CAISO Demand Response Resource User Guide

Guide to Participation in MRTU Release 1

November 29, 2007

Version 3.0

Table of Contents

1 Introduction

In the September 21 2006 MRTU FERC Order[1], the CAISO was directed to work with market participants to present additional opportunities for Demand Response resources to participate in the CAISO market and to work with Load Serving Entities ("LSEs") to develop methods for the accounting of expected demand response within Residual Unit Commitment (RUC procurement.

In this regard, five key demand resource working groups have been formed to help meet this important objective.
The five working groups are:

Demand Response Participation in MRTU Release 1

- Lead agency- CAISO

Demand Response Participation in MRTU Post Release 1

- Lead agency- CAISO

Demand Resource Product Specification

- Lead agency- CEC

Infrastructure for Demand Resources

- Lead agency- CEC

Vision for Demand Resources

- Lead agency- CPUC

Each working group has specific objectives and resulting deliverables to produce with the over-arching objective being to enable greater participation from demand resources in the wholesale power markets.

This User Guide was developed in response to this directive and is a result of the CAISO working collaboratively with the CPUC, CEC and Demand Resource Providers to advance the integration of demand resources into the CAISO's wholesale market design

[1] 116 FERC 61,274

and grid operations through the Demand Response participation in MRTU Release 1 Working Group.

The CAISO MRTU Release 1 software will include limited functionality and ability for demand resources to participate directly in the CAISO wholesale markets. The CAISO markets for MRTU Release 1 will accommodate pump storage hydro units and aggregated hydro pumps that participate in the CAISO markets as Participating Load. Although the design is limited, it may be possible for other types of demand resources to fit into this model allowing them to provide the CAISO imbalance energy as well as non-spinning reserve as a participating load. However, as currently designed the existing Demand Response Programs managed by the three Investor Owned Utilities in California, PG&E, SCE and SDG&E and others, are not compatible with the CAISO's current Participating Load model. Since the existing Demand Response Programs provide valuable DR, but are not compatible with the current Participating Load model, the MRTU Release 1 Working Group was formed to develop a process by which the CAISO can immediately account for benefits provided by these Demand Response Programs in the CAISO energy markets.

1.1 About this Guide

The purpose of this user guide is to document a process that describes how Demand Response Programs and Demand Response resources can be incorporated into MRTU Release 1. The Guide focuses on DR being in MRTU as Non-Participating Load. This user guide is intended to be a living document that will be updated periodically to reflect added functionality and enhancements that further eliminate the manual processes described herein and seek to seamlessly integrate demand response resources into the CAISO's markets and its grid operations.

This user guide is the result of a collaborative effort by Demand Response Providers as part of the MRTU Release 1 Working Group. Further refinement to this guide is expected with the initiation of the MRTU Post Release 1 working group and its efforts.

1.2 CAISO Requirements

The entity submitting Demand Response data and/or bids to the CAISO must be a certified Schedule Coordinator.[2] A Scheduling Coordinator is an entity certified by the CAISO for the purposes of undertaking functions such as scheduling, bidding, and settlement, and as further defined in Section 4.5.3 of the CAISO Tariff. In this document Scheduling Coordinators that submit Demand Response data to the CAISO will be referred to as Demand Response Providers.

2 Day-Ahead Demand Response Programs and Day-Of Programs called Day-Ahead

Day-Ahead Demand Response Programs are initiated by Demand Response Providers and are triggered based on various conditions such as the day-ahead forecasted temperature, day-ahead forecasted demand and high price forecasts. Customers are typically notified the day prior to the event day that the program will be triggered. This section also applies to Day-Of DR programs when they are called the Day-Ahead.

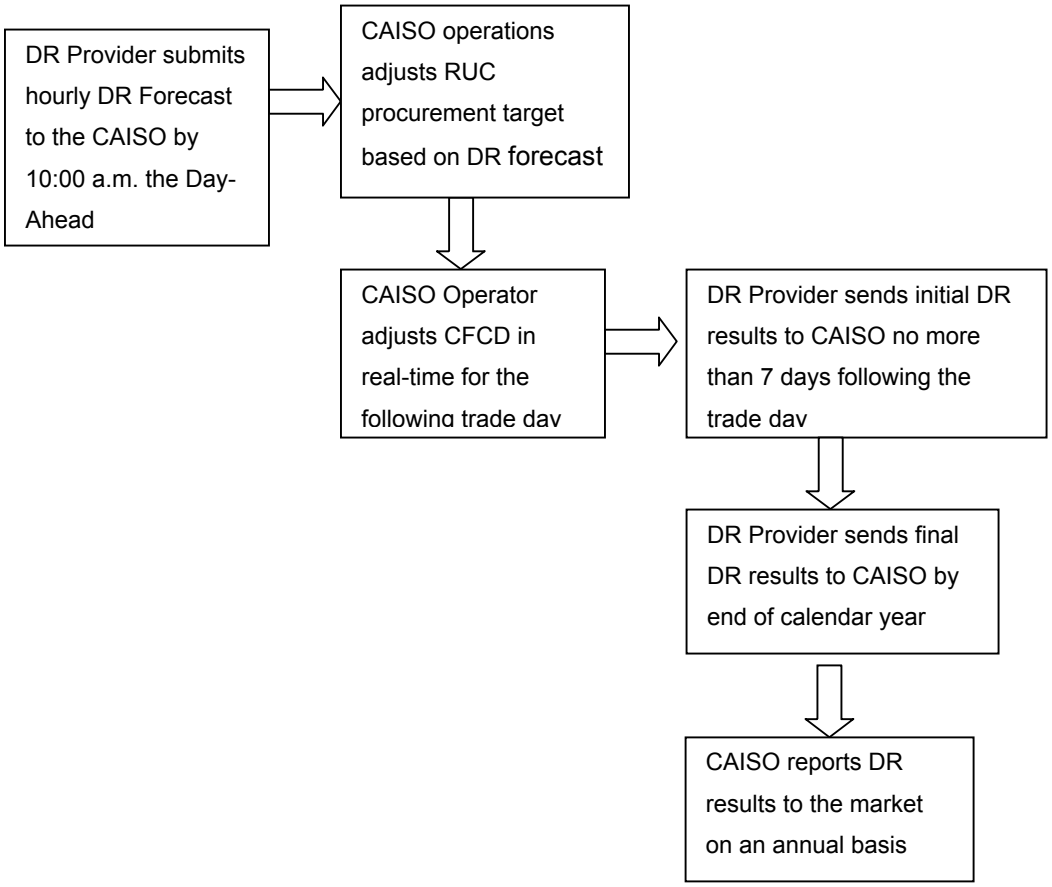
2.1 Process for Day-Ahead Programs

The following sections describe in detail the process for how Day-Ahead Demand Response Programs will participate and be accounted for in the CAISO markets for MRTU Release 1.

The overall process is shown graphically below. Each box that represents a process is explained in detail in the sections that follow:

[2] Other models for how demand response resources are delivered to the CAISO may evolve with time, e.g. the Curtailment Service Provider model used in some eastern ISOs; however, no changes to the Scheduling Coordinator model are contemplated at this juncture given regulatory policy, settlement, and technical barriers that must first be addressed.

Process Overview Day-Ahead Programs:



2.2 Submission of Demand Response (DR) Forecast

Since Demand Response resources will not participate in the CAISO market in Release 1 through an explicit market bid, the CAISO will need to be notified via a manual process using an Excel spreadsheet when a Demand Response Provider plans to call on a DR Program. Each Demand Response Provider will submit a spreadsheet to the CAISO. The DR forecast is a best estimate by the Demand Response Provider based on historical performance and other factors. In the future these estimates may be standardized to be based on an agreed upon load impact protocol that is approved by the CPUC as described in Section 5. The forecast is broken out by Demand Response Program by hour. In the future, the Demand Response Forecast will also be required to be broken out by RUC Zone. Initially, in 2008, the RUC zones will consist only of the UDC areas and MSS areas. Therefore,

the Demand Response forecast will be required by UDC area and will not need to be defined more granularly.

In the future as the CAISO's forecasting ability improves and becomes more granular there may be modifications to the existing RUC zones. These modifications will be communicated to stakeholders and the BPM for Market Operations will be updated with the new information. Sufficient time will be provided for the Demand Response Providers to adjust their systems and programs to provide this information by the new RUC zones. Once the CAISO's RUC zones become more granular, it will be required to submit the Demand Response forecast broken out by specific RUC Zone rather than the larger UDC area so the RUC procurement target can be adjusted based on the location of the Demand Response within the specific RUC Zone. The Daily DR Forecast Spreadsheet will be updated as these changes are made.

The CAISO has defined the following RUC Zones for MRTU Release 1:

- PG&E UDC
- SCE UDC
- SDG&E UDC
- NCPA MSS
- Anaheim
- Pasadena
- Azusa
- Banning
- Colton
- Riverside
- Vernon
- State Water Project

The process for submitting the Demand Response Forecast to the CAISO is as follows:

1. Each day that a Demand Response Provider is planning to call a DR program, it will fill out the Excel spread sheet "DR Price Responsive Program Forecast.

2. The spreadsheet should include all of the Demand Response Provider's Day-Ahead and Day-Of Price Responsive Programs even if they are not being called. If a Day-Ahead DR event is called, the Demand Response Provider will fill out the data that pertains the to the specific DR Program that will be called no later than 10 a.m. the Day-Ahead which corresponds to the Day-Ahead Market close time.

Example of Demand Response Forecast

Event Date	September 4, 2007							
Demand Response Provider	Load Curtailment Inc.							
Programs	Program Type	# of Accounts	Trigger	Date/Time Published	HE12 MW	HE13 MW	HE14 MW	HE15 MW
Demand Bidding Program	Day Ahead	225	Heat Rate Exceed 15K BTU	9/3/2007 9:02		40.2	25.4	32.5
Critical Peak Pricing Program	Day Ahead	42	Heat Rate Exceed 15K BTU	9/3/2007 9:02		25	25	40
Capacity Bidding Program	Day Ahead		Heat Rate Exceed 15K BTU					
Third Party Contract	Day Of		CAISO Flex Alert					
Demand Bidding Program	Day Of		CAISO Stage 1					
Capacity Bidding Program	Day Of		Heat Rate Exceed 15K BTU					
Total Price Response MW						65.2	50.4	72.5

3. Email Daily DR Forecast to the following CAISO email addresses:

Shift Supervisors: CISOSS@caiso.com or ShiftSupervisors@caiso.com

Day-Ahead Market: CAISOMktOps@caiso.com

Hour-Ahead Market: MarketOpsHourAhead@caiso.com

Also cc: JGoodin@caiso.com;GPerez@caiso.com;BSK@cpuc.ca.gov

Please see Attachment A for the DR Price Responsive Program Forecast Spreadsheet.

2.3 Accounting for Demand Response in the RUC Process

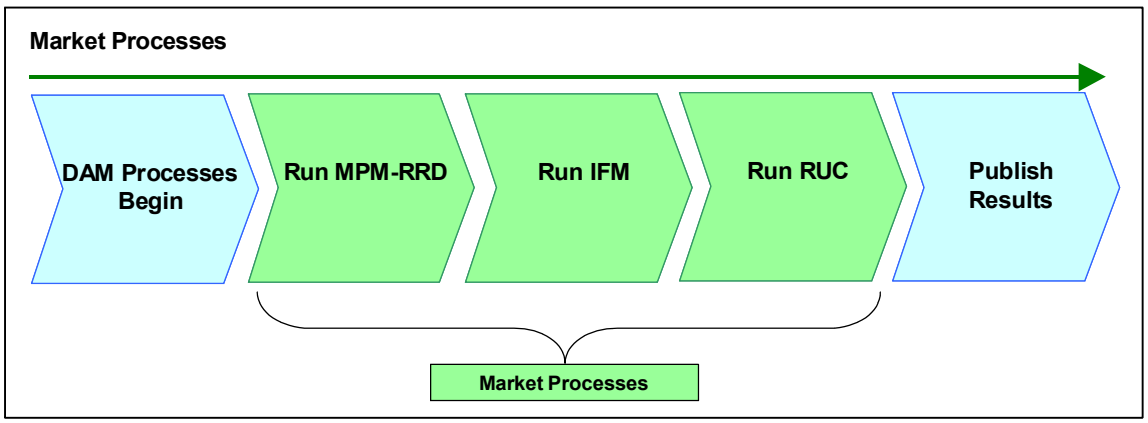
The purpose of the RUC (Residual Unit Commitment) is to procure additional capacity in the Day-Ahead Market that is required to meet the CAISO forecast of CAISO demand above what was committed in the Integrated Forward Market (IFM). The RUC process runs after the IFM is complete. See *Figure 1* below for CAISO Day-Ahead processes. The RUC process is based on specific requirements for serving expected CAISO Demand less any Demand scheduled in the IFM. These requirements are embedded in the RUC procurement target which is based on the CAISO Forecast of CAISO Demand (CFCD) and are established prior to the RUC run. The RUC procurement target is based on the difference between CFCD and the IFM Energy Schedule for each Trading Hour of the next Trading Day

The RUC process determines any incremental unit commitments and procures capacity from RUC Availability Bids to meet the RUC procurement target. Capacity selected in this process is awarded RUC Availability, and is required to be bid in and made available to the Real-Time Market.

The RUC procurement target is manually configurable by the CAISO operator and may be adjusted up or down based on various requirements.

Please see the *"BPM for Market Operations"* section 6.7.2 for a description of situations where the RUC procurement target may be adjusted up or down by the CAISO operator. The BPM for Market Operations may be accessed at the following link: http://www.caiso.com/1c0f/1c0fec1830fa0.doc

Figure 1 – CAISO Day-Ahead Market Processes



Since Demand Resources, other than Participating Load, will not explicitly participate in the market in MRTU Release 1, the CAISO will manually adjust the RUC procurement target by adjusting the CFCD in the relevant RUC Zone based on the Day-Ahead Demand Response Forecast submitted by the Demand Response Providers' as described in Section 2.2 above. The RUC Procurement Target will be adjusted based on the MW quantity of forecasted DR submitted to the CAISO. The accounted for Demand Response will allow the CAISO to adjust the RUC procurement target downwards resulting in less RUC procurement. The CAISO must receive the Demand Response forecast by no later than10:00 a.m. the Day-Ahead in order to adjust the RUC

Procurement Target. As described in Section 2.4 below, if the Demand Response forecast is received after 10:00 a.m only the CFCD for the Real-Time market will be adjusted for each hour the program is forecasted to be initiated.

Any changes to the RUC Procurement Target and reasons for the change will be logged by the CAISO Operator and communicated to the market in the form of a report that will be posted on the CAISO website. It is still to be determined the format of the report and how often it will be posted. This guide will be updated with more detailed information when it becomes available.

2.4 Accounting for Demand Response in the Real-Time Market Unit Commitment Processes

The Real-Time Market ("RTM") consists of three processes working together: STUC, RTUC and RTED. Since non-participating load bids are not accepted into the RTM, the RTM and its processes use the CAISO Forecast of CAISO Demand (CFCD) to clear with supply in each of the processes. Please see Figure 2 below for a description of the CAISO Real-Time processes.

Figure 2 – CAISO Real-Time Processes

Element	Acronym	Detail
Market Power Mitigation	MPM	Applies to all Bids received by T-75 before the operating hour
Hour-Ahead Scheduling Process	HASP	Executes at T – 67.5 and looks at the next Trading Hour: -Pre-dispatches Non-Dynamic System Resources -Pre-dispatches AS on the interties -Provides Advisory Schedules in 15-minute increments
Short-Term Unit Commitment	STUC	Executes hourly at T – 52.5. Looks ahead 4.5 hours to meet the CAISO demand forecast in each 15-min interval and commits Short and Medium Start Units if commitment decision can not be postponed for the next STUC/RTUC execution. Otherwise commitment decisions are advisory.
Real-Time Unit Commitment	RTUC	Executes every 15 – min at the middle of each quarter of the hour. Looks out between four and

		seven 15-minute intervals to ensure there is sufficient Capacity to meet the Demand. • Commits and de-commits Short Start and Fast Start Units • Procures additional AS
Real-Time Economic Dispatch	RTED	Executes every 5 minutes to meet the Imbalance Energy requirement

Since the CAISO generates new load forecasts for the RTM, the Demand Response MWs that were forecasted and accounted for in the RUC procurement target in the Day-Ahead market will be accounted for in Real-Time by reducing the CFCD for the hours that the Demand Response Program will be initiated. This ensures that the DR is carried through and accounted for when the CAISO commits additional generating units in the RTM. For example, if a forecast for a Day-Ahead DR Program is submitted to the CAISO for trade day tomorrow for hour ending 12 through hour ending 17 the CAISO operator would adjust the CFCD for the Real-Time market for the same hours. The real-time processes run continuously so in this example assuming that T is 12:00 pm which is the first hour of the DR Program, the HASP process when it runs at T-67.5 looking out a trading hour in the future would be performing the hourly pre-dispatch of resources beginning 10:53 a.m. for hourly pre-dispatch of units starting from 12:00 p.m. (T) to T + 60 (1:00p.m.) The STUC process would run beginning at T – 52.5 (11:12 a.m.) for that same trade hour and would be committing units for the time horizon T – 15 minutes (11:45 a.m) through T + 240 (4:00 p.m). Therefore adjustments made the CFCD for hour ending 12 through 16 would be taken into account for this run and subsequent runs of the HASP and STUC processes. If the adjustment to the CFCD were made well in advance ,the STUC could see this adjustment to the CFCD as early as approximately 7:08 a.m. for Trading hour ending 7 looking out over a time horizon for unit commitment of T – 15 (7:45 am) to T + 240 (12:00 pm).

Depending on system conditions and the quantity of Demand Response provided the adjustment to the CFCD may or may not result in a change to Real-Time unit commitment.

3 Day-Of Price Responsive Demand Response Programs

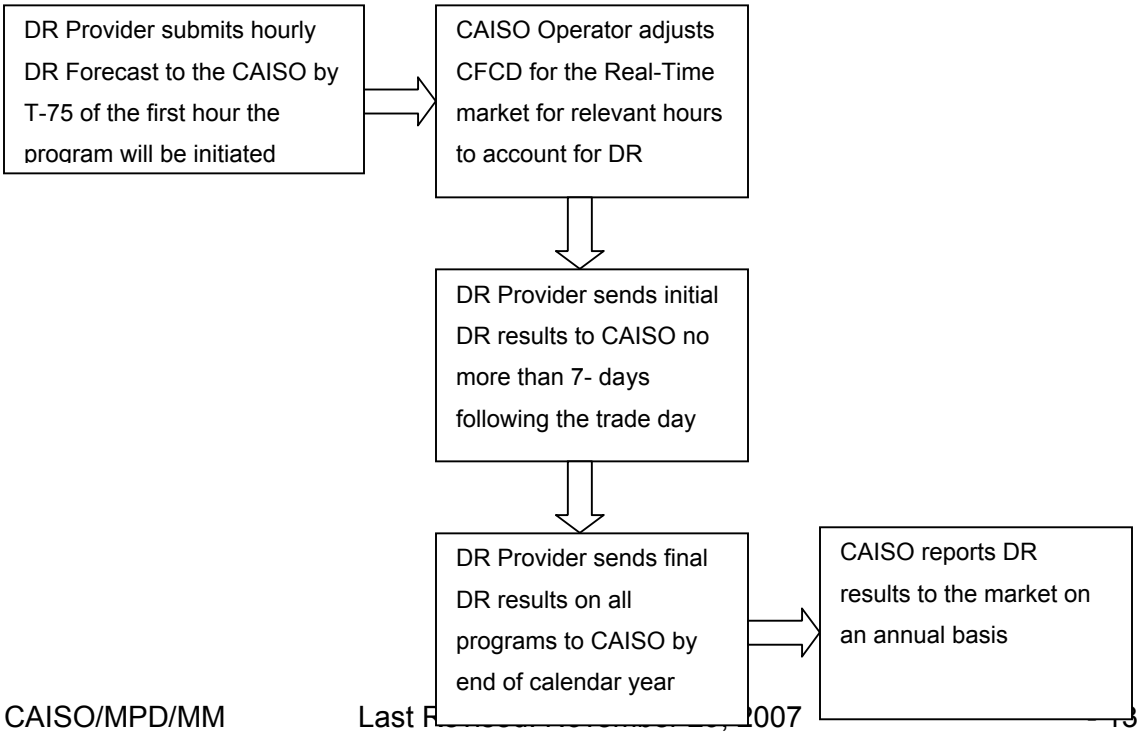
Day-Of Price Responsive Demand Response Programs are initiated by Demand Response Providers and may be initiated based on CAISO system conditions or other specific triggers such as forecasted load, expected heat rate indicator, forecasted high prices, CAISO Alerts or Warnings, forecasted or actual temperature, etc. CAISO declared system emergencies are covered under the Emergency Programs described in section 6 below.

Under Day-of Price Responsive Programs, customers are notified the same day the event will occur and, depending on the program, are given as much as 3 hours notice to as little as 15 minutes notice to curtail load.

The following sections describe in detail the process for how Day-Ahead Demand Response Programs will participate and be accounted for in the CAISO markets for MRTU Release 1.

The overall process is shown graphically below. Each box that represents a process is explained in detail in the sections that follow:

Process Overview – Day-Of Programs



3.1 Process for Day Of Programs

Demand Response Providers will fill out the DR Price Responsive Program spreadsheet with the relevant data for the Day-Of Program or programs being called and e-mail to the CAISO following the same process described in Section 2.2 above as soon as possible after an event is triggered, but no later than the Trading Hour minus 75 minutes (Real-Time Market close time).[3]

Demand Response Providers will report actual results to the CAISO using the process described in Section 5 below.

3.2 Adjustments for Day-Of Programs in the Day-Ahead and Real-Time Markets

The CAISO will adjust the CFCD based on the DR Forecast in Real-Time no later than T – 75 minutes for each hour that a program is scheduled to be initiated. This timing corresponds to the Real-Time Market close time. Depending on when the DR forecast is received the CAISO will adjust the CFCD for all hours or only a portion of hours the DR program is scheduled to be initiated. In order to adjust all hours the DR forecast will need to be received by the CAISO 75 minutes prior to the top of the first hour the program will be initiated. Any adjustments made to the CFCD either up or down will be logged by the CAISO operator. If conditions are such that a Demand Response Provider knows they will initiate a Day-of Program by 10:00 a.m. the Day-Ahead and sends that Demand Response forecast to the CAISO, the CAISO will adjust the RUC procurement target in the Day-Ahead Market as well as the Real-Time CFCD for the following day to account for the demand response. As described in Section 2.4 above, the real-time processes run continuously so the earlier the adjustment to the CFCD can be made will allow it to impact the various real-time processes that commit units over a longer time horizon such as the STUC and RTUC.

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[3] For example, Trade Hour 10 begins at 0900 and ends at 1000. As such, trading for Trade Hour 10 ends at 0745, i.e. T-75 minutes before the Trade Hour.

4 Emergency Programs

Emergency Programs, also known as Interruptible or non-firm programs, are triggered based upon a CAISO declared Stage 2 or Stage 3 emergency or for a local transmission emergency. These programs may be initiated by the Demand Response Provider themselves or by request from the CAISO.

4.1 Process for Emergency Programs

Demand Response Providers will fill out the spreadsheet entitled DR Emergency Program Forecast shown in Attachment B, and e-mail to the CAISO following the process described in Section 2.2 above as soon as possible after an event is triggered.

The CAISO will continue to follow the process defined in CAISO Operating Procedure No E-511 when making a request to a Demand Response Provider to trigger an Emergency Program.

Since emergencies are unpredictable and emergency responsive programs are dispatched as a last resort grid reliability measure, the CAISO does not intend to adjust the RUC Procurement Target or the Real-Time CFCD to account for the Demand Response provided by these programs.

Estimated actual DR response will be recorded in a separate spreadsheet titled “DR Expected Results and submitted to the CAISO as described in Section 5.1 below.

5 Load Impact Protocols

Demand Response performance is determined by the Demand Response Provider based on the difference between the meter read and the calculated energy baseline. Currently, load impact protocols used to determine baselines may differ by program type and/or by the three primary Demand Response Providers, PG&E, SCE, and SDG&E. In the near future, there will likely be a need to agree to a set of load impact protocols applicable to determining Demand Response Program performance for CAISO operational use and purposes. This issue of appropriate and applicable load impact protocols is currently being addressed by the CPUC in the DR Rulemaking (R.07-01-041) proceeding.

For the purposes of reporting DR Performance to the CAISO on Day-Ahead and Day-Of Programs the three main Demand Response providers have agreed to use a 3 in 10 baseline where the hourly average is based on the three (3) highest energy usage days of the immediate past ten (10) similar days. The three (3) highest energy usage days are those days with the highest total kilowatt hour usages during the program hours. The past ten (10) similar days will include Monday through Friday, excluding holidays and will additionally exclude days when the customer was paid to reduce load on an interruptible or other curtailment program or days when rotating outages were called

These baseline methodologies will be further refined in the future.

5.1 Actual DR Performance

The actual DR response, based on application of the appropriate baseline methodologies (see Section 5), will be reported to the CAISO in a separate spreadsheet titled “DR Program Results”. This spreadsheet will contain results for all programs by event date and by hour. This information will be sent to the CAISO within 7 days of the trade day after the event or as soon as possible thereafter.

If additional updates are required following the 7 day report to correct any significant variances, Demand Response providers will send an update to the CAISO and note the date of the revision in the template.

At the end of the calendar year Demand Response Providers will re-calculate and send final data for all programs by event date for the entire year to the CAISO using the same DR Program Results spreadsheet. The goal is for the data reported to the CAISO on DR Results to be consistent with what is reported to the CPUC and other regulatory agencies.

Sample of DR Program Results Spreadsheet

Demand Response Provider	Load Curtailment Inc.											
Programs	Event Date	Program Type	Trigger	# of Accounts	Event Start Time (PDT)	Event End Time	Last Modified Date	HE 01 MW	HE 02 MW	HE 03 MW	HE 04 MW	HE 05 MW
Demand Bidding Program	6/7/2007	Day Ahead	Heat Rate Exceed 15K BTU	225	12:00	20:00	6/18/2007			40.2	25.4	32.5
Critical Peak Pricing Program	6/7/2007	Day Ahead	Heat Rate Exceed 15K BTU	42	12:00	18:00	6/18/2007			8.1	8.4	8.6
Capacity Bidding Program	6/7/2007	Day Of	Heat Rate Exceed 15K BTU	16	14:00	16:00	6/18/2007					1.5
Third Party Contract	6/10/2007	Day Of	ISO Flex Alert	97	15:00	20:00	6/18/2007					
I6	6/12/2007	Emergency	ISO Stage 2	325	14:22	16:55	6/18/2007					352.0

Please see Attachment C for the DR Program Results spreadsheet.

6 Reporting DR Results to the Market

The CAISO proposes to publish the Demand Response results annually at the end of the calendar year after receiving the final DR results from providers.

The report would include the hourly DR forecasts, the MW reduced from the CAISO Forecast (CFCD), if applicable, and the final DR results. As Demand Response resources continue to play a larger role directly in the CAISO markets this report will be enhanced to show more data.

The CAISO will take appropriate steps in the publishing of the DR results to maintain the confidentiality of contracts. This includes having the DR Providers review the report before it is published.

6.1 Estimate of Demand Response Available MW

The Demand Response providers shall provide the CAISO with an estimate of the MW available in each DR program as necessary. The information shall be included with the Demand Response Forecast as an additional sheet in the workbook. This is for monthly planning information purposes only. The MW actually submitted when a DR program is called under Sections 2, 3 and 4 will supersede any estimate in this monthly planning submission. The document will also provide information on each of the programs including event limits (hours per call, calls per month and year, notification time, etc.)

7 Future Market Enhancements for Demand Response

The CAISO has formed a Demand Response Post Release 1 working group as discussed in Section 1 above, to address the future enhancements that will allow Demand Response resources to participate directly in the CAISO markets as dispatchable resources.

The design that is under consideration will allow demand resources, also known as Participating Load, to submit three-part bids similar to a generators' start-up, minimum load and multi segment energy bid that would consist of load curtailment cost, minimum

load reduction cost, and a multi segment load energy bid. Under this full dispatchable demand resource model, the Participating Load will have the opportunity to participate directly in the Day-Ahead energy market, RUC, Non-Spinning Reserve, and the Real-Time Imbalance Energy Market.

For more information on future enhancements associated with Demand Response please refer to most recent Draft Straw Proposal entitled " Post Release 1 MRTU Functionality for Demand Response" posted on the CAISO website at the following link: http://www.caiso.com/1c91/1c919e0e11c30.pdf

8 References

Other documents that provide background or additional detail directly related to the *CAISO Demand Response Resource User Guide* are:

- BPM for Market Operations
- 5 – Year Market Initiatives Road Map
- Residual Unit Commitment Zones under MRTU
- Issue Paper – Post Release 1 MRTU Functionality for Demand Response
- CAISO Operating Procedure No E- 511
- The Market 201 Training Workbook

8.1 CAISO Contacts

Please contact Margaret Miller at mmiller@caiso.com or 916 608-7028 or John Goodin at jgoodin@caiso.com or 916 608 -7154 with questions or comments on the *Demand Response Resource User Guide.*

9 Glossary of Terms

Some but not all of the terms provided herein are defined terms in the CAISO Tariff. These tariff defined terms have been flagged with a (T). Other terms have been defined for the purpose of this user guide only.

Term	Definition
CAISO Forecast of CAISO Demand (CFCD)	The forecast of CAISO Demand made by the CAISO for use in the CAISO Markets

	(T)
Day-Ahead Demand Response Program	A program to provide a reduction in Demand that is initiated the day-ahead of the actual event
Day-Of Demand Response Program	A program to provide a reduction in Demand that is initiated the same day of the event.
Demand Response (DR) Forecast	a MW quantity of Demand Response expected to be delivered
Demand Response Program	A program to provide a reduction in Demand in response to specified conditions or circumstances, typically implemented by an LSE. (T)
Demand Resource Provider	Any entity that provides demand response programs, curtailable demand or services.
Demand Response Provider	A certified SC that submits DR data to the CAISO.
Demand Response (DR) Results	Actual MW Quantity of Demand Response delivered based on baseline and used to compare against DR forecast
Emergency Demand Response Program	Demand Response Programs that are initiated as a result of a local transmission emergency or when the CAISO calls a Stage 2 or Stage 3 emergency
Hour-Ahead Scheduling Process (HASP)	The process conducted by the CAISO beginning at seventy-five minutes prior to the Trading Hour through which the CAISO conducts the following activities: 1) accepts Bids for Supply of Energy, including imports, exports and Ancillary Services imports to be supplied during the next

	Trading Hour that apply to the MPM-RRD, RTUC, STUC, and RTD; 2) conducts the MPM-RRD on the Bids that apply to the RTUC, STUC, and RTD; and 3) conducts the RTUC for the hourly pre-dispatch of Energy and Ancillary Services. (T)
Integrated Forward Market (IFM)	The pricing run conducted by the CAISO using SCUC in the Day-Ahead Market, after the MPM-RRD process, which includes Unit Commitment, Ancillary Service procurement, Congestion Management and Energy procurement based on Supply and Demand Bids (T)
Participating Load	An entity, including an entity with Pumping Load, providing Curtailable Demand, which has undertaken in writing by execution of a Participating Load Agreement to comply with all applicable provisions of the CAISO Tariff, as they may be amended from time to time. (T)
Residual Unit Commitment (RUC)	The process conducted by the CAISO in the Day-Ahead Market after the IFM has been executed to ensure sufficient Generating Units, System Units, System Resources and Participating Loads are committed to meet the CAISO Forecast of CAISO Demand. (T)
Real-Time Unit Commitment (RTUC)	An application of the RTM that runs every 15 minutes and commits Fast and Medium-Start Units using the SCUC to adjust from Day-Ahead Schedules and HASP Intertie Schedules. (T)
Real-Time Economic Dispatch (RTED)	The mode of the Real-Time Dispatch that

	will optimally dispatch resources based on their Energy Bids, excluding Contingency Only Operating Reserves except when needed to avoid an imminent System Emergency. (T)
RUC Procurement Target	quantity to be procured in RUC based on CFCD
Scheduling Coordinator	An entity certified by the CAISO for the purposes of undertaking the functions specified in Section 4.5.3. of the CAISO Tariff (T)
Short Term Unit Commitment (STUC)	The Unit Commitment procedure runs at approximately T-52.5 minutes for a Time Horizon of approximately five (5) hours. The STUC determines whether some Medium Start Units need to be started early enough to meet the Demand within the STUC Time Horizon using the CAISO Forecast of CAISO Demand. The STUC produces a Unit Commitment solution for every 15-minute interval within the STUC Time Horizon and issues binding Start-Up instructions only as necessary. (T)