

January 15, 2009

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") submits this filing to revise the CAISO's Market Redesign and Technology Upgrade Tariff ("MRTU Tariff"),¹ Appendix L, Methodology to Assess Available Transfer Capability ("Appendix L"), in compliance with the requirements of Order No. 890² and the Commission's May 16, 2008 Order Accepting Compliance Filing As Modified.³ The CAISO requests that these revisions be approved by the Commission, without modification, suspension, or hearing, and made effective on the effective date of MRTU implementation (which is targeted for March 31, 2009).

I. BACKGROUND

On February 16, 2007, the Commission issued Order No. 890 in which it adopted numerous reforms designed to strengthen the pro forma Open Access Transmission Tariff ("OATT"), provide greater specificity in the terms and conditions of service, and increase transparency in the rules applicable to planning and use of the transmission system. As part of the reforms, Order No. 890 required transmission providers to include detailed provisions in Attachment C to their OATTs to improve transparency and consistency in the determination of Available Transfer Capability ("ATC"). Specifically, the order directed each transmission provider to include the following provisions in Attachment C: (1) a clear identification of the methodologies of the North American Electric Reliability

¹ Capitalized terms not otherwise defined have the same meaning set forth in the MRTU Tariff on file with the Commission.

² *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, 72 Fed. Reg. 12,266 (March 15, 2007), FERC Stats. & Regs. ¶ 31,241 (2007), *order on reh'g*, Order No. 890-A, 73 Fed. Reg. 2984 (January 16, 2008), FERC Stats. & Regs. ¶ 31,261 (2007), *order on reh'g*, Order No. 890-B, 123 FERC ¶ 61,299 (2008).

³ *California Independent System Operator Corporation*, 123 FERC ¶ 61,180 (2008) ("May 16 Order").

Corporation (“NERC”) that it employs; (2) a detailed description of the specific mathematical algorithm it uses to calculate firm and non-firm ATC for the scheduling, operating, and planning horizons; (3) a process flow diagram that describes the various steps in its ATC calculation; (4) a definition of each ATC component and a detailed explanation of how each component is derived in both the operating and planning horizons;⁴ (5) documentation of its process for coordinating ATC calculations with neighboring systems; and (6) a narrative description detailing its capacity benefit margin practices.⁵ Order No. 890 also required transmission providers to include their current ATC calculation methodologies in the 210-day compliance filing, and then file a revised Attachment C sixty days after NERC and the North American Energy Standards Board (“NAESB”) complete their processes to develop ATC standards.⁶

On October 11, 2007, the CAISO submitted its filing to comply with Order No. 890 in Docket No. OA08-12-000. In that filing, the CAISO proposed to include in the existing CAISO Tariff a new Appendix L⁷ to describe the CAISO’s methodology for calculating ATC and incorporate the requirements of Order No. 890. The CAISO based its compliance demonstration on the existing CAISO Tariff, rather than on the provisions of, and services to be provided under, the MRTU Tariff. As explained in that compliance filing, the CAISO revised its existing tariff in order to implement more quickly the transparency principles adopted in Order No 890 with respect to ATC calculations. In its compliance filing, the CAISO expressly reserved making ATC-related changes to the MRTU Tariff until a later date when it could make such revisions in conjunction with any specific revisions required to comply with applicable NERC or NAESB ATC standards. A future filing would also permit the CAISO to reflect the final MRTU design.

On December 21, 2007, the CAISO filed in Docket Nos. ER06-615-000 and ER08-367-000 a comprehensive replacement version of the MRTU Tariff. This replacement version contained new provisions as well as ministerial changes designed to update the MRTU Tariff to incorporate provisions that had been previously submitted for Commission approval in the existing CAISO Tariff and that would still be relevant under the MRTU market design. Through this filing, the CAISO merged Appendix L of the existing CAISO Tariff into the MRTU Tariff.

On May 16, 2008, the Commission issued an order in Docket No. OA08-12-000 that accepted the CAISO’s October 11, 2007 compliance filing, with modifications. With respect to Appendix L of the CAISO Tariff, the May 16 Order directed the CAISO to revise the description of its ATC methodology to reflect

⁴ Order No. 890 at P 323.

⁵ *Id.* at P 337.

⁶ *Id.* at P 325.

⁷ The CAISO designated Appendix L to comply with Order No. 890, rather than Attachment C, because Appendix L was the next available Appendix/Attachment in the CAISO Tariff.

additional detail regarding (1) the specific mathematical algorithms used for calculating ATC, and include a link to the location on the CAISO Website where the algorithms are posted;⁸ (2) the calculation methodology used to determine the transmission capacity set aside for native load and non-OATT customers;⁹ and (3) the calculation and use of a transmission reserve margin and capacity benefit margin.¹⁰ The May 16 Order also recognized that the CAISO will reflect the ATC requirements of Order No. 890 by filing revisions to Appendix L of its MRTU Tariff prior to MRTU implementation.¹¹

On June 16, 2008, the CAISO submitted its filing to comply with the May 16 Order. That compliance filing, in pertinent part, modified CAISO Tariff, Appendix L, to add a narrative description of the ATC mathematical algorithm and provide a detailed explanation of the ATC components used by the CAISO. The filing also revised Appendix L to include statements that the CAISO does not use a transmission reserve margin or capacity benefit margin and that those values are set at zero in the calculation of ATC, or in the alternative to request waiver of the requirements in the May 16 Order related to the transmission reserve margin and capacity benefit margin.

II. COMPLIANCE DEMONSTRATION

The comprehensive replacement version of the MRTU Tariff that the CAISO filed on December 21, 2007 contained ATC provisions in Appendix L that were incorporated from, and virtually identical to, Appendix L of the existing CAISO Tariff. Subsequent to that filing, the Commission determined in its May 16 Order that CAISO Tariff, Appendix L should be supplemented with additional description and detail about the CAISO's ATC methodology. The CAISO's June 16, 2008 compliance filing in response to that order added the required information to the current CAISO Tariff. The purpose of the instant filing is to align Appendix L of the MRTU Tariff with the ATC requirements set forth in the Commission's May 16 Order so that the appropriate and necessary tariff provisions are in effect when MRTU is implemented. The modifications to Appendix L of the MRTU Tariff that are contained in this filing incorporate the same changes made to the current CAISO Tariff in the CAISO's June 16 compliance filing, as well as revisions to conform the procedures and defined terms to the ATC provisions in the MRTU Tariff. Below the CAISO identifies the specific tariff revisions it is proposing to Appendix L, as currently included in the MRTU Tariff.

A. ATC Methodology

In the May 16 Order, the Commission directed the CAISO to revise

⁸ May 16 Order at P 49.

⁹ Id. at P 54.

¹⁰ Id. at P 56, 60-61.

¹¹ Id. at P 48.

Appendix L to add a description of the specific mathematical algorithms used to calculate ATC for its scheduling, operating, and planning horizons, as required by Order No. 890, and to provide a link to the location of the CAISO Website where the actual algorithms are posted.¹²

In compliance with this directive, the CAISO proposes modifications to Appendix L of the MRTU 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 committed uses. ATC is defined as the Total Transfer Capability less applicable operating Constraints due to system conditions and Outages, less the Transmission Reserve Margin (which value is set at zero), less unused Transmission Rights Capacity, less the Capacity Benefit Margin (which value is set at zero), less tagged net Energy from Imports/Exports, less Ancillary Service capacity from Imports. Under MRTU, the CAISO will post the ATC values in megawatts to OASIS in conjunction with the closing events for the CAISO Day-Ahead Market, Hour-Ahead Scheduling Process, and Real-Time Market. The modifications also provide greater detail and information about each of the components of the ATC calculation. The CAISO requests that the Commission accept these modifications and find revised Appendix L of the MRTU Tariff to be in full compliance with Order No. 890 and the May 16 Order.

B. Detailed Explanation of the ATC Components

1. Existing Transmission Commitments

In the May 16 Order, the Commission directed the CAISO to revise Appendix L to include an explanation of the calculation methodology it uses to determine the transmission capacity set aside for native load and non-OATT customers.¹³

To comply with this requirement, the CAISO proposes modifications to Appendix L, Section L.1.4, of the MRTU Tariff to describe how the CAISO will reserve transmission capacity for existing transmission commitments that represent Existing Contracts¹⁴ and Transmission Ownership Rights.¹⁵ The modifications are consistent with the Existing Contract and Transmission

¹² Id. at P 49.

¹³ Id. at P 54.

¹⁴ Existing Contracts, as defined in the MRTU Tariff, Appendix A, are "The contracts which grant transmission service rights in existence on the CAISO Operations Date (including any contracts 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."

¹⁵ Transmission Ownership Rights, as defined in the MRTU Tariff, Appendix A, are "The ownership or joint ownership right to transmission facilities within the CAISO Balancing Authority Area of a Non-Participating TO that has not executed the Transmission Control Agreement, which transmission facilities are not incorporated into the CAISO Controlled Grid."

Ownership Rights provisions set forth in Sections 16 and 17, respectively, of the MRTU Tariff.

The modifications explain that the CAISO will reserve transmission capacity for each Existing Contract and Transmission Ownership Right based on instructions the responsible Participating Transmission Owner or Non-Participating Transmission Owner submits to the CAISO as to the amount of firm transmission capacity that should be reserved on each transmission interface for each hour of the Trading Day. The types of instructions will generally fall into three basic categories, where the existing transmission commitment reservation is: (1) a fixed percentage of the total transmission capacity on a line, which decreases if the line's total transmission capacity is derated; (2) a fixed amount of capacity, which decreases if the line's total transmission capacity is derated below the reservation level; or (3) an algorithm that changes at various levels of total transmission capacity for the line. The modifications also include a description of the CAISO's transmission commitment reservation calculator and how it will determine the amounts of transmission capacity to be reserved.

In addition, the modifications describe the timeline and process through which the existing transmission commitments will be released under MRTU. Existing Contract capacity reservations will remain reserved during the Day-Ahead Market and Hour-Ahead Scheduling Process. To the extent that the reservations are unused, they will be released in real-time operations for use in the Real-Time Market. Transmission Ownership Rights capacity reservations will remain reserved during the Day-Ahead Market and Hour-Ahead Scheduling Process, as well as through real-time operations. This capacity is under the control of the Non-Participating Transmission Owner and will not be released to the CAISO for use in the markets.

In order to provide further transparency to Market Participants, the CAISO has indicated in Appendix L that CAISO Operating Procedure M-423 (entitled "Scheduling and Use of Existing Transmission Contract Rights and Transmission Ownership Rights"), is publicly available on the CAISO Website. Operating Procedure M-423 contains additional, detailed information about the CAISO's procedures for the scheduling, treatment, use, validation, timeline, and release of existing transmission commitment reservations.

The CAISO requests that the Commission accept these modifications and find revised Appendix L of the MRTU Tariff to be in full compliance with Order No. 890 and the May 16 Order.¹⁶

2. Non-Applicable Existing Transmission Commitment Requirements

¹⁶ The CAISO's calculation of ATC will be revised, as appropriate, following completion of the NERC and NAESB processes to develop ATC standards.

In connection with existing transmission commitments, Paragraph 53 of the May 16 Order requires that Appendix L include an explanation of how rollover rights are accounted for in the ATC methodology. As the CAISO discussed in its October 11 and June 16 compliance filings, the Commission has previously ruled that Existing Contracts do not have rollover rights. Under the current tariff and MRTU market design, once the primary contract terms expire, the Existing Contract 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 would further require that the CAISO include in Appendix L an explanation of how point-to-point transmission requests will be incorporated into the calculation of existing transmission commitments. The CAISO does not provide point-to-point transmission service and does not incorporate point-to-point transmission service requests in its calculation. Accordingly, this requirement of the May 16 Order does not apply to the CAISO.

The CAISO requests that the Commission waive these requirements related to rollover rights and point-to-point transmission service because they are not applicable to the CAISO.

3. 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 methodology to calculate a Transmission Reserve Margin and description of the databases used in the calculation.¹⁷ In addition, the Commission directed the CAISO to revise Appendix L to provide a more detailed explanation of its practices with respect to a Capacity Benefit Margin, including the following: (1) information necessary to clarify who performs the resource adequacy assessment for a Capacity Benefit Margin 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 a Capacity Benefit Margin is set aside; (4) a definition or list of the databases used for the Capacity Benefit Margin calculation; (5) a demonstration that contingency outages are not double counted in the Capacity Benefit Margin determination; (6) procedures for allowing the use of a Capacity Benefit Margin during emergencies or a clear definition of what constitutes an emergency, or a list of entities that are permitted to use Capacity Benefit Margin during emergencies; and (7) the procedure that needs to be followed by Load Serving Entities when they need to access Capacity Benefit Margin.¹⁸

As the CAISO discussed in its June 16 compliance filing, the CAISO does

¹⁷ *Id.* at P 55.

¹⁸ *Id.* at PP 60-61.

not use Transmission Reserve Margins or Capacity Benefit Margins for operational purposes, and has not done so since the California energy crisis of 2000-2001.¹⁹ As a result, the CAISO has not developed and/or maintained much of the information that the May 16 Order requires to be included in Appendix L.²⁰ In these circumstances, creating new procedures, standards, methodologies and calculations that the CAISO does not and will not use under MRTU is unnecessary and would be unduly burdensome. The CAISO should not be required to create detailed procedures that describe measures the CAISO will not use in the calculation of ATC and that will not reflect actual operational practices following the implementation of MRTU. Further, 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 regarding the transparency of Transmission Reserve Margins or Capacity Benefit Margins for operational purposes, the CAISO proposes to comply with Order No. 890 and the May 16 Order by modifying Appendix L in the MRTU Tariff to include statements that the CAISO does not use Transmission Reserve Margins or Capacity Benefit Margins for operational purposes 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 provisions for Transmission Reserve Margins or Capacity Benefit Margins in Appendix L.

IV. 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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¹⁹ As support for this statement, please see the daily Capacity Benefit Margin Reports posted on the CAISO Website that uniformly show a Capacity Benefit Margin value of zero for all branch groups. The link to the posting is:
<http://www.caiso.com/docs/2001/11/20/2001112015042128272.html>.

²⁰ To the extent that the CAISO has prepared a written procedure pertaining to such measures, please see Operating Procedure S-322, entitled "Transmission Reliability Margin and Capacity Benefit Margin," which is publicly posted on the CAISO Website at:
<http://www.caiso.com/thegrid/operations/opsdoc/sched/index.html>.

V. 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 with effective Scheduling Coordinator Service Agreements under the CAISO Tariff. In addition, the CAISO is posting this transmittal letter and all attachments on the CAISO Website.

VI. ATTACHMENTS

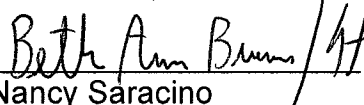
The following documents, in addition to this transmittal letter, support the instant filing:

- | | |
|--------------|------------------------------------------------------------------------------------------------------------|
| Attachment A | Revised tariff sheets for Appendix L of the MRTU Tariff to comply with Order No. 890 and the May 16 Order. |
| Attachment B | Revisions to Appendix L of the MRTU Tariff shown in black-line format. |

VII. CONCLUSION

For the foregoing reasons, the CAISO requests that the Commission accept the instant filing as satisfying the CAISO's compliance obligations with respect to the ATC requirements of Order No. 890 and the May 16 Order. The CAISO requests that the Commission grant all necessary waivers consistent with the discussion herein.

Respectfully submitted,


Nancy Saracino

General Counsel, Corporate Secretary
and Vice-President of Legal Affairs
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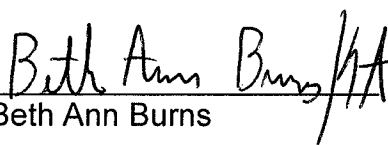
Fax: (916) 608-7296

Dated: January 15, 2009

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the entities that are described in that document 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 15 day of January, 2009.


Beth Ann Burns

Attachment A – Clean Sheets
Methodology to Assess Available Transfer Capability Amendment
4th Replacement CAISO Tariff (MRTU)
January 15, 2009
OA08-12-___

CAISO TARIFF APPENDIX L

Methodology to Assess Available Transfer Capability

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) (which value is set at zero), less the sum of any unused existing transmission commitments (ETComm) (i.e., transmission rights capacity for ETC or TOR), less the Capacity Benefit Margin (CBM) (which value is set at zero), less the Scheduled Net Energy from Imports/Exports, less Ancillary Service capacity from Imports.

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 CAISO utilizes rated path methodology to establish the TTC of CAISO Transmission Interfaces.

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

L.1.4 Existing Transmission Commitments (ETComm) include Existing Contracts and Transmission Ownership Rights (TOR). The CAISO reserves transmission capacity for each ETC and TOR based on TRTC Instructions the responsible Participating Transmission Owner or Non-Participating Transmission Owner submits to the CAISO as to the amount of firm transmission capacity that should be reserved on each Transmission Interface for each hour of the Trading Day in accordance with Sections 16 and 17 of the CAISO Tariff. The types of TRTC Instructions the CAISO receives generally fall into three basic categories:

- The ETC or TOR 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 or TOR 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 or TOR reservation is determined by 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 Market and Hour-Ahead Scheduling Process (HASP). 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 Market and HASP, as well as through real-time operations. This capacity is under the control of the Non-Participating Transmission Owner and is not released to the CAISO for use in the markets.

L.1.5 ETC Reservations Calculator (ETCC). The ETCC calculates the amount of firm transmission capacity reserved (in MW) for each ETC or TOR on each Transmission Interface for each hour of the Trading Day.

- **CAISO Updates to ETCC Reservations Table.** The CAISO updates the ETC and TOR reservations table (if required) prior to running the Day-Ahead Market and HASP. The amount of transmission capacity reservation for ETC and TOR rights is determined based on the OTC of each Transmission Interface and in accordance with the curtailment procedures stipulated in the existing agreements and provided to the CAISO by the responsible Participating Transmission Owner or Non-Participating Transmission Owner.
- **Market Notification.** ETC and TOR allocation (MW) information is published for all Scheduling Coordinators which have ETC or TOR scheduling responsibility in advance of the Day-Ahead Market and HASP. This information is posted on the Open Access Same-Time Information System (OASIS).
- For further information, see CAISO Operating Procedure M-423, Scheduling of Existing Transmission Contract and Transmission Ownership Rights, which is publicly available on the CAISO Website.

L.1.6 **Transmission Reliability Margin (TRM)** is that amount of transmission transfer capability necessary reserved in the Day-Ahead Market (DAM) to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions. This DAM implementation avoids Real-Time Schedule curtailments that would otherwise be necessary due to:

- Demand 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 Transmission Interface will be determined by CAISO 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 for Load Serving Entities (LSEs) to ensure access to Generation from interconnected systems to meet generation reliability requirements. In the Day-Ahead Market, CBM may be used to provide reliable delivery of Energy to CAISO Balancing Authority Area Loads and to meet CAISO responsibility for resource reliability requirements in Real-Time. The purpose of this DAM 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 CAISO Balancing Authority 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 Transmission Interface 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:

$$\text{CBM} = (\text{Demand} + \text{Reserves}) - \text{Resources}$$

Where:

- Demand = forecasted area Demand
- Reserves = reserve requirements
- Resources = internal area resources plus resources available on other Transmission Interfaces

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

L.2 ATC Algorithm

The ATC algorithm is a calculation used to determine the transfer capability remaining in the physical transmission network and available for further commercial activity over and above already committed uses. The CAISO posts the ATC values in megawatts (MW) to OASIS in conjunction with the closing events for the Day-Ahead Market and HASP Real-Time Market process.

The following OASIS ATC algorithms are used to implement the CAISO ATC calculation for the ATC rated path (Transmission Interface):

$$OTC = TTC - CBM - TRM - \text{Operating Constraints}$$

ATC Calculation For Imports:

$$ATC = OTC - \text{AS from Imports} - \text{Net Energy Flow} - \text{Hourly Unused TR Capacity.}$$

ATC Calculation For Exports:

$$ATC = OTC - \text{Net Energy Flow} - \text{Hourly Unused TR Capacity.}$$

ATC Calculation For Internal Paths 15 and 26:

$$ATC = OTC - \text{Net Energy Flow}$$

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

ATC	ATC MW	Available Transfer Capability, in MW, per Transmission Interface and path direction.
Hourly Unused TR Capacity	USAGE_MW	The sum of any unscheduled existing transmission commitments (scheduled transmission rights capacity for ETC or TOR), in MW, per path direction.
Scheduled Net Energy from Imports/Exports (Net Energy Flow)	ENE_IMPORT MW	Total hourly net Energy flow for a specified Transmission Interface.
AS from Imports	AS_IMPORT MW	Ancillary Services scheduled, in MW, as imports over a specified Transmission Interface.
OTC	OTC MW	Hourly Operating Transfer Capability of a specified Transmission Interface, per path direction, with consideration given to known Constraints and operating limitations.
Constraint	Constraint MW	Hourly transmission Constraints, in MW, for a specific Transmission Interface and path direction.
CBM	CBM MW	Hourly Capacity Benefit Margin, in MW, for a specified Transmission Interface, per Path Direction.
TRM	TRM MW	Hourly Transmission Reliability Margin, in MW, for a specified Transmission Interface, per path direction.
TTC	TTC MW	Hourly Total Transfer Capability, in MW, of a specified Transmission Interface, per path direction.

Attachment B - Blacklines
Methodology to Assess Available Transfer Capability Amendment
4th Replacement CAISO Tariff (MRTU)
January 15, 2008
OA08-12-___

* * *

CAISO TARIFF APPENDIX L

Methodology to Assess Available Transfer Capability

METHODOLOGY TO ASSESS AVAILABLE TRANSFER CAPABILITY

* * *

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) (which value is set at zero), less the total sum of any unused Existing Transmission Commitments (ETComm) (i.e., transmission rights capacity for ETC or TOR), less the Capacity Benefit Margin (CBM) (which value is set at zero), less the Scheduled Net Energy from Imports/Exports, less Ancillary Service capacity from Imports.

* * *

L.1.4 Existing Transmission Commitments (ETComm) include Existing Contracts and Transmission Ownership Rights (TOR). The CAISO reserves transmission capacity for each ETC and TOR based on TRTC Instructions the responsible Participating Transmission Owner or Non-Participating Transmission Owner submits to the CAISO as to the amount of firm transmission capacity that should be reserved on each Transmission Interface for each hour of the Trading Day in accordance with Sections 16 and 17 of the CAISO Tariff. The types of TRTC Instructions the CAISO receives generally fall into three basic categories:

- The ETC or TOR 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 or TOR 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 or TOR reservation is determined by 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 Market and Hour-Ahead Scheduling Process (HASP). 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 Market and HASP, as well as through real-time operations. This capacity is under the control of the Non-Participating Transmission Owner and is not released to the CAISO for use in the markets.

L.1.5 ETC Reservations Calculator (ETCC). The ETCC calculates the amount of firm transmission capacity reserved (in MW) for each ETC or TOR on each Transmission Interface for each hour of the Trading Day.

- CAISO Updates to ETCC Reservations Table. The CAISO updates the ETC and TOR reservations table (if required) prior to running the Day-Ahead Market and HASP. The amount of transmission capacity reservation for ETC and TOR rights is determined based on the OTC of each Transmission Interface and in accordance with the curtailment procedures stipulated in the existing agreements and provided to the CAISO by the responsible Participating Transmission Owner or Non-Participating Transmission Owner.
- Market Notification. ETC and TOR allocation (MW) information is published for all Scheduling Coordinators which have ETC or TOR scheduling responsibility in advance of the Day-Ahead Market and HASP. This information is posted on the Open Access Same-Time Information System (OASIS).
- For further information, see CAISO Operating Procedure M-423, Scheduling of Existing Transmission Contract and Transmission Ownership Rights, which is publicly available on the CAISO Website.

L.1.56 Transmission Reliability Margin (TRM) is that amount of transmission transfer capability necessary reserved in the Day-Ahead Market (DAM) 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 Market (DAM) to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions.~~ This DAM implementation avoids Real-Time Schedule curtailments that would otherwise be necessary due to:

- Demand 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 Transmission Interface will be determined by CAISO Regional Transmission Engineers (RTE).

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

L.1.67 Capacity Benefit Margin (CBM) is that amount of transmission transfer capability reserved by for Load Serving Entities (LSEs) to ensure access to Generation from interconnected systems to meet generation reliability requirements. In the Day-Ahead Market, CBM may be used to provide reliable delivery of Energy to CAISO Balancing Authority Area Loads and to meet CAISO responsibility for resource reliability requirements in Real-Time. The purpose of this DAM 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 CAISO Balancing Authority 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 Transmission Interface 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 Transmission Interfaces

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

L.2 ATC Algorithm

The ATC algorithm is a calculation used to determine the transfer capability remaining in the physical transmission network and available for further commercial activity over and above already committed uses. The CAISO posts the ATC values in megawatts (MW) to OASIS in conjunction with the closing events for the Day-Ahead Market and HASP Real-Time Market process.

The following OASIS ATC algorithms are used to implement the CAISO ATC calculation for the ATC rated path (Transmission Interface):

$$OTC = TTC - CBM - TRM - Operating Constraints$$

ATC Calculation For Imports:

$$ATC = OTC - AS \text{ from Imports} - Net \text{ Energy Flow} - Hourly \text{ Unused TR Capacity}$$

ATC Calculation For Exports:

$$ATC = OTC - Net \text{ Energy Flow} - Hourly \text{ Unused TR Capacity}$$

ATC Calculation For Internal Paths 15 and 26:

$$ATC = OTC - Net \text{ Energy Flow}$$

$$ATC = OTC - (TRM + ETC_{comm} + CBM)$$

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$$ATC = (TTC - \text{Operating Constraints}) - (TRM + ETComm + CBM)$$

Where:

- ~~OTC = TTC - Operating Constraints~~
- ~~TTC = Total Transfer Capability~~
- ~~OTC = Operating Transfer Capability~~
- ~~TRM = Transmission Reliability Margin~~
- ~~ETComm = Existing Transmission Commitments~~
- ~~CBM = Capacity Benefit Margin~~

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

<u>ATC</u>	<u>ATC MW</u>	<u>Available Transfer Capability, in MW, per Transmission Interface and path direction.</u>
<u>Hourly Unused TR Capacity</u>	<u>USAGE MW</u>	<u>The sum of any unscheduled existing transmission commitments (scheduled transmission rights capacity for ETC or TOR), in MW, per path direction.</u>
<u>Scheduled Net Energy from Imports/Exports (Net Energy Flow)</u>	<u>ENE IMPORT MW</u>	<u>Total hourly net Energy flow for a specified Transmission Interface.</u>
<u>AS from Imports</u>	<u>AS IMPORT MW</u>	<u>Ancillary Services scheduled, in MW, as imports over a specified Transmission Interface.</u>
<u>OTC</u>	<u>OTC MW</u>	<u>Hourly Operating Transfer Capability of a specified Transmission Interface, per path direction, with consideration given to known Constraints and operating limitations.</u>
<u>Constraint</u>	<u>Constraint MW</u>	<u>Hourly transmission Constraints, in MW, for a specific Transmission Interface and path direction.</u>
<u>CBM</u>	<u>CBM MW</u>	<u>Hourly Capacity Benefit Margin, in MW, for a specified Transmission Interface, per Path Direction.</u>
<u>TRM</u>	<u>TRM MW</u>	<u>Hourly Transmission Reliability Margin, in MW, for a specified Transmission Interface, per path direction.</u>
<u>TTC</u>	<u>TTC MW</u>	<u>Hourly Total Transfer Capability, in MW, of a specified Transmission Interface, per path direction.</u>
