# PJM User Guide:
## ExSchedule

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Revision 03 (10/28/2014)

- Added a section to detail the ExSchedule Credit Usage report
- Added a section to describe the Delayed Ramp concept in more detail
- Added a section to describe the Export Schedule Credit Screen Process
Welcome to the **PJM User Guide for PJM ExSchedule**. In this Introduction, you will find the following information:

- What you can expect from the PJM Manuals in general (see “About PJM Manuals”).
- What you can expect from this PJM User Guide (see “About This User Guide”).
- How to use this User Guide (see “Using This User Guide”).

### About This User Guide

The **PJM User Guide for ExSchedule** is a non-governed document that focuses on the PJM Internet application, called “ExSchedule”.

This guide is intended to illustrate the mechanics of using the ExSchedule application; however, it is not a substitute for an Interchange Scheduling manual. The language and rules in this document are superseded by the PJM Regional Transmission and Energy Scheduling Practices document.

The intended audiences for the **PJM User Guide for PJM ExSchedule** are:

- PJM Market Participants – engaged in the submission of Interchange Schedules
- PJM Market Settlements – engaged in summarization and billing of participants’ Interchange Schedules

### References

The references to other documents that provide background or additional detail directly related to the PJM User Guide for **PJM ExSchedule** are:

- PJM Regional Transmission and Energy Scheduling Practices
- PJM Command Line Interface Document

### Using This User Guide

We believe that explaining concepts is just as important as presenting procedures. This philosophy is reflected in the way we organize the material in this user guide. We start each section with an overview. Then we present details, procedures or references to procedures found in other PJM user guides or PJM manuals. The following provides an orientation to this user guide’s structure.
What You Will Find in This User Guide

- A table of contents that lists two levels of subheadings within each of the sections
- An approval page that lists the required approvals and a brief outline of the current revision
- A section containing specific guidelines, requirements, or procedures including PJM actions and PJM Member actions
Welcome to the PJM ExSchedule section of the PJM User Guide for PJM ExSchedule. ExSchedule is an Internet application that facilitates the interchange of bulk power between the PJM and its Adjacent Balancing Authorities by enabling market participants to create and review Interchange Schedules.

1.1 ExSchedule Overview

ExSchedule is an Internet application that facilitates the interchange of bulk power between the PJM control area and other Balancing Authorities by enabling market participants to request, evaluate and confirm their external energy transactions. Market participants may submit both Real-time and day-ahead transactions via ExSchedule.

1.1.1 EES vs ExSchedule Terminology Changes

<table>
<thead>
<tr>
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<th>ExSchedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browserless Interface</td>
<td>Command Line Interface</td>
</tr>
<tr>
<td>Real-Time with Price Reservation</td>
<td>Dispatchable Ramp Reservation</td>
</tr>
<tr>
<td>Two-Settlement Schedule</td>
<td>Day-Ahead Bid</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Two Settlement Schedule Statuses</th>
<th>Day-Ahead Bid Statuses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requested (before Day-Ahead Market Clearing)</td>
<td>Accepted</td>
</tr>
<tr>
<td>Requested (after Day-Ahead Market Clearing)</td>
<td>Cleared</td>
</tr>
</tbody>
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1.2 Definitions, Acronyms, and Abbreviations

<table>
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<tr>
<th>Ramp</th>
<th>The change in MW between consecutive 15 minute scheduling intervals. PJM’s ramp limits can be found in the Regional Transmission and Energy Scheduling Practices document.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramp Reservation</td>
<td>A submission by the user either via the User Interface (UI), Command Line Interface (CLI) or through Tag Processing Auto-Creation, to reserve and hold ramp. In order for a Ramp Reservation to actually become an Interchange Schedule, the Ramp Reservation must be attached to a Tag prior to its expiration. PJM’s Ramp Reservation timing requirements can be found in the Regional Transmission and Energy Scheduling Practices document.</td>
</tr>
<tr>
<td>Transaction Type</td>
<td>Fixed or Dispatchable</td>
</tr>
</tbody>
</table>
1.3 ExSchedule Functions

ExSchedule is built around the following basic functions:

- **Reserve Ramp** – Used by market participants to create and modify a Ramp Reservation
  - *Buy OASIS* – Used by market participants to purchase Transmission Service that covers their Ramp Reservation
- **Day-ahead Bid** – Used by market participants to create and modify Day-ahead Bids that will be evaluated in PJM’s Day-ahead market
  - *Buy OASIS* – Used by market participants to purchase Transmission Service that covers their Day-ahead Bid
- **View Ramp** – Used by market participants to view ramp availability
- **View Queued Ramp Reservations** – Used by market participants to view their queued Ramp Reservations
- **FRP Approval** – Used by market participants to approve or deny Tags that have been submitted by another entity on the participant’s behalf
- **Reports** – Used by market participants to view and download reports
- **Schedule Summary** – Used by select users to view Interchange Schedules between PJM and a specific BA. This function is not available to market participants.
• CLI – Used by market participants to upload or download Ramp Reservations, Day-ahead Bids, and reports without logging into the User Interface

1.4 Logging In to ExSchedule

In order to use the ExSchedule application, users must possess an eSuite account that has been granted the appropriate privileges by their company’s authorized CAM. The available ExSchedule user privileges are:

• ExSchedule Read Only
• ExSchedule Read/Write

1.5 Scheduling Rules and Guidelines

Refer to the PJM Regional Transmission and Energy Scheduling Practices document for a list of business rules and guidelines to follow when creating Ramp Reservations and Day-ahead Bids.

1.6 Organizer

The default first screen in ExSchedule is the Organizer. The Organizer can be used to view all Ramp Reservations, Tags, and Day-ahead Bids that belong to the user’s company. The Organizer also provides summary information about the current date, which is presented through the Current Position and Status Panel areas near the bottom of the screen.
1.6.1 Organizer Features

The following features have been implemented to assist ExSchedule users in viewing and managing their Interchange Schedule data.

Time Zone Selection

- Users may select a time zone that globally changes times and dates across the ExSchedule application.

Company and User

- ExSchedule displays both the user’s company and username in the upper right hand corner.

Help

- Navigates to the ExSchedule eTools webpage, where this user guide and user videos may be found.

User Notifications

- ExSchedule will display scrolling notifications to users when a significant event has occurred, such as the extension of the ExSchedule Day-ahead Bid submission deadline.

Auto-Refresh

- Users may click the “Refresh Enabled” checkbox to set the Organizer to auto-refresh on a 60 second interval.

Export CSV

- Users may export Organizer data in CSV format

Export XML

- Users may export Organizer data in XML format

Records per Page

- Users may specify the number of rows displayed on a single page of the Organizer.

Page Controls

- Users may navigate to previous and next Organizer pages
Ramp Reservation Expiration Notification

- ExSchedule will flag Ramp Reservations that are within 5 minutes of expiring to appear in orange on the Organizer screen.

### 1.6.2 Managing Organizer Data

As the Organizer displays data submitted by all users belonging to a single company, a variety of tools are available to help users selectively display the data that matters to them.

**Date Range:**

- Users may specify a From and To date to request data effective during the date range. The data will be retrieved when the user clicks the "Update" button. The default date range is 1 day. The maximum date range is 31 days.

**Column Sorting:**

- Users may sort the data in the Organizer by clicking on a column header. The sort order will toggle between ascending and descending with each click. A secondary and tertiary sort can be created by holding the CTRL key and clicking on additional columns.

**Column Filtering:**

- **Dropdown List**
  Users may filter the data displayed in certain columns by clicking on the dropdown arrow located in the text box below the column header and choosing a filter.

- **Free Text**
  Users may filter the data displayed in certain columns by entering a search string in the text box.

**Column Reordering:**

- Users may reorder the columns from their default position by clicking the column header and dragging it to the desired location in the Organizer.

**Reset to Defaults:**

- Users may click the "Reset" Button to clear all sorting and filters on the displayed columns. The Date Range and Column Order will not be reset until the user logs out of ExSchedule.
Custom Organizer Views

Users may customize and save how data is displayed on the Organizer:

From the “View” Menu

- Select Columns
  - Specify the columns that should be displayed
- Save View
  - Save the current Organizer selections for future use, including filters. Once saved, views may not be modified, but users can save additional views and delete unwanted views.

  Users can specify a saved view as “Preferred” and this view will become the new default upon logging in.

- Reset to Default
  - Clear the current view and reset to the default view. All default columns will be displayed and all filters will be removed.

- Delete Selected Views
  - Delete previously saved views that are no longer needed.

- My Views
  - Display a list of all views saved by the current user.

1.6.3 Retrieve Existing Ramp Reservations and Day-ahead Bids

From the “Ramp Reservation” or “Day Ahead” menus

- Click Retrieve
  - A new dialogue box will prompt the user for either a Ramp Reservation or Day-ahead Bid ID, depending on the menu. The user will be transitioned to the appropriate screen and the display will populate with the requested data.

Retrieve Ramp Reservation Example:
From the ID column of the Organizer

- The ID value is a hyperlink to more detailed information. Click this link to open either the Reserve Ramp or Day Ahead screen to view the details.

### 1.6.4 Organizer Column Definitions

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Description</th>
<th>Ramp Reservation</th>
<th>Day-ahead Bid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tag ID</td>
<td>This column will populate with the Tag ID for Tags associated with the user’s company.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Tag Status</td>
<td>Latest Composite Tag Status</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>This field will be populated with the Ramp Reservation ID or the Day-ahead Bid ID</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Profile Status</td>
<td>Latest Status associated to a profile</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Path</td>
<td>Scheduling path</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Start Time</td>
<td>Energy Profile Start Date/Time</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Stop Time</td>
<td>Energy Profile Stop Date/Time</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FRP</td>
<td>Company that is financially responsible</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Expiration Time</td>
<td>A timestamp indicating when a Pending Tag Ramp Reservation will expire</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Exception</td>
<td>A special keyword attached to the Tag</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
### 1.6.5 Organizer Dashboard Data

The following three dashboards provide users with additional information that may assist in providing a more comprehensive overview of their data. All displayed results are computed based on the current system date.

#### 1.6.5.1 Current Position

- **Pending Ramp**
  - The number of Ramp Reservations with “Pending Tag” status on the indicated date

- **In Queue**
  - The number of Ramp Reservations with “In Queue” status on the indicated date

- **Approved**
  - The number of Ramp Reservations with “Approved” status on the indicated date.

- **Day-ahead**
  - The number of Day-ahead Bids with “Cleared” status on the indicated date

- **Pending MWh**
  - The total megawatt hours of Ramp Reservations with “Pending Tag” status on the indicated date

- **In Queue MWh**
  - The total megawatt hours of Ramp Reservations with “In Queue” status on the indicated date

---

<table>
<thead>
<tr>
<th>Import Pricing</th>
<th>Day-ahead Bid Import Pricing Point</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export Pricing</td>
<td>Day-ahead Bid Export Pricing Point</td>
<td>X</td>
</tr>
<tr>
<td>Last Updated</td>
<td>Time of the last update</td>
<td>X</td>
</tr>
<tr>
<td>Queued</td>
<td>Time the Ramp Reservation was queued</td>
<td>X</td>
</tr>
<tr>
<td>Update User</td>
<td>User who last updated the record</td>
<td>X</td>
</tr>
<tr>
<td>Type</td>
<td>Fixed or Dispatchable</td>
<td>X</td>
</tr>
<tr>
<td>Market</td>
<td>Real-time or Day-ahead</td>
<td>X</td>
</tr>
<tr>
<td>Outside Name</td>
<td>Users can attach a custom label to their Ramp Reservation</td>
<td>X</td>
</tr>
<tr>
<td>Outside ID</td>
<td>Users can attach a custom reference ID to their Ramp Reservation.</td>
<td>X</td>
</tr>
</tbody>
</table>
Approved MWh

- The total megawatt hours of Ramp Reservations with “Approved” status on the indicated date

Day-ahead MWh

- The total megawatt hours of Day-ahead Bids with “Cleared” status on the indicated date

1.6.5.2 Status Panel

Last Refreshed

- The date and time the Organizer data was last refreshed

Next Tag Interval

- The next valid Tag submission interval (15 minute increments) for which a Tag will be considered “on-time”

Next Ramp Interval

- The next valid Ramp Reservation submission interval (15 minute increments) for which a Ramp Reservation will be considered "on-time"

Next Dispatchable Ramp Interval

- The next valid Dispatchable Reservation submission interval for which a Dispatchable Reservation will be considered “on-time”

1.6.5.3 Scheduling Desks

The Scheduling Desks panel displays all NAESB EIR Entity Codes that have been mapped to a company’s PJM Organization ID. At least one mapping must exist in order for a company to submit Tags.
1.7 Reserving Ramp

ExSchedule users can create and modify Ramp Reservations as an optional step in the Tag submission process. Ramp Reservation functionality can be accessed via the Reserve Ramp screen. ExSchedule currently supports two reservation types.

- Ramp Reservation
  Used to manually secure ramp ahead of Tag submission.

- Dispatchable Reservation
  Used to specify a floor or ceiling price for each energy interval to be used as a condition for the Tag’s flow. Tags with a Dispatchable Reservation attached will flow only if Real-time LMPs meet the specified price criteria.

1.7.1 Ramp Reservation Data Definitions

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Description</th>
<th>System Generated</th>
<th>Required</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramp Res ID</td>
<td>This will be the unique identifier for the Ramp Reservation. It will be formed by the combination of either the scheduling interface acronym (for imports and exports) or “WPJM” (for wheels) followed by a numerical ID generated by ExSchedule (e.g. WPJM1234, NYIS1234).</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NERC Tag ID</td>
<td>This field will be populated with the Tag ID when a Ramp Reservation has been attached to a Tag.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>The Ramp Reservation status received upon submission.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Owner</td>
<td>The company who owns the Ramp Reservation.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Last Updated Agent</td>
<td>The user who last updated the Ramp Reservation.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Update Timestamp</td>
<td>The timestamp at which the Ramp Reservation was last updated.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Expiration Timestamp</td>
<td>The timestamp at which the Ramp Reservation will expire if not linked to a Tag</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>In-Queue Timestamp</td>
<td>The timestamp at which the In-Queue Ramp Reservation will expire if there is no available ramp.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
### 1.7.2 Ramp Reservation Profile Types

An ExSchedule Ramp Reservation is a container that may hold multiple different profiles. A profile is a collection of start/stop/MW energy intervals. At any given time, a Ramp Reservation may contain a minimum of one profile and a maximum of one of each of the profile types listed below.

- **Approved**
  - Assigned when a Ramp Reservation has been successfully attached to a Tag.
- **Curtailed**
  - Assigned when a Tag has been curtailed. The Curtailed profile modifies the Approved profile.
- **Delayed**
  - Assigned to a Ramp Reservation created with a NYISO scheduling path. Delayed profiles are not validated against available ramp at the time of submission.
- **Denied**
  - Assigned to a Ramp Reservation that fails data validations at the time of submission.
- **Expired**
  - Assigned to a Ramp Reservation that previously contained a Pending Tag profile which was not attached to a Tag prior to expiration.
- **In Queue**
  - Assigned to a Ramp Reservation submitted into the ramp queue. In Queue profiles were unable to pass the ramp availability validation at the time of submission and are regularly reevaluated for ramp availability until expiration.
- **Pending Tag**
  - Assigned to a Ramp Reservation that successfully passed all data validations at the time of submission, but which has not yet been attached to a Tag.
- **Withdrawn**
  - Assigned to a Ramp Reservation that previously contained a Pending Tag profile that was withdrawn by the user.
- **Working**
  - Assigned to a Ramp Reservation that is actively being created or modified but has not been submitted. Working profiles may be saved for further modification at a later date.
1.7.3 Ramp Reservation Data Validations

Ramp Reservation submissions must pass multiple data validations:

1. Scheduling Path – the scheduling path must be valid for the entire duration of the Ramp Reservation energy profile
2. Timing Requirements – the Ramp Reservation must be submitted sufficiently far in advance of the start time of the Ramp Reservation in order to respect the timing requirements established in the Regional Practices
3. Ramp Availability – every MW value change in the energy profile must pass a ramp availability check

1.7.4 Create a New Ramp Reservation

Users may create a new Ramp Reservation by clicking either New Reservation or New Dispatchable from the Ramp Reservation menu. The following steps must be completed.

1. Make a selection in both the From Interface and To Interface dropdown lists in order to establish a scheduling path.
2. Create a reservation energy profile (start, stop, MW)
   a. Specify a start and stop date
   b. Specify a start and stop time. Minutes must be 00, 15, 30, or 45.
   c. Specify a MW value. MW must be an integer and the user-specified value may not exceed a maximum of 1500 MW.
   d. Dispatchable Reservation Only – Specify a price in $. The price may contain two decimal places and the user-specified price may not exceed $999.
3. For each completed energy interval, click the Add Energy button located under the MW/Price field(s). The energy profile will be added to the table at the right and to the chart below. The energy profiles will have a Working status.
4. Energy intervals in Working status may be discarded by clicking on the trash-can icon in the Action column.
5. When all energy profile intervals have been completed, click the Submit button above the energy interval table to validate the reservation.

Working profiles submitted using the “Submit” button will receive the following status:

- Pending Tag – if all data validations are successful
- Denied – if one or more data validations fails
Working profiles submitted using the “Queue” button will receive the following status:

- **Pending Tag** – if all data validations are successful
- **Denied** – if one or more data validations fails
- **In Queue** – if the ramp availability validation fails but all other data validations are successful

### 1.7.5 Modify an Existing Ramp Reservation
Users may modify an existing Ramp Reservation or Dispatchable Reservation by first retrieving the reservation from either the Organizer or the Reserve Ramp screen.

1. The *From Interface* and *To Interface* selections may not be modified.
2. Modify the existing reservation energy profile (start, stop, MW)
   a. Specify a start and stop date
   b. Specify a start and stop time. Minutes must be 00, 15, 30, or 45.
   c. Specify a MW value. MW must be an integer and the user-specified value may not exceed a maximum of 1500 MW.
   d. *Dispatchable Reservation Only* – Specify a price in $. The price may contain two decimal places and the user-specified price may not exceed $999.
3. For each completed energy interval, click the Add Energy button located under the MW/Price field(s). The energy profile will be added to the table at the right and to the chart below. The energy profiles will have a Working status.
4. Energy intervals in Working status may be discarded by clicking on the trash-can icon in the Action column.
5. When all energy profile intervals have been completed, click the Submit button above the energy interval table to validate the reservation.

Working profiles submitted using the “Submit” button will receive the following status:

- **Pending Tag** – if all data validations are successful. If the Ramp Reservation had an existing Pending Tag profile, the existing profile and the Working profile will be merged into a single Pending Tag profile.
- **Denied** – if one or more data validations fails. If the Ramp Reservation had an existing Denied profile, the existing profile will be deleted and the Working profile will transition to a new Denied profile.
Working profiles submitted using the “Queue” button will receive the following status:

- **Pending Tag** – if all data validations are successful. If the Ramp Reservation had an existing Pending Tag profile, the existing profile and the Working profile will be merged into a single Pending Tag profile.

- **Denied** – if one or more data validations fails. If the Ramp Reservation had an existing Denied profile, the existing profile will be deleted and the Working profile will transition to a new Denied profile.

- **In Queue** – if the ramp availability validation fails but all other data validations are successful. If the Ramp Reservation had an existing In Queue profile, the existing profile and the Working profile will be merged into a single In Queue profile.

### 1.7.6 Save a Ramp Reservation

Users may save a Ramp Reservation for further editing at a later time or for use in the Batch Submission process. Minimal data validations will be performed when saving a Working profile.

1. A selection must be made in both the *From Interface* and *To Interface* dropdown lists in order to establish a scheduling path.

2. At least one energy interval must be created
   e. Specify a start and stop date
   f. Specify a start and stop time. Minutes must be 00, 15, 30, or 45.
   g. Specify a MW value. MW must be an integer and the user-specified value may not exceed a maximum of 1500 MW.
   h. *Dispatchable Reservation Only* – Specify a price in $. The price may contain two decimal places and the user-specified price may not exceed $999.

3. For each completed energy interval, click the Add Energy button located under the MW/Price field(s). The energy profile will be added to the table at the right and to the chart below. The energy profiles will have a Working status.

4. When all energy profile intervals have been completed, click the Save button above the energy interval table.

### 1.7.7 Batch Submission

Users may submit several Ramp Reservations at once in order to have them evaluated as a group. Of specific note is that the ramp availability validation will apply to the net energy profile of all reservations in the batch as opposed to each reservation’s individual energy profile.

Ramp Reservation profile types eligible for Batch Submission are Denied, Working, and In Queue. If the Batch Submission is successful, the selected profiles will transition to Pending Tag status. If the Batch Submission fails a data validation, the selected profiles will remain in their previous statuses.
Batch Submission is accomplished via the Organizer:

1. Select one or more Ramp Reservations for the batch
2. Click the Submit button on the upper right side of the Organizer

1.7.8 Ramp Reservation Auto-Creation and Auto-Modification

Users may skip the process of manually creating and attaching a Ramp Reservation to a Tag by submitting the Tag without referencing a Ramp Reservation. ExSchedule will detect that no Ramp Reservation has been associated with the Tag and will attempt to create a reservation on the user's behalf. The auto-created Ramp Reservation will be subject to all normal data validations.

Similarly, if a user attaches a Ramp Reservation to a Tag, but the reservation energy profile and the Tag energy profile do not match, ExSchedule will attempt to modify the Ramp Reservation to match the Tag. The auto-modification of the reservation will be subject to all normal data validations.

1.7.9 Withdraw an Existing Ramp Reservation

Users may withdraw Pending Tag, Delayed, In Queue, and Working profiles.

1. From the “Withdraw” menu select Withdraw Pending/Delayed, Withdraw In-Queue or Withdraw Working. If these options are grayed out then the Ramp Reservation has no energy profiles with these statues.
2. A confirmation box will ask if you would like to proceed with the withdraw action.
3. Click “OK” to continue with the withdrawal or click “Cancel” to back out of the withdrawal.

If the withdrawal is successful, the selected profiles will transition to Withdrawn status.
1.7.10 Ramp Reservation Tools
Several features have been implemented in ExSchedule to assist users with the Ramp Reservation creation workflow.

1.7.10.1 Resubmit an Existing Ramp Reservation
Users may resubmit Denied and Expired Ramp Reservations instead of being required to manually recreate the Denied or Expired energy profile.

1. From the “Resubmit” menu select Denied Profile or Expired Profile. If these options are grayed out then the Ramp Reservation has no energy profiles with these statuses.
2. ExSchedule will revalidate the energy profile and assign the appropriate status.

1.7.10.2 Create a Working Profile from an Existing Profile
Users may use Denied and Expired profiles as templates to create a new Working profile.

1. From the “Create Working From” menu select Expired Profile or Denied Profile. If these options are grayed out then the Ramp Reservation has no energy profiles with these statuses.
2. ExSchedule will create a new working profile that matches the template profile.

1.7.10.3 Check Ramp
Users may initiate the ramp availability validation on Working, Denied, and Expired profiles prior to submission.

1. From the “Check Ramp” menu select Working Profile, Denied Profile, or Expired Profile. If these options are grayed out then the Ramp Reservation has no energy profiles with these statuses.
2. ExSchedule will indicate whether the profile passed or failed the ramp availability validation.

The Check Ramp function will not change a Ramp Reservation’s profile status.
1.8 Day-ahead Bids

ExSchedule users can create and modify Day-ahead Bids that will be included in PJM’s Day-ahead Market.

ExSchedule currently supports two bid types.

- **Fixed**
  This bid type is a price-taker with no preconditions. The bid will receive the Day-ahead LMP that results from the market clearing.

- **Dispatchable**
  This bid type gives the market participant an opportunity to specify a floor or ceiling price as a condition for the bid’s acceptance in the Day-ahead market. The bid will receive the Day-ahead LMP during the hours that meet the bid’s economic criteria.

1.8.1 Day-ahead Bid Data Definitions

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Column Description</th>
<th>System Generated</th>
<th>Required</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day Ahead ID</td>
<td>This will be the unique identifier for the Day-ahead Bid. They begin with the letter “T” plus a sequential number.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>The Day-ahead Bid status received upon submission.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner</td>
<td>The PSE responsible for Day-ahead Bid. This will be the company which enters the Day-ahead Bid.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Updated Agent</td>
<td>The user which updated the Day-ahead Bid last.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Update Timestamp</td>
<td>The timestamp at which the Day-ahead Bid was last updated.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total MWh</td>
<td>Total Megawatt Hours of the Day-ahead Bid</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import Pricing Point</td>
<td>Import Pricing Points available for user selection</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export Pricing Point</td>
<td>Export Pricing Points available for user selection</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.8.2 Day-ahead Bid Profile Types

An ExSchedule Day-ahead Bid is a container that may hold multiple different profiles. A profile is a collection of start/stop/MW energy intervals. At any given time, a Day-ahead Bid may contain a minimum of one profile and a maximum of one of each of the profile types listed below.

- **Accepted**
  - Assigned to a Day-ahead Bid that successfully passed all data validations at the time of submission and which will be included in the Day-ahead Market at the expiration of the Day-Ahead Market submission deadline.
- **Cleared**
  - Assigned after a Day-ahead Bid has been evaluated in the Day-ahead Market and results have been sent back to ExSchedule for display to users.
- **Denied**
  - Assigned to a Day-ahead Bid that fails data validations at the time of submission.
- **Pending OASIS**
  - Assigned to a Day-ahead Bid that has passed every data validation with the exception of the evaluation of the OASIS ID attached to the Bid. The Day-ahead Bid will be reevaluated immediately prior to inclusion in the Day-ahead Market. The bid will receive either Accepted or Denied status after the revalidation.
- **Withdrawn**
  - Assigned to a Day-ahead Bid that was withdrawn by the user.
- **Working**
  - Assigned to a Day-ahead Bid that is actively being created or modified but has not been submitted. Working profiles may be saved for further modification at a later date.
1.8.3 Day-ahead Bid Data Validations

Day-ahead Bid submissions must pass multiple data validations:

1. OASIS ID – the attached Transmission Service reservation must be in Confirmed status, must be of the type “Willing to Pay Congestion” and must have at least 1 MW available to cover the entire Day-ahead Bid energy profile.

2. Pricing Points – the selected Pricing Points must be valid for the entire duration of the Day-ahead Bid energy profile.

3. Direction – the path direction of the attached Transmission Service reservation must align with the implied path from the Pricing Point selections.
   a. Import path = Import Pricing Point only
   b. Export path = Export Pricing Point only
   c. Wheel path = Both Import and Export Pricing Point

4. Timing Requirements – the Day-ahead Bid must be submitted prior to the Day-ahead Market submission deadline.

1.8.4 Create a New Day-ahead Bid

Users may create a new Day-ahead Bid by clicking either New Fixed Price or New Dispatchable from the Day Ahead menu. The following steps must be completed.

1. Make a selection in one or both of the Import and Export Pricing Point dropdown lists

2. Type or search for a Transmission Service reservation in the OASIS ID field. All Transmission Service reservations owned by the user’s company for a specific date range are visible in the OASIS dialogue page that is displayed when the OASIS search tool is clicked.

3. Create a bid energy profile (start, stop, MW)
   a. Specify a start and stop date
   b. Specify a start and stop time. Minutes must be 00, 15, 30, or 45.
   c. Specify a MW value. MW must be an integer and the user-specified value may not exceed a maximum of 1500 MW.
   d. Dispatchable Bid Only – Specify a price in $. The price may contain two decimal places and the user-specified price may not exceed $999.

4. For each completed energy interval, click the Add Energy button located under the MW/Price field(s). The energy profile will be added to the table at the right and to the chart below. The energy profiles will have a Working status.

5. Energy intervals in Working status may be discarded by clicking on the trash-can icon in the Action column.
6. When all energy profile intervals have been completed, click the Submit button above the energy interval table to validate the Bid.

Working profiles submitted using the “Submit” button will receive the following status:

- **Accepted** – if all data validations are successful
- **Denied** – if one or more data validations fails
- **Pending OASIS** – if all data validations except the OASIS ID evaluation are successful

### 1.8.5 Modify an Existing Day-ahead Bid

Users may modify an existing Day-ahead Bid or Dispatchable Bid by first retrieving the bid from either the Organizer or the Day Ahead screen.

1. The Import and Export Pricing Point selections may not be modified
2. The OASIS ID selections may not be modified
3. Modify the existing bid energy profile (start, stop, MW)
   a. Specify a start and stop date
   b. Specify a start and stop time. Minutes must be 00, 15, 30, or 45.
   c. Specify a MW value. MW must be an integer and the user-specified value may not exceed a maximum of 1500 MW.
   d. **Dispatchable Bid Only** – Specify a price in $. The price may contain two decimal places and the user-specified price may not exceed $999.
4. For each completed energy interval, click the Add Energy button located under the MW/Price field(s). The energy profile will be added to the table at the right and to the chart below. The energy profiles will have a Working status.
5. Energy intervals in Working status may be discarded by clicking on the trash-can icon in the Action column.
6. When all energy profile intervals have been completed, click the Submit button above the energy interval table to validate the reservation.

Working profiles submitted using the “Submit” button will receive the following status:

- **Accepted** – if all data validations are successful
- **Denied** – if one or more data validations fails
- **Pending OASIS** – if all data validations except the OASIS ID evaluation are successful
1.8.6 Save a Day-ahead Bid
Users may save a Day-ahead Bid for further editing at a later time. Minimal data validations will be performed when saving a Working profile.

1. A selection must be made in one or both of the Import and Export Pricing Point fields
2. An entry must be made in the OASIS ID field
3. At least one energy interval must be created
   a. Specify a start and stop date
   b. Specify a start and stop time. Minutes must be 00, 15, 30, or 45.
   c. Specify a MW value. MW must be an integer and the user-specified value may not exceed a maximum of 1500 MW.
   d. *Dispatchable Bid Only* – Specify a price in $. The price may contain two decimal places and the user-specified price may not exceed $999.
4. For each completed energy interval, click the Add Energy button located under the MW/Price field(s). The energy profile will be added to the table at the right and to the chart below. The energy profiles will have a Working status.
5. When all energy profile intervals have been completed, click the Save button above the energy interval table.

1.8.7 Cleared Day-ahead Bids
Once a Day-ahead Bid has received an Accepted status and the submission deadline has passed, ExSchedule will send the bid for inclusion in PJM’s Day-ahead Market. The Day-ahead Market results will be posted back to ExSchedule starting at 16:00 each day but possibly later depending on when the Day-ahead case is completed. Each bid that was included in the market will be given Cleared status and the result intervals will be shown on the bid.

1.8.8 Withdraw an existing Day-ahead Bid
Users may withdraw an existing Day-ahead Bid or Dispatchable Bid by first retrieving the bid from either the Organizer or the Day Ahead screen.

1. Select an option from the Withdraw menu
   a. Withdraw Accepted
      a. Day-ahead Bids in Accepted status may be withdrawn prior to the expiration of the Day-Ahead Bid submission deadline. For multi-day bids that have already been partially included in the Day-ahead Market on previous calendar days, the users must modify the remaining energy profile to 0 MW in order to withdraw the bid. (this latter action will not result in a Withdrawn status, but the Bid is effectively withdrawn)
b. Withdraw Pending
   a. Day-ahead Bids in Pending OASIS status will be transitioned to Withdrawn status.

c. Withdraw Working
   a. Day-ahead Bids in Working status will be transitioned to Withdrawn status.

### 1.9 Ramp Viewer

ExSchedule users can view Available Ramp via the Ramp Viewer screen. The Ramp Viewer displays available ramp for all intervals in a user-specified time range. The ramp viewer can be refreshed manually or set to auto-refresh every 60 seconds.

Users may also choose to download the displayed ramp availability values into an XML file.
1.10 Ramp Queue

ExSchedule users can view their Ramp Reservation’s position in the ramp availability queue via the Ramp Queue screen.

Ramp Reservations receive an In-Queue status when the ramp availability validation fails on a specific interval. Reservations with an In-Queue status will be continually evaluated for ramp availability in the failed interval based on their queue position. Ramp Reservations receive queue positions for a specific interval based on a first-come, first-serve basis.

If ramp becomes available for the failed interval, Ramp Reservations that pass the ramp availability validation will receive Pending Tag status.
1.11 FRP Monitor

When a Tag is received by PJM in which the Market Participant listed as the Financial Responsible Party (FRP) on the PJM Transmission Provider (TP) line does not match the Market Participant who entered the Tag, PJM will put the Tag in “Study” status and the Financial Responsible Market Participant will appear in the FRP column on the ExSchedule Organizer.

The FRP Market Participant will need to Approve or Deny receipt of the Tag before PJM will further validate the Tag. Each modification made to such Tags will also need to be approved by the FRP before PJM will validate the request.

Use the following steps to Approve or Deny a Tag:

1. From the Organizer screen click on the Market Participant hyperlink or click on the FRP Monitor tab. Both will navigation you to the FRP Monitor screen.

2. Select “Approved” from the Status dropdown list to continue with validating the Tag or “Denied” to cancel the schedule before PJM will validate the Tag.

3. Click “Submit” – ExSchedule will update the Tag accordingly.
1.11.1 FRP Auto Approval Setup

ExSchedule allows companies to create automatic FRP approval mappings in order to skip the manual FRP approval process.

1. From the Organizer screen click on the Market Participant hyperlink or click on the FRP Monitor tab. Both will navigation to the FRP Monitor screen.

2. Click on the “Add Organization” button. A new dialogue box will allow the selection of a FRP (one of the company’s mapped scheduling desks) and the manual entry of a PSE acronym to identify the Tag Creator PSE.

3. Click the “Save” button and the entry will be listed in the FRP Automatic Approvals table.

4. Click “Cancel” to abandon the update

1.12 Reports

ExSchedule users can access Day-Ahead and Real-Time scheduling reports via the Reports screen. From the Reports screen, users may choose a report type and select a date range before generating the report. Report data can be viewed in the browser or exported to a CSV or XML file. Reports can be generated for a maximum of 31 days at a time.

The following report types are available in ExSchedule:

Day Ahead Bid
Will list all Day-ahead Bids that belong to the user’s company.

- Day Ahead ID
  - The Day-ahead Bid identifier

- Profile Status
  - The status of the Day-ahead Bid

- Type
  - Fixed or Dispatchable

- OASIS ID
  - The Transmission Service reservation specified on the Bid

- Start Time
  - Energy interval start time

- Stop Time
  - Energy interval stop time

- Requested MW
  - The MW requested for that energy interval

- Cleared MW
  - The MW cleared in the Day-ahead Market (available after 16:00 EPT each day)
Tag Reservation
Will list all Approved Ramp Reservations and associated Tags that belong to the user’s company.

- **Tag ID**
  - The Tag ID associated with the Ramp Reservation
- **RampRes ID**
  - The Ramp Reservation identifier
- **Owner**
  - The company who owns the Ramp Reservation
- **OASIS ID**
  - The Transmission Service reservation specified for the specific energy interval
- **Type**
  - Fixed (normal) or Dispatchable
- **Start Time**
  - Energy interval start time
- **Stop Time**
  - Energy interval stop time
- **Transmission MW**
  - The Transmission Service MW allocated to that specific energy interval on the Tag
- **Requested MW**
  - The MW requested for that energy interval on the Tag
- **Actual MW**
  - The actual MW that will flow in that energy interval after Tag Curtailments have been applied

Credit Usage
Will list all Export Tags that belong to the user’s company along with the calculated financial impact.

- **Tag ID**
  - The Tag ID for which a credit impact has been calculated
- **Start Time**
  - Energy interval start time
- **Stop Time**
  - Energy interval stop time
- **Tag MW**
The actual MW that will flow in that energy interval

- Pricing Point
  - The Interface Pricing Point assigned to the Export Tag

- Credit Used
  - The calculated credit impact for the energy interval

- Credit Limit
  - The company’s credit limit, as allocated in PJM’s eCredit application

- Total
  - The total credit impact of all reported Export Tags

### 1.13 File Transfers

PJM allows users to transfer XML formatted files to and from the ExSchedule system through a browserless Java-based application called the PJM Command Line Interface (CLI). File transfers must be formatted according to the requirements in the [PJM Command Line Interface (CLI) document](http://www.pjm.com/markets-and-operations/etools/exschedule.aspx) which is located at: [http://www.pjm.com/markets-and-operations/etools/exschedule.aspx](http://www.pjm.com/markets-and-operations/etools/exschedule.aspx)

PJM provides this specification to aid PJM customers in building an external interface to the ExSchedule application. PJM will provide assistance to customers seeking to understand or clarify details in this specification. However, due to the customizable nature of this external interface and the varied environments in which PJM customers will implement it, PJM is unable to provide application support for these customer-built external interfaces.

### 1.14 Schedule Summary

The ExSchedule Summary Screen is used by Neighboring Control Areas that need to reconcile Tags and Ramp Reservations entered into PJM’s system. Tags will be displayed in 15 minute intervals within a selected date range.

The Hourly Integrated option shows Control Area operators how much MW is actually flowing in each hour per Approved Tag. Operator sees 24 hours columns for each hour.

The data can also be exported to a CSV file by clicking on "Export to CSV"
Welcome to the Appendices section of the PJM User Guide for PJM ExSchedule. Appendices will be added as needed to explain certain scheduling concepts in more detail than is possible in Section 1 of the user guide.
2.1 Delayed Ramp Profiles

What are Delayed Ramp Profiles?

Delayed Ramp profiles are a type of Ramp Reservation exclusive to the NYISO, Hudson, LindenVFT, and Neptune interfaces. Ramp Reservations created on these interfaces will receive Delayed status instead of the normal Pending Tag and Approved statuses.

Unlike normal Ramp Reservations, Delayed profiles are not initially validated against PJM’s net ramp limits, nor do they reduce the net ramp capability available to other market participants. The result is that participants can create as many Delayed profiles as they need without concern for hitting up against PJM’s net ramp limits. However, when the NYISO issues preliminary and/or final market results for an interval, PJM will react by converting Delayed profiles into normal Approved profiles. Once this occurs, the portion of the Delayed profile that was converted to an Approved profile will begin to hold ramp and will reduce the net ramp capability available to other market participants.

The primary method for conversion from Delayed to Approved status is via Tag curtailments. The portion of a Tag that is covered by a finalized curtailment request will be converted to an Approved profile. In the event that there are no curtailments issued on a Tag, ExSchedule will wait until the Delayed profile is within 30 minutes of real-time flow before initiating a conversion. This process will transition the 15-minute interval in the Delayed profile that is about to start flowing into an Approved profile.

Why has PJM Introduced Delayed Ramp Profiles?

Several PJM stakeholders raised concerns in the NYISO-PJM Coordinated Transaction Scheduling (CTS) forums about ramp availability potentially being impacted due to CTS bidding activity starting in November 2014. Delayed Ramp profiles have been designed to mitigate the long-standing ramp availability issues that stem from market bidding activity on the NY interface. PJM will continue to review and make refinements to the functionality as needs dictate.

How Will Delayed Ramp Profiles Impact Market Participants?

For the most part, market participants only need to be aware of the Delayed profile concept since the Delayed status will be visible within ExSchedule. PJM has no requirements that participants modify their scheduling processes or behavior.

An important consideration is the topic of Ramp Priority since PJM allocates ramp availability on a first-come, first-serve basis. When normal Ramp Reservations are submitted, they receive a ramp priority timestamp that PJM uses to determine who is eligible for curtailment, should the need arise. Any actions by the market participant that result in a modification to their Ramp Reservation will cause the priority timestamp to be refreshed. This same priority methodology will continue to apply to Delayed Ramp profiles, but with a few nuances:

- If the NYISO clears a participant’s bid in full (no Tag modifications required), the Delayed Ramp profile will keep its original priority timestamp as PJM converts the profile to Approved status
- If the NYISO clears a portion of a participant’s bid and issues a Tag curtailment to modify the Tag’s energy profile to match the cleared bid, PJM will refresh the priority timestamp during the conversion from Delayed to Approved status
2.2 Export Schedule Credit Screening Process

What is the Export Schedule Credit Screening Process?
The Export Schedule Credit Screening Process refers to functionality within ExSchedule that ensures market participants have allocated via eCredit a sufficient portion of their posted collateral to cover their export interchange scheduling activity.

Why has PJM Introduced the Export Schedule Credit Screening Process?
As part of discussion in the NYISO-PJM Coordinated Transaction Scheduling (CTS) forums about the credit implications associated with CTS bidding activity, PJM’s stakeholders requested that any changes introduced to PJM’s credit policy also be extended to all Export Transactions. The associated functionality will be activated in November 2014 as part of the CTS implementation.

How Will the Export Schedule Credit Screening Process Impact Market Participants?
Per Attachment Q of the PJM OATT, market participants are required to set aside a portion of their posted collateral to cover export scheduling activity. The allocations are forwarded to ExSchedule where they are used to ensure that scheduling activity does not exceed the "limit" determined by the allocation. PJM will deny or curtail all Tags that exceed the limit.

Export Credit Exposure
A market participant’s export credit exposure will be calculated as the sum of the credit impact calculated for each Export Tag on the current day plus the three previous calendar days.

Export Transaction Screening
ExSchedule will perform the screening process via two methods. First, all new Tag requests that would cause a market participant’s Export Credit Exposure to exceed their Export Credit Limit will be denied. Second, if new forecast prices cause the recalculation of a participant’s existing Export Credit Exposure and an Export Credit Limit violation results, PJM will curtail every active Export Tag submitted by the participant.

Credit Usage Report
In the event Tag Curtailments are required, PJM will curtail all of a participant’s Exports. PJM will not make decisions about which schedules, if any, might still be able to flow via partial reductions. To enable participants in understanding the reason for curtailment, ExSchedule contains a Credit Usage Report that provides the credit impact of each Tag as well as the organization’s current limit and total exposure. If the participant determines via this report that a specific combination of schedules could be reloaded without causing an Export Credit Limit violation, they can contact the PJM Real-Time Transaction Desk at 610-666-4510 to request the reloads.
Revision History

Revision 00 (11/19/13)
Created a new document for the refreshed application that was previously Enhanced Energy Scheduler (EES) and is now ExSchedule. Updated the application functionality in accordance with the new application screens and windows. This is the first release of the PJM Manual for PJM ExSchedule.

Revision 01 (01/24/14)
Completed updates to the document to further align it with the most recent ExSchedule enhancements and modifications. As ExSchedule is not yet released to a production environment, a detailed change log has not been provided.

Revision 02 (09/12/14)
- Added a section to illustrate the terminology differences between EES and ExSchedule.
- Added clarifying language to the section on Day-Ahead Bid Withdrawals, highlighting that Bids in Accepted status can be withdrawn up until the Day-Ahead Bid submission deadline.

Revision 03 (10/28/2014)
- Added a section to detail the ExSchedule Credit Usage report
- Added a section to describe the Delayed Ramp concept in more detail
- Added a section to describe the Export Schedule Credit Screen Process