



California ISO
Your Link to Power

Draft

Congestion Revenue Rights Dry Run Guidebook

DRAFT

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Version 2.1

Revision History

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TABLE OF CONTENTS

REVISION HISTORY2

1 INTRODUCTION.....5

2 COMMUNICATION.....5

3 GUIDING DOCUMENTS.....6

4 DATA CONFIDENTIALITY6

5 DATA SUBMITTAL IS NON-BINDING6

6 CRR DRY RUN REGISTRATION PROCESS.....6

7 PARTICIPATION IN THE CRR DRY RUN.....6

8 IMPORTANCE OF REALISTIC AND TIMELY DATA SUBMITTALS.....7

9 OBJECTIVES7

10 TIMELINE FOR CRR IMPLEMENTATION8

11 HIGH-LEVEL CRR DRY RUN SCHEDULE10

12 CRR DRY RUN PERIOD10

13 CRR DRY RUN PARTICIPANTS.....10

14 DATA SUBMISSION FOR THE CRR DRY RUN.....10

 14.1 EFFORT AND TIMING.....10

 14.2 DATA FLOWS BETWEEN THE CRR DRY RUN PARTICIPANTS AND CAISO10

 14.3 DIFFERENT CATEGORIES OF DATA SUBMISSION FOR THE CRR DRY RUN10

 14.3.1 *Data Submitted via the Data Template*10

 14.3.2 *MUI Data*10

 14.3.3 *Detailed CRR Dry Run Schedule*10

15 CRR ALLOCATION AND AUCTION PROCESS10

 15.1 ANNUAL PROCESS10

 15.2 MONTHLY PROCESS10

16 USE OF THE SECONDARY REGISTRATION SYSTEM.....10

17 SOFTWARE.....10

18 CRR DRY RUN PARAMETERS.....10

 18.1 CRR TERM.....10

 18.2 TIME OF USE10

 18.3 FULL NETWORK MODEL.....10

 18.4 OUTAGES.....10

 18.5 OPERATING CONSTRAINTS10

 18.6 ALLOWABLE SOURCES AND SINKS10

 18.7 DISTRIBUTION FACTORS.....10

 18.7.1 *Default Load Aggregation Points*10

 18.7.2 *Sub Load Aggregation Points*10

 18.7.3 *Metered Subsystem Load Aggregation Points*.....10

 18.7.4 *Trading Hubs*10

 18.8 CRR CATEGORIES10

 18.9 MODELING OF TRANSMISSION RIGHTS10

 18.9.1 *Transmission Ownership Rights*10

 18.9.2 *Existing Transmission Contract Rights*.....10

 18.9.3 *Converted Rights*.....10

18.10	MERCHANT TRANSMISSION.....	10
19	CRR DRY RUN REPORTS.....	10
APPENDIX	10
	MAXIMUM PURCHASE AMOUNT CALCULATION EXAMPLES	10
	TIME OF USE.....	10

1 Introduction

As the California Independent System Operator (CAISO) proceeds with the Market Redesign and Technology Upgrade (MRTU) project, we will be having a market simulation phase, which for Congestion Revenue Rights (CRRs) will be the CRR Dry Run. The CRR Dry Run will provide Market Participants and CAISO staff an opportunity to step through the process of allocating and auctioning CRRs in a way very similar to what we expect will be experienced in 2007 when MRTU swings into production. This CRR Dry Run is intended to replicate the steps of the process for allocating and auctioning CRRs in Year 1. The actual CRR allocation and auction process will begin soon after the CRR Dry Run, and several months before the November 2007 date for full MRTU implementation.

CRRs are financial instruments primarily used for hedging that may be acquired by Market Participants (MPs) for use as a hedge against congestion costs that occur in the Day Ahead Market. The implementation of CRRs in the new California energy market is a key component of the MRTU project because they enable Market Participants to manage the variability in congestion costs that occur under location-based pricing.

The purpose of this guidebook is to provide information on the timeline and process steps for the CRR Dry Run. The CRR Dry Run includes an annual (with seasonal terms) allocation and auction process followed by a monthly allocation and auction process. For expediency, this CRR Dry Run process will cover the allocation and auction of CRRs for only two months.

It should be noted that the Business Practice Manual (BPM) for CRRs is under development and will provide similar information on the timeline and each step of the CRR allocation and auction process for the first and subsequent years. The first draft of the BPM for CRRs will be posted on July 31, 2006 and will undergo extensive stakeholder review.

2 Communication

During the course of the CRR Dry Run, Market Participants can communicate directly with the CAISO by sending electronic mail to the CRR Dry Run mailbox at MRTUImplementation@caiso.com. This mailbox will be closely monitored by CAISO staff.

CRR Information will be provided to the CRR Dry Run participants in the following ways.

- The CRR Dry Run page of the MRTU website at <http://www.caiso.com/17d0/17d0daf777b0.html>.
- Directly via electronic mail.
- Directly via telephone.
- By use of the CRR system market user interface (MUI) messaging capability.

When communicating via written documents, such as this guide, capitalized terms are as defined in Appendix A of the Tariff, unless otherwise specified in the document. CRR Dry Run data from CRR Dry Run participants will be transmitted to the CAISO by the following means.

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- The completed CRR Dry Run data template will be sent via e-mail to the CRR Dry Run mailbox (see above for e-mail address).
 - Historical and forecasted load data, CRR nominations, and CRR bids will be provided to the CAISO via the MUI.

3 Guiding Documents

This CRR Dry Run Guidebook is the primary planning and implementation document for the CRR Dry Run. It provides the necessary information, along with certain other reference information, for Market Participants who wish to participate in the CRR Dry Run to successfully do so.

The reader is also directed to the CAISO Tariff filed on February 9, 2006. Section 36 is the primary section on the allocation and auction process for CRRs, although the settlement of CRRs and other CRR related treatment are mentioned elsewhere in the CAISO Tariff. This document can be found on the CAISO website at <http://www.caiso.com/1798/1798ea1b23080.html>.

4 Data Confidentiality

All data provided to the CAISO by Market Participants for purposes of the CRR Dry Run will remain confidential.

5 Data Submittal is Non-Binding

All data submitted by the Market Participants for purposes of the CRR Dry Run is non-binding with respect to future CRR requests submitted by Market Participants.

6 CRR Dry Run Registration Process

Market Participants who wish to participate in the CRR Dry Run should follow the following registration process.

- Send an e-mail to the CRR Dry Run mailbox MRTUImplementation@caiso.com no later than Friday, May 5, 2006 indicating a desire to participate in the CRR Dry Run.
- Request a digital certificate from the CAISO, if you did not receive one for the CRR Sandbox, via the CRR Dry Run mailbox by Friday, May 19, 2006.

7 Participation in the CRR Dry Run

Participation in the CRR Dry Run is entirely voluntary for market participants, although the CAISO strongly encourages entities that anticipate becoming CRR Holders to engage in this CRR Dry Run and attend relevant training programs. The only prerequisites for participating in the CRR Dry Run are:

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- Complete the CRR Dry Run registration process described above.
 - Submit data to the CAISO as described in this document.

It should be noted that in accordance with section 36 of the Tariff, Market Participants who wish to participate in the actual CRR allocation process must participate in the CRR training program. The CAISO will provide classroom training that meets the CRR training requirements.

The first three days of training will include a general overview of congestion revenue rights and the CRR allocation and auction process. The final two days will be hands-on training using the MUI used to submit and receive CRR data. Use of the Secondary Registration System will also be covered. Participants in the CRR Dry Run are encouraged to attend this classroom training.

Also, the CAISO recommends that Market Participants engage in Sandbox testing to reduce the number of connectivity and security problems encountered in Market Simulation. Information about participation in the Sandbox is posted on the CAISO website at <http://www.aiso.com/17bf/17bf9e393f990.html>. The Sandbox will remain open until the end of May 2006.

8 Importance of Realistic and Timely Data Submittals

One of the purposes for conducting the CRR Dry Run is to provide Market Participants with feedback concerning the quantity of CRRs they may expect to receive in the annual and monthly allocation and auction process under MRTU. The CAISO plans to prepare reports summarizing the results of the CRR Dry Run¹. These reports will be shared with CRR Dry Run participants and the FERC.

It is important for Market Participants to submit realistic information when submitting historical and forecasted load data and CRR allocation nominations and CRR auction bids in order to maximize the benefits of the CRR Dry Run. In addition, it is essential for the data to be submitted in a timely fashion according to the data submittal schedule. A reasonable period of time has been allotted for data submission, based upon experience gained in collecting data for CRR Study 1 and CRR Study 2. In the event that a Market Participant does not submit data in a timely fashion, the CAISO may need to develop and submit data on behalf of the Market Participant in order to keep the CRR Dry Run on schedule.

9 Objectives

The main objective of the CRR Dry Run is to successfully conduct the CRR allocation and auction process in accordance with Section 36 of the CAISO Tariff, as filed with the FERC on February 9, 2006. In so doing, the CRR Dry Run will help Market Participants in the following ways.

- Understand the CRR process -- This process represents a major departure from the way Firm Transmission Rights (FTRs) are sold today at the CAISO. The CRR Dry Run will

¹ Individual allocation and auction results will not be shown in the report in order to maintain data confidentiality.

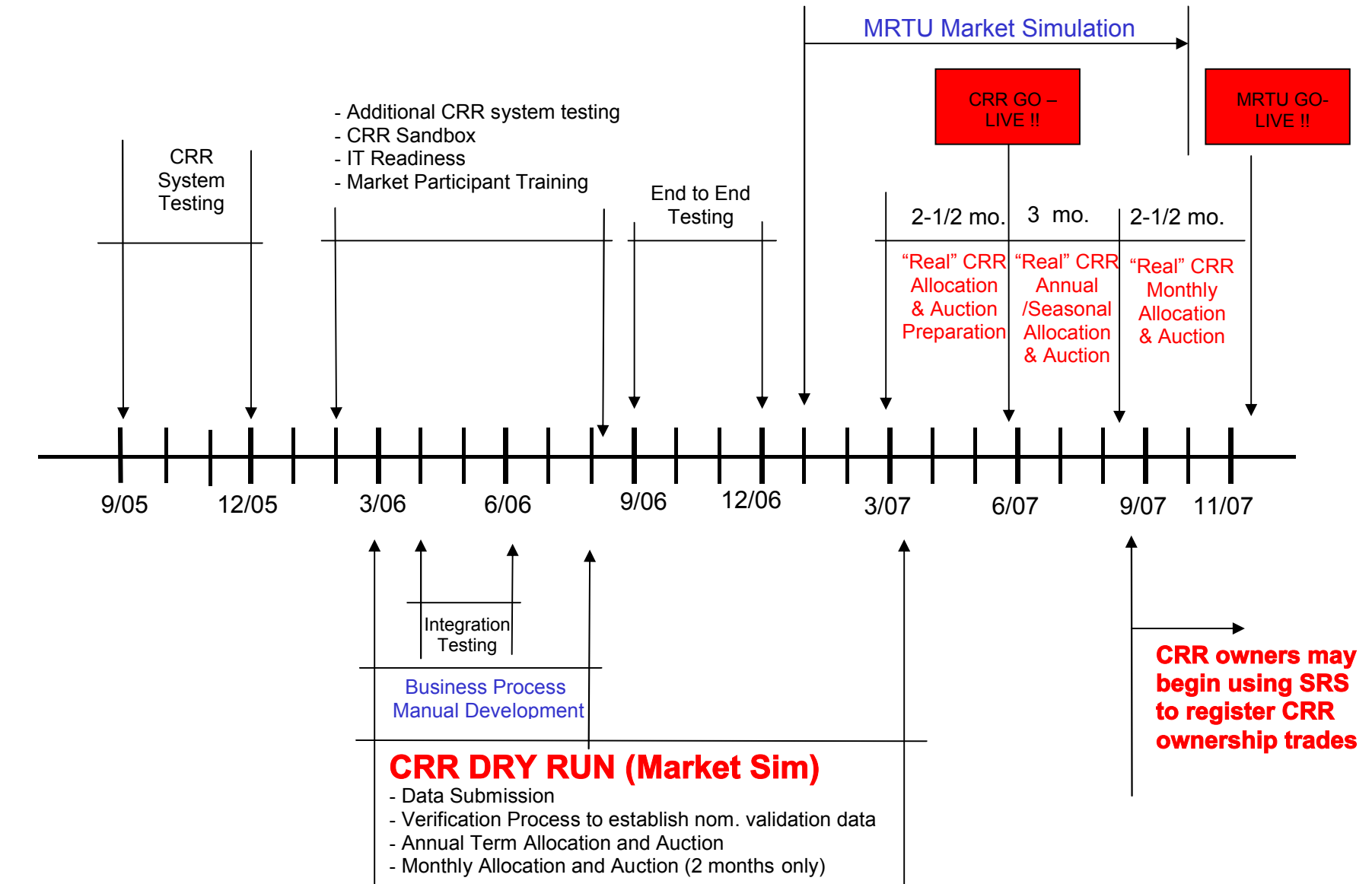
provide the opportunity for participants to experience the CRR process prior to production.

- Data exchange – The CRR Dry run will provide an opportunity to experience collection, submittal, and retrieval of data similar to how data exchange will occur in production.
- Evaluate the need for software tool development. – Experience gained in the CRR Dry Run will assist Market Participants test software tools they plan to use during CRR production and may lead to the development of additional tools to help facilitate the data development and submittal process.
- Assess workload and staffing requirements – The CRR process will be considerably more labor intensive than the current FTR auction process. The CRR Dry Run will be conducted over a ten-month period. During production, the same amount of work will be required in a much shorter time period. The CRR Dry Run will provide Market Participants an opportunity to experience the workload first-hand and determine whether additional staffing will be required for production.
- Assess the allocation and auction process – The CRR Dry Run will be run in accordance with Section 36 of the filed CAISO Tariff. As such, the experience may lead to stakeholder and CAISO recommendations for improving the process.
- Use the Market User Interface – The CRR Dry Run will require use of the MUI to exchange data. This will be very helpful to know prior to production.
- Use the Secondary Registration System – Market Participants will be encouraged to use the SRS to hypothetically trade CRR ownership and post “ads” expressing interest to buy and sell CRRs.
- Fulfill the CRR Training Requirement – Section 36 of the filed Tariff requires all Market Participants who wish to participate in the CRR allocation or auction process to attend a CRR training course. Market Participants who go through the CRR training planned as part of the CRR Dry Run will fulfill the training requirement.
- CRR Summary Report - The CAISO will utilize results of the CRR Dry Run to develop informational reports for the FERC. These reports, which will not discuss specific individual results due to data confidentiality, will also be shared with Market Participants.

10 Timeline for CRR Implementation

Following is a timeline that describes how the CRR Dry Run, and other CRR implementation activities, align with other key MRTU implementation activities.

Timeline for CRR Dry Run and CRR Implementation



The CRR Dry Run is, by design, the CRR market simulation for MRTU. Although the CRR Dry Run must, by necessity, be conducted in advance of “MRTU Market Simulation”, as indicated in the previous diagram, data from the CRR Dry Run – specifically cleared CRRs from the allocation and auction – will be used later by the settlement system during MRTU Market Simulation in order to produce settlement statements having the settlement of CRRs reflected as a line item. In this way, the CRR Dry Run market simulation and MRTU Simulation are related.

11 High-Level CRR Dry Run Schedule

Following is a high-level schedule for the CRR Dry Run. A more detailed schedule is provided in Section 14 of this document.

Task	Start Date	End Date
Distribute draft CRR Dry Run Guide Book & Data Template	4/21/2006	4/21/2006
CRR Dry Run stakeholder meeting	4/28/2006	4/28/2006
Request Digital Certificates	5/1/2006	5/19/2006
Distribute Revised CRR Dry Run Guide Book and Data Template	5/12/06	5/12/2006
Submission of Data Template Information	5/8/2006	7/28/2006
Provide Digital Certificates to Market Participants	6/5/2006	6/9/2006
CRR Training	8/14/2006	8/18/2006
Load Data Submission (via Market User Interface)	8/22/2006	9/4/2006
CRR Dry Run allocation and auction process (including submission of nomination and bid data)	8/31/2006	2/23/2007
Prepare and Distribute informational reports	12/18/06	3/12/2007
Secondary Registration System trading	2/26/2007	3/2/2007

12 CRR Dry Run Period

The CRR Dry Run is currently proposed to cover the time period December 1, 2007 through November 30, 2008. The CAISO chose to start the CRR term on December 1, 2007 since this would be the beginning of the first full season closest to the projected start-up of November 1, 2007. For the purpose of the CRR Dry Run, the annual allocation and auction process will include four seasons². The months that make up each season currently correspond to the same months used for CRR Study 2.

The table below shows the months that currently represent the term of each season. For this CRR Dry Run, the monthly allocation and auction process will include two months, as shown below.

Season	Months within the Season	Season Name
Winter	December 2007 through February 2008	Season 4
Spring	March through May 2008	Season 1
Summer	June through September 2008	Season 2
Fall	October and November 2008	Season 3

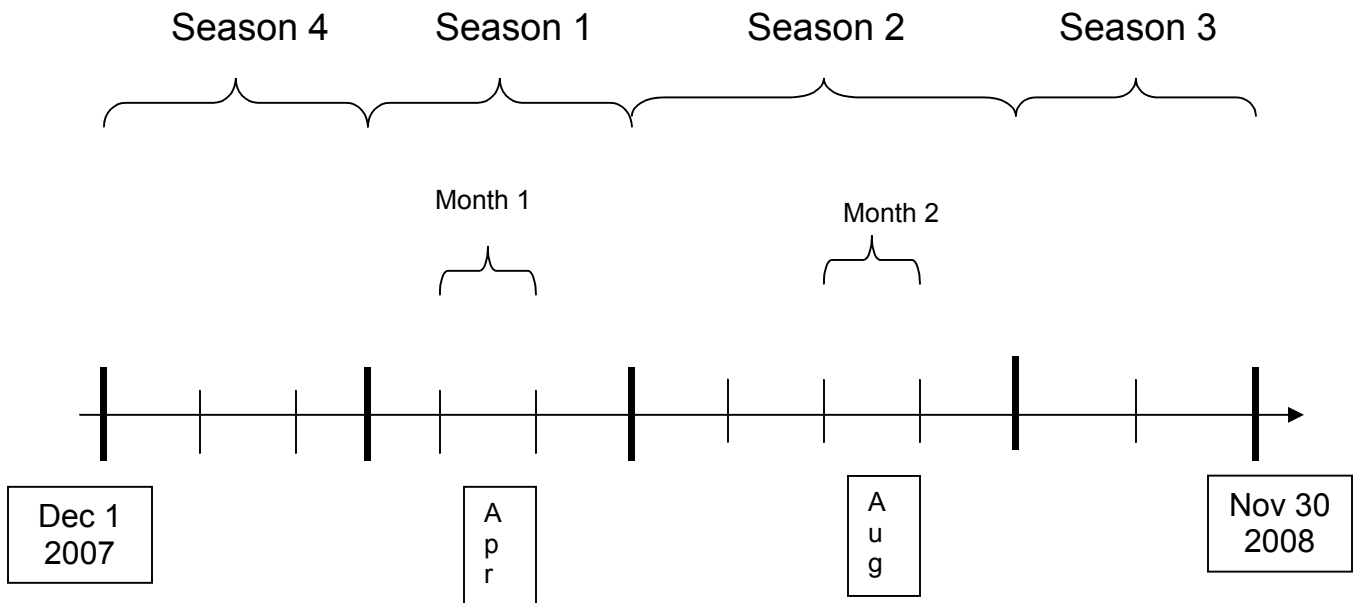
Month	Year	Month Name
April	2008	Month 1
August	2008	Month 2

Please note that the numbers associated with the season names correspond to the order in which the annual and monthly allocation and auction process will run for purposes of the CRR Dry Run (see diagram below). Thus, the CAISO will conduct the Spring season first followed by the Summer season and so on.

The chosen order in which the seasons and months that make up the allocation and auction process is intended to maximize and expedite the information provided to stakeholders in the informational reports, which the CAISO intends to file with FERC in late January 2007.

² The definition of “season” may change after the CRR Dry Run meeting with Market Participants scheduled for April 28, 2006.

The illustration below shows, in general terms, the annual and monthly CRR Dry Run terms.



13 CRR Dry Run Participants

The CRR Dry Run is open to any entity that may wish to participate in either the CRR allocation or auction market upon implementation of MRTU and meets the requirements of section 7 of this guidebook.

14 Data Submission for the CRR Dry Run

For this section, much of the focus is related to the source verification process that needs to be done for CRR year one for Tiers 1 and 2 of the annual allocation and Tier 1 of the monthly allocation.

14.1 Effort and timing

The CAISO will be working closely with Market Participants from early May through the end of August of this year on data submission for the CRR Dry Run. A detailed schedule is presented later in this section. As previously mentioned, it is essential that Market Participants provide timely data for the CRR Dry Run.

14.2 Data Flows Between the CRR Dry Run Participants and CAISO

The CRR Dry Run data submission process will be an iterative process. For the CRR allocation, this process includes the following steps.

1. CAISO to provide documentation to interested Market Participants describing, among other things, the data needed. This documentation will include this Guide, the data template, and a list of usable Pnodes and Aggregated PNodes (sources and sinks).
2. Market Participants will complete the data template and provide this information, along with certain data verification information, to the CAISO via electronic mail by the due date.
3. The CAISO will review the submitted data and spot-check for errors and data issues. Market Participants who have submitted data that appear to be in error or with data issues will be contacted by the CAISO.
4. The CAISO will work with Market Participants to resolve errors and any data issues such as conflicts associated with the sharing of the same physical resource (i.e., for MPs sharing the same generator). Resulting data will be submitted back to Market Participants via the CRR system messaging functionality or via electronic mail.
5. The CAISO will determine any residual capacity at Scheduling Points and notify Market Participants via the CRR system messaging system or electronic mail as to what share of this residual capacity they may choose to request in the allocation (see CAISO Tariff Section 36.8.4.1).
6. Market Participants with data errors or issues will resubmit data by the due date.
7. CAISO will input data into the CRR system.
8. Market Participants will submit load data into the CRR system via the Market User Interface (MUI) once the market opens for data submittal. CRR Dry Run participants will be notified by e-mail when the markets are open for data submittal. This data will be used by the CRR system to calculate the load metric for each Market Participant by time of use period, load aggregation point, season and month.
9. The CAISO will calculate CRR Eligible Quantities for each Market Participant, based upon each Market Participant's load metric, reduced by the amount of load served by transmission ownership rights, converted rights, and existing contract rights each Market Participant may have. The CRR Eligible Quantities will be used by the CAISO to calculate the CRRs that may be requested in each tier of the allocation. This information will be forwarded to Market Participants using the messaging capability of the CRR system or via electronic mail.
10. The CAISO will open the allocation market and Market Participants will submit allocation nominations before the close of the market. The dates for opening and closing the markets will be provided to participants via e-mail.
11. Steps 9 and 10 will be repeated for each allocation Tier (see diagrams in Section 15).

12. The CAISO will run the allocation markets and publish results of the allocation using the Market User Interface.
13. The CAISO will open the auction market and participants will submit bids before close of the market. The exact dates for opening and closing the market will be provided to Market Participants using e-mail. (See diagram in Section 15)
14. The CAISO will publish auction results to participants using the MUI.

The CRR Dry Run process for the auction will include the following steps.

1. For Market Participants interested in the CRR Dry Run auction, the CAISO needs to know which auction markets the Market Participant wishes to participate in and the amount of auction collateral they wish to use. This information will need to be entered into the data template. Since this is only a simulation, there will not be a requirement to actually post collateral but the CAISO will need Market Participants to provide a collateral value for purposes of the CRR Dry Run.
2. Market Participants will formulate and submit bids via the MUI when the auction market is opened. Bids will be accepted to the extent that they do not exceed the posted collateral limits (example calculations for determining the maximum purchase amount for PTP and MPT CRRs, which leads to the determination of your minimum collateral posting, is described in the Appendix,).

The CAISO will run the auction market and publish results via the MUI.

14.3 Different Categories of Data Submission for the CRR Dry Run

Following are types of data that must be collected from Market Participants prior to the CRR Dry Run. This data will be submitted to the CAISO using a data template or the CRR system MUI.

14.3.1 Data Submitted via the Data Template

The CAISO has created a data template that will be used by participants in the CRR Dry Run to submit data to the CAISO. This template can be found on the CAISO website at <http://www.caiso.com/17d0/17d0daf777b0.html>. Market Participants must submit the following data, using the data template, prior to the opening of the CRR Dry Run allocation and auction process.

- **Participant Name / BAID** – This notifies the CAISO of the name of your company and the Business Associate ID (BAID). If the participant does not currently have a BAID the CAISO will assign one for purposes of the CRR Dry Run.
- **Metered Subsystem Election** – For purposes of this CRR Dry Run, Market Participants that are Metered Subsystems must notify the CAISO whether they choose gross or net settlement of energy. Market Participants who choose gross

settlement will settle their CRRs at the Default Load Aggregation Point (i.e., PGE, SCE or SDGE) while those who choose net settlement will settle their CRRs at their specific Metered Subsystem Load Aggregation Point. This selection will also impact how the CRR Eligible Quantity is calculated.

- **Market Participation** – Market Participants will notify the CAISO as to which allocation and/or auction markets (seasonal and monthly) in which they want to participate
- **Auction Collateral** – Market Participants interested in participating in the auction must provide the CAISO with the collateral amount to use for each seasonal and monthly auction. Section 14.3.1.2 of this document (below) describes this in more detail.
- **Source and Sink Verification** – According to the CAISO filed Tariff, Market Participants must verify that they have the right to use the sources and sinks (both location and MW values) they select when submitting CRR allocation requests. Section 14.3.1.1 of this document (below) describes this in more detail.

14.3.1.1 Source and Sink Verification for the Allocation Process

Tiers 1 and 2 of the annual allocation process and Tier 1 of the monthly allocation process require both source and sink validation for CRR nominations. Following is a description of the source and sink location and MW validation requirements in accordance with the filed Tariff.

14.3.1.1.1 Source Location

The CAISO Tariff Section 36.8.3.4 specifies that source verification will use data for the period beginning September 1, 2004 through August 31, 2005.

Market Participants that represent LSEs, MSS and Participating Load must use as sources, either Generating Units, Trading Hubs or Scheduling Points (i.e., ties). Required verification for generator sources includes ownership and energy contracts. For trading hubs it will include energy contracts. For use of Scheduling Points it will include ownership of external generation resources, energy contracts and contracts demonstrating an ability to move energy from the external resource to the Scheduling Point.

For entities wishing to participate in the CRR allocation, to serve load outside the CAISO Control Area, must demonstrate they have generators as sources that are under ownership or contract and are internal to the CAISO Control Area. Trading hubs and import points are not allowed. (See CAISO Tariff Section 36.9.4)

14.3.1.1.2 Source MW

The source upper bound MW values will be determined from information provided to the CAISO by Market Participants as follows. (See CAISO Tariff Section 36.8.3.4 and 36.9.4)

Generating Unit - For Generating Units, the Market Participants must demonstrate they have the right to use a specific Generating Unit up to a specified MW amount. The maximum aggregate MW request from all Market Participants using a particular Generating Unit as a source cannot exceed the Pmax value of that Generating Unit.

Trading Hubs – Market Participants must demonstrate they have power contracts that source at the Trading Hubs. The maximum MW request that may be requested by a Market Participant from a Trading Hub is limited to the average hourly quantity of energy contracted for delivery at the Trading Hub.

Scheduling Points – Market Participants must demonstrate they may use specific Scheduling Points based upon energy and transmission contracts they possess. Market Participants must demonstrate the maximum MW values for each Scheduling Point source based upon these contracts. In addition, pursuant to Section 36.8.4.1, the CAISO will do a pro rata allocation of 50% of the capacity not assigned through the verification process, on each Scheduling Point, to all LSEs based on their Seasonal CRR Eligible Quantities.

14.3.1.1.3 Sink Location

Load Serving Entities (LSEs) and Metered Subsystems (MSSs) choosing gross settlement are limited to the Default LAPs (PGE, SCE and SDGE) as sinks. These entities must demonstrate that they serve load in the LAP or LAPs they intend to use as sinks. LSEs verification can be based upon scheduling registration with the Integrated Forward Market (during production). The MSSs may use their filed MSS agreement as a means of verification. (See CAISO Tariff Sections 36.8.3, 36.8.4 and 36.10)

For MSSs that choose the net settlement option, a specific MSS LAP will be created by the CAISO as a sink and used by the MSS. These MSSs can verify their sink location using the filed MSS agreement. (See CAISO Tariff Section 36.10)

In the CRR Dry Run, Market Participants serving load external to the CAISO Control Area that request CRR allocations may only use Scheduling Points for sinks. These external LSEs must provide historical export scheduling information that confirms these Scheduling Points were used in the past. The time period is the prior year. (See CAISO Tariff Section 36.9)

14.3.1.1.4 Seasonal and Monthly Eligible Quantities

For LSEs and also MSSs that choose the gross settlement option, the sink Eligible Quantity (i.e., the MW limit) is based upon the historical and forecasted load data provided to the CAISO by Market Participants for each default LAP and time of use period. Historical load data is used for the annual allocation process and forecasted



load data is used for the monthly allocation process. Forecasted load data should be supported by the same forecast methodology used by the LSE for Resource Adequacy. (See CAISO Tariff Section 36.8.2)

MSSs that choose the net settlement option must submit net historical and forecasted load information to the CAISO. The net historical load should be based upon forecasted generation usage and not historical generation usage. Also, forecasted load should be based upon the same forecast methodology used for purposes of Resource Adequacy. (See CAISO Tariff Section 36.10)

For load external to the CAISO Control Area, the MW limit is based upon the same process applied to LSEs, except that load is replaced by historical export schedules. Both the Seasonal and Monthly CRR Eligible Quantities are based on historical hourly export schedules. (See CAISO Tariff Section 36.9.3)

14.3.1.2 Auction Collateral Data

Market Participants must inform the CAISO what they wish their credit limits to be, for purposes of CRR auction participation. Market Participants are encouraged to provide a collateral number that is realistic. Submitted collateral amounts will remain confidential.

After bids are submitted to the auction, but before an auction is processed, the CRR system performs a collateral check. This check first determines the maximum purchase amount for each CRR bid, sums these amounts over all the bids submitted by a particular Market Participant then compares that value with the posted collateral. If the posted collateral is equal to or exceeds this sum, then the bids are permitted to enter the auction; if not the bids are rejected. Note that the CRR may be actually purchased for a lesser amount than the maximum purchase amount. The maximum purchase amount is calculated for both Point-to-Point bids and Multi-Point bids..

- For a Point-to-Point buy bid, the maximum purchase amount is determined from the submitted CRR bid curve. It is calculated by finding the maximum non-negative value of multiplying MW amount by the corresponding bid price.
- The maximum purchase amount for a Multi-point CRR buy bid is determined by first combining all Source buy bids to create an aggregate Source buy bid. Second by combining all Sink buy bids to create an aggregate Sink by bid. Third by effectively subtracting the aggregate Source bid from the aggregate Sink buy bid to create a net Sink buy bid. Once this net Sink buy bid is created it effectively resembles a Point-to-Point buy bid and the maximum purchase amount is then determined as described in the Point-to-Point bullet above.

Specific examples of how to calculate the maximum purchase amount can be found in the Appendix.

14.3.2 MUI Data

The data listed below will be submitted to the CAISO via the CRR system Market User Interface (MUI).

14.3.2.1 Load Data used to Calculate Seasonal and Monthly Eligible Quantities

For purposes of the CRR allocation process, load data are broken into two categories, one for historical load to be used in the annual/seasonal allocation and the other for forecasted load to be used in the monthly allocation process.

- **Historical Load** – Market Participants must submit historical load data for the period December 2004 through November 2005. For purposes of this CRR Dry Run, the data may be uniformly scaled upward to account for load growth expected to occur between this time period and the December 2007 through November 2008 CRR Dry Run period. Market Participants must notify the CAISO how much the load was scaled via an e-mail sent to <mailto:MRTUImplementation@caiso.com>.
- **Forecasted Load** -- Market Participants must submit forecasted load data covering the months April and August of 2008. This data is used to determine the load metric. The load metric is then used in the monthly allocation process.

Additional information about load data verification is discussed in Section 14.3.5.

14.3.2.2 Nomination and Bid Data

Market Participants interested in CRR allocations will submit nominations to the CAISO up to the Seasonal or Monthly CRR Eligible Quantity established for the annual and monthly allocation process. Market Participants interested in acquiring CRRs in the auction may submit bids into the annual and monthly auction process. A description of the nomination and bid data follows.

- **CRR Nominations** – This data will be provided to the CAISO by Market Participants via the Market User Interface, after Market Participants have 1) provided their historical and forecasted load data to the CAISO, 2) the CAISO has calculated and returned their Eligible Quantity information, and 3) the CAISO opens the allocation market. Nominations will include the Asset Owner (actually the BAID), CRR Type (CVR if the Asset Owner is a Converted Rights holder or LSE if the Asset Owner is a load serving entity), Market Name (the CAISO will create the names of each market), Time of Use (on or off-peak), Hedge Type (obligation) and category (point-to-point or multi-point CRR).
- **CRR Bids** – This data will be provided to the CAISO by Market Participants via the Market User Interface after they have posted collateral to participate in the auction and the auction market has opened.



14.3.3 Detailed CRR Dry Run Schedule

The following table is a detailed description of the CRR Dry Run schedule. This schedule, among other things, indicates when specific data is needed by the CAISO. It is essential that data be provided on a timely basis in order to avoid delays. Please contact the CAISO if you have any questions about the data that must be provided.



Task	Start Date	End Date
Distribute draft CRR Dry Run Guide Book & Data template	4/21/2006	4/21/2006
CRR Dry Run stakeholder meeting	4/28/2006	4/28/2006
Distribute revised version of CRR Guidebook & Data template	5/12/2006	5/12/2006
Request Digital Certificates	5/1/2006	5/19/2006
Provide Digital Certificates to Market Participants	6/5/2006	6/9/2006
Submission of Data Template Information		
CRR Dry Run participants to return completed data template, along with source/sink verification documentation	5/8/2006	6/8/2006
CAISO to review data template and return if additional information is needed	6/9/2006	6/29/2006
CRR Dry Run participants to return revised templates, if necessary	6/30/2006	7/14/2006
CAISO to review revised templates	7/14/2006	7/28/2006
CRR Training for Market Participants		
CRR overview class	8/14/2006	8/16/2006
Market user interface and SRS class	8/17/2006	8/18/2006
Load Data Submission (via Market User Interface)		
Historical Load Data	8/22/2006	9/4/2006
Forecasted Load Data	8/22/2006	9/4/2006
CAISO Data Preparation		
CRR Administrative Data	4/18/2006	4/18/2006
Upload data into CRR system	6/5/2006	8/3/2006
CRR commercial data development	4/3/2006	4/26/2006
Development of full network model	4/27/2006	5/10/2006
CRR Dry Run allocation and auction process (subject to change)		
Run TOR market	8/31/2006	9/1/2006
Season 1 (Spring) Allocation	8/31/2006	10/2/2006
Season 1 Auction / Post results	9/27/2006	9/28/2006
Month 1 (April) Allocation	10/3/2006	10/19/2006
Month 1 Auction / Post results	10/20/2006	10/25/2006
Season 2 (Summer) Allocation	10/26/2006	11/17/2006
Season 2 Auction / Post results	10/20/2006	10/23/2006
Month 2 (August) Allocation	11/24/2006	12/12/2006
Month 2 Auction / Post results	12/13/2006	12/15/2006
Season 3 (Fall) Allocation	12/18/2006	1/17/2007
Season 3 Auction / Post results	1/18/2007	1/23/2007
Season 4 (Winter) Allocation	1/24/2007	2/19/2007
Season 4 Auction / Post results	2/20/2007	2/23/2007
Distribute informational reports	12/18/2006	3/12/2007
Secondary Registration System trading	2/26/2007	3/2/2007

15 CRR Allocation and Auction Process

The allocation and auction of CRRs for the CRR Dry Run will be carried out following the process detailed in the CAISO Tariff that was filed at FERC on February 9, 2006. For this CRR Dry Run, the CAISO will conduct an annual allocation and auction process comprised of four seasons. The monthly allocation and auction process will be performed for only two months.

15.1 Annual Process

Market Participants interacting through the Market User Interface (MUI), will submit historical load data to the CAISO. The CRR system will use this data to calculate the load metric³ for each Market Participant, season, load aggregation point (LAP) and time-of-use period.

The quantity of CRR nominations an LSE can request for each season, LAP, and time-of-use period is based upon the Seasonal CRR Eligible Quantity. This is determined by reducing the load metric by the capacity in the network available to the Market Participant to serve load by way of Transmission Ownership Rights, Converted Rights and Existing Rights. This value is then scaled down to 75 percent, all in accordance with Section 36.8.2.1 of the filed CAISO Tariff.

The Seasonal CRR Eligible Quantity is the starting point for calculating the Tier 1 nomination limit. For Tier 1, LSEs may nominate up to 50 percent of the Seasonal CRR Eligible Quantity. Nominations are submitted by the Market Participant into the CRR system via the MUI. Submitted nominations are validated by the CRR system for permissible CRR Source and CRR Sink locations and MW values. If the nominations pass the validation process, they are included in the CRR market where they will undergo a simultaneous feasibility test and optimization contemporaneously with other CRR nominations in the same CRR market. Cleared CRRs are then provided back to Market Participants via the MUI. The CAISO will then calculate and provide back to Market Participants the new Eligible Quantities for Tier 2, based upon the Seasonal CRR Eligible Quantity less the CRRs that cleared in Tier 1. Market Participants repeat the same process in Tier 2 as they followed in Tier 1. For Tier 3, the Eligible Quantity is calculated as 100 percent of the Seasonal CRR Eligible Quantity less the CRRs that cleared in Tier 1 and Tier 2. For Tier 3, the source location and MW validation is relaxed, in accordance with the filed CAISO Tariff. However, the CRR Sink location and MW value validations are preserved.

The annual auction process follows the three-tiered annual allocation process. Market Participants interested in the auction may submit bids, once the market is opened, via the

³ The load metric represents the level of load for a season that is expected to be equaled or exceeded only 0.5% of the time (i.e., near the peak).

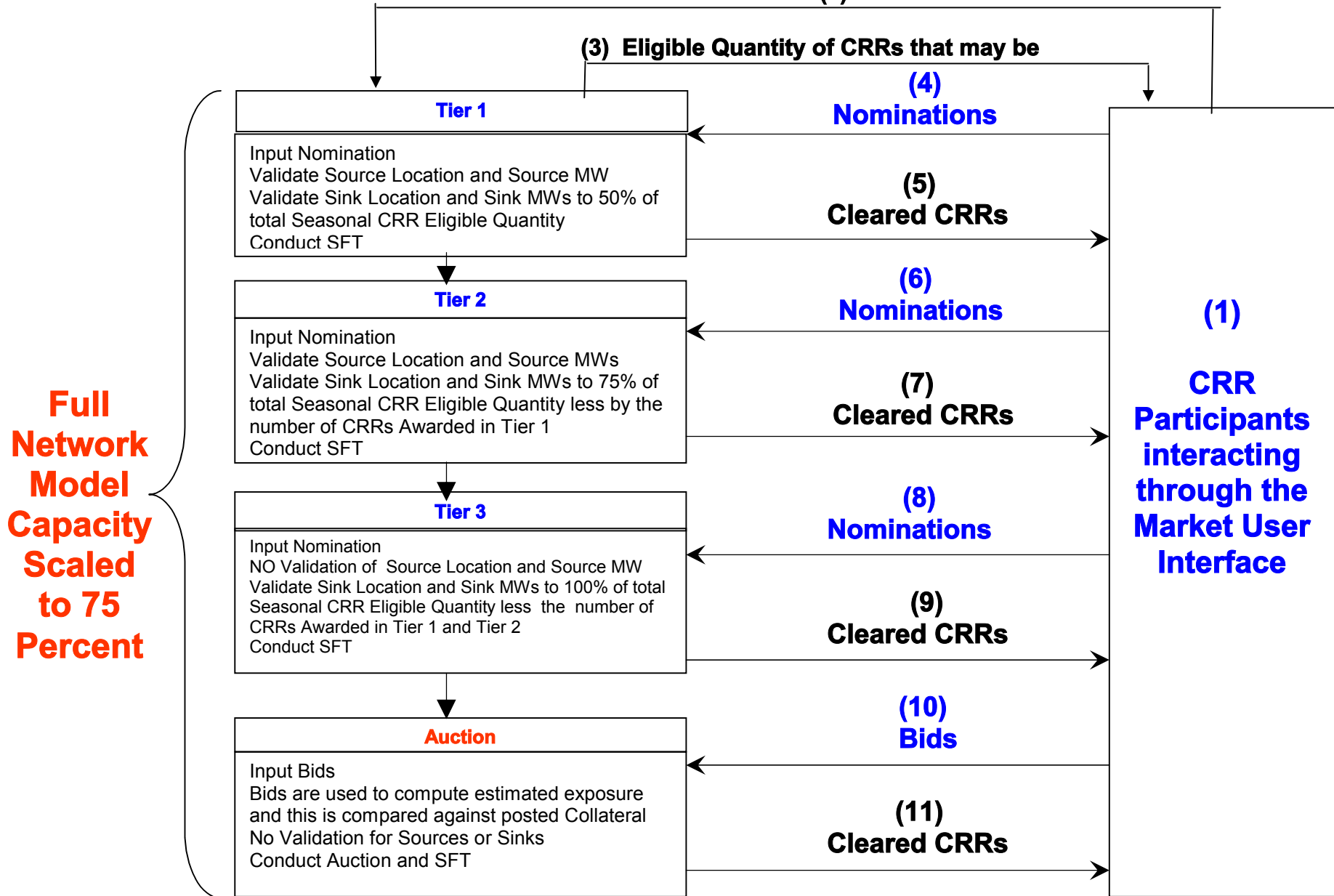
MUI to the extent that they do not exceed the posted collateral. Once the bid submittal period is over, the CAISO will run the simultaneous feasibility test and optimization and return results to Market Participants via the MUI.

15.2 Monthly Process

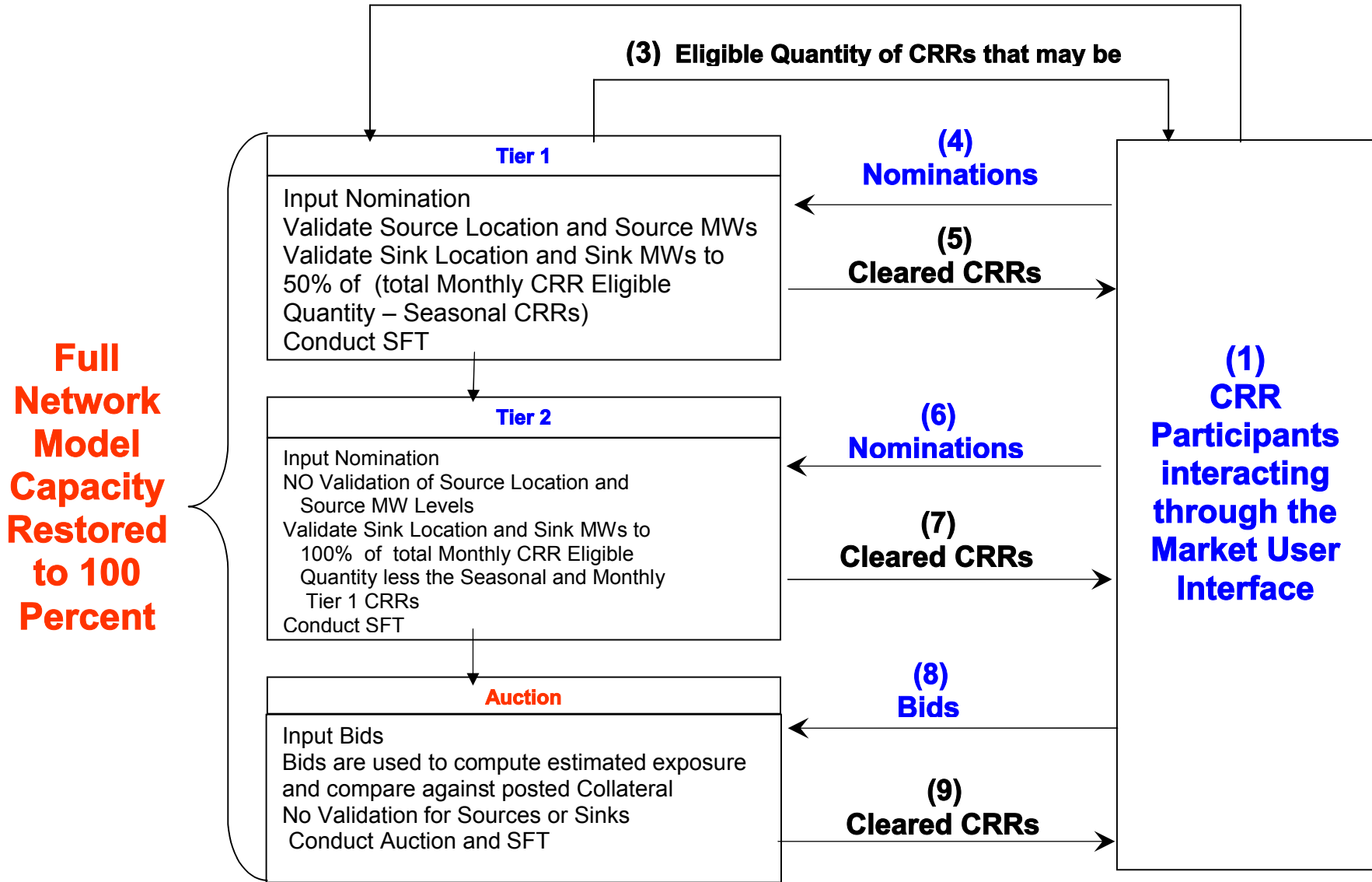
The monthly allocation process is similar to the annual process in many respects. In Tier 1, Market Participants may submit nomination requests up to 50 percent of the Monthly CRR Eligible Quantity and for Tier 2 up to 100 percent of the Monthly CRR Eligible Quantity less the quantity of CRRs awarded in Tier 1 (note that the Eligible Quantity are also adjusted downward for transmission rights as in the annual process). Tier 1 CRR nomination submittals are validated for the CRR Source and CRR Sink Location and MW values. In Tier 2, the validation for CRR Source Location and MW value is relaxed but validation for CRR Sink Location and MW values remain.

The mechanics of the annual and monthly process are summarized in the following two diagrams.

General Annual Process for a Season / Time of Use Period – Year 1 (2)



General Monthly Process for a Month / Time of Use Period – Year 1 (2)



16 Use of the Secondary Registration System

The CRR system also includes a secondary registration system (SRS). SRS allows Market Participants to post offers to buy and sell CRRs, similar to posting a notice in the newspaper “Want-Ads.” The system is also used to register CRR ownership changes. Market Participants are encouraged, at the end of the allocation and auction process, to use the SRS to initiate practice trades with other Market Participants.

17 Software

The software used by the CAISO to conduct the CRR Dry Run is identical to the software that will be used in production.

18 CRR Dry Run Parameters

18.1 CRR Term

As previously mentioned, the CRR Dry Run will include an annual and monthly allocation and auction process. The annual process will consist of all four seasons of the year, from December 2007 through November 2008, and the monthly process will include two months, April and August 2008. The months that comprise each season of the annual process and the months selected for the monthly process are described in Section 12 (CRR Dry Run Period) of this document.

18.2 Time of Use

The time-of-use (TOU) definitions for CRRs are mentioned in Section 36.3.3 of the ISO Tariff filing. The CRR Dry Run will use these same TOU definitions. A detailed description of TOU, for purposes of the CRR Dry Run, is included in the Appendix.

18.3 Full Network Model

The full network model (FNM) used for the CRR Dry Run will be based upon the transmission facilities expected to be in service in May 2007, at the time CRRs are allocated and auctioned under MRTU. The FNM used in the CRR Dry Run will be a DC network model.

18.4 Outages

For the purpose of the annual (i.e., seasonal) CRR allocation and auction, it will be assumed that all transmission facilities are in service. For the two monthly auctions that are part of the CRR Dry Run, the CAISO will review historical information (similar term as for the CRR Dry Run, Dec 2004 through Nov 2005) to determine which transmission facilities, if any, should be assumed to be out of service and removed from the full network model prior to running the monthly allocation and auction process.

18.5 Operating Constraints

One of the critical data inputs needed to conduct the CRR allocations and auctions for the CRR Dry Run are operating constraints. Operating Constraints that will be used for the CRR system include thermal line and transformer limits and generalized group limits.

Thermal limits of branches include normal and emergency thermal limits for the lines and transformers that comprise the branch. These limits generally do not vary by time of use (e.g., on-peak and off-peak) but may vary between summer and winter. Consequently, the CRR team will likely use a summer and winter constraint set in the modeling effort.

Branch groups may consist of both single and multiple lines with a single limit. Some constraint limits do not vary with season or time of use, while others do. In addition to using a relatively static set of non-variable constraint limits, the CRR team plans to utilize eight sets of variable constraint limits representing each season of the year and time of use period. To assist in this review we will also review the historical Operating Transfer Capability (OTC) values and look at the duration curves to provide further information on which to base our determination of OTC values to use for the various seasonal and monthly values.

The operating constraint limits will appropriately be adjusted taking into consideration the absence of reactive power and loss modeling. The CRR team will work with CAISO operating engineers to determine the appropriate adjustment to the operating constraint limits to use for the full network model.

18.6 Allowable Sources and Sinks

Market Participants may use the following sources and sinks for the allocation and auction process, subject to verification requirements, where applicable.

Allocation	
Sources	Sinks
<p>Generator Locations</p> <p>Trading Hub (NP15, ZP26, SP15)</p> <p>Scheduling Points (i.e., interties)</p>	<p>Default Load Aggregation Points (LAPs) (PGE, SCE, SDGE)(Used by Load Serving Entities and also MSSs that choose the gross settlement option)</p> <p>Sub-LAPs(Used by LSEs <u>only</u> in Tier 3 of the annual allocation process and Tier 2 of the monthly allocation process)</p> <p>Metered Subsystem (MSS) LAPs (Used only by MSSs that choose the net settlement option)</p> <p>Others</p>

Auction

All CRR Sources and CRR Sinks specified in the CRR Source and CRR Sink list may be used as a CRR Source or a CRR Sink in the auction.

The eligible CRR Source and CRR Sink names to be used for the purposes of the CRR Dry Run will be in an accompanying file to the data template provided to CRR Dry Run participants.

18.7 Distribution Factors**18.7.1 Default Load Aggregation Points**

There will be three standard load aggregation points (LAPs), one for each of the service territories of PG&E, SCE and SDG&E. The load distribution factors (LDFs) or allocation factors for the default load aggregation points (i.e., PG&E, SCE and SDG&E Aggregated Pricing Nodes) are used to allocate the CRR Sink MWs to the underlying network nodes. For the CRR Dry Run, the CAISO will create seasonal sets of LDFs by season and time of use period (i.e., on-peak and off-peak).

18.7.2 Sub Load Aggregation Points

The sub Load Aggregation Points will be available in Tier 3 of the Annual allocation, tier 2 of the monthly allocation and the auction markets. These sub LAPs will use load distribution factors (LDFs) that are based on LDFs from the Default LAPs (i.e., PG&E, SCE and SDG&E Aggregated Pricing Nodes).

18.7.3 Metered Subsystem Load Aggregation Points

The LAPs used for the Metered Subsystems (MSSs) that chose to be settled net will be comprised of the load points specifically identified as being part of the MSS.

18.7.4 Trading Hubs

In accordance with Section 27.3 of the filed CAISO Tariff, the CAISO will include Trading Hubs in the new market design to facilitate bilateral energy transactions. Trading Hubs will be defined based upon generation resources within existing internal congestion zones (NP15, ZP26 and SP15). These Trading Hubs, known as EZ-Gen Hubs, will be used in settlement of Inter-SC Trades in the Forward Market. These Trading Hubs can also be used as a CRR Source during the CRR allocation process and as either a CRR Source or a CRR Sink in the auction process.

Each Trading Hub will be comprised of all Generating Units within that zone. The allocation factor for each PNode within a Trading Hub will be based upon the ratio of the total output of energy at a PNode divided by the total generation output in that existing zone, for the corresponding season and time-of-use period.

18.8 CRR Categories

Market Participants may request Point-to-Point (PTP) CRRs (CRR Obligations) and also Multi-Point CRRs (CRR Obligations) in the allocation and auction process. PTP CRRs are defined from a single CRR Source to a single CRR Sink where Multi-Point (MPT) CRRs are defined by more than one CRR source and/or more than one CRR sink. PTP CRR bids will include a single bid curve and MPT CRRs will contain a bid curve for each source and each sink. Methods for submitting PTP and MPT nominations and bids into the CRR system will be covered during the CRR Training Course.

18.9 Modeling of Transmission Rights

The CAISO will model transmission ownership rights, existing transmission contract rights, and converted rights in the full network model. How the CAISO models these various transmission rights will be discussed with the respective transmission owner.

18.9.1 Transmission Ownership Rights

Transmission Ownership Rights (TOR) involve existing transmission facilities located within the CAISO Control Area that are non CAISO-grid (i.e., not under the direct control of the CAISO). According to the CAISO Tariff filed with the FERC on February 9, 2006, TOR entities are not subject to congestion charges. As such, the appropriate TOR capacity will be removed from the full network model prior to running the allocation and auction markets using PTP CRR options.

18.9.2 Existing Transmission Contract Rights

Entities holding Existing Transmission Contract (ETC) Rights will not be subject to congestion charges, according to the language in their respective contracts, under MRTU. For the purpose of the CRR Dry Run, the ETC rights will be modeled as PTP obligations where the sinks will be modeled at the actual ETC load location rather than be included as part of a default load aggregation point.

18.9.3 Converted Rights

Participating Transmission Owners (Anaheim, Azusa, Banning, Pasadena, Riverside and Vernon) are Converted Rights (CVR) holders and currently hold Firm Transmission Rights that were provided to them in exchange for turning over their respective transmission rights to the CAISO. These entities, in accordance with the CAISO Tariff, are not subject to forward market congestion. The appropriate CVR capacity will be removed from the full network model using PTP CRR options similar to how TOR capacity is removed from the network.

18.10 Merchant Transmission

In accordance with the filed Tariff, merchant transmission owners who do not recover investment in transmission facilities through an access-charge-based revenue requirement may request CRR Options. It is expected that the methodology for determining the amount of these CRRs will be developed within the CRR Business Practice Manual (BPM) process. Consequently, awards of CRRs to Merchant Transmission owners are not included as part of the CRR Dry Run.

19 CRR Dry Run Reports

The CAISO will use results of the CRR Dry Run to prepare informational reports to individual participants and to FERC. As the various phases of the CRR Dry Run are completed the CAISO will start the analysis of the CRR results by using the results from the CAISO's LMP studies to estimate the value of the awarded CRRs. The individual results of this analysis will be made available on a confidential basis to each entity participating in the CRR Dry Run.



Appendix

Maximum Purchase Amount Calculation Examples

Following is an example of how the CRR system determines the maximum purchase amount for a Multi-Point (MPT) and a Point-to-Point (PTP) auction buy bid.

For an MPT auction buy bid, the steps involved in this estimation calculation are as follows:

1. Create an aggregate source bid for all individual sources bids within the MPT;
2. Create an aggregate sink bid for all individual sink bids within the MPT;
3. Create a net sink bid from the aggregate sink bid and aggregate source bid; and
4. Determine the maximum purchase amount for this MPT auction buy bid (which also generically covers the point-to-point bid from this net sink buy bid).

Assume a MPT auction bid that has two source bids (Source1 bid and Source2 bid) and one sink bid as shown graphically below in Figure 1.

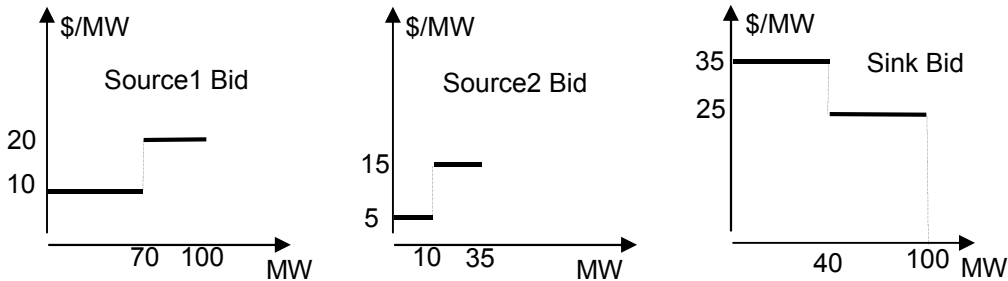


Figure 1 MPT Source bids and Sink bids

Step 1:

The aggregate Source bid is created by combining the two Source bids in order of ascending price segments. In tabular form the sorted segments are shown in Table 1

Table 1 Sorted Source bid segments

Price (\$/MW)	MW Segment	Original Source Bid
5	10	#2
10	70	#1
15	25	#2
20	30	#1

The aggregated Source bid is shown in Figure 2.

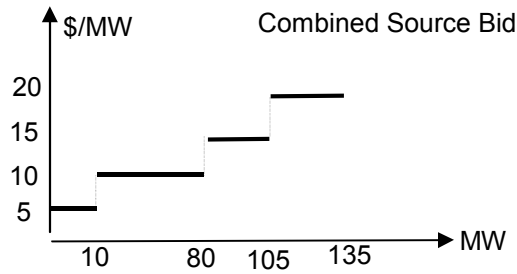


Figure 2 Aggregate Source Bid

Step 2:

Since there is only sink bid, this one sink is equivalent to the aggregate sink bid. If there were more than one sink bid, the aggregate bid would be constructed in a manner similar to the construction of the aggregate source bid, but with the prices ordered in descending order.

Step 3:

The net sink bid is constructed by effectively subtracting the aggregate source bid price from the aggregate sink bid price on a MW-by-MW basis. This operation is shown more effectively if the two bids are shown together as in Figure 3.

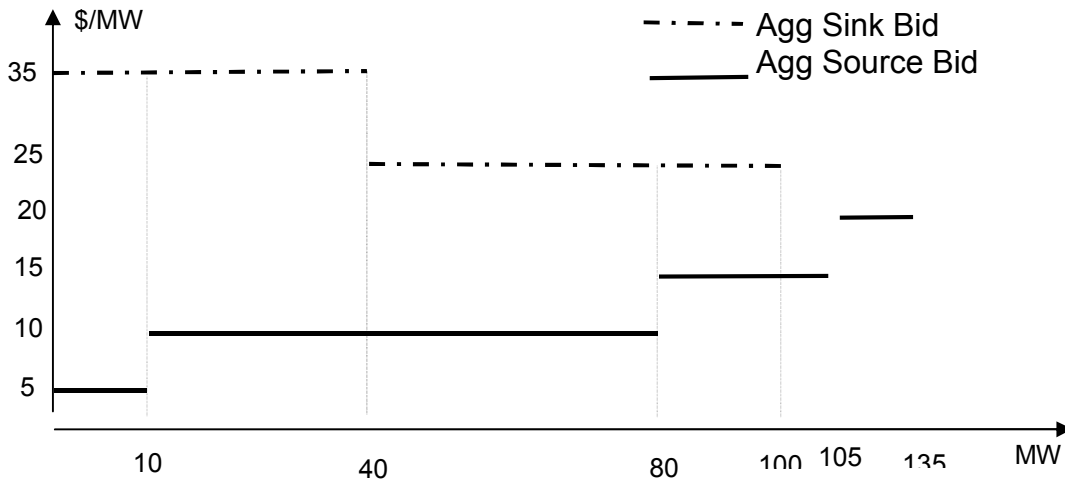


Figure 3 Aggregate Source Bid and Aggregate Sink Bid

The net sink bid is shown in tabular form in Table 2.

Table 2 Net sink bid segments

Net Price (\$/MW)	MW Segment
$30 = 35 - 5$	$10 = 10 - 0$
$25 = 35 - 10$	$30 = 40 - 10$
$15 = 25 - 10$	$40 = 80 - 40$
$10 = 25 - 15$	$20 = 100 - 80$

The operation proceeds to the MW end of either the aggregate source bid or the aggregate sink bid, which is smaller in value. Also, the operation need not continue after the net bid becomes negative, if it becomes negative. The net sink bid is shown in Figure 4.

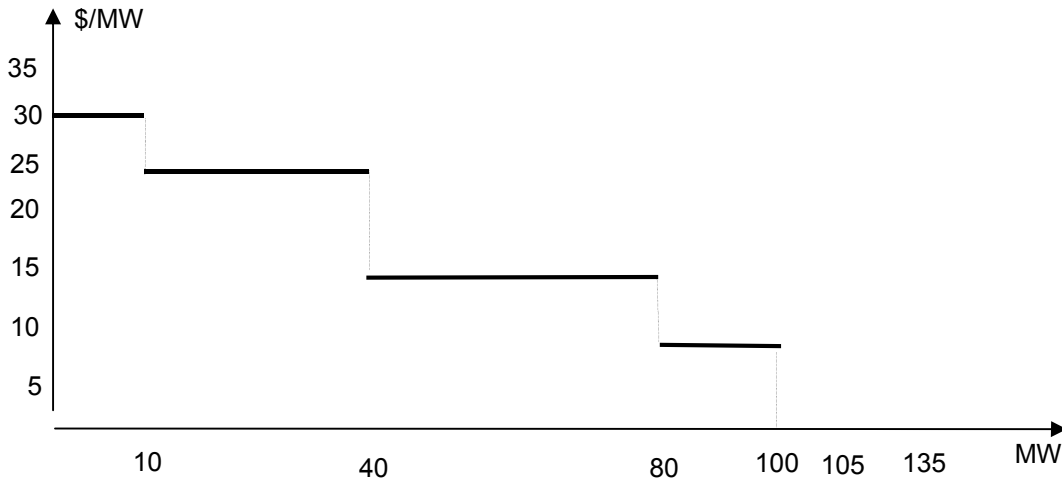


Figure 4 Net sink bid

At this point in the process, the net sink bid resembles a bid for a Point-to-Point CRR. Thus, this sample bid can be used to complete step 4 for both the MPT and PTP bid. Each bid segment in the sink bid presents the maximum price that the buyer is willing to pay for the CRR for each MW within the bid segment. For example, in the segment from 40 MW to 80 MW, the buyer is not willing to pay more than \$15/MW for each additional MW in this segment. Also, since the prices in the auction are based on the marginal bids, if the buyer was awarded, say, 50 MW, the price to be paid for the total of the 50 MW would not exceed \$15/MW for the whole 50 MW. The same logic applies to each segment. Table 3 provides a summary of these price limits.

Table 3 Maximum prices to be paid over certain MW limits

Maximum Price (\$/MW) To Pay for all MW purchased	Buying at least this many MW	Buying at most this many MW	Potentially maximum amount to pay (\$) for MW purchased {Price × Quantity}
30	0	10	300 = 30 × 10
25	10	40	1,000 = 25 × 40
15	40	80	1,200 = 15 × 80
10	80	100	1,000 = 10 × 100

In this example, the maximum amount that the buyer would pay, i.e., the maximum purchase amount, would be \$1,200. If $P(Q)$ represents the price function of the net sink bid curve for each MW value (Q), the maximum purchase amount is calculated as:

$$\max_{Q \in [0, Q_{\max}]} (P(Q) \times Q, 0)$$

Time of Use

The Time-of-Use definition is described as follows.

1. Normal weekdays are Monday to Saturday. That is, the off-peak hours are hour ending 1 through 6 and hour ending 23 and 24. The on-peak hours are hour ending 7 through 22.
2. Public holidays (listed below) and all Sundays are treated as holidays. That is, all 24 hours are off-peak hours on these days.
3. Based on NAESB Business Practices, Appendix A (http://www.naesb.org/pdf2/weq_bklet_011505_iip_mc.pdf):
 - a. If a public holiday falls on a Saturday, that Saturday will be treated as a holiday (i.e., all 24 hours are off-peak hours); and
 - b. If a public holiday falls on a Sunday, the following Monday will be treated as a holiday, i.e. all 24 hours are Off-peak hours.
4. HE 3 is excluded for the short day on March 9, 2008 (See Note below).
5. HE 25 is added for the long day on Nov 2, 2008 (See Note below).
6. Please also reference MRTU Tariff Filing Section 36.3.3 on on-peak and off-peak Specifications.

Summary of Public Holidays from Nov 1 2007 to Oct 31 2008		
Holiday	Date	Day
Thanksgiving Day	11/27/2008	Thursday
Christmas Day	12/25/2007	Tuesday
New Year's Day	1/1/2008	Tuesday
Memorial Day	5/26/2008	Monday
Independence Day	7/4/2008	Friday
Labor Day	9/1/2008	Monday

A TOU definition file covering the CRR Dry Run period can be found on the CAISO website at <http://www.caiso.com/17d0/17d0daf777b0.html>.