



# CAISO RC

## RC-BSAP Users Guide

February 23, 2023

### Revision History

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1/30/2019	1.1	WT	Format change and minor corrections applied.
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# 1 Introduction

The purpose of this document is to provide a customer who is joining the California ISO (CAISO) Reliability Coordinator (RC) Area with a summary of how to submit generation schedule forecast information into the Reliability Coordinator Base Schedule Aggregation Portal (RC-BSAP) application and how the information provided will support Reliability Coordination Day-Ahead and Real-Time situational awareness and contingency analysis studies.

One part of the CAISO RC system is the RC-BSAP component. From the viewpoint of an RC who interacts with the system, this component will:

- Allow access to the system by authorized users to submit as an RC Base Schedule Coordinator (BSC).
- Accepts submitted base schedules for resources with energy forecasts and possibly energy-related commodities (for Ancillary Services for Spin, Non-Spin or Regulation) from the BSCs that are associated with the resources.
- Ensure that those base schedules are valid and that the Balancing Area Authority (BAA) is reporting the balance aggregated RC base schedules within the BAA for the demand forecast related to the BAA zone for a given time period.
- Send BSC entered base schedules in RC-BSAP that are processed to other components of CAISO ISO's management systems for RC functions.
- Provides required feedback to the RC BSCs concerning base schedules that have been submitted.

This manual will instruct an RC BSC in the usage of the RC-BSAP web user interface for entering and submitting base schedule data for the generation forecast.

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 base schedules 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 RC base schedules. This material is useful in understanding how base schedules are processed including base schedule 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 base schedules. All user interface screens are constructed of certain basic elements; they are described here.

All users who will interact with the RC-BSAP User Interface should read this chapter.

- Chapter 3 discusses the components of base schedules and how create a new base schedule, how to enter data, submit base schedules, view base schedule status and how to cancel or delete a base schedule. This section also describes using create a new base schedule to replace one that is already in the system to edit it.

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

- Appendix A is a link to the SIBR Rules which has a tab for Terms, these terms are used within the rules engine when checking the content and validation of Base Schedules and bids.

## 1.1 Overview

The following chapter will discuss how the base scheduling process works at the CAISO, 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.

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 base schedule 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 a BSC 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.

### 1.1.1 Theory

#### 1.1.1.1 RC Base Schedule

An RC Base Schedule is a forecast of generation for energy, with hourly granularity for each resource. These base schedules are used as the baseline to measure deviations that may exist in the Demand Forecast for a particular zone for a specified hour. RC Base schedules initially will include the hourly generation schedules and in the future may contain the hourly forecasts of load, or hourly interchange schedules (at defined scheduling points and intertie associations).

Although this process seems simple, there are important subtleties. Specifically, there is an important difference between “created base schedule” and “submitted base schedule”. A BSC uses the Graphical User Interface (GUI) to create a base schedule by entering values for all the base schedule components needed. During this process, beyond some very simple validation (e.g., no alpha characters in numeric fields) and saving the base schedule in the database, the system takes little interest in the actual contents of the base schedule.

After the BSC has created the base schedule, it is submitted by clicking a button on the base schedule creation page. At this point, the system queues the base schedule for validation by the RC-BSAP Rules Engine and informs the BSC that the base schedule has been submitted and will display a status.

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

Once a BSC submits a base schedule, it is available for the system to validate. The RC-BSAP Rules Engine performs validation. The RC-BSAP Rules Engine is programmed with several rules that are used to validate the base schedule.

The process of validating a base schedule actually takes place in multiple steps; however, these multiple steps are automatic and are seamless to the user.

- Content Validation determines that the base schedule adheres to the structural rules required of all base schedules. This includes such things as validating that all required components are present, the units or services contained in the base schedule actually exist, etc.
- If the Content check fails, the base schedule becomes a “Rejected” Base schedule.
- After Content succeeds, Base schedule Validation verifies that the various components of the base schedule adhere to the applicable content and validation rules. If this validation passes, the base schedule becomes eligible to be used in market type period defined.
- If the Validation check fails, the base schedule becomes an “Invalid” Base schedule.
- Base schedules that pass validation will become ‘Valid’ or ‘Modified’ (Modified will display for aggregated resources).

At this point, the BSC has the option to view the base schedule and modify (re-create), delete or cancel if needed:

- Modify (re-create) and re-submit the base schedule, in which case the original base schedule is retained in the system database as an Obsolete Base schedule. Obsolete base schedules will not be further processed. If the base schedule is re-submitted, processing begins again. In simple terms you do not have to cancel or delete a base schedule, re-submitting for the resource for that time period will obsolete the previous base schedule.
- Delete a base schedule that is in either a status of ‘create’, ‘Rejected’ or ‘Invalid’. This can only be done for open market periods.
- Cancel a base schedule if it should not be used as part of the forecasted generation. This also can only be done for open market periods.
  - Note: base schedules will not be further processed. Cancel is used for Market Accepted base schedules; those are base schedules that are in a valid status.  
Do not use ‘Delete’ for Market Accepted base schedules, Delete is for base schedules that are in a ‘Create’, ‘Invalid’ or ‘Rejected’ status.

Master File changes are introduced into the system once per day and are cached. Since Master File changes may affect base schedule acceptance for new or changing resources close attention is needed when submitting for future dates. Here is an example:

- Base schedules for the Day-Ahead and Real-Time market type may be submitted up to 7 days in advance.
- A base schedule that is submitted on Monday afternoon for Thursday’s Day Ahead Market for 50MW has a status of Valid.
- There is a Master File change, a new maximum generation value of 40 will be effective on Thursday.
- Master File changes are read into the system on Wednesday morning new value of 40 exists, base schedule still has 50 from Monday’s submission.
- Base schedules currently go through a re-validation process daily after Master File changes are applied. Only for those base schedules submitted for the next trade date (Thursday in this case).

- Base schedule for resource of 50MW becomes “Invalid” and will show on GUI displaying the rule that fired to invalidate the base schedule that exceeded the maximum generation for the resource.
  - Note: If a new resource is added in Master File but the effective date is Thursday, the earliest a base schedule could be submitted would be after the Master File changes are read into the system on Wednesday morning.
  - Master File updates are typically completed by 2am the day before the effective date.
  - Base Schedule re-validation is scheduled for 8:25am daily for next trade date.

## 1.1.2 Practice

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

### 1.1.2.1 Basic Display Layout

As stated previously, this document is concerned with entry, submission, and management of base schedules. In this case, the Application-Specific menu will contain the following items:

- Base Schedule: Screen accessible through this menu item is used to create, submit, and manage base schedules for a day-ahead and real-time market type period defined.
- BAA Balance Viewer: Screen is a view of the aggregated base schedules for the BAA compared to the Demand Forecast for that BAA to show the delta MW between the two and the percentage, this is used to view the balancing.

## 2 Common UI Features & Navigation

There are a number of elements that appear on all (or many) GUI pages.

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

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

Base schedules are submitted for a market type. There are two market types:

- A Day-Ahead Market type is basically one 24-hour<sup>1</sup> period. Base schedules for a Day-Ahead market may be submitted up to 7 days in advance of the target operating date. Base schedules may be submitted until the "market close" event for the target market date (currently 10:00 A.M. PPT) on the previous day.
- A Real-Time Market type consists of one hour. Real-Time Market base schedules (for a particular trade day) are accepted up to 7 days in advance of the target operating date and hour until the real-time market for the designated hour closes.
- Using the example below we will use HE6 as the target hour (or also referred to as the active hour within the RC-BSAP Rules Engine) this is from 05:00 to 06:00 and is represented as 'T-'.
  - (T-75 = 03:45, T-55 = 04:05, T-40 = 04:20, T-25 = 04:35, T-15 = 04:45)

Example illustration below in figure 1 for Real-Time timeline for the active hour.

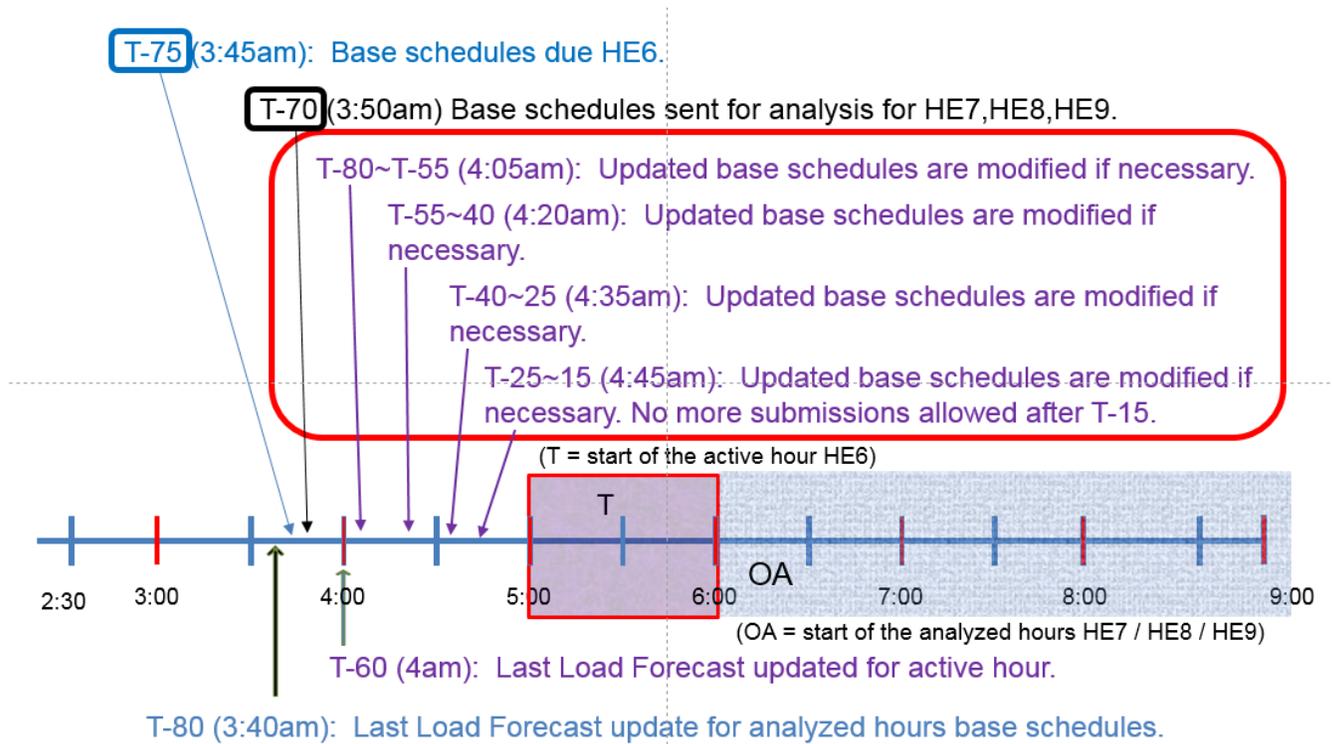


Figure 1: RTM Time-line Active Hour

## 2.1 Application – Specific Menu

The RC-BSAP application menu shown below contains the following items: (Figures 2)

- Navigation Tool Bar
- Schedule
- Balance Viewer

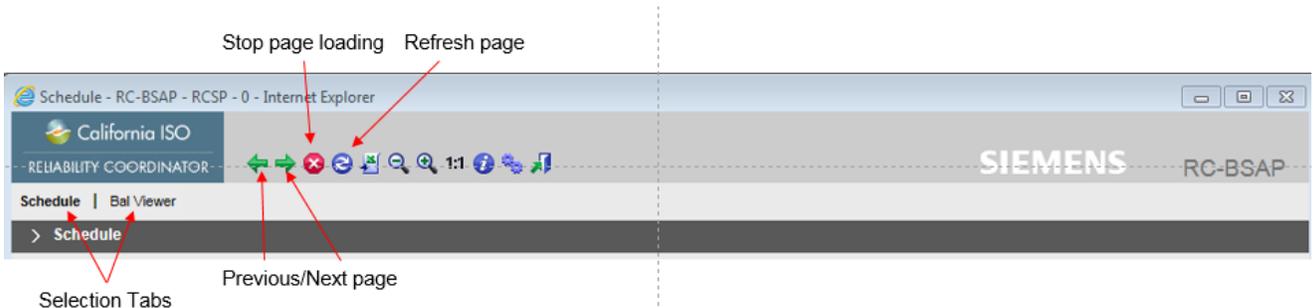


Figure 2: Application Header

## 2.2 Application Content Area

For most Base schedule Management displays, there are three basic components in the Application Content Area, as illustrated in Figure 3. These are:

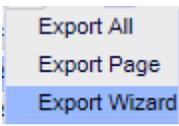
- **Filter Pane:** The filter pane is present on most RC-BSAP displays. It contains filters that allow the user to control the information displayed on the data grid portion of the display. The filter pane is always at the upper edge of the Application Content Area.
- **Data Grid(s):** Below the filter pane is at least one data grid. Base schedule data are entered, edited, and viewed in the data grid. Some displays may have additional data grids.
- **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.

The screenshot displays the RC-BSAP application interface. The top section is the application header, which includes the California ISO logo, the user role 'RELIABILITY COORDINATOR', and the 'SIEMENS RC-BSAP' branding. Below the header is the 'Schedule' section, which contains various filter controls such as 'Market' (set to 'Real Time'), 'Resource Type' (set to 'Generator'), and 'Resource' (set to 'ALL'). There are also 'Apply' and 'Reset' buttons. The main content area is divided into two panes. The left pane is a 'Data Grid' with columns for 'HR', 'Resource', 'EN', 'AS-RU', 'AS-RD', 'AS-SR', 'AS-NR', 'Distribution Status', and 'Submitted'. The right pane is a 'Message Viewer' showing several messages, including one with ID '30045' and another with ID '30038'. At the bottom of the application content area is a 'Message Bar' which displays a red error message: '01/17/2019 10:56:02 Building Update Command Failed due to null null'. The interface also shows a 'Distribution Pair' section and a 'CONNECTED' status indicator.

Figure 3: Content Area

A number of icons may be included at the upper left corner of the data grid.

describes the buttons that are available on tabular grids.

	
	This is the 'Edit' icon used to edit a selected set of rows.
	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.
	This is an inline filter icon, allowing to only display data that matches the inline filter criteria.
	This is used to export the contents of the data grid with the below options:
	Export All – all data grid items. Export Page – data on page. Export Wizard – will allow selection for Excel, csv or Word. And by column header.
	Print. This button prints the contents of the grid.
	This is a column select tool that will allow the user to add or remove columns from the grid. The default will always load when logging in.
	This will pop out the display into a separate window. This display is for view only and does not support submission of base schedules.

**Table 1: Buttons on Tabular Grids**

## 2.2.1 Sorting and Filtering

The sort order of a tabular grid is established in the configuration file for that grid. The User may change the sort order by clicking on the title row for a column. For example, in the grid illustrated in Figure 4, the user has clicked once on EN header and twice on the Resource header (resources are masked). This changes the sort order of the grid by making the EN column the primary sort key and Resource the secondary sort key. 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 in the triangle indicates which column is the first, second, etc. sort key. Up to 9 sort keys may be established in this way.

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.

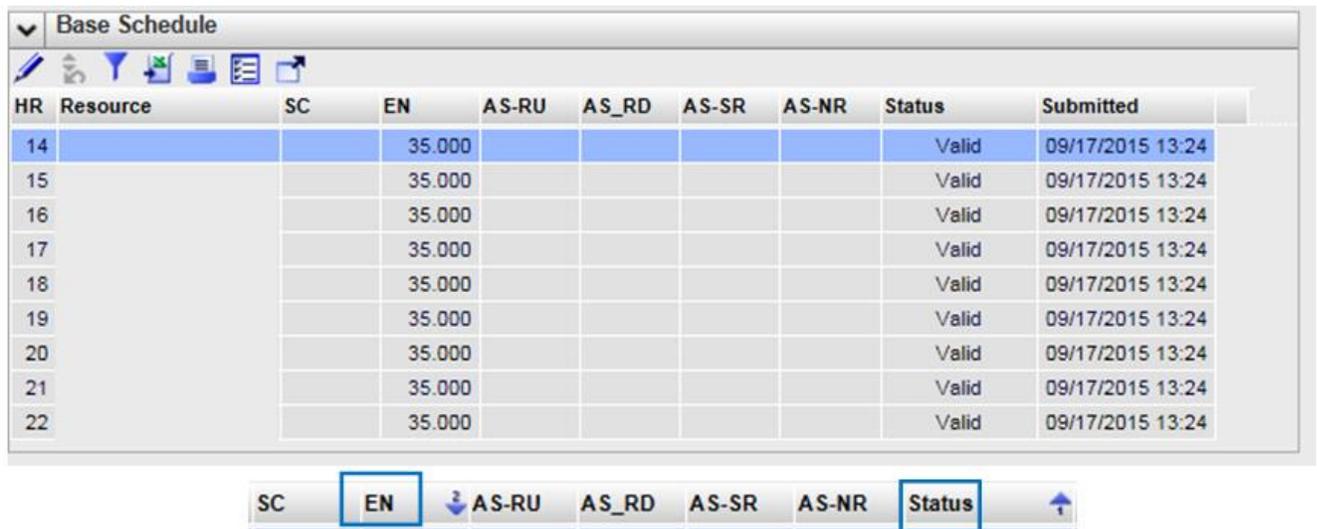


Figure 4: Basic Display Components

There is also an in-line filter available to all for sorting by a provided sequence of alpha or numeric entry shown in Figure 5. This can be used with an exact match such as typing UNIT in the resource column, then clicking outside the box to apply the filter will display all resources that have 'UNIT' in the name.

Also note that when data is available the page is displaying 1-50 of the 1017 records based on the header selection (example is showing all RTM records for single day for the BSC).

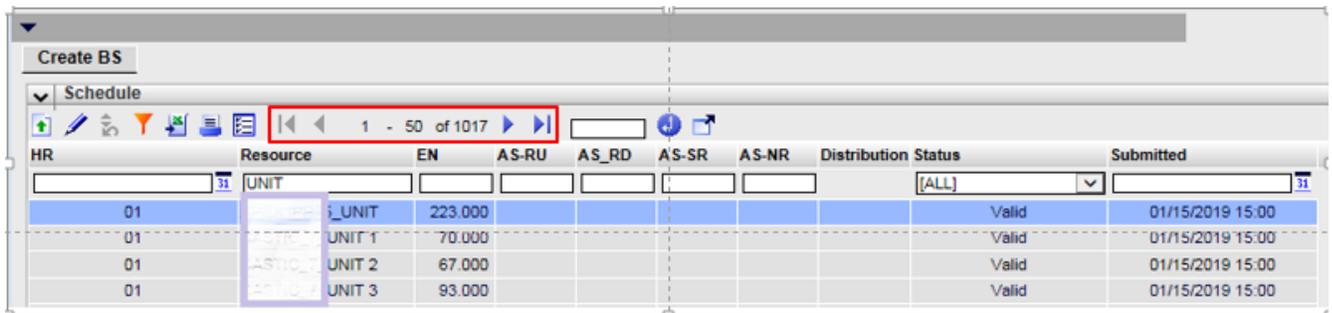


Figure 5: Inline Filter

## 2.2.2 Scrolling

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 may be configured to be “scrolled” as shown in figure 6.

In such a case, a scroll bar will be present on the right edge of the grid. This scroll bar is used to move forward and back in the data. Note that column headers and totals (if present) remain stationary as data are scrolled.

The screenshot shows the CAISO RC-BSAP interface. At the top, there is a navigation bar with 'California ISO' and 'RELIABILITY COORDINATOR' logos. Below this is a 'Schedule' section with various filters and controls. The main area is a data grid with columns: HR, Resource, EN, AS-RU, AS\_RD, AS-SR, AS-NR, Distribution Status, and Submitted. The grid contains 20 rows of data. A scroll bar is visible on the right side of the grid. A blue callout box with the text 'Scroll bars window and grid.' has red arrows pointing to the scroll bar and the grid area.

HR	Resource	EN	AS-RU	AS_RD	AS-SR	AS-NR	Distribution Status	Submitted
01		127.000					Valid	01/16/2019 15:00
01		89.000					Valid	01/16/2019 15:00
01		117.000					Valid	01/16/2019 15:00
01		107.000					Valid	01/16/2019 15:00
01		73.000					Valid	01/16/2019 15:00
01		111.000					Valid	01/16/2019 15:00
01		9.000					Valid	01/16/2019 15:00
01		14.000					Valid	01/16/2019 15:00
01		28.000					Valid	01/16/2019 15:00
01		81.000					Valid	01/16/2019 15:00
01		56.000					Valid	01/16/2019 15:00
01		43.000					Valid	01/16/2019 15:00
01		20.000					Valid	01/16/2019 15:00
01		9.000					Valid	01/16/2019 15:00
01		14.000					Valid	01/16/2019 15:00
01		22.000					Valid	01/16/2019 15:00
01		11.000					Valid	01/16/2019 15:00
01		26.000					Valid	01/16/2019 09:02
01		19.000					Valid	01/16/2019 15:00
01		14.000					Valid	01/16/2019 15:00
01		21.000					Valid	01/16/2019 15:00
01		75.000					Valid	01/16/2019 15:00
01		41.000					Valid	01/16/2019 15:00
01		69.000					Valid	01/16/2019 15:00
01		86.000					Valid	01/16/2019 15:00
01		103.000					Valid	01/16/2019 15:00
01		12.000					Valid	01/16/2019 15:00
01		32.000					Valid	01/16/2019 15:00
01		31.000					Valid	01/16/2019 15:00
01		61.000					Valid	01/16/2019 15:00

Figure 6: Scrolling

## 2.2.3 Right Click Menu Options

- **Right-Click Menu:** This menu gives you a list of commands associated with actions to perform on the entered data while the sheet is in edit mode shown in figure 7. Each of the functions is described in detail below.

EN	AS-RU	AS_RD	AS-SR	AS-NR	Status
26.000					Created
26.000					Created
26.000					Created
26.000					Created
26.0	Copy				Created
26.0	Paste				Created
26.0	Set all values in column to this value				Created
26.0	Copy Cell				Created
27.0	Paste Cell				Created
26.0	Paste Cell Through				Created
26.0	Mark Cell				Created
26.0	Sum Cells				Created
26.0	Clear Cell Selection				Created
26.0	Copy Row				Created
26.0	Paste Row				Created
26.0	Paste Row Through				Created
26.0	Update				Created
26.0	Cancel				Created

**Figure 7: Right-Click menu**

- **Set all values in column to this value:** While in edit mode and having the selected row with the value, will copy that value for the entire column.
- **Copy/Copy Cell/ Mark Cell:** Copies or marks the contents of the selected cell or row
- **Paste/ Paste Cell:** Pastes the copied row into the currently selected row
- **Paste Cell Through:** Pastes the copied cell into all the cells up or down through the selected cell
- **Paste Row Through:** Pastes the copied row into all the rows up or down through the selected row
- **Paste Cell Through:** Pastes the copied cell into all the cells up or down through the selected cell
- **Paste Row Through:** Pastes the copied row into all the rows up or down through the selected row
- **Copy Row:** Copies the row
- **Paste Row/Paste Row Through:** Paste the copied row into the selected row or through the selected row.
- **Update:** Updates the grid and exits the edit mode.
- **Cancel:** Cancels the last action and exits the edit mode.

## 2.3 RC-BSAP Screens

Must be logged in to the RC-BSAP system and a resource must be eligible from Master File to be allowed to submit Base Schedules.

There are two screens (Schedule, Bal Viewer).

Please see the Application Access page posted on CAISO web site for proper URL depending on which environment is used.

This is updated when information changes periodically.

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

Select the 'System Access Information for Market Participants.

### 2.3.1 RC-BSAP Schedule sub tab

1. Logging in to the RC-BSAP system requires a valid certificate with the appropriate role in order to access the system.
2. The Schedule Screen page is the default page that is loaded shown in figure 8.
3. The BSC / Entity SC that will show the first name that is associated with the specified role on the certificate that is used to authenticate. These are arranged alphabetically by name.

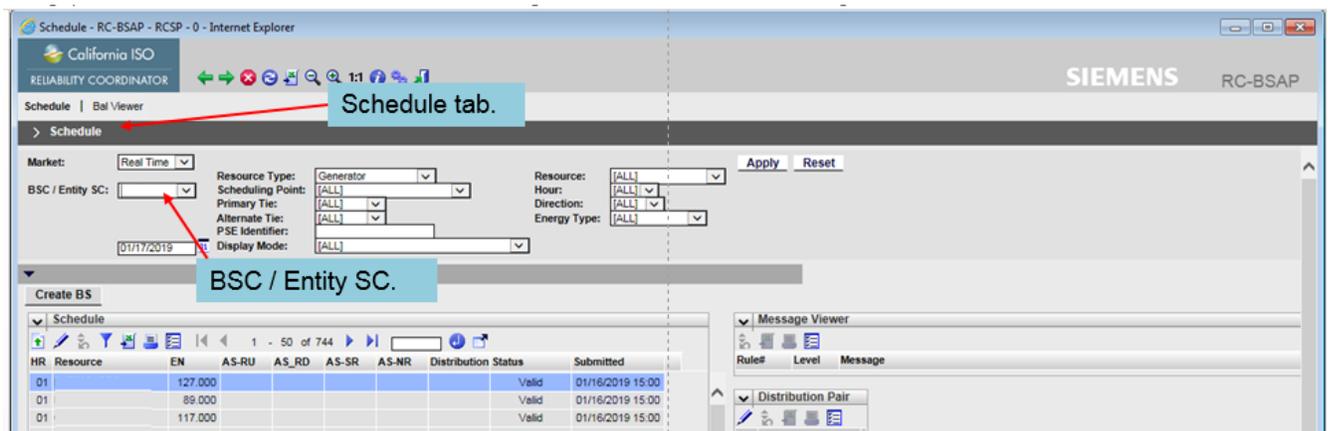


Figure 8: Schedule tab

4. Select Criteria from the drop down boxes shown below include criteria that could later support submission of Inter-Tie Transaction related schedules for an RC. The current implementation will only support registered resources (Generator) that exist in the Master File for an RC member.

Resource Type	Resource
Scheduling Point	Hour
Primary Tie	Direction
Alternate Tie	Energy Type
PSE Identifier	

(Figure 9 Schedule select criteria)

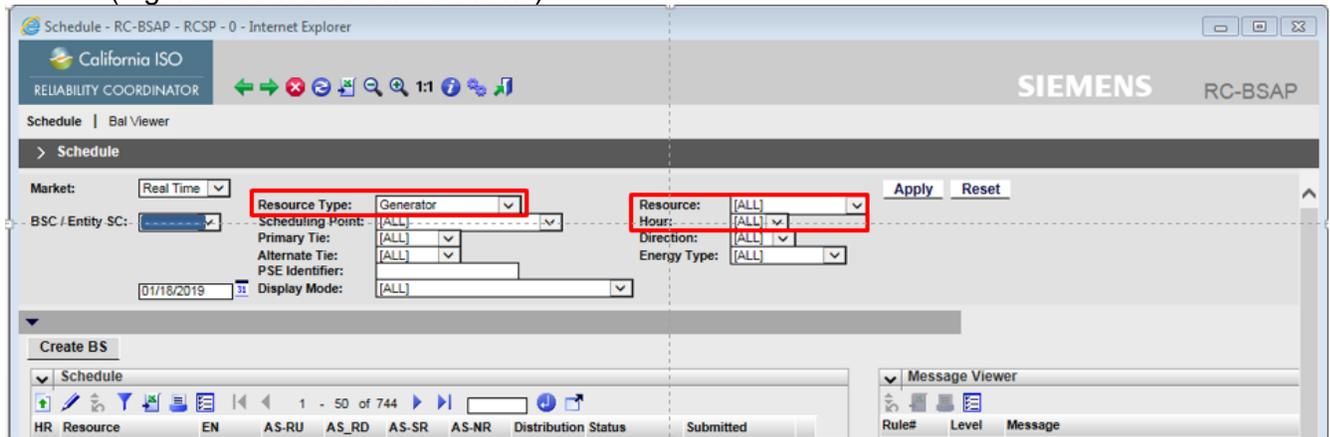


Figure 9: Schedule select criteria

### 2.3.1.1 Create and Submitting Base schedules

The base schedule submission process is largely identical for both Day-Ahead and Real-Time base schedules. As we have discussed before, the only major difference is that Day-Ahead base schedules are for a full day and Real-Time base schedules are for a one-hour period. For both Day-Ahead and Real-Time base schedules, a Base schedule Summary menu item is provided; this display is used to review, submit, or cancel base schedules.

Creating a Base Schedule requires the below fields to be populated shown in figure 10.

1. The BSC / Entity BSC drop down is populated the associated role on the issued certificate to access BSAP.
2. Choose a Resource Type.
3. For all Resource Types **except** Inter-Tie Transactions, once the resource is selected click on the **Apply** button (upper right).
4. Then click the **Create** button (top left of the Schedule grid).
5. The 'Create' will open the view in edit mode, Enter a MW value for the Base Schedule to be used for hours that are needed. (there **must** be an EN MW) - ( 0 ) zero is a valid entry.

The screenshot shows the 'Schedule - RC-BSAP - RCSP - 0 - Internet Explorer' window. The interface includes a header for 'California ISO RELIABILITY COORDINATOR' and 'SIEMENS RC-BSAP'. Below the header, there are filters for 'Market' (Real Time), 'BSC / Entity SC', 'Resource Type' (Generator), 'Scheduling Point', 'Primary Tie', 'Alternate Tie', 'PSE Identifier', 'Display Mode', 'Resource', 'Hour', 'Direction', and 'Energy Type'. The main area is titled 'Create BS' and contains a table with columns: HR, Resource, EN, AS-RU, AS\_RD, AS-SR, AS-NR, Distribution Status, and Submitted. A context menu is open over the 'EN' column, with the option 'Set all values in column to this value' highlighted. A red arrow points from a blue callout box to this option. The callout box text reads: 'To populate all values in column with the same value, right click in the box and select the option to 'Set all values in column to this value'.'

Figure 10: Create entry

6. Then select **Update** in the upper left of the Schedule grid.
7. After Update is selected it will exit the edit mode, in order to submit the Base Schedule(s) select the row or multiple rows and then 'right' click to bring up the 'options menu'.

8. Select 'Submit BS', this will submit the Base Schedules. (below in figure 11 has row 1 highlighted and would submit only that.)
9. Select Apply to refresh the display to see the status of the submitted schedule. Figure 12.

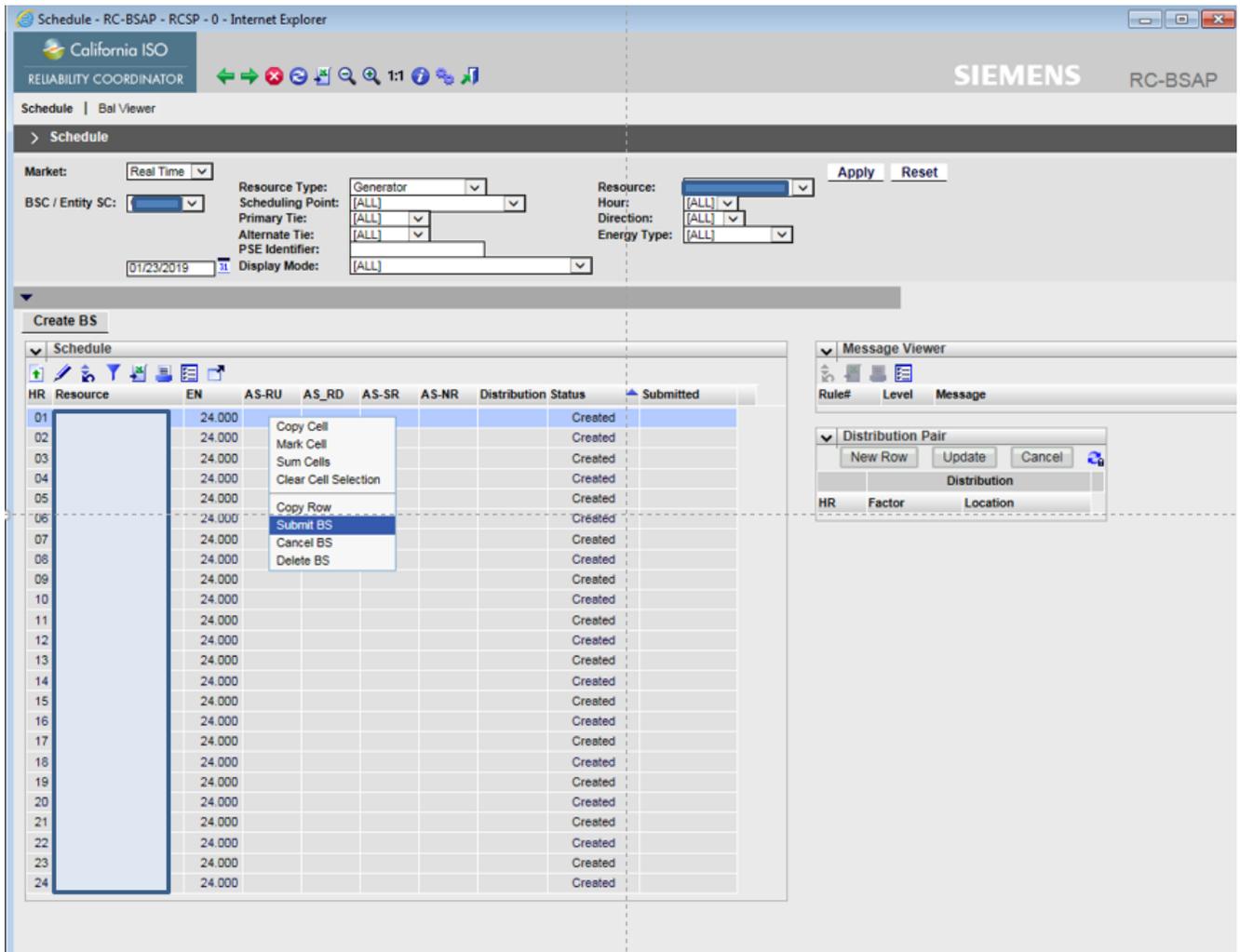
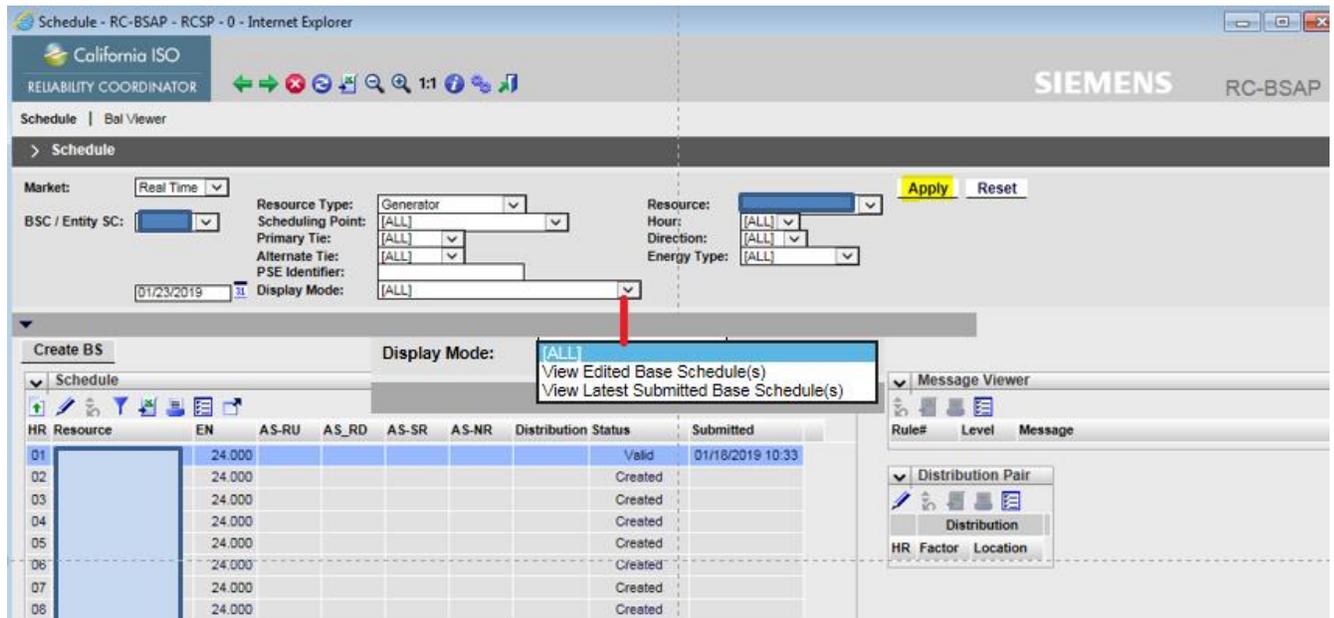


Figure 11: Schedule MW and update submit



**Figure 12: Schedule MW and updated Status/Submitted.**

Note: You may have to change the Display Mode to ‘View Latest Submitted Base Schedules’ or ALL to see the ‘Valid’ status instead of the ‘Created’ status along with the updated Submitted timestamp (shown in figure 9 on a prior page).

Editing of base schedule information is performed by re-creating the base Schedule described in the submission.

### 2.3.1.2 Canceling/Deleting Base schedules

To cancel a base schedule highlight each row of a base schedule to be canceled. Then **right click** and select the “**Cancel BS**” menu item. This will remove the base schedule(s) from consideration by the system.

The **Cancel BS** can only be done for **Valid** or **Modified** base schedules.

To remove created base schedules or **Invalid/Rejected** base schedules, right click each row and select the “**Delete BS**” menu item. (shown in figure 13 below).

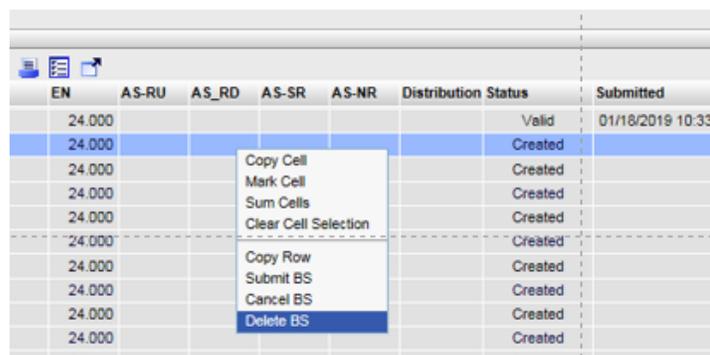


Figure 13: Cancel Delete Schedule

### 2.3.1.3 Schedule Messages from Rules

ALL base schedules submitted will show messages in the Message Viewer. When base schedules are found to have errors they will come back either in an invalid or rejected state. Select the row for the base schedule to see the Messages that fired on a Base Schedule. The Message viewer will show the rule number, level and Message for each rule that fired on the Base Schedule.

Refer to Figure 14 for an example of a base schedule containing errors.

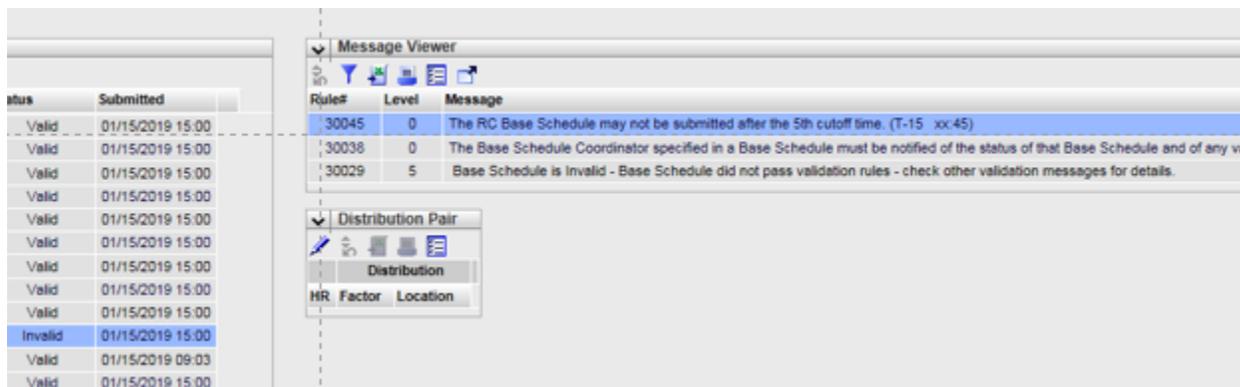


Figure 14: Error Message display.

### 2.3.2 RC-BSAP Balance Viewer

To view the Balance Viewer, select the Bal Viewer Sub-Tab (Figure 15)

This view displays the RC schedule Aggregate compared to the Demand Forecast to identify the delta between the aggregated valid submitted Base Schedules and the Demand Forecast for that hour. The Demand Forecast is updated in the view 3 times per hour with the latest being at the top of the hour for the next active hour.

For example, at 9:00am the Demand Forecast will update for the last time for HE 11.

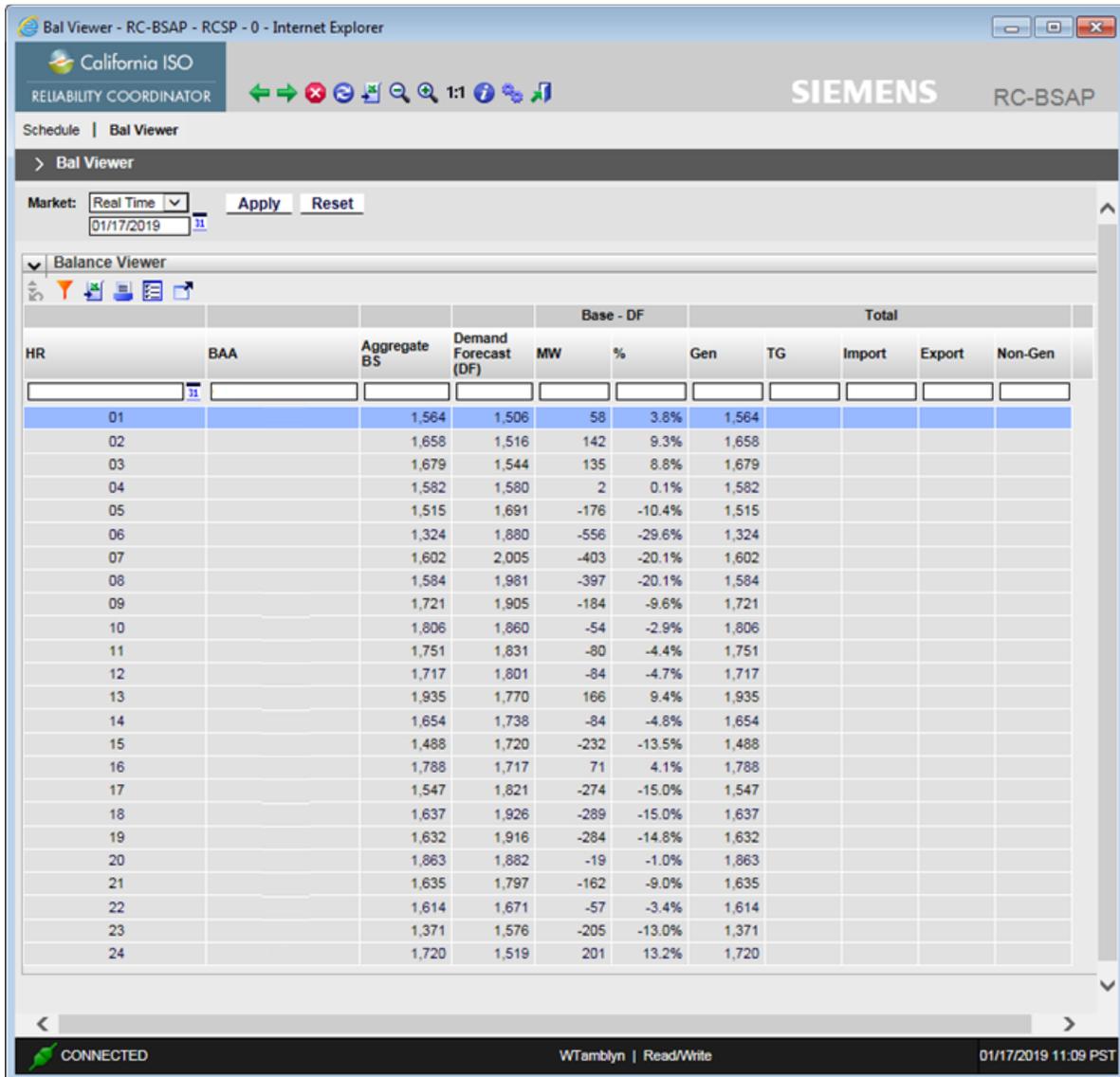


Figure 15 – Example Balance displayed (sample only)

The Balance Viewer display has many columns to provide information to the RC member. The primary columns are the Aggregate BS, Demand Forecast (DF) and the Base-DF %. The goal is to be balanced for a given hour after the latest Demand Forecast has been received.

Table 2 below defines the BAA Balance Viewer columns (note: that these are all aggregated per BAA).

<b>Column Name</b>	<b>Data Definition</b>
HR	Market period hour that is used.
BAA	The name of the Balancing Area Authority.
Aggregate BS	Total valid Base Schedules using the sum of (Gen + TG + Import) minus (Export).
Demand Forecast (DF)	Load Forecast for a BAA (zone) from ALFS (this is updated 3 times per hour, the top of the hour update is the most current for the active hour.)
Base – DF MW	The difference in MW per hour (Demand Forecast minus Aggregated BS)
Base – DF %	The percentage of the difference (Delta MW / Aggregate BS)
Total Gen	Total Gen resource Base Schedules that are Valid.
Total TG	Total TG resource Base Schedules that are Valid.
Total Import	Total Import Tie and Transaction (I) resource Base Schedules that are Valid.
Total Export	Total Export Tie and Transaction (E) resource Base Schedules that are Valid.
Total Non-Gen	Total Non-Gen resource Base Schedules that are Valid. (This can be positive or negative depending on how NGR resources are modeled.)

## 3 FAQ

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

### 3.1.1 General Questions

- **What are rules?**

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

When you submit a base schedule, the system responds immediately to acknowledge that the base schedule has been submitted. The base schedule is stored in the database and queued for consideration by the Rules Engine.

1. In the “Base schedule Content” step, the Rules Engine validates that all required contents of the base schedule are present.
2. In the “Base schedule Validation” step, the Rules Engine validates the base schedule for consideration in the target market period. Depending upon when the base schedule is submitted relative to the target market period, this step may be performed multiple times depending on modifications or re-submissions from the BSC or Entity BSC.
3. After market close for the target market period, the Base schedules are sent to the downstream applications for use in the Market for the target period.

- **What is Master File data?**

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

Data in the Master File are required for base schedule validation, and although Master File data are referred to as “static data”, they *may* change – even if only rarely. That is why every base schedule should be validated after the Master File update for the next target operating trade date.

- **How do I know my submissions are valid?**

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

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

- **What if I am not around when the rules engine runs, how do I find out about my base schedule?**

The Rules Engine produces output that identifies any problem with a base schedule that will prevent that base schedule 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 base schedule(s) and display any error messages and / or notifications about whether and how a base schedule 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 base schedule.

- **How can I change a base schedule?**

You can change a base schedule at any time up to the close of the market for the target period. To modify a base schedule, you use the same user interface screens that were used to create the base schedule. Bring up the schedule page; specify a resource and a base schedule period and the base schedule data will appear. Enter the header data to select the resource and click Create, enter new value(s) and click the submit button again to replace the original base schedule with the edited base schedule.

- **What happens to the original base schedule when I resubmit?**

Basically, the system remembers every base schedule that has ever been submitted. When a modified base schedule is re-submitted, the original base schedule is marked so that it will not be considered for use with an obsolete status ( 'O' ) these are not visible on the UI. However, the BSC who submitted it may view the newest base schedule.

- **What about canceling base schedules?**

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

- **Do I have to cancel a base schedule before I resubmit?**

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

### 3.1.2 Questions About Base Schedules

- **Can a base schedule contain more than one resource?**

A base schedule is strictly defined by the rules engine as being for one resource and for one base schedule period (in the case of a day-ahead base schedule, 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 base schedules when they are submitted.

- **Can I submit a partial base schedule?**

You can, and it may even be accepted. Base schedules undergo two basic validation steps – the first verifies that all required content is included in the base schedule; the second validates those contents. The absence of required components can cause the base schedule to be rejected outright.

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

- **If my base schedule is rejected, can I see what was wrong?**

Yes. The “Schedule page provides a listing of all base schedules that are known to the system, along with their current status. From this page, it is possible to recall base schedule information from any step in the process for viewing. You can view your original base schedule and if any were modified (either by you or by the system). In the case of rejected base schedules, you can view all messages generated by the rules engine?

- **What about “Short” and “Long” Days for Day-light Saving Time (DST)?**

When using the RC-BSAP GUI to enter a base schedule for a “short” or 23-hour day (spring time moving to PDT), the base schedule entry screen will contain only 23 hours, numbered 1 through 24 without HE3. The “long” (25-hour) day (fall time moving to PST) will have 25 hours, numbered hour 1, 2, 2\*, 3, 4 etc. The 2\* is the second HE2.

- **What happens if I submit the same base schedule twice?**

The system allows only one base schedule to be active for a resource for each target trading day and hour for Day Ahead Market Type and for a single trading hour in the case of the Real-Time Market Type. If you submit multiple base schedules for the same resource and date and hour, the newer base schedule will replace the older. The older base schedule is effectively canceled by going to an obsolete status and will no longer be considered by the system. However, all base schedules that have been submitted are stored by the system.

### 3.1.3 Questions About Users and Permissions

- **What’s the difference between a user and an associated role?**

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 BSC’s, each of whom has responsibility for providing base schedules for a collection of resources. As defined in the RC-BSAP system, a BSC is actually a “role” and entity that is assigned to a user.

In simple terms, a “role” is something a user is permitted to do. For example, in a typical operating system, there may be an “administrator” role. If a user is assigned the administrator role, that user has the privileges and is able to perform the tasks required to administer the system; such tasks may include installing software, creating users, changing system operating priorities, etc. Someone who has been assigned a “user” role has the privileges and can perform the tasks of a system user (e.g., create and edit files, print, run a web browser, etc.).

- **Can a user have more than one BSC role?**

Yes. This will occur when an organization uses multiple BSC IDs. A user given access to more than one BSC role per BSC ID will have access to submit and review base schedules for multiple BSC IDs. These are the entities assigned to the role.

