 (1997), *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶ 61,046 (1998), *aff'd in relevant part sub nom., Transmission Access Policy Study Group, et al. v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom, New York v. FERC*, 535 U.S. 1 (2002).

[5] Order No. 890 at P 157.

explain the CAISO's calculation methodology used to determine the transmission capacity set aside for native load and non-OATT customers.[6]

II. COMPLIANCE DEMONSTRATION

A. Non-Generator Participation in Ancillary Services Markets

In the May 16 Order, the Commission directed the CAISO to make modifications to Section 8 of the MRTU Tariff that are necessary to permit participation by non-generators in the CAISO's ancillary services market, and to file tariff sheets reflecting such changes in its 30-day compliance filing.[7] The Commission also recognized that, in its April 15 Compliance Filing, the CAISO proposed revisions to Section 8 of the CAISO Tariff and the MRTU Tariff that address the provision of Ancillary Services by non-generation resources. The Commission stated that, to the extent the CAISO believes that its April 15 Compliance Filing sufficiently addresses the concerns expressed by the Commission in the May 16 Order, the CAISO could demonstrate that in its 30-day compliance filing in the instant proceeding.

The CAISO supports the goal articulated by the Commission in Order No. 890 of preventing undue discrimination and preference with regard to the provision of transmission services. The CAISO further supports the development and deployment of alternative technologies and welcomes the participation of non-generation resources in the CAISO's Ancillary Services market. To that end, the CAISO has fully complied with the specific and express requirements of Paragraph 888 of Order No. 890 by proposing revisions to its currently effective CAISO Tariff and to the MRTU Tariff that specify that non-generation resources are permitted to provide the specified Ancillary Services, provided that the resources are capable of providing the specific service and meet the applicable Ancillary Service standards and technical requirements. Specifically, the CAISO's April 15 Compliance Filing proposed to revise Section 8.1 in both tariffs to provide that: (1) bids for Regulation, Spinning Reserve, Non-Spinning Reserve, and Voltage Support may be submitted by a Scheduling Coordinator for other non-generation resources that are capable of providing the specific service and that meet applicable Ancillary Service standards and technical requirements, as set forth in Sections 8.1 through 8.4, and are certified by the CAISO to provide

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[6] As explained in the October 11 Compliance Filing, the CAISO will submit Appendix L to the MRTU Tariff after the North American Electric Reliability Corporation ("NERC") and the North American Energy Standards Board ("NAESB") have completed their processes to develop ATC standards. *See* Transmittal Letter for October 11 Compliance Filing at 8-9 & n.10.

[7] May 16 Order at P 29.

Ancillary Services;[8] and (2) the provision of Regulation, Spinning Reserve, Non-Spinning Reserve, and Voltage Support by other non-generation resources will be subject to the same requirements applicable to other providers of these Ancillary Services, as set forth in Sections 8.5 through 8.14 of the current CAISO Tariff and in Sections 8.5 through 8.11 of the MRTU Tariff.[9] This tariff language is fully consistent with the *pro forma* tariff language that was adopted by the Commission in Order No. 890.

In addition, the CAISO has initiated a project and stakeholder process to develop the technical and operational requirements for integrating storage technologies into the system and consider the extent to which additional tariff revisions may be appropriate to enhance their participation in the CAISO's markets. As indicated in the Market Notice dated May 21, 2008 and provided as Attachment H hereto, the CAISO is taking significant steps to integrate large amounts of renewable resources onto the electric grid, including energy storage technologies. This project will undertake a comprehensive review of key issues related to the integration of the energy storage technologies. The types of storage technologies to be considered in the review with stakeholders will include flywheel systems, pumped hydro, battery storage, compressed air storage, super capacitors, flow batteries, and plug-in hybrid vehicles.

As one of the first steps in the project, the CAISO on May 28, 2008 posted a white paper that discusses the issues associated with integrating different types of energy storage technologies. A copy of this initial white paper is provided as Attachment G hereto. Following the issuance of the white paper, on May 29, 2008, the CAISO conducted a stakeholder teleconference which drew over 80 call-in participants interested in the initiative. The CAISO is now proceeding with a multi-step stakeholder process, in which issues and possible solutions will be considered in additional white papers prepared by the CAISO, and stakeholder feedback will be obtained through a series of stakeholder meetings, conference calls, and opportunities to submit written comments. The CAISO anticipates that implementation of the recommendations that result from this project and stakeholder process will occur after the expected Fall 2008 start-up of MRTU.

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[8] Energy imbalance service, which is an Ancillary Service under the *pro forma* OATT, is not an Ancillary Service under the CAISO Tariff. Instead, imbalances are resolved through the CAISO's Imbalance Energy markets, and those markets accommodate bids by Participating Loads. The MRTU Tariff already permits Participating Loads to provide Non-Spinning Reserve, as well as participate in the CAISO's Day-Ahead and Real-Time Markets.

[9] For informational purposes, the CAISO has included these filed tariff sheets in Attachment F to the instant filing.

In the Amendment to Motion to Intervene and Comments ("Amended Comments") filed in this proceeding by Beacon Power Corporation ("Beacon") on June 5, 2008, Beacon states that it acknowledges and appreciates the CAISO's initiation of the stakeholder process to discuss the integration of energy storage technologies. The CAISO welcomes Beacon's support and encourages its participation in the initiative. In spite of this support for the project, however, Beacon continues to assert that the CAISO's April 15 Compliance Filing is insufficient and that the CAISO should propose comprehensive modifications to its tariff, operating procedures, and software by June 16, 2008. In the alternative to that filing date, Beacon's Amended Comments suggest that the CAISO should submit a detailed schedule and date certain for filing additional modifications to the MRTU Tariff,[10] and identify the CAISO staff responsible for meeting the schedule.

The CAISO submits that the Commission should accept the Tariff modifications proposed in the April 15 Compliance Filing as being fully compliant with the requirements of Order No. 890, Paragraph 888. As explained above, the language of the CAISO's proposed modifications to Section 8.1 of the CAISO Tariff and of the MRTU Tariff authorizes non-generation resources to provide the specified Ancillary Services and is consistent with the language the Commission adopted in amending the *pro forma* OATT. The Commission did not impose any additional requirements in Order No. 890.

The comprehensive modifications that Beacon seeks to the CAISO's MRTU Tariff, operating procedures, and software far exceed the express requirements of Order No. 890 and would affect a large number of stakeholders. In Paragraph 888 of that order, the Commission modified the *pro forma* OATT "to indicate that Reactive Supply and Voltage Control, Regulation and Frequency Response, Energy Imbalance, Spinning Reserves, Supplemental Reserves and Generator Imbalance Services, respectively, may be provided by generation units as well as other non-generation resources, where appropriate." In comparison, Beacon's "preliminary list" of necessary tariff changes includes, for example, amendments to permit non-generation resources to: (1) participate in the Residual Unit Commitment Market under MRTU, (2) be eligible for Resource Adequacy, and (3) use netting in relation to station power.[11] Beacon also seeks the creation of a new frequency response market by the CAISO as a first priority for energy storage facilities.[12] These are brand-new issues not addressed in

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[10] Beacon no longer requests that such changes be made to the CAISO's currently effective Tariff. Beacon Amended Comments, fn 1.

[11] Beacon Amended Comments, Attachment entitled "MRTU Tariff Sections Requiring Review/Revisions for Energy Storage."

[12] Beacon Amended Comments, fn 3.

Order No. 890, given the extent of their scope and impact, properly should be addressed in a stakeholder process. The CAISO has fully complied with the Order No. 890 requirements related to non-generation resources, and it is inappropriate for Beacon to seek changes far in excess of what is required to comply with Order No. 890 in the instant proceeding. The stakeholder process that the CAISO has initiated is the appropriate forum to address these matters, not the proceeding established pursuant to Order No. 890, which does not even mention these issues.

Beacon's Amended Comments and claim of CAISO non-compliance blur the distinction between the actual requirements of Paragraph 888 of Order No. 890 and Beacon's wish list of additional tariff amendments to facilitate the commercial operation of its flywheel technology – amendments that go far beyond the specific tariff language adopted in Order No. 890. It is important that the Commission's determination of the CAISO's compliance with Order No. 890 be limited to the express directives of that Order. The CAISO's proposed tariff modifications clearly comply with the specific language adopted in Order No. 890. Accordingly, the Commission should accept the tariff modifications contained in the CAISO's April 15 Compliance Filing as being consistent with Paragraph 888 of Order No. 890.

Acceptance of the CAISO's proposed tariff modifications will in no way preclude or limit the CAISO's consideration of additional changes to the tariff, operating procedures and software. That is the very purpose of the CAISO's project and stakeholder initiative on the integration of storage technologies. This process is the more appropriate and efficient forum to consider the types of issues raised by Beacon given that the requirements of Order No. 890 apply to all non-generation resources, not just to Beacon's flywheel technology. All providers of energy storage technologies, including Beacon, will have the opportunity to participate in the CAISO's stakeholder process and offer their views and recommendations on changes needed to integrate non-generation resources.

Because this project and stakeholder initiative will be comprehensive and address many technologies, the Commission should allow the process to proceed as planned, without the rigid schedule requirements and date certain for completion that Beacon suggests. The CAISO is concerned that imposition of such arbitrary time requirements will frustrate the purpose of the project. The CAISO should not be required to shorten or limit the scope of the entire project, or consider flywheel systems separately, in order to meet an arbitrary deadline. Moreover, at this stage of the implementation schedule for MRTU, the CAISO is endeavoring to achieve a Fall 2008 start-up. The Commission should not require the CAISO to divert its attention from the implementation of the new market design to address within an arbitrary and abbreviated timeframe the issues Beacon has raised at such a late hour in this proceeding. Further, the CAISO's

MRTU systems and software are well into the testing and market simulation phases. Any requirement issued at this time that the CAISO make new software changes to accommodate Ancillary Services bidding by non-generation resources will pose significant pressure and risk to the MRTU implementation schedule. Such a result would be wholly inappropriate under the circumstances described herein.

The CAISO notes that in an April 25, 2008 compliance filing in Docket No.ER07-1372, the Midwest Independent Transmission System Operator, Inc. ("MISO") proposed tariff provisions for stored energy resources to provide ancillary services. MISO requested that those provisions be made effective June 1, 2009 because of the need to develop, test, and integrate new software and systems required to accommodate the tariff changes relating to this new type of resource. Under these circumstances, it is unrealistic to suggest that the CAISO could implement comparable provisions by the Fall of 2008.

In lieu of imposing arbitrary time limits, the CAISO proposes that the planned stakeholder process on storage integration go forward, accompanied by the CAISO submitting periodic status reports on that process in this docket. The CAISO believes that this procedure will adequately address both the interests of engaging in a thorough discussion during the initiative and of continuing to maintain progress toward integration of energy storage facilities. The CAISO notes that the Commission approved a similar approach for the MISO in an order issued May 15, 2008 in Docket No. OA08-14-000.[13]

There are no interconnection applications pending for non-generation resources to come on line within the next 90 days, and no parties other than Beacon have submitted comments in this proceeding that even address the issue. To the extent that any energy storage facilities obtain all necessary approvals and seek an on-line service date prior to the conclusion of the project, they will be permitted to participate in the Ancillary Service markets under the proposed revisions to Section 8.1 and the CAISO could adopt, as appropriate, interim measures that might be needed to accommodate operation of that technology.

B. Creditworthiness Provisions

In its October 11 Compliance Filing, the CAISO stated that the provisions of Section 12 of the current CAISO Tariff, as modified by the CAISO and approved by the Commission in Docket No. ER06-700, satisfy the requirements set forth by the Commission in Order No. 890 regarding the inclusion of credit procedures in a transmission provider's OATT. The CAISO also stated that, prior

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[13] *Midwest Independent Transmission System Operator, Inc.*, 123 FERC ¶ 61,154 (2008).

to the MRTU implementation date, the CAISO would conform the MRTU Tariff to reflect the latest effective tariff language, including the provisions of MRTU Section 12 regarding creditworthiness. The CAISO argued that the provisions of the MRTU Tariff would satisfy the creditworthiness directives in Order No. 890 once they were conformed to reflect the latest effective tariff language. In the May 16 Order, the Commission stated that, "[w]hile the CAISO has made a compliance demonstration pertaining to the creditworthiness requirements of Order No. 890 in section 12 of the CAISO's existing tariff, the CAISO has failed to demonstrate that the credit provisions in the context of the MRTU tariff comply with Order No. 890."[14] Therefore, the Commission stated that the CAISO could not delay incorporating its creditworthiness provisions into the MRTU Tariff until such time as MRTU is implemented and directed the CAISO to incorporate the creditworthiness provisions, in compliance with the requirements of Order No. 890, and file MRTU Tariff sheets reflecting these provisions in its 30-day compliance filing.[15]

The CAISO has already submitted tariff filings that satisfy these Order No. 890 directives. Subsequent to the submittal of the October 11, 2007 compliance filing, the CAISO incorporated creditworthiness provisions complying with Order No. 890 into the MRTU Tariff in proceedings other than the instant proceeding. Specifically, on December 21, 2007, the CAISO made a tariff filing in Docket Nos. ER06-615 and ER08-367 to, among other things, conform the MRTU Tariff to reflect applicable provisions in the current CAISO Tariff. This tariff filing included the applicable creditworthiness provisions found in Section 12 of the current CAISO Tariff that the Commission had approved in Docket No. ER06-700.[16] For informational purposes, the CAISO includes in Attachment E hereto the MRTU creditworthiness provisions that it has previously filed with the Commission as described above.

The CAISO submits that the MRTU Tariff provisions contained in Attachment E hereto satisfy the creditworthiness directives of Order No. 890, for reasons that are essentially the same as those explained in the October 11, 2007 compliance filing with regard to the provisions of the current CAISO Tariff.[17]

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[14] May 16 Order at P 43.

[15] *Id.* at PP 43-44.

[16] In addition, on May 30, 2008, the CAISO made a tariff filing in Docket Nos. ER08-1059, *et al.* that included, *inter alia*, revisions to the creditworthiness provisions in the current CAISO Tariff and corresponding revisions to the MRTU Tariff. The Commission has not yet issued an order on that tariff filing.

[17] The rest of the discussion in this Section II.B is virtually the same as the discussion contained on pages 41-44 of the October 11 Compliance Filing, except that in Section II.B below the CAISO substitutes references to provisions of the MRTU Tariff for the references to the current CAISO Tariff contained on pages 41-44 of the October 11 Compliance Filing.

Order No. 890 required that each transmission provider specify, in a new Attachment L to the *pro forma* OATT, the qualitative and quantitative criteria that the transmission provider uses to determine the level of secured and unsecured credit required of its customers.[18] Attachment L must contain the following elements: (1) a summary of the procedure for determining the level of secured and unsecured credit; (2) a list of the acceptable types of collateral/security; (3) a procedure for providing customers with reasonable notice of changes in credit levels and collateral requirements; (4) a procedure for providing customers, upon request, a written explanation for any change in credit levels or collateral requirements; (5) a reasonable opportunity to contest determinations of credit levels or collateral requirements; and (6) a reasonable opportunity to post additional collateral, including curing any non-creditworthy determination.[19] Transmission providers may supplement Attachment L with a credit guide or manual to be posted on OASIS.[20] As explained below, the provisions of Section 12 of the MRTU Tariff provided in Attachment E hereto satisfy each of the Commission's directives in Order No. 890 regarding the inclusion of credit procedures in a transmission provider's transmission OATT.

In Docket No. ER06-700, the CAISO filed an amendment to the current CAISO Tariff to substantially revise its credit requirements. Subsequently, in response to Commission orders in the proceeding, the CAISO submitted compliance filings containing further revisions to the credit requirements, which the Commission accepted.[21] In its orders, the Commission provided direction to the CAISO regarding the credit requirement provisions that the CAISO must include in the current CAISO Tariff and those provisions that the CAISO may include in a Business Practice Manual (the "Credit Policy & Procedures Guide" or Credit Guide under the currently effective CAISO Tariff and the Business Practice Manual for Credit Management under the MRTU Tariff), which is available on the CAISO website and on OASIS.[22] The direction provided by the

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18 Order No. 890 at P 1656.

19 *Id.* at P 1657.

20 *Id.*

21 *See* March 2006 Credit Policy Amendments to the Tariff of the California Independent System Operator Corporation, Docket No. ER06-700-000 (Mar. 7, 2006); *California Independent System Operator Corp.*, 115 FERC ¶ 61,170 (2006); California Independent System Operator Corporation Compliance Filing and Status Report, Docket No. ER06-700-003 (July 11, 2006); *California Independent System Operator Corp.*, 119 FERC ¶ 61,053 (2007); California Independent System Operator Corporation Compliance Filing, Docket No. ER06-700-004 (May 31, 2007); *California Independent System Operator Corp.*, 120 FERC ¶ 61,147 (2007).

22 *See California Independent System Operator Corp.*, 115 FERC ¶ 61,170, at PP 20-22, 32, 34, 36, 42-44; *California Independent System Operator Corp.*, 119 FERC ¶ 61,053, at PP 15-

Commission in Docket No. ER06-700 is equally applicable in the context of the current CAISO Tariff and in the context of the MRTU Tariff, because the level of detail on credit requirements under both of those tariffs and many of the key credit provisions are essentially the same in both tariffs.

The MRTU Tariff provisions included in Attachment E hereto concern each of the subjects that Order No. 890 requires to be addressed in new Attachment L. These MRTU Tariff provisions, and the subjects they address, are the following:

- Section 12.1.1.2 contains the qualitative and quantitative criteria that the CAISO uses to determine the level of unsecured credit required for each Market Participant, *i.e.*, the Market Participant's Unsecured Credit Limit. Further, Section 12.1.2 states that secured credit (*i.e.*, a Financial Security Amount) is required to the extent that a Market Participant's Unsecured Credit Limit is insufficient to cover the Market Participant's financial liability (*i.e.*, the Market Participant's Estimated Aggregate Liability).[23]

- Section 12.1.1.1.2 contains the CAISO's process for calculating a Market Participant's Unsecured Credit Limit, and Section 12.1.2 contains the CAISO's process for determining the Financial Security Amount that is required from a Market Participant.

- Section 12.1.2 lists the types of Financial Security that are acceptable under the MRTU Tariff.

- Sections 12.1.1, 12.1.1.2, and 12.4 contain the CAISO's procedures for providing Market Participants with reasonable notice of changes in Unsecured Credit Limits and Financial Security posting requirements.[24]

17, 37-38, 47. When the MRTU Tariff goes into effect, a modified version of the Credit Guide will become the Business Practice Manual for Credit Management.

[23] The sum of a Market Participant's Unsecured Credit Limit and its Financial Security Amount is its Aggregate Credit Limit. Each Market Participant is required to maintain an Aggregate Credit Limit that is equal to or greater than its Estimated Aggregate Liability. *See* MRTU Tariff, §§12.1, 12.1.2.

[24] "In the event the CAISO determines that the Unsecured Credit Limit of a Market Participant must be reduced as a result of a subsequent review, the CAISO shall notify the Market Participant or FTR Bidder of the reduction . . . ." MRTU Tariff, § 12.1.1. "A Market Participant, upon request, will be provided with a written analysis as to how the provisions in Section 12.1.1.1 and this section were applied in setting its Unsecured Credit Limit." MRTU Tariff, § 12.1.1.2. "Following the date on which a Market Participant commences trading, if the Market Participant's Estimated Aggregate Liability, as calculated by the CAISO, at any time exceeds its Aggregate Credit Limit, the CAISO shall direct the Market Participant to post an additional Financial Security Amount within five (5) Business Days that is sufficient to ensure that the Market Participant's Aggregate Credit Limit is at least equal to its Estimated Aggregate

- Sections 12.1.1 and 12.4.2 contain the CAISO's procedures for providing Market Participants, upon request, with a written explanation for any change in Unsecured Credit Limits or Financial Security posting requirements.[25]
- Sections 12.4.1 and 12.4.2 provide a reasonable opportunity for Market Participants to contest determinations of Unsecured Credit Limits or Financial Security posting requirements.[26]
- Section 12.4 provides a reasonable opportunity for Market Participants to post additional Financial Security, including for the purpose of curing any determination by the CAISO that the Market Participant is not creditworthy.

Because the MRTU Tariff provisions contained in Attachment E hereto include all of the material required for Attachment L, the CAISO believes that these MRTU Tariff provisions are consistent with or superior to the *pro forma* OATT contained in Order No. 890. Moreover, the MRTU Tariff provisions satisfy the Commission's stated reasons for requiring transmission providers to include basic credit requirements in their OATTs. In that regard, in Order No. 890, the Commission stated that it was directing each transmission provider to include its basic credit requirements in Attachment L in order to (1) ensure that all customers have clear information as to the credit process and standards used by the transmission provider and (2) give customers an opportunity to comment on any changes to the standards proposed by the transmission provider in a rate filing with the Commission.[27] The MRTU Tariff provisions described above

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Liability. The CAISO shall also notify a Market Participant if at any time its Estimated Aggregate Liability exceeds ninety percent (90%) of its Aggregate Credit Limit." MRTU Tariff, § 12.4.

[25] "In the event the CAISO determines that the Unsecured Credit Limit of a Market Participant must be reduced as a result of a subsequent review, the CAISO shall notify the Market Participant of the reduction, and shall, upon request, also provide the Market Participant with a written explanation of why the reduction was made." MRTU Tariff, § 12.1.1. "The following steps are required for a Market Participant to dispute a Financial Security request resulting from the CAISO's calculation of Estimated Aggregate Liability: (1) Request by the Market Participant to review the CAISO calculation . . . ." MRTU Tariff, § 12.4.2.

[26] "A Market Participant has five (5) Business Days to review a CAISO request for additional Financial Security. Within the five (5) Business Days, the Market Participant must either demonstrate to the CAISO's satisfaction that the CAISO's Financial Security request is entirely or partially unnecessary, or post the required Financial Security Amount calculated by the CAISO." MRTU Tariff, § 12.4.1. "Market Participants may dispute the Estimated Aggregate Liability calculated by the CAISO and, as a result, the CAISO may reduce or cancel a requested Financial Security adjustment." MRTU Tariff, § 12.4.2.

[27] Order No. 890 at P 1656.

ensure that all Market Participants have clear information as to the CAISO's credit process and standards, and the presence of these provisions in the MRTU Tariff gives Market Participants an opportunity to comment on any changes to them that the CAISO may propose. Given that the MRTU Tariff already includes provisions that satisfy the requirements of Order No. 890, the CAISO requests that the Commission not require the CAISO to create a new Attachment L containing such provisions (*see* Order No. 890 at PP 157, 1660), but instead permit them to remain in their current location in the MRTU Tariff.

C. Procedures for Addressing Parallel Flows

In the May 16 Order, the Commission noted that the CAISO did not file any procedures addressing Attachment J requirements – Procedures for Addressing Parallel Flows. Accordingly, the Commission directed the CAISO to file a completed Attachment J containing the following provision:

> The North American Electric Reliability Corporation's ("NERC") Qualified Path Unscheduled Flow Relief for the Western Electricity Coordinating Council (WECC) Reliability Standard WECC-IRO-STD-006-0 filed by NERC in Docket No. RR07-11-000 on March 26, 2007, and approved by the Commission on June 8, 2007, and any amendments thereto, are hereby incorporated and made part of this Tariff. See www.nerc.com for the current version of the NERC's Qualified Path Unscheduled Flow Relief Procedures for WECC."

In compliance with the Commission's directive, the instant filing contains revisions to include the required provision as Appendix FF to the current CAISO Tariff and Appendix M to the MRTU Tariff.[28]

D. ATC Methodology

In the May 16 Order, the Commission directed the CAISO to revise its Appendix L to add a description of the specific mathematical algorithms used to calculate Available Transmission Capacity "for its scheduling, operating and planning horizons" as required by Order No. 890 and to provide a link to the location on the CAISO's website containing the actual algorithms.[29]

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[28] The May 16 Order notes that Order No. 890 contemplates that a new Attachment J will be added to each transmission provider's OATT setting forth procedures for addressing parallel flows. The use of "Attachment J", however, would not be consistent with the numbering convention of the CAISO's tariffs. Thus, in this compliance filing, the CAISO is including the information required in Attachment J in a new "Appendix FF" to the CAISO Tariff, which is the next available appendix designation in that tariff.

[29] May 16 Order at P 49.

The CAISO's October 11 Compliance Filing added Appendix L to the CAISO Tariff to describe the methodology the CAISO uses to assess ATC. Section L.2 of Appendix L sets forth the CAISO's actual ATC mathematical algorithm. Accordingly, in order to comply with the May 16 Order, the CAISO in the instant filing proposes modifications to Appendix L to the CAISO Tariff to add a narrative description of the ATC mathematical algorithm as a measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. ATC is defined as the Total Transfer Capability, less the TRM (which value is set at zero), less the sum of existing transmission commitments, current physical constraints, and retail customer service commitments. The CAISO posts the ATC values in megawatts, to the OASIS website in conjunction with the market closing events for the CAISO's Day-Ahead, Hour-Ahead, and Real-Time Markets. The modifications also provide greater detail and information about each of the components of that calculation. The CAISO requests that the Commission accept these modifications and find revised Appendix L to be in full compliance with Order No. 890 and the May 16 Order.

E. Detailed Explanation of the ATC Components

1. Existing Transmission Commitments

In the May 16 Order, the Commission directed the CAISO to file a revised Appendix L that includes an explanation of the CAISO's calculation methodology used to determine the transmission capacity set aside for native load and non-OATT customers.[30]

In compliance with this directive, the CAISO proposes modifications to Appendix L, Section L.1.4, of the CAISO Tariff to describe how the CAISO reserves transmission capacity for Existing Transmission Commitments ("ETCs") that represent Existing Contracts[31] and Transmission Ownership Rights.[32] The modifications are consistent with the ETC provisions already contained in Sections 4.2.1 and 16 of the CAISO Tariff. The modifications explain that the

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30 *Id.* at P 54.

31 Existing Contracts, as defined in the CAISO Tariff, Appendix A, are "[t]he contracts which grant transmission service rights in existence on the ISO Operations Date (including any contract entered into pursuant to such contracts) as may be amended in accordance with their terms or by agreement between the parties thereto from time to time."

32 Transmission Ownership Rights, as defined in the CAISO Tariff, Appendix A,, are "A non-Participating TO ownership or joint ownership right to transmission facilities within the ISO Control Area that has not executed the Transmission Control Agreement and the transmission facilities are not incorporated into the ISO Controlled Grid."

CAISO reserves transmission capacity for each ETC based on instructions the responsible Participating Transmission Owner ("PTO") submits to the CAISO as to the amount of firm transmission capacity that should be reserved on each branch group for each hour of the Trading Day. The modifications also explain and provide examples of the types of instructions the CAISO receives from the responsible PTO. These instructions generally fall into three basic categories: (1) the ETC reservation is a fixed percentage of the Total Transmission Capacity ("TTC") on a line, which decreases as the TTC is derated; (2) the ETC is a fixed amount of capacity, which decreases if the line's TTC is derated below the reservation level; or (3) the ETC is an algorithm that changes at various levels of TTC for the line. The modifications also add a description of the CAISO's ETC Reservations Calculator and how it determines the amounts of transmission capacity reserved for ETC rights. Finally, the modifications describe the timeline and process through which ETC rights are released under current practices.

In an effort to provide further transparency for Market Participants, the CAISO has also revised Appendix L to include a link to CAISO Operating Procedure M-423 (entitled "Scheduling and Use of Existing Transmission Contract Rights and Transmission Ownership Rights"), which is publicly available on the CAISO Website. Operating Procedure M-423 is a 25-page document that contains additional, detailed information about the CAISO's procedures for the scheduling, treatment, use, validation, timeline, and release of ETC reservations. The CAISO requests that the Commission accept these modifications and find revised Appendix L to be in full compliance with Order No. 890 and the May 16 Order.[33]

In connection with ETCs, Paragraph 53 of the May 16 Order requires an explanation of "how rollover rights are accounted for." As the CAISO explained in its October 11 Compliance Filing, the Commission has previously ruled that ETCs do not have rollover rights and, once their primary terms expire, the ETC-holder must take service under the CAISO's OATT. Thus, the requirement in Paragraph 53 of the May 16 Order does not apply to the CAISO.

The May 16 Order also requires that the CAISO include in Appendix L an explanation of how point-to-point transmission requests are incorporated in the ETC calculation. The CAISO does not provide point-to-point transmission service and does not incorporate point-to-point transmission service requests in its ETC calculation. Accordingly, this requirement of the May 16 Order does not apply to the CAISO.

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[33] The modifications to Appendix L described in this paragraph are provided in Attachments A and B hereto.

2. Transmission Reserve Margin and Capacity Benefit Margin

In the May 16 Order, the Commission directed the CAISO to revise Appendix L to provide a detailed explanation of its TRM calculation methodology and the databases used to calculate TRM.[34] In addition, the Commission directed the CAISO to revise Appendix L to provide a more detailed explanation of its CBM practices, including the following: (1) information necessary to clarify who performs the resource adequacy assessment for CBM determination; (2) the methodology used to perform generation reliability assessments and whether or not the assessment method reflects a specific regional practice; (3) the assumptions used in this assessment and the basis for the selection of paths on which CBM is set aside; (4) a definition or list of the databases used for the CBM calculation; (5) a demonstration that contingency outages are not double-counted in the CBM determination; (6) procedures for allowing the use of CBM during emergencies or a clear definition of what constitutes an emergency, or a list of entities that are permitted to use CBM during emergencies; and (7) the procedure that needs to be followed by LSEs when they need to access CBM.[35]

The CAISO does not use CBMs or TRMs for operational purposes, and has not done so since the California energy crisis of 2000-2001.[36] As a result, the CAISO has not developed and/or maintained much of the information that the May 16 Order required to be included in Appendix L.[37] In these circumstances, creating new procedures, standards, methodologies, and calculations that the CAISO does not and will not use would be unnecessary and unduly burdensome. Because the CAISO does not use CBMs or TRM, procedures related to the CAISO's "CBM practices" would have no basis in the reality of the CAISO's operational practices. The CAISO should not be required to create detailed procedures that describe the use of terms that are not used in the CAISO's calculation of ATC. Further, the CAISO should not be required to create detailed explanations and procedures related to the calculation and application of CBMs and TRMs when the CAISO does not employ those measures. Moreover, such information would not be useful or provide transparency to the CAISO's Market Participants. For these reasons, and to address the Commission's concerns

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[34] May 16 Order at P 55.

[35] *Id.* at PP 60-61.

[36] As support for this statement, please see the daily CBM Reports that the CAISO is required to post on its Website and that uniformly show a CBM value of zero for all branch groups. The link to the posting is: http://www.caiso.com/docs/2001/11/20/2001112015042128272.html.

[37] To the extent that the CAISO has prepared a written procedure pertaining to such measures, please see Operating Procedure S-322, Transmission Reliability Margin (TRM) and Capacity Benefit Margin (CBM), which is publicly posted on the CAISO Website at: http://www.caiso.com/thegrid/operations/opsdoc/sched/index.html.

regarding CBM and TRM transparency, the CAISO proposes to comply with Order No. 890 by modifying Appendix L to the CAISO Tariff to include a statement that the CAISO does not use CBMs or TRMs and that those values are set at zero in the calculation of ATC. The CAISO requests that the Commission accept these tariff modifications and otherwise waive the requirements of Order No. 890 and the May 16 Order as they relate to the inclusion of CBM and TRM provisions in Appendix L.[38]

III. COMMUNICATIONS

Communications regarding this filing should be addressed to the following individuals, whose names should be placed on the official service list established by the Secretary with respect to this submittal:

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IV. SERVICE

The CAISO has served copies of this transmittal letter, and all attachments, on the California Public Utilities Commission, the California Energy Commission, the California Electricity Oversight Board, and all parties in the captioned proceeding. In addition, the CAISO is posting this transmittal letter and all attachments on the CAISO website.

V. ATTACHMENTS

In addition to this transmittal letter, the instant compliance filing includes the following attachments:

Attachment A	Currently Effective CAISO Tariff Clean Sheets incorporating black-lined revisions contained in Attachment B

[38] These tariff modifications are provided in Attachments A and B hereto.

Attachment B	Currently Effective CAISO Tariff black-lined revisions to comply with the directives in the May 16 Order
Attachment C	4th Replacement MRTU Tariff Clean Sheets incorporating black-lined revisions contained in Attachment D
Attachment D	4th Replacement MRTU Tariff black-lined revisions to comply with the directives in the May 16 Order
Attachment E	Informational – Section 12 as filed in 4th Replacement MRTU Tariff on December 21, 2007 in Docket No. ER08-367
Attachment F	Informational – Section 8.1 as filed in 4th Replacement MRTU Tariff on April 15, 2008 in Docket No. OA08-12
Attachment G	Integration of Energy Storage Technology White Paper dated May 22, 2008
Attachment H	May 21, 2008 Integration of Energy Storage Technology Market Notice

Please contact the undersigned with any questions. Thank you for your attention to this matter.

Respectfully submitted,

Nancy Saracino
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and Vice-President of Legal Affairs
Anthony J. Ivancovich
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Regulatory
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Attachment A – Clean Sheets

FERC Order 890 Compliance Filing [Docket No. OA08-12]

Currently Effective CAISO Tariff

June 16, 2008

METHODOLOGY TO ASSESS AVAILABLE TRANSFER CAPABILITY

L.1 Description of Terms

The following descriptions augment existing definitions found in Appendix A "Master Definitions Supplement."

L.1.1 **Available Transfer Capability (ATC)** is a measure of the transfer capability in the physical transmission network resulting from system conditions and that remains available for further commercial activity over and above already committed uses.

ATC is defined as the Total Transfer Capability (TTC) less applicable operating Constraints due to system conditions and Outages (i.e., OTC), less the Transmission Reliability Margin (TRM), less the total of Existing Transmission Commitments (ETC), less the Capacity Benefit Margin (CBM).

L.1.2 **Total Transfer Capability (TTC)** is defined as the amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected transmission system by way of all transmission lines (or paths) between those areas. In collaboration with owners of rated paths and the WECC Operating Transfer Capability Policy Committee (OTCPC), the ISO utilizes Rated Path Methodology to establish the TTC of ISO branch groups.

L.1.3 **Operating Transfer Capability (OTC)** is the TTC reduced by any operational Constraints caused by seasonal derates or Outages. ISO Regional Transmission Engineers determine OTC through studies using computer modeling.

L.1.4 **Existing Transmission Commitments (ETC)** include Existing Contracts, and as appropriate, Firm Transmission Rights, and Transmission Ownership Rights. The ISO reserves transmission capacity for each ETC based on instructions the responsible Participating TO submits to the ISO as to the amount of firm transmission capacity that should be reserved on each branch group for each hour of the Trading Day in accordance with Sections 4.2.1 and 16 of the ISO Tariff. The types of instructions the ISO receives from the Participating TO generally fall into three basic categories:

- The ETC reservation is a fixed percentage of the TTC on a line, which decreases as the TTC is derated (ex. TTC = 300 MW, ETC fixed percentage = 2%, ETC = 6 MWs. TTC derated to 200 MWs, ETC = 4 MWs);

- The ETC reservation is a fixed amount of capacity, which decreases if the line's TTC is derated below the reservation level (ex. ETC = 80 MWs, TTC declines to 60 MW, ETC = OTC or 60 MWs; or

- The ETC reservation is an algorithm that changes at various levels of TTC for the line (ex. Intertie TTC = 3,000 MWs, when line is operating greater than 2,000 MWs to full capacity ETC = 400 MWs, when capacity is below 2000 MWs ETC = OTC/2000* ETC).

Existing Contract capacity reservations remain reserved during the Day-Ahead and Hour-Ahead ISO markets. To the extent that the reservations are unused, they are released in real-time operations for use in the Real-Time Market.

Transmissions Ownership Rights capacity reservations remain reserved during the Day-Ahead and Hour-Ahead ISO markets, as well as through real-time operations. This capacity is under the control of the Participating TO and is not released to the ISO for use in the markets.

L.1.5 **ETC Reservations Calculator (ETCC)** exists as an SI (Scheduling Infrastructure) application. The ETCC identifies the amount of firm transmission capacity reserved (in MW) for each ETC rights holders on each branch group for each hour of the Trading Day.

- **CONG Calculated ETC Reservations**. In addition, the total amount of capacity reserved for firm ETC rights on each branch group is calculated within the ISO's Congestion Management system (CONG). CONG sums the transmission capacity reservation across all contract reference numbers (CRN) for each branch group to determine the total amount of ETC reservation on each branch group.

- **ISO Updates to ETC Reservations Table.** The ISO updates the ETC reservations table (if required) prior to running the Day-Ahead and Hour-Ahead Markets. The amount of transmission capacity reservation for ETC rights is determined based on the OTC of each branch group and in accordance with the curtailment procedures stipulated in the existing agreements and provided to the ISO by the responsible Participating TO.

- **Market Notification.** The information is made available to all SCs who have ETC scheduling capacities in advance of the Day-Ahead Preferred, Day-Ahead Revised Preferred, and Hour-Ahead Markets. This information is posted on the Open Access Same-Time Information System (OASIS).

- For further information, see ISO Operating Procedure M-423, Scheduling and Use of Existing Transmission Contract Rights and Transmission Ownership Rights, which is publicly available on the CAISO Website at http://www.caiso.com/docs/2002/03/14/2002031412575719815.pdf.

L.1.6 **Transmission Reliability Margin (TRM)** is that amount of transmission transfer capability necessary to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions. TRM reserves sufficient transmission capacity from the Day-Ahead (DA) Market to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions. This DA implementation avoids real time schedule curtailments that would otherwise be necessary due to:

- Load forecast error
- Anticipated uncertainty in transmission system topology
- Unscheduled Flow
- Simultaneous path interactions
- Variations in generation dispatch
- Operating reserve actions

The level of TRM for each branch group will be determined by ISO Regional Transmission Engineers (RTE).

The ISO does not use TRMs. The TRM value is set at zero.

L.1.7 Capacity Benefit Margin (CBM) is that amount of transmission transfer capability reserved by Load Serving Entities (LSEs) to ensure access to generation from interconnected systems to meet generation reliability requirements. In the DA Market, CBM may be used to provide reliable delivery of Energy to ISO Control Area Loads and to meet ISO responsibility for resource reliability requirements in real time. The purpose of this DA implementation is to avoid real time schedule curtailments and firm load interruptions that would otherwise be necessary. CBM may be used to reestablish Operating Reserves. CBM is not available for non-firm transmission in the ISO Control Area. CBM may be used only after:

- all non-firm sales have been terminated,
- Direct-control Load management has been implemented,
- customer interruptible demands have been interrupted,
- if the LSE calling for its use is experiencing a Generation deficiency and its transmission service provider is also experiencing transmission constraints relative to imports of Energy on its transmission system.

The level of CBM for each branch group is determined by the amount of estimated capacity needed to serve firm Load and provide Operating Reserves based on historical, scheduled, and/or forecast data using the following equation to set the maximum CBM:

CBM = (Demand + Reserves) - Resources

Where:

- Demand = forecasted area demand
- Reserves = reserve requirements
- Resources = internal area resources plus resources available on other branch groups

The ISO does not use CBMs. The CBM value is set at zero.

L.2 ATC Algorithm

A measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. ATC is defined as the Total Transfer Capability (TTC), less the Transmission Reliability Margin (TRM) (which are set at a value of zero), less the sum of existing transmission commitments, current physical constraints, and retail customer service commitments. The ISO posts the ATC values in megawatts to OASIS in conjunction with the ISO Market closing events for the Day-Ahead, Hour-Ahead, and Real-Time markets.

ATC = OTC – (TRM + ETC + CBM)

or

ATC = (TTC – Operating Constraints) - (TRM + ETC + CBM)

Where:

OTC = TTC – Operating Constraints
TTC = Total Transfer Capability
OTC = Operating Transfer Capability
TRM = Transmission Reliability Margin
ETC = Existing Transmission Commitments
CBM = Capacity Benefit Margin

The specific data points used in the ATC calculation are each described in the following table.

ATC	ATC_BG_MW	Available Transfer Capacity, in MW, per Branch Group and Path direction.
Constrained Hour	CONSTRAINED_BG_FLG	Hourly Y/N flag for a specified Branch Group indicating whether the OTC is less than or equal to 25% of the TTC. This flag can be used to determine if the Branch Group is considered a Constrained Path in accordance with the FERC Definitions.
Constraints	CONSTRAINED_BG_MW	Hourly transmission Constraints, in MW, for a specific Branch Group and Path direction.
Counterflows	COUNTERFLOW_BG_MW	Hourly Interchange scheduled in the opposite direction over a specified Branch Group.
ETC Available	ETC_BG_AVAIL_MW	Capacity reserved on a specified Branch Group for Existing Transmission Contract owners. This value reflects the Existing Transmission Contract rights that have not been scheduled for use over a specified Branch Group and Path direction.
ETC Scheduled	ETC_BG_SCHD_MW	Total hourly Interchange Schedules using Existing Transmission Contracts over a specified Branch Group and Path direction.
FTR Scheduled	FTR_BG_SCHD_MW	Total hourly Interchange Schedules using Firm Transmission Rights over a specified Branch Group and Path direction.
AS Scheduled	OP_RSRV_BG_SCHD_MW	Ancillary Services scheduled, in MW, as imports over a specified Branch Group.
OTC	OTC_BG_MW	Hourly Operating Transfer Capacity of a specified Branch Group, per Path direction, with consideration given to known Constraints and operating limitations, as used in the Congestion Management System for a specified market.
TRM	TRM_BG_MW	Hourly Transmission Reliability Margin, in MW, of a specified Branch Group, per Path direction.
Spot Market Usage	TRNS_SPOT_MKT_USAGE_MW	Total hourly New Firm Use less quantities scheduled under Firm Transmission Rights for a specified Branch Group and path direction.
TTC	TTC_BG_MW	Hourly Total Transfer Capacity, in MW, of a specified Branch Group, per Path direction.

ISO TARIFF APPENDIX FF

Procedures for Addressing Parallel Flows

PROCEDURES FOR ADDRESSING PARALLEL FLOWS

The North American Electric Reliability Corporation's (NERC) Qualified Path Unscheduled Flow Relief for the Western Electricity Coordinating Council (WECC), Reliability Standard WECC-IRO-STD-006-0 filed by NERC in Docket No. RR07-11-000 on March 26, 2007, and approved by the Commission on June 8, 2007, and any amendments thereto, are hereby incorporated and made part of this Tariff. See www.nerc.com for the current version of the NERC's Qualified Path Unscheduled Flow Relief Procedures for WECC.

Attachment B - Blacklines

FERC Order 890 Compliance Filing [Docket No. OA08-12]

Currently Effective CAISO Tariff

June 16, 2008

* * *

ISO TARIFF APPENDIX L

Methodology to Assess Available Transfer Capability

METHODOLOGY TO ASSESS AVAILABLE TRANSFER CAPABILITY

* * *

L.1.4 Existing Transmission Commitments (ETC) include Existing Contracts, and as appropriate, Firm Transmission Rights, and Transmission Ownership Rights. The ISO reserves transmission capacity for each ETC based on instructions the responsible Participating TO submits to the ISO as to the amount of firm transmission capacity that should be reserved on each branch group for each hour of the Trading Day in accordance with Sections 4.2.1 and 16 of the ISO Tariff. The types of instructions the ISO receives from the Participating TO generally fall into three basic categories:

- The ETC reservation is a fixed percentage of the TTC on a line, which decreases as the TTC is derated (ex. TTC = 300 MW, ETC fixed percentage = 2%, ETC = 6 MWs. TTC derated to 200 MWs, ETC = 4 MWs);

- The ETC reservation is a fixed amount of capacity, which decreases if the line's TTC is derated below the reservation level (ex. ETC = 80 MWs, TTC declines to 60 MW, ETC = OTC or 60 MWs; or

- The ETC reservation is an algorithm that changes at various levels of TTC for the line (ex. Intertie TTC = 3,000 MWs, when line is operating greater than 2,000 MWs to full capacity ETC = 400 MWs, when capacity is below 2000 MWs ETC = OTC/2000* ETC).

Existing Contract capacity reservations remain reserved during the Day-Ahead and Hour-Ahead ISO markets. To the extent that the reservations are unused, they are released in real-time operations for use in the Real-Time Market.

Transmissions Ownership Rights capacity reservations remain reserved during the Day-Ahead and Hour-Ahead ISO markets, as well as through real-time operations. This capacity is under the control of the Participating TO and is not released to the ISO for use in the markets.

L.1.5 ETC Reservations Calculator (ETCC) exists as an SI (Scheduling Infrastructure) application. The ETCC identifies the amount of firm transmission capacity reserved (in MW) for each ETC rights holders on each branch group for each hour of the Trading Day.

- **CONG Calculated ETC Reservations.** In addition, the total amount of capacity reserved for firm ETC rights on each branch group is calculated within the ISO's Congestion Management system (CONG). CONG sums the transmission capacity reservation across all contract reference numbers (CRN) for each branch group to determine the total amount of ETC reservation on each branch group.

- **ISO Updates to ETC Reservations Table.** The ISO updates the ETC reservations table (if required) prior to running the Day-Ahead and Hour-Ahead Markets. The amount of transmission capacity reservation for ETC rights is determined based on the OTC of each branch group and in accordance with the curtailment procedures stipulated in the existing agreements and provided to the ISO by the responsible Participating TO.

- **Market Notification.** The information is made available to all SCs who have ETC scheduling capacities in advance of the Day-Ahead Preferred, Day-Ahead Revised Preferred, and Hour-Ahead Markets. This information is posted on the Open Access Same-Time Information System (OASIS).

- For further information, see ISO Operating Procedure M-423, Scheduling and Use of Existing Transmission Contract Rights and Transmission Ownership Rights, which is publicly available on the CAISO Website at http://www.caiso.com/docs/2002/03/14/2002031412575719815.pdf.

L.1.65 Transmission Reliability Margin (TRM) is that amount of transmission transfer capability necessary to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions. TRM reserves sufficient transmission capacity from the Day-Ahead (DA) Market to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions. This DA implementation avoids real time schedule curtailments that would otherwise be necessary due to:

- Load forecast error
- Anticipated uncertainty in transmission system topology
- Unscheduled Flow
- Simultaneous path interactions
- Variations in generation dispatch
- Operating reserve actions

The level of TRM for each branch group will be determined by ISO Regional Transmission Engineers (RTE).

The ISO does not use TRMs. The TRM value is set at zero.

L.1.76 Capacity Benefit Margin (CBM) is that amount of transmission transfer capability reserved by Load Serving Entities (LSEs) to ensure access to generation from interconnected systems to meet generation reliability requirements. In the DA Market, CBM may be used to provide reliable delivery of Energy to ISO Control Area Loads and to meet ISO responsibility for resource reliability requirements in real time. The purpose of this DA implementation is to avoid real time schedule curtailments and firm load interruptions that would otherwise be necessary. CBM may be used to reestablish Operating Reserves. CBM is not available for non-firm transmission in the ISO Control Area. CBM may be used only after:

- all non-firm sales have been terminated,
- Direct-control Load management has been implemented,
- customer interruptible demands have been interrupted,
- if the LSE calling for its use is experiencing a Generation deficiency and its transmission service provider is also experiencing transmission constraints relative to imports of Energy on its transmission system.

The level of CBM for each branch group is determined by the amount of estimated capacity needed to serve firm Load and provide Operating Reserves based on historical, scheduled, and/or forecast data using the following equation to set the maximum CBM:

CBM = (Demand + Reserves) - Resources

Where:

- Demand = forecasted area demand
- Reserves = reserve requirements
- Resources = internal area resources plus resources available on other branch groups

The ISO does not use CBMs. The CBM value is set at zero.

L.2 ATC Algorithm

A measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. ATC is defined as the Total Transfer Capability (TTC), less the Transmission Reliability Margin (TRM) (which are set at a value of zero), less the sum of existing transmission commitments, current physical constraints, and retail customer service commitments. The ISO posts the ATC values in megawatts to OASIS in conjunction with the ISO Market closing events for the Day-Ahead, Hour-Ahead, and Real-Time markets.

ATC = OTC – (TRM + ETC + CBM)

or

ATC = (TTC – Operating Constraints) - (TRM + ETC + CBM)

Where:

OTC = TTC – Operating Constraints
TTC = Total Transfer Capability
OTC = Operating Transfer Capability
TRM = Transmission Reliability Margin
ETC = Existing Transmission Commitments
CBM = Capacity Benefit Margin

The specific data points used in the ATC calculation are each described in the following table.

ATC	ATC_BG_MW	Available Transfer Capacity, in MW, per Branch Group and Path direction.
Constrained Hour	CONSTRAINED_BG_FLG	Hourly Y/N flag for a specified Branch Group indicating whether the OTC is less than or equal to 25% of the TTC. This flag can be used to determine if the Branch Group is considered a Constrained Path in accordance with the FERC Definitions.
Constraints	CONSTRAINED_BG_MW	Hourly transmission Constraints, in MW, for a specific Branch Group and Path direction.
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ETC Scheduled	ETC_BG_SCHD_MW	Total hourly Interchange Schedules using Existing Transmission Contracts over a specified Branch Group and Path direction.
FTR Scheduled	FTR_BG_SCHD_MW	Total hourly Interchange Schedules using Firm Transmission Rights over a specified Branch Group and Path direction.
AS Scheduled	OP_RSRV_BG_SCHD_MW	Ancillary Services scheduled, in MW, as imports over a specified Branch Group.
OTC	OTC_BG_MW	Hourly Operating Transfer Capacity of a specified Branch Group, per Path direction, with consideration given to known Constraints and operating limitations, as used in the Congestion Management System for a specified market.
TRM	TRM_BG_MW	Hourly Transmission Reliability Margin, in MW, of a specified Branch Group, per Path direction.
Spot Market Usage	TRNS_SPOT_MKT_USAGE_MW	Total hourly New Firm Use less quantities scheduled under Firm Transmission Rights for a specified Branch Group and path direction.
TTC	TTC_BG_MW	Hourly Total Transfer Capacity, in MW, of a specified Branch Group, per Path direction.

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ISO TARIFF APPENDIX FF

Procedures for Addressing Parallel Flows

PROCEDURES FOR ADDRESSING PARALLEL FLOWS

The North American Electric Reliability Corporation's (NERC) Qualified Path Unscheduled Flow Relief for the Western Electricity Coordinating Council (WECC), Reliability Standard WECC-IRO-STD-006-0 filed by NERC in Docket No. RR07-11-000 on March 26, 2007, and approved by the Commission on June 8, 2007, and any amendments thereto, are hereby incorporated and made part of this Tariff. See www.nerc.com for the current version of the NERC's Qualified Path Unscheduled Flow Relief Procedures for WECC.

* * *

Attachment C – Clean Sheets

FERC Order 890 Compliance Filing [Docket No. OA08-12]

4th Replacement CAISO Tariff (MRTU)

June 16, 2008

CAISO TARIFF APPENDIX M

Procedures for Addressing Parallel Flows

PROCEDURES FOR ADDRESSING PARALLEL FLOWS

The North American Electric Reliability Corporation's (NERC) Qualified Path Unscheduled Flow Relief for the Western Electricity Coordinating Council (WECC), Reliability Standard WECC-IRO-STD-006-0 filed by NERC in Docket No. RR07-11-000 on March 26, 2007, and approved by the Commission on June 8, 2007, and any amendments thereto, are hereby incorporated and made part of this Tariff. See www.nerc.com for the current version of the NERC's Qualified Path Unscheduled Flow Relief Procedures for WECC.

[Eight Sheet Numbers Reserved for Future Filings.]

Attachment D - Blacklines

FERC Order 890 Compliance Filing [Docket No. OA08-12]

4th Replacement CAISO Tariff (MRTU)

June 16, 2008

* * *

CAISO TARIFF APPENDIX M

Procedures for Addressing Parallel Flows

~~[NOT USED]~~

* * *

PROCEDURES FOR ADDRESSING PARALLEL FLOWS

The North American Electric Reliability Corporation's (NERC) Qualified Path Unscheduled Flow Relief for the Western Electricity Coordinating Council (WECC), Reliability Standard WECC-IRO-STD-006-0 filed by NERC in Docket No. RR07-11-000 on March 26, 2007, and approved by the Commission on June 8, 2007, and any amendments thereto, are hereby incorporated and made part of this Tariff. See www.nerc.com for the current version of the NERC's Qualified Path Unscheduled Flow Relief Procedures for WECC.

* * *

[~~Ten~~Eight Sheet Numbers Reserved for Future Filings.]

* * *

INFORMATIONAL

Attachment E – Blacklines

Section 12 as Filed in 4th Replacement CAISO Tariff (MRTU) on December 21, 2007 in

Docket No. ER08-367

12 CREDITWORTHINESS.

12.1 Credit Requirements.

The creditworthiness requirements in this section apply to the CAISO's acceptance of ~~Bids~~**Schedules**, ~~Inter-SC Trades, and to CRR Holders or Candidate CRR Holders, and~~ ~~**to all**~~ **any** transaction~~**s**~~ in a~~ny~~ CAISO Market, to the payment of charges pursuant to the **CA**ISO Tariff (including the Grid Management Charge), and to establish credit limits for participation in any **CA**ISO auction of CRRs and to CRR Holders for the holding of CRRs. Each Market Participant (including each Scheduling Coordinator, ~~CRR Holder,~~ UDC, ~~or~~ MSS, CRR Holder, or Candidate CRR Holder) ~~**or FTR Bidder**~~ shall secure its financial transactions with the **CA**ISO (including its participation in any auction of ~~**FTRs or**~~ CRRs and for the holding of CRRs) ~~either~~ by maintaining an ~~Approved~~Unsecured Credit Limit ~~Rating (which may differ for different types of transactions with the CAISO)~~ and/or by posting Financial Security, the level of which constitutes the Market Participant's ~~**or FTR Bidder's**~~ Financial Security Amount. For each Market Participant ~~**or FTR Bidder**~~, the sum of its Unsecured Credit Limit and its Financial Security Amount shall represent its Aggregate Credit Limit. Each Market Participant ~~**or FTR Bidder**~~ shall have the responsibility to maintain an Aggregate Credit Limit that is at least equal to its Estimated Aggregate Liability.

[Docket No. ER06-700 Amendment filing accepted by FERC. See Table.]
[Docket No. ER07-1077 Amendment filing accepted by FERC. See Table.]
[Docket No. ER07-613 Amendment filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.1 Unsecured Credit Limit.

Each Market Participant ~~**or FTR Bidder**~~ requesting an Unsecured Credit Limit shall submit an application to the **CA**ISO in the form specified on the **CA**ISO ~~**Home PageWebsite**~~. The **CA**ISO shall determine the Unsecured Credit Limit for each Market Participant ~~**or FTR Bidder**~~ in accordance with the procedures set forth in the **applicable Business Practice Manual**~~**ISO Credit Policy & Procedures Guide posted on the ISO Home Page**~~. The maximum Unsecured Credit Limit for any Market Participant ~~**or FTR Bidder**~~ shall be $250 million. In accordance with the procedures described in the **applicable Business Practice Manual**~~**ISO Credit Policy & Procedures Guide**~~, each Market Participant ~~**or FTR Bidder**~~ requesting or maintaining an Unsecured Credit Limit is required to submit to the **CA**ISO or its agent financial statements and other information related to its overall financial health as directed by the **CA**ISO. Each Market

Participant ~~or FTR Bidder~~ is responsible for the timely submission of its latest financial statements as well as other information that may be reasonably necessary for the **CA**ISO to conduct its evaluation. The **CA**ISO shall determine the Unsecured Credit Limit for each Market Participant ~~or FTR Bidder~~ as described in Sections 12.1.1.**1A**, 12.1.1.**1A**.1, and 12.1.1.**1A**.2.

As a result of the **CA**ISO's credit evaluation, a Market Participant ~~or FTR Bidder~~ may be given an Unsecured Credit Limit by the **CA**ISO or denied an Unsecured Credit Limit with the **CA**ISO. Following the initial application and the establishment of an Unsecured Credit limit, the **CA**ISO will review each Market Participant's ~~or FTR Bidder's~~ Unsecured Credit Limit on a quarterly basis, unless that entity does not prepare quarterly statements, in which case the review will occur on an annual basis, and no entity shall be required to submit a new application. In addition, the **CA**ISO may review the Unsecured Credit Limit for any Market Participant ~~or FTR Bidder~~ whenever the **CA**ISO becomes aware of information that could indicate a Material Change in Financial Condition. In the event the **CA**ISO determines that the Unsecured Credit Limit of a Market Participant ~~or FTR Bidder~~ must be reduced as a result of a subsequent review, the **CA**ISO shall notify the Market Participant ~~or FTR Bidder~~ of the reduction, and shall, upon request, also provide the Market Participant ~~or FTR Bidder~~ with a written explanation of why the reduction was made.

[Docket No ER06-700 Amendment and Compliance Filings accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.1~~A~~.1 Unsecured Credit Limit Calculation.

An Unsecured Credit Limit (UCL) for each Market Participant ~~and FTR Bidder~~ that is a **Rated or Unrated** Public/Private Corporation, a **Rated or Unrated** Governmental Entity, or a Local Publicly Owned Electric Utility and that requests an Unsecured Credit Limit is calculated as follows:

1. **For each Rated Public/Private Corporation, ~~s—T~~t**he Unsecured Credit Limit is the lesser of $250 million or an amount equal to the Market Participant's ~~or FTR Bidder's~~ Tangible Net Worth (TNW) multiplied by a calculated percentage of TNW. The TNW percentage is comprised of ~~50~~ **fifty** percent (50%) of the Market

Participant's ~~or FTR Bidder's~~ Credit Rating Default Probability **(CRDP)** and ~~50~~ **fifty** percent (50%) of the MKMV Default Probability, *if reasonably applicable*.

2. **For each Unrated Public/Private Corporation, ~~s — T~~t**he Unsecured Credit Limit is the lesser of $250 million or an amount equal to the Market Participant's ~~or FTR Bidder's~~ TNW multiplied by a calculated percentage of TNW. The TNW percentage is comprised of ~~100~~ **one hundred** percent **(100%)** of the MKMV Default Probability.

3. **For each Rated Governmental Entity, ~~ies — T~~t**he Unsecured Credit Limit is the lesser of $250 million or an amount equal to the Market Participant's ~~or FTR Bidder's~~ Net Assets (NA) multiplied by a calculated percentage of NA. The NA percentage is comprised of ~~100~~ **one hundred** percent **(100%)** of the Market Participant's ~~or FTR Bidder's~~ Credit Rating Default Probability.

4. **(a) For each Unrated Governmental Entity~~ies~~ ~~O~~other ~~T~~than one~~These~~ that ~~R~~receives ~~A~~appropriations from the ~~F~~federal ~~G~~government or a ~~S~~state ~~G~~government, ~~— T~~t**he Unsecured Credit Limit is the lesser of $250 million or an amount equal to a specified percentage of the Market Participant's ~~or FTR Bidder's~~ Net Assets if the Market Participant ~~or FTR Bidder~~ has a minimum of $25 million in Net Assets and its Times Interest Earned, Debt Service Coverage and Equity to Assets ratios (as those ratios are defined in ~~Section A-2.3 of the CAISO Credit Policy & Procedures Guide~~ **the applicable Business Practice Manual**) meet or exceed minimums specified in the **applicable Business Practice Manual**~~ISO Credit Policy & Procedures Guide~~.

(b) For each Unrated Governmental Entity~~ies~~ that ~~R~~receives ~~A~~appropriations from the ~~F~~federal ~~G~~government or a ~~S~~state ~~G~~government, ~~— T~~the Unsecured Credit Limit is the lesser of $250 million ~~dollars~~ or the amount appropriated by the federal or relevant state government for the purpose of procuring ~~e~~**E**nergy and ~~e~~**E**nergy-related products and services for the applicable fiscal year. The Unrated Governmental Entity seeking to establish an Unsecured

Credit Limit pursuant to this section shall provide documentation establishing its annual appropriations.

5. ~~**Local Publicly Owned Electric Utilities** —~~A Local Publicly Owned Electric Utility with a governing body having ratemaking authority that has submitted an application for an Unsecured Credit Limit shall be entitled to an Unsecured Credit Limit of $1 million ~~**dollars**~~ without regard to its Net Assets. Such Local Publicly Owned Electric Utility shall be entitled to request an Unsecured Credit Limit based on Net Assets as provided in Section 12.1.1.**1A**(3) or 12.1.1.**1A**(4) in order to establish an Unsecured Credit Limit as the greater of $1 million ~~**dollars**~~ or the amount determined as provided in this Section 12.1.1.**1A**(5). A public entity that is not a Local Publicly Owned Electric Utility is not entitled to an Unsecured Credit Limit of $1 million ~~**dollars**~~ under this Section 12.1.1.**1A**(5) but may seek to establish an Unsecured Credit Limit as provided in any other provision of the **CA**ISO Tariff that may apply.

Public entities, including Local Publicly Owned Electric Utilities, that operate through a Joint Powers Agreement, or a similar agreement acceptable to the **CA**ISO with the same legal force and effect, shall be entitled to aggregate or assign their Unsecured Credit Limits subject to the following limitations and requirements. A public entity that is a party to a Joint Powers Agreement or similar agreement and that is also participating independently in the **CA**ISO~~'s~~ **Mm**arkets with an established Unsecured Credit Limit shall not be entitled to assign or aggregate any portion of its Unsecured Credit Limit that the public entity is using to support financial liabilities associated with its individual participation in the **CA**ISO~~'s~~ **Mm**arkets. A Local Publicly Owned Electric Utility that operates through a Joint Powers Agreement or similar agreement that desires to aggregate a portion of its Unsecured Credit Limit that is equal to or less than $1 million ~~**dollars**~~ with one or more other Local Publicly Owned Electric Utilities that operate through that Joint Powers Agreement or similar agreement

or to assign a portion of its Unsecured Credit Limit that is equal to or less than $1 million ~~dollars~~ to the Joint Powers Authority shall be entitled to do so. A Local Publicly Owned Electric Utility that operates through a Joint Powers Agreement or similar agreement that desires to aggregate its Unsecured Credit Limit with one or more other Local Publicly Owned Electric Utilities that operate through that Joint Powers Agreement or similar agreement or to assign a portion of its Unsecured Credit Limit to the Joint Powers Authority that exceeds $1 million ~~dollars~~, and any public entity that is not a Local Publicly Owned Electric Utility that operates through a Joint Powers Agreement or similar agreement that desires to aggregate its Unsecured Credit Limit with one or more other Local Publicly Owned Electric Utilities that operate through that Joint Powers Agreement or similar agreement or to assign any portion of its Unsecured Credit Limit to the Joint Powers Authority, shall provide documentation that is acceptable to **the CA**ISO and that demonstrates the Local Publicly Owned Electric Utility or public entity will assume responsibility for the financial liabilities of the Joint Powers Agency associated with the assigned or aggregated portion of the Unsecured Credit Limit. Such documentation may include a guaranty or similar instrument acceptable to the **CA**ISO.

Unsecured Credit Limits established pursuant to this Section 12.1.1.**1A** shall be subject to the **CA**ISO's consideration of the same qualitative factors that apply to all Market Participants ~~**and FTR Bidders**~~ as set forth in Section 12.1.1.~~**21**~~ and, accordingly, the **CA**ISO may adjust their Unsecured Credit Limits pursuant to Section 12.1.1. The $250 million hard cap on Unsecured Credit Limits specified in Section 12.1.1 has been set with respect to the length of the current **CA**ISO Payments Calendar, i.e., a maximum of **ninety-five (**95**)** Trading Days of charges outstanding. Upon implementation of payment acceleration (scheduled for 2008), the **CA**ISO expects to recommend a reduction in the $250 million hard cap. Any changes to the $250 million cap will require FERC approval of an amendment to the applicable provisions of the **CA**ISO Tariff.

[Docket No. ER06-700 Compliance Filing accepted by FERC. See Table.]

[Docket No. ER08-___ Amendment filing pending FERC Order. See Table.]
[Ministerial tariff language revision shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.1A.1.1 Maximum Percentage of Tangible Net Worth and Net Assets.

For Rated and Unrated Public/Private Corporations or Rated Governmental Entities, the maximum percentage of TNW or NA is 7.5 percent (7.5%) if the Market Participant's ~~**or FTR Bidder's C**~~**c**ombined ~~**D**~~**d**efault ~~**P**~~**p**robability **(CDP)** is less than or equal to 0.06 percent (0.06%).

The ~~**M**~~**m**aximum ~~**A**~~**a**llowable ~~**P**~~**p**ercentage of 7.5% is for the highest quality firms; that is, those Market Participants ~~**and FTR Bidders**~~ with a CDP of 0.06 percent or less. The Tangible Net Worth ~~**P**~~**p**ercentage (TNWP) or Net Assets ~~**P**~~**p**ercentage (NAP) that a Market Participant ~~**or FTR Bidder**~~ qualifies for will be reduced as its credit risk increases.

For Unrated Governmental Entities, the **CA**ISO may provide an Unsecured Credit Limit of up to ~~**5 five**~~ percent (5%) of NA.

With respect to either of these potential maximum percentages, a lesser amount of unsecured credit may be granted if the **CA**ISO becomes aware of information related to a Material Change in Financial Condition or other significant information that presents a significant risk to the creditworthiness of the entity.

[Docket No. ER06-700 Compliance Filing accepted by FERC. See Table.
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.1A.1.2 Unsecured Credit Limit Calculation Steps.

An eight-step process is used to determine Unsecured Credit Limits for Market Participants ~~**and FTR Bidders**~~ that are Rated Public/Private Corporations, Unrated Public/Private Corporations, and Rated Governmental Entities.

Step 1 – If the Market Participant ~~**or FTR Bidder**~~ has a credit rating(s) from one or more of the "Nationally Recognized Statistical Rating Organizations" (NRSRO), verify the rating(s) with the appropriate NRSRO.

Step 2 - Calculate the Market Participant's ~~**or FTR Bidder's**~~ Average Rating Default Probability (ARDP).

(a) ARDP is the sum of Credit Rating Default Probabilities divided by the total number of Credit Rating Default Probabilities used.

(b) The median default probability calculated by Moody's KMV (i.e., MKMV) for Standard & Poor's and Moody's long-term credit rating classes is provided on the **CA**ISO Website at http://www.caiso.com/1bd8/1bd8b09916e50.html. Default probabilities are available from each NRSRO.

(c) Issuer ratings without the benefit of credit enhancement would be used in this assessment. Such ratings are also known as "counterparty" or "underlying" ratings.

Step 3 – Using M**oody's** KMV's CreditEdge or RiskCalc software, obtain the Market Participant's ~~**or FTR Bidder's**~~ MKMV Default Probability (MKDP).

(a) Since M**oody's** KMV calculates default probabilities directly, the MKMV Default Probability will be used without any mapping.

Step 4 – Calculate a ~~**C**~~**c**ombined ~~**D**~~**d**efault **P**probability (CDP) based on one of the following methodologies:

(a) CDP for Rated Public/Private Corporations = (ARDP * 50%) + (MKDP * 50%) *or (ARDP * 100%) if a MKDP is not reasonably applicable.*

(b) CDP for Unrated Public/Private Corporations = MKDP * 100%

(c) CDP for Rated Governmentally Owned Utilities = ARDP * 100%

Step 5 – Calculate the Market Participant's ~~**or FTR Bidder's**~~ Tangible Net Worth **P**percentage (TNWP) or Net Assets **P**percentage (NAP).

(a) TNWP = MAP * BDP / CDP for Rated/Unrated Public/Private Corporations

(b) NAP = MAP * BDP / CDP for Rated Governmental Entities

Where:

MAP = **Mm**aximum **Aa**llowable **Pp**ercentage;

BDP = **Bb**ase **Dd**efault **Pp**robability;

CDP = see Step 4 above; and

If the SC's CDP > 0.5%, the TNWP or NAP equals 0%

Step 6 – Calculate the Market Participant's ~~**or FTR Bidder's**~~ Tangible Net Worth or Net Assets.

(a) TNW for Rated/Unrated Public/Private Corporations = Assets minus Intangibles (e.g., Good Will) minus Liabilities

(b) NA for Rated Governmental Entities = Total Assets minus Total Liabilities

Step 7 – Calculate the Market Participant's ~~**or FTR Bidder's**~~ Unsecured Credit Limit.

(a) UCL = TNW * TNWP for Rated/Unrated Public/Private Corporations

(b) UCL = NA * NAP for Rated Governmental Entities

Step 8 – Adjust Unsecured Credit Limit downward, if warranted based on the **CA**ISO's review of factors in Section 12.1.1.1.

(a) Final UCL = UCL from Step 7 * (0 - 100%)

[Docket No. ER06-700 Compliance Filing accepted by FERC. See Table.]
[Docket No. ER08-___ Amendment filing pending FERC Order. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.1.~~12~~ Qualitative and Quantitative Credit Strength Indicators.

In determining a Market Participant's ~~**or FTR Bidder's**~~ Unsecured Credit Limit, the **CA**ISO may rely on information gathered from financial reporting agencies, the general/financial/energy press, and provided by the Market Participant ~~**or FTR Bidder**~~ to assess its overall financial health and its ability to meet its financial obligations. Information considered by the **CA**ISO in this process may include the following qualitative factors:

(a) Applicant's history;

(b) Nature of organization and operating environment;

(c) Management;

(d) Contractual obligations;

(e) Governance policies;

(f) Financial and accounting policies;

(g) Risk management and credit policies;

(h) Market risk including price exposures, credit exposures and operational exposures;

(i) Event risk; and

(j) The state or local regulatory environment.

Material negative information in these areas may result in a reduction of up to **one hundred percent (**100%**)** in the Unsecured Credit Limit that would otherwise be granted based on the eight-step process described in Section 12.1.1.**1A**. A Market Participant ~~**or FTR Bidder**~~, upon request, will be provided a written analysis as to how the provisions in Section 12.1.1.**1A** and this section were applied in setting its Unsecured Credit Limit.

[Docket No. ER06-700 Compliance Filings accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.1.~~23~~ Financial Statements.

Market Participants ~~**and FTR Bidders**~~ requesting unsecured credit are required to provide financial statements so that a credit review can be completed. Based on availability, the Market Participant ~~**or FTR Bidder**~~ must submit a financial statement for the most recent financial quarter, as well as audited financial statements for the most recent three fiscal years, or the period of existence of the Market Participant ~~**or FTR Bidder**~~, if shorter, to the **CA**ISO or the **CA**ISO's designee. If audited financial statements are not available, financial statements, as described below, should be submitted, signed and attested to by an officer of the Market Participant ~~**or FTR Bidder**~~ as a fair representation of the financial condition of the Market Participant ~~**or FTR Bidder**~~ in accordance with generally accepted accounting principles. The information should include, but is not limited to, the following:

(a) If publicly traded:

(i) Annual and quarterly reports on Form 10-K and Form 10-Q, respectively

(ii) Form 8-K reports, if any

(b) If privately held or governmentally owned:

(i) Management's **D**~~d~~iscussion & **A**~~a~~nalysis (if available)

(ii) Report of **I**~~i~~ndependent **A**~~a~~ccountants (if available)

(iii) Financial **S**~~s~~tatements, including:

- Balance **S**~~s~~heet
- Income **S**~~s~~tatement
- Statement of **C**~~c~~ash **F**~~f~~lows
- Statement of **S**~~s~~tockholder's **E**~~e~~quity

(iv) Notes to **F**~~f~~inancial **S**~~s~~tatements

If the above information is available electronically on the **I**~~i~~nternet, the Market Participant ~~**or FTR Bidder**~~ may indicate in written or electronic communication where such statements are located for retrieval by the **CA**ISO or the **CA**ISO's designee.

[Docket No. ER06-700 Compliance Filing accepted by FERC. See Table.]
[Ministerial tariff language revision shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.1.~~3~~4 Determination of Unsecured Credit Limits for Affiliates.

If any Market Participant ~~**or FTR Bidder**~~ requesting or maintaining an Unsecured Credit Limit is affiliated with one or more other entities subject to the credit requirements of this Section 12, the **CA**ISO may consider the overall creditworthiness and financial condition of such Affiliates when determining the applicable Unsecured Credit Limit. The **CA**ISO may determine that the maximum Unsecured Credit Limit specified in Section 12.1.1 applies to the combined activity of such Affiliates. In the event the **CA**ISO determines that the maximum Unsecured Credit Limit applies to the combined activity of the Affiliates and the Market Participant, the **CA**ISO shall inform the Market Participant in writing.

[Docket No ER06-700 Amendment and Compliance Filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.1.~~4~~5 Notification of Material Change in Financial Condition.

Each Market Participant ~~or FTR Bidder~~ shall notify the **CA**ISO in writing of a Material Change in Financial Condition, within five (5) Business Days of when the Material Change in Financial Condition is known or reasonably should be known by the Market Participant ~~or FTR Bidder~~. The provision to the **CA**ISO of a copy of a Form 10-K, **Form** 10-Q, or Form 8-K filed with the U.S. Securities and Exchange Commission shall satisfy the requirement of notifying the **CA**ISO of such Material Change in Financial Condition. Alternatively, the Market Participant may direct the **CA**ISO to the location of the information on their company website or the website of the U.S. Securities & Exchange Commission.

[Docket No ER06-700 Amendment and Compliance Filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.2 Financial Security and Financial Security Amount.

A Market Participant ~~or FTR Bidder~~ that does not have an Unsecured Credit Limit, or that has an Unsecured Credit Limit that is less than its Estimated Aggregate Liability, shall post Financial Security that is acceptable to the **CA**ISO and that is sufficient to ensure that its Aggregate Credit Limit (i.e., the sum of its Unsecured Credit Limit and Financial Security Amount) is equal to or greater than its Estimated Aggregate Liability. The Financial Security posted by a Market Participant ~~or FTR Bidder~~ may be any combination~~or provide in favor of the CAISO one~~ of the following ~~forms~~types of Financial ~~s~~Security provided in favor of the **CA**ISO~~for an amount to be determined by the Scheduling Coordinator, CRR Holder, UDC or MSS~~ and notified to the CAISO under Section 12.3:

(a) an irrevocable and unconditional letter of credit ~~confirm~~issued by a bank or financial institution that is reasonably acceptable to the CAISO;

(b) an irrevocable and unconditional surety bond ~~post~~issued by an insurance company that is reasonably acceptable to the CAISO;

(c) an unconditional and irrevocable guarant~~ee~~ issued by a company that is reasonably acceptable to the **CA**ISO~~which has and maintains an Approved Credit Rating~~;

(d) a cash deposit standing to the credit of the **CA**ISO in an interest-bearing escrow account maintained at a bank or financial institution that is reasonably acceptable to~~designated by~~ the CAISO;

(e) a certificate of deposit in the name of the CAISO ~~from~~issued by a bank or financial institution that is reasonably acceptable to~~designated by~~ the CAISO; ~~or~~

(f) a payment bond certificate in the name of the CAISO ~~from~~issued by a bank or financial institution that is reasonably acceptable to~~designated by~~ the CAISO; or~~.~~

(g) a prepayment to the **CA**ISO.

~~Letters of credit, guarantees, surety bonds, payment bond certificates, escrow agreements and certificates of deposit must cover all applicable outstanding and estimated liabilities including those identified under Section 12.3 and~~ Financial Security instruments as listed above shall be in such form as the CAISO may reasonably require from time to time by notice to Market Participants ~~**or FTR Bidders**~~ ~~including Scheduling Coordinators, Candidate CRR Holders, CRR Holders, UDCs or MSSs.~~, or in such other form as has been evaluated and approved as reasonably acceptable by the **CA**ISO. The **CA**ISO shall publish and maintain standardized forms related to the types of Financial Security listed above on the **CA**ISO ~~**Home Page**~~ **Website**. The **CA**ISO shall require the use of standardized forms of Financial Security to the greatest extent possible.

[Docket No ER06-700 Amendment accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.2.1 Additional Procedures Regarding Certain Types of Financial Security.

(a) Unconditional and irrevocable guaranties: In those cases where a Market Participant ~~**or FTR Bidder**~~ is a subsidiary or affiliate of another entity and would like to utilize the consolidated financial statements and other relevant information of that entity for obtaining credit, a signed corporate guaranty is required. A guarantor would be considered reasonably acceptable and a corresponding Financial Security Amount would be set based on the guarantor's credit evaluation according to the same procedures that apply to the credit evaluation of a Market Participant ~~**or FTR Bidder**~~.

(b) Cash deposits standing to the credit of the **CA**ISO in interest-bearing escrow accounts: Interest on a cash deposit standing to the credit of the **CA**ISO in an

interest-bearing escrow account will accrue to the Market Participant's ~~or FTR Bidder's~~ benefit and will be added to the Market Participant's ~~or FTR Bidder's~~ prepayment account on a monthly basis. Should a Market Participant ~~or FTR Bidder~~ become delinquent in payments, the Market Participant's ~~or FTR Bidder's~~ outstanding account balance will be satisfied using deposited funds. The Market Participant ~~or FTR Bidder~~ must take care to replenish used funds to ensure that its Aggregate Credit Limit continues to exceed its Estimated Aggregate Liability.

(c) Prepayments to the **CA**ISO: Prepayments to the **CA**ISO will be held in an interest-bearing account or another investment acceptable to the Market Participant and the **CA**ISO, and interest on the investment will accrue at the rate as provided for in the investment. Interest will accrue to the Market Participant's benefit and will be added to the Market Participant's prepayment account on a monthly basis. Due to the additional administrative effort involved in tracking and posting interest on such prepayments, the use of this option is not encouraged.

[Docket No ER06-700 Compliance Filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.2.2 Process for Evaluating Requests to Use Non-Standardized Forms of Financial Security.

A Market Participant ~~or FTR Bidder~~ that seeks permission to use a form for Financial Security other than one or more of the standardized forms posted on the **CA**ISO Home Page shall seek such permission in a written request to the **CA**ISO that explains the basis for the use of such non-standardized form. The **CA**ISO shall have ten (10) Business Days from receipt of such request to evaluate it and determine whether it will be approved as reasonably acceptable. If the **CA**ISO does not respond to such request within the ten (10) Business Day period, the request shall be deemed to have been denied. Until and unless the **CA**ISO approves the use of a non-standardized form for Financial Security, the Market Participant ~~or FTR Bidder~~ that submitted such request shall be required to use one of the standardized forms for Financial Security described in this Section 12.1.2.

[Docket No ER06-700 Amendment and Compliance Filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.2.3 Expiration of Financial Security.

Each Market Participant ~~**or FTR Bidder**~~ shall ensure that the financial instruments it uses for the purpose of providing Financial Security will not expire and thereby cause the Market Participant's ~~**or FTR Bidder's**~~ Aggregate Credit Limit to fall below the Market Participant's ~~**or FTR Bidder's**~~ Estimated Aggregate Liability. The **CA**ISO will treat a financial instrument that does not have an automatic renewal provision and that is not renewed or replaced within seven (7) days of its date of expiration as being out of compliance with the standards for Financial Security contained in this Section 12 and will deem the value of such financial instrument to be zero, and will draw upon such Financial Security prior to its stated expiration if deemed necessary by the **CA**ISO.

[Docket No ER06-700 Amendment and Compliance Filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.2.4 Risk of Loss of Financial Security Amounts Held and Invested by the CAISO.

In accordance with the **CA**ISO's investment policy, the **CA**ISO will invest each Financial Security Amount of a Market Participant ~~**or FTR Bidder**~~ only in bank accounts, high-quality money market accounts, and/or U.S. Treasury/Agency securities unless a specific written request is received from the Market Participant ~~**or FTR Bidder**~~ for a different type of investment and the **CA**ISO provides its written consent to such alternative investment. A Market Participant ~~**or FTR Bidder**~~ that provides a Financial Security Amount that is held and invested by the **CA**ISO on behalf of the Market Participant ~~**or FTR Bidder**~~ will bear all risks that such Financial Security Amount will incur a loss of principal and/or interest as a result of the **CA**ISO's investment of such Financial Security Amount. ~~A Scheduling Coordinator, CRR Holder, UDC or MSS, which does not maintain an Approved Credit Rating shall be subject to the limitations on trading set out in Section 12.3.~~

[Docket No ER06-700 Amendment and Compliance Filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

~~**Notwithstanding anything to the contrary in the CAISO Tariff, a Scheduling Coordinator or UDC that had an Approved Credit Rating on January 3, 2001, and is an Original Participating**~~

~~Transmission Owner or is a Scheduling Coordinator for an Original Participating Transmission Owner shall not be precluded by Section 12.3 from scheduling transactions that serve a UDC's Demand from~~

~~(1) a resource that the UDC owns; and~~

~~(2) a resource that the UDC has under contract to serve its Demand.~~

[Ministerial section number change: above language was in Section 12.1 in MRTU and Section 12.1.3 in S&R – now moved to Section 12.3.1 (as modified by Docket No. ER06-700 Amendment Filing accepted by FERC). See Table.]

12.1.3~~5~~ Estimated Aggregate Liability.

The **CA**ISO will periodically calculate the Estimated Aggregate Liability of each Market Participant ~~**and FTR Bidder**~~, based on all charges and settlement amounts for which such Market Participant ~~**or FTR Bidder**~~ is liable or reasonably anticipated by the **CA**ISO to be liable for pursuant to the **CA**ISO Tariff. The Estimated Aggregate Liability for each Market Participant ~~**or FTR Bidder**~~ shall be determined and applied by the **CA**ISO consistent with the procedures set forth in the **applicable Business Practice Manual**~~**ISO Credit Policy & Procedures Guide posted on the ISO Home Page**~~. The **CA**ISO shall upon request provide each Market Participant ~~**or FTR Bidder**~~ with information concerning the basis for the **CA**ISO's determination of its Estimated Aggregate Liability, and the **CA**ISO's determination may be disputed in accordance with the procedures set forth in the **applicable Business Practice Manual**~~**ISO Credit Policy & Procedures Guide**~~. The **CA**ISO shall compare each Market Participant's ~~**or FTR Bidder's**~~ Estimated Aggregate Liability against its Aggregate Credit Limit on a periodic basis.

[Docket No ER06-700 Amendment filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.3~~5~~A.1 Calculation of Estimated Aggregate Liability.

12.1.3~~5~~A.1.1 Calculation *of the Estimated Aggregate Liability Amount. ~~Methodology Based on the Level Posting Period.~~*

Except as described in Section 12.1.**35A.1**.2, the **CA**ISO shall use the method described in this Section 12.1.**35A.1**.1 to calculate each Market Participant's Estimated Aggregate Liability. The Estimated Aggregate Liability **represents the amount owed to the CAISO for all unpaid obligations,**

specifically, the obligations for the ~~*is based on a "Level Posting Period" equal to 102 Trading Days, which represents the maximum*~~ number of Trading Days outstanding at a given time based on the **CA**ISO's Payments Calendar ~~*(95 Trading Days)*~~ plus seven **(7)** Trading Days based on the allowable period for Market Participants to respond to **CA**ISO requests for additional collateral (five **(5)** Business Days)**, and other liabilities including the value of a Market Participant's CRR portfolio, if negative**. The charges the **CA**ISO shall use to calculate Estimated Aggregate Liability shall be charges described or referenced in the **CA**ISO Tariff. The **CA**ISO shall calculate the Estimated Aggregate Liability for each Market Participant ~~*for a given Level Posting Period*~~ by aggregating the following obligations:

- **Invoiced amounts, i.e., any published but unpaid amounts on Invoices;**
- **published amounts, i.e., amounts for Trading Days for which Settlement Statements have been issued;**
- **estimated amounts, i.e., amounts based on estimated Settlement amounts calculated by the Settlement system using estimated meter data, and other available operational data;**
- **extrapolated amounts, i.e., amounts calculated for Trading Days for which neither actual nor estimated Settlement Statements have been issued;**
- **CRR portfolio value, i.e., the prospective value of the CRR portfolio, if negative, as described in Section 12.6.3;**
- **CRR Auction limit, i.e., the maximum credit limit for participation in a CRR Auction;**
- **CRR Auction awards (prior to invoicing), i.e., amounts to cover winning offers at the completion of the CRR Auction bur prior to invoicing;**
- **past-due amounts, i.e., any unpaid or past due amounts on Invoices;**
- **Annual FERC Fees, i.e., FERC fees for a Market Participant that has elected to pay such amounts on an annual basis that are owed and outstanding and not already captured in any other component of Estimated Aggregate Liability;**

- **WAC Charges, i.e., WAC amounts for the current year or future years as specified in Section 36.9.2;**
- **Estimated Aggregate Liability adjustments, i.e., adjustments that may be necessary as a result of analysis performed as a result of Section 12.4.2; and**
- **extraordinary adjustments, i.e., adjustments to Settlement amounts related to FERC proceedings, if known and estimated by the CAISO, as described in Section 12.1.3.1.3.**
- ~~**Outstanding obligations – Any past-due open balances of amounts payable by and amounts receivable from the Market Participant, including unpaid FERC Annual Charge balances and excluding balances covered by bankruptcies.**~~
- ~~**Invoice obligations – Obligations from either a preliminary or a final invoice that has been issue but not yet paid.**~~
- ~~**Actual Settlement obligations – The Market Participant's preliminary and final Settlement obligations up to the date of the latest Preliminary Settlement Statement.**~~
- ~~*Estimated obligations – Estimated charges for the Market Participant for the balance of the Level Posting Period. The ISO shall calculate estimated obligations for the Market Participant by multiplying (i) a daily average of published, actual Settlement charges for the Market Participant by (ii) the number of days remaining in the Level Posting Period for which actual Settlement data is unavailable. In calculating (i), above, the ISO shall separate the Market Participant's Settlement activity into daily market activity, monthly market activity, and Grid Management Charge activity, and shall determine the daily average of charges for each such type of activity separately based on the different frequencies with which charges for these types of activities are assessed. The*~~

~~*daily average charges used in (i), above, shall normally be based on two months of available historical Settlement data for the Market Participant. The ISO may review the trend of Market Participant historical charges and determine that an alternative of one month or twelve months of historical charges would result in a more accurate estimate, and may use such data to calculate the daily average charges.*~~

For a Market Participant that maintains multiple BAID numbers, the Estimated Aggregate Liability of the Market Participant as a legal entity shall be calculated by summing the Estimated Aggregate Liabilities for all such BAID numbers and comparing the sum of the Estimated Aggregate Liabilities to the Aggregate Credit Limit of the Market Participant. Market Participants may recommend changes to the liability estimates produced by the **CA**ISO's Estimated Aggregate Liability calculation through the dispute procedures described in Section 12.4.2.

[Docket No ER06-700 Compliance filing accepted by FERC. See Table.]
[Docket No. ER08-___ Amendment filing pending FERC Order. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.~~35~~A.1.2 Calculation Methodology Applicable to New Market Participants.

Each new Market Participant (and each Market Participant that has previously been inactive) is required to **have ~~post~~** an initial **~~Financial Security Amount~~ Aggregate Credit Limit that is sufficient** to cover a minimum of *forty-five (45) ~~14~~* Trading Days of estimated obligations **~~as well as additional Financial Security as obligations are incurred~~**. This initial *credit ~~posting~~* requirement is based on anticipated **transactions in the CAISO Markets ~~scheduling/trading practices and overall volumes~~**, and shall be considered to be equal to the Market Participant's Estimated Aggregate Liability *until the CAISO obtains sufficient data from its automated calculation of Estimated Aggregate Liability as described in Section 12.1.3.1.1 to begin relying on that calculation.*

[Docket No ER06-700 Compliance filing accepted by FERC. See Table.
[Docket No. ER08-___ Amendment filing pending FERC Order. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.~~35~~A.1.3 Special Circumstances

12.1.~~35~~A.1.3.1 Daily Adjustments and Disputes.

Charges associated with daily adjustments and disputes that are regularly calculated by the **CA**ISO Settlement system will be included in the **CA**ISO's determinations of Estimated Aggregate Liability as the charges are calculated.

[Docket No ER06-700 Compliance filing accepted by FERC. See Table.
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.35A.1.3.2 FERC Refund Orders.

The **CA**ISO will assess its ability to reasonably calculate the charges associated with a refund before the **CA**ISO's Settlement system is re-run. If the **CA**ISO can reasonably apportion the refund charges to specific Market Participants, it will include the amounts in its calculation of Estimated Aggregate Liability for those Market Participants and will request Financial Security from them accordingly. If the **CA**ISO determines that complexities of a FERC refund order preclude the **CA**ISO from reasonably being able to include refunds in its calculation of Estimated Aggregate Liability, the **CA**ISO will not request Financial Security associated with the required refunds until the refunds are processed through the **CA**ISO Settlement system. However, if feasible, the **CA**ISO will make available to Market Participants, for informational purposes only, an aggregate forecast of the effect that providing the refunds will have on the **CA**ISO's calculation of Estimated Aggregate Liability.

[Docket No ER06-700 Compliance filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.1.35A.1.3.3 CAISO ADR Procedures.

The **CA**ISO will handle transactions associated with the **CA**ISO ADR Procedures in the same manner as transactions associated with refunds provided pursuant to Section 12.1.**35A.1**.3.2.

[Docket No ER06-700 Compliance filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.2 Review of Creditworthiness.

The CAISO may review the creditworthiness of any Market Participant ~~**or FTR Bidder**Scheduling Coordinator, CRR Holder, UDC or MSS~~ **that** ~~**which**~~ delays or defaults in making payments due under the CAISO Tariff and, as a consequence of that review, may require such Market Participant ~~**or FTR Bidder**Scheduling Coordinator, Candidate CRR Holders, CRR Holder, UDC or MSS~~, whether or not it has

~~(or is deemed to have)~~ an UnsecuredApproved Credit LimitRating, to provide credit support in the form of any of the following types of Financial Security:

(a) an irrevocable and unconditional letter of credit by a bank or financial institution reasonably acceptable to the CAISO;

(b) a cash deposit standing to the credit of an interest-bearing escrow account maintained at a bank or financial institution ~~*designated by*~~ *reasonably acceptable to* the CAISO;

(c) an irrevocable and unconditional surety bond posted by an insurance company reasonably acceptable to the CAISO; ~~or~~

(d) a payment bond certificate in the name of the CAISO from a financial institution ~~*designated by*~~ *reasonably acceptable to* the CAISO; or~~.~~

(e) a prepayment to the **CA**ISO.

The CAISO may require the Market Participant ~~**or FTR Bidder**~~~~Scheduling Coordinator, Candidate CRR Holders, CRR Holder, UDC or MSS~~ to maintain such ~~credit support~~Financial Security for at least one (1) year from the date of such delay or default.

[Docket No ER06-700 Amendment filing accepted by FERC. See Table.]
[Docket No. ER08-___ Amendment filing pending FERC Order. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.3 ~~Limitation on Trading~~Posting and Releases of Financial Security.

~~A Scheduling Coordinator, CRR Holder, UDC or MSS that does not maintain an Approved Credit Rating, as defined with respect to either payment of the Grid Management Charge, or payment of other charges, shall maintain security in accordance with Section 12.1. For the avoidance of doubt, the CAISO Security Amount is intended to cover the entity's total outstanding and estimated liability, including, but not limited to all outstanding and estimated liabilities for all charges identified in Section 11.1.2 of this CAISO Tariff. For purposes of security requirements for a CRR Obligation, the estimated liability shall be based on the net projected obligation of the CRR for the entire term of the CRR. An entity's total outstanding and estimated liability shall be referred to as the estimated aggregate liability, which shall be determined pursuant to procedures set forth in the Business Practice Manuals.~~ Each Market Participant ~~**or FTR**~~

BidderScheduling Coordinator, Candidate CRR Holder, CRR Holder, UDC or MSS required to provide a CAISOFinancial Security Amount under Section 12.1.2 shall notify the CAISO of the initial CAISOFinancial Security Amount (separated into amounts securing payment of the Grid Management Charge and amounts securing payments of other charges) that it wishes to provide at least fifteen (15) days in advance and shall ensure that the CAISO has received such CAISOFinancial Security Amount prior to the date the Market Participant commences activity through the **CA**ISO, Scheduling Coordinator commences trading, a Candidate CRR Holder bids in the CRR Auction, or the UDC or MSS commences receiving bills for the High Voltage Access Charge and Transition Charge or the date the **CRR Holder or Candidate CRR Holder FTR Bidder** participates in the applicable auction of **CRRsFTRs**. A Market Participant **or FTR Bidder**Scheduling Coordinator, CRR Holder, UDC or MSS may at any time increase its CAISOFinancial Security Amount by providing additional guarantees or credit support Financial Security in accordance with Section 12.1.2. A Market Participant **or FTR Bidder** Scheduling Coordinator, UDC or MSS may request thatreduce its CAISOFinancial Security Amount be reduced or released by making its requestgiving the CAISO not lessfewer than fifteen (15) days prior to the date on whichnotice of the reduction or release is requested to occur., provided that the Scheduling Coordinator, UDC or MSS is not then in breach of this Section 12.3. The **CA**ISO shall evaluate the request and inform the Market Participant **or FTR Bidder** within ten (10) Business Days either that a reduction or release of the Financial Security Amount is permissible, that a reduction or release of the Financial Security Amount is impermissible, or that the **CA**ISO requires more information from the Market Participant **or FTR Bidder** in order to make its determination. The **CA**ISO may decline to reduce or release a Financial Security Amount or may release a lesser amount for any of the following reasons:

(a) The Estimated Aggregate Liability for the Market Participant **or FTR Bidder** cannot be accurately determined due to a lack of supporting **sS**ettlement charge information.

(b) The most recent liabilities of the Market Participant **or FTR Bidder** are volatile to a significant degree and a reduction or release of the Financial Security Amount would present a high likelihood that, after the Financial Security Amount was

reduced or released, the Estimated Aggregate Liability for the Market Participant ~~or FTR Bidder~~, as calculated by the **CA**ISO, would exceed its Aggregate Credit Limit.

(c) The Market Participant has provided notice or otherwise demonstrated that it is terminating or significantly reducing its participation in the **CA**ISO ~~m~~**M**arkets.

The **CA**ISO may retain a portion of the Financial Security Amount to ensure that the Market Participant is adequately secured with respect to pending liabilities that relate to ~~s~~**S**ettlement re-runs or other liabilities for which the Market Participant may be responsible under this **CA**ISO Tariff.

~~The CAISO shall release, or permit a reduction in the amount of, such guarantees or other credit support required to give effect to a permitted reduction in the CAISO Security Amount as the Scheduling Coordinator, UDC or MSS may select.~~

[Docket No ER06-700 Amendment filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.3.1 Self-Supply of UDC Demand.

Notwithstanding anything to the contrary in the CAISO Tariff, a Scheduling Coordinator or UDC that ~~had an Approved Credit Rating on January 3, 2001, and~~ **is an Original Participating Transmission Owner or is a Scheduling Coordinator for an Original Participating Transmission Owner shall not be precluded by Section 12.3 from scheduling transactions that serve a UDC's Demand from**

(1) a resource that the UDC owns; and

(2) a resource that the UDC has under contract to serve its Demand.

[Ministerial section number change: above language was in Section 12.1 in MRTU and Section 12.1.3 in S&R – now moved to Section 12.3.1.]
[Deletion of language by Docket No. ER06-700 Amendment Filing accepted by FERC. See Table.]

~~12.3.1~~**12.4 Calculation of Ongoing Financial Security Requirements.** ~~**Limitation of Trades by Scheduling Coordinators.**~~

Following the date on which a Market Participant commences trading, if the Market Participant's Estimated Aggregate Liability, as calculated by the **CA**ISO, at any time exceeds its Aggregate Credit Limit, the **CA**ISO shall direct the Market Participant to post an additional Financial Security Amount within five (5) Business Days that is sufficient to ensure that the Market Participant's Aggregate Credit Limit is at least equal to its Estimated Aggregate Liability. ~~Following the date on which a Scheduling Coordinator commences trading, the Scheduling Coordinator shall not be entitled to submit a Bid to the CAISO and the CAISO may reject any Bid or unbalanced portion of an ETC Self-Schedule submitted if, at the time of submission, the Scheduling Coordinator's CAISO Security Amount is exceeded by the Scheduling Coordinator's estimated aggregate liability.~~ The CAISO shall also notify a ~~Scheduling Coordinator~~Market Participant if at any time its Estimated Aggregate Liability~~such outstanding liabilities~~ exceeds **ninety percent (**90%**)** of its Aggregate Credit Limit.~~the relevant portion of the CAISO Security Amount.~~ For the purposes of calculating the ~~Scheduling Coordinator's~~Market Participant's ~~e~~Estimated ~~a~~Aggregate ~~l~~Liability, the ~~estimate~~**CA**ISO shall include (1) outstanding charges for Trading Days for which Settlement data is available, and (2) an estimate of charges for Trading Days for which Settlement data is not yet available. To estimate charges for Trading Days for which Settlement data is not yet available, the CAISO will consider available historical Settlement data, and other available operational and market data as described in the **applicable Business Practice Manual~~ISO Credit Policy & Procedures Guide posted on the ISO Home Page~~**.~~appropriately adjusted to reflect recent market prices and trends, or other available information for individual Scheduling Coordinators.~~

[Docket No ER06-700 Amendment filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

~~**12.3.2 Limitation of Trades for UDC or MSSs.**~~

~~Following the date on which a UDC or MSS commences operation, the UDC's or MSS's Scheduling Coordinator shall not be entitled to submit a Bid and the CAISO may reject any Bid or unbalanced portion of an ETC Self-Schedule submitted if, at the time of submission, the UDC's or MSS's CAISO Security Amount is exceeded by the UDC's or MSS's estimated aggregate liability. The CAISO shall notify a UDC or MSS if at any time such outstanding liabilities exceed 90% of the relevant portion of the CAISO Security Amount. For the purposes of estimating the UDC's or MSS's aggregate liability for High Voltage~~

~~Access Charges and Transition Charges, the UDC's or MSS's liability shall be equal to the billed Demand use (in MWh) for a month in the UDC's or MSS's Service Area (including exports from the Service Area) multiplied by the CAISO's estimated High Voltage Access Charge and Transition Charge for that month, as such estimated cost is notified by the CAISO to UDCs and MSSs from time to time.~~

~~**12.3.3** The CAISO shall notify the relevant Scheduling Coordinator if it rejects a Bid under Section 12.3 in which event the Scheduling Coordinator shall not be entitled to submit any further Bids until it has demonstrated to the CAISO's satisfaction that its CAISO Security Amount has been increased sufficiently to avoid the limit on trading imposed under Section 12.3 from being exceeded.~~

~~**12.3.4** The CAISO may restrict, or suspend a Scheduling Coordinator's right to Bid or require the Scheduling Coordinator to increase its CAISO Security Amount if at any time such Scheduling Coordinator's liability for Energy is determined by the CAISO to be excessive by comparison with the likely cost of the amount of Energy Bid by the Scheduling Coordinator.~~

[The above sections deleted by Docket No ER06-700 Amendment filing accepted by FERC.]

12.4.1 ~~Review~~ Resolution of an CAISO Request for an Additional Financial Security Amount.

A Market Participant has five (5) Business Days to **resolve ~~review~~** a**~~n~~ CA**ISO request for additional Financial Security **~~and submit proposed changes that must be agreed to by the ISO~~**. Within the five (5) Business Days, the Market Participant must either demonstrate to the **CA**ISO's satisfaction that the **CA**ISO's Financial Security request is entirely or partially unnecessary, or post the required Financial Security Amount calculated by the **CA**ISO. If the **CA**ISO and the Market Participant are unable to agree on the appropriate level of Financial Security during the five (5) Business Day review period, the Market Participant must post the additional Financial Security and may continue with the dispute process described in Section 12.4.2. Any excess Financial Security **~~a~~A**mounts will be returned to the Market Participant if the dispute process finds in favor of the Market Participant.

[Docket No ER06-700 Compliance filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.4.2 Dispute Process Regarding an CAISO Request for an Additional Security Amount.

Market Participants may dispute the Estimated Aggregate Liability calculated by the **CA**ISO and, as a result, the **CA**ISO may reduce or cancel a requested Financial Security adjustment. The following steps are required for a Market Participant to dispute a Financial Security request resulting from the **CA**ISO's calculation of Estimated Aggregate Liability:

(1) Request by the Market Participant to review the **CA**ISO calculation.

(2) A reasonable and compelling situation presented, as determined by the Market Participant's **CA**ISO client representative.

(3) Documentation of facts and circumstances that evidence that the **CA**ISO's calculation of Estimated Aggregate Liability results in an excessive and unwarranted Financial Security posting requirement.

(4) Approval by the **CA**ISO Manager and/or Director of Customer Services and Industry Affairs and approval by the **CA**ISO Treasurer.

(5) The **CA**ISO may decline to adjust the initial Estimated Aggregate Liability, as calculated by the **CA**ISO, if the Market Participant has had Financial Security shortfalls in the past **twelve (**12**)** months (i.e., it has been shown that the Market Participant's Aggregate Credit Limit at times during the preceding **twelve (**12**)** months has been insufficient to cover the Market Participant's Estimated Aggregate Liability).

In no such case shall a~~n~~ **CA**ISO request for increased Financial Security remain outstanding for more than five (5) Business Days. Either the above process is to be completed within five (5) Business Days from the date of the **CA**ISO request for additional Financial Security, or the Market Participant is to post additional Financial Security within the five (5) Business Days and continue this process, which may result in a return of posted Financial Security back to the Market Participant if the results of the dispute process are found to favor the Market Participant.

Factors for consideration in the event this dispute process is utilized include: weighing the risk of using the lower figure to the potential detriment of market creditors if the Market Participant is under-secured and defaults, against the desire not to impose additional potentially unwarranted costs on a Market

Participant; equity and consistency of treatment of Market Participants in the dispute process; and the evidentiary value of the information provided by the Market Participant in the dispute process.

[Docket No ER06-700 Compliance filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.5 CAISO Enforcement Actions Regarding Under-Secured Market Participants.

If a Market Participant's Estimated Aggregate Liability, as calculated by the **CA**ISO, at any time exceeds its Aggregate Credit Limit, the **CA**ISO may take any or all of the following actions:

(a) The **CA**ISO may withhold a pending payment distribution.

(b) The **CA**ISO may limit trading, which may include rejection of **Bids, including Self-**Schedules, and/or limiting other **CA**ISO ~~**m**~~**M**arket activity, including limiting eligibility to participate in a CRR Allocation or CRR Auction. In such case, the **CA**ISO shall notify the Market Participant of its action and the Market Participant shall not be entitled to participate in the **CA**ISO~~**'s m**~~**M**arkets or CRR Auctions or submit further **Bids, including Self-**Schedules, or otherwise participate in the **CA**ISO~~**'s m**~~**M**arkets until the Market Participant posts an additional Financial Security Amount that is sufficient to ensure that the Market Participant's Aggregate Credit Limit is at least equal to its Estimated Aggregate Liability.

(c) The **CA**ISO may require the Market Participant to post an additional Financial Security Amount in lieu of an Unsecured Credit Limit for a period of time.

(d) The **CA**ISO may restrict, suspend, or terminate the Market Participant's CRR Entity Agreement or **any other S**service **A**agreement.

(e) The **CA**ISO may resell the CRR Holder's CRRs in whole or in part, including any Long Term CRRs, in a subsequent CRR Auction or bilateral transaction, as appropriate.

(f) The **CA**ISO will not implement the transfer of a CRR if the transferee or transferor has an Estimated Aggregate Liability in excess of ~~**their**~~ **its** Aggregate Credit Limit.

In addition, the **CA**ISO may restrict or suspend a Market Participant's right to **submit further Bids, including Self-Ss**chedule**s,** or require the Market Participant to increase its Financial Security Amount if at any time such Market Participant's potential additional liability for Imbalance Energy and other **CA**ISO charges is determined by the **CA**ISO to be excessive by comparison with the likely cost of the amount of Energy ~~**scheduled**~~ **reflected in Bids or Self-Schedules submitted** by the Market Participant.

[Docket No ER06-700 Amendment filing accepted by FERC. See Table]
[Docket No. ER07-1077 Amendment filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

~~**12.5 Credit Obligations for CRR Holders and Candidate CRR Holders.**~~

~~**12.5.1 Credit Limits for CRR Auctions.**~~

~~To establish available credit for participating in any CRR Auction, each Candidate CRR Holder must have an Approved Credit Rating or have provided security in a form consistent with Section 12 of this CAISO Tariff, which shall establish the amount of credit available to the Candidate CRR Holder. For a candidate CRR Holder that does not maintain an Approved Credit Rating, the amount of available credit for participating in a CRR Auction shall not exceed the difference between the value of security posted in accordance with this Section 12 of the CAISO Tariff and the Candidate CRR Holder's estimated aggregate liability.~~

~~**12.5.2 Credit Requirements for CRR Obligations upon Allocation, Auction or Transfer.**~~

~~The CAISO shall not release any CRR Obligations allocated, awarded in an auction, or proposed to be transferred to a Candidate CRR Holder, except upon receipt of security, in a form consistent with this Section 12 of the CAISO Tariff, equal to the value of the net projected obligation of the CRR for the entire term of the CRR, unless that Candidate CRR Holder has an Approved Credit Rating. The CAISO will determine the value of the net projected obligation of each CRR Obligation using appropriate methods, including proxy values or values based on experience, which shall be published in a Business Practice Manual. For negatively priced CRR Obligations awarded in an auction, the minimum value of the net projected obligation shall be set at the price determined in the auction. The CAISO may reassess its net~~

~~projected obligation determinations at any time during the term of the CRR and shall require additional security if the determination results in an increase in a CRR Holder's aggregate estimated liability that is not covered by available security.~~

[Above deleted language superseded by new language accepted from Amendment filed in Docket No. ER07-1077.]

12.6 Credit Obligations Applicable to CRRs.

12.6.1 Credit Requirements for CRR Allocations.

Subject to applicable requirements of Section 36.9.2 concerning the prepayment of Wheeling Access Charges, Load- Serving Entities eligible to participate in any CRR Allocation are not required to provide additional Financial Security in advance of a CRR Allocation.

[Docket No. ER07-1077 Amendment filing accepted by FERC. See Table.]

12.6.2 Credit Requirements for CRR Auctions.

To establish available credit for participating in any CRR Auction, each **CRR Holder or** Candidate CRR Holder must have an Unsecured Credit Limit or have provided Financial Security in a form consistent with Section 12.1.2 ~~**of this ISO Tariff**~~. Each ~~**FTR Bidder**~~ **CRR Holder or Candidate CRR Holder** may choose to designate a portion of ~~**their**~~ **its** Unsecured Credit Limit and/or posted Financial Security specifically for the ~~**FTR**~~ **CRR aA**uction by notifying the **CA**ISO of the ~~**FTR Bidder's**~~ **CRR Holder's or Candidate CRR Holder's** intent. Alternatively, the ~~**FTR Bidder**~~ **CRR Holder or Candidate CRR Holder** may choose to post additional Financial Security solely to cover ~~**their**~~ **its** participation in the ~~**FTR**~~ **CRR aA**uction by notifying the **CA**ISO of the purpose for the additional Financial Security. Each **CRR Holder or** Candidate CRR Holder that participates in a CRR Auction shall ensure that its Aggregate Credit Limit in excess of its Estimated Aggregate Liability is the greater of $500,000 or the sum of the absolute values of all of its bids for CRRs submitted in the relevant CRR Auction. A **CRR Holder or** Candidate CRR Holder that fails to satisfy this requirement shall not be permitted to participate in the relevant CRR Auction.

[Docket No. ER07-1077 Amendment filing accepted by FERC. See Table.]
[Some language moved from S&R Section 12.1.5A.4 as added by Docket No ER06-700 Compliance filing accepted by FERC. See Table.]

[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.6.3 Credit Requirements for the Holding of CRRs.

12.6.3.1 Credit Requirements Generally.

(a) Each CRR Holder, whether it obtains CRRs through a CRR Allocation or a CRR Auction, must maintain an Aggregate Credit Limit in excess of its Estimated Aggregate Liability including the credit requirement of the CRR portfolio determined as described in this Section 12.6.3. CRR Holders obtaining CRRs in the initial CRR Allocation will be required to comply with the credit requirements associated with such CRRs as determined by the **CA**ISO after completion of the initial CRR Auction. The **CA**ISO shall issue a ~~**m**~~**M**arket ~~**n**~~**N**otice after completion of the initial CRR Auction to announce that CRR Holders obtaining CRRs in the initial CRR Allocation must comply with such credit requirements.

(b) Each CRR Holder shall be required to ensure that its Aggregate Credit Limit is sufficient to satisfy the credit requirements described in this Section 12.6.3. CRRs are evaluated on a portfolio basis as follows. If a CRR Holder owns more than one CRR, such CRR Holder shall be subject to an overall credit requirement that is equal to the sum of the individual credit requirements applicable to each of the CRRs held by such CRR Holder. If this sum is positive, the amount will be added to the CRR Holder's Estimated Aggregate Liability. However, if the sum is negative, the CRR Holder's Estimated Aggregate Liability shall not be reduced.

(c) The **CA**ISO shall reevaluate the credit requirements for holding CRRs, and shall adjust the credit requirements accordingly, not less than monthly. The **CA**ISO may adjust the credit requirements for holding CRRs with terms of one year or less more frequently than monthly at the **CA**ISO's discretion to account for changes in the monthly auction prices for CRRs. The **CA**ISO may also adjust the credit requirements for holding Long Term CRRs annually ~~*to reflect the number of years remaining in the term of any Long Term CRR*~~, to reflect the

changes in auction prices of one-year CRRs in annual auctions, and to reflect updates to Credit Margins based on actual Locational Marginal Price data derived from market operations.

(d) In cases where the ownership of a CRR is to be transferred through either the Secondary Registration System or through **l**Load **m**Migration, the **CA**ISO shall evaluate and adjust the credit requirements for both the current owner of the CRR and the prospective owner of the CRR as appropriate prior to the transfer. If additional Financial Security is required from either the current or prospective owner, the transfer will not be completed until such Financial Security has been provided to and accepted by the **CA**ISO.

[Docket No. ER07-1077 Amendment filing accepted by FERC. See Table.
[Docket No. ER08-___ Amendment filing pending FERC Order. See Table.]
Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

12.6.3.2 Calculation of the Credit Amount Required to Hold a CRR With a Term of One Year or Less.

Each CRR Holder that holds a CRR with a term of one year or less shall be subject to a credit requirement ($/MW) equal to the negative of the most recent CRR Auction Price of such CRR plus the Credit Margin for such CRR.

[Docket No. ER07-1077 Amendment filing and Errata filing accepted by FERC. See Table.]

12.6.3.3 Calculation of the Credit Amount Required to Hold a Long Term CRR.

Each CRR Holder that holds a Long Term CRR shall be subject to a credit requirement ($/MW) equal to (i) the negative of the most recent CRR Auction Price of a CRR with the same **CRR Ss**ource and **CRR Ss**ink as the Long Term CRR but with only a one-year term, plus (ii) the Credit Margin calculated for the one-year CRR. If there is less than one year remaining in the term of a Long Term CRR, the credit requirement shall be determined pursuant to Section 12.6.3.2.

[Docket No. ER07-1077 Amendment filing and Errata filing accepted by FERC. See Table]
[Docket No. ER07-1077 Compliance filing pending FERC Order. See Table.]

12.6.3.4 Calculation of Credit Margin.

The Credit Margin ($/MW) for a CRR is equal to (i) the Expected Congestion Revenue minus (ii) the Fifth Percentile Congestion Revenue of such CRR. Both values will be based on the probability distribution of Congestion revenue of such CRR calculated using historical Locational Marginal Price data, when available, and proxy values, including data taken from Locational Marginal Price studies conducted by the **CA**ISO, until such time as historical Locational Marginal Price data is available, with the details of such calculation published in a Business Practice Manual. The **CA**ISO may reassess its determinations regarding the Credit Margin determination at any time and shall require additional Financial Security if the reassessment results in an increase in a CRR Holder's Estimated Aggregate Liability that is not covered by a CRR Holder's Aggregate Credit Limit (consisting of the CRR Holder's Unsecured Credit Limit and/or Financial Security).

[Docket No. ER07-1077 Amendment filing and Errata filing accepted by FERC. See Table.]
[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

~~12.4~~12.7 Credit Obligation for New Responsible Utilities for RMR Costs.

[Section number change made to accommodate new sections accepted from Amendments filed in ER06-700 and ER07-1077.]

If a Responsible Utility first executed **~~a~~ the** TCA after April 1, 1998 (a "New Responsible Utility") and if:

(i) the senior unsecured debt of the New Responsible Utility is rated or becomes rated at less than A- from Standard & Poor's ("S&P") or A3 from Moody's Investment Services ("Moody's"), and

(ii) Such ratings do not improve to A- or better from S&P or A3 or better from Moody's within 60 days,

the New Responsible Utility shall issue and confirm to the CAISO an irrevocable and unconditional letter of credit in an amount equal to three times the highest monthly payment invoiced by the CAISO to the New Responsible Utility (or the prior Responsible Utility) in connection with services under Reliability Must-Run Contracts in the last 3 months for which invoices have been issued. The letter of credit must be issued by a bank or other financial institution whose senior unsecured debt rating is not less than A from S&P and A2 from Moody's. The letter of credit shall be in such form as the CAISO may reasonably require from time to time by notice to the New Responsible Utility and shall authorize the CAISO or the

RMR Owner to draw on the letter of credit for deposit solely into the RMR Owner Facility Trust Account in an amount equal to any amount due and not paid by the Responsible Utility under the CAISO Invoice. The security provided by the New Responsible Utility pursuant to this Section is intended to cover the New Responsible Utility's outstanding liability for payments it is liable to make to the CAISO under this Section, including monthly payments, any reimbursement for capital improvement, termination fees and any other payments to which the CAISO is liable under Reliability Must-Run Contracts.

[Ministerial tariff language revisions shown in BOLD – Docket ER06-615, Sept. 21, 2006 Order.]

* * *

INFORMATIONAL

Attachment F – Blacklines

Section 8.1 as Filed in 4th Replacement CAISO Tariff (MRTU) on April 15, 2008 in

Docket No. OA08-12

* * *

8. ANCILLARY SERVICES.

8.1 Scope.

The CAISO shall be responsible for ensuring that there are sufficient Ancillary Services available to maintain the reliability of the CAISO Controlled Grid consistent with WECC and NERC Reliability Standards, WECC Reliability Criteria, and other WECC and NERC criteria. The CAISO's Ancillary Services requirements may be self-provided by Scheduling Coordinators as further provided in the Business Practice Manuals. Those Ancillary Services which the CAISO requires to be available but which are not being self-provided will be competitively procured by the CAISO from Scheduling Coordinators in the Day-Ahead Market, the Hour-Ahead Scheduling Process (the hourly HASP Ancillary Service Awards) and the RTM consistent with Section 8.3. The provision of Ancillary Services from the Interties with interconnected Balancing Authority Areas is limited to Ancillary Services bid into the competitive procurement processes in the IFM, HASP and RTM. The CAISO will not accept Submissions to Self-Provide Ancillary Services that are imports to the CAISO Balancing Authority Area over the Interties with interconnected Balancing Authority Areas, except from Dynamic System Resources certified to provide Ancillary Services or if provided pursuant to ETCs, TORs or Converted Rights. The CAISO will calculate payments for Ancillary Services supplied by Scheduling Coordinators and charge the cost of Ancillary Services to Scheduling Coordinators based on their Ancillary Service Obligations.

For purposes of this CAISO Tariff, Ancillary Services are: (i) Regulation Up and Regulation Down, (ii) Spinning Reserve, (iii) Non-Spinning Reserve, (iv) Voltage Support, and (v) Black Start capability. These services will be procured as stated in Section 8.3.5. Bids for Non-Spinning Reserve may be submitted by Scheduling Coordinators for Curtailable Demand as well as for Generation. Bids for Regulation, Spinning Reserve, Non-Spinning Reserve, and Voltage Support may be submitted by a Scheduling Coordinator for other non-generation resources that are capable of providing the specific service and that meet applicable Ancillary Service standards and technical requirements, as set forth in Sections 8.1 through 8.4, and are certified by the CAISO to provide Ancillary Services. The provision of Regulation, Spinning Reserve, Non-Spinning Reserve, and Voltage Support by other non-generation resources is subject to the same requirements applicable to other providers of these Ancillary Services,

as set forth in Sections 8.5 through 8.11. Identification of specific services in this CAISO Tariff shall not preclude development of additional interconnected operation services over time. The CAISO and Market Participants will seek to develop additional categories of these unbundled services over time as the operation of the CAISO Controlled Grid matures or as required by regulatory authorities.

* * *

Attachment G

Integration of Energy Storage Technology White Paper

Identification of Issues and Proposed Solutions

May 22, 2008

DRAFT

Integration of Energy Storage Technology
White Paper – Identification of Issues and proposed Solutions
May 22, 2008

Introduction

This white paper describes the issues on integrating different types of energy storage technology on the electric power grid. The November 2007 California ISO publication "Integration of Renewable Resources" contained a chapter that described some of the available technologies. A copy of that material is reproduced as Appendix A to this paper. In the November report, the ISO described the potential value of storage to help with the integration of large amounts of intermittent resources such as wind and solar generation. The purpose of this paper is to continue that initial discussion, identify outstanding issues and barriers to the successful deployment of storage facilities, and ultimately to determine the optimum solution to the issues.

Background

The overall process to be used will be stakeholder driven. The proposed steps and initial timeline are:

- May 29th, 2008 – Web cast with stakeholders to identify the major issues.
- June 2-10– Rewrite of the white paper to further describe the issues and post the paper for stakeholder review.
- June 17 – Stakeholder meeting at the ISO in Folsom to discuss the issues and proposed solution alternatives.
- June 18-30 – Write paper on proposed solutions.
- July – Perform additional analytical studies as required to analyze proposals
- July-August – Date to be determined – 2nd Stakeholders meeting to discuss proposals and results of the studies.
- August-September– Write detailed description of recommendations and alternatives
- September – Post for comments
- October – Respond to comments and revise proposal as necessary
- TBD - Presentation to ISO Board -

The ISO currently has 20,000 MW of wind generation and 20,000 MW of solar generation in the generator interconnection queue. While it is doubtful all of these renewable energy projects will be built, the ISO expects that over 7,000 MW of wind generation will be connected to the system by 2011. We also expect to have at least 1500 MW of solar generation. The forecast for 2020 is for 12,000 MW of wind generation and 6,000 MW of solar. The variability of these renewable resources creates an opportunity for new storage technology. Storage facilities can provide ancillary services (regulation and operating reserves) as well as a way to shift energy delivery from off-peak periods to delivery during peak load periods.

The ISO participated in a California Energy Commission sponsored research project in 2005-6 to evaluate the use of a high-speed flywheel system for regulation services. A 100 KVA high-speed flywheel was located at the Distributed Utility Integration Test Facility (DUIT) in San Ramon, CA. The ISO sent a real-time regulation signal to the unit to verify its ability to follow a control signal from the ISO Energy Management System. For this test, the ISO used an ACE (Area Control Error) and Frequency signal to drive the flywheel instead of a traditional AGC (Automatic Generation Control) signal. This type of a signal creates many more charge and discharge cycles for a ten minute period and is more compatible with the operating characteristics of a storage system. An AGC signal to a generating plant can often drive the unit up or down from its operating set point for an extended period of time, from several minutes to 10 to 20 minutes, so a traditional AGC signal may not be compatible with some storage technology. The use of an ACE/Frequency signal worked well and the project was a success. The longer term question that still must be resolved is how to blend an AGC regulation signal that fits both generation and non-generation facilities and provide the system control required to meet NERC and WECC standards.

There currently is no market or tariff to pay a facility for providing a pure frequency regulation service. The Western Interconnection (WECC) has been working on a frequency response standard for several years. The ISO has anticipated that if a 30 second frequency response standard is finally approved, the ISO will probably have to create a new market for procurement of a frequency response service. New storage facilities will probably find this a very attractive market. The current projection for approval of the proposed frequency response standard is sometime in 2009.

FERC Order 890 has directed the ISO/RTO's to modify their tariffs to reflect the fact that non-generating resources can provide ancillary services. The ISO's proposed tariff language changes have been filed with FERC to meet this requirement. There are still numerous issues that need to be discussed and alternative solutions proposed to assist with the integration of storage technology on the grid.

Interconnection issues

One of the first issues is what is the process and procedures for interconnecting a new storage facility. There are at least five potential locations:

S1 – Customer sites
S2 – Distribution substations
S3 – Sub-transmission substations
S4 – Transmission substations
S5 - Generating stations

Diagrammatically this can be illustrated as shown below:

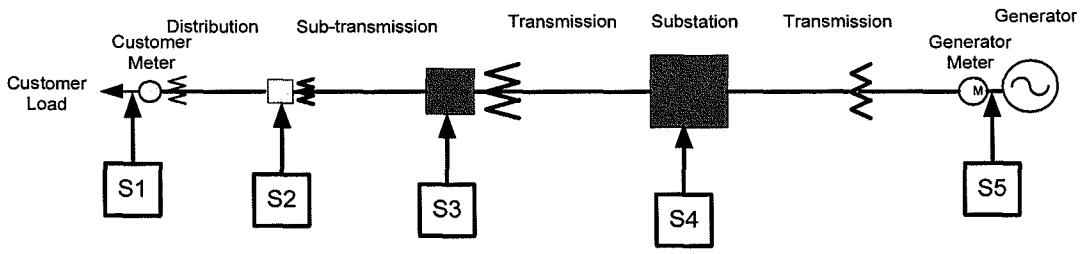


Figure 1

The storage facility could also be interconnected to the transmission line, sub-transmission, or distribution circuit which potentially adds to the complexity of the interconnection. The facility would have to be included in circuit protection schemes and its rapidly changing injections of energy and load on the circuit could impact other automatic control devices such as automatic voltage regulators. Other transmission or distribution circuit customers could experience voltage flicker problems. For the purposes of this initial discussion of interconnection of storage facilities, let's limit the discussion to the potential interconnection points S1 to S5.

Storage can provide a variety of services at each of these locations and the types of services it provides will determine how it is treated financially. Some of the options are:

1. Transmission device – voltage support, VAR source, mitigation of transmission loading, etc. – and therefore storage is financed through transmission rates.
2. Distribution device – power quality improvement, voltage support, load relief, load leveling, etc. –included in distribution rates.
3. Customer device – demand peak reduction, power quality, uninterruptible power supply, plug-in hybrid vehicles, etc. – paid for by the customer or a curtailable load provider.
4. Market services – Ancillary Services such as regulation and operating reserves, arbitrage of energy prices (shifting of energy from low cost periods for deliver during higher cost periods). Obviously these services are financed though the energy and capacity markets.

Customer Storage (Location S1) is behind the meter and subject to National Electric Code regulations. An example could be a traditional UPS device with a large amount of battery storage and a backup generator. It could also be a Plug-in Hybrid Electric Vehicle (PHEV). If the customer also has Distributed Generation (DG) behind the meter, then CPUC's Rule 21 regulations will apply if the system is capable of reverse power flow on the distribution system. The question is whether Rule 21 would apply for a large storage device on the customer side of the meter.

Storage connected to the distribution system (Location S2) could be owned by either the local distribution company or it could be merchant service. If it is owned by the utility and is used to support the distribution system, then it would be financed by distribution rates. It probably would not be used to sell ancillary services to the ISO. If it is merchant based, then would the utility treat it as a DG facility or would they have to negotiate a performance based contract for the services? If it is merchant based, could the operator sell Ancillary Services to the ISO? The distribution system would probably be impacted by a 10 MW storage device that was providing fast regulation service acting like an extremely variable ±MW load. Obviously this option needs to be discussed with the utilities to determine if it is realistic to have independently owned storage devices plugged into the distribution system.

Storage connected to the Sub-transmission system or non-ISO transmission (Location S3) could provide both transmission services to the Transmission Owner (TO) and ancillary services to the ISO. The acceptable size of a storage device would depend on the voltage level and the robustness of the sub-transmission system. The owner of such a storage device would have to apply to the transmission company for an interconnection study and approval. A storage owner could potentially negotiate with the transmission company to set up a contract for transmission services and then sell ancillary services to the ISO. The big question is whether such a hybrid method of financing a storage device is feasible and practical. If the device is used to support the sub-transmission system and it is owned by the transmission company, then they would need CPUC approval to include it distribution rates or FERC approval to include it in transmission rates.

Storage connected to the ISO Transmission network (Location S4) could provide both transmission services and market based services in the energy and capacity markets. The owner of the storage facility would apply to the ISO for an interconnection study and approval. The ISO currently has a Large Generator Interconnection Process (LGIP) and a Small Generator Interconnection Process (SGIP) that is described in detail on our web site http://www.caiso.com . Currently the ISO is using the SGIP rules for storage facility applications. The question is: does this process need to be formally changed to recognize it applies to both small generators and storage facilities? Is there any compelling reason to design a new process that is just for storage facilities?

Storage connected to the ISO Transmission network from a Generating Plant site (Location S5) is very similar to the SGIP procedure described above. If this is an existing generating plant or a wind farm, there may already be sufficient transformer and transmission capacity to handle the additional energy from a storage system. Storage at

this location would probably be a market based service and financed as a merchant facility.

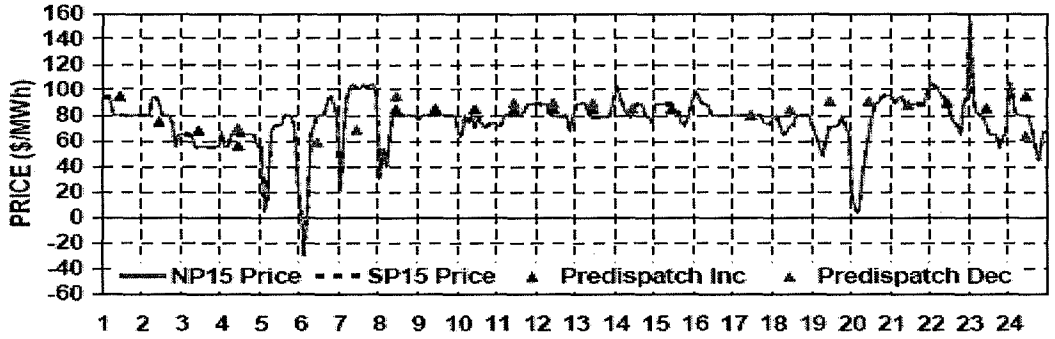
Energy Market

Storage participation in Forward Energy Market and Real Time Energy Markets can be useful to shift energy delivery from off-peak periods to on-peak periods. This would be particularly useful with large amounts of energy production from intermittent resources such as wind and solar generation. Storage would add to the nighttime load on the system when excess wind generation is often available. It could also absorb energy from the concentrated solar generation facilities which are expected to ramp up to maximum daily energy production in the morning hours between 6 am to 7 am while the morning load pull is just starting. Storage then can become the "shock absorber" by being the energy source and sink for the mismatch of wind and solar generation with the system load.

The key question is whether the storage facility can operate at a profit by buying energy from the market when the price is low or negative and sell it back to the market when the price is high. For this strategy to be successful, it would be useful to have

- significant volatility in real-time energy prices,
- a volume of energy storage that is at least 3 times the capacity rating of the unit (a 10 MW facility should have at least 30 MW Hrs of storage capability),
- a very efficient storage technology with low round trip energy losses, and
- a capital cost per MW of energy storage that is below $1Million.

Figure 2 below is an example of real-time energy prices. Prices vary from -$30 at 6 am to $80 at 6:30 am. Although there are at least 5 periods of significant price variation, the low or negative price periods may not last long enough for the storage device to absorb very much energy at the low price. This only an example of one day's prices and the question is whether this is a typical pattern for prices.



	NP15				SP15			
	Min	Max	Avg	Δ Avg.	Min	Max	Avg	Δ Avg.
	RTMA MCP							
Peak	$ 5.00	$ 105.47	$ 79.67	$ (2.33)	$ 5.00	$ 105.47	$ 79.67	$ (2.33)
Off-Peak	$ (29.89)	$ 154.00	$ 69.36	$ 8.54	$ (29.89)	$ 154.00	$ 69.36	$ 8.54

Figure 2

A more detailed study on the variability of real-time energy prices has been done and the results will be discussed at the June Stakeholder meeting on Integration of Storage Technology. There is an additional issue: the use of historical pricing data may not be a good indicator of future price variability once the new market system MRTU goes into operation in the 4th quarter of 2008. One of the MRTU design objective is to have day-ahead energy generation schedules that more closely match load schedules and forecasts. If this objective is achieved, then real-time prices may be less volatile. On the other hand, the large increase in wind and solar generation on the system by 2011 and 2012 may significantly increase the variability of generation energy supplies and this could result in an increase in real-time price volatility.

Storage technology typically has losses that range from 10% to as high as 40% or greater. For a device with a 10% loss rate (round-trip efficiency of 90%), then for every 10 MW-Hrs of energy stored in the facility, only 9 MW-Hrs of energy are recovered and sold back into the market. If the price of energy at the time of the energy injection into the storage system was $5/MW-Hr, then the energy cost was $50. If the energy price at the time of the sale back into the market was $50, then gross profit is $450 (9x$50) for a net profit of $400. If this process could be repeated many times per day, then the amount of net profit would probably exceed the operating costs and provide sufficient return on capital to justify the investment in the storage facility

The capital cost for all storage technologies still appears to be greater than $1 Million a megawatt. The hope is that this cost will decline as volume production of batteries, flywheels and other storage devices ramps up. Energy tax credits would help with the financing of new storage facilities and to get the industry started. The question is how this can be accomplished on the state and federal level.

Large Energy Ramps

Large Energy Ramps were identified in the November Renewables Report as a major operating issue for the future. Today's 1000 MW to 2000 MW per hour energy ramps for three hours during the morning load pick up and corresponding rapid energy ramp down in the evenings are expected to increase by approximately 1000 MW for number of months of the year. A storage facility that could either charge or discharge for three to five hours could be a significant help with the large ramps. Pump storage, flow based batteries and compressed air storage would seem to fit this criteria the best. Perhaps NAS and LI battery storage systems can be designed to meet this longer charge/discharge cycle. At the present time, the ISO depends on the Supplemental Energy Market for this ramping capability so the ability of storage technology to bid into the Supplemental Energy market could provide a valuable additional resource. A future issue will be the need to grow the depth of the INC and DEC bids in the Supplemental Energy Market.

Over Generation Mitigation

An issue identified in the November Renewables Report was the problem of the mismatch of generation schedules with scheduled loads. In 2006, there were at least 50 occurrences where the ISO had to declare an over generation problem existed and there

was a market appeal for more DEC bids to reduce the amount of scheduled generation and energy imports to match the forecasted load. The new MRTU market system should help to ensure that more accurate generation and import schedules are produced. The forecasted wind generation energy production will also be included in the scheduled energy production. Again storage facilities could help to mitigate significant mismatches between energy production schedules and forecasted loads.

Ancillary Services Markets

As per FERC Order 890, the ISO has been directed to submit tariff changes to allow non-generation resources such as storage to participate in Ancillary Services Markets. The ISO's proposed tariff changes are shown in Attachment B.

Storage participation in capacity markets – Regulation, Spinning Reserve and Non-spinning reserves

Many potential investors and operators of storage facilities are very interested in providing regulation services and/or spinning reserves. These capacity markets can significantly increase the profitability of a storage facility. For example, if the market clearing price for regulation was $21/MW for UP regulation and $19 for DOWN regulation; a 10 MW stage facility successfully bidding into this market, they would be paid $210 for UP regulation ($21x(+10MW)) and $190 for DOWN regulation ($19x(-10MW)) for a total capacity payment of $400 for that hour. If the unit had a 90% round-trip efficiency and the market clearing price for energy was $50/hr for 1 MW, then the 10 MW unit might consume 1 MW of energy from the real-time energy market so its profits would be reduced by $50 to a net profit of $350 for the hour. If the unit delivered net energy to the market during the hour (used some of the energy previously stored), they it would be paid the market price for the energy.

The market clearing price for Spinning Reserve is typically significantly less than the regulation market so the attractiveness of bidding into the Spinning Reserve market may be relatively low. Market clearing prices can be quite variable as seen in Figure 3 below.

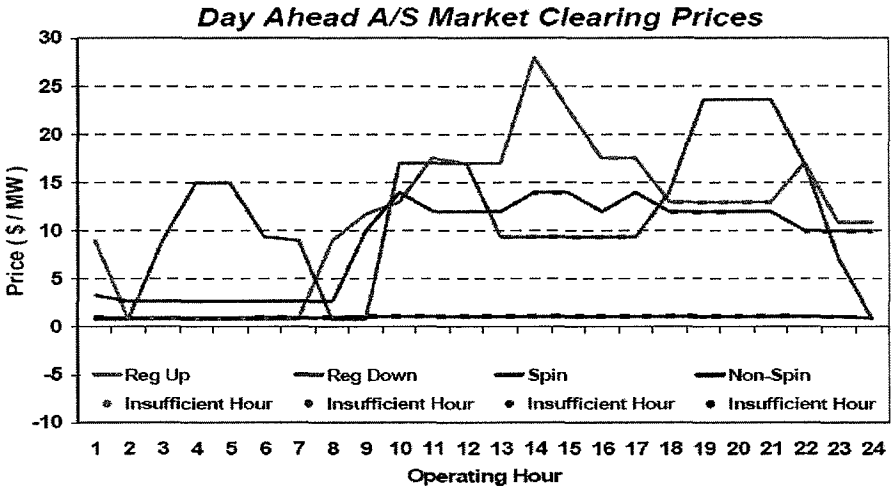


Figure 3

Some storage facilities such as batteries and flywheels have the unique characteristic of ramping from full discharge to full charge in only several seconds. They have argued that very fast regulation services should be paid a premium over the normal market clearing price for regulation. Initial studies have shown that fast regulation units such as hydro generation facilities do most of the regulation work so there is some merit to this argument. Additional studies are need to verify this initial finding and if there is justification for a premium payment for fast regulation, then who pays for this premium services? Is it paid for by reducing the total amount of regulation and, if so, how confident is the ISO that it can meet NERC operating standards with less regulation?

Certification of storage for Regulation and Spinning Reserve

ISO Procedure G-213 Generator Certification Testing on the CAISO web site http://www.caiso.com/docs/2000/09/08/200009081011018455.pdf describes the current procedure for testing and certifying generation, loads, and system resources for ancillary services such as regulation and operating reserves. This procedure should be updated to include the procedure for testing and certifying storage facilities for suppliers of ancillary services.

Frequency Regulation

The ISO currently does not have a specific market product for frequency regulation. The Automatic Generation Control (AGC) signal that is used to rebalance the system is a combination of Interchange error (I_{SCH} - I_{ACT}) plus a frequency deviation term, plus an off set term for automatic time error correction and an Hourly Inadvertent Energy Payback term. The traditional AGC dispatch for generating facilities may be a less than optimum solution for the future with large amounts of storage available for fast regulation. A potential project is being discussed that would explore the use of a new ASC (Automatic Storage Control) signal and a ALC (Automatic Load Control) signal in addition to an AGC signal. A future control system might look something like the following Figure 4:

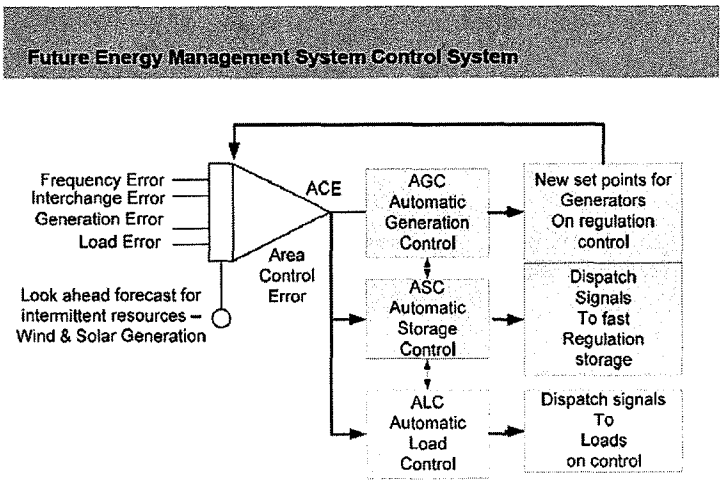


Figure 4

Communication requirements
The communication requirements to a generating unit in the ISO area is described in detail in the interconnection agreement and participating generator agreement documents. Essentially the ISO requires 4 second real-time data from the facility and the ability to communicate with the facility on a 24/7 basis. The normal communications interface device between the generator and the ISO is a RIG (Remote Intelligent Gateway) or a DPG (Data Processing Gateway). A RIG is required for the unit to provide ancillary services. A similar communication requirement will be essential for a storage device to provide ancillary services. These requirements will be reviewed with storage to determine if there is anything uniquely different about storage versus a generator or a load. The initial expectation is that the operator of the storage facility will have to manage the amount of energy stored in the system and that is not an ISO responsibility.

Plug-In Hybrid Electric Vehicles (PHEV)

PHEVs are a major potential load and energy storage on the grid. They are like regular hybrids vehicles but with larger batteries and the ability to re-charge the battery from an electric connection to the grid. Ideally they can travel for the first 30 miles or further on the energy stored in the battery and not have to start the gasoline engine in the vehicle. This would be within the commute range for many drivers and it could significantly lower the amount of air pollution from vehicles.

The stability of the grid could be enhanced if the charging units for the PHEV's were designed to be frequency sensitive. As long as the electric system frequency was above 59.95 Hz, the units would charge as normal. If the frequency drops below 59.95 Hz, they would reduce by 50% and help the system frequency recover. If the frequency drops below 59.9 Hz, they would stop charging all together until the frequency recovers to 59.95 Hz. Once the frequency has recovered to 59.95 Hz or higher, then they would have a random amount of seconds' delay (0 to 30 seconds) before they would start charging again so all the charging load would not hit the grid at once. This would help the grid recover from a major frequency event such as the loss of a major generating unit and would have little direct impact on the PHEV and their ability to fully charge the battery. Such logic could easily be added to the PHEV on-board computer system that manages the charging of the batteries.

Summary
This white paper and the accompanying Frequently Asked Questions document attempt to frame some of the issues associated with integrating storage facilities on the power grid. The details and solution alternatives are expected to develop during discussion with stakeholders over the next several months.

ATTACHMENT H

Market Notice

May 21, 2008

Categories
Grid Operation
Market Operations
Market Rules and Market Design

Requested Client Action
Mark Your Calendar

Integration of Energy Storage Facilities

Summary
The CAISO will conduct a conference call on May 29, 2008 to discuss issues associated with integrating storage facilities on the grid and the California electricity markets.

Main Text
In collaboration with stakeholders, the California ISO (CAISO) is taking significant steps to integrate large amounts of renewable resources into the electric grid. Among the key areas being evaluated is the need for energy storage technologies and processes to use services from storage facilities to assist with integration of renewable resources. The CAISO will hold a conference call on May 29 to discuss the issues associated with integrating storage facilities onto the grid and into California Markets.

The purpose of the call is to identify key issues related to the integration of energy storage facilities. Concepts that will be explored during the call include, but not limited to:

- Are energy storage facilities a transmission device that should be covered in transmission rates?
- To what extent is each type of energy storage technology capable of providing market-based services such as regulation or other ancillary services?

The CAISO will post a discussion paper to help frame issues by May 22, 2008 to its website at http://communications.caiso.com/c.html?rtr=on&s=lgl3,9zq4,7k2,g60f,bzfr,b589,diqv.

Conference Call Details
Date: Thursday, May 29, 2008
Time: 9:30 a.m. – 12:00 p.m. (Pacific Time)
Call-in Number: (800) 230-1092
International Number: (612) 332-0923
Name of Call: Storage Facilities

Web Conference Information
Web Address: http://communications.caiso.com/c.html?rtr=on&s=lgl3,9zq4,7k2,9k2r,cnkj,b589,diqv
Meeting Number: 8662054243
Code: 3459258

For More Information Contact

David Hawkins at dhawkins@caiso.com or 916-351-4465

The California ISO strives to be a world-class electric transmission organization built around a globally recognized and inspired team providing cost-effective and reliable service, well-balanced energy market mechanisms, and high-quality information for the benefit of our customers.

151 Blue Ravine Road, Folsom, CA 95630

EA/ComPR/IPS/ds

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing documents upon all of the parties listed in the attached filing as receiving service, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California this 16th day of June, 2008.

BAM

Anna Pascuzzo