California ISO

SIBR - Scheduling Coordinator Users Guide

DRAFT

March 2, 2018

Revision History

Date	Version	By	Description
3/2/2018	6.4	WT	Update added for grid expansion and Favorites.
2/2/2018	6.3	WT	Update with WebSDK 3.4 UI layout and functions for SIBR application.
1/18/2018	6.2	WT	Update with WebSDK 3.4 UI layout and functions for SIBR bidding. DRAFT in progress

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			up to section 5 Convergence Bids.
12/28/2017	6.1	WT	Update with WebSDK 3.4 UI layout and functions for SIBR bidding. DRAFT in progress up to section 4 Trades.
12/14/2017	6	WT	Update with WebSDK 3.4 UI layout and functions for SIBR bidding. DRAFT in progress up to Creating Bids.
6/15/2016	5.5	DC	Updated section 3.4 for ESDER Project Fall 2016 Project (State of Charge - Daily Component)
5/27/2016	5.4	WT	Updated section 1.2.2 and 3.2 for Daily Components to add re-bidding in RTM. Added Figure 27a to section 3.4 for RTM tab Daily Components.
10/1/2015	5.3	WT	Added GHG bid component to the Hourly Display and removed it from Day-Ahead. Added GHG Bid Component. Added note for IE compatibility setting.
6/5/2015	5.2	WT	Added GHG bid component and removed BSAP (BSAP has a separate User Guide).
4/15/2015	5.1	WT	Added CB On Ties UI functionality.
11/4/14	5.0	WT	Fall 2014 Release Functionality added. (Wheeling, Transaction bids) EIM Base Schedule.
5/14/13	4.0	WT	Functionality documentation added from post Go-Live through Pay for Performance Regulation Mileage.
8/24/09	3.4	WT	Capacity Limit Ind Flag on EN Product for RA.
12/7/07	3.3	WT	Review of Trades Status

			Removed outdated info. Added ETC scheduling screenshot.
11/20/07	3.2	WT	Updated for IMS Update 2
10/11/07	3.1	WT	Updated for IMS Update 1
2/28/07	3.0	MM	Added information on Indicator Viewer Screen. Added screen shots for uploading bids and trades

Contents

1 Introduction

In response to the California energy crisis of 2000 and 2001 the California Independent System Operator (CAISO) management initiated the MRTU project to:

- Take a comprehensive view of the changes needed in the structure of California's electricity markets with a focus on those markets that are operated by the CAISO in performance of its core functions, and
- Develop an integrated program of proposed market design changes that will address current problems in a systematic fashion and create a framework for a sustainable, workably competitive electric industry that benefits all California consumers and is compatible with the rest of the western region.

One part of the CAISO system is the Scheduling Infrastructure Business Rules (SIBR) component. From the viewpoint of a Scheduling Coordinator (SC) who interacts with the system, this component:

- Accepts bids and trades for energy and energy-related commodities from Scheduling Coordinators that are certified to interact with CAISO,
- Ensures that those bids and trades are valid and modifies bids for correctness when necessary.
- Enters those bids and trades into a database for processing by other components of CAISO's management systems, and
- Provides required feedback in the form of messages displayed to SCs concerning bids and trades that have been submitted.

This manual will instruct a Scheduling Coordinator (SC) in the usage of the California ISO Software Infrastructure Business Rules (SIBR) web user interface for entering and submitting bid data.

This manual is intended to be used by persons who wish to use the web-based user interface supplied by the CAISO system to submit bids and trades for energy and energy-related commodities and services

The organization of this manual is as follows:

- Chapter 1 is introductory material. Notably, it contains an overview of the process that the California ISO (and the software system that has been put into place by CAISO) follows in accepting and evaluating bids. This material is useful in understanding how bids are processed including bid statuses, the order in which processing steps occur, etc. The chapter also explains how to access the system.

All users of the system should read this chapter.

- Chapter 2 describes basics of the user interface used to enter bids. All user interface screens are constructed of certain basic elements; they are described here.

All users who will interact with the SIBR User Interface should read this chapter.

- Chapter 3 discusses the components of bids and how to enter them. It also describes how to submit bids, how to view bid status as a bid progresses through the system, how to cancel a bid, how to create a new bid to replace one that is already in the system, etc.

Personnel who enter, submit, or need to view the status of bids should read this chapter.

- Appendix A is a glossary. In this instance, the glossary is quite large in an effort to provide a common vocabulary for all persons involved in the bidding process.
- Appendix B contains flowcharts for both Day-Ahead and Real-Time bid processing. These are of interest to persons who wish to see the entire process described in a single diagram.

1.1 References

1.2 Overview

The following chapter will discuss how the bidding process works at the California ISO, using the software system that has been jointly designed by CAISO and Siemens and built by Siemens. Not only will we discuss how the process works, but we will also establish a common vocabulary for that discussion[1].

Note that the overview in this chapter is not intended to explain every detail of the process. It will, however describe the major steps in bid processing. The overview is in three sections:

- Theory: where we explain how the main flows in the process work.
- Practice: where we discuss in general terms how an SC interacts with the system via the user interface.
- FAQ: where we answer questions – some which have come from customers and some that we've made up ourselves on behalf of customers.

[1] This document includes an extensive glossary of terms and acronyms used in the context of the CAISO system.

1.2.1 Theory

1.2.1.1 Bids

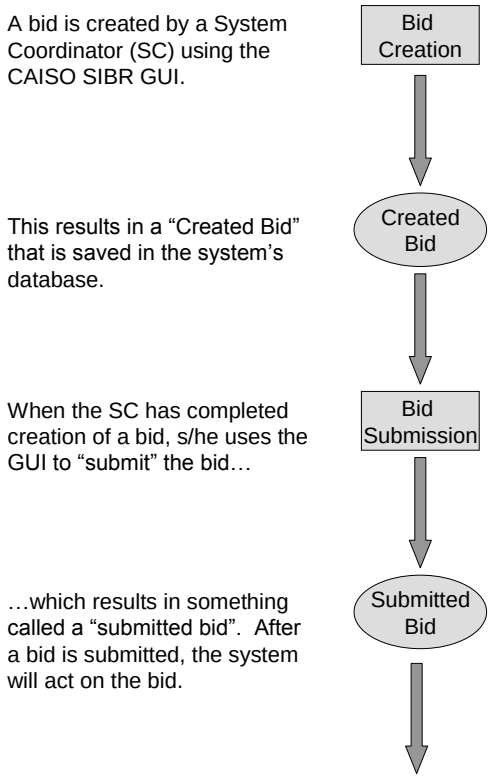
What is a "Bid"?

A bid is an "offer for the supply (or demand) of a market commodity for a specified market. The CAISO has adopted the use of a single energy curve for all services offered by a single resource. A bid in the CAISO SIBR system will contain all commodities and self-schedules being offered to a specified CAISO markets on a resource.

How is a Day-Ahead Bid Created & Submitted?

Figure 1 illustrates the process of creating and submitting a bid. In this case, we are discussing a bid for the Day Ahead Market. (Note that flowcharts for the complete Day Ahead and Real-Time processing flow are included in Appendix B.)

Figure 1: Day-Ahead Bid Creation & Submission



Although this process seems simple, there are important subtleties. Specifically, there is an important difference between "created bid" and "submitted bid". An SC uses the GUI to create a bid by entering values

for all the bid components. During this process, beyond some very simple validation (e.g., no alpha characters in numeric fields) and saving the bid in the database, the system takes little interest in the actual contents of the bid.

After the SC has created the bid, it is submitted by clicking a button on the bid creation page. At this point, the system queues the bid for validation by the "rules engine" and informs the SC that the bid has been submitted.

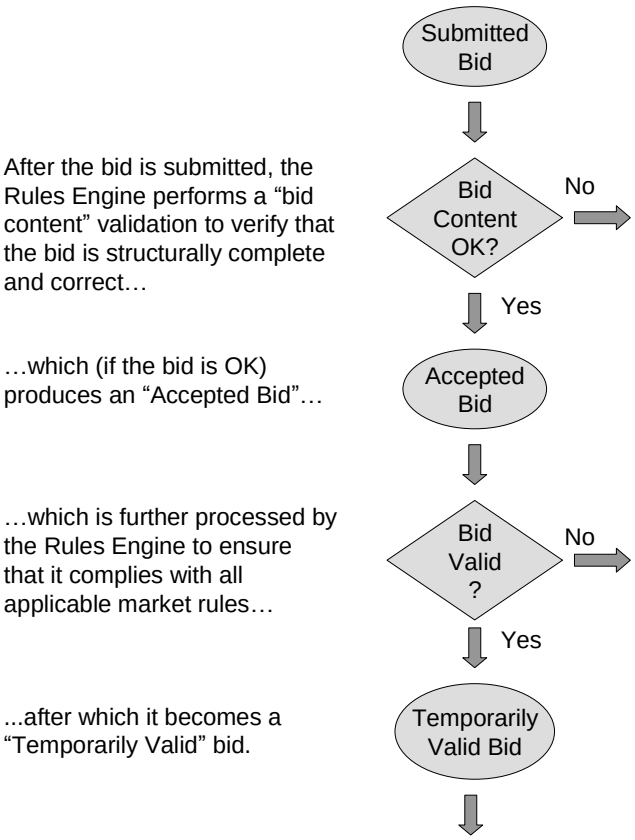
After a bid is submitted, the system maintains a complete history of the bid and actions performed. The SC can view the bid; it may also be used as the basis for creating another bid.

How is a Day Ahead Bid Validated?

Once an SC submits a bid, it is available for the system to validate. The SIBR Rules Engine performs validation. The SIBR Rules Engine is programmed with several hundred rules that are used to validate the bid.

Flowcharts for the complete Day Ahead and Real-Time processing flow are included in Appendix B.

Figure 2: Day-Ahead Bid Validation (Simplified)



The process of validating a bid actually takes place in multiple steps; however, these multiple steps are automatic and are seamless to the user. Figure 2 illustrates two of those steps:

- Content Validation determines that the bid adheres to the structural rules required of all bids. This includes such things as validating that all required components are present, the units or services contained in the bid actually exist, etc.
- If the Content check fails, the bid becomes a "Rejected Bid".
- After Content Validation succeeds, Bid Validation verifies that the various components of the bid adhere to the applicable market rules. If this validation passes, the bid becomes eligible to be used in a market.

These and all future bid processing steps can be said to be performed "in the background". This means that the system will not immediately inform the SC of errors. After the validation process has completed, the system remembers any errors; it will then inform the SC that validation has completed and will present error analysis to the SC. (If the SC has logged off, error analysis will be available the next time s/he logs on.).

If all validation up to this point passes, the bid becomes a "Temporarily Valid Bid". If validation fails, the bid becomes an "Invalid Bid". (For the sake of simplicity, failure paths are not shown in Figure 2)

Day Ahead Bid Processing

So, now the system has a "Temporarily Valid Bid". Based upon market requirements and prior agreements, the bid may either be accepted as-is or modified by the system. Figure 3 shows the first portions of Bid Processing in flowchart form.

The system analyzes the Temporarily Valid Bid produced in Figure 2. Depending upon master file data, data contained in the bid and market rules, SIBR may automatically modify the bid to produce a valid bid that can be accepted into the designated CAISO market.

- If the bid is acceptable to the system as-is, it is called a Conditionally Valid Bid for dates beyond the latest Master File date, and would be a Valid Bid for the date the last Master File was received.
- If the bid is acceptable only after the system has automatically modified it, it is called a Conditionally Modified Bid for dates beyond the latest Master File date, and would be a Modified Bid for the date the last Master File was received. Some examples of when a bid would be modified by the SIBR system are as follows:
  - The Regulation Mileage Up or Down was not included in the submitted bid when a Regulation component did exist. SIBR will insert the Regulation Mileage bid at the default cost.
  - The energy bid curve range specified in a bid does not cover the Reliability Availability Obligation for the resource. SIBR will extend the energy bid curve to cover the additional capacity specified for the resource.

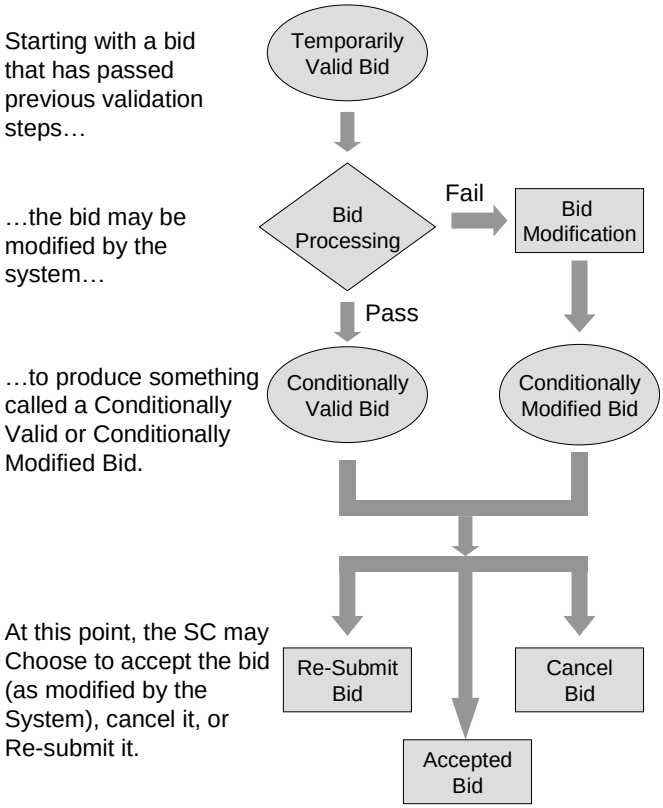
At this point, the SC has the option to view the bid and:

- Cancel the bid, in which case the bid is retained in the system database as a Cancelled Bid. Cancelled bids will not be further processed.
  - Note: Cancel is used for Market Accepted bids, those are bids that are in a Conditionally Modified / Modified or Conditionally Valid / Valid or MF Inserted status.

Do not use ‘Delete’ for Market Accepted bids, Delete is for bids that are in a ‘Create’, ‘Invalid’ or ‘Rejected’ status.

- Modify and re-submit the bid, in which case the original bid is retained in the system database as an Obsolete Bid. Obsolete bids will not be further processed. If the bid is re-submitted, processing begins again as shown in Figure 1. (Note that the GUI allows the SC to use a Conditionally Valid / Valid Bid or a Conditionally Modified / Modified Bid or MF Inserted as the basis for a new bid for re-submission.)
- Leave the Conditionally Modified / Modified or Conditionally Valid / Valid or MF Inserted bid as-is to be processed in the designated CAISO market.

Figure 3: Day-Ahead Bid Processing



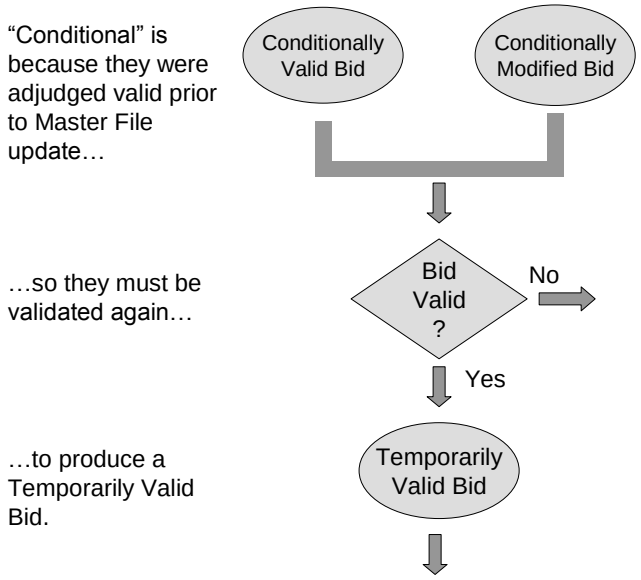
Master File Data and Conditional Status

Master File changes are introduced into the system once per day. Since Master File changes may affect bid acceptance, all bids must be re-validated after the final Master File update and before the designated trading period when the bid will take effect. This explains the use of the word "Conditionally" in our earlier discussion of Bid Processing. Bids for the Day-Ahead market may be submitted up to 7 days in advance. Therefore, a bid that is submitted on Monday afternoon for Thursday's Day Ahead Market that has a status of Conditionally Valid must be re-validated after the master file has updated each day with data for the next trading day to take into account any changes that may have occurred. Bids will retain the status of Conditional until the master file update has occurred for the designated trading period.

Validation After Master File Update

After the Master File has been updated, and the latest Gas Price Index and Commitment Cost adders have been received all "conditional" bids are re-validated via a process very similar to what we've seen previously, as illustrated in Figure 4.

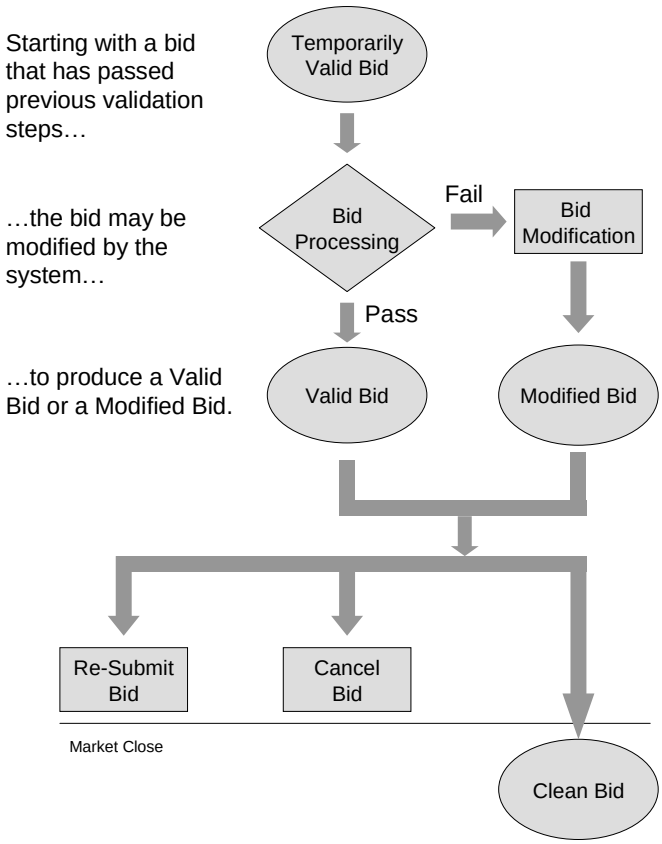
Figure 4: Bid Validation (After Master File Update)



Bid Processing After Master File Update

Also, after the Master File is updated, the Bid Processing steps are repeated, this time to produce either a Valid Bid or a Modified Bid.

Figure 5: Day Ahead Processing (After Master File Update)



As the illustration shows, this process is quite similar to the processing step that occurs before Master File update. Again, the system can either:

- Accept the bid as-is.
- Modify the bid.

This time, the bid is given a new title, either MF Inserted, Valid Bid or Modified Bid; any reference to "conditional" is gone, as the bid has now been processed with the Master File data that will be in use on the day for which the bid applies.

As in the prior case, the SC can view the bid. As before, the SC may:

- Re-submit the bid, in which case all validation steps and other bid processing are repeated.
- Cancel the bid.
- Allow the bid to stand.

As in all previous processing, if the operator re-submits or cancels the bid, it is retained in the system database but will not be processed further. It may however, be viewed by the SC and possibly used as the basis for future bids.

Real-Time Market Bids

Handling of Real-Time Market bids is quite similar to what was described earlier for day-ahead. The major difference derives from the fact that Real-Time bids are not submitted days before the target market period; therefore there is no requirement to process the bid before Master File Update and again after. However there are changes to Commitment Cost data for resources that are using a Proxy Cost option, and once the newest cost data is received for the next trading day, all Real-Time bids are revalidated using the most recent data to determine the correct cost. (Note that flowcharts for the complete Day Ahead and Real-Time processing flow are included in Appendix B.)

Generated Bids

In some cases, for certain generating resources, an SC may be required to bid in the full range of available capacity for that resource on a daily basis to the CAISO. If the SC fails to enter a market accepted bid for the resource, the system will create a bid on the SC's behalf. Such a bid will be created after market close (to avoid conflicting with any bid that the SC may enter) and will be based upon data in the Master File and the Resource Adequacy obligation data. This type of bid is called a Generated Bid. The relevant SC may view these bids, but since they are generated after market close, the SC may not modify them.

1.2.1.2 Trades

For a tutorial on Trades please use the link below: which is located on the Participate page under Application Access.

http://www.caiso.com/participate/Pages/ApplicationAccess/Default.aspx

Trade Tutorial -- note that Trade processing has not changed since the Market Redesign and Technology Upgrade (MRTU) was introduced.

http://www.caiso.com/Documents/SIBRInter-SCTrades_IST_Tutorial.pdf

1.2.2 Practice

In the last several pages, we have discussed how bids and a reference to how trades are validated and processed by SIBR. In the following chapter, we'll cover in general terms, the practical aspects of accessing the system, entering, submitting, and managing bids. The goal here is to understand the basic principles and processes – later chapters will address particulars such as which buttons to push and when.

1.2.2.1 Basic Display Layout

The SIBR UI with the latest features was developed for use with IE11 for support and testing. The SIBR UI will display in Chrome but is not supported when reporting any issues using the UI with any browser other than IE11.

Note for **IE11** users, using the latest SIBR UI all compatibility features must be turned off in order for the display to function.

In IE select 'Tools' and then select "Compatibility View settings", then remove any URL and deselect all options.

Please close the browser and restart.

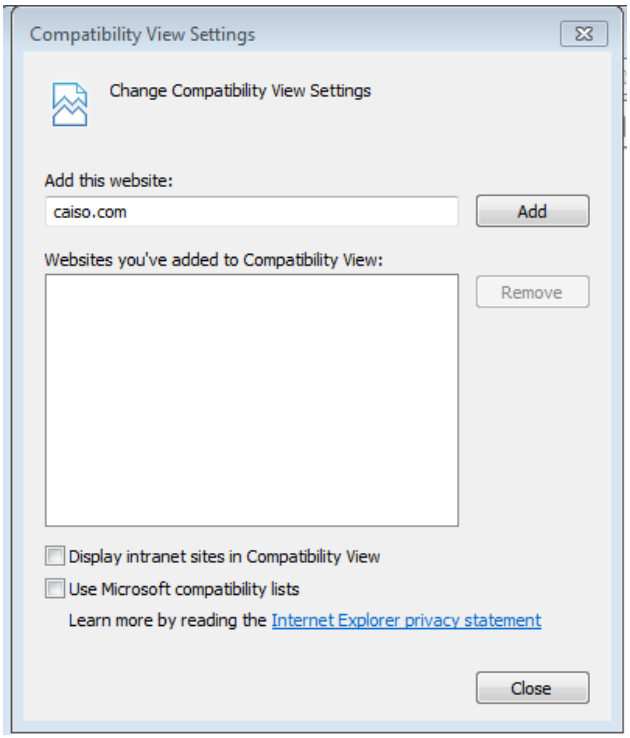


Figure 5 Compatibility View Settings.

1.2.2.2 Application Specific Menu

As stated previously, this document is concerned with entry, submission, and management of bids from the Bids tab. In this case, the Application-Specific menu will contain the following items based on Market Type and date selected:

- **Bid summary** This screen is used to submit or remove bids for the respective market. It is also used to view status of bids that have been submitted or are available for submission. There are sub-tabs below the Bid summary to view details on the selected bid(s).

  - Daily: This screen is used to enter (edit) those bid parameters that do not change for the entire trade day. Start-Up, Minimum Load and Transition Costs can be re-bid into the Real-Time Market.
  - Hourly: This screen is used to enter (edit) those bid parameters that may be different for each hour of the market period.
  - Product types: (Energy, Self-Schedules and Ancillary Services).

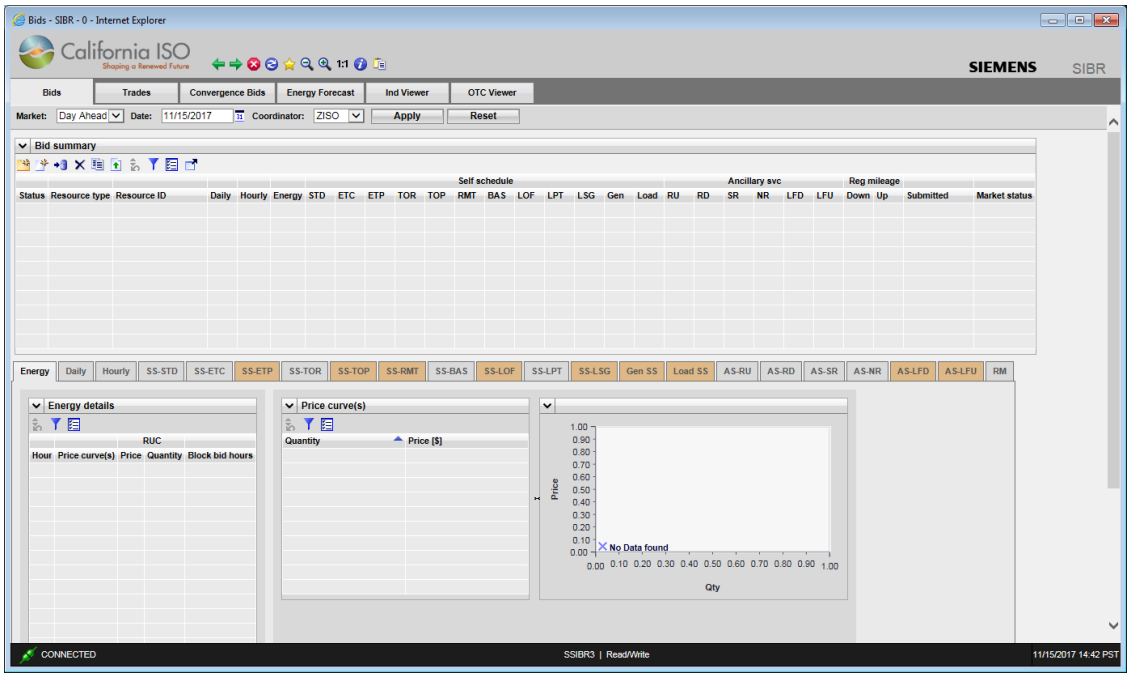


Figure 6 Display Layout Bids

Other Application-Specific menu tabs contain will contain the following items and displays for each tab that is on the application:

- **Trades**: An SC can create Trades for DAM and RTM
  - Manage DAM Trades
    - IST Physical
    - APN
  - Manage RTM Trades
    - IST Physical
    - APN
    - AS (Spin, Non-Spin, Regulation Up/Down)
    - UCT (no Product for Uplift)

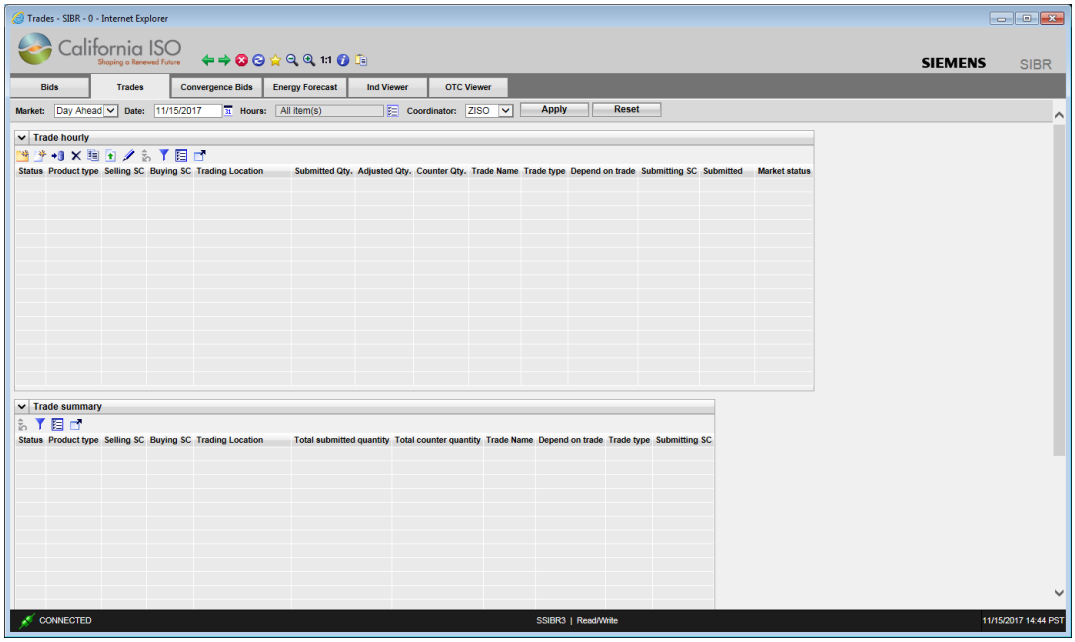


Figure 7: Display Layout Trades

- **Convergence Bids**: Screens accessible through this menu item are used to create, submit, and manage Convergence bids (also known as Virtual Bids) for a day-ahead market.

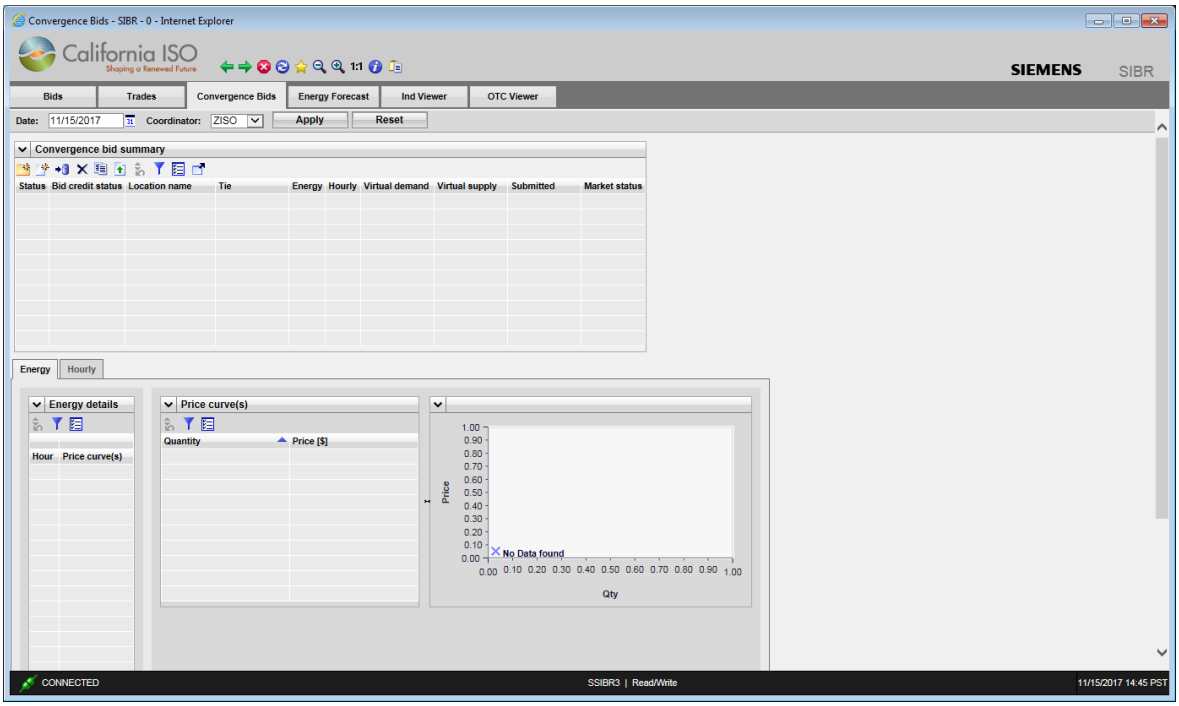


Figure 8 Display Layout Convergence Bids

- **Energy Forecast**: Screens accessible through this menu item are used to submit Energy Forecasts for Variable Energy Resources (VER) and Load Serving Generators (LSG).

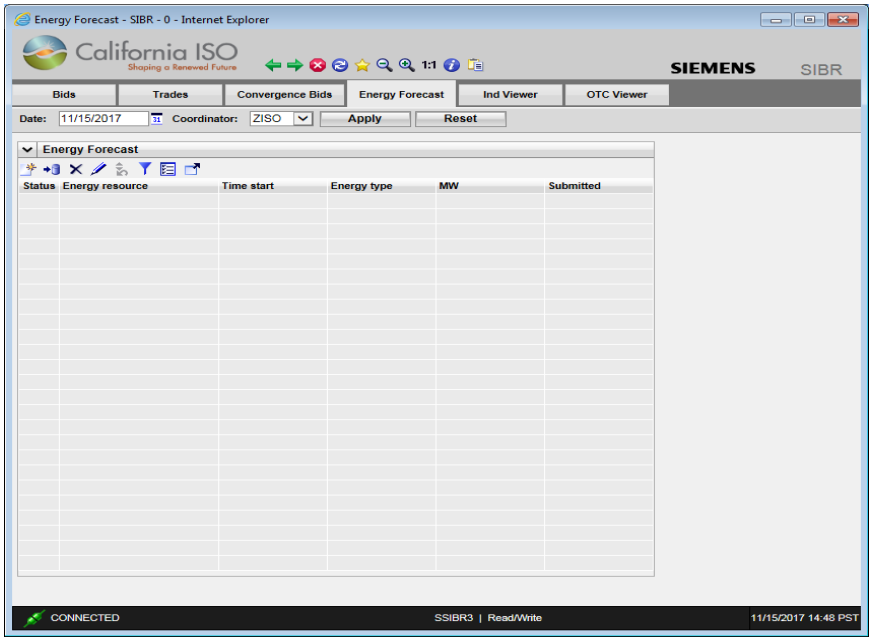


Figure 9 Display Layout Energy Forecast

- **Ind Viewer**: An SC can check imbalances on select resources that are in either the Day Ahead or Real Time Markets for balancing (ETC/TOR/WHL) and or priority (ETC/TOR).

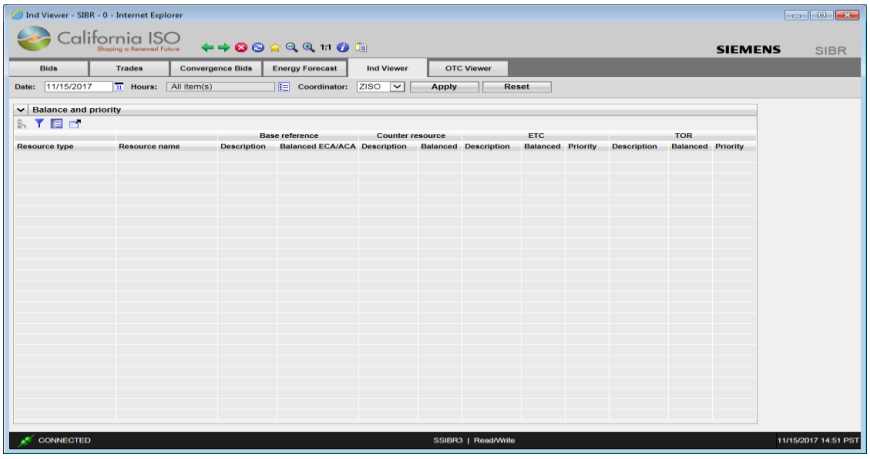


Figure 10 Display Layout Ind Viewer

- **OTC Viewer**: An SC can view by Interchange for a given date the Import and Export Limits received in SIBR and if there is an 'Isolated Tie Condition'. (condition when 0 limit exist)

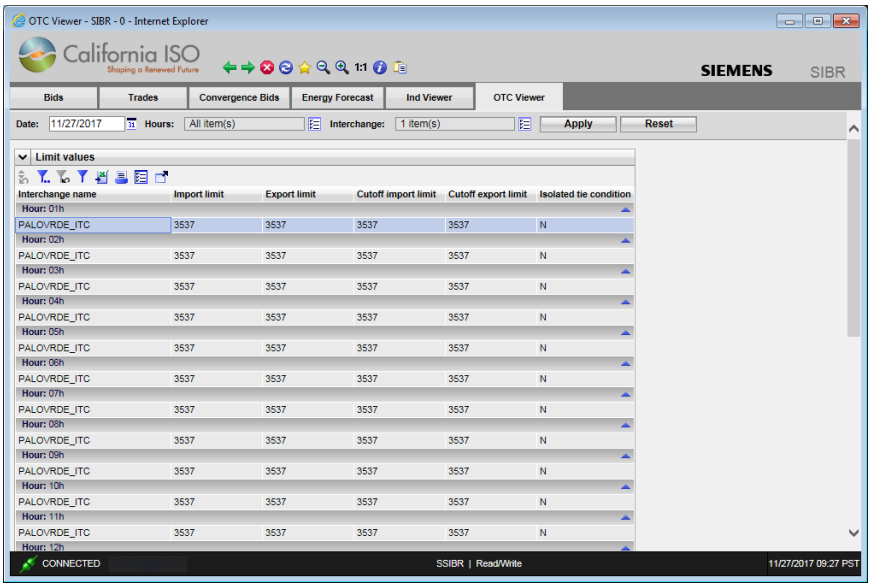


Figure 11 Display Layout OTC Viewer

- **Portfolios:** An SC can create bids (either from scratch or from another bid) and save them for future use. This capability is accessed from the Portfolio menu items.

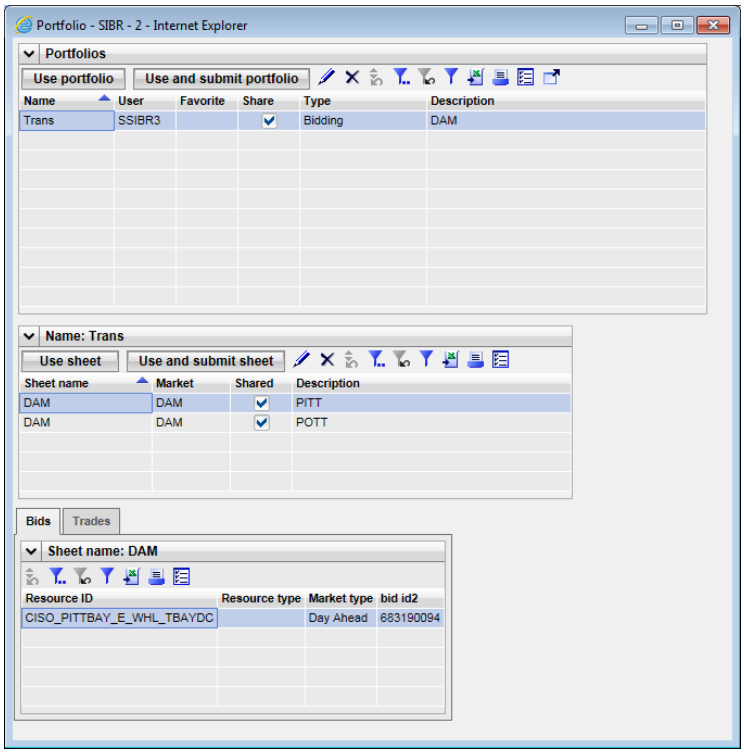


Figure 12 Display Layout Portfolio Management

1.2.2.3 More About Bids and Bid Contents

Components: A bid will contain up to three types of components:

- Daily Bid Components: These are components that are set for the entire trade day for the resource designated in the bid. They are entered either into the Day-Ahead or Real-Time Market. Examples of these types of bid components are Start Up Curves, Minimum Load Costs, State Transition (MSG only), Energy Limits, and Charge Limits (NGR only). Energy Limits and Charge Limits are only available in the DAM, the Startup and Minimum Load costs may be re-bid into Real-Time as long as the resource was not committed in the DAM.
- Product Bid Components: These components may be different for each hour of the market period of the bid in both DAM and RTM. An example of these types of bid components is energy bid curves as well as quantities and prices designated for Ancillary Services bid components and RUC. RUC is only available in the DAM.
- Miscellaneous Bid Components: These data components may differ between market types for the Day Ahead and Real-Time markets. This data is for Counter Resource for Wheeling, GHG components, Capacity Limits and Dispatch Options. Dispatch Options are only available in RTM.

Edit / Created

The system database provides a “scratchpad” area for bids while they are being prepared. Once bid data have been entered, clicking the Update button on the details page causes data to be saved to the database. A bid is not submitted for consideration by the system until an authorized SC formally submits the bid from the Summary screen. One of the benefits of this arrangement is that it is not necessary to enter a bid from start to finish in one session. Portions may be entered, the (incomplete) bid saved, completed at a future time (possibly by a different person), and ultimately submitted from the Summary screen.

Bid data entry pages allow the SC to enter data for multiple bids on the same page. For example, if an SC is responsible for bidding three generators, it is possible to view all three at the same time in the bid summary, more importantly for data entry purposes, to use the page’s input accelerators to minimize the amount of typing required within the details area.

2 Common UI Features & Navigation

There are a number of elements that appear on all (or many) GUI pages. We've already talked about some of them:

- Portal Menu
- Application Menu
- Logout and Help links.
- Application Content Area.

In this chapter, we'll talk about other common display elements and concepts.

Bids are submitted for a market. There are two market types:

- A Day-Ahead Market is basically one 24-hour[2] period. Bids for a Day-Ahead market may be submitted up to 7 days in advance of the target market date. Bids may be submitted until the "market close" event for the target market date (currently 10:00 A.M.) on the previous day.
- A Real-Time Market consists of one hour. Real-Time Market bids (for a particular trade day) are accepted beginning when the Day-Ahead results are published (usually prior to 1:00 p.m. the previous day) until the real-time market for the designate hour closes. (this is T-75, i.e. HE6 will close at 3:45a.m.)

The GUI screens used to enter Day-Ahead and Hour-Ahead bids are quite similar, although there are some significant differences. This is discussed in Chapter 3.

[2] There is one 23-hour (no HE3) short day moving from PST to PDT and one 25-hour (has HE2* for second HE2) long day moving from PDT to PST. This is for daylight savings time adjustments.

2.1 Application – Specific Menu

The SIBR application menu shown in figure 13 below allows for different screens to be accessed by selecting a specific tab depending on the needs to view data for a given Market Type, Date, Coordinator.

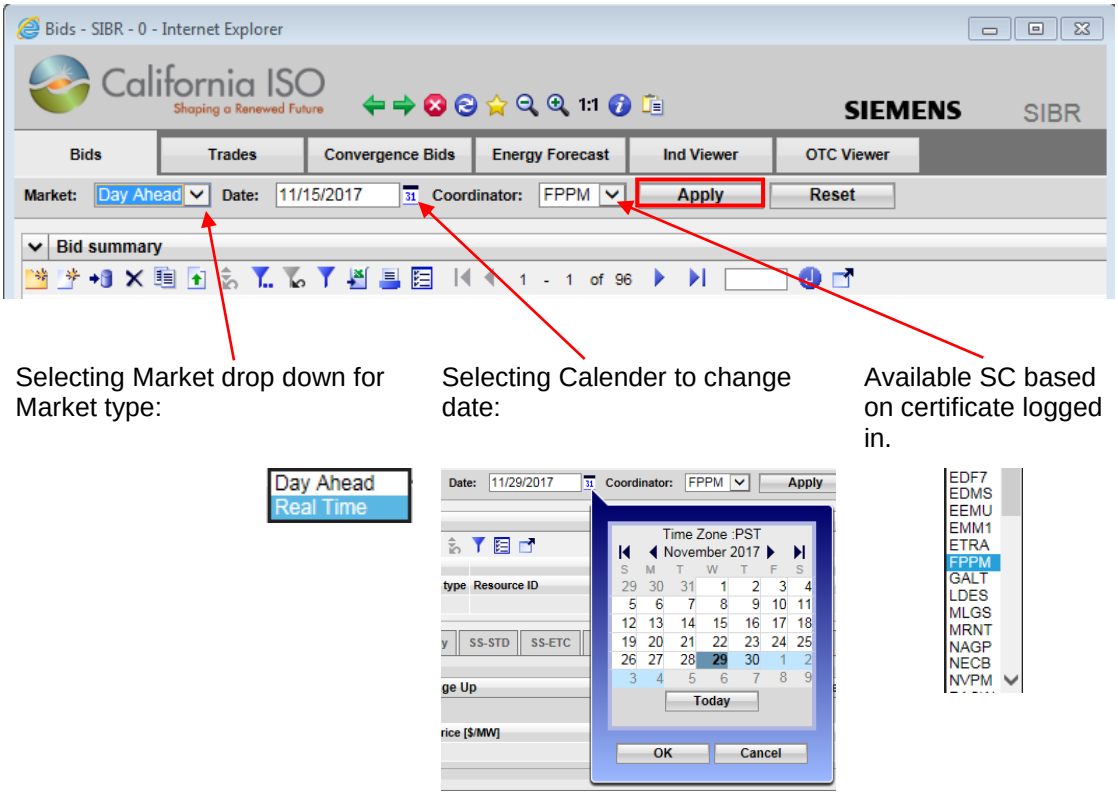


Figure 13 Application Header display

The SIBR application navigation icons shown in figure 14 below will assist in viewing data.

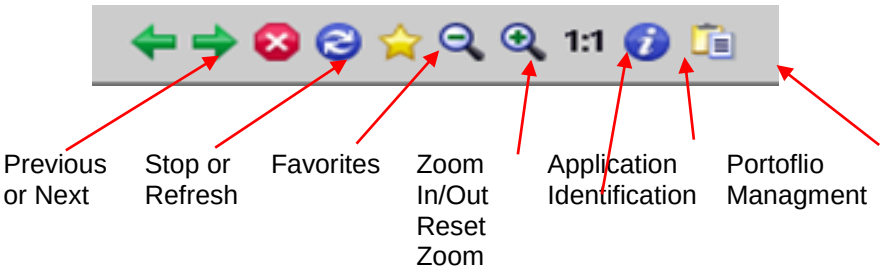


Figure 14 Navigation Icons

2.2 Application Content Area

A Scheduling coordinator will be concerned mostly with what is in the portion of application labeled as “Application Content Area”.

For most Bid Management displays, there are three basic components in the Application Content Area, as illustrated in figure 15 on the next page. These are:

- Filter Pane: The filter pane is present on most SIBR displays. It contains filters that allow the user to control the information displayed on the data grid portion of the display. The filter pane is always at the upper edge of the Application Content Area.
- There is also an ‘in-line’ filter option for better granularity. Filters will be cached based on login, if a filter is applied and the user logs out, the next time the user logs in the filter will still be applied. The Date filter on login will default to the current date.
- Data Grid(s): Below the filter pane is at least one data grid. Bid data are entered, edited, and viewed in the data grid. Some displays may have additional data grids showing the details of the product in the bid.
    - There is also an adjust column tool to better manage the Data Grid.
- Message Bar: This is at the very bottom of the Application Content Area. It is used to advise the user of various events, errors, etc. This area grows and shrinks vertically to accommodate the message(s) that need to be shown.

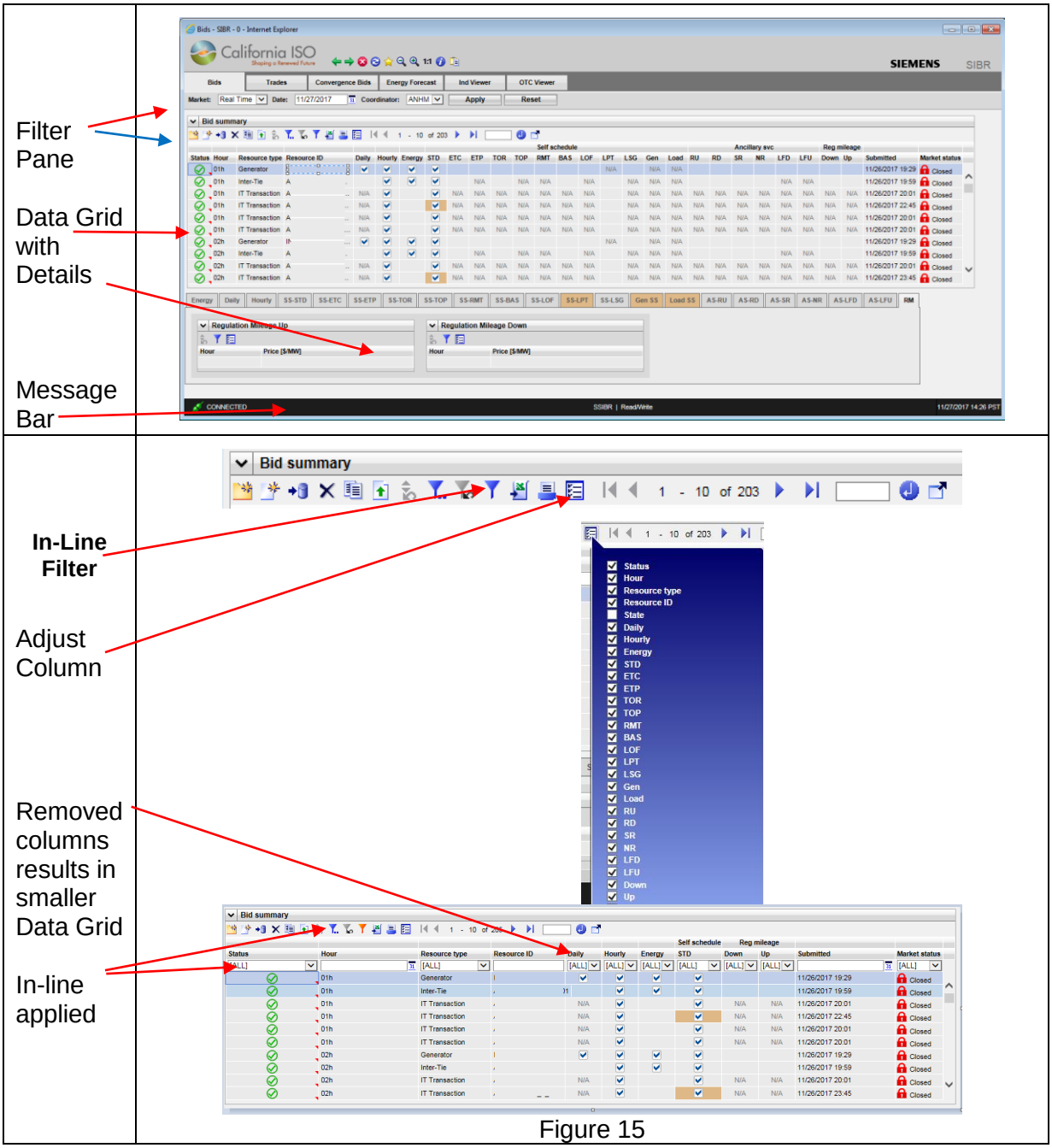

Filter Pane
Data Grid with Details
Message Bar
In-Line Filter
Adjust Column
Removed columns results in smaller Data Grid
In-line applied
Bid summary
Status
Hour
Resource type
Resource ID
State
Daily
Hourly
Energy
STD
ETC
ETP
TOR
TOP
RMT
BAS
LOF
LPT
LSG
Gen
Load
RU
RD
SR
NR
LFD
LFU
Down
Up

Figure 15

2.2.1 Filter Pane

Filters in the Filter Pane allow the user to customize (or select) what is shown on the display. The SIBR UI employs a small number of filter types; these are described in the following paragraphs.

Header Filters for Market, Date and Coordinator when changed are applied when the 'Apply' button is clicked. Figure 13 in the previous section illustrates each component.

In-Line Filters: In-line filtering can be applied to each column on the display, this can be applied by clicking on the blue filter button below the header filters as illustrated in figure 16 below. When the In-Line filter is applied there are a couple options to use to filter the data depending on the column chosen. If there is an In-Line filter applied the filter will be orange, to remove the filter click on the orange filter.

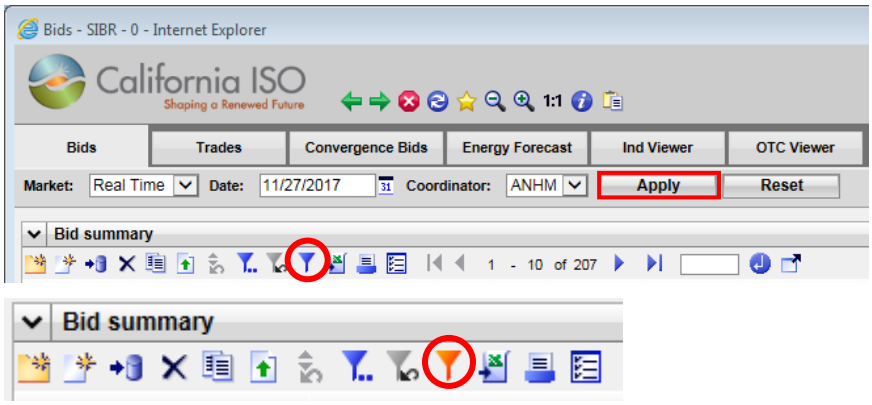


Figure 16 In-line filter on or off.

When the In-Line filter is select the first row will be open for setting a filter as shown in figure 17 below, the user can narrow the viewable data by applying filters in one or more columns. Once data is entered into a column to filter the filter will automatically be applied by moving the mouse out of the filter.

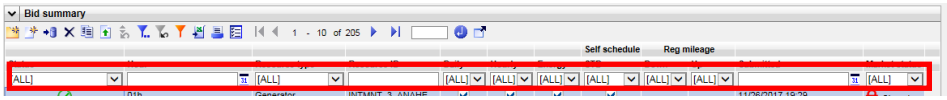
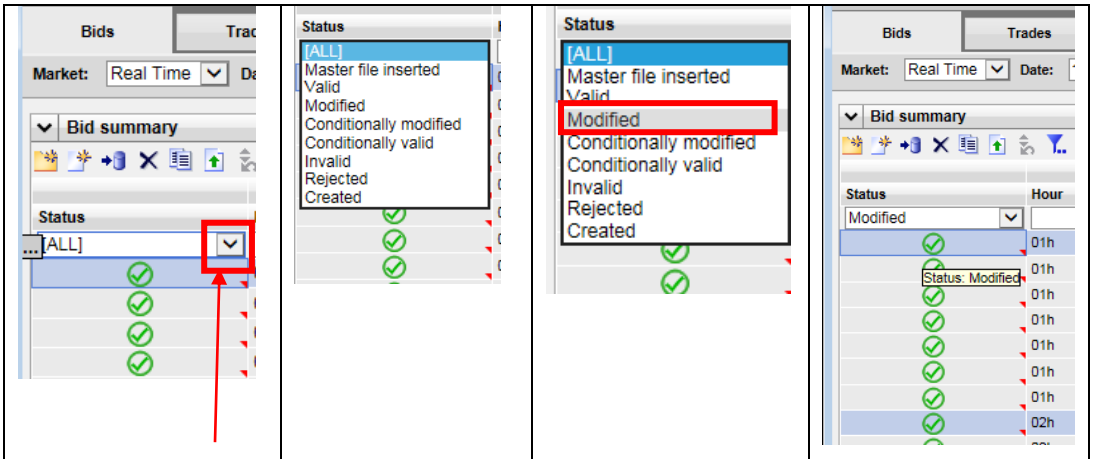


Figure 17 In-line filter first column.

The In-Line filter selection can be selected from a drop down to show available criteria and it can also support multi-select options. There is also a free form filter for resource column that will use a string to narrow viewable data.

2.2.1.1 In-Line Drop Down

Figure 18 shows how to apply the In-Line filter for the Status column using the drop down option.



Click on the down arrow to view filter criteria.	Available criteria will display.	Select a Status, the filter will refresh in a few seconds.	Data grid now shows all Modified bids.

Figure 18 In-Line filter Drop Down for Status.

The drop down to show available criteria can be used on the Status, Resource Type, Product, and Market Status columns as shown in figure 19 below.

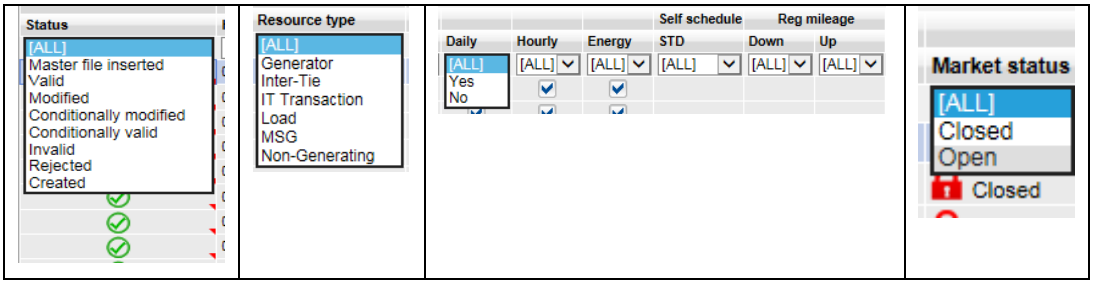


Figure 19 In-Line filter Drop Downs.

2.2.1.2 In-Line Multi-Select

To select multiple items based on available criteria, the user must move the mouse into the top filter column that is blank and select the icon with three dots to open a separate window to add the search criteria shown below in figure 20.

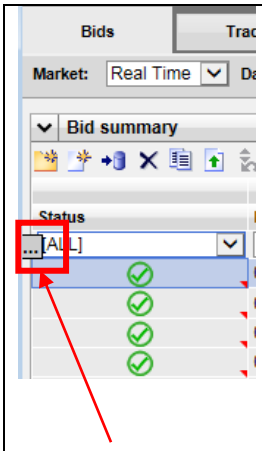
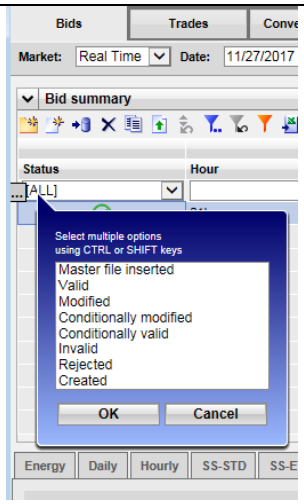
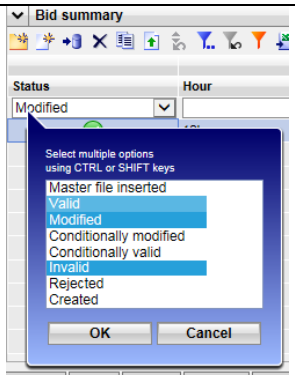
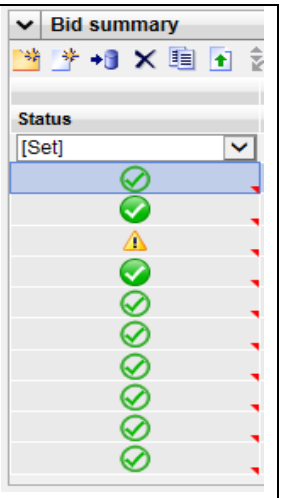
			
Click on the icon with 3 dots when mouse is in the filter column.	Available criteria will display and the user can select multiple using CTLR or SHIFT keys	Once selected click on OK to apply.	Selected Status will display. Hovering over icon shows status.

Figure 20 Multi-Select use.

2.2.1.3 Date and Hour Select

Another filter type allows the user to select a date (or a date and a time).

Commonly a default date is shown; some logical date is chosen – typically today's date (or for bid entry screens, the next possible date for which bids may be entered). There are two ways to enter data into this type of filter.

1. Click in the box and enter the data in the same format it is displayed (e.g., for a date: MM/DD/YYYY).
2. Click on the calendar icon to the right of the box. This exposes a calendar like that shown in figure 21. Click on the desired date – select OK - the window closes and the selected date appear in the box. The **>>** and **<<** icons on the calendar may be used to navigate to the next and previous month. The **Today** link at the bottom of the calendar selects today's date.

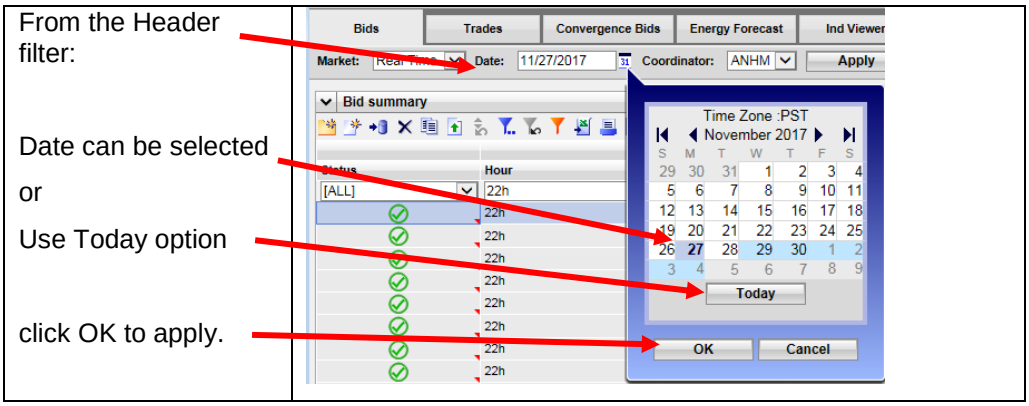


Figure 21 Date Select Header

There are three ways to enter data to select the hour within the Real Time market on the In-Line filter shown in Figure 22.

1. Click the calendar icon in the Hour column and enter the hour in the Date box when Exact Match is selected then click OK.
2. Use the Hour window to type in the hour XX:XX then click OK
3. Enter the begin hour in the From box and the end hour in the To box when Date Range is selected then click OK.

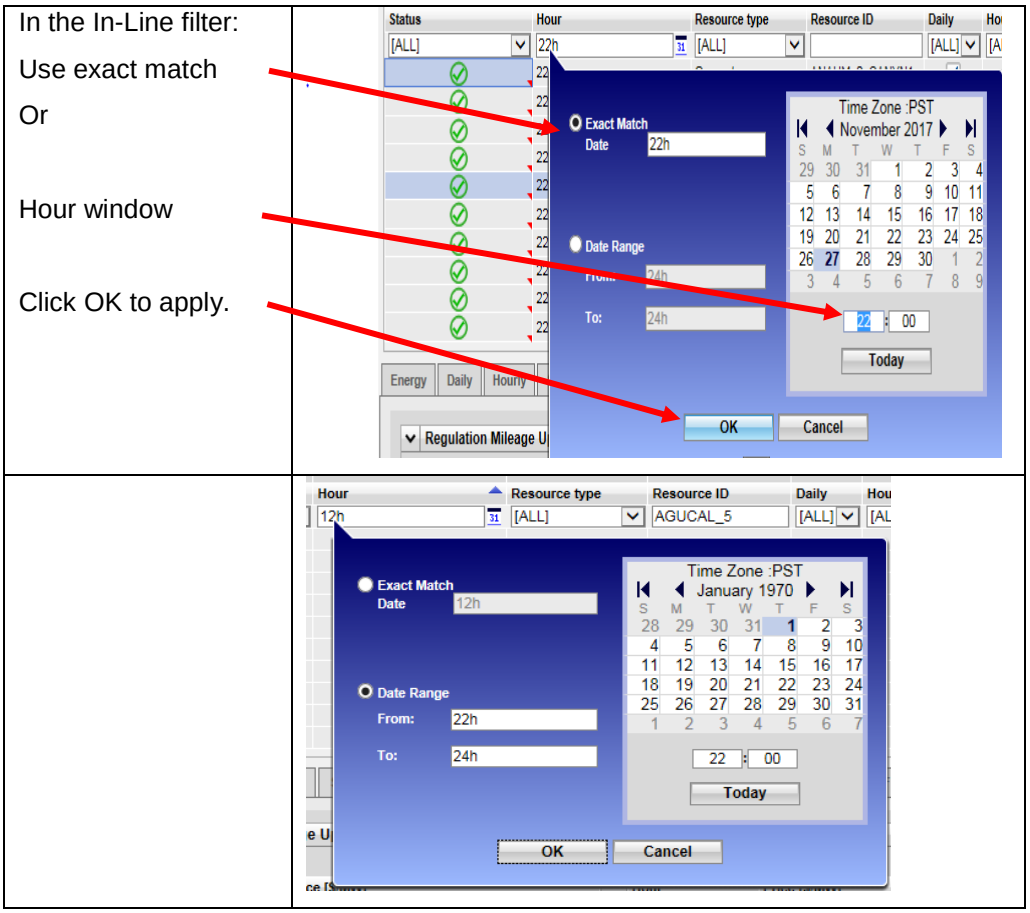
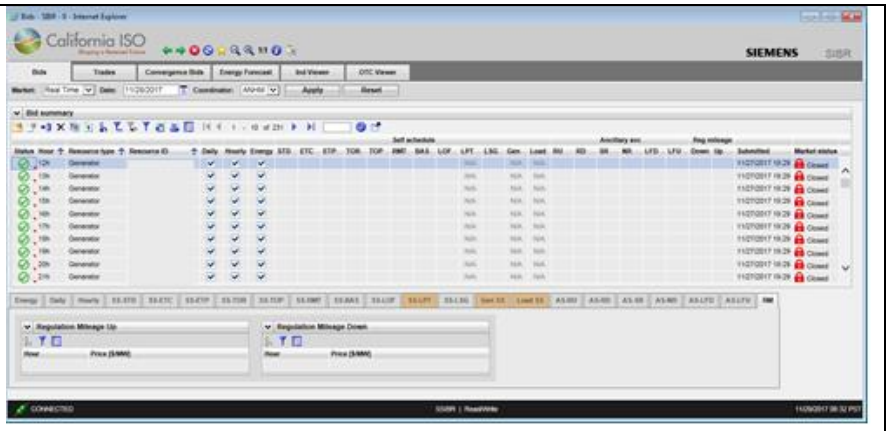


Figure 22 Hour Select In-Line

2.2.2 Data Grid

The most noticeable and largest component of most displays is the data grid; for tabular displays, the data grid occupies the majority of the Application content area. It is possible that a page may have more than one data grid. **Each data grid can also be sized to show more or less rows.** It is also possible that the content area may contain one or more charts in addition to the data grid(s), and it may also contain various control elements like buttons, checkboxes, etc. Figure 23 shows an example.

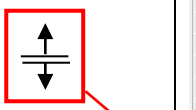
Data Grid Bid summary (default 10 rows) Detail tabs.	

Example to adjust rows

Now showing 28 rows

At bottom of grid there is a slide bar.

Hover over bar with mouse and extend or shorten the grid.



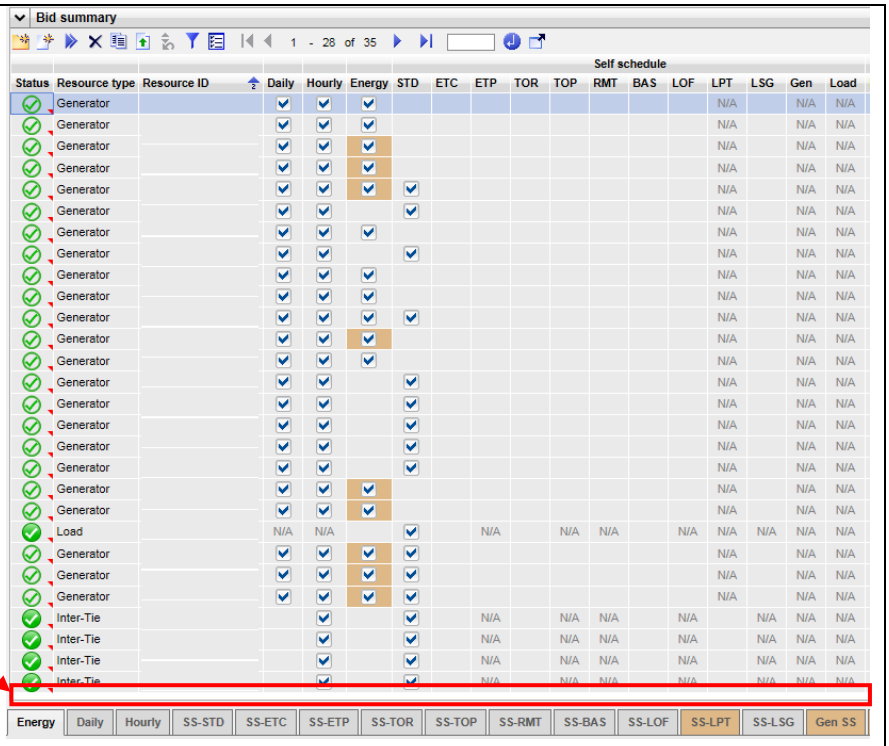
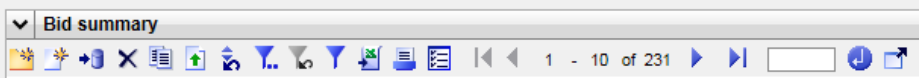
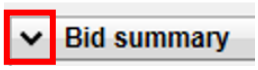


Figure 23 Data Grid Example

2.2.2.1 Controls on Data Grid

A number of icons may be included at the upper left corner of the data grid. Figure 24 describes the buttons that are available on the grid.

	
	Collapse / Restore grid. This button collapses (restores) a tabular grid. When a grid is collapsed, the title of the grid remains visible.
	Add to Portfolio. Highlighted bids will be saved to a Portfolio.
	Create Bid. Will open a separate window allowing user to specify the date resource type, product type, hours(RTM), coordinator and resource.
	Submit Bids. Bids in the rows that are highlighted on the data grid will be submitted.
	Remove bids. Bids in the rows that are highlighted on the data grid will be removed.
	Copy Bids. Copies highlighted bids and makes them viewable as a Created bid for editing.
	Upload Bids. Will allow user to select a file for upload to the system. Files must be in xml format and valid based on supported schema design.
	Restore Default Sort. It is possible to change the sort order of the contents of a tabular display by clicking on the title row. Clicking on the Restore Default Sort button restores the sort order to the default, that is, it removes any sorting that has been established by clicking on title rows.
	Filter. Clicking on this button opens the In-Line filter and enables each column to contain filter criteria.
	Export. By clicking on this button, the user may export grid contents (either displayed contents or the entire contents of the database table(s) used to populate the grid) to Microsoft Excel, Microsoft Word, or an XML file.

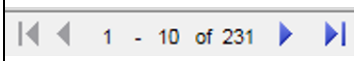
	Print. This button prints the contents of the grid. Note that there is another print button in the “common functions” area of the display. That button prints the contents of the entire display.
	Adjust Columns. Opens a select window allowing the user to specify which columns will populate on the display.
	Page Navigator. Displays count of available data based on filters applied. Allows user to advance to next or previous page, last or first page.
	Go To. Putting in a line number will refresh the display going to the bid that is in that index and displays.
	Pop Out Application. This will open a separate Data Grid and allow additional filtering. Only 1 additional Data Grid will open.

Figure 24 Controls on Data Grid

2.2.2.2 Sorting Data Grid

The User may change the default sort order by clicking on the title row for a column. For example, in the grid illustrated in figure 25, the user has applied a sort on the ResourceID, the Hour, and the Resource type this changes the sort order of the grid by making the ResourceID column the primary sort key ascending, secondary sort on Hour ascending and a third sort applied to Resource type descending.

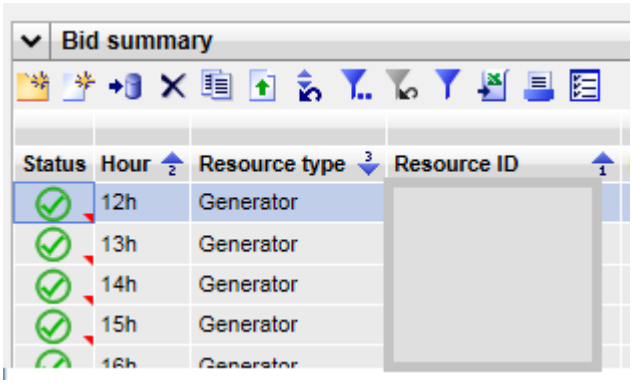


Figure 25 Sort Order

A small triangle appears in the header row to indicate:

- Sort order. The orientation of the triangle (pointing up means ascending, pointing down means descending).
- Key: The small number above or below the triangle indicates which column is the first, second, etc. sort key.

As implied above, sorting may be ascending, descending, or none:

- Clicking once sorts in ascending order.
- Clicking a second time on the same column changes the order to descending.
- Clicking on the same column for a third time removes sorting.

By clicking on the grid's Restore Default Sort button, all sort keys can be removed and the sort order returned to default.

All sorting functions work the same for all columns that have more than one row.

2.2.2.3 Status Icon Definition

Below is a legend for desired icon use and definition depending on the type of submission.

ICON	**Definition for Bids**	
	For market accepted bids with External Bid Status of 'MI' or 'V' Master File Inserted / Valid	Has already processed through rules engine ui_display_flag = 1 and the bid was good with submitted data that matches Master File.
	For market accepted bids with External Bid Status of 'M' Modified	Has already processed through rules engine ui_display_flag = 1 and processing rules added or modified components using Master File data.
	Definition for Virtual Bids (CB)	
	For CB bids with External Bid Status of 'V' and Bid Credit Status 'AP Valid / Approved	Has already processed through rules engine ui_display_flag = 1 and the bid approved by CTS.
	For CB bids with External Bid Status of 'V' and Bid Credit Status 'PR' or 'PRS' Valid / Pending Request or Pending Response	Has already processed through rules engine ui_display_flag = 1 and no response yet from CTS.
	For market accepted bids with External Bid Status of 'CM' or 'CV'	Has already processed through rules engine ui_display_flag = 1

	Conditionally Modified / Valid	
	For Invalid bids with External Bid Status of 'I'	Has already processed through rules engine ui_display_flag = 1
	For Rejected bids with External Bid Status of 'RJ'	Has already processed through rules engine ui_display_flag = 1
	For edited bids with External Bid Status of 'CR' Created	For when Display Mode is in edited (or all)
	For bids submitted with Status of 'S' or 'RS' Submitted / Recent Submit	For when Display Mode is in edited (or all)
	Definition for Trades	
	For Trades with a Trade Status of 'V' Valid	Has already processed through rules engine ui_display_flag = 1 and the bid was good with submitted data that matches Master File.
	For Trades with a Trade Status of 'M' Modified	Has already processed through rules engine ui_display_flag = 1 and processing rules added or modified components using Master File data.
	For Trades with a Trade Status of 'CV' Conditionally Valid	Has already processed through rules engine ui_display_flag = 1
	For Trades with a Trade Status of 'MT' Matched.	Has already processed through rules engine ui_display_flag = 1 and processing rules added or modified components using Master File data.
	For Trades with a Trade Status of 'U' Unmatched.	Has already processed through rules engine ui_display_flag = 1
	For Invalid Trades with Trades Status of 'I'	Has already processed through rules engine ui_display_flag = 1
	For Rejected trades with Trade Status of 'RJ'	Has already processed through rules engine ui_display_flag = 1
	For edited trades with Trade Status of 'CR' Created	For when Display Mode is in edited (or all)
	For trades submitted with Status of 'S' or 'RS' Submitted / Recent Submit	For when Display Mode is in edited (or all)
	Definition for Energy Forecast	
	For Energy Forecast with Status of 'V' Valid	Energy Forecast will either be Valid or Invalid or rejected. EF will have nothing as modified or conditional.
	For Invalid Energy Forecast with Status of 'I'	Has already processed through rules engine ui_display_flag = 1

	For Rejected trades with Trade Status of ‘RJ’	Has already processed through rules engine ui_display_flag = 1
	For edited trades with Trade Status of ‘CR’ Created	For when Display Mode is in edited (or all)
	For trades submitted with Status of ‘S’ or ‘RS’ Submitted / Recent Submit	For when Display Mode is in edited (or all)

2.2.2.4 Scrolling the Grid

Often the data grid of a tabular display is not large enough to display all the data in the corresponding columns of the database. In such a case, the grid will show a scroll bar to the right for vertical movement and on the bottom for horizontal movement illustrated in figure 26 below.

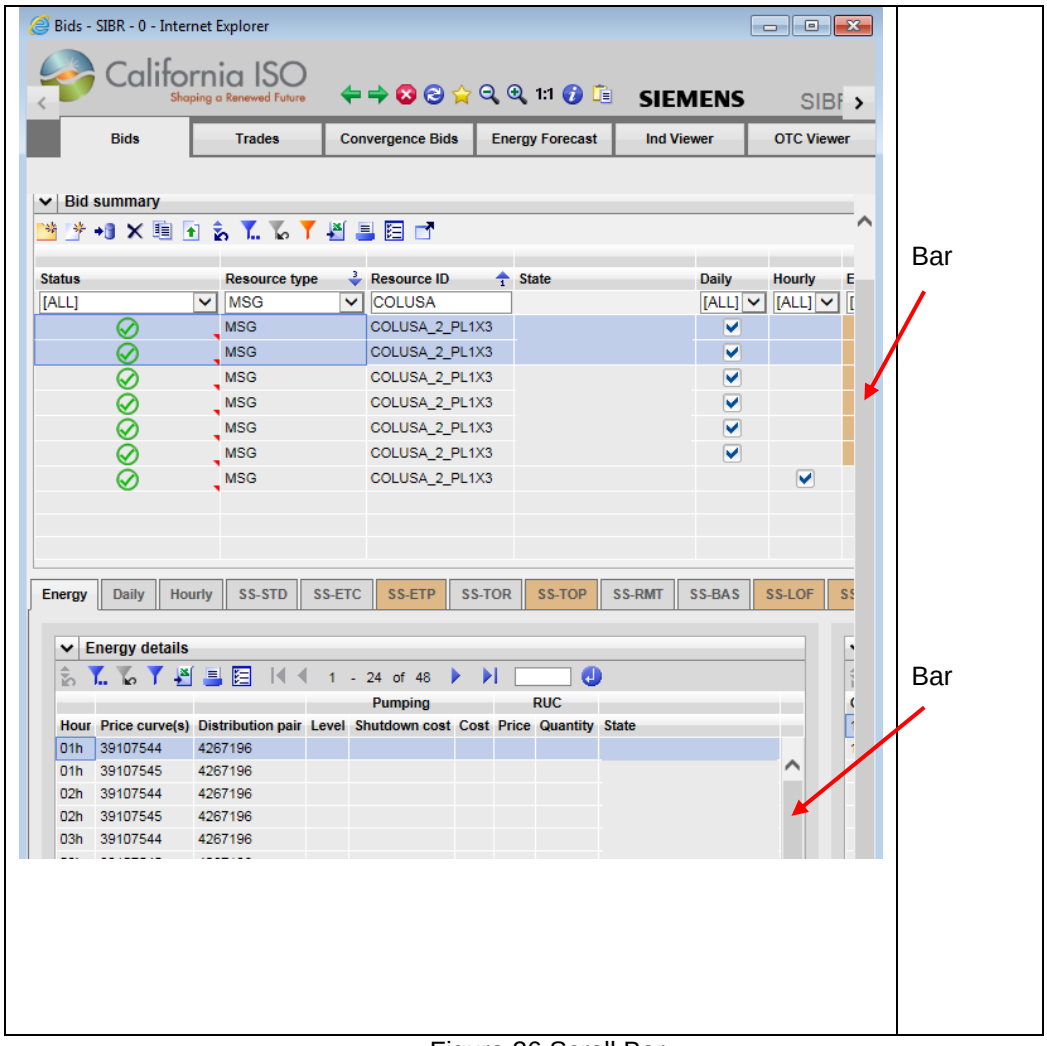


Figure 26 Scroll Bar

2.2.3 Message Area

The area immediately below the grid is used for messages. This area expands and shrinks as necessary to accommodate any messages that the application believes are of interest to the user. Figure 27 illustrates The messages that appear in this area are related to actions that the user has recently taken (e.g., applying a filter, incorrectly typing an alphabetic character in a numeric field, clicking the Save button, etc

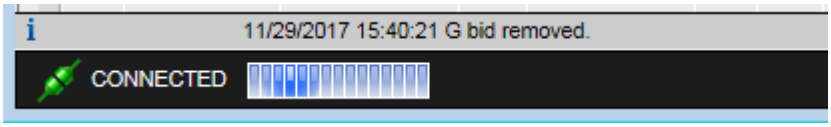


Figure 27 Message Area

2.2.4 Input Accelerators

There are two distinct methods of input acceleration on data tables for bids in a created state for editing. Both methods allow you to quickly and easily replicate duplicate data on a table similar to using a spreadsheet.

This is accomplished either by using the right-click menu when you are in the data grid ore you can use the CTRL and SHIFT keys in selecting data as well as using the CTRL+ C for copy and CTRL+V for paste.

- Right-Click Menu: This menu gives you a list of commands associated with actions to perform on the entered data. Each of the functions is described in detail below.
  - Copy: Copies the contents of the selected cell or row
  - Set all values in column to this value: Sets the value in all rows in the grid. This will over-write existing values.
  - Paste: Pastes the copied row into all the rows up or down through the selected row
  - Paste with Operation: Pastes the copied cell into the currently selected cell but will use an operation (Mulitply, Add, Divide, or Subtract)
    - Make sure to select Update after applying changes to save them or to select Cancel to remove them.

The below illustration in Figure 28 shows the Right Click Menu from within the Energy details tab of an edited bid. The Price curve(s) column displays the price curve ID for hours in a DAM bid. The row for HE17 is selected and using the right click and selecting Copy.

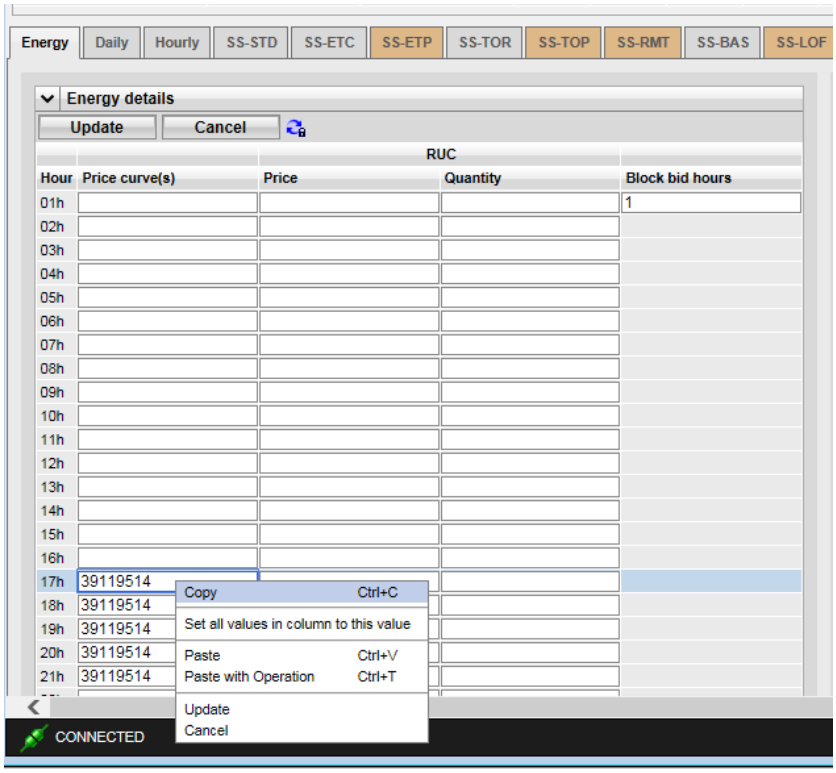


Figure 28 Right Click Menu

Once data has been selected you can select one or more rows to paste into either by moving the mouse to select the column for example in row 12 and select Paste will copy the value into that cell. If setting all values, selet the Set all values in column to the this value. This is illustrated in Figure 29 below.

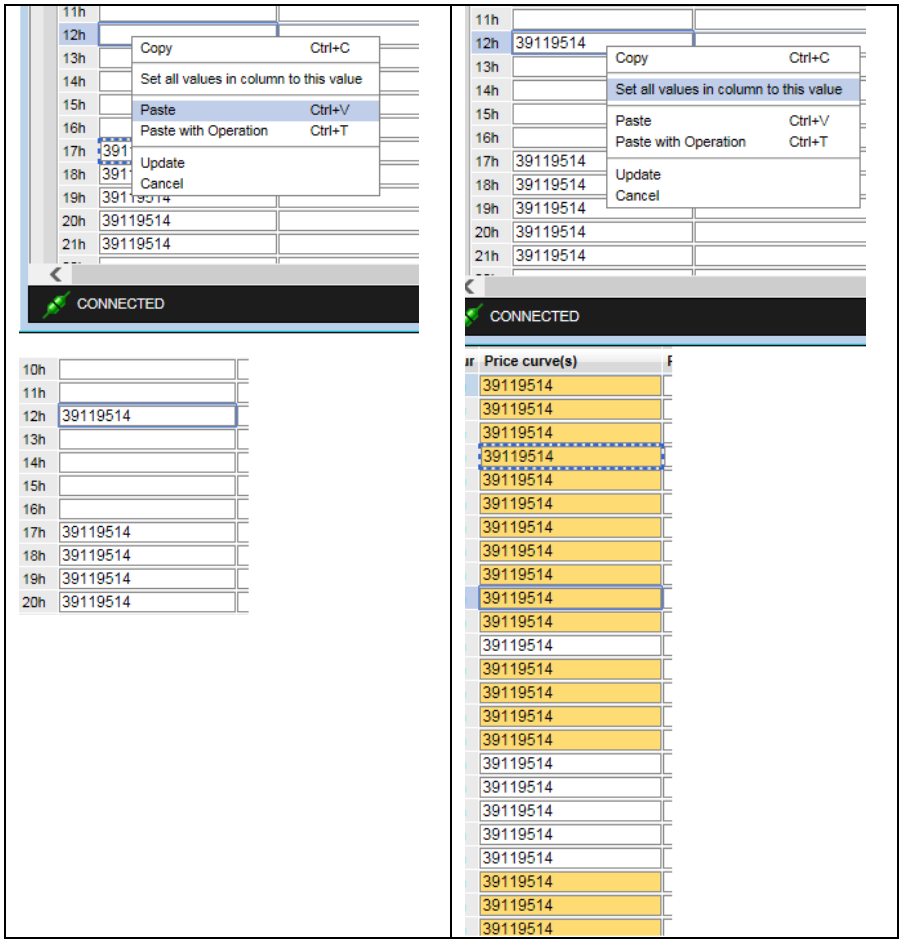
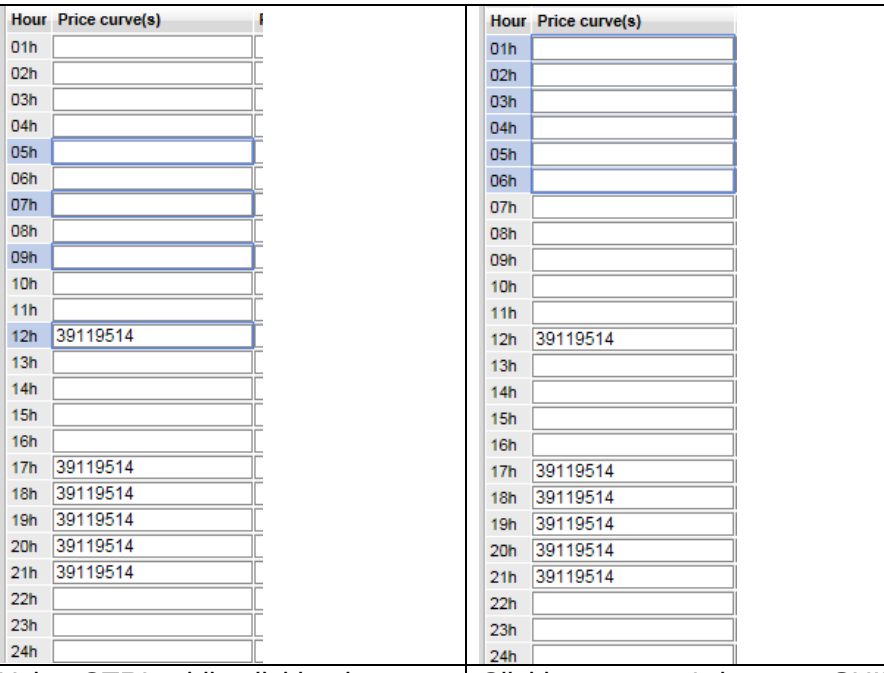


Figure 29 Paste row

To copy into a subset of available columns you can select a row, then use the CTRL key and mouse click into another row or more than one row to highlight the rows then when Paste is applied it will copy into those rows shown below in Figure 30.



Using CTRL while clicking into open cells then right click and Paste or CTRL+V.	Clicking on row 1 then use SHIFT and click in row 6 then right click and Paste or CTRL+V.

Figure 30 Sub-set of rows to Paste

For the Paste with Operation, this would be most useful when dealing with curve data for bid in MW or price. This will use the copied value and multiply or divide, add or subtract that value as shown in figure 31 on the next page.

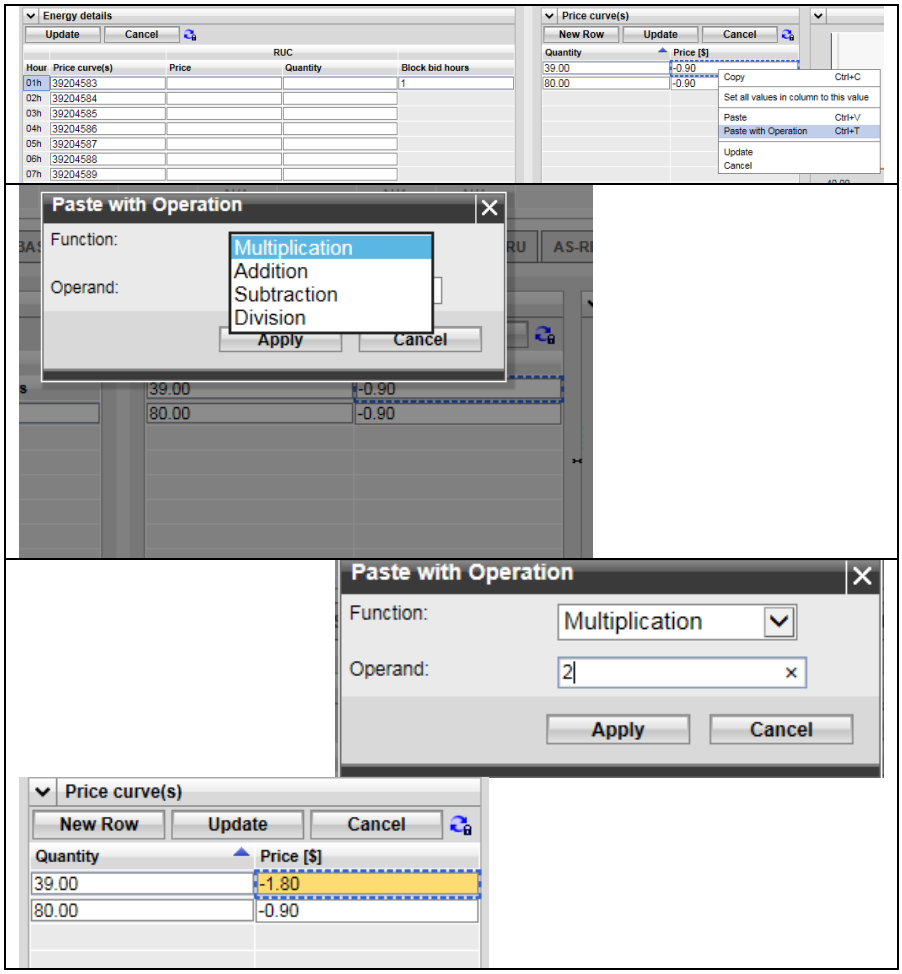


Figure 31 Paste with Operation

Using a price curve for HE1 and then copy the -0.90 using the Paste with Operation of Multiplication and providing a value of 2 pastes in the value of -1.80.

3 Bids

This section will show the user how to view bid status, how to create new bids based on existing bids, cancel bids, and submit bids. A step-by-step walkthrough of the bid entry process is included at the end of this chapter.

The CAISO SIBR system accepts two kinds of bids:

- Day-Ahead bids: A day-ahead bid is submitted for a resource for a 24-hour market period. Day-ahead bids may be submitted for up to 7 days in the future. Day-ahead bids must be submitted prior to market close for the target day.
- Note (Convergence Bids are Day-Ahead only)
- Real-Time bids: Real-time bids are submitted for one-hour periods for one target day. Although real-time bids are for one-hour periods, the user interface bid entry screens are designed to permit up to 24 (25 on a long day, 23 on a short) day-ahead bids to be entered on a single screen.

Bid data is entered on either the Day-Ahead or Real-Time market tab. Day-Ahead and Real-Time pages look and behave very much alike, the major difference being that a Real-Time bid requires that certain data be provided for each hour of the target day.

For both Day-Ahead and Real-Time bids, there are 3 types of categories of data that can be entered:

- Daily Components: These are parameters that are associated with the resource for the trade day, not with an individual market or hourly intervals of the bid.
- Product Components: These are parameters that may vary from one hour to the next through the market period.
- Hourly (Miscellanious) components: These are parameters that may vary from one hour to the next through the market period.

3.1 Bid Details Displays

Bids are submitted for both the Day-Ahead Market (DAM) and for the Real-Time Market (RTM) and the display only varies slightly depending on the Market Type. The major difference is that Real-Time bids are for one-hour periods while Day-Ahead bids are for 24-hour periods for a single Trade Date and may be submitted up to 7 days ahead of the target market date. As with Day-Ahead bids, a Real-Time bid consists of Daily, Product and Hourly (Miscellaneous) components. However, if daily components have already been submitted for a resource with its bid in the day-ahead market, they do not need to be submitted again for that resource in the real-time market but the can be. Also like Day-Ahead bids, the actual columns shown may vary, depending upon the type of resource. The bid data consists of three broad categories:

- Daily Components: These apply to the entire trade day on DAM and for a single hour in RTM.
- Product Components: These may be different for each hour of the bid period.
- Hourly Components: These may be different for each hour of the bid period at the resource level (MSG).

The next sections will break down the tabular details displays.

3.1.1 Daily Details Displays

Figure 32 illustrates the display used for entering and viewing daily components. The exact contents of this display will vary, depending upon the type of resource. These can include the following:

- Startup information (cost curve, time curve) (DAM and RTM)
- Minimum Load information. (DAM and RTM)
- Minimum and Maximum Energy Limit information. (Gen only)
- Minimum and Maximum Charge Limit information. (NGR only)
- Initial State of Charge Limit Information (Initial State) (NGR only)
- State Transitions (MSG only)

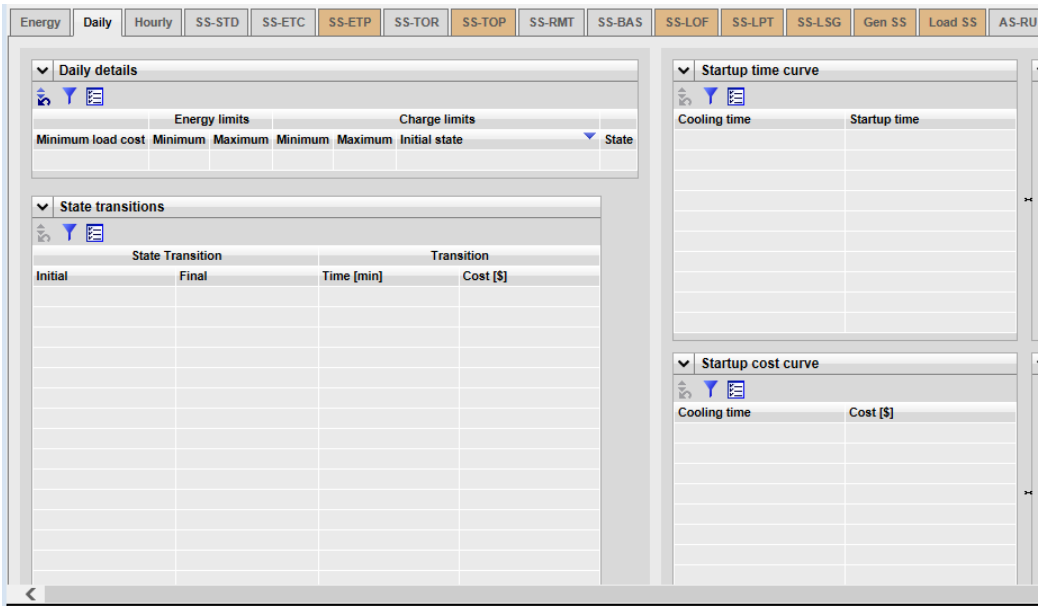
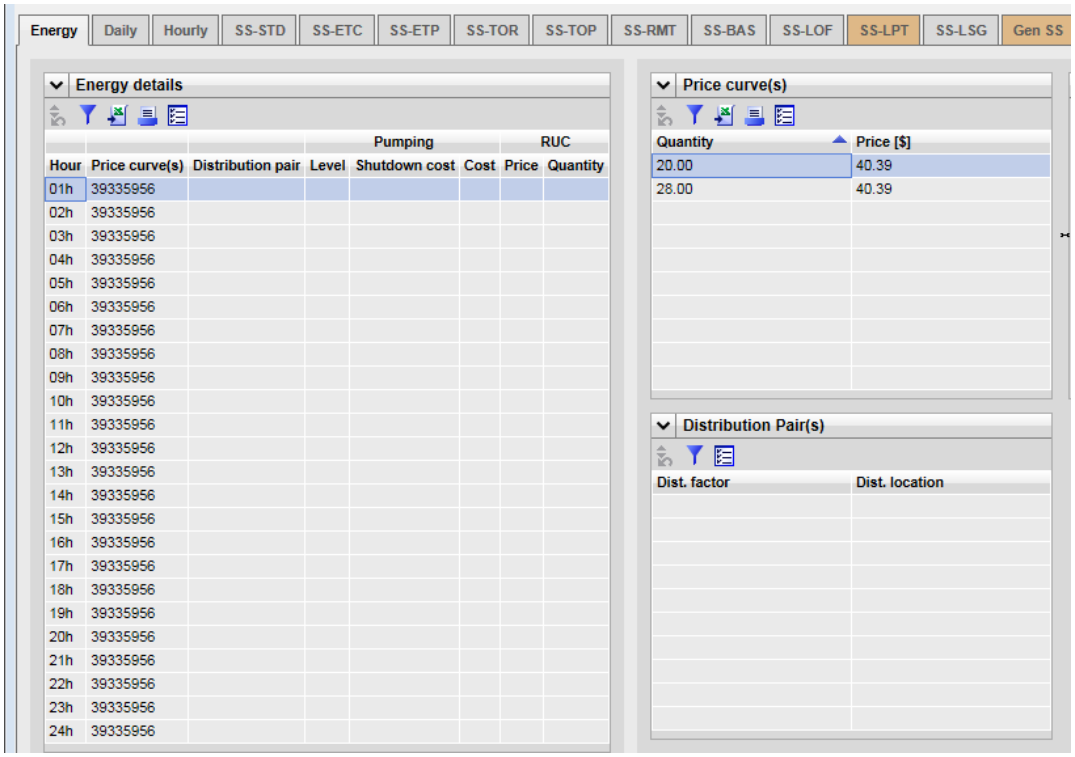


Figure 32 Daily Components Layout

3.1.2 Energy Details Displays

Figure 33 illustrates the display used for entering and viewing the Energy components. The exact contents of this display will vary, depending upon the type of resource. These can include the following for both markets unless noted:

- Hour
- Price Curve(s) – The ID number, the curve is displayed in the Price Curve(s) pane to the right.
- Distribution pair – The ID for aggregated resources, details are in the Distribution Pair(s) pane to the right.
- Pumping - Level / Shutdown cost / Cost (Pump Storage Hydro units only).
- RUC - Price / Quantity (DAM only) – Resource must be certified for RUC.



Figuire 33 Energy Detail

3.1.3 Hourly Details Displays

Figure 34 illustrates the display used for entering and viewing Hourly (Miscellanious) components. The exact contents of this display will vary, depending upon the type of resource and which Market type. These can include the following:

- Hour
- Open Tie indicator – Indicates if the path is down that resource is tied to.
- Gen capacity limit – Indicator to market for available dispatch capacity.
- NERC tag (not used)
- Scheduling coordinator/SchedulePoint/PrimaryTie/PSE id (used for Transactions).
- Registered Resource – Indicates if the resource is Registered in Master File.
- Dispatch Option (RTM only) – Hourly, Once, 15Min, or Dynamic.
- Counter resource (Wheeling) – Identifies the partner resource for the Wheel Transaction.
- GHG Capacity / Price (EIM Participating) – GHG component for each hour.
- GHG CA Supply (EIM Participating) – Indicator if serving load in CA. (not active as of this draft 12/8/2017).

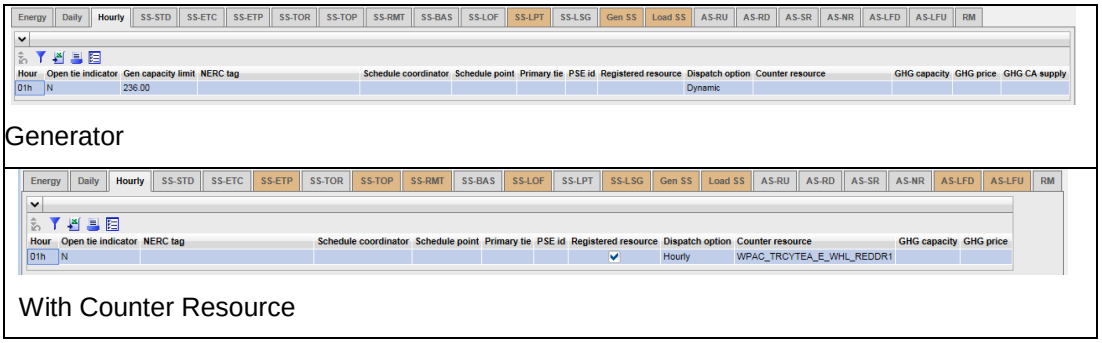


Figure 34 Hourly Details Display

3.1.4 SS-STD (Self-Schedule Standard) Details Displays

Figure 35 illustrates the display used for entering and viewing Self-Schedule Standard (also known as a PT Self-Schedule) components. The exact contents of this display will vary, depending upon the type of resource. These can include the following:

- Hour
- Self schedule quantity [MW] – Quantity of SS.
- Supporting Resource (Export only) – Resource named to provide non-RA capacity for the export.
- Block bid hours (DAM only) – Number of hours to consider in DAM optimization for dispatch, all bid values must be the same.
- Pumping Self Schedule (Pump Storage Hydro only) – Quantity of SS for Pump.

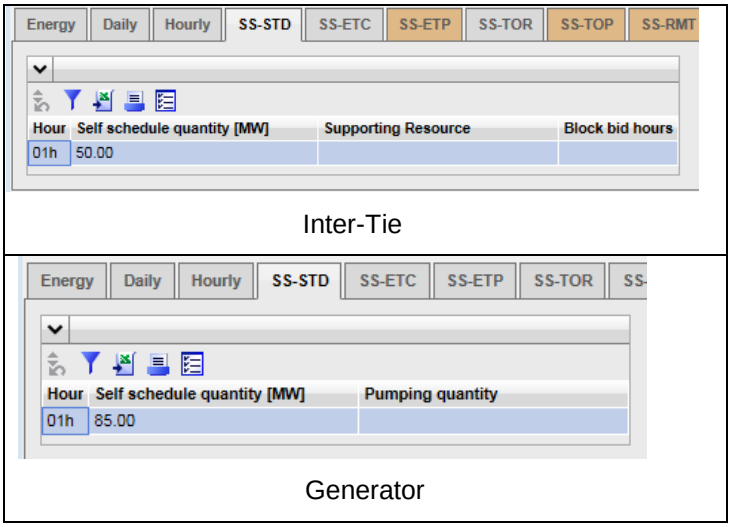


Figure 35 SS-STD Details Display

3.1.5 SS-ETC Details Displays (same for ETP/TOR/TOP/RMT)

Figure 36 illustrates the display used for entering and viewing SS for resources that have contract rights for scheduling priority.

ETC – Existing Transmission Contract, ETP is for Pumping Contracts.

TOR – Transmission Ownership Rights, TOP is for Pumping Contracts.

RMT – Regulatory Must Take – Resources registered as RMT can submit.

These can include the following:

- Hour
- Self schedule contract(s) – This is the obligation ID –details are to the right in the Obligation(s) pane.
- Self schedule quantity – Quantity applied to the contract.
- Contract – Contract Reference Name (CRN) associated to resource.

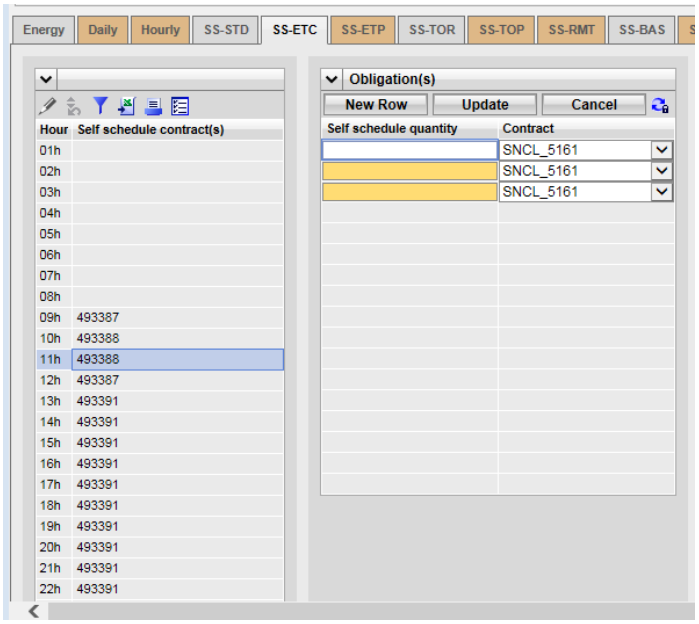


Figure 36 SS-ETC (Contracts) Detail Display

The above display is the same for ETP/TOR/TOP/RMT.

3.1.6 SS-BAS Details Displays (Not used)

The Base Self-Schedule is not currently used.

3.1.7 SS-LOF Details Displays (Not used)

The Self-Schedule Lay-off is not used. This referenced energy to be used with adjacent control areas. This is now covered under the Energy Imbalance Market (EIM).

3.1.8 SS-LPT Details Displays (Export only)

Figure 37 illustrates the display used for entering and viewing SS for Export resources that name a supporting resource to provide non-RA energy to the export.

- Hour
- Resource Name – Supporting Resource for the Export.
- Self schedule quantity – Non-RA MW quantity from the supporting resource.

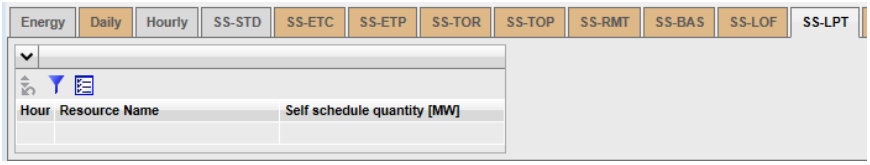


Figure 37 SS-LPT Detail Display

3.1.9 SS-LSG Details Displays (Load Serving Generator only)

Figure 38 illustrates the display used for entering and viewing SS for resources that serves load behind the meter qualifying for net Energy settlement.

- Hour
- Self Schedule quantity – Load MW served behind the meter.

Figure 38 SS-LSG Detail Display

3.1.10 Gen SS and Load SS Details Displays (NGR only)

Figure 39 illustrates the display used for entering and viewing SS for NGR resources on the Generation side (positive) and Load side (positive on display) the display for the LSS is the same as the GSS.

- Hour
- Resource Name Take out.
- Self Schedule quantity – Price taker MW for NGR

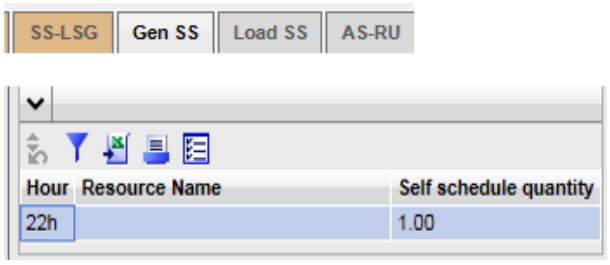


Figure 39 Gen SS Detail Display

3.1.11 AS-RU and AS-RD Details Displays (Regulation Up/Down)

Figure 40 illustrates the display used for entering and viewing RU / RD for resources that have certified capacity.

- Hour
- Capacity MW – Capacity considered for dispatch.
- Capacity price [$] – Economic consideration during optimization for dispatch.
- Opportunity cost [$MW] – Additional cost for operating under Regulation.
- Self-provision [MW] - MW quantity for its own AS obligation.
- Contingency indicator (DAM only)– Indicates if resource can be dispatched only under contingency. (only for Spin and Non-Spin)

Figure 40 AS-RU / RD Detail Display

3.1.12 AS-SR and AS-NR Details Displays (Spin and Non-Spin Reserve)

Figure 41 illustrates the display used for entering and viewing SR resources that have certified capacity.

- Hour
- Capacity MW – Capacity considered for dispatch.
- Capacity price [$] – Economic consideration during optimization for dispatch.
- Self-provision [MW] - MW quantity for its own AS obligation.
- Contingency indicator (DAM only) – Indicates if resource can be dispatched only under contingency.

Figure 41 AS-SR AS-NR Detail Display

3.1.13 AS-LFD / LFU Details Displays (Load Following Down / Up)

Figure 42 illustrates the display used for entering and viewing LFD for resources that have a Load Following Down service by a MSSA.

- Hour
- Self-provision [MW] - MW quantity for its own AS obligation.
- Contingency indicator (DAM only) – Indicates if resource can be dispatched only under contingency.

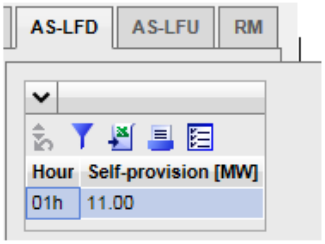


Figure 42 AS-LFD / AS LFU Detail Display

3.1.14 RM Details Displays (Regulation Mileage)

Figure 43 illustrates the display used for entering and viewing Regulation Mileage Up or Down for resources that have a Regulation bid component.

- Hour
- Price [$/MW]

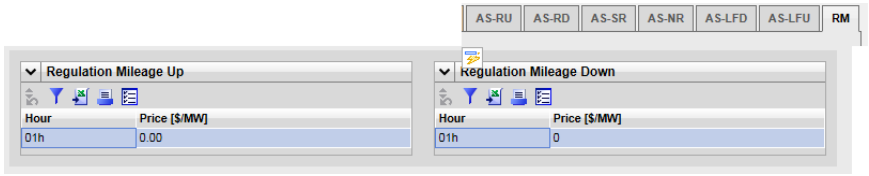


Figure 43 RM Detail Display

3.2 Managing Bids

Managing bids is largely identical for both Day-Ahead and Real-Time bids. As we have discussed before, the only major difference is that Day-Ahead bids are for a full day and Real-Time bids are for a one-hour period. In addition to the market time periods, there are certain components in a bid that can be either for DAM or RTM.

The UI Bids Summary is where all the options will be present for managing bid details. This area will provide options for creating, copying, submitting, removing and viewing bids.

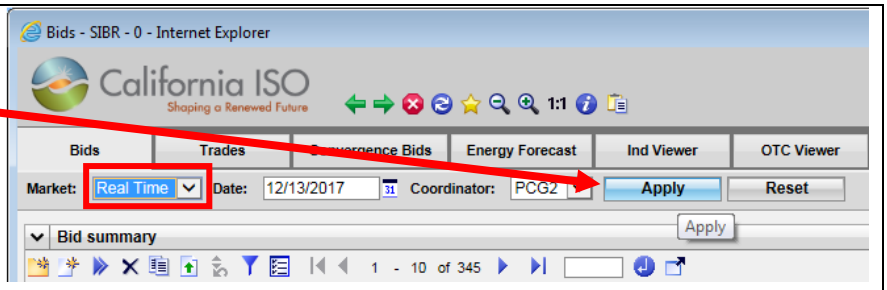
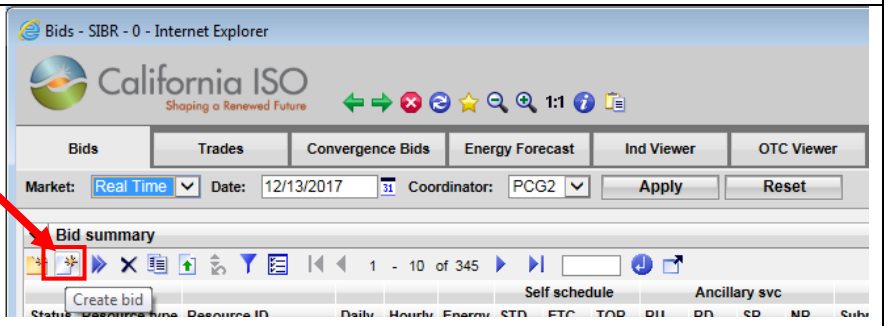
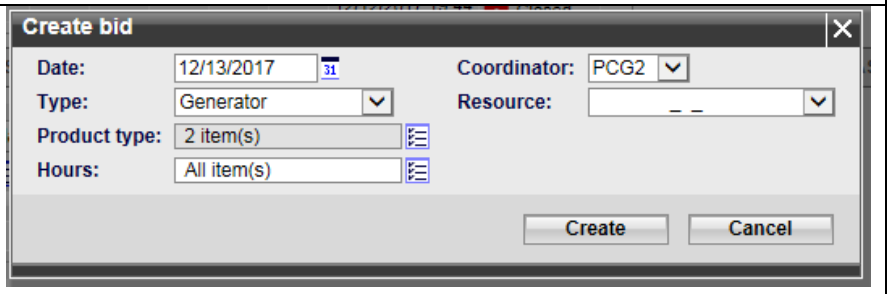
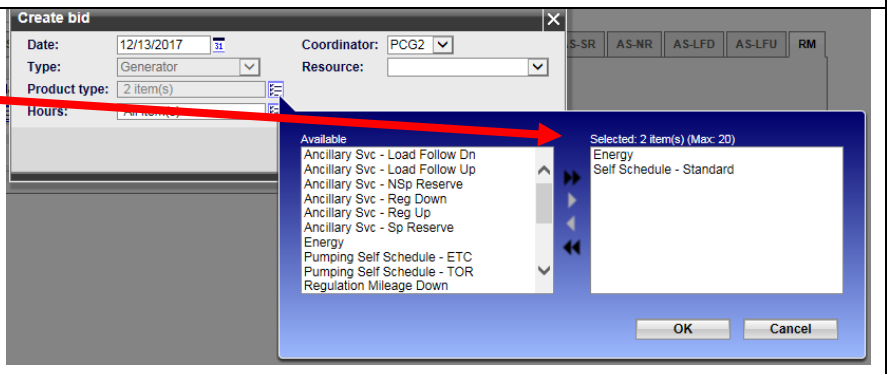
3.2.1 Creating Bids

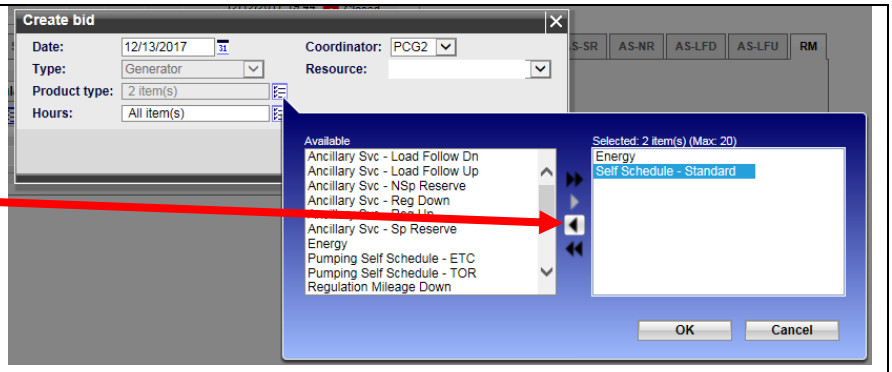
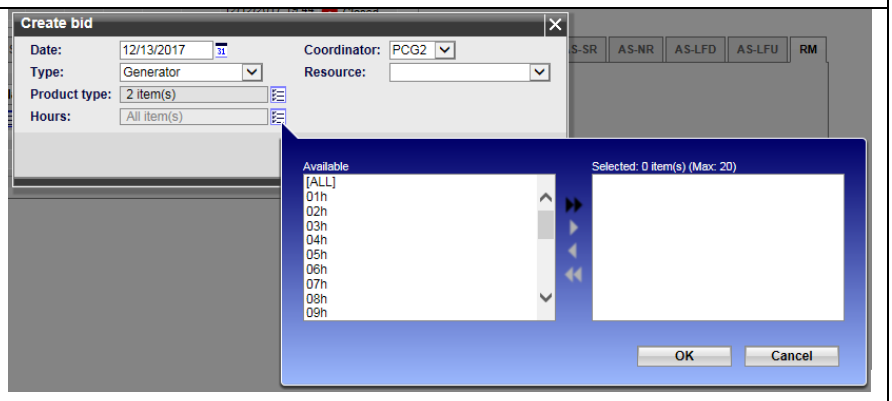
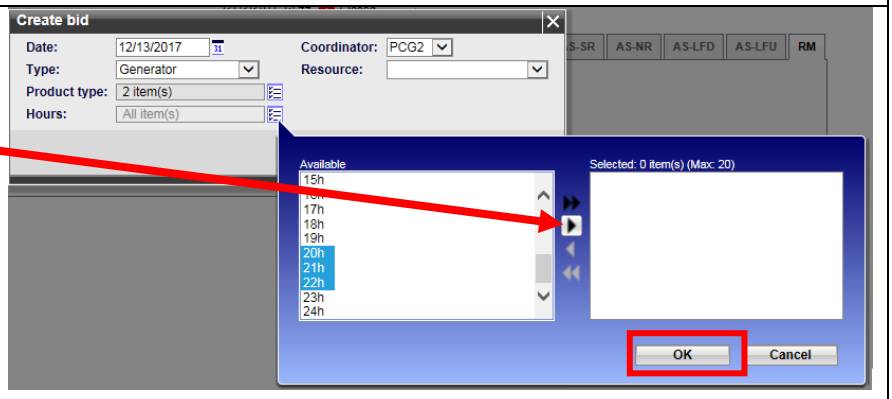
This section will take the user step-by-step through the bid entry process. The scenario used in this walkthrough is straightforward and designed to take the user through each of the basic bid-entry steps. Some aspects of the bid-entry process may be left out due to the fact that bids can become very complex.

From the Bids tab on the Bid summary clicking on the create icon will generate a created bid for editing. The steps are outlined on the next page in figure 44.

Creating a bid for a Market type requires the header filter to be on the Market type.

In the example we have selected Real Time on the header and hit the Apply button.

Select the Market for the bid and then Apply	
Select the Create bid icon	
Date Type Product type Hours (RTM only) Coordinator Resource	
Product type Default set to Energy and Self Schedule Standard. Select from Available then use move arrows to the Selected	

You can also remove from the Selected by using the move arrow.	
Hours Can be ALL or a subset.	
Select from Available then use move arrows to the Selected When Product and Hours are done click OK	

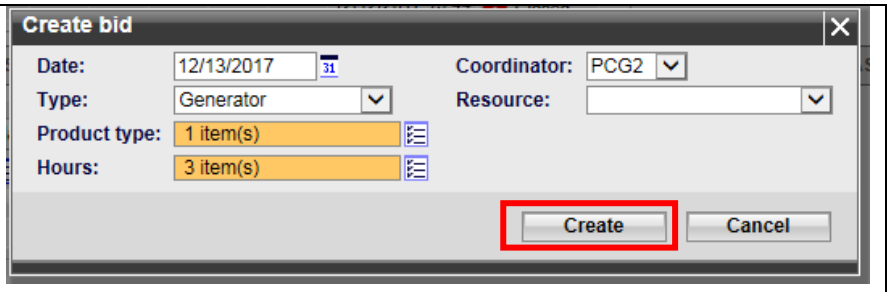
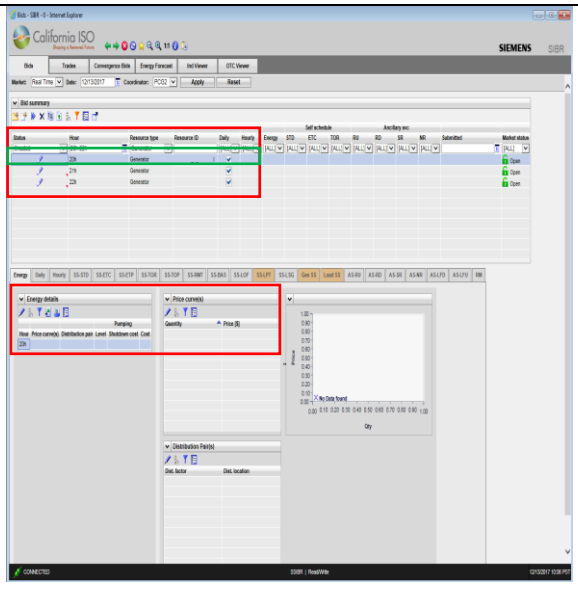
Once criteria has been set Click the Create button	

Figure 44 Create Bid

Now that a bid has been created, to see the bid in the created status you will have to set the In-Line filter to display by using one or more of the columns to narrow the displayed data. Things to consider for the filter:

1. Select appropriate market and date for bid on Header.
2. Select status (Created)
3. Select Hour or Range of Hours
4. Select resource type and or resource name

Below is the Bid summary view after applying the In-Line filter that correlated with the created bid from above

Status Hour Resource type Applied on In-Line. Note HE20 is the selected row. Energy details shows HE20.	

If more than 1 row is selected:

Energy details now show 1 of 3.

Using the arrow will move to the next record.

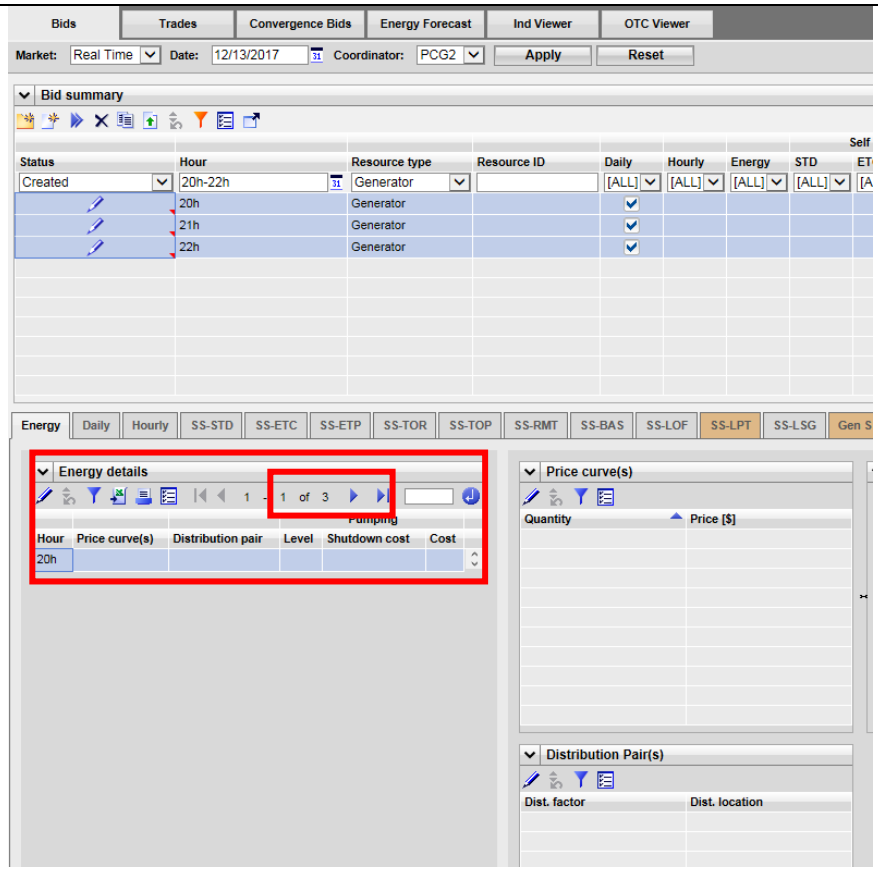


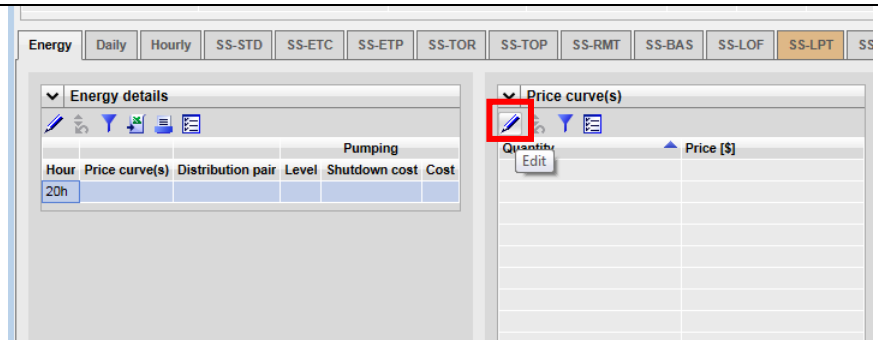
Figure 45 View Created Bid

With the bid in a created status, details may be entered on the bid for the products selected when creating the bid. In this case only Energy was selected.

The below figure 46 will illustrate how to enter an Energy curve for the resource.

In the Price curve(s) pane click

Edit icon



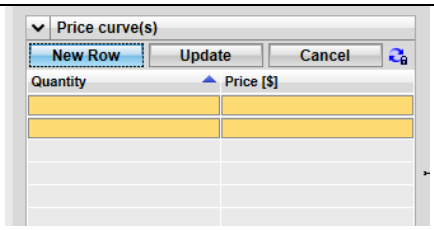
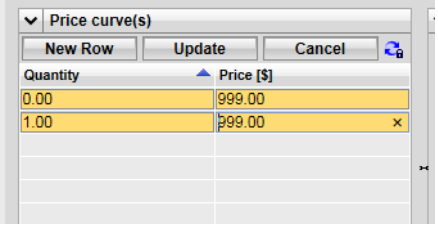
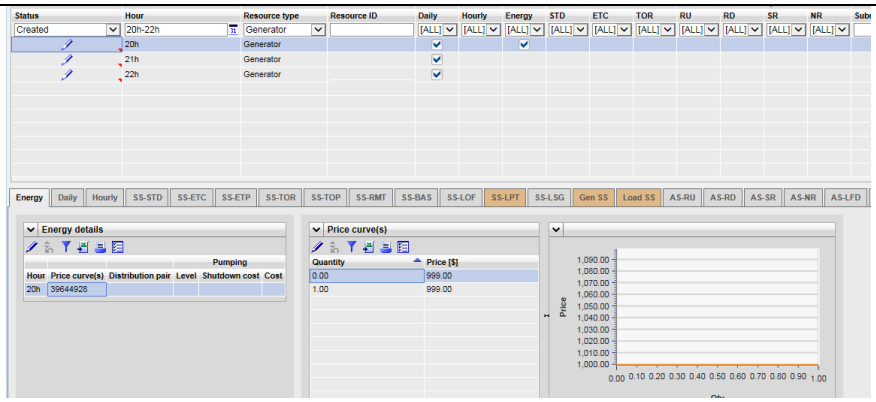
Click New Row for each segment to be entered. There must be 2.	
Enter a Quantity and a Price Then Update	
After Update Top row has Energy check for HE20. Price curve ID for resource. Rows are out of edit.	
	The above bid is now ready for submission with an Energy component.

Figure 46 Created Bid with Product Component.

3.2.1.1 Adding Products to a Created Bid

If desired and an additional component needs to be added to the Created bid this can be done by right clicking the column for the product to add in the Bid summary for the selected bid. These steps are illustrated in figure 47 below.

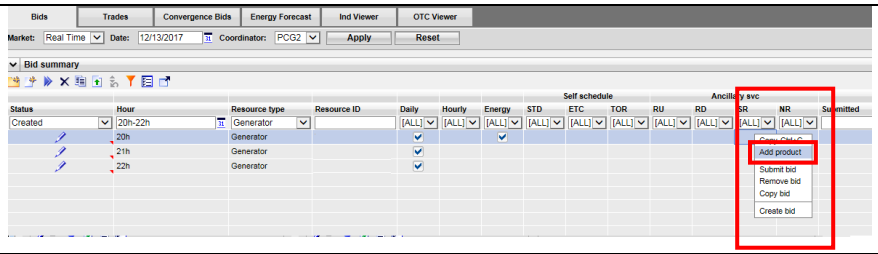
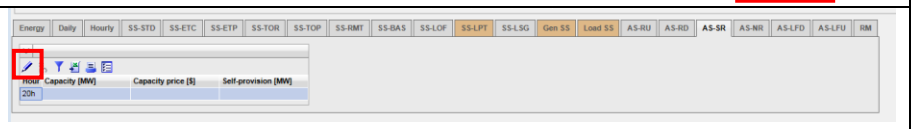
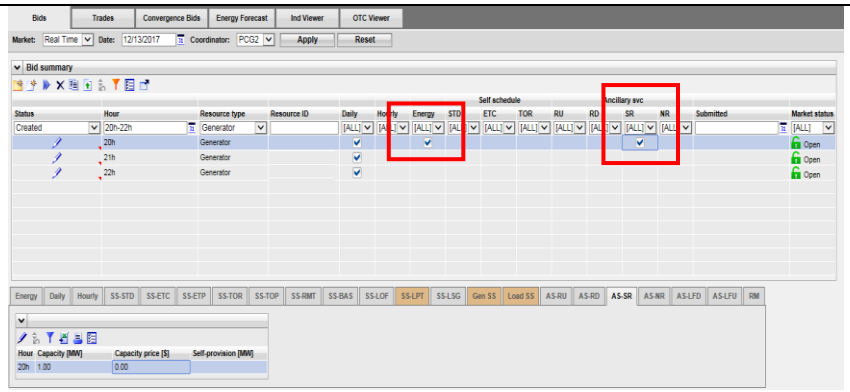
Select Row right click in the Product Select Add Product.	
Detail pane will refresh Product. Select Edit icon	
Enter data Update	
Bid now contains Energy and Spin.	

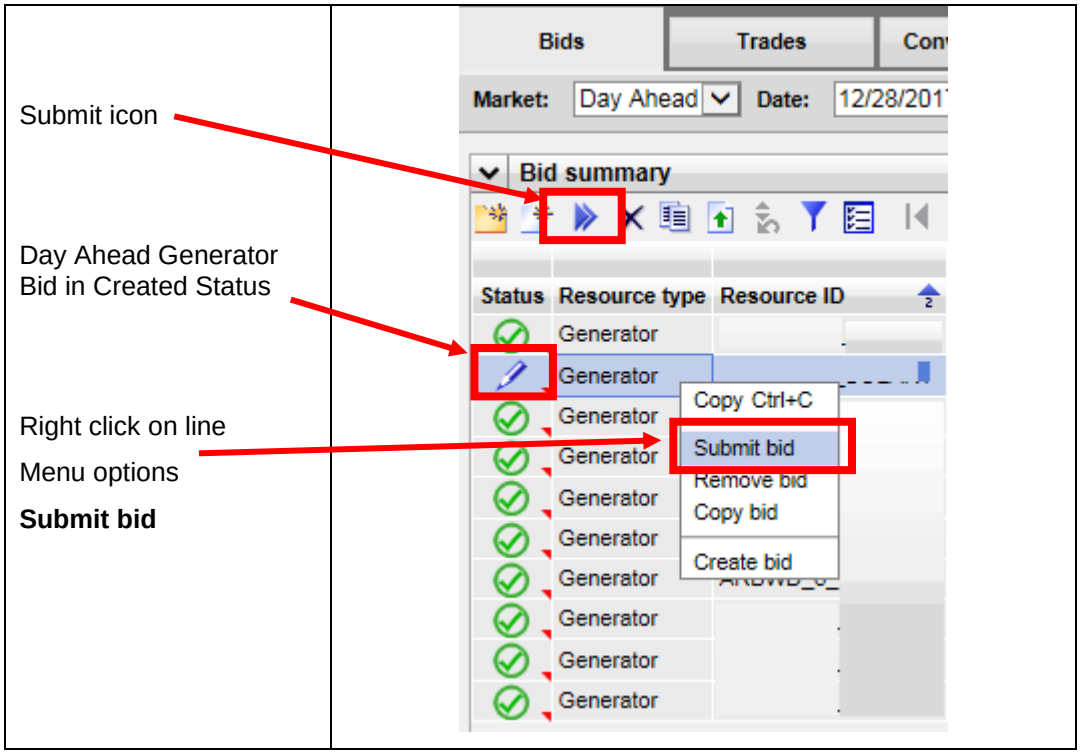
Figure 47 Adding Components

3.2.2 Submitting Bids

Bids that are in a Created status are available for submission, if a bid is not in a Created status, there will be an error on submit that will show on the message pane in the bottom of the screen.

The user can submit 1 or more bids, and there is an option to submit all.

On a Created bid there is an icon to submit or you can select 1 or more rows in the summary grid and right click to bring the menu up to Submit. This is shown below for the Created bids in figure 48.



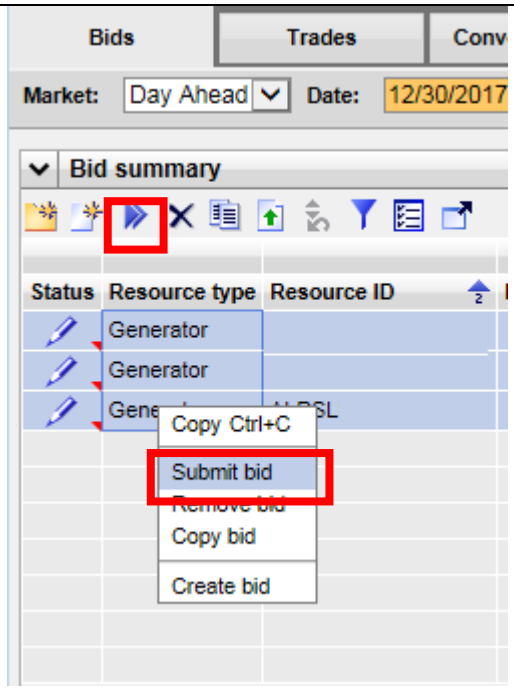
Multi Row select	

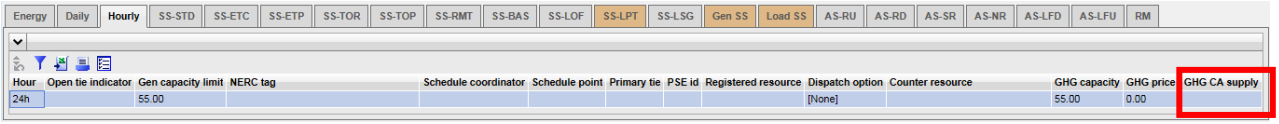
Figure 48 Submit Bid

3.2.3 Product Component Functional Details

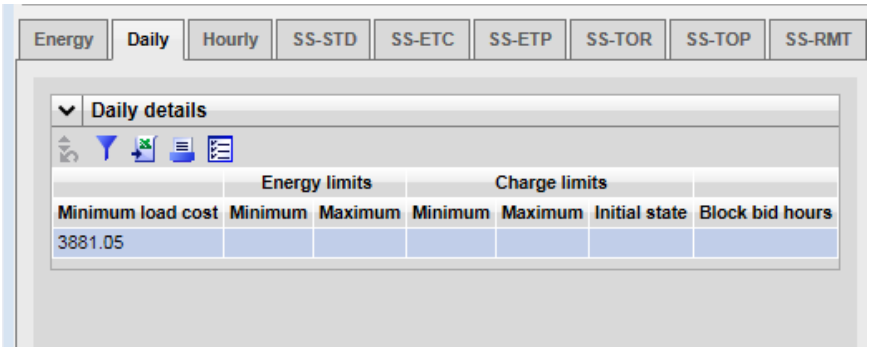
When bidding in selected components there may be new functionality or modified functionality that has been recently released in support of new policy or enhancements. This section of the document will cover any new change to using the UI. All component details are outlined in section 3.1 for the respective tabs.

There are 2 new functions with the Spring 2018 Release that impact the UI.

1. Adding CA Supply Indicator (Hourly tab – Real-Time ONLY for EIM Participating Resources)



2. Removing Ramp Rate input (Daily tab for all resources).

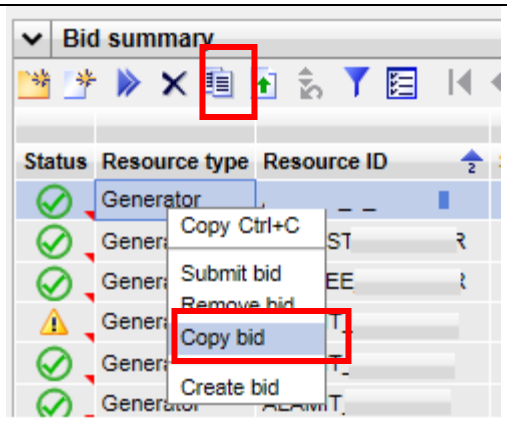


3.2.4 Copying Bids

To copy an existing bid for editing or submission can be done using the copy icon or by selecting rows from the Bid summary and right click to copy. You can copy to either the current sheet for editing the existing bid or to a new sheet for a different date. After the 'Copy to' has been selected you can either select Copy, Copy and submit or Cancel the copy.

If selecting a New sheet and specifying a date either in the date column manually or by selecting a date from the calendar pop-out, when the copy is performed the Bid summary will go to that date.

Copy will allow for editing of the bid prior to submission, Copy and submit will submit the copied bid and Cancel will cancel the operation and return to the Bid summary. Please see the below for an illustration on how to copy in figure 49.

Copy icon Right click menu Select Copy bid	

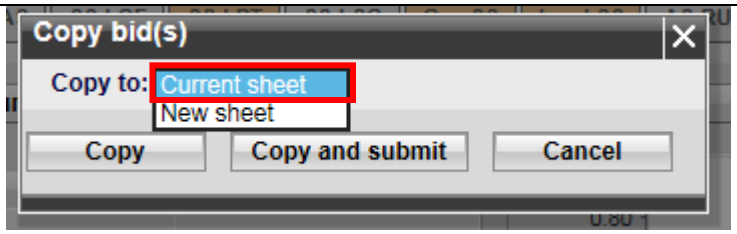
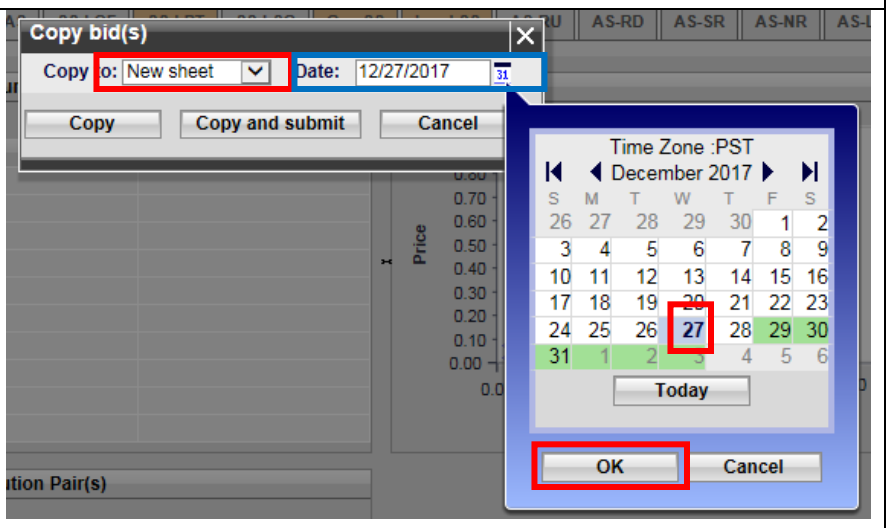
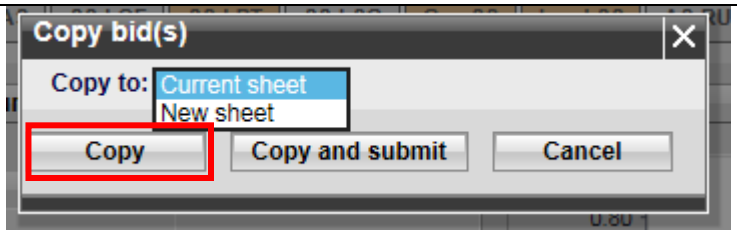
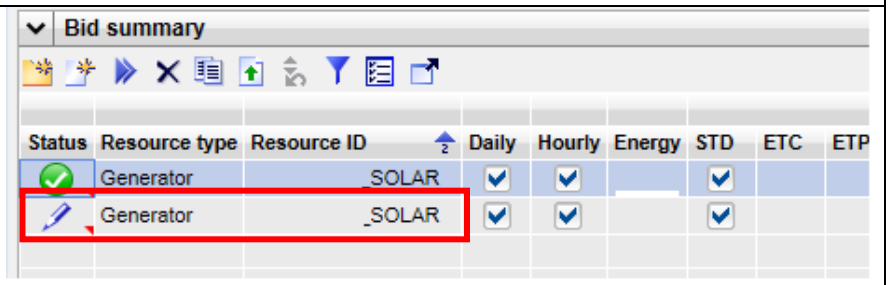
Copy to: Current sheet	
Copy to: New sheet Date display and calendar pop-out. Select date then OK.	
Using copy for either Current sheet or New sheet	
Copied bids will show as Created for the resource. Select that row to edit.	

Figure 49 Copy Bids

3.2.5 Removing Bids

To remove a bid select the row or rows from the Bid summary display and then use either the icon for remove bids or right click and select the remove bids from the menu. This is illustrated in figure 50 below.

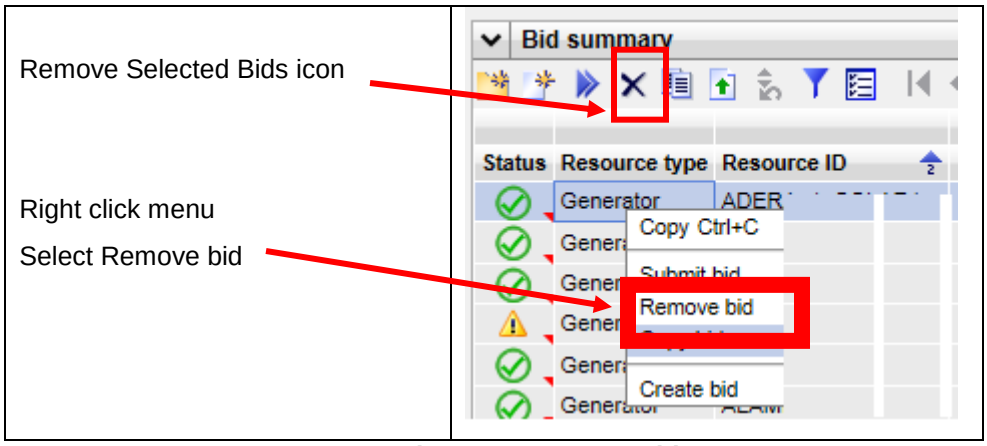
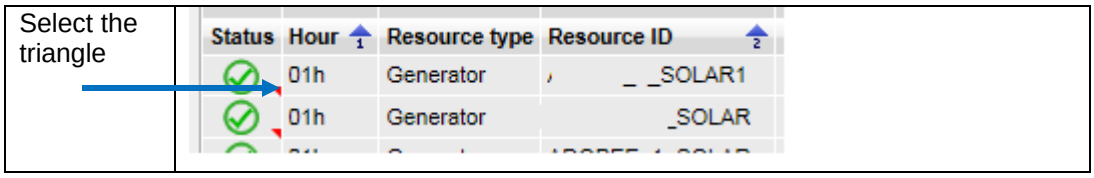


Figure 50 Remove Bids

3.2.6 Viewing Messages on Bids

For each bid that is not in a created status there will be a set of messages indicating the rules that were triggered for the bid after it was submitted. To view the messages click on the red triangle located in the bottom right corner of the Status cell. This will open a pop-up Bid Messages display to show the Product, rule number, level indicator and message shown in figure 51 below.



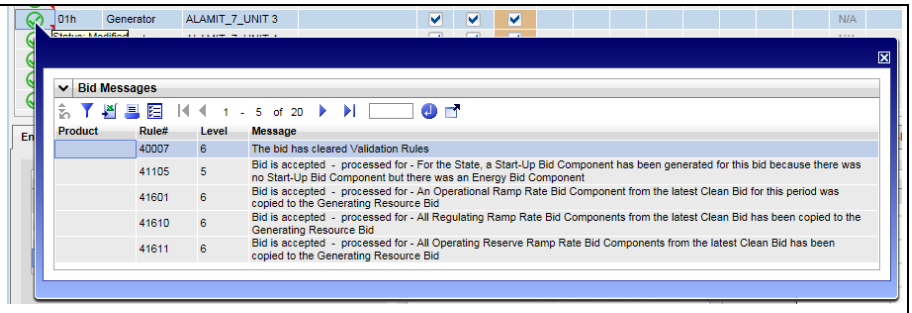
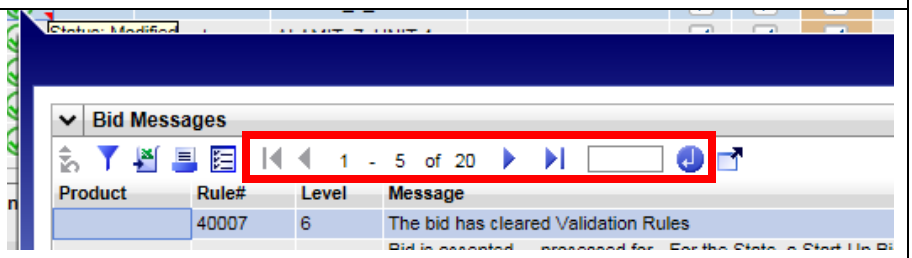
Message pop out.	
Displayed rows (5) Page forward or back.	

Figure 51 Bid Messages

The messages provide required feedback on submitted bids to participants, it should also be noted that if a bid that was submitted and was market accepted at the time of submission could become non market accepted after a triggered bid revalidation such as from either new master file data for a future trade date or by special processing of contract entitlements or wheeling transactions to name a few.

Product will indicate the rule fired for a specific product type, if there is no Product it means the rule applies to the bid in general or is either a Daily or Miscellaneous component.

Rule number is the actual rule that fired while processing through the rules engine, the rule document is located on the CAISO web site.

The **level** can be shown as 0, 5, or 6 depending on the rule condition. A 0 will indicate that the bid did not meet the conditions specified in the rule. Typically you will see this on rejected or invalid bids. A rule with a level of 5 or 6 indicates that some processing was done on the bid, you will typically see this on modified bids when a component is added or an existing component is modified to meet the condition of the rule.

The **message** is intended to be a simplified explanation of the rule that fired to indicate either why the bid is not market accepted or what was modified on the bid to meet the rule condition.

3.2.7 Transaction Walkthrough

To create a Transaction bid is similar to the steps defined for the generator in section 3.2.1. Below in figure 52 will show the combination of the entered data and how it will be processed by SIBR to generate a Transaction MRID (name) based on SIBR Business Rules.

All data in the **Transaction** box must be entered except for Alternate Tie (this is reserved for pre-defined Tie Points). The Scheduling Point must be allowed at the Primary tie to be accepted.

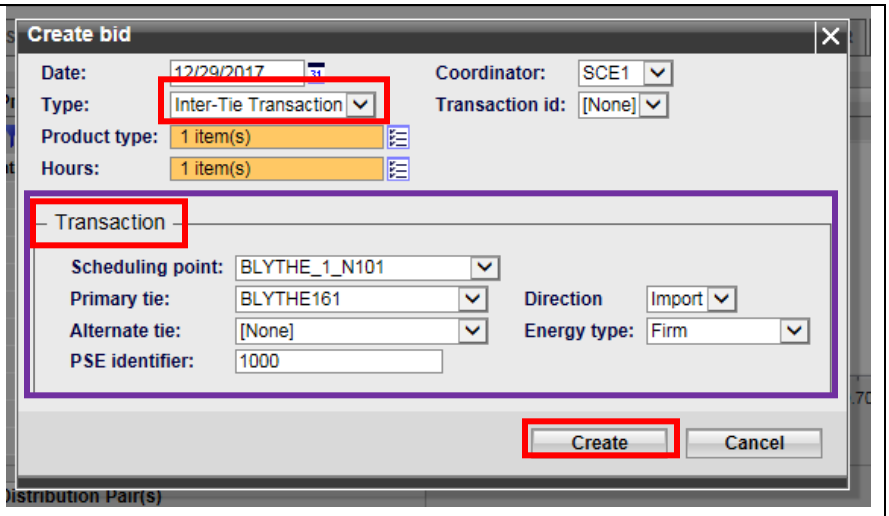
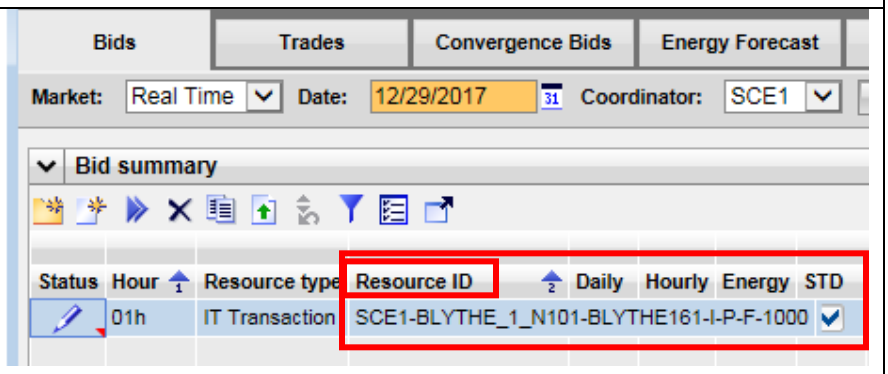
Select the Type: Inter-Tie Transaction Scheduling point Primary tie PSE identifier Direction Energy type Create or Cancel	
The created bid will be displayed showing the Transaction name as the Resource ID.	

Figure 52 Create Transaction bid

3.2.8 Wheeling Transaction Walkthrough

This section will take the user step-by-step through Wheeling transaction entry process in figure 53 below. The Wheeling functionality now uses the 'Counter Resource' instead of a Wheeling Reference.

The 'Counter Resource' if submitting a bid on an Import, would be the Export resource.

There are both Registered Interties and Transactions that may have Wheeling.

If the bid is on a registered Intertie the Counter Resource must be the other Wheeling Transaction bid, and the Registered Resource check box must be selected.

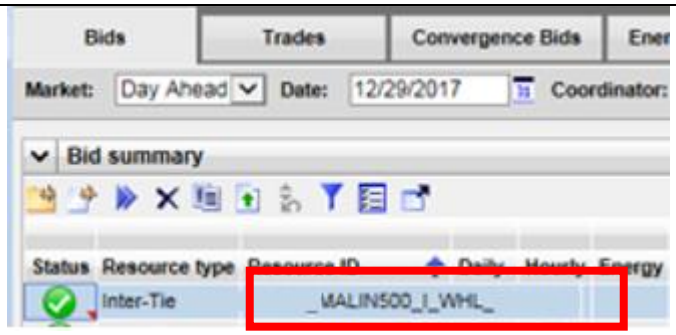
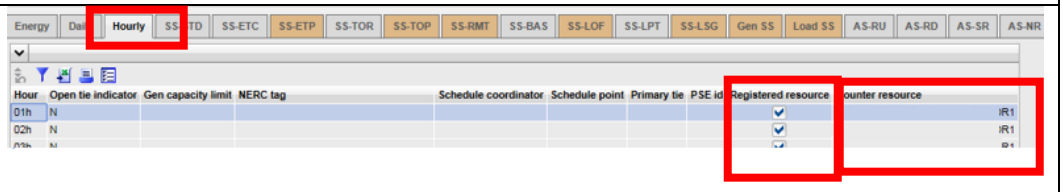
Day Ahead bid Import resource	
Hourly tab Counter resource is Export.	

Figure 53 Wheeling Transaction

Import Bid uses Export Counter Resource, the Export Bid uses the Import Counter Resource.

If the bid is on a Transaction then the Scheduling Coordinator, Scheduling Point, Primary Tie, PSE Identifier must be supplied that when applied and submitted will generate the Counter Resource using the Transaction MRID for the other Wheeling Transaction

Once the bid has been submitted and processed, the SIBR Rules will generate the Counter Resource for the Transaction. (same methodology as when a Transaction bid is submitted.)

After submission, you can view the Hourly Display page and see the generated Counter Resource.

4 Trades

4.1 Trade Display

This display will allow the user to enter/create, view submitted, submit, copy/paste, and cancel trades for the RT, and the DA markets. When viewing submitted trades, you will always see the current date in header when logging in, this is the same as for bids.

The user will be allowed to view both the “created state” (which is editable), and the latest submitted trades. The user will also be able to filter using the In-Line filters to narrow in displayed data. Refer to section 2.2.1 for the filter options previously defined.

Once logged in to the SIBR system, the Trade Hourly Detail display can be found on top the Trades summary display shown below in figure 54.

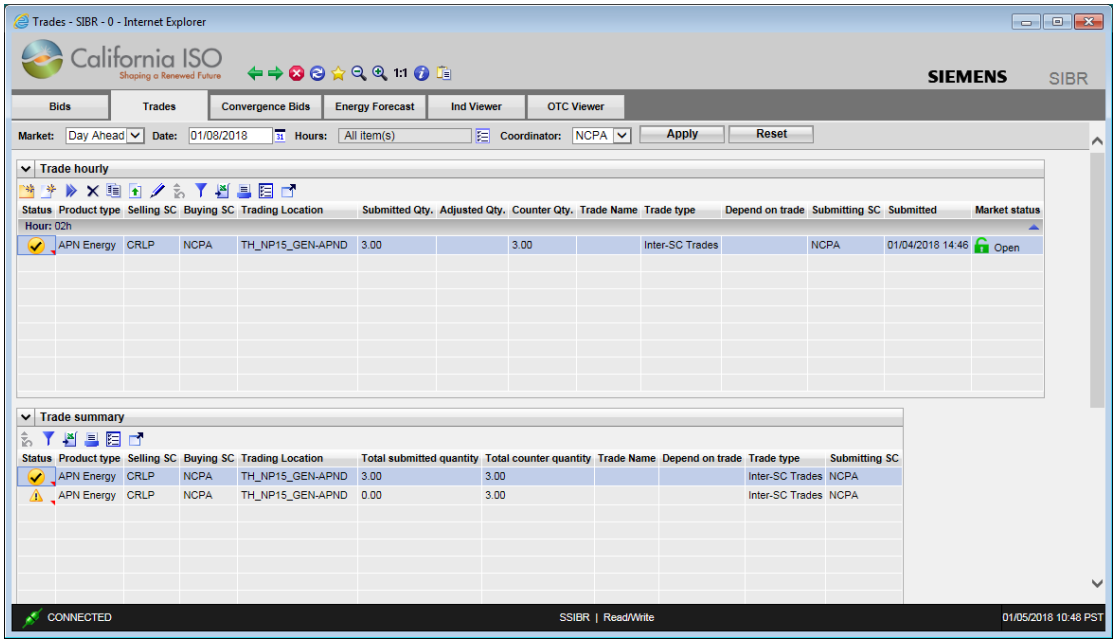
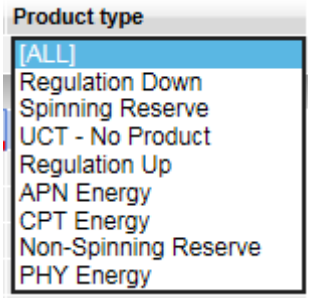


Figure 54 Trade tab

4.2 Trades Products and Market Type

Managing trades is largely identical to managing bids for both Day-Ahead and Real-Time trades. The only major difference is that Day-Ahead trades are for a full day and viewed by the hour and Real-Time bids are for a one-hour period. In addition to the market time periods, there are certain components in a trade that can be submitted either for DAM or RTM.

Trade products available. Regulation Down/Up, Spinning Reserve, UCT, Non-Spinning Reserve are available in RTM only. PHY and APN for both. CPT will exist if PHY trade does not clear fully.	
Aggregated Pricing Node (APN)	Trades that do not require validation of physical delivery and are only provided at defined aggregated pricing points (Trading Hubs and LAPs).
Physical Trade (PHY)	Physical Inter-SC trades are used to facilitate the settlement of the Seller's Choice contracts.
Converted Physical Trade (CPT)	A converted physical trade has all the attributes and relations inherited from the PHY but the quantity is the pro-rata reduced quantity of the PHY.
Regulation Down RDT (RTM Only)	A Trade of Regulation Down Obligation.
Regulation Down RUT (RTM Only)	A Trade of Regulation Up Obligation.
Spinning Reserve Trade (RTM Only)	A Trade of a Spinning Reserve Obligation.
Non-Spinning Reserve Trade (RTM Only)	A Trade of a Non-Spinning Reserve Obligation.
Unit Commitment Trade (RTM	Load Uplift Obligation

Only)	

4.3 Managing Trades Hourly Detail Display

The UI Trades Summary is where all the options will be present for managing trade details. This area will provide options for creating, copying, submitting, removing and viewing trades. These functions are primarily the same between bids and trades when using the icons or by using the right-click mouse option menu.

4.3.1 Trade Creation

This section will take the user step-by-step through the trade entry process. The scenario used in this walkthrough is straightforward and designed to take the user through each of the basic trade-entry steps. Some aspects of the trade-entry process may be left out due to the fact that trades can become complex.

“Created” for new/editable trades, otherwise the current status of the submitted trade. Trade status is one of the following:

- Invalid
- Valid
- Conditionally Modified
- Conditionally Valid
- Created
- Submitted (or Recent Submit)
- Modified
- Rejected
- Unmatched
- Matched

Assuming user is brought to Day-Ahead Bid Summary at login. Click on Trades tab to bring up the Trade Hourly and Trade summary display.

When creating a Trade certain information will be required to generate the trade to be viewed in the Trade hourly so that it may be submitted.

The Coordinator drop down will show the SC names associated with the authorized certificate that was used to login.

Trade type For Real Time the **Trade type** can be one of the following:

- Inter-SC Trades (DAM or RTM, it defaults to this in DAM)
- Ancillary Services Trades (RTM only)
- Unit Commitment Trades (RTM only)

Location depends on Trade type

- List of resource locations (PHY)
- trading hubs (APN)
- aggregation points (APN)

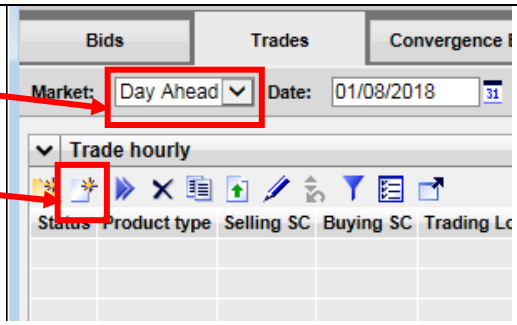
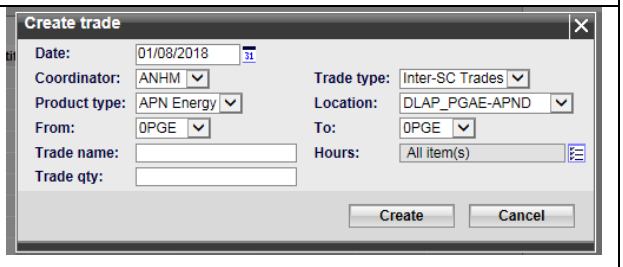
List of SCs in the From are selling to another SC. (drop down will show all)

List of SCs in the To are buying from another SC. (drop down will show all)

Trade name (PHY only, text entered must match exactly between both parties)

Trade qty is the MW to trade that must match with both parties. Note that unmatched trades will be invalidated at the close of the respective market for which they were submitted to if there is no counter trade.

Below in figure 55 are the steps for creating a trade.

Select Market. (Day Ahead or Real Time) Click on Create trade icon.	
Select the Date. Select Coordinator. Select the Product type. Trade type (is always Inter-SC Trades in DAM). Select a Location where the trade will take place.	

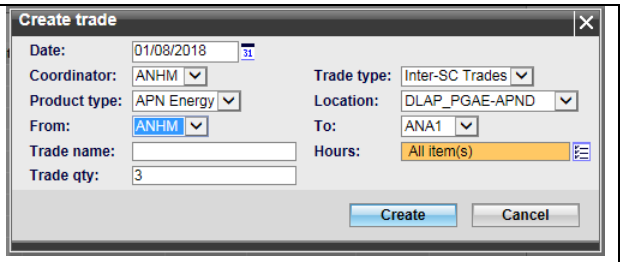
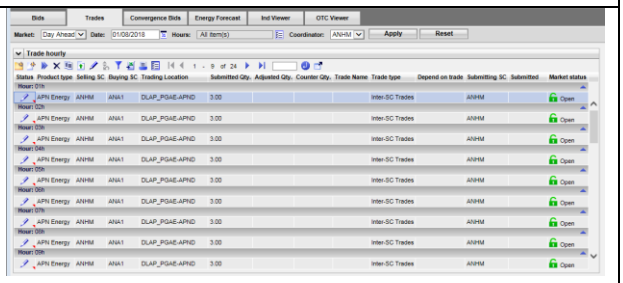
Select the From and To parties involved in the trade (one must be the Coordinator). Select Hours Enter Trade name (only for PHY). Enter Trade qty (MW). Select Create.	
The newly created trade will appear in the Trade hourly display. These are in a 'Created' status. (not submitted yet).	

Figure 55 Trade Creation

Once the trade has been submitted and processed by the SIBR rules. The submitted trade may now be viewed from the Trades Summary display.

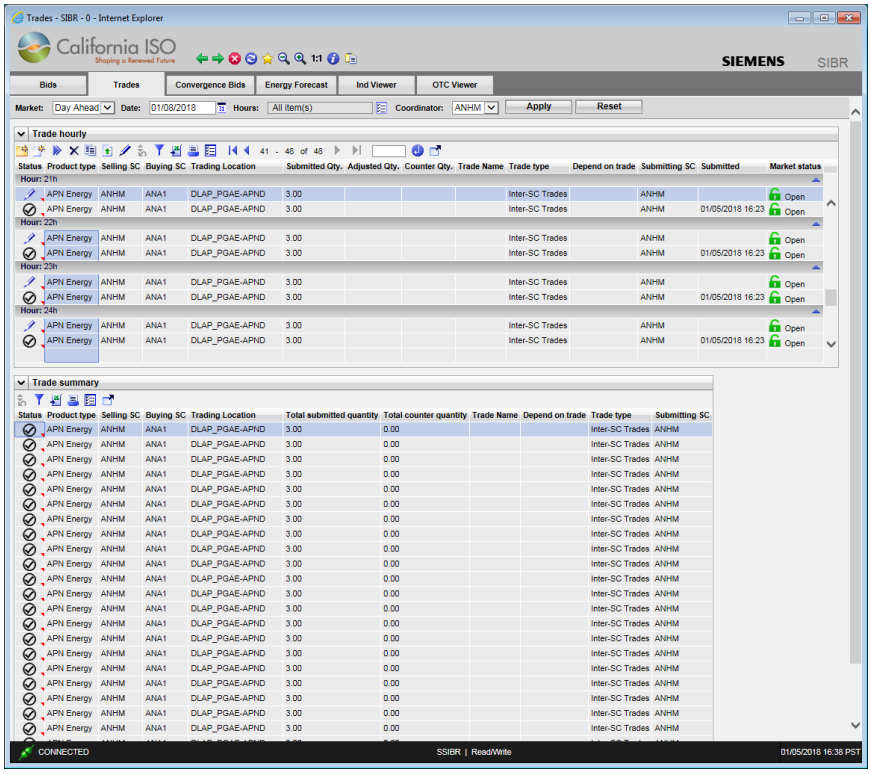


Figure 56 Trade Summary of submitted Trade

There, the user can monitor the trade status and view other trades fitting the summary display criteria. Note that if there is a trade that is missing it will show on the summary as 0 submitted with a counter quantity from the other party.

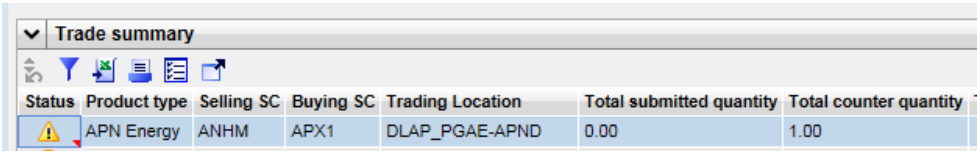


Figure 57 Trade Summary of Missing submitted Trade

4.3.2 Trade Submission

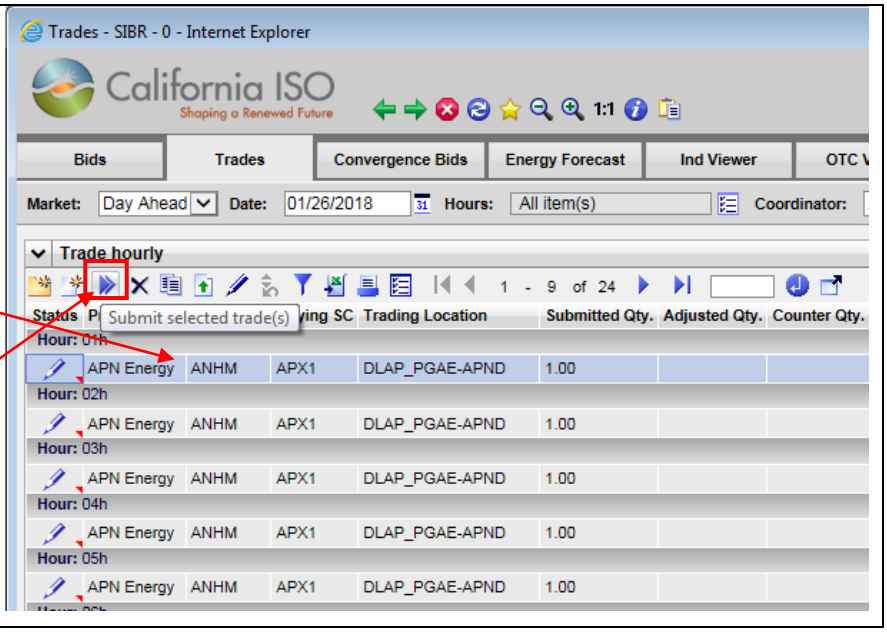
This section will take the user step-by-step through the trade submission process. The scenario used in this walkthrough is straightforward and designed to take the user through each option to submit a trade.

The [Submit Trades] button submits selected trades to the market for processing. Trades are selected by clicking on the row or rows for trades in the tabular data grid shown in figure 58 below.

For single hour submission

Selected row

Click on Submit selected trade(s).



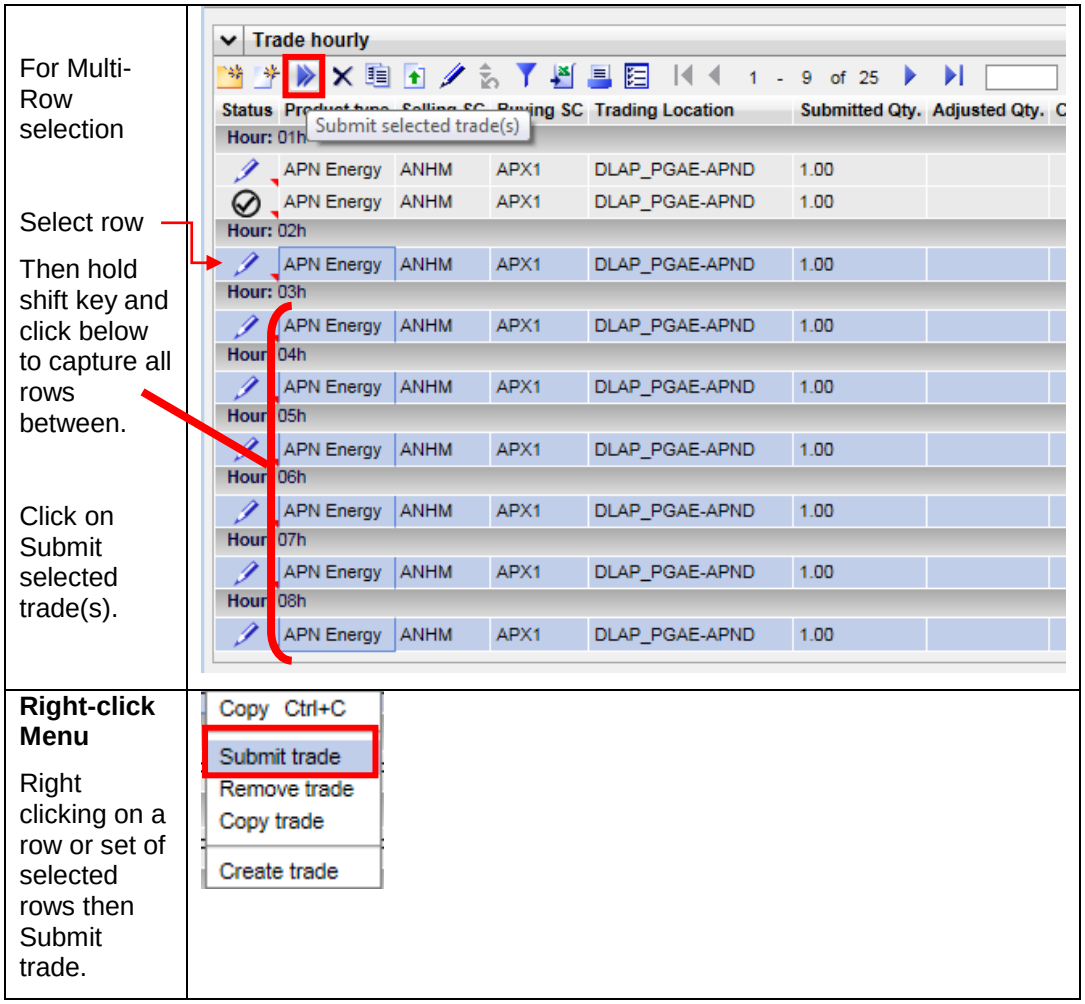


Figure 58 Trade submission

4.3.3 Trade Copy

This section will demonstrate how to copy a selected trade or set of trades.

The “Copy selected trade(s) to new trading day” function copies selected rows to a new date for future use. The user can use the icon to copy trades or right-click menu once selected rows are highlighted shown in figure 59.

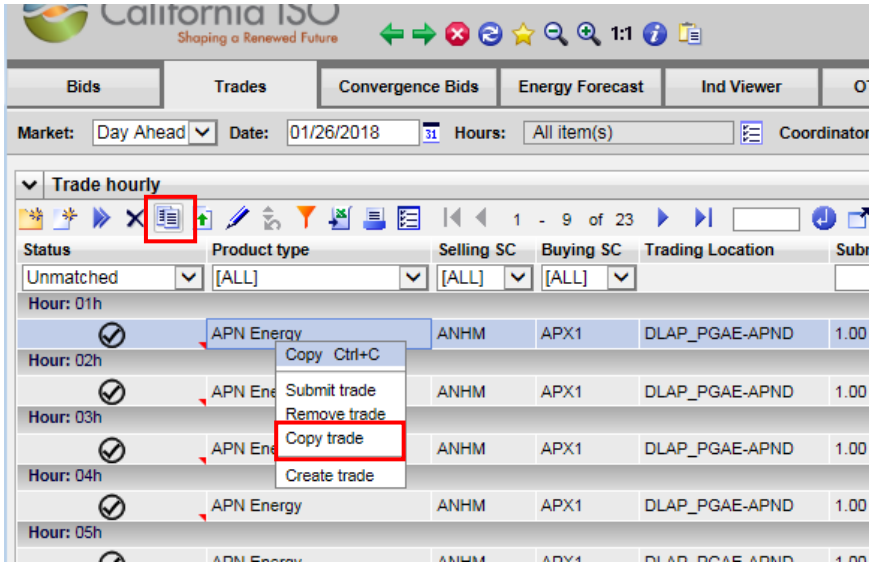
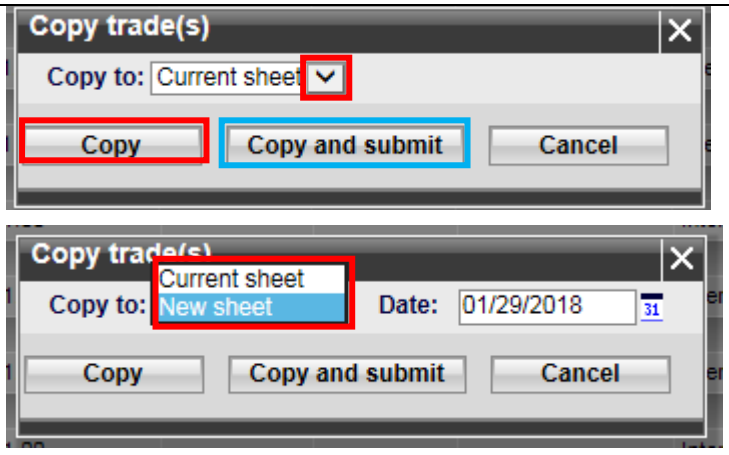


Figure 59 Select Copy Trade

There are two choices when a copy is selected, one is for the Current sheet which will allow an edit to take place retaining all the data and the second is for New sheet which will copy the trade(s) to a new date shown in figure 60.

Copy trade(s) Drop down Copy (edit prior to submit) Copy and submit, submits as is. New sheet	

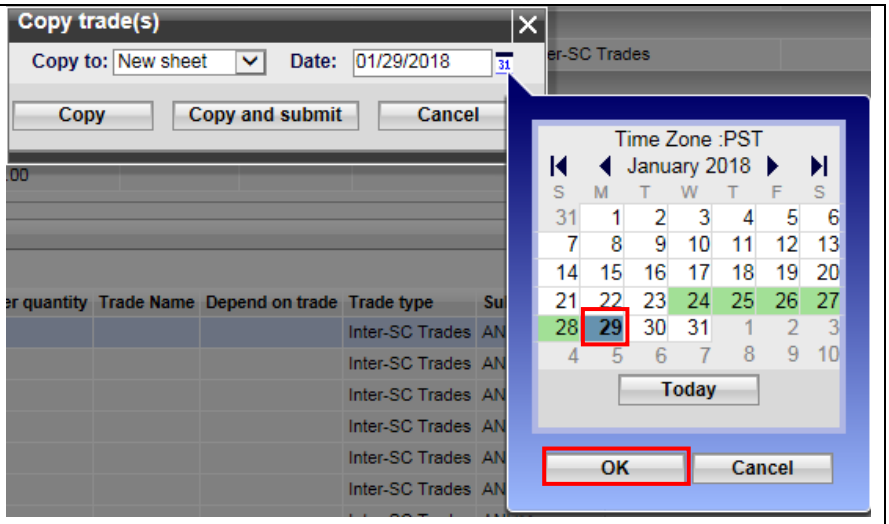
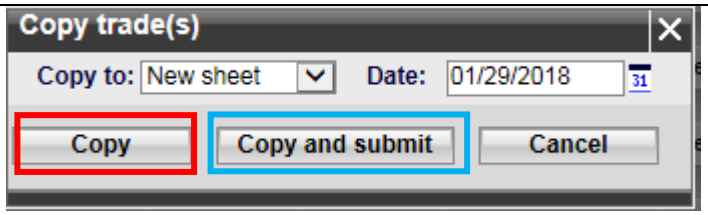
New sheet Date select Select date then OK	
Copy will allow edit before submit. Copy and submit will submit as is for that date.	

Figure 60 Copy Trade

4.3.4 Trade Removal

The removal of Trades is similar to removing bids. There are 2 methods that can be used to remove a trade or set of trades. The first is by using the icon from the top of the grid for removing selected trade(s) after selecting a trade or set of trades from the grid. The other option is to use the right-click menu after the trade(s) are selected and then click on Remove trade (shown in figure 61).

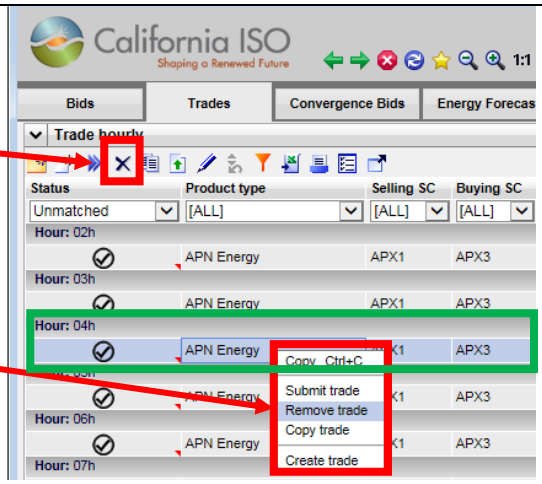
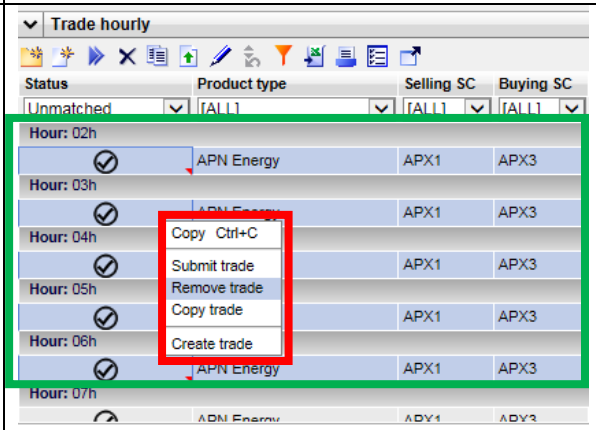
Icon for Remove selected trade(s) Right Click Menu Remove trade	
Multi Row selected.	

Figure 61 Trade Removal

5 Convergence Bids

Convergence Bids (CB) are for the Day-Ahead Market only and are submitted for a full 24-hour period that must contain at least 1 market interval (Hourly bid) and may be submitted up to 7 days ahead of the target market date. Convergence Bids are for energy only.

Submission of a CB that becomes valid will also be subject to Market Clearing where the CB bid will have a Bid Credit Status returned based on available collateral.

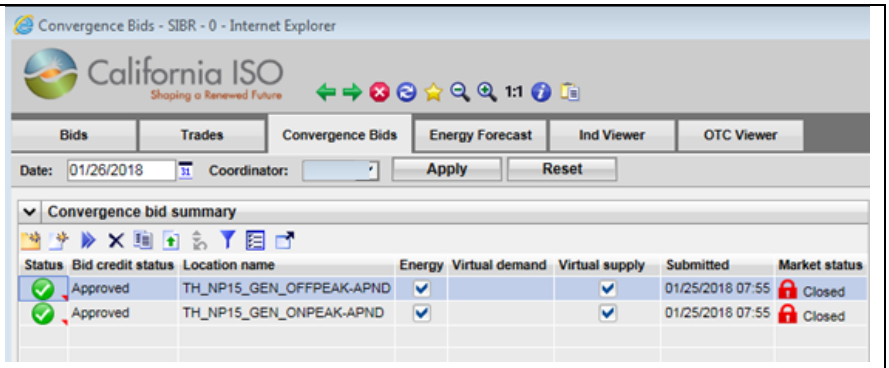
If the Bid Credit Status is returned as Approved the bid will remain as Valid, if the Bid Credit Status is returned as Disapproved the bid will become invalid.

CB are defined with having the below entered into the bid:

- Trading Date
- Scheduling Coordinator (must be associated with a CB Entity in order to submit Convergence Bid.)
- Resource Type (Virtual Demand or Virtual Supply)
- Product Type (Energy only)
- Location (Individual Pnode or Aggregate Pnode)
- Tie (will only populate IF the Location selected is associated with a Tie)

5.1 Convergence Bids Display

Figure 62 displays the Convergence Bidding tab shows the Convergence bid summary data for a select trade date and Coordinator.

Displayed: Status (Bid) Bid Credit status Location Virtual type Demand or Supply	

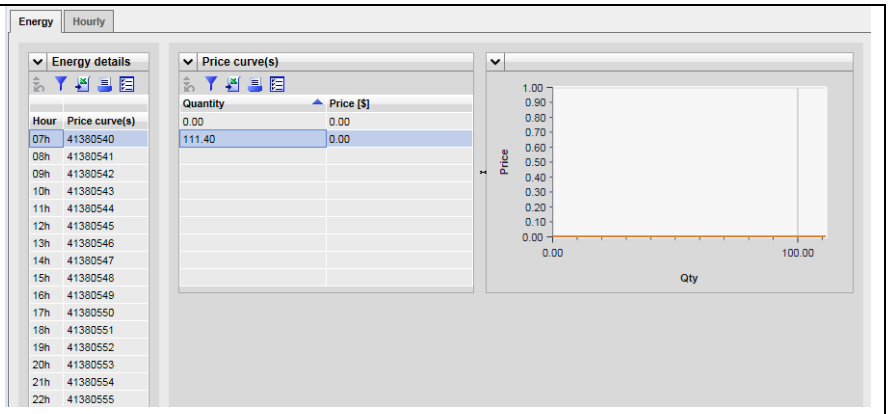
Energy The energy bid here is the same as an energy bid entered for a physical bid.	

Figure 62 Convergence Bid summary

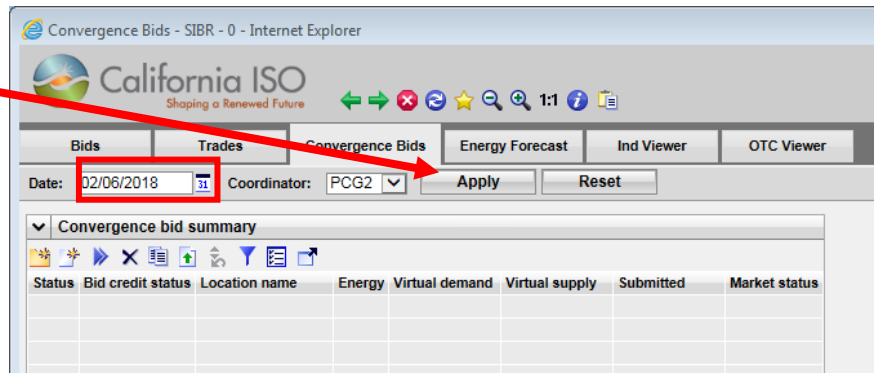
5.2 Convergence Bids Create

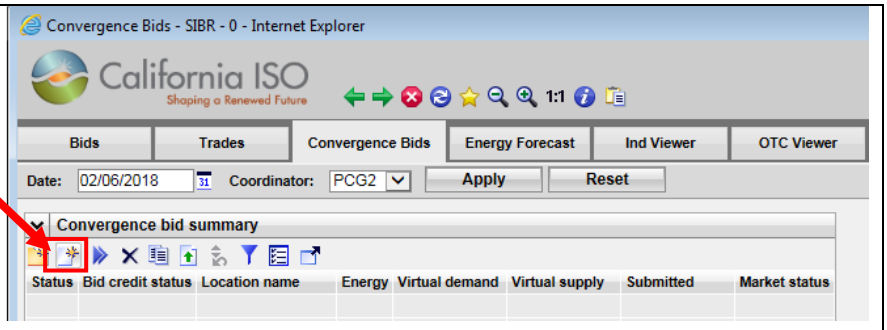
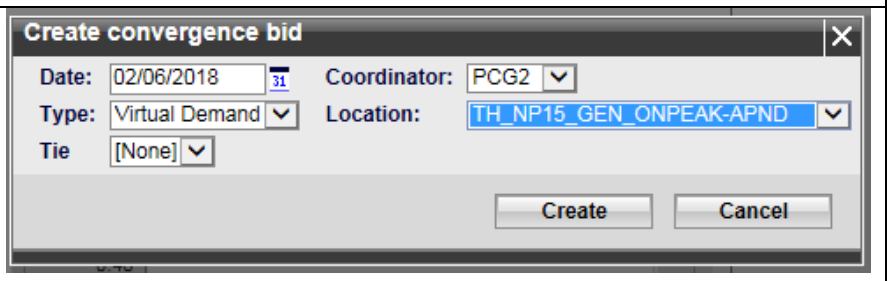
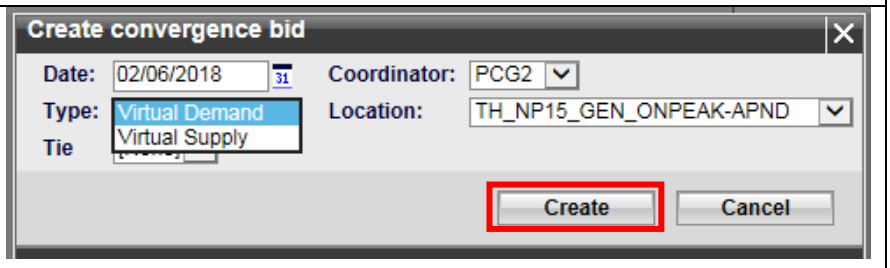
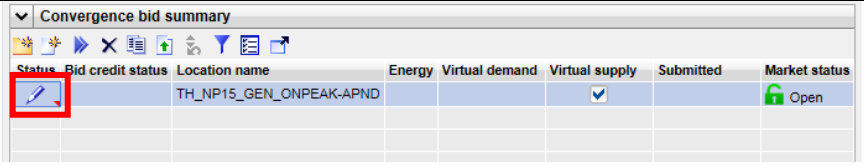
This section will take the user step-by-step through the bid entry process. The scenario used in this walkthrough is straightforward and designed to take the user through each of the basic bid-entry steps. Convergence Bids only contain the Energy Product.

From the Bids tab on the Bid summary clicking on the create icon will generate a created bid for editing. The steps are outlined on the next page in figure 63.

Creating a Convergence bid is only allowed in the Day-Ahead Market and the header filter will display a date selection and Coordinator.

In the example we have selected the 6ht of February and a Coordinator on the header and hit the Apply button.

Select the Date for the bid and then Apply	

Select the Create bid icon	
Date Type Coordinator Type Location	
Once criteria has been set (Demand or Supply) And location Click the Create button	
Created Status for CB now exists on summary.	

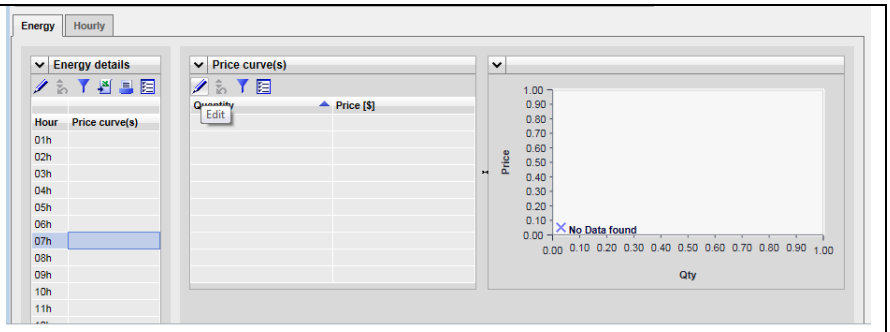
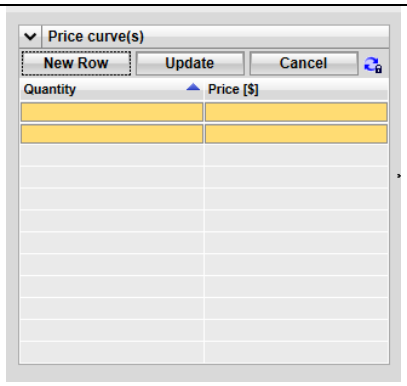
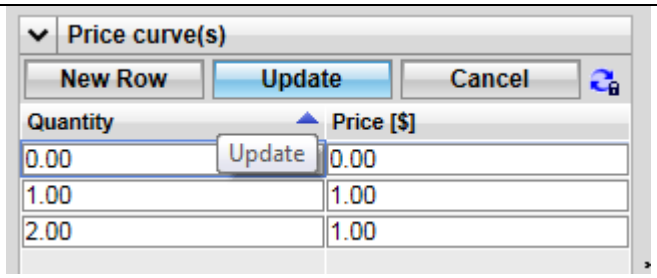
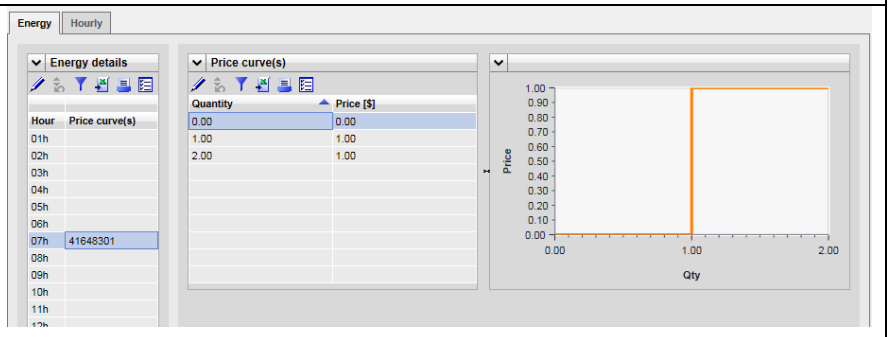
Only Energy is displayed. HE7 is highlighted Click on edit icon in Price Curve to create a curve for that hour.	
After edit is selected click on New Row twice to create editable curve, you can add more rows as needed. Last 2 must match Price.	
Make sure to hit Update after entering data.	
Now there is a Convergence bid with a price curve in HE7. Curves may be entered for 1 or more hours.	

Figure 63 Create Convergence Bid

You may also use the input accelerators to enter curve data from 1 hour to another (refer to section 2.2.4 for these features.

5.3 Convergence Bids Submit

Bids that are in a Created status are available for submission, if a bid is not in a Created status, there will be an error on submit that will show on the message pane in the bottom of the screen.

The user can submit 1 or more bids, and there is an option to submit all.

On a Created bid there is an icon to submit or you can select 1 or more rows in the summary grid and right click to bring the menu up to Submit. This is shown below for the Created bids in figure 64.

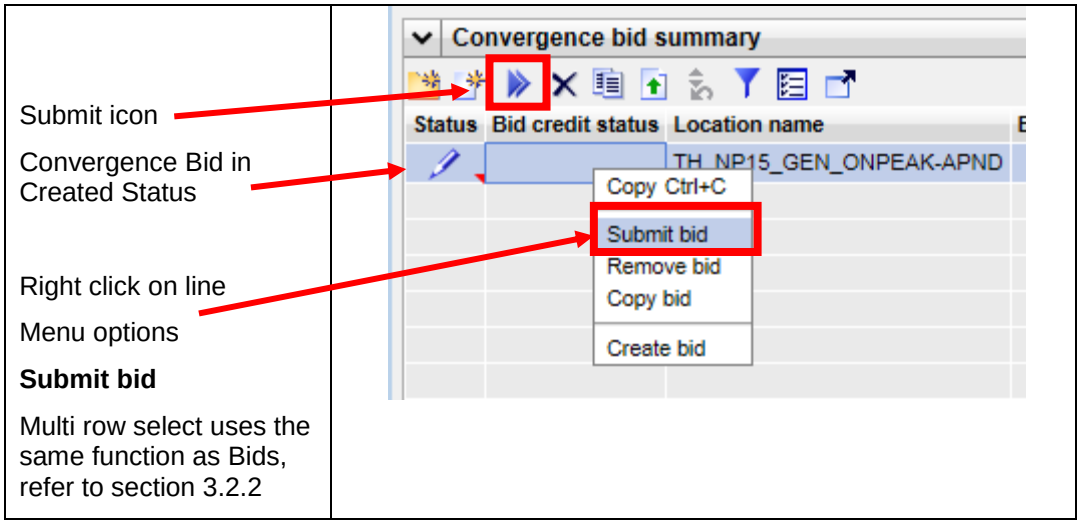


Figure 64 Submit Convergence Bid

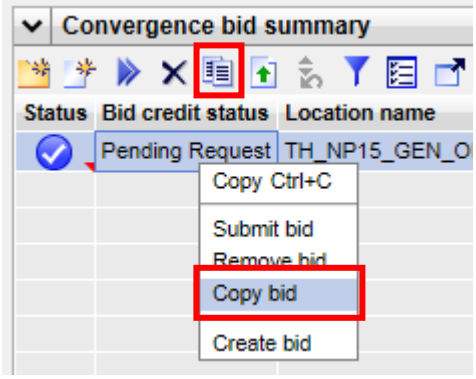
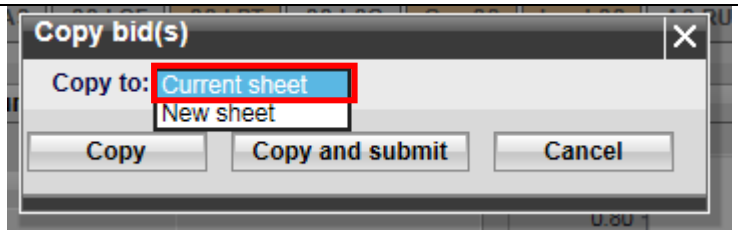
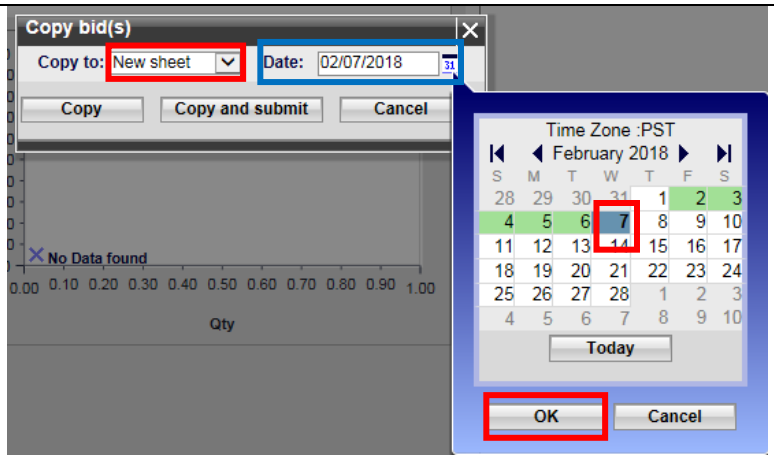
5.4 Convergence Bids Copy

To copy an existing bid for editing or submission can be done using the copy icon or by selecting rows from the Bid summary and right click to copy. You can copy to either the current sheet for editing the existing bid or to a new sheet for a different date. After the

'Copy to' has been selected you can either select Copy, Copy and submit or Cancel the copy.

If selecting a New sheet and specifying a date either in the date column manually or by selecting a date from the calendar pop-out, when the copy is performed the Bid summary will go to that date.

Copy will allow for editing of the bid prior to submission, Copy and submit will submit the copied bid and Cancel will cancel the operation and return to the Bid summary. Please see the below for an illustration on how to copy in figure 65.

Copy icon Right click menu Select Copy bid	
Copy to: Current sheet	
Copy to: New sheet Date display and calendar pop-out. Select date then OK.	

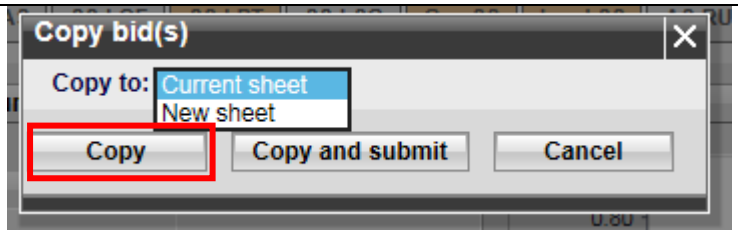
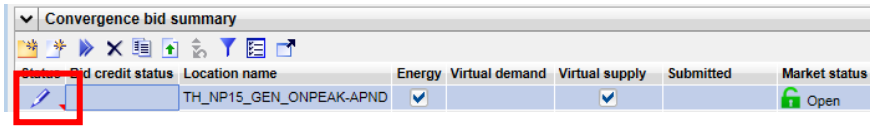
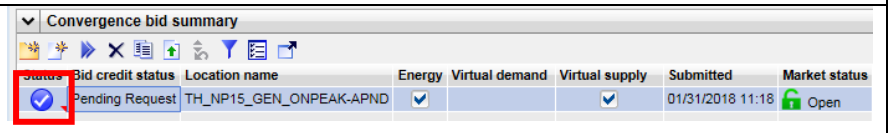
Using copy for either Current sheet or New sheet	
Copied bids will show as Created for the resource. Select that row to edit.	
Copy and submit will show as submitted with status.	

Figure 65 Copy Convergence Bids

5.5 Convergence Bids Remove

To remove a bid select the row or rows from the Bid summary display and then use either the icon for remove bids or right click and select the remove bids from the menu. This is illustrated in figure 66 below.

Remove Selected Bids icon

Right click menu

Select Remove bid

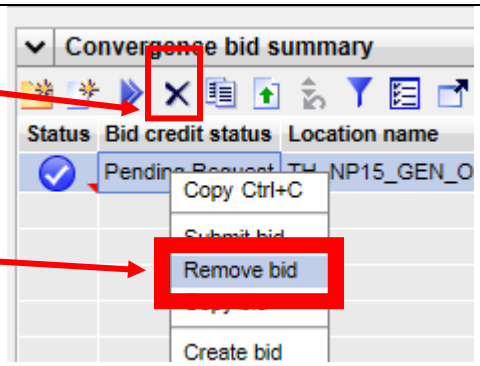


Figure 66 Remove Convergence Bids

6 Energy Forecast Screen

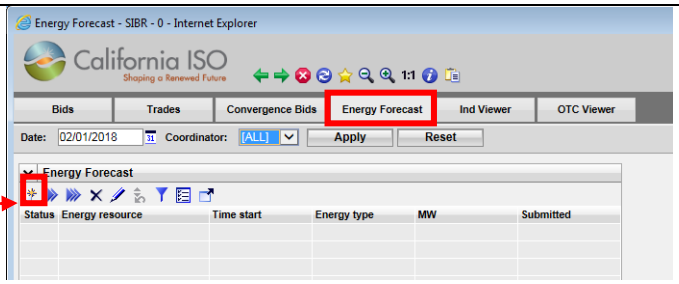
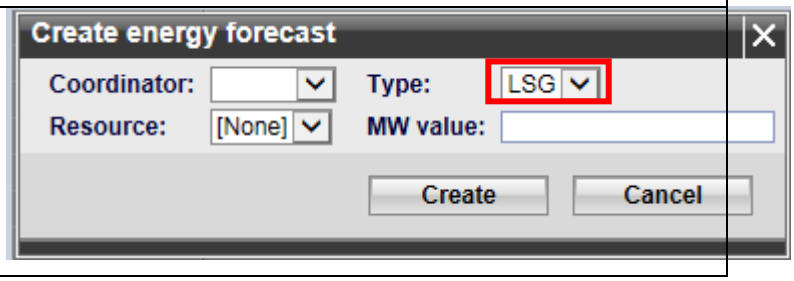
The Energy Forecast Screen is used to submit Energy Forecasts for Variable Energy Resources (VER) and Load Serving Generators (LSG). This data is represented in 5 minute intervals for a resource that will be sent to the Automated Load Forecast System (ALFS) and over-ride the existing 5 minute data for the resource.

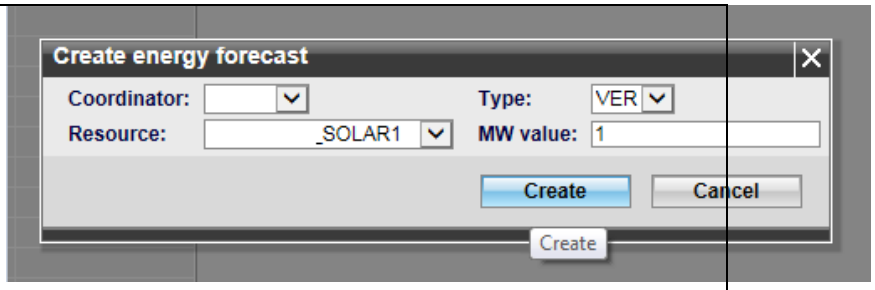
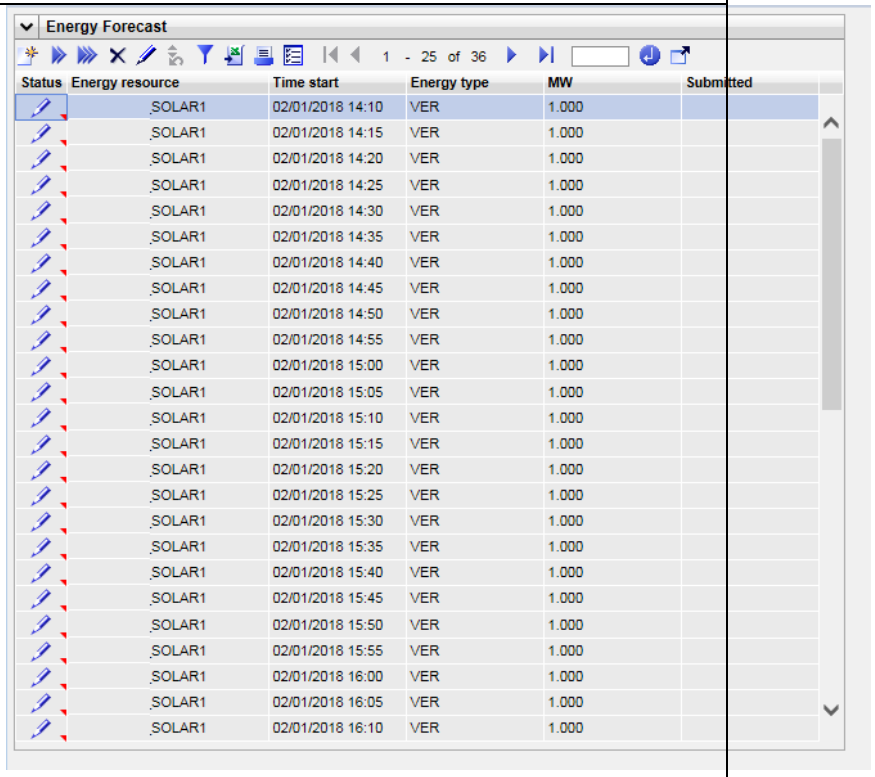
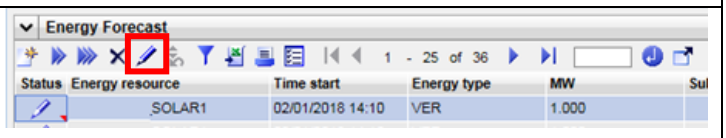
This data is also sent to the market system to be used for the resource in optimiization.

6.1 Energy Forecast Create

Must be logged in to the SIBR system and a resource must be eligible from Master File to be allowed to submit an Energy Forecast. This is an election on the RDT to allow SC submissions for Forecast data. The following steps are illustrated in figure 67 below.

Navigate to the Energy Forecast Screen page by clicking on the Energy Forecast tab in the SIBR application.
Enter a MW value for the Energy Forecast to be used. Then select OK.
This will populate the forecast for then next set of available time periods for the horizon.
And will be displayed on the screen.

Click on the Energy Forecast tab in the SIBR application. Select the Create energy forecast icon.	
Select Criteria from the window for Coordinator, Type (VER or LSG), Resource, and MW value.	

Enter a MW value for the Energy Forecast to be used. Once the data is entered click on 'Create' button.	
All created Energy Forecasts use the same initial value, these are now created and ready for submission.	
All initial created EF will have the same value, to edit specific intervals select the edit icon.	

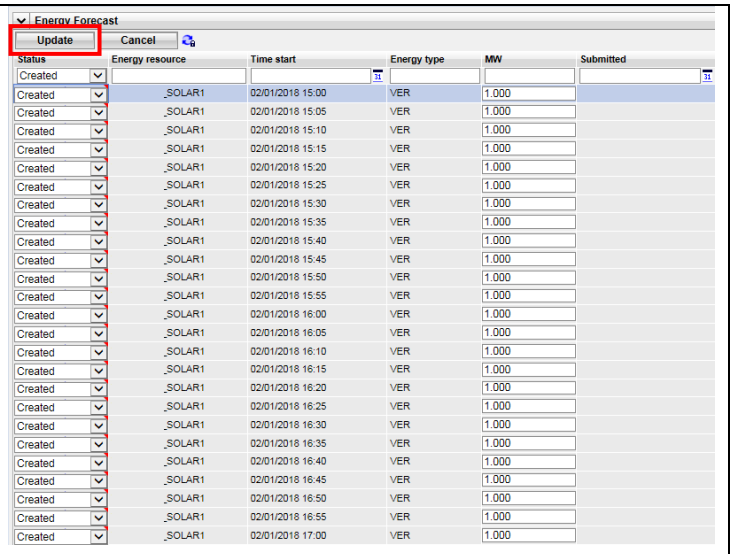
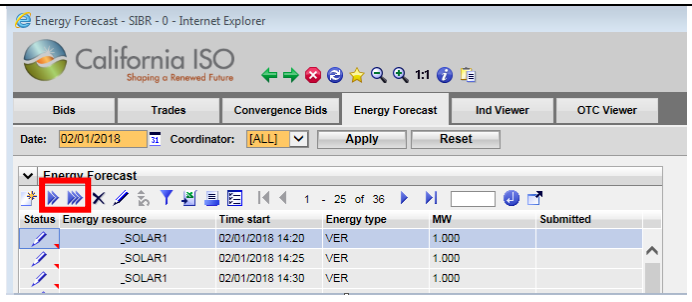
Enter new values for respective intervals and then click Update.	

Figure 67 Energy Forecast Create

6.2 Energy Forecast Submit or Remove

Submitting the Energy Forecast is similar to all submit actions for SIBR by using the Submit icon or using the right click menu option. There is also an additional submit icon that submits ALL created Energy forecasts at once, this is useful if the intent is to submit for all 36 intervals that are created by default. Figure 68 below illustrates submission and removal of Energy Forecasts (EF).

Select the submit icon for selected row or rows.	

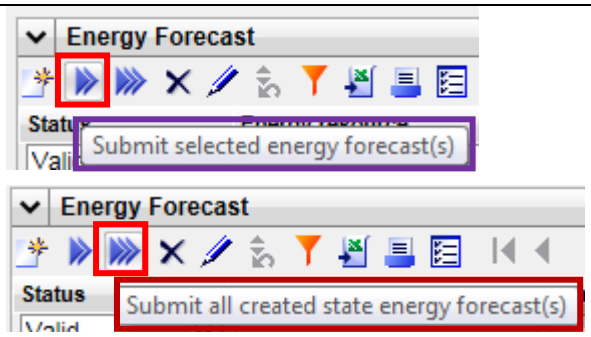
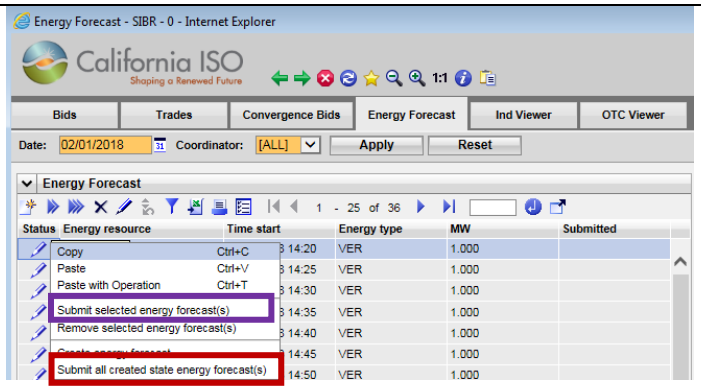
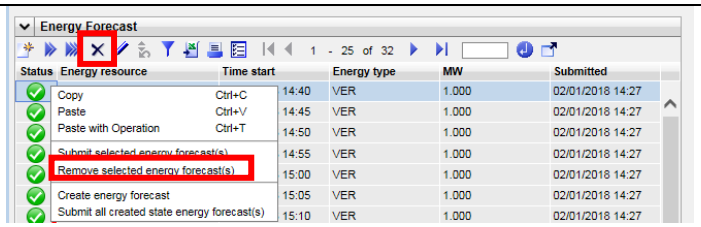
Selected option Or ALL option	
Right click menu Selected or All	
Removing Selected EF	

Figure 68 Energy Forecast Submission and Removal

7 Indicator Viewer Screen

The indicator Screen provides users with the ability to view special indicators that apply to ETC/TOR self-schedules and Wheeling Transactions.

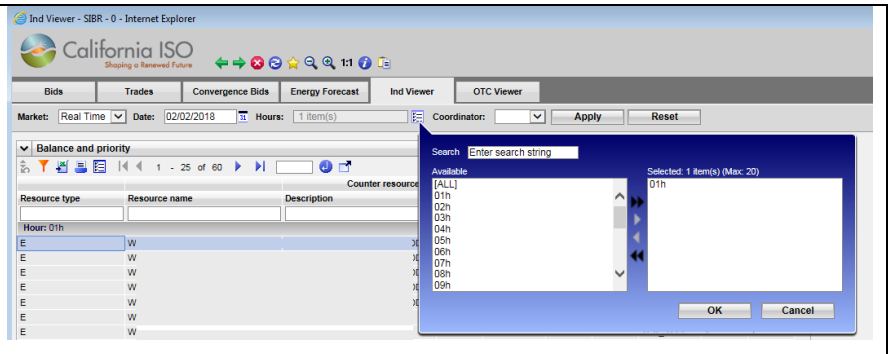
Since these types of schedules must be submitted balanced the Indicator screen allows users to view balance indicators which will display Y if the schedule is balanced or N if it is not balanced by Contract Reference, and Wheeling Counter Resource. In the case of ETC/TOR self-schedules the Priority Indicator is also displayed for each Contract Reference which shows “Y” if the ETC or TOR self-schedule is within its allotted entitlement amount or “N” if it is exceeding its entitlement amount.

The following screen shots will show examples of the information displayed in the Indicator Screen.

7.1 Viewing Information in the Indicator Viewer Screen

Viewing the indicator Screen by clicking on the Ind Viewer tab in SIBR.

Below are steps illustrating how to view data in figure 69. The user will need to select the Market type, Date (all or subset of hours), Coordinator as part of the header filters and then Apply them. Additional Filtering can be used with the In-Line filters, please refer to section 2.2.1 for In-Line filter options.

Hour selection. Select from Available (left pane), use arrow to move to the Selected (right pane). Click OK.	

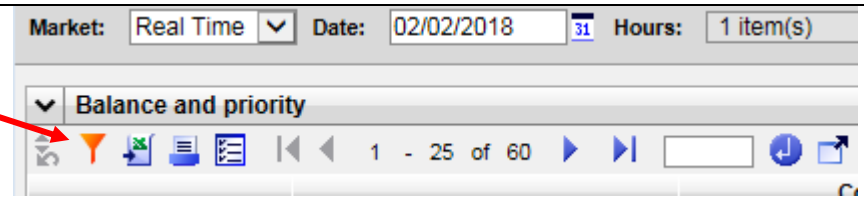
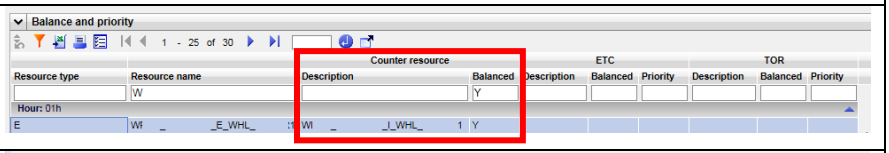
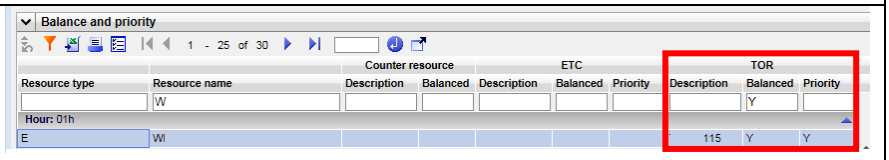
In Line Filter can also be used.	
Wheeling Counter Resource	
TOR Balance Priority	

Figure 69 Indicator Viewer Selection

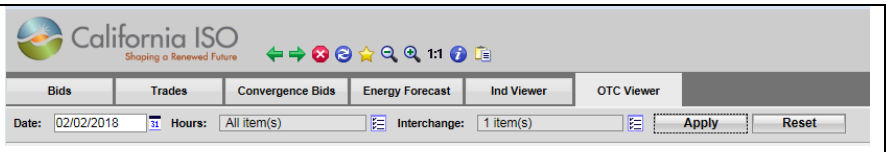
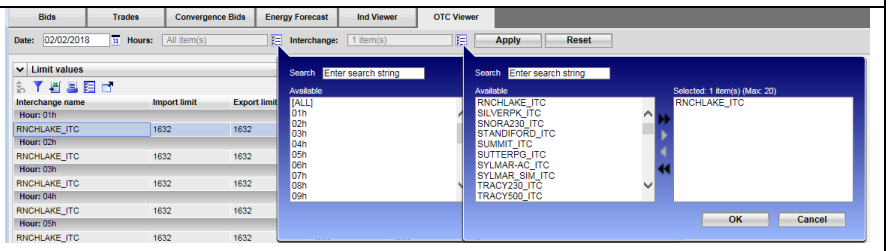
8 OTC Viewer Screen

The OTC Screen provides users with the ability to view by Interchange name the Import and Export Limits that SIBR receives from the Existing Transmission Contracts Calculation (ETCC) application. The data from ETCC is used in SIBR to validate ETC/TOR entitlement values as well as Interchange data for Open Tie conditions.

8.1 Viewing Information in the OTC Viewer Screen

Viewing the OTC Viewer Screen by clicking on the OTC Viewer tab in SIBR.

Below are steps illustrating how to view data in figure 70. The user will need to select the Date (all or subset of hours), and Interchange as part of the header filters and then Apply them. Additional Filtering can be used with the In-Line filters, please refer to section 2.2.1 for In-Line filter options.

	
Hour selection. Select from Available (left pane), use arrow to move to the Selected (right pane). Click OK.	

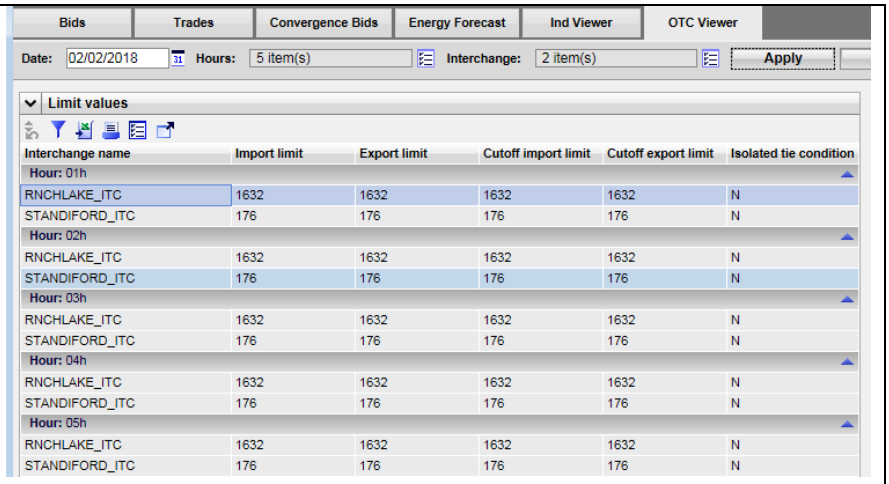
Data will display based on the filter criteria provided.	

Figure 70 OTC Viewer Selection

9 Portfolios

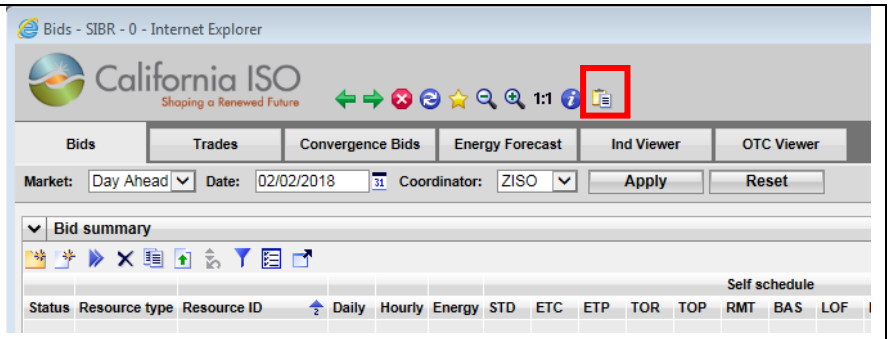
Portfolios offer users the ability to save collections of bids and trades in one or more sheets in a named portfolio for future use. For example there could be a sheet named Unit XYZ DAM generation bids, LAP 123 DAM load bids and DAM Import Bids saved in a portfolio named “weekend” portfolio. These individual portfolio sheets can be retrieved and submitted individually or all three sheets can be submitted at once as an entire portfolio. Portfolios can be created for both the Day-Ahead and the Real-Time market.

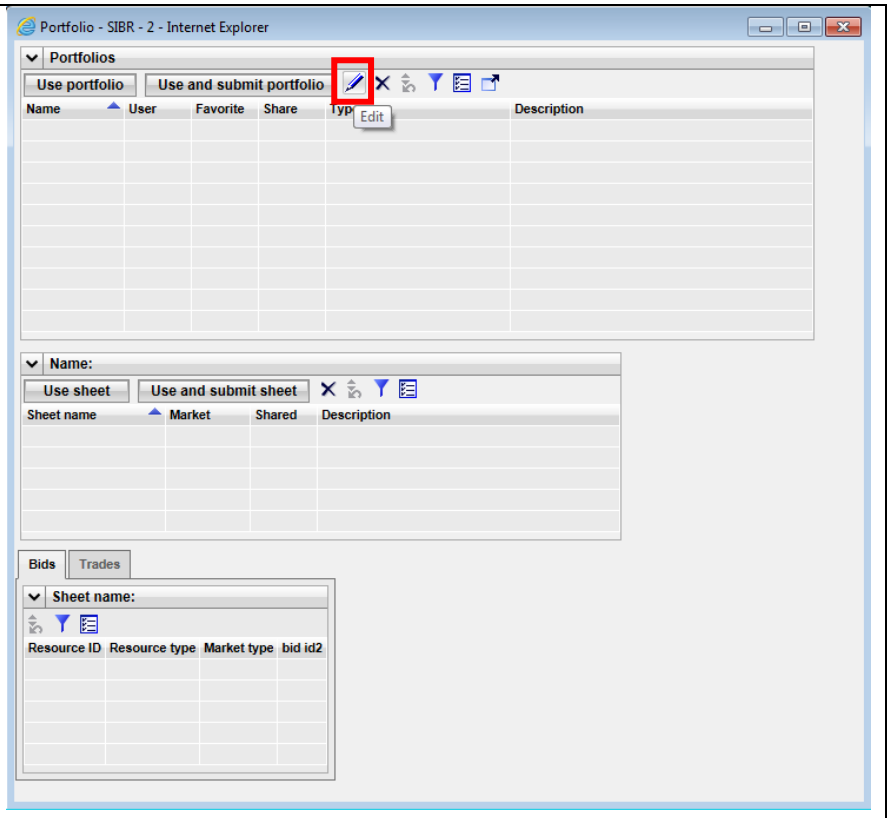
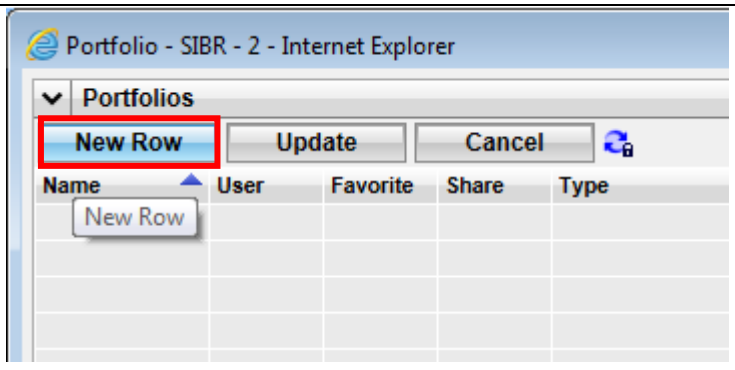
The following screen shots walk through the process of creating portfolios and submitting portfolios for bids. The process for trades is the same and can be followed by selecting the manage trades option instead of manage bids from the portfolio tab

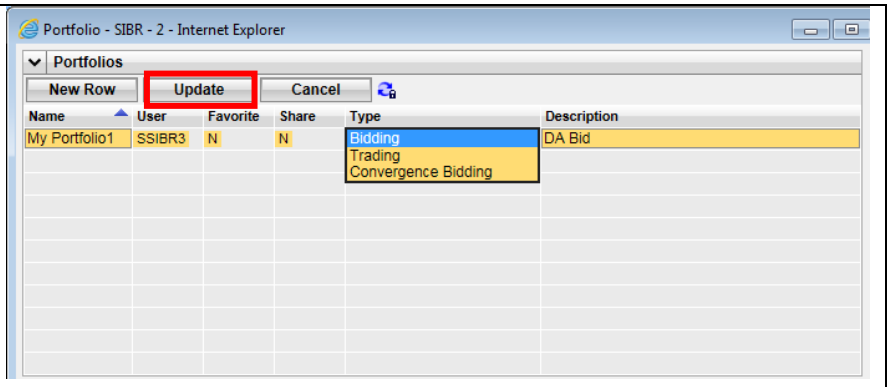
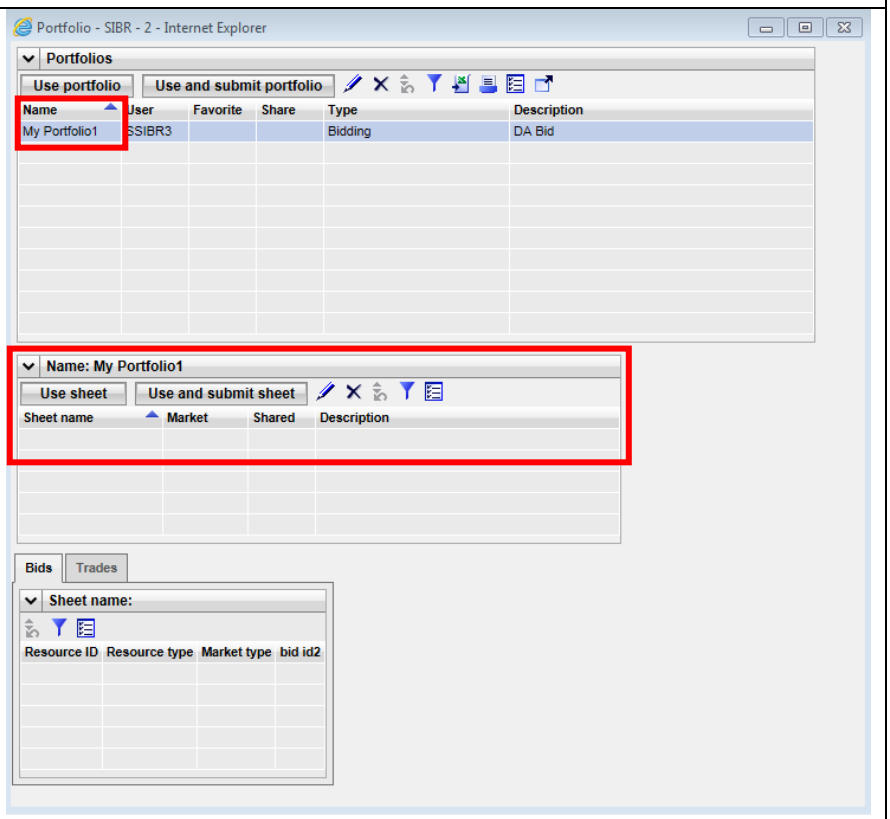
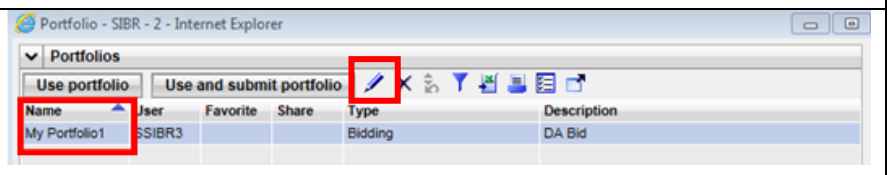
9.1 Creating Portfolio Displays

After logging in to the SIBR system creating a portfolio for use later can be done by selecting the Manage Portfolios icon above the tabs that are displayed. A portfolio must exist before you can save bids or trades to a portfolio.

Once the icon is selected it will open up a separate window to create the portfolio. Below are illustrations to show the steps to create a portfolio in figure 71.

Click on the Manage portfolio icon	

New window will appear: Click on the edit icon.	
Click on New Row	

Enter Data for Name Select Type from the drop down. (Bidding example) Description Click Update	
Portfolio has now been created and available for edit or to copy bids to.	
To edit Click edit icon	

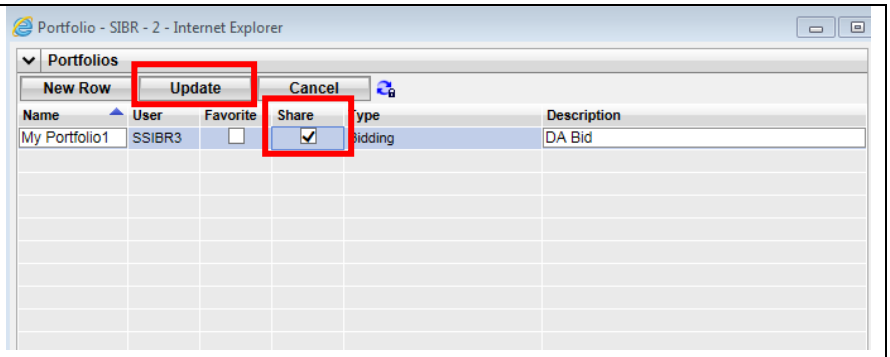
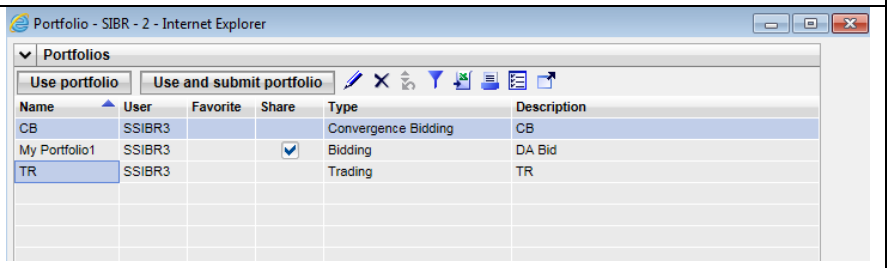
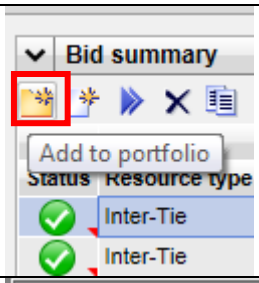
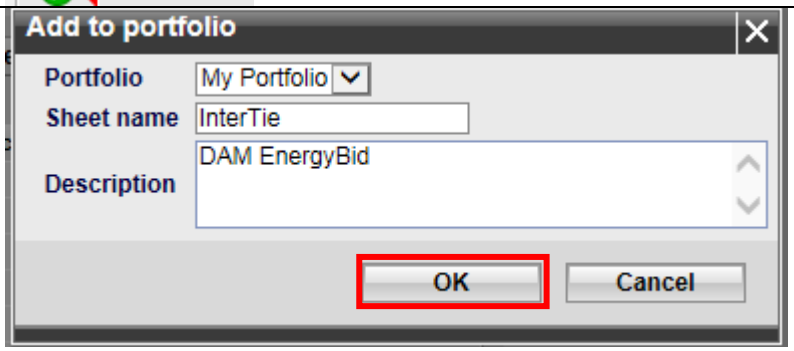
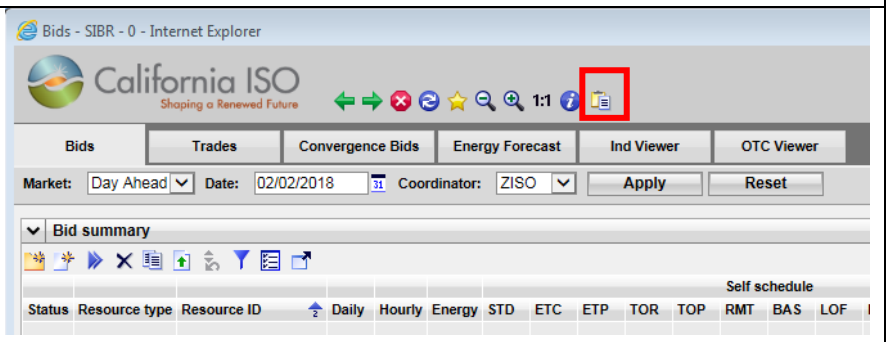
Example below Share has been selected for the named portfolio. This will allow others who have access to the Coordinator for the bids in a portfolio to see them. Click Update	
Repeat the process for other portfolios as needed.	

Figure 71 Creating Portfolio

9.2 Save Bids or Trades to Created Portfolio

Select Bids from the Bid summary Screen either Day-Ahead or Real-Time to add to portfolio. Bids that have been submitted and bids in created state can be added to a portfolio, figure 72 will illustrate adding bids to a portfolio. Saving Trades and Convergence bids works the same, the examples below will just show sample bids.

Highlight bid row Click on the icon for Add to portfolio	
Select Portfolio to copy to from drop down. Enter a Sheet Name Enter a Description Click OK	
Click on the Manage portfolio icon to view the added bids.	

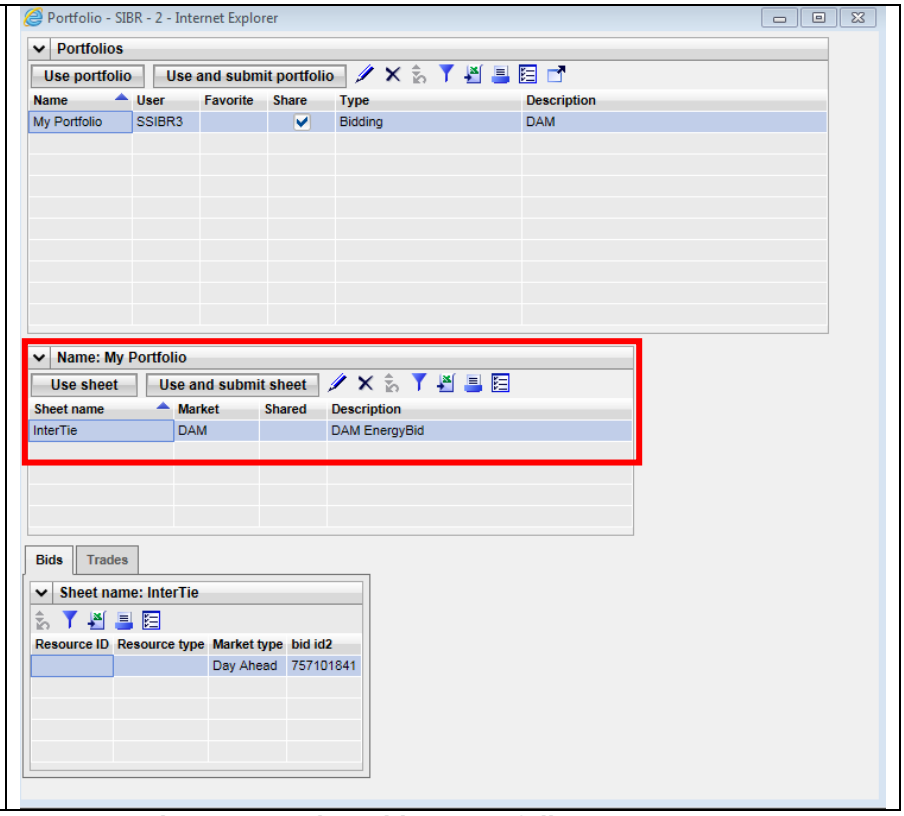
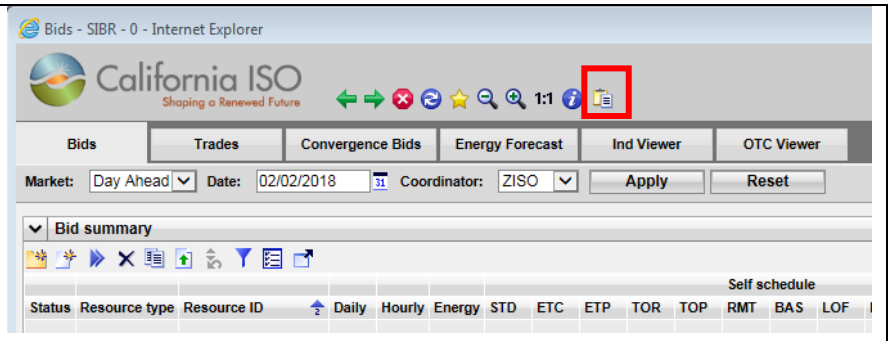
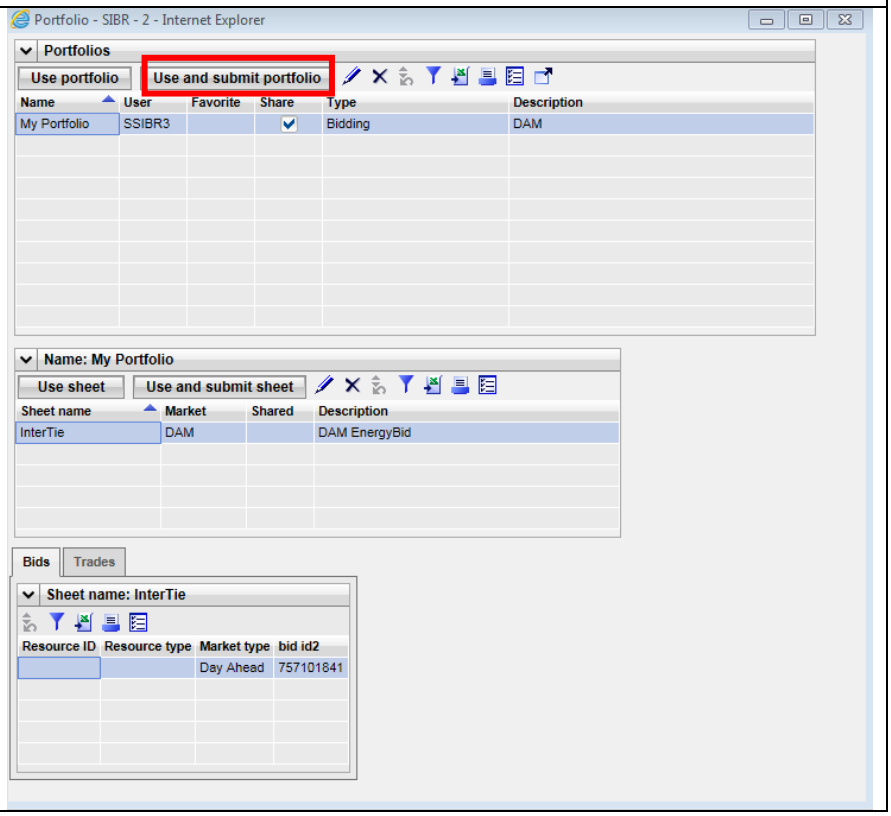


Figure 72 Saving Bids to Portfolio

9.3 Submitting From Portfolio Displays

There are two ways to submit bids from portfolios, submit entire portfolio that includes all sheets saved in the portfolio or submit only individual sheets or individual bids within a sheet in a portfolio. Figure 73 will illustrated the submission from a portfolio.

Click on the Manage portfolio icon to view the added bids.	
Select row Portfolio to submit from and click Use and submit portfolio	

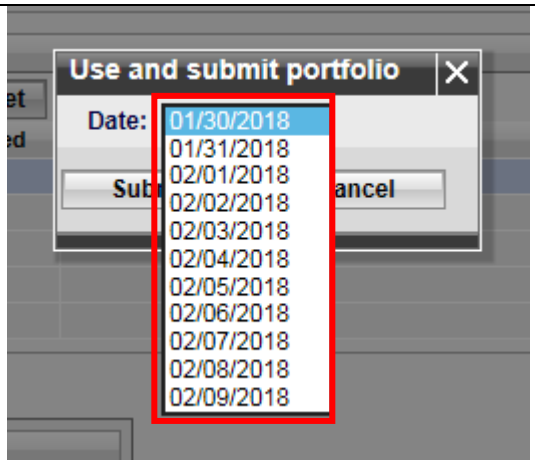
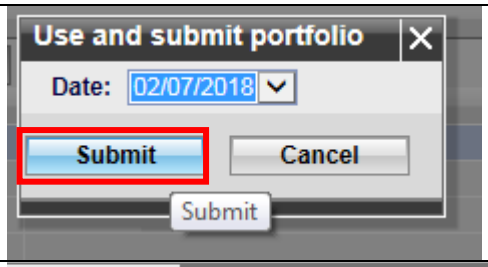
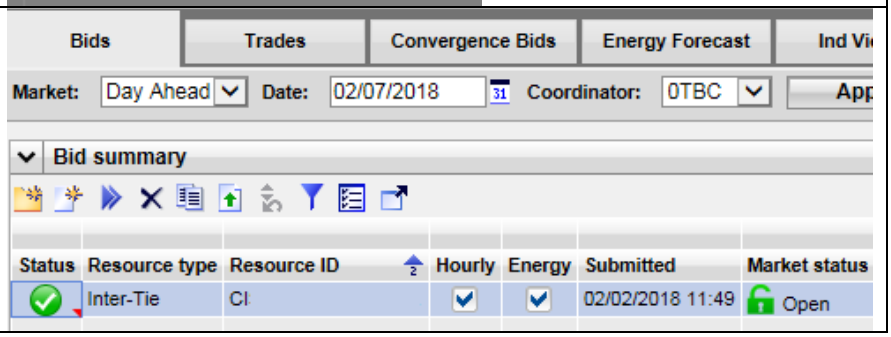
Click on the date to submit to.	
Click Submit	
To view submission: Change date to see new bid with recent Submitted time.	

Figure 73 Submitting from Portfolio

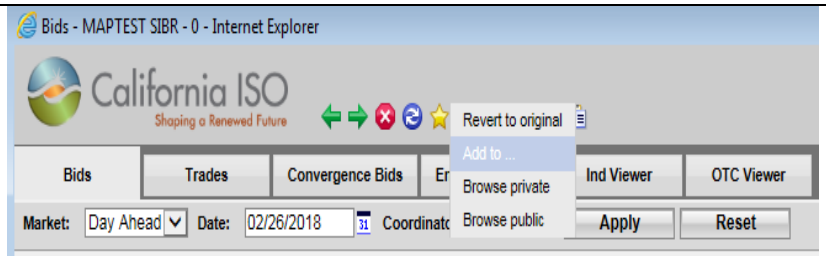
10 Favorites

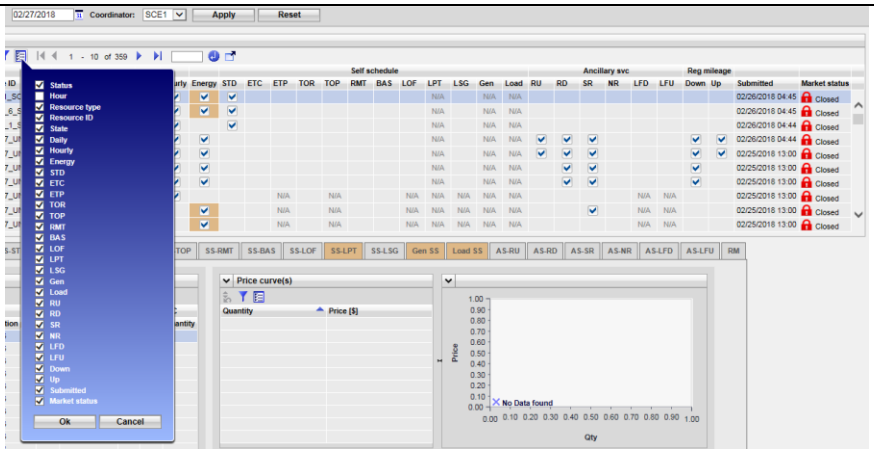
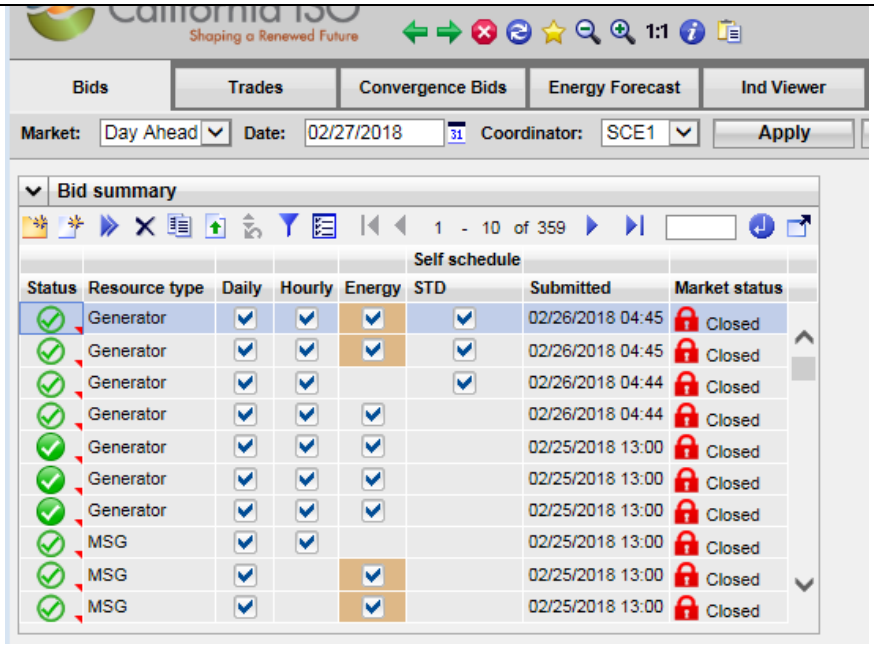
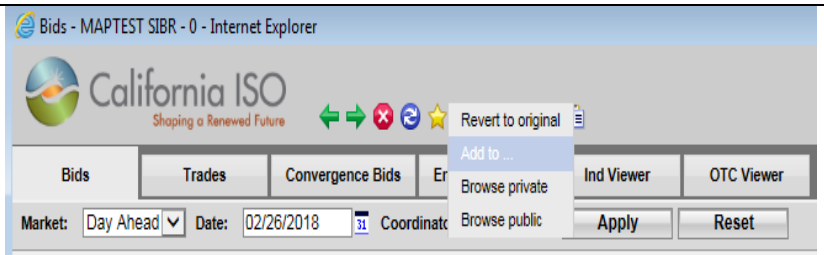
Favorites offer users the ability to save views to be used with bids and trades in either private or public folders for future use. Favorites under Private are restricted to the certificate login, and favorites saved for Public can be seen by any user and can be removed by any user.

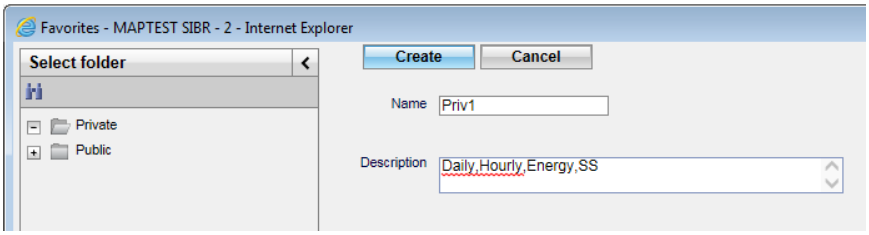
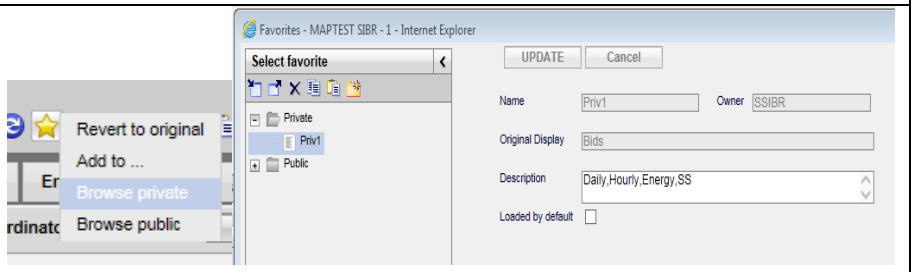
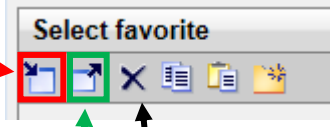
The following screen shots walk through the process of creating views and editing or opening them to apply the view.

10.1 Creating Favorites Displays

After logging in to the SIBR system creating a favorite for use later can be done by selecting the Star icon above the tabs that are displayed. Change the columns to display what you would like before you create and save the view as a favorite or revert back to the original.

Revert to original (removes view) Add to… (creates view) Browse private Browse public (display created views)	

Select the column tool Check what to view Click Ok.	
Example: Kept only Daily Hourly Energy Self-Schedule	
	

Click on Private Specify Name Specify Description Click Create	
Click Star Select Browse private Open folder (+) Priv1 is shown.	
Open Open in New Window Delete Copy, Paste and Create Folder (not supported)	

11 FAQ

Whenever a subject like “user interface design” is discussed, there are almost always a lot of questions. This chapter attempts to answer some of those questions. We have attempted to categorize the questions under chapter headings.

11.1.1 General Questions

What is this Rules Engine?

There are rules (actually several hundred of them) about what the content of a bid must be in order for that bid to be considered by the system. The Rules Engine is the system component that validates bids to ensure that they contain all the correct components, that the values in those components are correct, etc.

When Does the Rules Engine Run?

When you submit a bid, the system responds immediately to acknowledge that the bid has been submitted. The bid is stored in the database and queued for consideration by the Rules Engine. The Rules Engine may actually look at each bid multiple times, as is explained in Chapter 1.2.1. Briefly:

- In the “Bid Content” step, the Rules Engine checks that all required contents of the bid are present.
- In the “Bid Validation” step, the Rules Engine checks that all components of the bid are valid with respect to the specifics of the resource.
- In the “Bid Processing” step, the Rules Engine may alter or update the bid to add components such as Start Up Cost or a ramp rate or Generation Distribution Factor to name a few. Depending upon when the bid is submitted relative to the target market period, this step may be performed multiple times.

What’s a Master File? You Talk About It a Lot.

There are a lot of so-called “static data” associated with resources. These include such things as maximum generator outputs, forbidden regions, reference ramp rates, fuel type, location, and a lot of other things that either don’t change or change only infrequently. Rather than require the time-consuming and error-prone entry of these for every bid, they are stored by the system and updated daily.

Data in the Master File are required for bid validation, and although Master File data is referred to as “static data”, they *may* change – even if only rarely. That is why every bid is (re-) validated after the Master File update for the target date.

What Notifications Do I Receive?

When a bid is submitted, the system provides feedback as soon as bid information has been written to the system database (almost immediately).

Additional feedback is provided each time the Rules Engine considers a bid.

But, I Might Not Be Around When the Rules Engine Runs. How Do I Find Out About My Bid?

The Rules Engine produces output that identifies any problem with a bid that will prevent that bid from being considered by the system. That output is stored in the system database until the next time you log in. At that time, the system will be able to inform you of the status of your bid(s) and display any error messages and / or notifications about whether and how a bid has been modified by the system.

Note that the final Rules Engine run is after market close. At this point, you receive the final status of your bid.

Can I Change a Bid? When? How?

Yes. You can change a bid at any time up to the market for the target period closes. To modify a bid, you use the same user interface screens that were used to create the bid. Bring up the transaction page; specify a resource and a bid period and the bid data will appear. Modify it and click the submit button again to replace the original bid with the modified bid.

What Happens To the Original Bid When I Resubmit?

Basically, the system remembers every bid that has ever been submitted. When a modified bid is re-submitted and passes the content and validation rules, the original bid is marked so that it will not be considered for use and becomes an obsolete bid in the database. If there is a market accepted bid, and a new bid is submitted that does not pass the content or validation, the market accepted bid will remain as the market accepted bid and will not be replaced.

What About Canceling Bids?

Canceling a bid is similar in many ways to re-submitting a bid. The canceled bid is marked so that it is not considered for use.

Do I Have to Cancel a Bid Before I Resubmit?

No. When you resubmit a bid for the same resource and market period, it replaces the existing bid (if there is one). There is no need to cancel the existing bid first.

11.1.2 Questions About Bids

Can a Bid Contain More Than One Resource?

A bid is strictly defined by the rules engine as being for one resource and for one bid period (in the case of a day-ahead bid, for example, this would be one 24 hour period). However, the user interface is designed to allow you to enter data for multiple resources on the same screen. However, these become multiple bids when they are submitted.

Can I Submit a Partial Bid?

You can, and it may even be accepted. Bids undergo two basic validation steps – the first verifies that all required content is included in the bid; the second validates those contents (and potentially modifies them). The absence of required components can cause the bid to be rejected outright. However, in some cases, the bid modification process can fill in omissions. In such a case, the modified bid could be accepted.

You can also create a partial bid, save it (without submitting), complete it at some later time, and then submit it.

So, What Constitutes a Complete Bid?

A complete bid will include all commodities and self-schedules for a resource that a user intends to submit to the CAISO Day-Ahead or Real-Time market. Some generating resources may have certain requirements that more strictly define what will constitute a complete bid.

If My Bid is Rejected, Can I See What Was Wrong?

Yes. The "Bid summary" page provides a listing of all bids that are known to the system, along with their current status. In the case of all bids, you can view all messages generated by the Rules Engine.

If My Bid is Modified, Can I See What Was Changed?

Yes. The system stores the submitted bid. If the bid was automatically modified by the system, the modified version is also stored. If a bid is re-submitted, both the original and the new version are stored. The "Bid Overview" page provides a listing of all bids that are known to the system, along with their current status. From this page, it is possible to recall bid information from any step in the process for viewing. If a bid is modified by the system, you can view the original bid that you submitted, along with the modified version on the same page.

What About "Short" and "Long" Days?

When using the SIBR GUI to enter a bid for a "short" or 23-hour day, the bid entry screen will contain only 23 hours, numbered 1 through 24 with no HE3 displayed. The "long" (25-hour) day will have 25 hours, numbered hour 1, 2, 2*, 3, 4 etc.

Can I Re-Submit A Modified Bid?	Yes. This is true for both "conditionally modified" and "modified" bids. In both cases, the new bid replaces the old and will be sent through the full validation process again. This process can be repeated until the designated market closes.
What Happens If I Submit The Same Bid Twice?	The system allows only one bid to be active for a resource for each target trading day or trading hour in the case of the Real-Time Market. If you submit multiple bids for the same resource and date, the newer bid will replace the older. The older bid is effectively canceled and will no longer be considered by the system. However, all bids that have been submitted are stored by the system, so the older bid will be available for viewing by a valid SC.

11.1.2.1 Recurring Bids

Can I Submit a Bid for Multiple Days?	Yes, but it helps to understand what really happens behind the curtain…When you submit a "bid" for seven days, what is really happening behind the scenes is that the system creates 7 separate bids and submits each. Each bid goes through validation (and potential modification) steps separately. Each bid will be validated and potentially conditionally modified shortly after it is submitted. But, remember in our overview (Chapter 1.2.1), we talked about the Master File, Master File updates, and how they may affect the validity of a bid? Specifically, before a bid becomes a Clean Bid, it must be validated using data from the Master File for the target date. This means that each of the seven bids will be validated once again after market close (and Master File update) for the target trading date.
How are Recurrent Bids Stored?	When an SC submits a recurrent bid, the system actually creates and stores one bid for each day of the recurrent series. That is, if the SC creates a bid and submits it for an entire week, seven bids are created.
Can I Modify Just One Day of a Recurrent Bid?	Yes. Since the system creates a unique bid for each day of recurrence, you may modify the bid for one day without affecting the others.
What If I Want To Modify Every Day?	Simply choose the first day you wish to modify. Modify that bid and resubmit it as a recurrent bid. The modified bid will be replicated by the system for each day of recurrence and will replace any existing bid.

How About Canceling a Single Day, Multiple Days?

The story here is the same as for modifying a single day of a recurrent bid. Select the day you want to cancel and cancel it. All other bids in the recurrent series will remain in the system. The user interface also allows you to cancel multiple days.

11.1.3 Questions About Templates

What's a Template?

A template is a bid without a market date that can be saved for future use as a pattern for a bid to be submitted. Templates are accessed through a user interface feature called "Portfolio". By saving one or more templates, an SC can quickly create bids.

Are Templates Validated?

No, the system does not validate templates. However, any bid that has been submitted can be used to create a template. Any bid submitted from a template will go through the Rules Engine. Keep in mind that what is valid today may not be valid tomorrow due to Master File changes.

Can I Apply a 24-hour Template to a Long or Short Day?

Yes, for Trades but not bids. However, if you apply a 24-hour template to a 23-hour day, the last hour of the day is eliminated. If you apply a 24-hour template to a 25-hour day, the last hour will have values of zero. This may not be what you want, so the safest course is to create a special set of templates for long and short days.

11.1.4 Questions About Users and Permissions

What's the Difference Between a User and an SC?

These terms do tend to get a bit mixed up and sometimes used interchangeably. Strictly defined, a user is a person who has a valid login to the system.

There are a number of Scheduling Coordinators, each of whom has responsibility for providing bids for a collection of resources. As defined in the SIBR system, a Scheduling Coordinator is actually a "entity" that is assigned to a user certificate with either a 'Write' role or a 'Read' role but not both.

What's a Role, Then?

In simple terms, a "role" is something a user is permitted to do. For SIBR there is a Read only role and a Write role. For each certificate there can only be 1 role associated to SIBR.

Can a User Have More Than One SC Entities?

Yes. This will occur when an organization uses multiple SCIDs. A user given access to more than one SC role will have access to submit and review bids for multiple SCIDs. This eliminates the current issue where each SCID must have a separate login.

Appendix A Glossary

Accepted Bid	A Submitted Bid that has passed Bid Content.
Active Day	The first Trading Day in the Market Horizon of a given Day-Ahead Market.
Active Dispatch Interval	The Dispatch Interval that starts at or after 10min later than the Energy Forecast submission time. For example, if the Energy Forecast submission time is 0:00:00, the Active Dispatch Interval is 0:10:00-0:15:00; if the Energy Forecast submission time is 0:01:17, the Active Dispatch Interval is 0:15:00-0:20:00.
Active Hour	The second Trading Hour in the Market Horizon of a given Real-Time Market.
Aggregate Generating Resource	A Generating Resource that is a group of Generating Resources scheduled or dispatched as a single Generating Resource.
Aggregate Participating Load Resource	A Participating Load Resource that is a group of Participating Load Resources scheduled or dispatched as a single Participating Load Resource.
Alternate Inter-Tie	The Inter-Tie optionally associated with an Inter-Tie Resource for tagging Schedules and Awards from associated Bids when the Open Tie Status is set for these Bids.
Ancillary Service	A service that supports the transmission of Energy from Supply to Demand to maintain the reliable operation of the ISO Control Area in accordance with WECC standards.
Ancillary Service Award	An Award for an Ancillary Service.
Ancillary Service Bid Ceiling	The maximum price allowed in an Ancillary Service Bid Component.
Ancillary Service Bid Component	A Bid Component for Ancillary Services.
Ancillary Service Bid Floor	The minimum price allowed in an Ancillary Service Bid Component.
Ancillary Service Capacity	The Capacity designated for an Ancillary Service.

Ancillary Service Obligation	The Demand for which a Scheduling Coordinator is financially responsible for Ancillary Services.
Ancillary Service Obligation Trade	A Trade of an Ancillary Service Obligation.
Ancillary Service Self-Provision	An Ancillary Service provided by a Scheduling Coordinator to primarily meet its own Ancillary Service Obligation.
Ancillary Service Self-Provision Award	An Ancillary Service Award from Ancillary Service Self-Provision.
Ancillary Service Self-Provision Bid Component	A Bid Component for Ancillary Service Self-Provision.
Ancillary Service Self-Provision Capacity	The Capacity designated for an Ancillary Service Self-Provision.
Approved	The Credit Indicator and Credit Status of a Virtual Resource Bid that has received credit.
Attaining Control Area	The Control Area that has operational control over a Pseudo-Tie within another Control Area (Native Control Area).
Average Fuel Cost	The ratio of fuel cost into Energy for a Generating Resource at a given Operating Level.
Average Heat Rate	The ratio of heat conversion into Energy for a Generating Resource at a given Operating Level.
Award	The Ancillary Service Capacity selected from a Resource in a Trading Hour of a Day-Ahead Market or a Commitment Interval of a Real-Time Market, or the RUC Capacity selected from a Resource in a Trading Hour of a Day-Ahead Market.
Balance Indicator	An indicator for each TOR/ETC and Trading Hour that indicates whether the corresponding TOR/ETC has passed or failed TOR/ETC balancing validation. An indicator for each Wheeling Bid Component that indicates whether the corresponding Wheeling Transaction is balanced or not.
Balancing Authority Area	A Control Area.
Base Energy Schedule	The hourly Energy Schedule of an EIM Resource that predates the EIM; it is fixed and not settled in the DAM; it is the reference for imbalance Energy in the RTM.

Base Generating Resource State	The Generating Resource State of an EIM Resource that predates the EIM; it is fixed in the DAM; it is fixed for EIMNPR in the RTM.
Base Load	The amount of electric power consumption of a Participating Load Resource that is not issued a Dispatch Instruction for Load Reduction.
Base Net Interchange	The Net Interchange attributed to Base Energy Schedules.
Base Non-Spinning Reserve Schedule	The hourly Non-Spinning Reserve Schedule of an EIM Resource outside of EIM; it is ignored in the DAM and the RTM and provided only for information and future functionality.
Base Regulation Down Schedule	The hourly Regulation Down Schedule of an EIM Resource outside of EIM; it is ignored in the DAM and the RTM and provided only for information and future functionality.
Base Regulation Up Schedule	The hourly Regulation Up Schedule of an EIM Resource outside of EIM; it is ignored in the DAM and the RTM and provided only for information and future functionality.
Base Schedule	The hourly Energy or Ancillary Service Schedule of an EIM Resource that predates the EIM.
Base Schedule Coordinator	A Market participant authorized by the ISO to submit Base Schedules for an EIM Resource.
Base Schedule Period	The time period for which a Base Schedule applies.
Base Spinning Reserve Schedule	The hourly Spinning Reserve Schedule of an EIM Resource outside of EIM; it is ignored in the DAM and the RTM and provided only for information and future functionality.
Best Operating Reserve Ramp Rate	The Operating Reserve Ramp Rate of a Generating Resource under best operating conditions.
Best Operational Ramp Rate Curve	The Operational Ramp Rate Curve of a Generating Resource under best operating conditions.
Best Regulating Ramp Rate	The Regulating Ramp Rate of a Generating Resource under best operating conditions.
Bid	An offer for the supply or demand of a Commodity in a Market.

Bid Component	A section of a Bid that contains information used in Market activities.
Bid Content	The determination that a Bid or a Bid Component complies with the structural rules so that it can be used in a Market.
Bid Deletion	The process where a Resource Bid is deleted after the relevant Market Close Time.
Bid Fill Option	A SIBR initialization parameter that controls the Multi-Period Bid Generation in the DAM: No: No Multi-Period Bids are generated; Market Accepted Bids are used as Source Bids when available. Last: Multi-Period Bids are generated only for the Trading Days in the Day-Ahead Market Horizon after the last Trading Day when a Market Accepted Bid exists; that Market Accepted Bid is used as Source Bid. History: Multi-Period Bids are generated for each applicable Trading Day in the Day-Ahead Market Horizon using the DAM Clean Bid of the applicable History Day as Source Bid.
Bid Final Processing	The process where a Resource Bid is modified after the relevant Market Close Time.
Bid Generation	The process where a Resource Bid is generated after the relevant Market Close Time.
Bid Identification	The section of a Bid that contains information used to identify the Bid.
Bid Period	The time period for which a Bid applies.
Bid Processing	The modification of a Valid Bid to produce a Clean Bid or the creation of a Clean Bid.
Bid Special Processing	The process before the relevant Market Close Time where a Resource Bid is examined for potential modification after that Market Close Time.
Bid Status	The validation status of a Bid in SIBR: Created, Submitted, Rejected, Accepted, Invalid, Temporary Valid, Conditionally Valid, Conditionally Modified, Valid, Modified, Obsolete, Canceled, Clean, and STUC.
Bid Submission	The submission of a Bid to a Market.

Bid Submission Time	The time when a Bid is submitted to a Market.
Bid Type	An Inter-Tie Transaction attribute that indicates a Physical Resource (P) or Virtual Resource (V).
Bid Validation	The determination that a Bid or a Bid Component complies with the Market rules so that it can be used in a Market.
Branch Group	An oriented group of Network Branches.
Canceled	The Bid Status of a Bid that has been canceled by the User who originally submitted it. The Credit Status of a Virtual Resource Bid that has been sent to CTS for Credit Release.
Canceled Bid	A Bid that has been canceled by the User who originally submitted it.
Capacity	The amount of electric power that a Network component can produce, transmit, or consume.
Capacity Limit	A limit for the total Generating Resource Capacity that can be used for Commodities in DAM and RTM.
Capacity Limit Indicator	An indicator specifying that the Capacity Limit must be enforced in IFM.
Clean Bid	A Bid ready to be used in a Market.
Commitment Interval	The 15-minute Trading Interval of a Real-Time Market.
Commitment Status	The designation of the operating state of a Resource with discrete modes of operation.
Commodity	Energy, Ancillary Service Capacity, or RUC Capacity.
Conditionally Modified Bid	A Bid modified by SIBR in Bid Processing before the Master File update for the relevant Trading Day.
Conditionally Valid Bid	A Bid that has passed Bid Processing before the Master File update for the relevant Trading Day.
Constrained Output Generator	A Generating Resource with an operating range between its registered Maximum Capacity and Minimum Load equal to the Quantity Precision.
Contingency Dispatch Indicator	An indicator specifying that Spinning Reserve and Non-Spinning Reserve must be dispatched only

	under contingency.
Control Area	An electrical system that balances Supply and Demand to maintain system frequency and Net Interchange with other interconnected Control Areas in accordance with WECC standards.
Convergence Bidding	The submission of Virtual Resource Bids in the Day-Ahead Market.
Convergence Bidding Entity	An Entity authorized for Convergence Bidding for one or more SCs.
Cooling Time	The time that elapses between a Shut-Down Instruction and the next Start-Up Instruction issued to a Resource.
Cooling Time Break Point	A Cooling Time that defines the start or the end of a segment in a Start-Up Time Bid Curve or a Start-Up Cost Bid Curve.
Created Bid	A Bid that has been created by a User.
Credit Indicator	An indicator received from CTS for a Virtual Resource Bid indicating whether there is sufficient credit collateral to support that Bid: Approved, Disapproved, and Error.
Credit Release	The action of sending a Virtual Resource Bid to CTS to release credit.
Credit Request	The action of sending a Virtual Resource Bid to CTS to request credit.
Credit Status	The financial status of a Bid in SIBR: Pending Request, Pending Response, Approved, Disapproved, and Canceled.
Credit Tracking System	The credit management and approval system.
CTS Communication Status	The administratively set and persistently maintained in SIBR status of SIBR-CTS communication: On: allows sending Bids to CTS; Off: suppresses sending Bids to CTS.
Custom Generation Aggregation Point	The Generation Aggregation Point that includes a custom set of Generating Resources in a BAA; it may be used as an Inter-Tie Scheduling Point.

Custom Load Aggregation	A Non-Participating Load Resource aggregation scheme with resource-specific Distribution Factors that are submitted with the Bid and for which the distributed Energy is settled at the relevant Distribution Location marginal prices.
Day-Ahead Award	An Award produced by a Day-Ahead Market.
Day-Ahead Base Schedule Cutoff Time	The latest time when Base Schedules can be submitted in the DAM for the Active Day.
Day-Ahead Demand Forecast Cutoff Time	The cutoff time used in the DAM to retrieve the Demand Forecast for an EIM BAA for the Active Day for Base Schedule balancing validation.
Day-Ahead Generating Resource State	The Generating Resource State that is associated with the Day-Ahead Schedule.
Day-Ahead Market	A Market with a Market Horizon of consecutive Trading Hours that span one or more consecutive Trading Days. This Market is conducted the day before the start of its Market Horizon. Schedules and Awards are financially binding for the first Trading Day and advisory for the remaining Trading Days in the Market Horizon.
Day-Ahead Market Horizon	The number of Trading Days in the Market Horizon of a given Day-Ahead Market.
Day-Ahead Non-Spinning Reserve Award	A Day-Ahead Award for Non-Spinning Reserve.
Day-Ahead PT Self-Schedule	The portion of the Day-Ahead Schedule identified as PT Self-Schedule.
Day-Ahead Regulation Down Award	A Day-Ahead Award for Regulation Down.
Day-Ahead Regulation Up Award	A Day-Ahead Award for Regulation Up.
Day-Ahead RUC Award	A Day-Ahead Award for RUC Capacity.
Day-Ahead Schedule	A Schedule produced by a Day-Ahead Market.
Day-Ahead Spinning Reserve Award	A Day-Ahead Award for Spinning Reserve.
Daytime Type	The daytime certification for a Virtual Resource Location: ON: valid only during On-Peak Trading Hours; OFF: valid only during Off-Peak Trading Hours; ALL: valid during all Trading Hours.
Default Ancillary Service Bid Price	The default Ancillary Service Bid Price used for a Resource with no Ancillary Service Bid

	Component.
Default Energy Bid Price	The default Energy Bid Price used for a Resource with no Energy Bid Component and no registered cost information.
Default Generation Aggregation Point	The Generation Aggregation Point that includes all Generating Resources in a BAA; it may be used as an Inter-Tie Scheduling Point.
Default Regulation Mileage Bid Price	The default Regulation Mileage Bid Price used for a Resource with no Regulation Mileage Bid Component.
Default RUC Bid Price	The default RUC Bid Price used for a Resource with no RUC Bid Component.
Deleted Bid	A Clean Bid deleted by SIBR after the relevant Market Close Time.
Demand	The collective of Resources that demand Energy (i.e., Load Resources and Export Resources).
Demand Forecast	The forecast for the hourly Demand of a BAA in the FNM for a Trading Day in the DAM or a Trading Interval in the RTM.
Direction	An Inter-Tie Transaction attribute that indicates Import (I) or Export (E).
Disapproved	The Credit indicator and Credit Status of a Virtual Resource Bid that has been denied credit.
Discrete Reliability Demand Response Resource	A RDRR that should be dispatched discretely (on/off) in RTM. (not allowed in DAM).
Dispatch	The Energy dispatched from a Resource for a Dispatch Interval of a Real-Time Market.
Dispatch Instruction	A financially binding outcome of the Real-Time Market that determines the Operating Level of a Resource at a specific time within the first Trading Interval of the Market Horizon of the Real-Time Market.
Dispatch Interval	The 5-minute Trading Interval of a Real-Time Market.

Dispatch Option	A Bid option that determines the participation of an Inter-Tie Resource or an Inter-Tie Generating Resource in the Real-Time Market: Hourly: dispatched as an Hourly Pre-Dispatched Resource with a flat Dispatch for all Trading Intervals of a Trading Hour. Once: dispatched as an Hourly Pre-Dispatched Resource with up to a single Dispatch revision in a Commitment Interval of a Trading Hour. 15min: dispatched in each Commitment Interval of a Trading Hour with a flat Dispatch for all Dispatch Intervals of that Commitment Interval. Dynamic: dispatched in each Dispatch Interval of a Trading Hour.
Dispatchable Demand Resource	A type of NGR with a continuous operating range only in the load mode: Lmax < Lmin = 0 = Gmin = Gmax.
Distribution Bid Component	A Bid Component for distributing the Bid, Schedule, or Dispatch of an Aggregate Generating Resource or an Aggregate Participating Load Resource.
Distribution Factor	The fraction of the Bid, Schedule, or Dispatch of an Aggregate Generating Resource or an Aggregate Participating Load Resource distributed at a Distribution Location.
Distribution Location	A Network Node.
Distribution Pair	A pair of a Distribution Location and a Distribution Factor.
Distribution Status	The Static or Dynamic nature of the Schedule or Dispatch distribution of an Aggregate Generating Resource.
Dynamic Resource	An Inter-Tie Resource or an Inter-Tie Generating Resource that can be dynamically controlled to maintain the frequency and Net Interchange of a Control Area. Registered Inter-Tie Resources and Inter-Tie Generating Resources that are Dynamic Resources are registered with Energy Type DYN.
EIM BAA	A BAA that participates in EIM, other than the CAISO.
EIM Entity	A BAA operator for one or more EIM BAAs.

EIM Entity BSC	The BSC of an EIM Entity for an EIM BAA. The EIM Entity BSC is the BSC for all EIM Non-Participating Resources associated with an intertie with that EIM BAA. In the DAM, the EIM Entity BSC is the BSC for all EIM Resources residing in or associated with an intertie with that EIM BAA. In the RTM, the EIM Entity BSC is the BSC for all EIM Resources residing in or associated with an intertie with that EIM BAA after the RTM Base Schedule Second Cutoff Time.
EIM Entity SC	The SC of an EIM Entity for an EIM BAA; it is the SC for the EIM Non-Participating Resources in that EIM BAA. The EIM Entity SC may not be the SC for an EIM Participating Resource.
EIM Inter-Tie	An Inter-Tie from an EIM BAA to a non-EIM BAA.
EIM Non-Participating Resource	An EIM Resource for which the EIM Participating Indicator is not set; it may not submit Bids in EIM.
EIM Participating Indicator	It indicates that an EIM Resource may submit Bids in EIM.
EIM Participating Resource	An EIM Resource for which the EIM Participating Indicator is set; it may submit Bids in EIM.
EIM Resource	A Resource in an EIM BAA, or an Inter-Tie Resource or Inter-Tie Generating Resource associated with an EIM Inter-Tie.
EIM Transfer	The portion of Net Interchange with other EIM BAAs or the CAISO.
ELC Self-Schedule	A Generated Self-Schedule for ELC.
ELC Self-Schedule Bid Component	A Generated Self-Schedule Bid Component for ELC.
ELC Self-Schedule Quantity	The Energy associated with an ELC Self-Schedule; it is the Minimum Load of the corresponding ELS.
Eligible PT Export Capacity	The calculated available non-RA Capacity of a Supporting Resource. It is used for Export Resource Self-Schedule priority determination.
End Date/Time	The date and time that designate the end of a time period such as a Bid Period.
Energy	The amount of electric energy that a Network component produces, transmits, or consumes within a time period.

Energy Bid Ceiling	The maximum price allowed in an Energy Bid Component.
Energy Bid Component	A Bid Component for Energy.
Energy Bid Curve	An incremental cost curve of Energy Bid Price versus Operating Level.
Energy Bid Floor	The minimum price allowed in an Energy Bid Component.
Energy Bid Price	The price to marginally produce or consume Energy at an Operating Level within an Energy Bid Segment of an Energy Bid Curve.
Energy Bid Quantity	An Operating Level that defines the start or the end of an Energy Bid Segment.
Energy Bid Range	The Capacity range of an Energy Bid Curve between the LEL and UEL, inclusive.
Energy Bid Segment	A segment of an Energy Bid Curve between two successive Energy Bid Quantities.
Energy Consumption Forecast	The forecasted energy consumption for the load served behind the meter of a Generating Resource over a Dispatch Interval.
Energy Forecast	The Energy Production Forecast or the Energy Consumption Forecast for a Generating Resource over a Dispatch Interval.
Energy Forecast Period	The time period for which an Energy Forecast applies.
Energy Imbalance Market	The extension of the Real-Time Market to BAAs other than the CAISO.
Energy Limit	A lower or upper limit on the amount of Energy scheduled and dispatched from a Resource within a Trading Day.
Energy Limit Bid Component	A Bid Component for Energy Limits.
Energy Price Index	The historical average marginal price for Energy for a specific Resource over a time period.
Energy Production Forecast	The forecasted energy production of a Generating Resource with variable energy production over a Dispatch Interval.
Energy Self Schedule Resource	Designation from Master File that limits the resource as being able to only provide Energy Self-Schedules (includes pumping Self-Schedule) in

	both DAM and RTM.
Energy Trade	A Trade of Energy.
Energy Type	An Identifier of the type of Energy from an Inter-Tie Resource as it pertains to Ancillary Service Requirements, Wheeling, or Dynamic Interchange.
Error	The Credit Indicator of a Virtual Resource Bid that CTS failed to process.
ETC Chain	A combination of individual ETCs used in sequence.
ETC Entitlement	The hourly use limit of a ETC.
ETC Link	A ETC that is not a ETC Chain.
ETC Pumping Self-Schedule	A Pumping Self-Schedule associated with an ETC.
ETC Pumping Self-Schedule Bid Component	A Bid Component for a ETC Pumping Self-Schedule.
ETC Pumping Self-Schedule Quantity	The Energy Bid Quantity for an ETC Pumping Self-Schedule.
ETC Reference	A unique identifier of an ETC.
ETC Self-Schedule	A Self-Schedule associated with an ETC.
ETC Self-Schedule Bid Component	A Bid Component for an ETC Self-Schedule.
ETC Self-Schedule Quantity	The Energy Bid Quantity for an ETC Self-Schedule.
ETCC Cutoff Time	A configurable parameter used for setting the time of day to trigger OTC/Entitlement validation for applicable bids when ETCC data is received. (similar to Market Close Time)
Existing Transmission Contract	An agreement currently in effect between a Participating Transmission Owner and another party that was executed on or before July 9, 1996, which places limitations on the ISO's operational control of Network Branches owned by the Participating Transmission Owner.
Existing Transmission Contract Calculator	An ISO application that publishes ITC OTC and TOR/ETC Entitlements.
Export Resource	A Resource that consumes Energy exported out of a BAA.

Export Resource Bid	A Bid for an Export Resource.
External Bid Status	The Bid Status exposed to the User.
External Control Area	A Control Area not modeled in the Full Network Model. An External Control Area has inter-connections with the CAISO Control Area and with other Control Areas. The inter-connections of the CAISO Control Area with External Control Areas are modeled as radial inter-ties.
Extra Long-Start Unit	A Generating Resource with a long Start-Up Time that requires a Start-Up instruction in advance of the DAM.
Extra Long-Start Unit Commitment	The Start-Up of an ELS in advance of the DAM.
Fast-Start Unit	A Generating Resource certified for Non-Spinning reserve in the RTM (it must have a Start-Up Time not greater than 10 minutes).
Final Multi-Period Bid	A promoted Multi-Period Bid for a Trading Day after the Active Day in a Day-Ahead Market Horizon, or a Trading Hour after the Active Hour in a Real-Time Market Horizon (STUC).
Final Online Generating Resource State	The Online Generating Resource State of a MSG after a State Transition.
Firm Import Resource	An Import Resource that is supported by Spinning Reserve; it is registered with an Energy Type of FIRM.
Forbidden Operating Range	A range of Operating Levels within which a Resource cannot operate in a stable manner and must ramp through.
Forward Bid Resource	Resource from Market Accepted Bid that can be used in the STUC Rule Flow. If there is a SIBR temporary administrative addition to the Forward Bid Resource exception list for a resource, that resource will not be allowed to use a Forward Bid.
Fuel Source	The registered fuel used by a Generating Resource to produce Energy.
Full Network Model	The Network used in the Market; it includes the CAISO and several other BAAs.
Gas Price Index	The average natural gas price at a specific Location and period of time.

Generated Bid	A Clean Bid generated by SIBR after the relevant Market Close Time.
Generating Capacity Limit	A limit for the total Non-Generator Resource generating Capacity that can be used for Commodities in DAM and RTM.
Generating Resource	A Resource that produces Energy.
Generating Resource Ancillary Service Bid Component	A Generating Resource Bid Component for Ancillary Services.
Generating Resource Ancillary Service Self-Provision Bid Component	A Generating Resource Bid Component for Ancillary Service Self-Provision.
Generating Resource Bid	A Bid for a Generating Resource.
Generating Resource Bid Component	A Bid Component of a Generating Resource Bid.
Generating Resource Distribution Bid Component	A Bid Component for distributing the Bid, Schedule, or Dispatch of an Aggregate Generating Resource.
Generating Resource Energy Bid Component	A Generating Resource Bid Component for Energy.
Generating Resource Energy Limit Bid Component	A Generating Resource Bid Component for Energy Limits.
Generating Resource ETC Self-Schedule Bid Component	A Generating Resource Bid Component for ETC Self Schedules.
Generating Resource Load Following Self-Provision Down Bid Component	A Generating Resource Bid Component for Load Following Down Self-Provision.
Generating Resource Load Following Self-Provision Up Bid Component	A Generating Resource Bid Component for Load Following Up Self-Provision.
Generating Resource Minimum Load Cost Bid Component	A Generating Resource Bid Component for Minimum Load Cost.
Generating Resource Non-Spinning Reserve Bid Component	A Generating Resource Bid Component for Non-Spinning Reserve.
Generating Resource Non-Spinning Reserve Self-Provision Bid Component	A Generating Resource Bid Component for Non-Spinning Reserve Self-Provision.
Generating Resource PT Self-Schedule Bid Component	A Generating Resource Bid Component for a PT Self Schedule.
Generating Resource Ramp Rate Bid Component	A Generating Resource Bid Component for Ramp Rates.

Generating Resource Regulation Down Bid Component	A Generating Resource Bid Component for Regulation Down.
Generating Resource Regulation Down Self-Provision Bid Component	A Generating Resource Bid Component for Regulation Down Self-Provision.
Generating Resource Regulation Up Bid Component	A Generating Resource Bid Component for Regulation Up.
Generating Resource Regulation Up Self-Provision Bid Component	A Generating Resource Bid Component for Regulation Up Self-Provision.
Generating Resource RUC Bid Component	A Generating Resource Bid Component for RUC Capacity.
Generating Resource Self-Schedule Bid Component	A Generating Resource Bid Component for Self-Schedules.
Generating Resource Spinning Reserve Bid Component	A Generating Resource Bid Component for Spinning Reserve.
Generating Resource Spinning Reserve Self-Provision Bid Component	A Generating Resource Bid Component for Spinning Reserve Self-Provision.
Generating Resource Start-Up Bid Component	A Generating Resource Bid Component for Start-Up.
Generating Resource State	The operating configuration indicator for a Generating Resource. All Generating Resources have an Offline Generating Resource State (0), and a default Online Generating Resource State (1). MSGs have additional Online Generating Resource States (2, 3, etc.)
Generating Resource TOR Self-Schedule Bid Component	A Generating Resource Bid Component for TOR Self-Schedules.
Generating Self-Schedule	A Self-Schedule from a NGR in generating mode.
Generating Self-Schedule Bid Component	A Bid Component for Generating Self-Schedules.
Generation Aggregation Point	An aggregate Location comprised of Generating Resources in a BAA.
Greenhouse Gas Bid	An Energy Bid Curve Price adder that applies to EIMPR and expresses the additional cost for complying with emission regulations for energy imports to California.
Greenhouse Gas Energy Cost Allowance Curve	A greenhouse gas emission cost adder to the generated Energy Bid Curve for a Generating

	Resource or MSG configuration.
Greenhouse Gas Minimum Load Cost Allowance	A per MW greenhouse gas emission cost adder to the Proxy Minimum Load Cost for a Generating Resource or MSG configuration.
Greenhouse Gas Start-Up Cost Allowance Curve	A greenhouse gas emission cost adder to the Proxy Start-Up Cost Curve for a Generating Resource or startable MSG configuration.
Grid Management Charge Energy Cost Rate	A grid management charge cost adder to each segment of the generated Energy Bid Curve for any Generating Resource or MSG configuration.
Grid Management Charge Minimum Load Cost Rate	A per MW grid management charge cost adder to the Proxy Minimum Load Cost for any Generating Resource or MSG configuration.
Grid Management Charge Start-Up Cost Adder	A grid management charge cost adder to each segment of the Proxy Start-Up Cost Curve for a Generating Resource or startable MSG configuration.
Grid Management Charge Start-Up Cost Rate	A volumetric grid management charge cost rate used to calculate the Grid Management Charge Start-Up Cost Adder for any Generating Resource or MSG configuration.
History Day	A Trading Day used to select the DAM Clean Bid as Source Bid for a Multi-Period Bid when the Bid Fill Option is "History". By default, the History Day is the last similar Trading Day (if the Trading Day is Tuesday 6/14, the default History Day will be Tuesday 6/7), but the operator may choose any Trading Day within the past seven days.
Hourly Pre-Dispatched Inter-Tie Generating Resource	An Inter-Tie Generating Resource dispatched at the same Operating Level over a Trading Hour of a Real-Time Market.
Hourly Pre-Dispatched Resource	A Resource dispatched at the same Operating Level over a Trading Hour of a Real-Time Market.
IFM Self-Schedule	The IFM committed Self-Schedule used for REM resources that are awarded Regulation Capacity from IFM.
Import Resource	A Resource that produces Energy that is imported into a BAA.
Import Resource Bid	A Bid for an Import Resource.

Incremental Fuel Cost	The cost of the fuel consumed by a Generating Resource at a given Operating Level to produce the next increment of Energy.
Incremental Fuel Cost Curve	The Incremental Fuel Cost of a Generating Resource as a function of its Operating Level.
Incremental Heat Rate	The amount of fuel consumed by a Generating Resource at a given Operating Level to produce the next increment of Energy.
Incremental Heat Rate Curve	The Incremental Heat Rate of a Generating Resource as a function of its Operating Level.
Incremental PT Self-Schedule Quantity	The positive difference between the PT Self-Schedule Quantity specified in a RTM PT Self-Schedule Bid Component and the Day-Ahead Schedule for the same Trading Hour.
Initial Online Generating Resource State	The Online Generating Resource State of a MSG before a State Transition.
Instruction	A financially binding outcome of a Market that determines the Commitment Status or Operating Level of a Resource at a specific time within the Market Horizon of that Market.
Integrated Forward Market	A Day-Ahead Market application for committing Resources and optimally scheduling Energy and Ancillary Services.
Inter-Tie	A Branch Group that inter-connects two BAAs (from a BAA to another BAA).
Inter-Tie Corridor	A collection of Inter-Tie Scheduling Points where an Energy/AS scheduling limit is enforced.
Inter-Tie Generating Resource	A Generating Resource at an Inter-Tie Scheduling Point.
Inter-Tie Resource	An Import Resource or an Export Resource at an Inter-Tie Scheduling Point; it is either a Registered Inter-Tie Resource or an Inter-Tie Transaction.
Inter-Tie Resource Ancillary Service Bid Component	An Inter-Tie Resource Bid Component for Ancillary Services.
Inter-Tie Resource Ancillary Service Self-Provision Bid Component	An Inter-Tie Resource Bid Component for Ancillary Service Self-Provision.
Inter-Tie Resource Bid	A Bid for an Inter-Tie Resource.
Inter-Tie Resource Bid Component	A Bid Component of an Inter-Tie Resource Bid.

Inter-Tie Resource Energy Bid Component	An Inter-Tie Resource Bid Component for Energy.
Inter-Tie Resource ETC Self-Schedule Bid Component	An Inter-Tie Resource Bid Component for ETC Self Schedules.
Inter-Tie Resource ETC Self-Schedule Bid Component	An Inter-Tie Resource Bid Component for ETC Self-Schedules.
Inter-Tie Resource Non-Spinning Reserve Bid Component	An Inter-Tie Resource Bid Component for Non-Spinning Reserve.
Inter-Tie Resource Non-Spinning Reserve Self-Provision Bid Component	An Inter-Tie Resource Bid Component for Non-Spinning Reserve Self-Provision.
Inter-Tie Resource PT Self-Schedule Bid Component	An Inter-Tie Resource Bid Component for a PT Self-Schedule.
Inter-Tie Resource Regulation Down Bid Component	An Inter-Tie Resource Bid Component for Regulation Down.
Inter-Tie Resource Regulation Down Self-Provision Bid Component	An Inter-Tie Resource Bid Component for Regulation Down Self-Provision.
Inter-Tie Resource Regulation Up Bid Component	An Inter-Tie Resource Bid Component for Regulation Up.
Inter-Tie Resource Regulation Up Self-Provision Bid Component	An Inter-Tie Resource Bid Component for Regulation Up Self-Provision.
Inter-Tie Resource RUC Bid Component	An Inter-Tie Resource Bid Component for RUC Capacity.
Inter-Tie Resource Self-Schedule Bid Component	An Inter-Tie Resource Bid Component for Self-Schedules.
Inter-Tie Resource Spinning Reserve Bid Component	An Inter-Tie Resource Bid Component for Spinning Reserve.
Inter-Tie Resource Spinning Reserve Self-Provision Bid Component	An Inter-Tie Resource Bid Component for Spinning Reserve Self-Provision.
Inter-Tie Resource TOR Self-Schedule Bid Component	An Inter-Tie Resource Bid Component for TOR Self-Schedules.
Inter-Tie Scheduling Limit	A scheduling limit that applies on an Inter-Tie.
Inter-Tie Scheduling Point	A Location associated with an Inter-Tie Resource.
Inter-Tie Transaction	An Inter-Tie Resource that is identified dynamically, but persistently in the Market by a unique combination of submitted Bid attributes.

Inter-Tie Transaction Identification	The unique identifier of an Inter-Tie Transaction assigned by SIBR based on a unique combination of submitted Bid attributes, as follows: SCID-LID-TID-D-BT[-ET-PSE] Where: SCID is the Scheduling Coordinator identification (required); LID is the Inter-Tie Scheduling Point identification (required); TID is the Primary Inter-Tie identification (required); D is the Direction (required): I for Import and E for Export; BT is the Bid Type (required): P for physical and V for virtual; ET is the Energy Type (required for physical transactions): F for firm, N for non-firm, U for unit-contingent, D for Dynamic Interchange, and W for Wheeling Resource; and PSE is a registered Purchase-Selling Entity (required for physical transactions) with optional trailing numerals (from ".1" to ".9"); it can be used to distinguish multiple Inter-Tie Transactions by PSE.
Invalid	The Bid Status of a Bid or a Bid Component that has failed Bid Validation.
Invalid Bid	A Bid that has failed Bid Validation.
IRR	The RA repository (IRRSNAP schema) that contains the RA Capacity information on an hourly basis.
ISO Demand Forecast Indicator	If set, it indicates that an EIM Entity has elected to use the Demand Forecast produced by the CAISO for balancing Base Schedules in their EIM BAA(s).
Isolated ISL Indicator	A Y/N ISL attribute published by ETCC indicating an isolated ISL condition where only stranded load can be served under the ISL OTC.
Isolated ITC Indicator	A Y/N ITC attribute published by ETCC indicating an isolated ITC condition where only stranded load can be served under the ITC OTC.
Lay-Off Self-Schedule	A Self-Schedule from a Pseudo-Tie indicating Energy for the relevant Native Control Area.
Lay-Off Self-Schedule Bid Component	A Bid Component for a Lay-Off Self-Schedule.

Lay-Off Self-Schedule Quantity	The Energy Bid Quantity for a Lay-Off Self-Schedule.
Limited Energy Storage Resource	A type of NGR with a continuous operating range that spans both load (charging) and generating (discharging) modes: Lmax < Lmin = 0 = Gmin < Gmax.
Load Capacity Limit	A limit for the total Non-Generator Resource load Capacity that can be used for Commodities in DAM and RTM.
Load Drop Rate	The rate at which a Participating Load Resource can decrease its electric power consumption.
Load Following	The Load Following Down or Load Following Up service by a MSSA.
Load Following Down Capacity	The Capacity designated for Load Following Down Self-Provision.
Load Following Down Self-Provision	The service where a MSSA decrements designated Resources to meet the relevant MSS load deviations in real time.
Load Following Down Self-Provision Bid Component	A Bid Component for Load Following Down Self Provision.
Load Following Option	The option by a MSSA to perform Load Following.
Load Following Resource	A Resource used for Load Following, registered with a MSSA that has elected the Load Following Option.
Load Following Up Capacity	The Capacity designated for Load Following Up Self-Provision.
Load Following Up Self-Provision	The service where a MSSA increments designated Resources to meet the relevant MSS load deviations in real time.
Load Following Up Self-Provision Bid Component	A Bid Component for Load Following Up Self Provision.
Load Pick-Up Rate	The rate at which a Participating Load Resource can increase its electric power consumption.
Load Reduction	The reduction of electric power consumption of a Participating Load Resource from its Base Load.
Load Reduction Initiation	The process where a Participating Load Resource decreases its electric power consumption from its Base Load.

Load Reduction Initiation Bid Component	A Bid Component for Load Reduction Initiation.
Load Reduction Initiation Cost	The Operating Cost associated with Load Reduction Initiation.
Load Reduction Initiation Instruction	An Instruction to a Participating Load Resource to decreases its electric power consumption from its Base Load.
Load Reduction Initiation Instruction	A Dispatch Instruction issued to a Participating Load Resource for Load Reduction Initiation.
Load Reduction Initiation Time	The time period required for Load Reduction Initiation after a Load Reduction Initiation Instruction is issued.
Load Resource	A Resource that consumes Energy.
Load Self-Schedule	A Self-Schedule from a NGR in load mode.
Load Self-Schedule Bid Component	A Bid Component for Load Self-Schedules.
Load Serving Entity	A market participant that is an agent for Load Resources.
Load-Serving Generator	A Generating Resource that serves load behind the meter qualifying for net Energy settlement.
Location	A Network Node or an aggregation of Network Nodes.
Long Trading Day	The Trading Day when daylight saving ends. It has 25 Trading Hours, including the additional Trading Hour from 3:00 AM PDT to 3:00 AM PST.
Lower Charge Limit	The lowest stored Energy that should be maintained in a LESR.
Lower Economic Limit	The first (lowest) Energy Bid Quantity of the Energy Bid Curve specified in an Energy Bid Component.
Lower Operating Limit	The Minimum Load of a Resource, incorporating any applicable overrates.
Lower Regulating Limit	The lowest Operating Level of a Regulating Range.
LPT Self-Schedule	Lower Priority Self-Schedule used for Exports that are not identified as being supported by non-RA Capacity
LSG Self-Schedule	A Self-Schedule for the load behind the meter of a LSG.

LSG Self-Schedule Bid Component	A Bid Component for a LSG Self-Schedule.
LSG Self-Schedule Quantity	The Energy Bid Quantity for a LSG Self-Schedule.
Major Maintenance Minimum Load Cost Adder	A major maintenance cost adder to the Proxy Minimum Load Cost for a Generating Resource or MSG configuration.
Major Maintenance Start-Up Cost Adder	A major maintenance cost adder to each segment of the Proxy Start-Up Cost Curve for a Generating Resource or startable MSG configuration.
Market	A forum where Bids for supply and demand of a Commodity are evaluated and selected so that supply meets demand.
Market Accepted Bid	A Conditionally Valid, Valid, Conditional Modified, or Modified Bid.
Market Close Time	The latest time that a physical Resource Bid can be submitted in a DAM in advance of the relevant Active Day, or in a RTM in advance of the relevant Active Hour.
Market Fill Option	A SIBR initialization parameter that controls the Multi-Period Bid Generation in the DAM when the Bid Fill Option is set to "No" or "Last": Yes: Market Accepted Bids are used as is. No: Default prices are used for SUC/MLC and Energy/AS/RUC.
Market Horizon	The time period for which Bids are evaluated in a Market.
Market Open Time	The earliest time that a Bid can be submitted in a DAM in advance of the relevant Active Day, or in a RTM in advance of the relevant Active Hour.
Market Type	An indicator specifying the Market for which a Bid is submitted.
Master File	A global Resource data registry.
Master File Requirement	A Master File data requirement.
Matching Ancillary Service Obligation Trade	A Submitted Ancillary Service Obligation Trade by the Counterparty of an Ancillary Service Obligation Trade for the same Market and Trade Period with opposite Traded Ancillary Service Obligation.
Matching Energy Trade	A Submitted Energy Trade by the Counterparty of an Energy Trade for the same Market and Trade Period at the same Location with opposite Traded

	Energy.
Maximum Capacity	The maximum sustained Operating Level of a Generating Resource.
Maximum Daily Energy Limit	The maximum Energy scheduled and dispatched from a Generating Resource within a Trading Day.
Maximum Daily Generating Energy Limit	The maximum net Energy produced by a NGR within a Trading Day.
Maximum Daily Load Energy Limit	The maximum net Energy consumed by a NGR within a Trading Day.
Maximum Daily Start-Ups	The maximum number of Start-Ups allowed for a Generating Resource within a Trading Day.
Maximum Energy Curve Segment Number	The maximum allowed number of Energy Bid Segments in Submitted Bids.
Maximum ETC Self-Schedule Quantity	The maximum ETC Self-Schedule Quantity allowed for a Resource.
Maximum Export Capacity	The maximum export capacity at a Virtual Demand Resource Location that is an Inter-Tie Scheduling Point.
Maximum Generating Capacity	The maximum generating capacity at a Virtual Supply Resource Location that is not an Inter-Tie Scheduling Point.
Maximum Import Capacity	The maximum import capacity at a Virtual Supply Resource Location that is an Inter-Tie Scheduling Point.
Maximum Load Capacity	The maximum load capacity at a Virtual Demand Resource Location that is not an Inter-Tie Scheduling Point.
Maximum Load Drop Rate	The maximum rate at which a Participating Load Resource can decrease its electric power consumption.
Maximum Load Pick-Up Rate	The maximum rate at which a Participating Load Resource can increase its electric power consumption.
Maximum Load Reduction	The maximum Load Reduction that a Participating Load Resource is certified for.
Maximum Load Reduction Initiation Time	The maximum time required for Load Reduction Initiation after a Load Reduction Initiation

	Instruction is issued.
Maximum LSG Self-Schedule Quantity	The maximum LSG Self-Schedule Quantity allowed for a Generating Resource.
Maximum NGR Generation	The maximum sustained Operating Level of a NGR operating in generating mode.
Maximum NGR Load	The maximum sustained Operating Level of a NGR operating in load mode.
Maximum Online Generating Resource State Count	The configurable maximum number of Online Generating Resource States that can be bid in a Bid.
Maximum Pumping Capacity	The maximum sustained Pumping Level of a Pumped-Storage Hydro Unit operating as a hydro pump.
Maximum Ramp Rate	The maximum Ramp Rate of an Inter-Tie Resource.
Maximum Ramp Rate Curve Segment Number	The maximum allowed number of Ramp Rate curve segments in Submitted Bids for Generating Resources.
Maximum RMT Self-Schedule Quantity	The maximum RMT Self-Schedule Quantity allowed for a Generating Resource.
Maximum Start-Up Time/Cost Curve Segment Number	The maximum allowed number of Start-Up Time/Cost Curve segments in Submitted Bids.
Maximum State Transition Time	The maximum State Transition Time for a registered State Transition Definition of a MSG. This is the NOTIFICATION time that is retrieved from MF and includes the Transition Ramp Time as part of the Notification Time (used to validate the Notification Time submitted in a bid).
Maximum Stored Energy	The maximum energy (MWh) that can be stored in a LESR.
Maximum TOR Self-Schedule Quantity	The maximum TOR Self-Schedule Quantity allowed for a Resource.
Meter Subsystem	An entity, e.g., a municipality or irrigation district, whose contiguous network and resources are part of the CAISO grid, and there are revenue quality meters installed on all MSS ties.
Meter Subsystem Aggregation	The aggregation of Metered Subsystems under a common set of options for a) Load Following, b)

	RUC participation, and c) gross versus net settlement.
Minimum Daily Energy Limit	The minimum Energy scheduled and dispatched from a Generating Resource within a Trading Day; it is used to specify maximum pumping Energy for PSH units.
Minimum Daily Generating Energy Limit	The minimum net Energy produced by a NGR within a Trading Day.
Minimum Daily Load Energy Limit	The minimum net Energy consumed by a NGR within a Trading Day.
Minimum Down Time	The minimum duration that a Generating Resource must stay off from a given Online Generating Resource State after a State Transition from that State onto another Generating Resource State (including the Offline Generating Resource State).
Minimum Energy Bid Segment Size	The minimum required size of any Energy Bid Segment in a Virtual Resource Energy Bid Component.
Minimum Gen-to-Pump Down Time	The minimum duration that a PSH must stay Offline between generating and pumping operations.
Minimum Hourly Block	The minimum number of consecutive Trading Hours that an Inter-Tie Resource must be scheduled, if at all.
Minimum Load	The minimum sustained Operating Level of a Generating Resource.
Minimum Load Cost	The Operating Cost of a Generating Resource operating at its Minimum Load.
Minimum Load Cost Basis	A Generating Resource option (applicable to all MSG configurations) that indicates the basis of the MLC determination: Registered Cost: The MLC is registered. Proxy Cost: The MLC is bid, but it cannot be higher than an approximation of the actual MLC.
Minimum Load Cost Bid Component	A Bid Component for Minimum Load Cost.
Minimum Load Fuel Cost	The cost of the fuel consumed by a Generating Resource operating at its Minimum Load.
Minimum Load Reduction	The discrete Load Reduction of a Participating Load Resource below its Base Load.

Minimum Load Reduction Cost	The Operating Cost of a Participating Load Resource operating at its Minimum Load Reduction below its Base Load.
Minimum Load Reduction Cost Bid Component	A Bid Component for Minimum Load Reduction Cost.
Minimum Load Reduction Threshold	The minimum Load Reduction allowed for any Participating Load Resource.
Minimum NGR Generation	The minimum sustained Operating Level of a NGR operating in generating mode.
Minimum NGR Load	The minimum sustained Operating Level of a NGR operating in load mode.
Minimum Pump-to-Gen Down Time	The minimum duration that a PSH must stay Offline between pumping and generating operations.
Minimum Pump-to-Pump Down Time	The minimum duration that a PSH must stay Offline between pumping operations.
Minimum Resource Down Time	The minimum duration that a Generating Resource must stay Offline State after a Shut Down from any Online Generating Resources State. This is equivalent to a Minimum Up Time for the Offline Generating Resource State.
Minimum Resource Up Time	The minimum duration that a Generating Resource must stay Online in any Online Generating Resource State, including State Transitions between Online Generating Resource States. This is equivalent to a Minimum Down Time for the Offline Generating Resource State.
Minimum State Group Down Time	The minimum duration that a Generating Resource must stay off from a given Online Generating Resource State Group after a State Transition from a State in that Group onto another State (including the Offline Generating Resource State) not in that Group.
Minimum State Group Up Time	The minimum duration that a Generating Resource must stay Online in a given Online Generating Resource State Group.
Minimum Stored Energy	The minimum energy (MWh) that must remain in a LESR.
Minimum Up Time	The minimum duration that a Generating Resource must stay Online in a given Online Generating

	Resource State.
Miscellaneous Bid Component	An hourly Bid Component for miscellaneous Bid information.
Modified Bid	A Bid modified by SIBR in Bid Processing after the Master File update for the relevant Trading Day.
MOO Resource	A Resource that is under a Must Offer Obligation for its RA Capacity, as indicated by the RA Flag.
Multi-Day Bid Resource Exception List	A persistent Resource list maintained administratively in SIBR for the purpose of overwriting market-based bids with default bids in DAM Multi-Period Bids for the Resources in that list.
Multi-Period Bid	A Bid generated for a Trading Day after the Active Day in a Day-Ahead Market Horizon for a given Day-Ahead Market, or a Trading Hour after the Active Hour in the Real-Time Market Horizon for a given Real-Time Market.
Multi-State Generator	A Generating Resource with multiple Online Generating Resource States.
Must-Offer Obligation	A condition where a Resource must participate in the DAM and/or the RTM due to Resource Adequacy requirements.
Native Control Area	The Control Area that a Pseudo-Tie resides in.
Natural Gas Resource	A Generating Resource fueled by natural gas.
NERC Tag	Inter-Tie scheduling information in accordance with NERC standards.
NET Benefit Floor Off-Peak	The minimum acceptable price as determined by the DR Net Benefits Test calculation (Casio) for Off-Peak Hours.
NET Benefit Floor On-Peak	The minimum acceptable price as determined by the DR Net Benefits Test calculation (Casio) for On-Peak Hours.
Net Interchange	The net Energy flow over all Inter-Ties of a Control Area.
Network	The collective of system components that produce, transmit, or consume Energy.
Network Branch	A Network component used to transmit electric

	energy between Network Nodes.
Network Node	A node where Network components connect.
NGR Maximum Ramp Rate Curve Segment Number	The maximum allowed number of Ramp Rate curve segments in Submitted Bids for NGR.
Non-EIM BAA	A BAA that does not participate in EIM.
Non-Firm Import Resource	An Import Resource that is not supported by Spinning Reserve; it is registered or specified with Energy Type NF.
Non-Generator Resource	A NGR is a Resource with up to two operating modes: a) a generating mode from Gmin to Gmax (0 ≤ Gmin ≤ Gmax), and b) a load mode from Lmin to Lmax (0 ≥ Lmin ≥ Lmax). Currently, a NGR has a continuous operating range and no inter-temporal constraints Lmin = 0 = Gmin. Currently, a NGR may not be associated with an Inter-Tie or an ECA/ACA, it may not be an RA Resource or a Supporting Resource, it may not bid Ancillary Service Self-Provision, it may not be certified for Load Following or RUC, and it may not bid Self-Schedules other than Price Taker Self-Schedules.
Non-Market-Rate Resource	A Resource for which FERC has temporarily suspended market rate authority disallowing bids at market rates.
Non-Participating Load Resource	A Load Resource that cannot be dispatched to change its Energy consumption.
Non-Participating Load Resource Bid Component	A Bid Component for a Non-Participating Load Resource.
Non-Spinning Reserve	An Ancillary Service from an Offline Generating Resource, an Inter-Tie Resource, or a participating load Resource, to provide Energy within a specified time period after a Dispatch Instruction is issued.
Non-Spinning Reserve Award	An Award for Non-Spinning Reserve from a Non-Spinning Reserve Self-Provision Bid Component and a Non-Spinning Reserve Bid Component.
Non-Spinning Reserve Bid Component	A Bid Component for Non-Spinning Reserve.

Non-Spinning Reserve Capacity	The Capacity designated for Non-Spinning Reserve.
Non-Spinning Reserve Obligation	The Demand for which a Scheduling Coordinator is financially responsible for Non-Spinning Reserve.
Non-Spinning Reserve Obligation Trade	A Trade of a Non-Spinning Reserve Obligation.
Non-Spinning Reserve Price	The price of a Bid for Non-Spinning Reserve.
Non-Spinning Reserve Self-Provision	Non-Spinning Reserve provided by a Scheduling Coordinator to primarily meet its own Non-Spinning Reserve Obligation.
Non-Spinning Reserve Self-Provision Bid Component	A Bid Component for Non-Spinning Reserve Self-Provision.
Non-Spinning Reserve Self-Provision Capacity	The Capacity designated for Non-Spinning Reserve Self-Provision.
North American Electric Reliability Council	The authoritative body with the mission to ensure that the bulk electric system in North America is reliable, adequate, and secure.
Notification Time	The notification time for completing a MSG State Transition between Online Generating Resource States (biddable).
Obsolete	The Bid Status of a Bid made obsolete by a Submitted Bid for the same SC, Resource, Resource Type, Market Type, and Bid Period, with a later Bid Submission Time.
Obsolete Bid	A Bid made obsolete by a Submitted Bid for the same SC, Resource, Resource Type, Market Type, and Bid Period, with a later Bid Submission Time.
Offline	The Commitment Status of a Generating Resource that is not connected to the grid.
Off-Peak RLC Curve	A proxy Energy Bid Curve used for RA Import Resources during Off-Peak Trading Hours.
Off-Peak Trading Hour	A Trading Hour during off-peak load conditions as specified by WECC: Mon-Sat 0:00-6:00 and 22:00-24:00, and all day on Sun and certain holidays.
Online	The Commitment Status of a Generating Resource that is connected to and synchronized with the grid.
Online Generating Resource State Group	A group of Online Generating Resource States of a MSG. Online Generating Resource State Groups

	may be nested.
Online Generating Resource State Shut- Down Capability Indicator	An Indicator that indicates whether a MSG can Start-Up to an Online Generating Resource State.
Online Generating Resource State Start-Up Capability Indicator	An Indicator that indicates whether a MSG can Shut-Down from an Online Generating Resource State.
On-Peak RLC Curve	A proxy Energy Bid Curve used for RA Import Resources during On-Peak Trading Hours.
On-Peak Trading Hour	A Trading Hour during on-peak load conditions as specified by WECC: Mon-Sat 6:00-22:00 except certain holidays.
Open Tie Status	An hourly Y/N status generated by SIBR for a Bid to indicate open or isolated ITC conditions that apply to that Bid for the relevant Trading Hour. The DAM and RTM applications would treat the Resource as unavailable in these Trading Hours producing zero Energy/AS schedules.
Operating Cost	The cost of operating a Resource.
Operating Level	The amount of electric power a Resource produces or consumes at a given time.
Operating Level Break Point	An Operating Level that defines the start or the end of a segment of an Operational Ramp Rate Curve.
Operating Reserve Ramp Rate	The Ramp Rate used to evaluate Generating Resource Bids for Spinning Reserve and Non-Spinning Reserve.
Operating Reserve Ramp Rate Bid Component	A Bid Component for Operating Reserve Ramp Rate.
Operation and Maintenance Cost	The portion of the Operating Cost of a Generating Resource that is not related to fuel cost.
Operational Ramp Rate Bid Component	A Bid Component for Operational Ramp Rate.
Operational Ramp Rate Bid Curve	The Ramp Rate curve of a Generating Resource.
Operational Transfer Capability	The dynamic directional ITC limit published by ETCC.
Participating Load Resource	A Load Resource that can be dispatched to change its Energy consumption.

Participating Load Resource Ancillary Service Bid Component	A Participating Load Resource Bid Component for Ancillary Services.
Participating Load Resource Ancillary Service Self-Provision Bid Component	A Participating Load Resource Bid Component for Ancillary Service Self-Provision.
Participating Load Resource Bid	A Bid for a Participating Load Resource.
Participating Load Resource Bid Component	A Bid Component of a Participating Load Resource Bid.
Participating Load Resource Distribution Bid Component	A Bid Component for distributing the Bid, Schedule, or Dispatch of an Aggregate Participating Load Resource.
Participating Load Resource Energy Bid Component	A Participating Load Resource Bid Component for Energy.
Participating Load Resource Energy Limit Bid Component	A Participating Load Resource Bid Component for Energy Limits.
Participating Load Resource ETC Self-Schedule Bid Component	A Participating Load Resource Bid Component for ETC Self Schedules.
Participating Load Resource Load Reduction Initiation Bid Component	A Participating Load Resource Bid Component for Load Reduction Initiation.
Participating Load Resource Minimum Load Reduction Cost Bid Component	A Participating Load Resource Bid Component for Minimum Load Reduction Cost.
Participating Load Resource Non-Spinning Reserve Bid Component	A Participating Load Resource Bid Component for Non-Spinning Reserve.
Participating Load Resource Non-Spinning Reserve Self-Provision Bid Component	A Participating Load Resource Bid Component for Non-Spinning Reserve Self-Provision.
Participating Load Resource PT Self-Schedule Bid Component	A Participating Load Resource Bid Component for a PT Self Schedule.
Participating Load Resource Ramp Rate Bid Component	A Participating Load Resource Bid Component for Ramp Rates.
Participating Load Resource RUC Bid Component	A Participating Load Resource Bid Component for RUC Capacity.
Participating Load Resource Self-Schedule Bid Component	A Participating Load Resource Bid Component for Self-Schedules.
Participating Load Resource TOR Self-Schedule Bid Component	A Participating Load Resource Bid Component for TOR Self-Schedules.
Participating Transmission Owner	A Transmission Owner that has transferred control

	of its Network Branches to the ISO.
Pending Bid Approval Option	An administrative option (Y/N) persistently maintained in SIBR and controlling whether Valid Virtual Resource Bids with Credit Status of Pending Response are approved and promoted to Clean Bids (Y) or invalidated (N) after the DAM Market Close.
Pending Request	The Credit Status assigned to a Submitted Virtual Resource Bid. In implementation, an unassigned Credit Status (null) is interpreted as a Credit Status of Pending request.
Pending Response	The Credit Status assigned to a Conditionally Valid or Valid Virtual Resource Bid after it is sent to CTS for Credit Request.
Physical Resource	A physical Resource that can actually produce or consume Energy.
Physical Resource Bid	A Bid for a Physical Resource.
Price Precision	The minimum price precision allowed in a Bid.
Price-Taker	An Energy Bid Quantity without an explicit Energy Bid Price, effectively at the lowest possible Energy Bid Price for Supply or the highest possible Energy Bid Price for Demand.
Primary Inter-Tie	The Inter-Tie associated with an Inter-Tie Resource for tagging Schedules and Awards from associated Bids when the Open Tie Status is not set for these Bids.
Priority Indicator	An indicator for each TOR/ETC and Trading Hour that indicates whether the corresponding TOR/ETC has passed or failed TOR/ETC Entitlement validation.
Proxy Demand Resource	A logical Generating Resource used to model demand response.
Proxy Minimum Load Cost	An approximation of the actual MLC for a Generating Resource registered with a Minimum Load Cost Basis of "Proxy Cost".
Proxy Start-Up Cost Curve	An approximation of the actual SUC for a Generating Resource registered with a Start-Up Cost Basis of "Proxy Cost".

Proxy State Transition Cost	An approximation of the actual STC for a MSG State Transition between Online Generating Resource States.
Pseudo-Tie	A Generating Resource within a Control Area (Native Control Area), but under the operational control of another Control Area (Attaining Control Area).
PT Export Capacity Factor	A configurable parameter used for Export Resource Self-Schedule priority determination.
PT Generating Self-Schedule	A Self-Schedule from a Price-Taker NGR in generating mode.
PT Generating Self-Schedule Bid Component	A Bid Component for a PT Generating Self-Schedule.
PT Generating Self-Schedule Bid Quantity	The Energy Bid Quantity for a PT Generating Self-Schedule.
PT Load Self-Schedule	A Self-Schedule from a Price-Taker NGR in load mode.
PT Load Self-Schedule Bid Component	A Bid Component for a PT Load Self-Schedule.
PT Load Self-Schedule Bid Quantity	The Energy Bid Quantity for a PT Load Self-Schedule.
PT Pumping Self-Schedule	A Pumping Self-Schedule from a Price Taker.
PT Pumping Self-Schedule Bid Component	A Bid Component for a PT Pumping Self-Schedule.
PT Pumping Self-Schedule Quantity	The Energy Bid Quantity for a PT Pumping Self-Schedule.
PT Self-Schedule	A Self-Schedule from a Price Taker.
PT Self-Schedule Bid Component	A Bid Component for a PT Self-Schedule.
PT Self-Schedule Quantity	The Energy Bid Quantity for a PT Self-Schedule.
Pump	A Resource that can only operate in pumping mode.
Pump Shut-Down Cost	The cost to shut down a Pumped-Storage Hydro Unit (in pumping mode) or a Pump.
Pumped-Storage Hydro Unit	A hydro generating station with the capability to operate as a hydro pump.
Pumping Bid Component	A Bid Component with pumping data for Pumped-

	Storage Hydro Units and Pumps.
Pumping Cost	The Operating Cost of a Pump or a Pumped-Storage Hydro Unit operating as a hydro pump.
Pumping Level	The fixed Operating Level of a Pump or a Pumped-Storage Hydro Unit operating as a hydro pump.
Pumping Minimum Up Time	The minimum duration that a PSH must stay Online in pumping operation.
Pumping Self-Schedule	A Self-Schedule from a Pump or a Pumped-Storage Hydro Unit operating as a hydro pump.
Pumping Self-Schedule Bid Component	A Bid Component for a Pumping Self-Schedule.
Pumping Self-Schedule Quantity	The Energy Bid Quantity for a Pumping Self-Schedule.
Purchasing-Selling Entity	A registered entity that purchases or sells Energy or Ancillary Services over Inter-Ties; it appears in electronic tags for Inter-Tie Schedules.
Quantity Precision	The minimum Capacity or Energy precision allowed in a Bid.
RA Capacity	The Capacity of a Resource under Resource Adequacy requirements, provided by IRR for each Resource and Trading Hour.
RA Flag	A Yes/No flag provided by IRR for each Resource and Trading Hour indicating whether the Resource is a RA Resource in that Trading Hour. It is used for MOO status determination.
RA Resource	A Resource with Resource Adequacy requirements.
Ramp Rate	The rate of change of the Operating Level of a Resource.
Ramp Rate Bid Component	A Bid Component for Ramp Rates.
Ramp Rate Bid Curve	The Ramp Rate curve of a Non-Generator Resource.
Real-Time Base Schedule First Cutoff Time	The first cutoff time when Base Schedules can be submitted in the RTM for the Active Hour.
Real-Time Base Schedule Second Cutoff Time	The second cutoff time when Base Schedules can be submitted in the RTM for the Active Hour.

Real-Time Base Schedule Third Cutoff Time	The third and last cutoff time when Base Schedules can be submitted in the RTM for the Active Hour.
Real-Time Demand Forecast First Cutoff Time	The first cutoff time used in the RTM to retrieve the Demand Forecast for an EIM BAA for the Active Hour for Base Schedule balancing validation.
Real-Time Demand Forecast Second Cutoff Time	The second cutoff time used in the RTM to retrieve the Demand Forecast for an EIM BAA for the Active Hour for Base Schedule balancing validation.
Real-Time Demand Forecast Third Cutoff Time	The third cutoff time used in the RTM to retrieve the Demand Forecast for an EIM BAA for the Active Hour for Base Schedule balancing validation.
Real-Time Market	A Market with a Market Horizon of consecutive Trading Intervals that span one or more consecutive Trading Hours. This Market is conducted shortly (1½ Trading Intervals) before the start of its Market Horizon. Dispatches, and Awards are financially binding for the first Trading Interval and advisory for the remaining Trading Intervals in the Market Horizon.
Real-Time Market Horizon	The number of Trading Hours in the Market Horizon of a given Real-Time Market.
Registered Export Resource	A Registered Resource that is an Export Resource.
Registered Import Resource	A Registered Resource that is an Import Resource.
Registered Inter-Tie Resource	A Registered Resource that is an Inter-Tie Resource. An Inter-Tie Generating Resource (TG) is both a Generating Resource and an Inter-Tie Resource, thus it is also a Registered Inter-Tie Resource.
Registered Resource	A Resource that is registered and identified statically in the Market by a unique resource identification.
Registry Start Date	The latest Trading Day when the registry data for a Resource has been modified.
Regulating Ramp Rate	The Ramp Rate used to evaluate Generating Resource Bids for Regulation Up and Regulation Down.

Regulating Ramp Rate Bid Component	A Bid Component for Regulating Ramp Rate.
Regulating Range	The Operating Level range within which a Generating Resource may provide Regulation.
Regulation	An Ancillary Service provided by a Resource that is dynamically controlled to maintain the frequency and Net Interchange of the ISO Control Area.
Regulation Down	Downward Regulation.
Regulation Down Award	An Award for Regulation Down from a Regulation Down Self-Provision Bid Component and a Regulation Down Bid Component.
Regulation Down Bid Component	A Bid Component for Regulation Down.
Regulation Down Capacity	The Capacity designated for Regulation Down.
Regulation Down Obligation	The Demand for which a Scheduling Coordinator is financially responsible for Regulation Down.
Regulation Down Opportunity Cost	The long-term opportunity cost for providing Regulation Down.
Regulation Down Price	The price of a Bid for Regulation Down.
Regulation Down Self-Provision	Regulation Down provided by a Scheduling Coordinator to primarily meet its own Regulation Down Obligation.
Regulation Down Self-Provision Bid Component	A Bid Component for Regulation Down Self-Provision.
Regulation Down Self-Provision Capacity	The Capacity designated for Regulation Down Self-Provision.
Regulation Energy Management	Master File designated resource with negative or positive power injection.
Regulation Energy Management Resource	A type of LESR or DDR enrolled in ISO's program to manage SOC while on Regulation.
Regulation Mileage Bid Ceiling	The maximum price allowed in a Regulation Mileage Up or Down Bid Component.
Regulation Mileage Down	An Ancillary Service for Resource movement while on Regulation Down.
Regulation Mileage Down Bid Component	A Bid Component for Regulation Mileage Down.
Regulation Mileage Down Price	The price of a Bid for Regulation Mileage Down.

Regulation Mileage Up	An Ancillary Service for Resource movement while on Regulation Up.
Regulation Mileage Up Bid Component	A Bid Component for Regulation Mileage Up.
Regulation Mileage Up Price	The price of a Bid for Regulation Mileage Up.
Regulation Up	Upward Regulation.
Regulation Up Award	An Award for Regulation Up from a Regulation Up Self-Provision Bid Component and a Regulation Up Bid Component.
Regulation Up Bid Component	A Bid Component for Regulation Up.
Regulation Up Capacity	The Capacity designated for Regulation Up.
Regulation Up Obligation	The Demand for which a Scheduling Coordinator is financially responsible for Regulation Up.
Regulation Up Obligation Trade	A Trade of Regulation Up Obligation.
Regulation Up Opportunity Cost	The long-term opportunity cost for providing Regulation Up.
Regulation Up Price	The price of a Bid for Regulation Up.
Regulation Up Self-Provision	Regulation Up provided by a Scheduling Coordinator to primarily meet its own Regulation Up Obligation.
Regulation Up Self-Provision Bid Component	A Bid Component for Regulation Up Self-Provision.
Regulation Up Self-Provision Capacity	The Capacity designated for Regulation Up Self-Provision.
Regulatory Must Run/Take	A Generating Resource that has a high scheduling priority because of regulatory requirements, e.g., run-of-the-river hydro unit, hydro unit in hydro spill condition, nuclear unit, qualifying facility, etc.
Rejected Bid	A Submitted Bid that has failed Bid Content.
Relative Proxy Minimum Load Cost Ceiling	The maximum Minimum Load Cost allowed in a Minimum Load Cost Bid Component for a Generating Resource registered with a Minimum Load Cost Basis of "Proxy Cost," relative to the Proxy Minimum Load Cost.
Relative Proxy Start-Up Cost Ceiling	The maximum Start-Up Cost allowed in a Start-Up Cost Bid Component for a Generating Resource registered with a Start-Up Cost Basis of "Proxy

	Cost," relative to the Proxy Start-Up Cost Curve.
Relative RDRR Energy Bid Floor	A configurable parameter to set what the Bid Floor is based on the Bid Ceiling Price.
Reliability Demand Response Resource	A Generating Resource that conditionally participates in the DAM and RTM under system emergency or other adverse conditions.
Reliability Must Run	A condition that applies to Generating Resources that need to operate for reliability reasons under a contract with the ISO.
Reliability Unit Commitment	A Day-Ahead Market application for committing additional Resources and optimally scheduling RUC Capacity after the IFM.
Resource	A Network component that produces or consumes Energy.
Resource Adequacy	A mandatory planning and procurement process for Load Serving Entities to ensure adequate capacity to meet their demand.
Resource Type	The type of the Resource specified in the Bid Identification of a Bid or in a Base Schedule. It can be one of the following: 1) a Generating Resource ("G"); 2) a Non-Generator Resource ("NGR"); 3) an Inter-Tie Generating Resource ("TG"); 4) a Registered Import Resource ("I"); 5) a Registered Export Resource ("E"); 6) an Import Transaction ("IT"); 7) an Export Transaction ("ET"); 8) a Non-Participating Load Resource ("L"); 9) a Virtual Generating Resource ("VG"); 10) a Virtual Load Resource ("VL"); 11) a Virtual Import Resource ("VI"); or 12) a Virtual Export Resource ("VE").
Right Indicator	A registered indicator for each TOR or ETC that indicates the contractual rights of that TOR or ETC in the DAM or RTM: physical, financial, both, or none.
RLC Curve	The On-Peak/Off-Peak Energy Bid Curve received from RLC (Potomac) and used to generate an Energy Bid Curve for an Import RA Resource.
RMR Resource	A Resource with a RMR contract.
RMR Schedule	The portion of the RUC Schedule identified as RMR.

RMT Reference	A unique identifier of a RMT.
RMT Self-Schedule	A Self-Schedule associated with a RMT.
RMT Self-Schedule Quantity	The Energy Bid Quantity for a RMT Self-Schedule.
RUC Award	An Award for scheduled RUC Capacity.
RUC Bid Ceiling	The maximum price allowed for RUC Capacity in a Generating Resource RUC Bid Component.
RUC Bid Component	A Generating Resource Bid Component for RUC Capacity.
RUC Bid Floor	The minimum price allowed for RUC Capacity in a Generating Resource RUC Bid Component.
RUC Capacity	The Capacity of a Generating Resource above its Minimum Load, or its Day-Ahead Schedule, which is bid in RUC to meet Demand in the RTM.
RUC Generating Resource State	The Generating Resource State that is associated with the RUC Schedule.
RUC Price	The price in a Generating Resource Bid Component for RUC Capacity.
RUC Schedule	The Capacity, including the Day-Ahead Schedule, scheduled by RUC for a Resource in a Trading Hour of a Day-Ahead Market.
Schedule	The Energy scheduled for production or consumption from a Resource in a Trading Hour of a Day-Ahead Market or a Commitment Interval of a Real-Time Market.
Scheduling Coordinator	A Market participant authorized by the ISO to submit Bids and Trades.
Self-Schedule	An Energy Bid that is evaluated in a Market in terms of priority instead of price.
Self-Schedule Bid Component	A Bid Component for Self-Schedules.
Self-Schedule Quantity	The Energy Bid Quantity for a Self-Schedule.
Short Trading Day	The Trading Day when daylight saving starts. It has only 23 Trading Hours because there is no Trading Hour from 2:00 AM PST to 3:00 AM PDT.
Short-Term Unit Commitment	A Real-Time Market application for committing Resources up to three Trading Hours after the Active Hour.

Shut-Down	The process where an Online Generating Resource is disconnected form the grid and is shut down.
Shut-Down Instruction	An Instruction issued to a Generating Resource to Shut-Down and be Offline at a specific time.
Shut-Down State Transition Path	A State Transition Path of Online Generating Resource States from an Online Generating Resource State to the Offline Generating Resource State (0).
Similar Trading Day	The last Trading Day that is the same day of the week with a given Trading Day.
Source Bid	The Bid used as a template to generate a Multi-Period Bid; it can be a forward Market Accepted Bid, a DAM Clean Bid, or a RTM Clean Bid. All Bid Components are copied from the Source Bid into the Multi-Period Bid.
Spinning Reserve	An Ancillary Service from an Online Generating Resource, an Inter-Tie Resource, or a Participating Load Resource, to provide Energy within a specified time period after a Dispatch Instruction is issued.
Spinning Reserve Award	An Award for Spinning Reserve from a Spinning Reserve Self-Provision Bid Component and a Spinning Reserve Bid Component..
Spinning Reserve Bid Component	A Bid Component for Spinning Reserve.
Spinning Reserve Capacity	The Capacity designated for Spinning Reserve.
Spinning Reserve Obligation	The Demand for which a Scheduling Coordinator is financially responsible for Spinning Reserve.
Spinning Reserve Obligation Trade	A Trade of a Spinning Reserve Obligation.
Spinning Reserve Price	The price of a Bid for Spinning Reserve.
Spinning Reserve Self-Provision	Spinning Reserve provided by a Scheduling Coordinator to primarily meet its own Spinning Reserve Obligation.
Spinning Reserve Self-Provision Bid Component	A Bid Component for Spinning Reserve Self-Provision.
Spinning Reserve Self-Provision Capacity	The Capacity designated for Spinning Reserve Self-Provision.
Start Date/Time	The date and time that designate the start of a time

	period such as a Bid Period.
Start-Up	The process where an Offline Generating Resource is started up and is synchronized with the grid.
Start-Up Bid Component	A Bid Component for Start-Up.
Start-Up Cost	The Operating Cost for a Generating Resource to Start-Up.
Start-Up Cost Basis	A Generating Resource option (applicable to all start-capable MSG configurations) that indicates the basis of the SUC determination: Registered Cost: The SUC is registered. Proxy Cost: The SUC is bid, but it cannot be higher than an approximation of the actual SUC.
Start-Up Cost Bid Curve	The Start-Up Cost versus Cooling Time curve in a Generating Resource Start-Up Bid Component.
Start-Up Cost Curve	The registered Start-Up Cost versus Cooling Time curve for a Generating Resource registered with a Start-Up Cost Basis of "Registered Cost".
Start-Up Energy	The Energy consumption of a Generating Resource to complete a Start-Up.
Start-Up Energy Cost	The cost of Start-Up Energy.
Start-Up Energy Cost Curve	A Start-Up Energy Cost versus Cooling Time curve for a Generating Resource.
Start-Up Energy Curve	A Start-Up Energy versus Cooling Time curve for a Generating Resource.
Start-Up Fuel	The fuel consumption of a Generating Resource to complete a Start-Up.
Start-Up Fuel Cost	The cost of Start-Up Fuel.
Start-Up Fuel Cost Curve	A Start-Up Fuel Cost versus Cooling Time curve for a Generating Resource.
Start-Up Fuel Curve	A Start-Up Fuel versus Cooling Time curve for a Generating Resource.
Start-Up Instruction	An Instruction issued to a Generating Resource to Start-Up and be Online at a specific time.
Start-Up Time	The notification time for a Generating Resource to complete a Start-Up from being Offline to its Minimum Load.

Start-Up Time Bid Curve	The Start-Up Time versus Cooling Time curve in a Generating Resource Start-Up Bid Component.
Start-Up Time Curve	The registered Start-Up Time versus Cooling Time curve for a Generating Resource.
State of Charge	The stored Energy in a LESR.
State Transition	The transition process of a MSG between Generating Resource States. The transition between the Offline and an Online Generating Resource State is a Start-Up. The transition between an Online and the Offline Generating Resource State is a Shut-Down.
State Transition Bid Component	A Bid Component for MSG Online Generating Resource State Transition data.
State Transition Cost	The Operating Cost incurred for a MSG State Transition between Online Generating Resource States.
State Transition Definition	State Transition data composed of Initial and Final Online Generating Resource States, and Notification Time and Transition Cost.
State Transition Energy	The Energy consumption of a Generating Resource to complete a State Transition between Online Generating Resource States.
State Transition Energy	The Energy consumption of a Generating Resource to complete a State Transition.
State Transition Energy Cost	The cost of State Transition Energy.
State Transition Energy Cost	The cost of State Transition Energy.
State Transition Fuel	The fuel consumption of a Generating Resource to complete a State Transition between Online Generating Resource States.
State Transition Fuel	The fuel consumption of a Generating Resource to complete a State Transition.
State Transition Fuel Cost	The cost of State Transition Fuel.
State Transition Fuel Cost	The cost of State Transition Fuel.
State Transition Path	A feasible sequence of State Transitions between Online Generating Resource States.
Storage Efficiency	The efficiency ($0 \leq SE \leq 1$) for storing Energy in a NGR operating in load mode.

Stranded Load Indicator	A registered Y/N Resource attribute that indicates a stranded load that can be served under an isolated ITC condition.
STUC Bid	A Generated Bid for each of the consecutive three Trading Hours following the Active Hour of a Real-Time Market. This Bid has a Bid Status of STUC Modified (SM) and it is not a Market Accepted Bid. SM Bids are used solely in STUC. There is no interaction between SM Bids and non-SM Bids.
STUC Bid Generation Time	The time after RTM Market Close Time when STUC Bids are generated.
Submitted Bid	A Bid submitted to a Market.
Submitted Trade	A Trade submitted to a Market.
Supply	The collective of Resources that supply Energy (i.e., Generating Resources and Imports).
Supporting Resource	A Generating Resource with non-RA Capacity that supports an Export Resource PT Self-Schedule.
System Infrastructure and Bidding Rules	The Bid validation and processing system.
Temporarily Valid Bid	A Bid that has passed Bid Validation.
Time Precision	The finest time precision allowed in Bids.
TOR Chain	A combination of individual TORs used in sequence.
TOR Entitlement	The hourly use limit of a TOR.
TOR Link	A TOR that is not a TOR Chain.
TOR Pumping Self-Schedule	A Pumping Self-Schedule associated with a TOR.
TOR Pumping Self-Schedule Bid Component	A Bid Component for a TOR Pumping Self-Schedule.
TOR Pumping Self-Schedule Quantity	The Energy Bid Quantity for a TOR Pumping Self-Schedule.
TOR Reference	A unique identifier of a TOR.
TOR Self-Schedule	A Self-Schedule associated with a TOR.
TOR Self-Schedule Bid Component	A Bid Component for TOR Self-Schedules.
TOR Self-Schedule Quantity	The Energy Bid Quantity for a TOR Self-Schedule.

Total Generating Self-Schedule Quantity	The sum of the Generating Self-Schedule Quantities specified in all Generating Self-Schedule Bid Components for a given NGR and Trading Hour; it is zero if there is no Generating Self-Schedule Bid Component.
Total Load Self-Schedule Quantity	The negative sum of the Load Self-Schedule Quantities specified in all Load Self-Schedule Bid Components for a given NGR and Trading Hour; it is zero if there is no Load Self-Schedule Bid Component.
Total Pumping Self-Schedule Quantity	The sum of the Pumping Self-Schedule Quantities specified in all TOR, ETC, and PT Pumping Self-Schedule Bid Components for a given Resource and Trading Hour; it is zero if there is no Pumping Self-Schedule Bid Component.
Total Self-Schedule Quantity	The sum of the Self-Schedule Quantities specified in all Lay-Off, TOR, ETC, RMT, PT, LPT, and LSG Self-Schedule Bid Components for a given Resource and Trading Hour; it is zero if there is no Self-Schedule Bid Component.
Trade	A trade of Energy or Ancillary Service Obligation between two Scheduling Coordinators.
Trade Content	The determination that a Trade complies with the structural rules.
Trade Identification	The section of a Trade that contains information used to identify the Trade.
Trade Period	The time period for which a Trade applies.
Trade Submission Time	The time when a Trade is submitted to a Market.
Trade Type	The type of a Trade as it pertains to the traded Commodity.
Trade Validation	The determination that a Trade complies with the Market rules.
Traded Ancillary Service Obligation	The amount of an Ancillary Service Obligation Trade.
Traded Energy Quantity	The amount of an Energy Trade.
Traded Non-Spinning Reserve Obligation Quantity	The amount of a Non-Spinning Reserve Obligation Trade.
Traded Regulation Down Obligation	The amount of a Regulation Down Obligation

Quantity	Trade.
Traded Regulation Up Obligation Quantity	The amount of a Regulation Up Obligation Trade.
Traded Spinning Reserve Obligation Quantity	The amount of a Spinning Reserve Obligation Trade.
Trading Day	A set of consecutive Trading Hours spanning a calendar day in the Market Horizon of a Day-Ahead Market. All Trading Days have 24 Trading Hours except for the Short Trading Day and the Long Trading Day.
Trading Hour	A clock hour in the Market Horizon of a Day-Ahead Market.
Trading Hub	A standard aggregation of Locations defined by the ISO.
Trading Interval	A sub-hourly time period in the Market Horizon of a Real-Time Market.
Trading Period	A Trading Day or a Trading Hour.
Transition Ramp Time	Ramp time between MSG States (retrieved from MF as TRANS_TIME, used to validate the Notification Time submitted in a bid)
Transmission Owner	An organization that owns Network Branches.
Transmission Ownership Right	A physical transmission right of a Transmission Owner on a Network Branch that is within the ISO Control Area but not under the ISO control.
Upper Charge Limit	The highest stored energy that should be allowed in a LESR.
Upper Economic Limit	The last (highest) Energy Bid Quantity of the Energy Bid Curve specified in an Energy Bid Component.
Upper Operating Limit	The Maximum Capacity of a Resource, incorporating any applicable derates.
Upper Regulating Limit	The highest Operating Level of a Regulating Range.
Use-Limited Resource	A Generating Resource whose Energy output is limited due to fuel or emission limitations.
User	An authorized SIBR user.

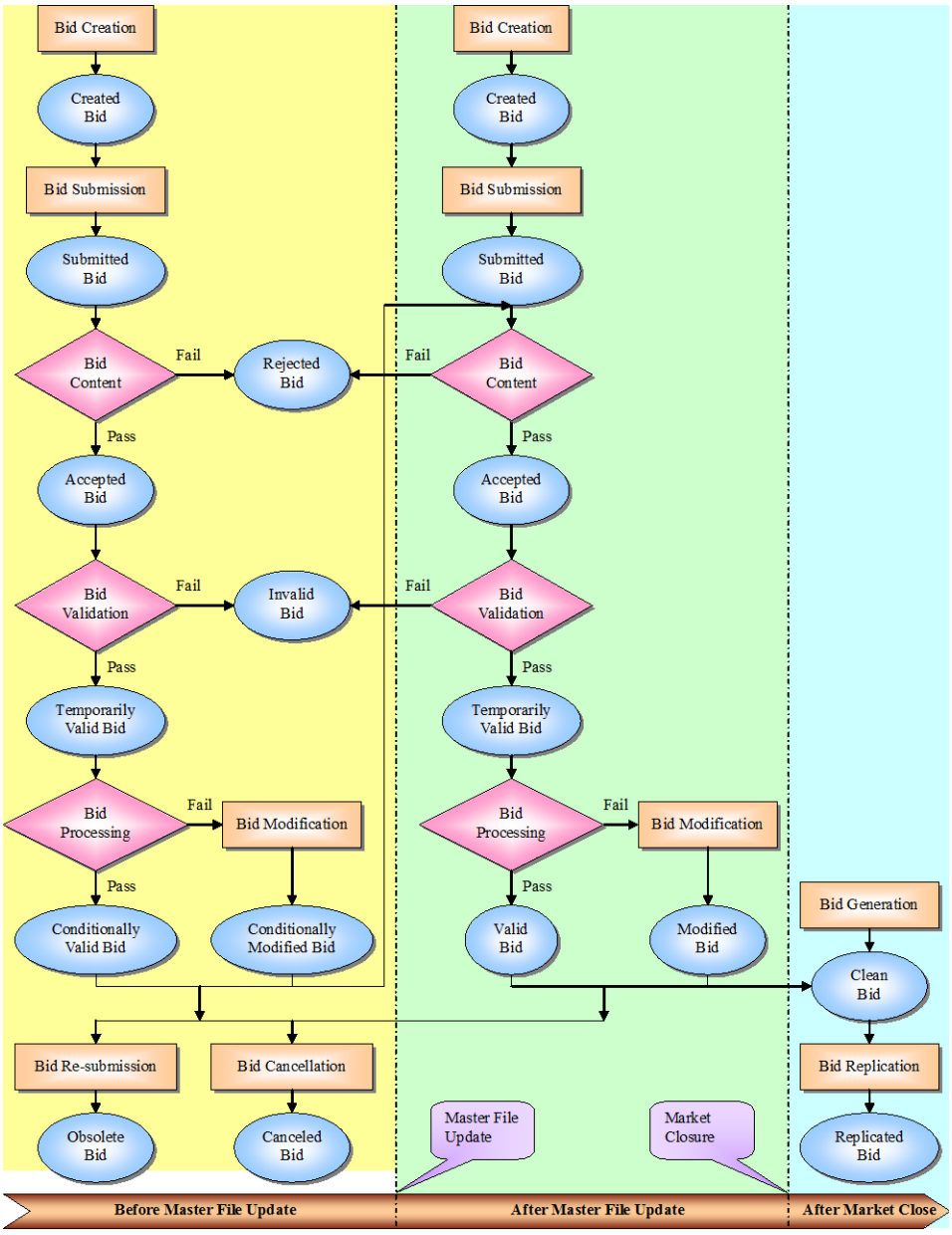
Valid	The Bid Status of a Bid or a Bid Component that has passed Bid Validation.
Valid Bid	A Bid that has passed Bid Processing after the Master File update for the relevant Trading Day.
Valid Bid Component	A Bid Component (of a Valid Bid) that has not failed any validation rules, other than cross-bid validation rules.
Variable Energy Resource	A Resource with variable non-controllable Energy production (wind, solar, run-of-the river hydro, etc.)
Virtual Demand Bid	A Bid from a Virtual Demand Resource.
Virtual Demand Resource	A Virtual Resource for Demand.
Virtual Demand Resource Location	A Location for a Virtual Demand Resource. SIBR rules support different sets for Virtual Supply/Demand Resource Locations, but these sets are identical in implementation.
Virtual Export Position Limit Factor	The portion of the Maximum Export Capacity that is allowed as the aggregate maximum Energy Bid Quantity for the Virtual Demand Resources from all SCs of a CB Entity at a Virtual Demand Resource Location that is an Inter-Tie Scheduling Point.
Virtual Export Resource	A Virtual Demand Resource at a Virtual Demand Resource Location that is an Inter-Tie Scheduling Point.
Virtual Export Resource Bid	A Bid for a Virtual Export Resource.
Virtual Generating Resource	A Virtual Supply Resource at a Virtual Supply Resource Location that is not an Inter-Tie Scheduling Point.
Virtual Generator Position Limit Factor	The portion of the Maximum Generating Capacity that is allowed as the aggregate maximum Energy Bid Quantity for the Virtual Supply Resources from all SCs of a CB Entity at a Virtual Supply Resource Location that is not an Inter-Tie Scheduling Point.
Virtual Import Position Limit Factor	The portion of the Maximum Import Capacity that is allowed as the aggregate maximum Energy Bid Quantity for the Virtual Supply Resources from all SCs of a CB Entity at a Virtual Supply Resource Location that is an Inter-Tie Scheduling Point.
Virtual Import Resource	A Virtual Supply Resource at a Virtual Supply Resource Location that is an Inter-Tie Scheduling

	Point.
Virtual Import Resource Bid	A Bid for a Virtual Import Resource.
Virtual Load Position Limit Factor	The portion of the Maximum Load Capacity that is allowed as the aggregate maximum Energy Bid Quantity for the Virtual Demand Resources from all SCs of a CB Entity at a Virtual Demand Resource Location that is not an Inter-Tie Scheduling Point.
Virtual Load Resource	A Virtual Demand Resource at a Virtual Demand Resource Location that is not an Inter-Tie Scheduling Point.
Virtual Resource	A non-physical non-registered Resource that may only participate in the DAM with Energy Bid Components.
Virtual Resource Bid	A Bid for a Virtual Resource.
Virtual Resource Bid Market Close Time	The latest time that a Virtual Resource Bid can be submitted in a DAM in advance of the relevant Active Day. It must not be later than and not earlier than one hour before the Market Close Time.
Virtual Resource Location	A Location for a Virtual Resource.
Virtual Resource Position Limit	The maximum administrative limit allowed for the aggregate Energy Bid Quantity in the Virtual Resource Bids from all SCs of a CB Entity at a Virtual Resource Location.
Virtual Supply Resource	A Virtual Resource for Supply.
Virtual Supply Resource Bid	A Bid from a Virtual Supply Resource.
Virtual Supply Resource Location	A Location for a Virtual Supply Resource. SIBR rules support different sets for Virtual Supply/Demand Resource Locations, but these sets are identical in implementation.
Western Electricity Coordinating Council	The authoritative body setting standards for the reliable operation of the interconnected electrical system between Western Canada, Mexico, and the Western United States.
Wheeling Bid Component	A Bid Component used for a Wheeling Transaction.
Wheeling Export Resource	An Export Resource used for Wheeling Transactions.

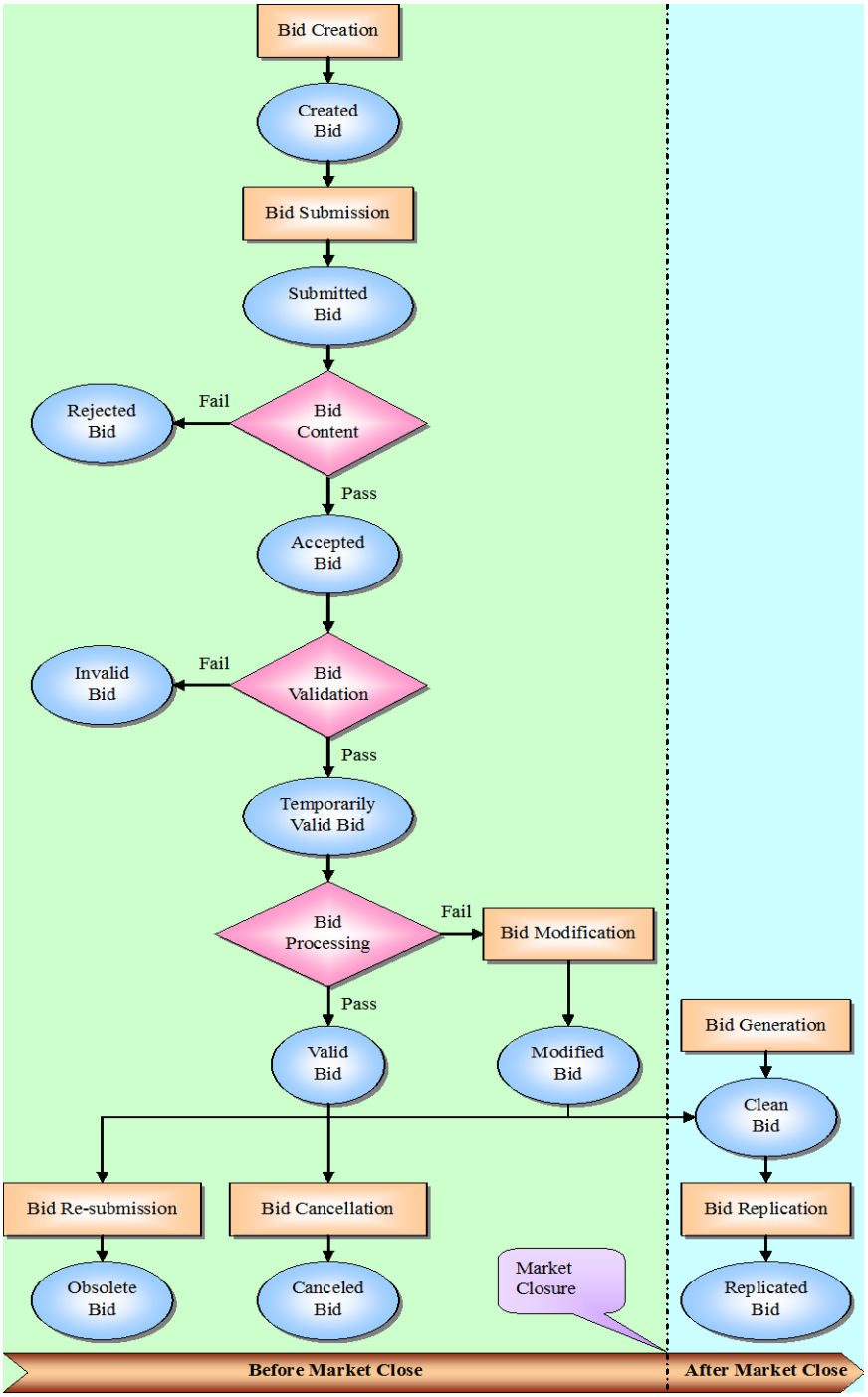
Wheeling Import Resource	An Import Resource used for Wheeling Transactions.
Wheeling Resource	A Wheeling Import Resource or a Wheeling Export Resource; Registered Inter-Tie Resources that are Wheeling Resources are registered with Energy Type of WHL; Inter-Tie Transactions that are Wheeling Resources are specified with Energy Type of WHL.
Wheeling Transaction	Balanced Energy exchange between an Import and an Export Resource.
Worst Operating Reserve Ramp Rate	The Operating Reserve Ramp Rate of a Generating Resource under worst operating conditions.
Worst Operational Ramp Rate Curve	The Operational Ramp Rate Curve of a Generating Resource under worst operating conditions.
Worst Regulating Ramp Rate	The Regulating Ramp Rate of a Generating Resource under worst operating conditions.

Appendix B Processing Flowcharts

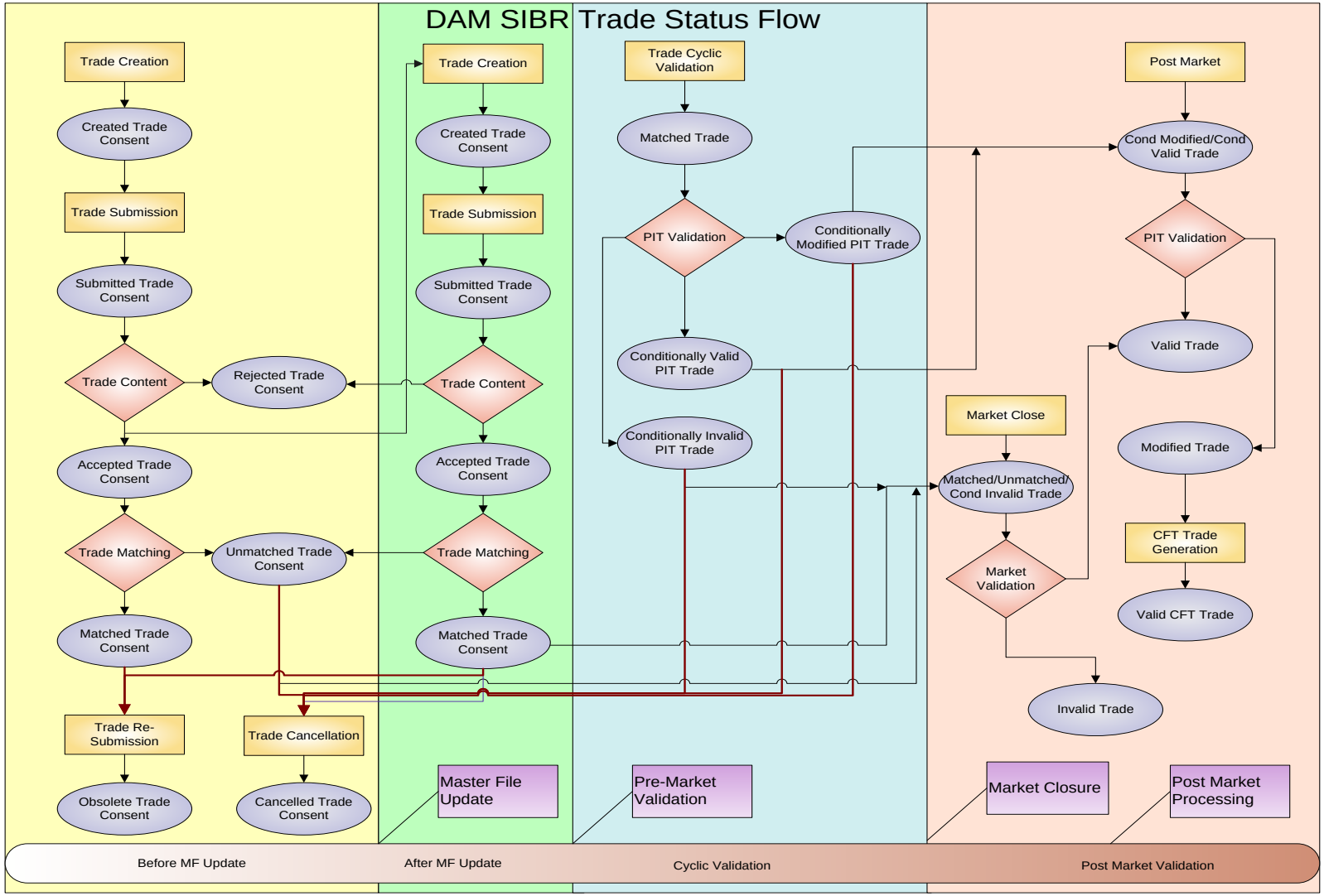
Day Ahead Bid processing flow:

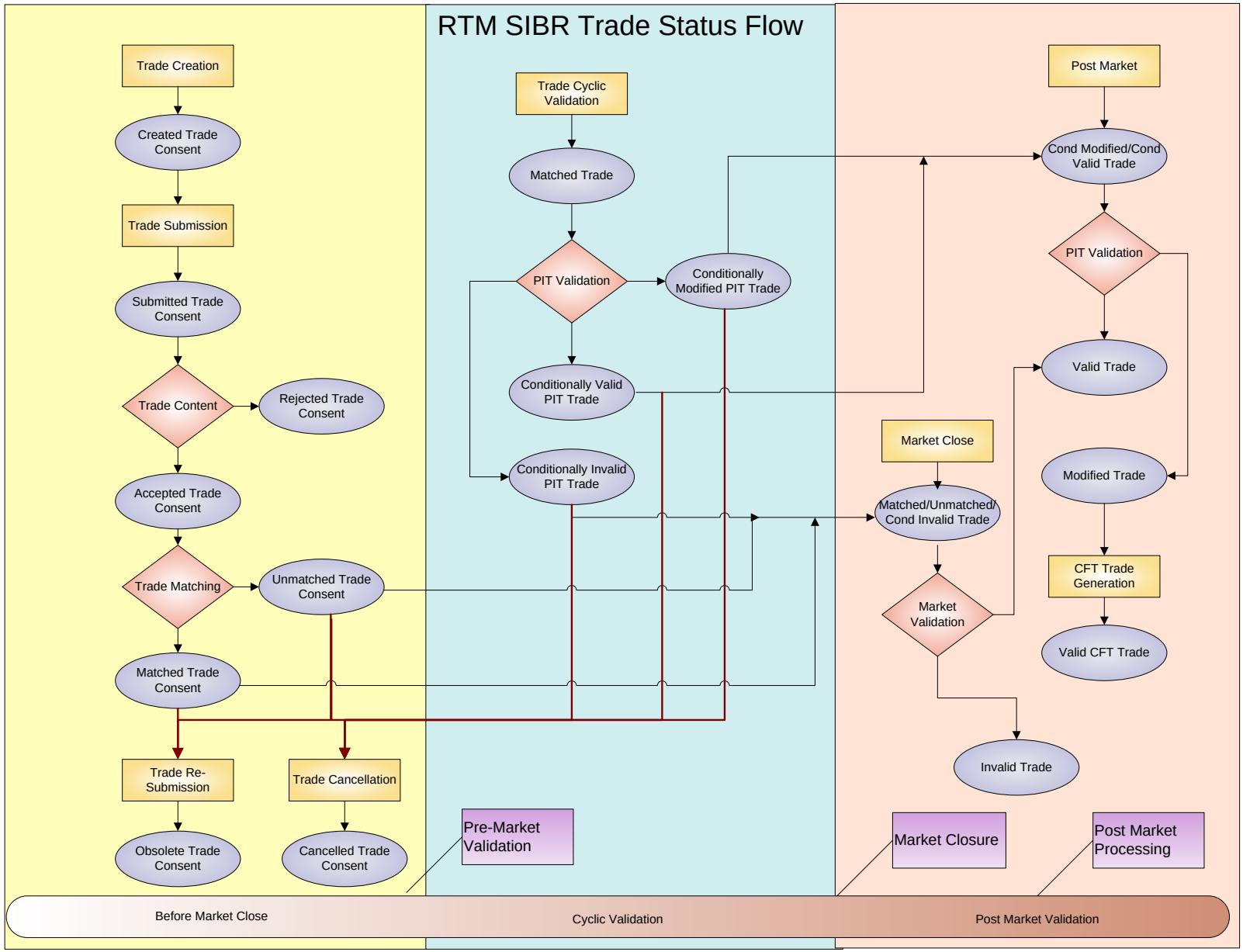


Real-Time Bid processing flow:



Trade process flow:




RTM SIBR Trade Status Flow
Trade Creation
Created Trade Consent
Trade Submission
Submitted Trade Consent
Trade Content
Rejected Trade Consent
Accepted Trade Consent
Trade Matching
Unmatched Trade Consent
Matched Trade Consent
Trade Re-Submission
Obsolete Trade Consent
Trade Cancellation
Cancelled Trade Consent
Trade Cyclic Validation
Matched Trade
PIT Validation
Conditionally Modified PIT Trade
Conditionally Valid PIT Trade
Conditionally Invalid PIT Trade
Post Market
Cond Modified/Cond Valid Trade
PIT Validation
Valid Trade
Market Close
Modified Trade
Matched/Unmatched/ Cond Invalid Trade
CFT Trade Generation
Market Validation
Valid CFT Trade
Invalid Trade
Pre-Market Validation
Market Closure
Post Market Processing
Before Market Close
Cyclic Validation
Post Market Validation

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