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Revision History

Revision 00 (06/26/2012)
This is the first published version of the eDART User Guide. eDART: Introduction, Generator Tickets and Transmission Outage Tickets sections included.

Revision 01 (09/10/2012)

Revision 02 (09/28/2012)
Reactive Reserve Check, NERC Data, Restoration Data sections added.

Revision 03 (11/19/2012)
XML and Browserless Functionality, Network Model and TERM sections added.

Revision 04 (06/26/2013)
Conflict Analyzer Functionality, Black Start and Facility Data sections added.

Revision 05 (05/09/2014)
Updates made to XML and Browserless Functionality and Black Start sections. Table of outage Cause IDs and Descriptions added to Generator [MW] Tickets and Transmission Outage Tickets sections.

Revision 06 (10/22/2015)
Requirement for Transmission users to sign NDA and new filetransfer.jar file reference added. Screenshots and email addresses updated.

Revision 07 (04/28/2017)
Reactive Results Tickets section added. Generation and Transmission Outage Cause lists updated.

Revision 08 (10/18/2017)
Added Default Status Section, updated EMS Trip and Emergency Outage Sections, updated Reactive Reserve Check Section.
Revision 09 (02/18/2019)
Updated User Types and Access List:
- Removed retired sections: Restoration Data and Telemetry Coordination.
- Updated BlackStart Calculator row.
- Added Voltage Schedules row.

Revision 10 (12/18/2019)
Removed retired sections: Facility Data, Blackstart - Cranking Path and Supplemental Status Report.
Replaced eDART User Groups with eDART Forums
Added GO Survey section
**eDART: Introduction**

**eDART** (electronic **D**ispatcher **A**pplication **R**eporting **T**ool) is a suite of electronic applications used to facilitate dispatcher-to-dispatcher communications, along with other engineering communication and coordination functions.

eDART’s benefits to PJM membership include a quick, 24/7 process for outage and model change request submittal, easy access to comprehensive information and a simple and user-friendly online interface. Through eDART, a user can filter outage information based on start date, end date, ticket number and other criteria to help ease the dissemination of information and to help make a comprehensive range of reports.

eDART’s creation has greatly reduced the amount of physical paperwork and the time consuming communication of prior processes.

**eDART User Registration**

Registering to get access to eDART needs to be done on 2 levels: company (to set up Customer Account Managers - CAMs) and individual users.

CAMs can request access to eDART for users in their companies by filling out the eDART Registration form at [https://www.pjm.com/markets-and-operations/etools/edart/form-edart-reg.aspx](https://www.pjm.com/markets-and-operations/etools/edart/form-edart-reg.aspx)

*NOTE: This process is currently the only way to gain access to eDART.*

**Company Registration**

In order to have an account in eDART, it is required to have a Customer Account Manager (CAM) set up for all Generation and Transmission companies. Every eDART user account requested must be authorized by the company’s CAM. PJM recommends that every company have at least two CAMs.

There are 2 forms necessary to set up the company’s primary account – **CAM Authorization Form A** and **CAM Authorization Form B**.

CAM Authorization Form A is used for registering the CAM(s).
CAM Authorization Form B is used for designating, updating or terminating CAMs. It is necessary to send both forms to PJM for the initial account creation.

For subsequent CAM personnel changes, only CAM Form B is needed.

- **CAM Form A** - [http://www.pjm.com/~media/about-pjm/member-services/membership-assistant/authorizationform.ashx](http://www.pjm.com/~media/about-pjm/member-services/membership-assistant/authorizationform.ashx)
Individual User Registration

In order to register an individual user, CAMs should complete and submit the eDART Registration Form.

Click on the link titled Register on the eDART page (https://www.pjm.com/markets-and-operations/etools/edart.aspx) to open the eDART Registration Form (http://www.pjm.com/markets-and-operations/etools/edart/form-edart-reg.aspx) and follow the registration instructions.

Transmission Edit and Read Only users must also have CEII approval. User can submit the CEII Request Form here (https://www.pjm.com/library/request-access/form-ceii-request-new.aspx). User must be logged into pjm.com to access the form.
Select a **Company** from the drop down. If the company required is not listed in the drop down menu, select **Other** and enter the company name and supporting details in the **Comments/Questions** section at the bottom of the form.
When filling out the registration form, the user or CAM will need to provide the Authorized Contact information i.e., the designated CAM unless user is requesting a generic account. For assistance in filling out this form, refer to the eDART Registration Form Help (http://pjm.com/markets-and-operations/etools/edart/~media/etools/edart/edart-help.ashx).

Once all of the required fields have been filled out, submit the form.
- A submission email is sent to the CAM (Authorized Contact) as confirmation.
- The CAM is required to reply to the email and confirm that the submitted information is correct and the user is approved to have eDART access.

Once the account is set up, an updated user list will be sent to the CAM and the account credentials will be sent to the user.

If a user changes companies, a new account request is needed and a new user ID must be issued. eDART does not support multiple accounts with the same User ID.

For help resetting or unlocking a password, please call one of the following:
- **PJM Member Services:** 610-666-8980
- **PJM Help Desk:** 610-666-8886

**User Types and Access**

There are 3 types of company users:
- Generation Owners
- Transmission Owners
- Generic

**Generation Owners**
- **Edit** – This user can submit, revise and review company data.
- **Read Only** – This user can view company specific data. This user can NOT submit or revise company data.

**Transmission Owners**
- **Edit** – This user can submit, revise and review company data.
- **Read Only** – This user can view company specific data. This user can NOT submit or revise company data.
- **Transmission Planning** - This user can review D-Curve reports for units within user’s Transmission Zone and view Default MVAR Tickets.

**Generic**
- **Read Only** – This user can view non-Market Sensitive transmission outage data and Pool Totals reports from completed Instantaneous Reserve Checks (IRCs).

* Transmission users must accept a Model Sharing Non-Disclosure Agreement monthly to retain...
access to eDART. The user’s name and email address are required as a signature. The agreement can also be accepted through XML browserless interface as well.
The table below displays the privileges of each user access type. It is also available online (http://www.pjm.com/~media/etools/edart/account-types-and-application-access-ashx).

<table>
<thead>
<tr>
<th>Application</th>
<th>Generic Read Only</th>
<th>Generic Read/Write</th>
<th>Gen &amp;Trans Read/Write</th>
<th>Trans Read/Write</th>
<th>Trans Read only</th>
<th>Transmission Planning</th>
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<tbody>
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<td>Complete functionality</td>
<td>No update or insert</td>
<td>Complete functionality</td>
<td>No update or insert</td>
<td>New Default MVAR Tickets and D-Curve Reports</td>
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<tr>
<td>Transmission Outage Tickets</td>
<td>Read Current and Future and Historical Reports</td>
<td>Read Current and Future and Historical Reports</td>
<td>Complete functionality</td>
<td>Complete functionality</td>
<td>No update or insert, Can't view Resource Limitations.</td>
<td></td>
</tr>
<tr>
<td>TERM</td>
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<td>Complete functionality</td>
<td>Complete functionality</td>
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</tr>
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<td></td>
<td>Complete functionality</td>
<td>Complete functionality</td>
<td>No update or insert.</td>
</tr>
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<td>NERC Data</td>
<td>Gen PSSE Map Read Only</td>
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<td>Complete functionality</td>
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<td></td>
<td></td>
</tr>
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<td>Instantaneous Reserve Check</td>
<td>View Pool Totals</td>
<td>Complete functionality</td>
<td>Complete functionality</td>
<td>View Final Report</td>
<td>View Final Report</td>
<td></td>
</tr>
<tr>
<td>MinGen</td>
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<td>Complete functionality</td>
<td>View Final Report</td>
<td>View Final Report</td>
<td></td>
</tr>
<tr>
<td>Reactive Reserve</td>
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</tr>
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<td>Complete functionality</td>
<td>No update or insert.</td>
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<tr>
<td>Voltage Schedules</td>
<td>Acknowledge and View Voltage Schedules</td>
<td>Complete functionality</td>
<td>Create, Update and View Voltage Schedules</td>
<td>View Voltage Schedules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage Limits</td>
<td></td>
<td></td>
<td></td>
<td>Complete functionality</td>
<td>No update or insert.</td>
<td></td>
</tr>
</tbody>
</table>
**Company Distributed Workflow (CDW)**

This functionality in eDART allows eDART tasks to be distributed either to an Agent company or on a unit/task basis per user (for Generation companies only). The use of CDW minimizes the need for multiple sub-accounts per company and multiple user accounts per person.

Companies interested in using the Company Distributed Workflow (CDW) functionality should contact the eDART team for set up requirements.

**CDW Member-Agent Functionality**

Company admins of Members will be able to request Agent companies to act on their behalf in eDART. Agent users only need one account, under Agent company, and are able to switch companies in eDART without logging out and back in.

Suggested for Agent companies managing eDART tasks for multiple PJM Members.
CDW Unit-Task Functionality

Company admins for Generation companies will be able to split eDART tasks per unit/per user. Users no longer need multiple accounts. Suggested for Generation companies that currently have multiple sub-accounts or that are managing eDART tasks for multiple plants outside eDART.

Arrows represent tasks in eDART.
Logging Into eDART

The eDART login screen contains legal warnings, notifications and application messages, along with the ability to login, change a password or register for access to eDART.

To login, enter a user name and its corresponding correct password and hit the “Login” button.

For security purposes, 3 incorrect password entries would result in a locked account. To reset a password and/or unlock an account, users should contact PJM Help Desk at (610) 666-8886 or PJM Member Relations at (610) 666-8980.

Users may also change their password using the “Change Password” button.
When creating a password, the following rules apply:

- Must contain at least one upper case and one lower case letter.
- Must contain a numeral.
- Must contain one special character (~!#$%^*()-_+=[{}];:.>/%@).
- Password length of at least 8 characters and not more than 16 characters.
- Username cannot be part of a password.
- Cannot use the same password for 15 generations.

In addition to a valid user name and password, eDART has an additional security requirement that a user’s IP address remain static during a session in eDART. This is to prevent action being taken in eDART by a hijacked user session. If the IP address on taking action in eDART (submitting a ticket, downloading a file, etc.) is different from the IP address captured on login, the user’s session will be ended.

**eDART Forum (formerly eDART and eDART XML User Groups)**

The eDART User Group and eDART XML User Group are now known as the eDART Forum and eDART XML Forum.

The eDART Forum discusses potential and future changes to eDART functionality. eDART is a tool that enables generation and transmission owners to submit generation and transmission outage requests electronically. The eDART XML Forum focuses on data transfer between eDART and member applications using XML. eDART XML allows members to plug their applications directly into eDART.

eDART Forum Notification

A user can register to receive emails sent to eDART Forum and eDART XML Forum members by logging into their PJM.com account and going to https://www.pjm.com/mypjm/newsletters.aspx.
On the “My Email Lists” page, select Forum and check the **Subscribed** box for either or both of “eDART Forum” or “eDART XML Forum”. Click **Submit**.

To remove subscriptions, uncheck the **Subscribed** box and click **Submit**.

Joining the email lists, in conjunction with occasional meetings, will serve as membership to the eDART Forum and eDART XML Forum.

Upcoming meetings can be found on the eDART Forum page.
# My Email Lists

PJM uses a number of lists to send meeting notices, materials, voting or polling results, tool updates and reminders to stakeholders. To subscribe to a list, browse the topic categories and select the lists to which you would like to be added. Once you have made your selections, click the submit button. Selections will be processed within 10 minutes of submission. Do not attempt to resubmit the selection as this will overwrite the latest request.

If you don’t see an email list in the Available Subscriptions box below, you can update your subscription preferences via the Email List Update form by entering the name of the mailing list which you would like to be subscribed to or unsubscribed from.

<table>
<thead>
<tr>
<th>Email List</th>
<th>Subscribed</th>
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</thead>
<tbody>
<tr>
<td>Committees</td>
<td></td>
</tr>
<tr>
<td>Communications</td>
<td></td>
</tr>
<tr>
<td><strong>Forums</strong></td>
<td></td>
</tr>
<tr>
<td>Subcommittees</td>
<td></td>
</tr>
<tr>
<td>Task Forces</td>
<td></td>
</tr>
</tbody>
</table>

- eDART Forum
- eDART XML Forum

Submit
**Online Help**

PJM offers extensive online support for eDART. There are a variety of ways to access help materials for eDART.


Users can also use the **Online Help** button in eDART to access this page.

This page contains a variety of help sources. Each form listed has a corresponding help document/guide. Additionally, PJM has provided an **eDART FAQs** (Frequently Asked Questions) section, which can be accessed from the link on the right side of the page.

**Training Presentations** are also available for different eDART functionalities.

The **XML Documentation** page has information and tools needed for the browserless functionality of eDART. On this page, the user can also find eDART XML schema diagrams,
documentation and examples. More information is provided in the XML and Browserless Functionality section of the eDART User Guide.
Feedback

The eDART Feedback Form is used to capture feedback (including issues, comments and questions) that would not normally be handled by the eDART help/support team or PJM Dispatch.

Click on the Feedback button in eDART to open the eDART Survey feedback form in another window. Feedback can be submitted either anonymously, or with contact information for a follow-up.

For urgent needs, call PJM Member Relations at 866-400-8980 instead of using the feedback page.

Enter feedback and click the Finish button to submit the form.
**My eDART**

**My eDART** gives users the ability to customize their eDART experience. Users can choose which eDART applications they would like to see when they log in. Depending on user access rights, an eDART user can see up to 12 application buttons on the left hand side when in eDART. Not all of these applications may be necessary to the user and with My eDART, users have the ability to pick and choose the applications they need.

Clicking on the ‘My eDART’ button will pull up a menu with the applications user has access to.

Using the **Display** drop down, select ‘Yes’ to display the application, and ‘No’ to hide it.

A pop-up calendar is displayed when a user clicks on a date field in the eDART applications. To disable or hide the calendar, select ‘No’ from the **Display** drop down for **Display Calendar Pop-Up**.

Click the **Submit Form** button to save changes.

A Transmission user can also sign the Model Sharing Non-Disclosure Agreement by clicking the **NDA Sign-Off** button. This can be used when user is within 7 days of the NDA expiring.
<table>
<thead>
<tr>
<th>Functionality</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Start</td>
<td>Yes</td>
</tr>
<tr>
<td>Display Calendar Pop-Up</td>
<td>Yes</td>
</tr>
<tr>
<td>Facility Display</td>
<td>Yes</td>
</tr>
<tr>
<td>Feedback Form</td>
<td>Yes</td>
</tr>
<tr>
<td>Gen. Ticket</td>
<td>Yes</td>
</tr>
<tr>
<td>Hydro Calc</td>
<td>Yes</td>
</tr>
<tr>
<td>Instantaneous Reserve Check</td>
<td>Yes</td>
</tr>
<tr>
<td>Minimum Gen. Report</td>
<td>Yes</td>
</tr>
<tr>
<td>My eDART</td>
<td>Yes</td>
</tr>
<tr>
<td>NERC Data</td>
<td>Yes</td>
</tr>
<tr>
<td>Network Model</td>
<td>Yes</td>
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Generation users of companies set up for the CDW Unit-Task functionality will also see their assignments on this page.

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Generator Tickets

PJM is responsible for coordinating and approving requests for outages of generation facilities for the reliable operation of the regional transmission organization (RTO).

The eDART (electronic Dispatcher Application and Reporting Tool) application provides communications with PJM Generation Operators (GOs) regarding unit outage requests, updates to reactive capability curves (D-curves), and voltage regulator statuses among other generation and transmission functionalities.

The eDART Generator Tickets functionality is used to record and schedule generator facility outages. PJM members use eDART to report requests for generation outages via a ticketing system.

Business Rules

PJM Members can request outages via the Gen. Ticket eDART tool. PJM may either accept or reject a specific outage request. However, PJM does not “schedule” when outages should take place. All outage requests are analyzed together, and PJM only rejects outage requests when they affect the reliability of the PJM Regional Transmission Organization. It is the responsibility of each PJM Member to determine its own best outage schedule. Outage requests are honored by PJM on a first-come first-serve basis.

Where a user is required to give PJM verbal notification, the following PJM personnel should be contacted:

- Master Coordinator
  - All outages
  - Clearing of outage tickets
- Generation Dispatcher
  - Outages of units on-line or scheduled to come on-line

Generator outages fall into the following categories:

- Forecasted Planned / Planned
- Maintenance
- Unplanned

Partial outages are outages where a unit is still operating, but is operating at less than full capacity. Partial outages can be Planned, Maintenance or Unplanned. All rules and regulations for Partial outages are the same as those for corresponding Full outages.
1. All MW outage tickets can only be started up to 1 hour in advance of the Est. Start Time.

E.g. if Est. Start Time = 10/10/2016 10:00, Switch Start Time cannot be before 10/10/2016 09:00.
   - If rule is violated, eDART will return an error message: “Switch Start Time is more than 1 hour in advance of estimated start time. Please revise estimated start time”.
   - To start a ticket earlier than the allowed time, user can submit a revision to the Est. Start Time. If the outage is approved for the earlier Est. Start Time, an earlier Switch Start Time can be submitted.
     Using the example above, if GO wants to start the outage at 08:00, submit a revision to change Est. Start Time to 10/10/2016 08:00 and if approved, Switch Start End can be as early as 10/10/2016 07:00.

Note that this is to prevent outages from being started too far in advance of the period for which they were approved.

2. Planned outages cannot be started early if the Est. Start Time – 1 hour falls into peak period maintenance.

E.g. if Est. Start Time = 09/09/2017 00:00, user will not be allowed to submit a Switch Start Time of 09/08/2017 23:00 as this falls into the 2017 Summer Peak Period Maintenance Margin Season (06/12/2017 to 09/08/2017).
   - If the rule is violated, eDART will return an error message: “Planned outages can’t start during peak period maintenance”

3. Switch End dates will automatically close generator outage tickets without PJM user intervention.
   - Switch end date cannot be more than 1 hour into the future of estimated end time.
   - Switch end date cannot be more than 18 hours into the past of estimated end time.

4. When a generator eDART ODEP company (company responsible for submitting outage tickets in eDART) changes, eDART will automatically create a copy of the latest completed new default MVAR ticket from the old company to the new company.
Forecasted Planned / Planned

Planned outages are scheduled by the PJM Members well in advance and they usually occur during periods when the peak demand on the power system is lowest. Planned outages have flexible start dates, a predetermined duration, may last for several weeks, and occur only once or twice a year. Some instances in which a company may request a Planned or Forecasted Planned outage may include nuclear refueling and annual facility inspections, among others. This process applies ONLY to MW (megawatt) outages.

- The initial Planned outage request has to be submitted to PJM no later than 30 days prior to the Operating Day.
- If the outage start date is greater than 31 days in the future, it is classified as a “Forecasted Planned” outage.
- Every evening the eDART system will automatically change the status of all “Forecasted Planned” outages due to start in less than 31 days to “Planned” outages.
- Once the ticket is changed to “Planned,” and has a status of approved, a reduction revision can be submitted.
- The Start date of a Planned ticket can only be increased (and no more than 30 days into the future).
- The End date can also be changed.
- An approved Planned outage may be rescheduled within the 30 day timeframe of approval only if it is approved by PJM, but once an approved Planned outage is moved, it becomes “Unplanned” and cannot be extended past the original timeframe.
- Other than cancellation, no other changes can be made.
- The approval process involves checking for conditions such as violation of Black Start power failure solution and Reliability scenarios, availability of adequate reserves and whether the outage is scheduled during the Peak Period Maintenance season, which occurs from the 24th Wednesday of the calendar year through the 36th Wednesday of the same year.
- A Planned outage is in Black Start Scenario violation if a station already has an outage for a critical Black Start unit during the same period. Some transmission zones may have other specific outage requirements that will be verified to prevent Black Start Scenario violations.
- If the request is denied, members re-evaluate their Planned outage schedule and submit a new outage request. This process is repeated until the request submitted is acceptable.
- PJM may withdraw its approval for a Planned outage by notifying members at least 24 hours in advance in order to ensure the adequacy of reserves or the reliability of the PJM RTO.
- Planned outages can be extended. A Planned Outage Extension is the extension beyond the originally estimated completion date which can only be used in instances when the original scope of work requires more time to complete than originally scheduled.
- An extension for a Planned outage begins at the same time the Planned outage ends. Planned Outage Extensions must be for the same work that was originally scheduled,
and should only be used if the aforementioned work is taking longer than anticipated to complete, and not when unexpected problems or delays are encountered.

All Planned Outage Extension requests should be made at least 48 hours before the originally expected outage end. Planned Outage Extensions can be requested via ticketing in eDART.

**Maintenance Outages**

Maintenance outages may occur throughout the year, have flexible start dates, are much shorter than Planned outages, and have a predetermined duration established at the start of the outage.

- A Maintenance outage is an outage that may be deferred beyond the next weekend. In other words, it is an outage that can be postponed to the following Monday morning (0800 hrs).
- The duration of a Maintenance outage is generally unlimited except during the PJM Peak Period Maintenance *(PPM) Season during which approved Maintenance outages will be limited to a maximum duration of 9 consecutive days, 5 weekdays plus the included weekends. The Weekend Period is defined from Friday at 2200 hrs to Monday at 0800 hrs.
- A Maintenance Outage Extension is an extension beyond the originally estimated completion date which can only be used in instances when the original scope of work requires more time to complete than originally scheduled and not when unexpected problems or delays are encountered. The request for a Maintenance outage Extension must be submitted before the original end date.
- If a Maintenance outage is extended beyond 9 days in PPM season, it becomes an “Unplanned” outage.
- If a company requests a Maintenance outage during the Peak Period Maintenance Season, and PJM denies the outage, and the company decides to take the outage anyway, the following rules apply:
  - The company has the option to enter the outage as an “Unplanned outage”.
  - If the company does not enter an “Unplanned outage” and opts to take an “unapproved” Maintenance outage, the “Peak Period Maintenance Compliance Penalty” will be assessed.
  - For reference, the formula for the “Peak Period Maintenance Compliance Penalty” is as follows: (Weighted Average Resource Clearing Price + the higher of (.2 * Weighted Average Resource Clearing Price or $20/MW-Daily) multiplied by (Daily Peak Season Maintenance Shortfall for RPM Resource Commitments * (1-Effective EFORd)) and also could affect the unit’s EFORp.
  - If the company enters an “Unplanned outage,” the “Peak Period Maintenance Compliance Penalty” will not be assessed but the Unplanned outage will affect the unit’s EFORd (Equivalent Forced Outage Rate).

*Peak Period Maintenance (PPM) shall be defined as those weeks containing the 24th through
the 36th Wednesdays of a calendar year. Each such week shall begin on a Monday and end on the following Sunday, except for the week containing the 36th Wednesday, which shall end on the following Friday.

Unplanned Outages

In case of an Unplanned Outage, members are expected to do the following:

- Advice PJM of the Unplanned Outage suffered or anticipated as promptly as possible. This includes a verbal notification to the PJM Generation Dispatcher.
- Provide PJM with the expected date and time that the resource will be made available.
- Make and submit to PJM a record of the events and circumstances giving rise to the Unplanned outage.
Generator Outage Reporting

When logged into eDART, click on the **Gen. Tickets** button on the left menu to open the **Generator Tickets Main Menu** as shown in the example below:
Create New Ticket

Tickets can be created for 6 types of Generator outages:

- Generator Megawatt (MW) Outages
- Voltage Regulator Outages
- MVAR Capability Changes
- Governor Outages
- MVAR Test
- Power System Stabilizer (PSS) Outages

In order to create any one of the above tickets, select the Create New Ticket button to open the New Generator Ticket form as shown in the example below:
Ticket Fields

- The **User** and **Company** fields are system generated tags from login identifying the ticket’s submitter and which company the user represents.
- **Generation Type**: The generation type includes the options Combined Cycle, Diesel/CT, Diesel/CT (small unit), Geothermal, Hydro, Hydro – pumped storage, Nuclear, Nug, Solar, Fossil/Steam, Wind, etc. and refers to the method of generation the unit uses.
- **Unit Name**: Select unit from the drop-down menu based on the type already selected.
- **Company Ticket ID**: Optional field for the company’s internal application ticket number. The ticket’s submitter should review their own company policy to see if they should utilize this field.
- **Description**: Brief work description. In Unplanned outages and Emergency cases, this field should always provide information on the circumstance resulting in the outage.
- **Est. /Ramp Start**: Proposed ticket start date and time. All times should be entered in MM/DD/YY and HH24:MI (or 24 hour “military” style time). Ramp Start times are designed mainly for larger units, which could take hours to come off line.
- **Est. End**: Proposed ticket end date and time. Mandatory for Forecasted Planned and Maintenance outages.
- **Est. Early Return**: Proposed date and time when unit can be returned in advance of Est. End if called up by PJM. Mandatory for Forecasted Planned outages.
- **End Date Unknown**: Can only be selected for Unplanned MW outages, or for MVAR “New Default” tickets.
- **Daily Job, #Days, Start Day Delta**: Necessary for multiple day tickets. See section Multiple Day Data Entry.

**MW (Real Power) Ticket**

MW (Megawatt) tickets are the most common generator outage tickets used in eDART. MW tickets are used to request outages for units that produce megawatts of energy. Select the MW button to create a ticket for a MW outage. This is the default ticket type on the New Generator Ticket form.

- **Company Switch Start Date and Hour**: Actual outage start date and time. Cannot be more than 1 hour before the Est./Ramp Start time or 2 hours later than the Est./Ramp Start time.
- **Company Switch End Date and Hour**: Actual outage End date and time. Must be entered no later than 2 hours after the Est. End time. *(Note: This is not meant to eliminate any verbal communications with the PJM Generation Dispatcher when a generating unit is coming on or off-line for an outage. Verbal notifications of unit status changes must still be provided to PJM Master Coordinator if it is a case of just clearing the ticket and the Generation Dispatcher if it is a case of clearing the ticket and bringing the unit online.)*
- **Informational**: Indicates that outage is “Info-only” (MW Reduction = 0). Only valid for Maintenance outages. When intending to create a new Informational ticket, check the “Informational” box and eDART will set reduction to 0 and change the type to
“Maintenance.”

(Note: If a revision to an Informational ticket has a non-zero reduction, ‘Informational’ will change to ‘No’ but the outage type will remain as ‘Maintenance.’)

- **Ticket Reduction:** MW Reduction value. Cannot be zero for non-Informational tickets. Can be negative only if the “Cause” is Ambient Air and the “Outage Type” is Maintenance.
- **Inst. Cap.:** Installed capacity for the unit selected on the ticket.
- **Cause:** Reason for outage. Cannot be “Not Applicable.” If cause is “Other,” it is necessary to provide more information in the Description.
- **Outage Type:** Unplanned, Maintenance or Forecasted Planned.

Depending on the unit, a field for **Est. Ramp Complete** may appear under the MW Ticket Info section. Enter the estimated time at which the ramp procedure will end. This should fall between the **Est./Ramp Start** and **Est. End** times.

**Daily Jobs**

eDART has functionality to create a multiple day outage ticket by entering the data once without creating a separate ticket for each occurrence. This is called a **Daily Job.** *Note: Daily jobs are only permitted for Maintenance outages.*

- **Daily Job:** Check this box to designate whether a ticket will be a multiple day, multiple ticket outage.
- **# Days:** Enter the total number of days of labor required for the job.
- **Start Day Delta:** Enter the number of days separating each day of labor. If the job
will occur on consecutive days, enter “1.”

For example, if a user wants to create a ticket on 10/07/15 and wants to request a bi-daily job lasting three total days of labor, they would do the following: Create a new ticket. Enter all regular information. Check Daily Job. In the # Days field, enter the total number of days of labor necessary for the job. Enter “2” as the Start Day Delta to create a bi-daily schedule. (The user could also enter a Start Day Delta of “1” to have a daily schedule or “3” to have a tri-daily schedule.).

After entering the necessary data, the user would click the Submit Form button to open the Ticket Validation Form, which lists outages scheduled to occur in the same window as the newly created outage ticket. The result would be three tickets, each two days apart as shown in the example below:

![Ticket Validation Form]

To make changes, click Back button; to create the ticket, click Submit form button. **Note: New Ticket is the ticket that has just been created. If that is the only ticket displayed then no other outage is scheduled to occur at the same time as the new ticket.**

After creating a set of Daily Jobs tickets, the tickets can found in the Future Tickets sections of eDART Generation:
**Cause Types**

The following cause types are available for Generator MW tickets. Voltage Regulator, MVAR, Governor, MVAR Test, and PSS tickets do not have a corresponding cause type. For the most up to date list of cause types, an XML download is available via the Web and Browserless interfaces. For the Browserless interface, type=generationcause.

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<td>Cranking Diesel</td>
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<td>Black Start Auxiliary Equipment</td>
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<td>Cold Weather Preparation Exercise</td>
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<td>Black Start Testing</td>
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**Voltage Regulator Ticket**

eDART’s outage request system includes ticketing for Voltage Regulators. Select the **Volt. Reg.** button on the **New Generator Ticket** form to create a ticket for a VR outage.
Voltage Regulator Ticket Fields (See “Ticket Fields” under the sub-section “Create a Ticket” for explanations of the other fields on a Voltage Regulator ticket.)

- **Out of Service:** Indicate if the Voltage Regulator is Out of Service.
- **Emergency:** Indicate if it is an Emergency outage.

**Note:** Voltage Regulator tickets should be created either when it is in the manual mode or if it is completely out of service.

**MVAR (Reactive Power) Ticket**

Reactive power is necessary to maintain system voltages within safe operating limits. Reactive power controls the voltage in cases of disturbances and emergencies.

D-Curves (Reactive capability curves) give the maximum and minimum reactive power loadings corresponding to set MW values. This model is called a D-Curve because of its typical shape when plotted.

Select the MVAR button in the New Generator Ticket form to create an MVAR capability changes ticket. Tickets for reactive testing should be made using an MVAR Test Ticket, explained later in this document.
MVAR Ticket Fields (See “Ticket Fields” under the sub-section “Create a Ticket” for explanations of the other fields on a MVAR ticket.)

- **Emergency**: Indicate if it is an Emergency outage. Only applies if the change was unplanned.
- **New Default**: Indicate that the change to the D-curve is permanent and will be used as the default going forward.
- **Capability Adj. MVAR Adder**: Add or subtract a value from all entries at once rather than changing values individually to shift the entire D-curve.
- **Max**: MVAR Max values should decrease or stay constant as MW Point value increases
- **Min**: MVAR Min values should increase or stay constant as MW Point value increases
- **Apply Adj.**: Apply adder value to MVAR values.
- **MVAR Limit**: The Min and Max columns under MVAR Limit display the existing minimum and maximum values respectively.
- **Adjusted MVAR Limit**: The MW points and the Min and Max columns under the Adjusted MVAR Limit field display the new values after the adder is applied.

**Note**: If either Emergency or New Default are checked, End Date Unknown can be checked if
applicable.

For additional information on the rules, please refer to the “Attachment D: PJM Generating Unit Reactive Capability Curve Specification and Reporting Procedures” of Generator Operational Requirements – PJM Manual M14D.

**Governor Ticket**

The Governor helps manage frequency in a generation unit. Governor tickets can be used to schedule outages for a unit’s governor.

Select the **Governor** button in the **New Generator Ticket** form to create a ticket for a governor outage.

**Governor Ticket Unique fields** (See “Ticket Fields” under the sub-section “Create a Ticket” for explanations of the other fields on a Governor ticket.)

- **Out of Service**: Use this field to indicate if the governor is Out of Service.
- **Emergency**: Use this field to indicate if it is an Emergency outage.

**MVAR Test (Reactive Power Test) Ticket**

Companies are required to coordinate with PJM and inform PJM if they are planning to perform a test to vary the MVAR output and make sure the D-curve in eDART is accurate. Companies
can create an **MVAR Test** ticket to schedule the test.

For more information on MVAR testing procedures, please refer to the “Attachment E: PJM Generator Reactive Capability Testing” of *Generator Operational Requirements – PJM Manual M14D*.

**Note:** Changes to the MVAR capability as a result of MVAR test must be submitted through an **MVAR Ticket** (as explained previously).

![New Generator Ticket form](image)

**MVAR Test Ticket Unique fields** (See “Ticket Fields” under the sub-section “Create a Ticket” for explanations of the other fields on a MVAR ticket.):

- **Current eDART D-curve:** This table displays the current D-Curve data for reference.

**Power System Stabilizer (PSS) Ticket**

PSS tickets can only be created for units designated as having a Power System Stabilizer (PSS). Power System Stabilizers are used to help larger units control their voltage levels.

If a PSS ticket cannot be made for a unit with a PSS, contact the PJM Generation Department or the eDART team to update the unit properties.

Select the **PSS** button in the **New Generator Ticket** form to create the ticket.
**PSS Ticket Unique fields** (See “Ticket Fields” under the sub-section “Create a Ticket” for explanations of the other fields on a Governor ticket.):

- **Out of Service**: Indicate if the PSS unit is Out of Service.
- **Emergency**: Indicate if it is an Emergency outage.

**Filtering Options**

eDART offers a great array of filtering options that range from simply searching for the Ticket ID to searching the Unit Type and the Start or End Dates of the desired outage, among other filtering options. The options for a standard ticket search using the *View/Revise Ticket* button in the *Gen. Tickets* menu are listed and detailed below. Other areas of eDART’s generation suite that use filtering include all of the options in the *Trans. Tickets* menu, the *D-Curve Report* search function and the *Owners Report* search function. The same basic principles apply to all eDART filtering functions. However, other sections with filtering capabilities may include different fields. The only type of field not covered below is a field with a checkbox. To use a checkbox, simply click the box to designate whether the field applies.

- **Ticket Type**: Select what kind of ticket to filter on; options range from MW, Volt. Reg., MVAR, Governor, MVAR Test or PSS.
- **Ticket ID**: Using this field, the user can filter for a specific ticket by entering the unique Ticket ID corresponding to the initial outage request ticket.
- **Company Ticket ID**: This field allows the user to use a company’s own designated ticket ID. Individual companies may have differing ticket reference policies. This filter can be useful for users who are more familiar with their company’s ticket ID scheme. Because company policies are often different, this ID could range from letters to numbers and depends entirely on the company’s own categorical policy.
• **Outage Type:** This field enables the user to select specific outage types, including Planned, Unplanned, and Maintenance. Please keep in mind that Forecasted Planned is unselected by default, and users must specifically include “Forecasted Planned” in order to see “Forecasted Planned” results. For multi-select, hold the Ctrl key and click on desired Outage Types.

• **Unit Type:** The unit type includes the options Combined Cycle, Diesel/CT, Diesel/CT (small unit), Geothermal, Hydro, Hydro – pumped storage, Nuclear, Nug, Solar, Fossil/Steam or Wind and refers to the method of generation the unit uses. Selecting a Unit Type will affect which Unit Names are available to select. Including Unit Type typically creates more effective and efficient searches.

• **Unit Name:** Select a specific unit based on type already selected. Only units of the selected type will be available to choose from.

• **Reduction:** MW Reduction value. This can only be negative only if the “Cause” is Ambient Air and the “Outage Type” is Maintenance. Using this will likely result in a relatively narrow filter.

• **Installed Capacity:** This field allows the user to choose the range or value of installed capacity of the outaged units.

• **Cause:** This field allows the user to filter for the cause of outages. Depending on which cause is selected, the filter may be very narrow.

• **Ticket or Revision Status:** This field allows the user to filter for the status of tickets. This may be used to filter for active tickets, for completed tickets and for denied or canceled tickets. The user can combine this field with other fields to see the status of tickets with different qualities.

• **Submission Date:** This field allows the user to search for tickets submitted on a specified date or during a specified date range. A user may use this field to look at what has been submitted, or to confirm when they submitted a ticket during a period of time, among other functions.

• **Est. Start/End Date:** This field allows the user to search for tickets that have a specified estimated start date. Users may use this field to get an idea of what tickets they have planned for the future.

• **Actual Start/End Date:** This field allows the user to search for tickets that have a specified actual start date. Users may use this to review when different tickets occurred or to find a ticket that they know occurred at a specific time, among other uses.

• **Occurring During:** This field allows the user to search for tickets that are occurring during a specified date. Users may use this to get a snapshot of what outages are requested or planned during a certain period of time, among other uses.

All these can be combined and selected in any manner to create a search tailored to meet individual needs. For example, a user may want to find the Approved tickets for any upcoming MW Maintenance outages with Testing as their cause that their company has scheduled for September 2012 that were submitted during May 2012. The following is an example of a filter that would meet those needs. Notice how only the fields relevant to the user’s search are filled.

To filter for those criteria, the user would select MW from the **Ticket Type** drop-down menu and highlight **Maintenance** in the **Outage Type** box (**Note:** The Outage Type box is a multi-
select field, and to select more than one option the user would hold the CTRL key while clicking as many options as desired.) while also selecting Approved in the Ticket Status drop-down menu and Testing from the Cause drop-down menu. The user would then enter the range of dates in May (5/1/12 to 5/31/12) in the Submission Date box and the range of dates in September (9/1/12 to 9/30/12) in the Occurring During box.

The user would then hit Apply Filter. This would bring the user to the Sorting screen. If the user does not wish to sort their results beyond the default settings, the user can hit Apply Sorting to see their filter results. For more on Sorting, go to the Sorting section of this guide.

By using this filter, the user will only get results that meet the following criteria:

- Must be a MW ticket; AND
- Must be either a Maintenance ticket; AND NOT a Reactive Ticket, Planned Ticket, Unplanned ticket or Forecasted Planned ticket; AND
- Must have been caused by Test; AND
- Must have had a Ticket Status of Approved; AND
- Must have been submitted from February 1st, 2012 (02/01/12) to September 12th, 2012 (09/12/12);

This is a pretty narrow filter. If a ticket does not fulfill any of those criteria it will not be listed in the filter. Below is an example of results for this filter:
A user may desire a simpler filter. For instance, a user may want to see all of their company’s Completed Hydro tickets during any period of time. This would be a comparatively broad filter. The user would just select Nuclear in the Unit Type field and Complete in the Ticket Status field and hit Apply Filter.

For this filter, the results would just have to meet the following criteria:

- Must be either a Planned Ticket, Unplanned ticket or Maintenance ticket; AND NOT a Reactive Ticket or a Forecasted Planned ticket (Note: This is the default for the Outage Type filter field) AND
- Must be a ticket for a Nuclear unit; AND
- Must have a Ticket Status of Complete.

This is an example of a very broad filter.

A user can also use filtering to search for individual tickets if a user has either the Ticket ID or their Company’s Ticket ID. In either instance, the user would just enter the ID into either the Ticket ID or Comp. Ticket ID field respectively, and hit Apply Filter. Because these IDs are
unique, the user should only see one result.

Using filtering, a user can present outage reports in a variety of ways. Filtering can be combined with eDART’s sorting function to create highly customized results presentations.

**Sorting**

**Sorting** is a simple way to further organize outage search results. By default, tickets are sorted in ascending order of the **Ticket ID**, but the user can sort results based on any field. It is also possible to sort on multiple columns based on a user defined sort order. The columns will be sorted in the numerical order as specified in the text box under each column name. For example, to sort by **Ticket Type** first, and then **Outage Type**, enter the digit “1” in the box under **Ticket Type** and “2” under **Outage Type**, and then click on the **Apply Sorting** button at the top of the window. The results will be displayed in the desired sort order as shown in the example below. It is necessary to delete numbers that are over any columns that are not to be used in a sort. Sorting can be done on any reports where there are text boxes under each column name.

![Sorted Tickets Example](image)

**Opportunity Window**

Outage **Opportunity Window** tool can be used to facilitate scheduling of generator outages to maintain reserves.
User will select unit, outage duration, outage reduction and a start and end window. Tool will then provide availability between dates.

Message displayed in red text if no opportunity window is found for the parameters entered.

Outage date range displayed if opportunity window is found.
**View / Revise Ticket**

In order to view or revise any existing tickets, select the **View/ Revise Ticket** button on the **Generation Tickets Main Menu** to open the **Generator Ticket Selection Form**.
Use the **Apply Filter** button to apply any selected filter criteria. The default filter setting selects all tickets except “Forecasted Planned.” “Forecasted Planning” tickets are omitted in the default filter settings because these tickets can be scheduled up to 3 years in the future, and therefore inclusion would provide excessive results. In order to view “Forecasted Planned” tickets, the user must explicitly select it from the options under **Outage Type** field. The filters can be used in any combination; however, the data displayed will need to meet the criteria selected in order to be included in any filtered search.

Below is an example of results from a default use of the **Apply Filter** button:

![Generator Ticket Selection Form](image)

Click on **Go To Filter** button to return to the previous page for filtering. In order to open a specific ticket, click on the **Ticket ID** field for the desired ticket and this will open the **Generation Ticket (Review/Revise)** form as shown in the example below:

![Generator Ticket (Review/Revise)](image)
The only fields that can be updated are the ones that have a corresponding valid text box next to them. In case of a MW ticket (as shown in the example above), the fields that can be edited are **Company Ticket ID, Description, Company Switch Start and End Date/Time**. The same rules apply for **Company Switch Start/End** as explained earlier in the *Create New Ticket* section. When finished updating the desired fields, select the **Submit** button and a confirmation message will appear as shown in the example on the next page:

![Generator Ticket (Review/Revise)](image)

It is also possible to change the **Est./Ramp Start** and **End Date and Time** and **MW Reduction** by selecting the **Add New Revision** button which opens the **New Revision** form as shown in the example below:

![Generator Ticket (Review/Revise) with New Revision](image)

Enter the **Revised Start and End Date/Time**, which should adhere to the rules as explained earlier for Est. Start and End Date. It is also possible to update the **MW Reduction**; the
corresponding Date /Time when the Reduction should take effect can be provided in the Eff. Date/Time field. When finished updating the desired fields, select the Update button as shown in the example above.

**Note:** When submitting a revision to an Informational ticket, if the revision has a non-zero reduction, ‘Informational’ field will change to ‘No’ but the outage type will remain as ‘Maintenance.’

In order to delete a ticket, select the Cancel Ticket button. A confirmation dialog box will appear enabling ticket cancelation, as shown in the example below:

After clicking “Ok,” the following confirmation message will appear:

The ticket status will now be changed to **Cancelled by Company**. A ticket cannot be canceled if the Ticket Status is **Active**.

**eDART Ticket Status**

- **Submitted:** This is the original status of the ticket upon submittal
- **Approved:**
  - **MW Ticket** – The ticket status is changed to **Approved** by PJM upon review and approval.
- **Reactive Ticket** – The ticket status is changed to **Received by PJM** upon receipt of this type of ticket by PJM PD. The status is displayed as **Approved** on the menu.
- **Active**: The ticket status is changed to **Active** upon input of an actual outage “start” date by PJM.
- **Complete**: The ticket status is changed to **Complete** upon input of an actual outage “end” date by PJM.
- **Denied**:
  - **MW Ticket** – The ticket status is changed to **Denied** by PJM upon review and denial.
  - **Reactive Ticket** – The ticket status cannot be changed to **Denied**.
- **Cancelled by Company**: The ticket status is changed to **Cancelled by Company** if the company initiates cancellation of the ticket. **Note**: A verbal notification to PJM is required if the change affects current or the next operating day.
- **Cancelled by PJM**: The ticket status is changed to **Cancelled by PJM** if PJM initiates cancellation of the ticket. A verbal notification is given to the company.
- **Pending Evaluation**: Tickets can be auto-approved by eDART if they meet certain criteria. Tickets that require manual review and approval are set to **Pending Evaluation**.

**Generator Outage Ticket Reports**

**Submitted Tickets Report**

In order to view a report for Submitted tickets, select the **Submitted Tickets** button on the main menu, and this opens the **Submitted Tickets** report page that displays a list of all the Submitted tickets (except Forecasted Planning).
The user defined sort order (as explained in the “Sorting” section) can also be applied here to sort on multiple columns. In order to filter the results based on search criteria, select the Go To Filter button and this will open the Submitted Ticket Report Filter as shown in the example below:
After specifying the search criteria, click the **Apply Filter** button and this opens the **Submitted Tickets** report with filtered results. *(Note: “Forecasted Planned” tickets will not show up in the filtered search results unless it is specifically selected from the list under Outage Type.)*

In order to open a specific ticket, click on the **Ticket ID** field on the filtered reports page and this will open the **Generation Ticket (Review/ Revise)** form as shown in the example below:

![Generation Ticket (Review/Revise) form](image)

This form is the same as the one described in the **View/ Revise ticket** section. *(Note: This is a MW ticket and the fields will vary based on the ticket type.)* The only addition is a **Revisions** table displayed at the bottom (as shown in the example above) that shows a list of all the revisions that have been added to a ticket.
Revised Tickets Report

In order to view a report for Revised tickets, select the Revised Tickets button on the main menu and this opens the Revisions report that displays a list of all the Revised tickets (except Forecasted Planning).

![Generator Tickets Main Menu]

The user defined sort order (as explained in the “Sorting” section) can also be applied here to sort on multiple columns. In order to filter the results based on search criteria, select the Go To Filter button and this will open the Revisions report filter as shown in the example below:
After specifying the search criteria, click the **Apply Filter** button and this opens the **Revisions Tickets report** with filtered results. *(Note: “Forecasted Planned” tickets will not show up in the filtered search results unless it is specifically selected from the list under Outage Type.)*

In order to open a specific ticket, click on the **Ticket ID** field in the filtered reports page and this will open the **Generation Ticket (Review/ Revise)** form as shown in the example below:
This form is the same as the one described in the View/Revise Ticket section. (Note: This is a MW ticket and the fields will vary based on the ticket type). The only addition is that the Revision table is displayed at the bottom (as shown in the example above) which shows a list of all the revisions that have been applied to this ticket.
Current Tickets Report

In order to view a report for Current tickets, select the Current Tickets button on the main menu and this opens the Current Tickets report that displays a list of all the active tickets (except Forecasted Planning).

![Current Tickets Report](image)

The user defined sort order (as explained in the “Sorting” section) can also be applied here to sort on multiple columns. In order to filter the results based on search criteria, select the Go To Filter button and this will open the Current Ticket Report Filter as shown in the example below:
After specifying the search criteria, click the Apply Filter button and this opens the Current Ticket Report with filtered results. (Note: “Forecasted Planned” tickets will not show up in the filtered search results unless it is specifically selected from the list under Outage Type.)

In order to open a specific ticket, click on the Ticket ID field on the filtered reports page and this will open the Generation Ticket (Review/Revise) form as shown in the example below:

This form is the same as the one described in the View/Revise ticket section for a MW ticket. (Note: This is a MW ticket and the fields will vary based on the ticket type). The only addition is that the Revision table is displayed at the bottom (as shown in the example above) which shows a list of all the revisions that have been applied to this ticket.
Approved / Received Tickets Reports

In order to view a report for Approved/Received tickets, select the **Approved Tickets** button on the main menu and this opens the **Approved Tickets report** that displays a list of all the Approved/Received tickets (except Forecasted Planning).

The user defined sort order (as explained in the “Sorting” section) can also be applied here to sort on multiple columns. In order to filter the results based on search criteria, select the **Go To**
Filter button and this will open the **Approved Ticket Report Filter** as shown in the example below:

![Approved Ticket Report Filter](image)

After specifying search criteria, click the **Apply Filter** button and this opens the **Approved Ticket Report** with filtered results. *(Note: “Forecasted Planned” tickets will not show up in the filtered search results unless it is specifically selected from the list under Outage Type.)*

In order to open a specific ticket, click on the **Ticket ID** field on the filtered reports page and this will open the **Generation Ticket (Review/ Revise)** form as shown in the example below:

![Generation Ticket (Review/Revise)](image)

This form is the same as the one described in the **View/Revise ticket** section for a MW ticket. *(Note: This is a MW ticket and the fields will vary based on the ticket type.)* The only addition is that the **Revision** table is displayed at the bottom (as shown in the example above) which shows a list of all the revisions that have been applied to this ticket.
Future Tickets Report

Future tickets are tickets that are scheduled to start in a later date and may be in any status except Cancelled by Company, Cancelled by PJM or Denied.

In order to view a report for Future tickets, select the Future Tickets button on the main menu and this opens the Future Tickets report that displays a list of all the Future tickets (except Forecasted Planning).
The user defined sort order (as explained in the “Sorting” section) can also be applied here to sort on multiple columns. In order to filter the results based on search criteria, select the Go To Filter button and this will open the Future Ticket Report Filter as shown in the example below:

After specifying the search criteria, click the Apply Filter button and this opens the Future Ticket report with filtered results. (Note: “Forecasted Planned” tickets will not show up in the filtered search results unless it is specifically selected from the list under Outage Type.)

In order to open a specific ticket, click on the Ticket ID field on the filtered reports page and this will open the Generation Ticket (Review/Revise) form as shown in the example below:

This form is the same as the one described in the View/Revise ticket section for a MW ticket.
(Note: This is a MW ticket and the fields will vary based on the ticket type). The only addition is that the Revisions table is displayed at the bottom (as shown in the example above) which shows a list of all the revisions that have been applied to this ticket.

**Approved Not Started Report**

Approved Not Started tickets are tickets that were scheduled to start in an earlier date and may be in an Approved/Received Status.

In order to view a report for Approved Not Started tickets, select the Approved No Start button on the main menu and this opens the Approved Not Started report that displays a list of all the Approved No Start tickets.
The user defined sort order (as explained in the “Sorting” section) can also be applied here to sort on multiple columns. In order to filter the results based on search criteria, select the Go To Filter button and this will open the Approved Not Started Filter as shown in the example below:

After specifying the search criteria, click the Apply Filter button and this opens the Approved Not Started report with filtered results. (Note: “Forecasted Planned” tickets will not show up in the filtered search results unless it is specifically selected from the list under Outage Type.)

In order to open a specific ticket, click on the Ticket ID field on the filtered reports page and this will open the Generation Ticket (Review/Revise) form as shown in the example below:
This form is the same as the one described in the View/Revise ticket section for a MW ticket. (Note: This is a MW ticket and the fields will vary based on the ticket type). The only addition is that the Revisions table is displayed at the bottom (as shown in the example above) which shows a list of all the revisions that have been applied to this ticket.

**Active Beyond Estimated End Date Report**

Active Beyond Estimated End tickets are tickets that were scheduled to end on an earlier date and have an active status.

In order to view a report for Active Beyond End tickets, select the Active Beyond End button on the main menu and this opens the Active Beyond Estimated End Date report that displays a list of all the Active Beyond End tickets.
The user defined sort order (as explained in the “Sorting” section) can also be applied here to sort on multiple columns. In order to filter the results based on search criteria, select the Go To Filter button and this will open the Active Beyond Estimated End Date Filter as shown in the example below:
After specifying the search criteria, click the **Apply Filter** button and this opens the **Active Beyond Estimated End Date** report with filtered results. *(Note: “Forecasted Planned” tickets will not show up in the filtered search results unless it is specifically selected from the list under Outage Type.)*

In order to open a specific ticket, click on the **Ticket ID** field on the filtered reports page and this will open the **Generation Ticket (Review/ Revise)** form as shown in the example below:

This form is the same as the one described in the **View/ Revise ticket** section for a MW ticket. *(Note: This is a MW ticket and the fields will vary based on the ticket type.)* The only addition is that the **Revisions** table is displayed at the bottom (as shown in the example above) which shows a list of all the revisions that have been applied to this ticket.
Recalled Tickets

This button shows a list generator outage tickets that have been recalled by PJM. Outage tickets that are not completed prior to the recall date will be treated as unplanned outages and marked with a “Forced Date”. Tickets in this list includes both active and approved tickets.
Forced Tickets

This button identifies tickets that are treated as forced outages. Forced tickets can either be tickets that were not completed prior to a recall date or it can be from tickets that have not been completed 24 hours after the estimated end date.
## Generator Ticket (Review/Revise)

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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<td>User ID:</td>
<td>[redacted]</td>
</tr>
<tr>
<td>Ticket Number:</td>
<td>797071</td>
</tr>
<tr>
<td>Company:</td>
<td>PJM TEST</td>
</tr>
<tr>
<td>Generation Type:</td>
<td>Geothermal</td>
</tr>
<tr>
<td>Ticket Status:</td>
<td>Active</td>
</tr>
<tr>
<td>Company Ticket ID:</td>
<td>pjm_test_797072</td>
</tr>
<tr>
<td>Unit Name:</td>
<td>TEST UNIT 39</td>
</tr>
<tr>
<td>Est/Ramp Start:</td>
<td>01/13/2016 15:44</td>
</tr>
<tr>
<td>Timestamp:</td>
<td>01/14/2016 15:44</td>
</tr>
<tr>
<td>Est. End:</td>
<td>01/16/2016 19:44</td>
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<tr>
<td>Recall Date:</td>
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</tr>
<tr>
<td>Actual Start:</td>
<td>01/13/2016 15:15</td>
</tr>
<tr>
<td>Actual End:</td>
<td></td>
</tr>
</tbody>
</table>

### Description

pjm_test_797071

### PJM Comments


### MW Ticket Info

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
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</tr>
<tr>
<td>Time</td>
<td></td>
</tr>
<tr>
<td>Ticket Reduction:</td>
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</tr>
<tr>
<td>Installed Cap:</td>
<td>761</td>
</tr>
<tr>
<td>Informational:</td>
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</tr>
<tr>
<td>Cause:</td>
<td>Mill Work</td>
</tr>
<tr>
<td>Outage Type:</td>
<td>Maintenance</td>
</tr>
</tbody>
</table>

Add New Revision  | Submit   | Refresh       | Comments Log | History Log | Files | Main Menu
Ticket History

This button will allow users to search for a summary of historical generator tickets. Filter options will be available when the button is accessed. See Filtering section for detailed instructions on how to filter.
**Peak Period Maintenance Margin**

Peak Period Maintenance (PPM) season is defined as *those weeks containing the 24\textsuperscript{th} through the 36\textsuperscript{th} Wednesdays of a calendar year*. Each such week shall begin on a Monday and end on the following Sunday, except for the week containing the 36\textsuperscript{th} Wednesday, which shall end on the following Friday. The Peak Period Maintenance season is the period during which demand for electricity is highest. PJM seeks to minimize maintenance during the PPM to promote economic efficiency.

On the main menu, the **PPM Margin Start** and **End Dates** for the current or next cycle are displayed under “Summer Peak Period Maintenance Margin Season.” *(Note: During this season, there are limitations on the Maintenance and Forecasted Planned outages).* Based on the results of the margin calculations, a value of 0, N/A or the actual PPM MW value is displayed under the “Current Maintenance Margin” for the Mid-Atlantic and Western Southern region as shown in the example below. This value represents the amount of margin available for scheduling outages for the current day. As long as this value is above the set threshold, it means there is sufficient availability to accommodate outages in which case the current maintenance margin would show up as “N/A.” Once load gets too close to the margin, the actual PPM MW value which represents the remaining available margin is displayed. If the current maintenance margin value is less than the lower limit of the threshold, “0” is displayed.

*Note: The Maintenance Margin is analyzed throughout the year and not just during peak periods.*
**Maintenance Margin Log**

In order to view the margin values for longer durations rather than the current day, click on the **Maint. Margin log** button on the Main Menu and this will open the Maintenance Margin Log window as shown in the example below:

![Maintenance Margin Log Window](image)

It is possible to filter the results based on the Start and End date and the Region. By default, the results for both the Mid-Atlantic and Western Southern region are displayed. Use the **Last 30 days** option to search for the results in the last 30 days. After specifying search criteria and clicking the **Submit Form** button, the filtered results are displayed as shown in the example below:
<table>
<thead>
<tr>
<th>Region</th>
<th>Date</th>
<th>Margin</th>
<th>Timestamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western-Southern</td>
<td>10/08/2015</td>
<td>0</td>
<td>10/02/2015 01:12</td>
</tr>
<tr>
<td>Western-Southern</td>
<td>10/08/2015</td>
<td></td>
<td>10/01/2015 19:12</td>
</tr>
<tr>
<td>Mid-Atlantic</td>
<td>10/08/2015</td>
<td></td>
<td>10/01/2015 19:12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Owners Report**

Some units have joint ownership rights in which case there are multiple capacity owners for that unit. However, only one company will report outages on that unit. The purpose of the Owners Report is to provide access to other companies to view any outages created by the company that has the right to report outages on the unit they jointly own.

Click on the **Owners Report** button on the main menu and this opens the **Generation Owners Report Filter** as shown in the example below:

Once clicked, users will have the option to view and edit current owners maintenance by selecting the **Owners Maintenance** button, search for reports by selecting **Owners Report**, or go back to the Main Menu.

On the Owners Report, use the **Apply Filter** button to create a **Generation Owners Report** filtered for any desired criteria. *(Note: “Forecasted Planned” tickets will not show up in the filtered search results unless it is specifically selected from the list under **Outage Type**.)*
The user defined sort order (as explained in the “Sorting” section) can also be applied here to sort on multiple columns. To modify the search criteria, select the Go To Filter button, which leads back to the Generation Owners Report Filter.

**Owners Report** can also be used to grant read-only access for generator outages to other Generation Owners for select units in eDART. To use this functionality, an authorized representative of the company must complete and submit the eDART Email Group for Generation Owner Report Notification Request Form (https://pjm.com/-/media/etools/edart/generation-owner-report-notification-request-form.ashx?la=en).

Companies who have this set up will have additional functionality under Owners Report available to the company admin and authorized users. Non-authorized users will have read only access to the additional reports.
To grant access under Owners Maintenance, select unit, select company and Submit Form.

To remove access, check Delete as desired and Submit Form.
**BlackStart Test Upload**

BlackStart is a system in which some generators are selected based on location and capabilities and are necessary to re-energize the transmission system following a system-wide blackout. As a result of the importance of having enough BlackStart units available in black-out scenarios, PJM closely monitors outages for BlackStart units.

BlackStart Test Upload functionality allows users to better identify the BlackStart file type and verify successful receipt of the file by PJM. This feature acts as a resolution to the prior issue that it was difficult to verify successful submission of BlackStart files.

Click on the **BlackStart Test Upload** button on the main menu and this will open the **PJM BlackStart Service Upload** as shown in the example below:
Select the type of file from the “Type of File Being Uploaded” drop-down menu. There are two options – “Testing” and “Cost” as shown in the example in the screen below:

Click the Browse button and a Choose File Dialog box opens. Choose an appropriate file to upload and click Open. The file name along with its path gets displayed in the File to Upload textbox.

Click on Submit File and this opens a new file verification window as shown in the example below stating that the upload was successful and displays the following information:

- **User Id:** Displays the user ID of the person who uploaded the file.
- **Type of File:** Lists the file type which is either “Testing” or “Cost.”
- **Name of the File:** Lists the file name.
- **File Size:** Lists the size of the file in bytes.
- **Upload Time:** Lists the date and time the file was submitted to this window.

- **Test Report Form:** Link to the BlackStart Testing forms that can be downloaded,
completed, saved and uploaded in eDART.

- **Generator Cost Data Form:** Link to the BlackStart Generator Cost Data form that can be downloaded, completed, saved and uploaded in eDART.
- **BlackStart Working Group Home Page:** Link to the BlackStart Service Task Force page.

**BlackStart Test Download**

BlackStart Test Download feature allows the user to review previously submitted files by listing all the files that have been submitted and allows the user to download either a single file or multiple files.

Click on **BlackStart Test Download** button and this opens a screen as shown in the example below:
The BlackStart File Download window lists all files submitted by the company the user
represents, along with all the fields as mentioned in the previous section under Blackstart XLS Upload. Files are sorted in descending order of timestamp.

The **From/To** Date filter allows the user to select a timeframe. The default filter is set to 14 months. The default value for **To** field is Today and that for **From** field is (Today – 14 months). Check the **Include** box for each desired file and click the **Download** button. The resulting file will be a .zip file with all desired files.

### D-curve Reports

The D-Curve Reports section shows the D-Curve values for each unit. D-curves are used to identify the necessary levels of reactive power a unit needs. The following is an example of a D-Curve.

![D-Curve Diagram](image)

This process was added to keep all the Generation Owners, Transmission Owners and PJM Dispatch in sync with the reactive capability of the system. Generation owners can review curves for accuracy and EMS (Energy Management System) update. After the company reviews it, they can click **Acknowledge** on D-Curve report.

To access this application, select **Gen. Tickets** and under Generation Reports click on **D-Curve Report**.
In the following window, **Unit Type**, **Unit Name**, and **EMS Equipment Name** are mandatory.

To download the desired reports, select **Download All** and then select a destination for the file. To view the desired reports, click **Submit Form**.

When a Generation or Transmission Owner is asked to review capability curves, a notification message will be posted to the log-in screen labeled, “Application Message.” Generation and Transmission Owners will update D-Curve information in their systems. **D-Curve Report** button will change to **RED** on the Transmission Menu and remain so until company completes the review process by updating the information in their system.
Once the information is entered for all units, the Generation or Transmission Owner can acknowledge the report by clicking the Acknowledge button on the D-Curve Report. The D-Curve Report button will then return to its BLUE color.

This is a report of the reactive capability of the generators in a Generation Owner’s fleet or Transmission Owner’s transmission zone. To get all units, search by either name only or no criteria and click D-Curve Report.

- **Unit Name:** The name given to the unit by the company.
- **Unit Type:** Refers to the kind of generator the unit is. Examples: Steam/Fossil, Nuclear, Hydro.
- **Installed Capacity:** Refers to the amount of MW a unit can put out.
- **Voltage Control Philosophy:** How voltage support is assigned for the unit; Voltage Schedule or Reactive Power Schedule.
- **Metered MVAR Value:** The point/side from which PJM receives telemetry or metering information; Low-side Gross, Low-side Net or High-side Net.
- **Power System Stabilizer:** Indicates whether GO has designated the unit as PSS or not.
- **EMS Equipment Name:** Unit name as displayed in PJM’s EMS.
- **MW Point/MVAR Min/MVAR Max:** Capability of unit to supply (max) or absorb (min) VARS based on MW loading.

D-Curve values are reviewed every year in April and October. In May and November, TOs and GOs will review eDART data and their EMS systems. To ensure accuracy of generator reactive capabilities that may result from planned unit modifications, a critical input to PJM and Transmission Owner security analysis packages,
PJM requires that each Generation Owner/Operator review and confirm their unit reactive capability data via eDART on a bi-annual basis. PJM and the Transmission Owners should then verify accuracy of unit reactive capabilities modeled in their respective EMS systems.

The bi-annual review periods are defined as follows:

- **Pre-Summer Review:** From April 1 through April 30, Generator Owners should review their unit reactive capabilities in eDART. From May 1 through May 31, PJM and Transmission Owners should review and update EMS reactive capabilities based on the updated data in eDART.

- **Pre-Winter Review:** From October 1 through October 31, Generator Owners should review their unit reactive capabilities in eDART. From November 1 through November 30, PJM and Transmission Owners should review and update EMS reactive capabilities based on the updated data in eDART.
GO Survey

PJM Generation Department initiates various surveys (seasonal fuel, winter checklist, contact info, etc.) in eDART. This information is needed for, but not limited to, operational planning and communication purposes. Members can view active and previously completed surveys by clicking the GO Survey button.

The GO Survey button will turn red to inform GOs that a survey must be completed. Note that the GO Survey for Contact Information is always open to allow GOs to update contact information as needed. The GO Survey button will not be red if the only active survey is the contact survey.

Survey start and end dates are provided as well as the number of units that need to answer vs. the number of units answered.
Click on the red **GO Survey** button from the main menu; **Active GO Surveys** are listed on the left hand side.

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Survey Name</th>
<th>Note</th>
<th>Start Date</th>
<th>End Date</th>
<th>Number of Units Total</th>
<th>Number of Units Answered</th>
<th>Files</th>
<th>Upload File</th>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>GO Survey for Fuel</td>
<td>FDN Members should complete this survey.</td>
<td>08/01/2018</td>
<td>05/16/2023</td>
<td>76</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>GO Survey for Contact</td>
<td>FDN Members should complete this survey and keep it updated whenever contact.</td>
<td>06/25/2019</td>
<td>06/01/2019</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Respond to GO Survey**

Click on the **Survey Name** to open the survey. The resulting page will be different depending on the type of survey questions.

**GO Level Questions** are to be answered for the company while **Unit Questions** are to be answered per unit.

For Unit Level Surveys, select **Unit Questions**, select a unit by **TA** (EMS unit information) or by **Commercial Name** and respond to the questions as displayed.
After selecting the unit, click **Continue** to proceed to the unit question list.

Users have the option to save progress on a survey and complete it later by clicking **Save Form**. Note that PJM does not see the survey response until the user submits by clicking **Submit Form**.

Some questions depend on answers to preceding questions and the options to submit or save the survey response will not be available until all questions are displayed.
**View Completed GO Surveys**

Click on the Completed GO Surveys drop down from the GO Survey main menu and select completed survey.

Responses to GO Level Questions will be immediately displayed; click Unit Questions to display responses per unit for the unit level surveys.

Select a unit by TA (EMS unit information) or by Commercial Name then click Continue to proceed to the unit question list.
## GO Survey Unit Level Questions

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Survey Name</th>
<th>Note</th>
<th>Start Date</th>
<th>End Date</th>
<th>Number of Units Total</th>
<th>Number of Units Answered</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GO Survey</td>
<td>Contains the final version of the GO Survey questions.</td>
<td>10/08/2014</td>
<td>11/08/2014</td>
<td>124</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Unit By TA

<table>
<thead>
<tr>
<th>Station</th>
<th>Voltage</th>
<th>Equipment</th>
<th>Type</th>
<th>Commercial Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Unit By Commercial Name

<table>
<thead>
<tr>
<th>Station</th>
<th>Voltage</th>
<th>Equipment</th>
<th>Unit Type</th>
<th>Commercial Name</th>
<th>Latest Update Date</th>
<th>Latest Update User</th>
<th>Answer Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Diesel</td>
<td></td>
<td>03/16/2017 14:36</td>
<td></td>
<td>Submitted</td>
</tr>
</tbody>
</table>

### Generic Unit / Unit Type Questions

<table>
<thead>
<tr>
<th>Index</th>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSS-1T</td>
<td>Does the unit have a power system stabilizer (PSS) installed? If no, select No and skip remaining PSS questions</td>
<td>No</td>
</tr>
<tr>
<td>PSS-2T</td>
<td>Is the PSS in-service during normal operation?</td>
<td>No</td>
</tr>
<tr>
<td>PSS-3T</td>
<td>If no to PSS-2, does the unit intend to put the PSS in-service?</td>
<td>No</td>
</tr>
</tbody>
</table>
Reactive Result Tickets
Generating Facilities within the PJM footprint are required to test the reactive capability of their units. This includes individual units, synchronous condensers, and aggregated generating plants with the following specifications:

- Individual generating units with a gross nameplate rating greater than 20 MVA and directly connected to the Bulk Electric System.
- Generating plants/facilities with a gross aggregate nameplate rating greater than 75 MVA including variable resources such as wind, solar, run of river hydro, etc.
- Synchronous condensers with a gross nameplate rating greater than 20 MVA and directly connected to the Bulk Electric System.
- All generating units providing PJM Black Start Service.

Generator Owners (GO) must test 20% of their units yearly, as a result, 100% of their units over a 66 month period. GOs have 6 months to complete all of their required tests and 30 days after the testing date to submit their results to PJM Reactive Testing.

For additional information, please refer to “Attachment E: PJM Generator and Synchronous Condenser Reactive Capability Testing” of Generator Operational Requirements – PJM Manual M14D.

When logged into eDART, click on the Gen. Tickets button on the left menu to open the Generator Tickets Main Menu. The bottom portion of the menu consists of the Reactive Result Tickets section.
### Generator Tickets Main Menu

**Summer Peak Period Maintenance Margin Season**

Start: 06/12/2017    End: 09/08/2017

Current Maintenance Margin
- Mid-Atlantic: 0
- Western Southern: 0

- **Create New Ticket**
- **View/Revise Ticket**

<table>
<thead>
<tr>
<th>MW</th>
<th>Volt. Reg.</th>
<th>MVAR</th>
<th>Governor</th>
<th>MVAR Test</th>
<th>PSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submitted Tickets</td>
<td>30</td>
<td>2</td>
<td>26</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Revised Tickets</td>
<td>35</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Current Tickets</td>
<td>26</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Approved Tickets</td>
<td>45</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Future Tickets</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Approved No Start</td>
<td>31</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Active Beyond End</td>
<td>26</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Recalled Tickets</strong></td>
<td><strong>2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Reactive Result Tickets**

- **Create Reactive Result Ticket**
- **View Reactive Result Tickets**
- **Company Unit Report**

<table>
<thead>
<tr>
<th>Status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saved</td>
<td>42</td>
</tr>
<tr>
<td>PJM Review</td>
<td>1</td>
</tr>
<tr>
<td>GO Data Required</td>
<td>1</td>
</tr>
<tr>
<td>GO Review</td>
<td>1</td>
</tr>
<tr>
<td>GO No Response</td>
<td>2</td>
</tr>
<tr>
<td>New Default D-Curve Under Review</td>
<td>4</td>
</tr>
<tr>
<td>Awaiting Test Letter</td>
<td>3</td>
</tr>
<tr>
<td>Test Letter Issued</td>
<td>2</td>
</tr>
<tr>
<td>MOD-025 only, no PJM Letter</td>
<td>1</td>
</tr>
</tbody>
</table>
Reactive Result Ticket Process

Creating Reactive Result Tickets

To submit reactive testing results to PJM, click on Create Reactive Result Ticket from the Generator Tickets Main Menu.

![Reactive Result Tickets Table]

<table>
<thead>
<tr>
<th>Status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saved</td>
<td>42</td>
</tr>
<tr>
<td>PJM Review</td>
<td>1</td>
</tr>
<tr>
<td>GO Data Required</td>
<td>1</td>
</tr>
<tr>
<td>GO Review</td>
<td>2</td>
</tr>
<tr>
<td>GO No Response</td>
<td>4</td>
</tr>
<tr>
<td>New Default D-Curve Under Review</td>
<td>3</td>
</tr>
<tr>
<td>Awaiting Test Letter</td>
<td>2</td>
</tr>
<tr>
<td>Test Letter Issued</td>
<td>1</td>
</tr>
<tr>
<td>MOD-025 only, no PJM Letter</td>
<td>1</td>
</tr>
</tbody>
</table>
On the **New Reactive Result Ticket** page, select a **Generation Type** to filter the list of units and select a **Unit**. The **Last Tested** field will be displayed (if available), indicating when the unit was last tested. Click **Continue** to create a ticket for the selection in a status of ‘Saved.’

On the **Reactive Result Ticket**, users will be able to select applicable **Test Types**, link corresponding MVAR test tickets, submit data results, attach additional files and comments:
- **Ticket ID**: System Generated ID from PJM.
- **Company**: User login’s company.
- **Unit**: The selected unit for data submission.
- **Last Tested**: Date indicating when the unit has last officially tested their reactive capability.
- **Ticket Status**: By default, this will show the current status of the ticket. Users can select ‘PJM Review’ and click **Save** to submit the ticket for analysis. Users can also elect to cancel a ticket by selecting ‘Canceled by GO’ and clicking **Save**.
- **Company Ticket ID**: Optional field for the company’s internal application ticket number. The ticket submitter should review their own company policy to see if they should utilize this field.
- **Late**: This field will specify if the ticket has been submitted to PJM after the testing deadline date.
- **GO Comments**: Optional textbox for GO to add any additional comments.
- **Earliest Test Date**: This date will display the earliest test date based on the MVAR Test Ticket selection.
- **Testing Deadline Date**: This date will display the deadline to submit all required tests data to PJM. GOs have a 6 month window to submit all test results.
- **Include**: Users must select all required tests for the unit.
- **Test Type**: A list of tests to submit for evaluation.
- **MVAR Test Ticket**: Users can link MVAR Test tickets by selecting a testing ticket created for the unit in the past 30 days or by entering the ticket number.
- **MVAR Test Date**: This field will populate the **Actual End Date** or the **Estimated End Date** if no actual end date is entered for the MVAR test ticket.
- **Test Data**: Click the **Enter/View Data (No Data)** to open the **Reactive Capability Testing Form**. Once all required fields marked by asterisk (*) are completed, the data can be saved and the user can proceed with the rest of the ticket by clicking **Back to Ticket**.
  
  *Note: Checkboxes on image are for reference only. Users must select telemetry location to the right.*

- **Test Entry Date**: Displays the date when the data was entered and saved. If the data is saved after 30 days from the MVAR test date, a late flag will appear.

- **Additional Files**: Clicking the **Files** link will take the user to a new page to upload supporting files for analysis. Users can add files by browsing the desired file and clicking **Submit File**. Users can also delete files by checking a file and clicking **Delete**.

A list of **Supported File Types** can also be accessed on this page:
- **Save:** Stores changes made to the ticket.
- **History Log:** Users will be able to view a history log of status changes to any Reactive result ticket.

Once all information has been entered and status is saved as ‘PJM Review,’ the ticket will be locked and the **Submission Date** field will appear. PJM will analyze the results and take next actions. Users may request to have one or more tests to be unlocked by contacting the assigned PJM Engineer.
### Reactive Result Ticket

**Ticket ID:** 121  
**Company:** Electric Company  
**Unit:** UNIT 1  
**Last Tested:** 09/26/2015

**Go Comments:**
Attached are additional data for PJM Review.

**PJM Comments:**

---

**Submission Date:** 12/10/2016 10:19  
**Earliest Test Date:** 09/01/2016  
**Testing Deadline Date:** 03/01/2017

<table>
<thead>
<tr>
<th>Editable</th>
<th>Test Type</th>
<th>MVAR Test Ticket</th>
<th>MVAR Test Date</th>
<th>Test Data</th>
<th>Test Entry Date</th>
<th>Additional Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Max Load Lagging</td>
<td>311054</td>
<td>03/01/2016</td>
<td>View Data</td>
<td>12/10/2016</td>
<td>Late</td>
</tr>
<tr>
<td>No</td>
<td>Max Load Leading</td>
<td>311055</td>
<td>12/10/2016</td>
<td>View Data</td>
<td>12/10/2016</td>
<td>Late</td>
</tr>
</tbody>
</table>

---

### Reactive Result Tickets

**Status** | **Total**
---|---
Saved | 1
**PJM Review** | 3
GO Data Required | 0
GO Review | 0
GO No Response | 0
New Default D-Curve Under Review | 1
Awaiting Test Letter | 0
Test Letter Issued | 1
MOD-025 only, no PJM Letter | 0

---

---
GO Data Required

If **Reactive Result Tickets** are incomplete or require additional information for analysis, PJM will set the ticket status to ‘GO Data Required’. In this status, GOs can view initial PJM results which may include a list of issues and additional comments to review. GOs can add/edit the sections that require additional data. Once the ticket has been updated, the ticket status can be set back to ‘PJM Review.’

If no response is received within 30 days, the ticket status will go into ‘GO No Response.’ This will alert the user that urgent action may be required. If there are any tickets in this status, please
review the tickets as soon as possible by clicking on ‘GO No Response’ in the ticket summary bin.

Once the ticket has been fully reviewed by a PJM engineer, GO can review the results under the PJM Analysis Results section. This section includes:
• **Result:** This field will have a basic summary of the test.

• **Issues:** This field includes a list of common issues with the analysis. When PJM identifies an issue, it will be highlighted blue.

• **Additional Comments:** PJM may make additional comments on the test if ‘Other’ Issues is selected.

• **Retest:** This field indicates if the initial submission requires a retest.

• **Result Files:** Click on the Files link to open the Reactive Result Test Ticket PJM Result Files page. GO can select and download the analysis results for review.

When the data has been reviewed, GOs can select ‘Yes’ or ‘No’ to agree or disagree with PJM results. Furthermore, **GO Analysis Comments** and **Next Action** can be filled out or selected. A list of **Next Action** includes:

- **Select New Default D-Curve:** GOs can elect to submit a new default D-Curve if necessary. If this option is selected, a dropdown of MVAR Tickets submitted for the unit will appear. If no MVAR tickets have been submitted yet, please refer to the MVAR (Reactive Power) Ticket section of Generation Tickets on how to submit a new default D-Curve. Ticket status will automatically go ‘New Default D-Curve Under Review’ when the ticket is sent back to ‘PJM Review.’

- **Retest:** GOs have the option to retest a specific or all portion of the ticket. If selected, please identify in the comments which tests needs to be rerun.

- **No Change:** This option can be selected if GO agrees with all PJM analysis results and no next action is needed. Ticket status will automatically go ‘Awaiting Test Letter’ when the ticket is sent back to ‘PJM Review’ if all results are within or excess.

- **PJM Review:** If GO disagrees with any results, users can choose to have further PJM Review.

Once all fields are completed, GOs can send the ticket back to ‘PJM Review.’
New Default D-Curve Under Review

When the ticket is in **New Default D-Curve Under Review**, PJM will review the MVAR ticket submitted and implement the D-Curve in PJM EMS if accepted. Once this step has been completed, the status will go into ‘Awaiting Test Letter.’
Awaiting Test Letter

Once the ticket is in this status, PJM has accepted the test results and all next actions are completed. PJM will upload the test letters for documentation.
Test Letter Issued

When the ticket status is in ‘Test Letter Issued,’ all ticket information and files have been uploaded and saved onto eDART. GOs can open the ticket to retrieve the test letter by clicking the **Download** link on the bottom of the page. GOs can also revisit the ticket for future review.
MOD-025 only, no PJM Letter

GO data submittals for MOD-025-2 only will also be evaluated and scored. If GO chooses not to accept the results, PJM can issue a new status type.
View Reactive Result Tickets

To view the reactive result tickets, click on View Reactive Result Ticket.
Company Unit Report

To view the record of Reactive Testing, click on Company Unit Report.

This opens a filter page.

After choosing all the desired filters, click on Apply Filter to open the Reactive Testing Unit Reports with desired tickets. Last Test Date and Next Test Deadline are displayed. Checking the ‘Include in Reactive Test’ check box and clicking on Submit Form will include that unit in Reactive Test.
### Reactive Testing Unit Report

<table>
<thead>
<tr>
<th>Type</th>
<th>Unit ID</th>
<th>Commercial Name</th>
<th>ICAP</th>
<th>Effective Date</th>
<th>Retired Date</th>
<th>Last Test Date</th>
<th>Next Test Deadline</th>
<th>Include in Reactive Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Cycle CT</td>
<td>708898</td>
<td>JALLEN-MT-CT-001</td>
<td>200</td>
<td>06/26/2014</td>
<td>06/25/2012</td>
<td>07/01/2022</td>
<td>07/01/2022</td>
<td>Yes</td>
</tr>
<tr>
<td>Combined Cycle CT</td>
<td>708899</td>
<td>JALLEN-MT-CT-002</td>
<td>500</td>
<td>06/26/2014</td>
<td>06/25/2012</td>
<td>07/01/2022</td>
<td>07/01/2022</td>
<td>Yes</td>
</tr>
<tr>
<td>Combined Cycle CT</td>
<td>709001</td>
<td>JALLEN-MT-CT-003</td>
<td>200</td>
<td>06/26/2014</td>
<td>06/25/2012</td>
<td>07/01/2022</td>
<td>07/01/2022</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Transmission Outage Tickets

PJM is responsible for coordinating and approving requests for outages of transmission facilities for reliable operation of the Regional Transmission Organization (RTO).

The eDART (electronic Dispatcher Application and Reporting Tool) application provides communications with PJM Transmission Owners and Operators regarding transmission outages for submission and notification. eDART is used in real-time and near-term capacity analysis, along with other tasks. When logged into eDART, click on the Trans. Ticket application.
**Business Rules**

Transmission Owners (TOs) are required to submit Outage Request Tickets in eDART for all outages to PJM in advance of the outage start date. PJM will provide all relevant information required for system studies, such as critical facility status, load, generation, operating reserve projection, and known Interchange Transaction via the North American Electric Reliability Corporation (NERC) System Data Exchange (SDX) secure site. The files are continuously updated on a 15-minute basis (NERC Standard IRO-004-1). PJM staff is required to analyze submitted outages to ensure outages do not violate PJM reliability criteria and market rules.

** Transmission Outage Requests**

- Transmission Owners should submit the tentative dates of all planned transmission outages to PJM via eDART as far in advance as possible and update PJM at least monthly. TOs should include the following information in the notification: Date, time and duration of outage, brief job description, switching times, restoration time (availability) and all affected equipment (including clearance points).

- Transmission outages 5 days or less in length are to be submitted by the 1st day of the month preceding the month of the outage.

  - **1-month rule:** Transmission Owners are required to provide notice of all transmission outages five days or less by the first day of the month preceding the month of the outage.  
    - A 5-day outage starting in June, 2012 must be submitted by 23:59 on April 30, 2012 to be on time.

- For transmission outages exceeding 5 days, the planned outage schedule should be submitted via eDART one year in advance if possible but no later than the 1st of the month 6 months in advance of the requested start date.
  - If the outage is submitted by the 1st of the month, 6 months prior to the start of the outage, the ticket has an “On Time” status. PJM approves all transmission outage submitted “On Time” so long as the reliability of the RTO can be
maintained during the proposed outage. If an outage is on time, PJM will not deny the requested outage based on economics (for example, based on anticipated congestion).

- If the outage is submitted after the 1st of the month 6 months prior to the start of the outage, the ticket has a “Late” status. PJM reserves the authority to require a TO to reschedule a requested outage based on an outage impact analysis for congestion if a ticket is “Late.”

• **6-Month Rule:** “The TO is required to submit all outage requests in excess of 5 days in duration by the 1st of the month six months in advance of the start of the outage.” M03
  
  - If a 6-day outage begins in October, the outage must be submitted by 23:59 on March 31 to be on time.

• Outages scheduled for the following planning year (June 1 – May 31) exceeding 30 days in duration are to be submitted via eDART by February 1 of the current year for use in the annual Financial Transmission Rights auction. For example, outages scheduled to begin between June 1, 2009 and May 31, 2010 should be submitted by February 1, 2009. Estimated start and stop dates are acceptable.

• **30-Day Rule:** “Outages scheduled for the following Planning year (i.e. June 1 – May 31) exceeding 30 days in duration are to be submitted via eDART by February 1 for use in the annual FTR auction unless the 6-month rule is more restrictive.” M03
  
  - An outage greater than 30 days starts in September 2012. It must be submitted by:
    a) 6-month rule: Must be submitted by February 29, 2012 @ 23:59
    b) 30-day rule: Must be submitted by January 31, 2012 @ 23:59
  
  - Since the 30-day rule is more restrictive, (b) is the correct choice. The 30-day rule applies.

• Planned transmission outages are given priority based on the date of submission.
• If the outage is submitted after 8 a.m. 3 days before the start of the outage, the ticket has a “Past Deadline” status. In such a situation, only Emergency or Exception requests (for example, a generator tripped and the TO is taking advantage of the situation) will be considered.

• PJM considers all transmission outages in the following priority order:
  1. Forced or emergency transmission outages.
  3. Transmission outage requests submitted “Late.”

• PJM can cancel or withhold approval of any outage that is expected to result in Emergency Procedures.

• PJM studies and approves all outage requests that are submitted “On Time” and do not jeopardize the reliability of the PJM system.

• When actual or anticipated system conditions change such that, at the discretion of PJM, the rescheduling of a transmission outage is advisable:
  o The TO should consider the impacts of proceeding with the outage as advised by PJM and may either proceed knowing the estimated impacts on the remaining facilities or postpone the outage.
  o If the outage is not postponed, PJM determines and records the appropriate impacts or changes to system limits and takes the steps required to maintain established operating reliability criteria.

• When non-reportable equipment outages at a station occur, which can lead to the simultaneous loss of more than one reportable transmission or generator facility for any single facility malfunction or failure, PJM must be informed.

<table>
<thead>
<tr>
<th>Request Submitted</th>
<th>Ticket Received Status</th>
<th>PJM Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outage &gt; 30 Calendar Days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before February 1 (for the following planning cycle June 1 – May 31) OR by the 1st of the month six months prior to the starting month of the outage (whichever is more restrictive)</td>
<td>“On Time”</td>
<td>The outage will be approved, provided it does not jeopardize system reliability.</td>
</tr>
<tr>
<td>On or after February 1 (for the following planning cycle June 1 – May 31) OR on or after the 1st of the month six months prior to the starting month of the outage (whichever is more restrictive)</td>
<td>“Late”</td>
<td>The outage may be denied if it jeopardizes system reliability or causes congestion requiring off-cost operations.</td>
</tr>
</tbody>
</table>

Emergency Outages

The eDART Energy Management System (EMS) Tripping functionality creates emergency outage tickets in cases of emergency tripping where it may take some time for the TO to assess
the scope of the issue. PJM EMS automatically receives a signal from the TO EMS when there is an outage; eDART creates the ticket and notifies interested TOs and neighboring independent system operators (ISOs) and RTOs. If the facility is mapped in the **NERC Power System Simulator for Engineering** (PSSE) model, the outage is included in the Transmission Outages report sent to NERC SDX with a status of “Forced.” Tickets are created for LINE or XFMR only.

The EMS Tripping bridge runs every 10 minutes to see if an outage ticket exists for specific facility (LINE or XFMR, 115kV and above – with exceptions) that is reported as out of service:

If no ticket is found for the facility (with the exception of cut-in tickets), the EMS Tripping bridge creates a new ticket for the owning TO (or one of the tie-line owners) with the field qualities:

- **Outage Type:** “EMS Tripped.”
- **Start Date/Switch Date:** Current date/time.
- **End Date:** Start Date + 2 hours.
- **Status:** “Active.”
- **Availability:** “Duration.”
- **Emergency:** Checked.
- **Cause:** “Emergency” and “Unknown.”
- **Location/Description of Work:** “EMS Tripping.”
- **Equipment List:** Outaged facility.

If a ticket is found for the facility which is scheduled to start less than or equal to the current date + 12 hours, and the end date is greater than or equal to the current date, and the status is Submitted, Received, Approved, or Revised, the following will occur:

- **Status:** “Active.”
- **PJM Comments:** “This ticket was moved to Active as a result of the EMS checkout application.”
- **End Date:** changed to current date/time + 2 hours.

If an EMS Tripping ticket is found for the facility, in the “Active” status and the **End Date** is in the past, the following will occur:

- **End Date:** changed to current date/time + 2 hours.

If a non-EMS Tripping, “Active” ticket is found for the facility, no action is taken. The TO who owns the facility still must create a replacement outage ticket or update the system generated ticket with full outage details. See the **EMS Trip Update** section for more on EMS Tickets.

The EMS Tripping functionality may not catch automatic re-close outages that last for less than
10 minutes (between run times). In this case, TO may create an **EMS Tripping Auto Re-Close** ticket with the following qualities:

- Outage duration (\( \text{End Date/Time} - \text{Start Date/Time} \)) must be less than 10 minutes.
- **Start Date** and **End Date** must be in the past.
- **Outage Type**: “EMS Tripping.”
- **Emergency**: “Checked."
- **Status**: “Completed” (ticket is completed by eDART system).
Transmission Outage Reporting

Create New Ticket

On the Transmission Outage main menu, click on Create New Outage Ticket to begin a new ticket.

This will bring the user to the New Transmission Ticket Page. Enter outage information as shown below (mandatory fields are highlighted):
Ticket Fields

- The **User** and **Company** are system generated.
- **Company Ticket ID:** This is an optional field for the company’s internal application ticket number.
- **RTEP Queue #:** This is an optional field for the Regional Transmission Expansion Planning (RTEP) project queue number to which the outage is related (if any).
- **Ticket Start, Ticket End:** Enter the proposed ticket start and end dates and times in these fields.
- **Switch Date:** Enter the proposed time for switching in this field.
- **Location/Description of Work:** Enter the location of the main work, brief work description and switching information in this field. Bus outages should be detailed in this field. This field has a limit of 4000 total characters.
- **Information/Hotline Work:** Checking this field would indicate that work is being performed on selected equipment, however, that equipment remains energized. No equipment status can be “O” (Open) if this field is checked.
- **Emergency:** Checking this field would indicate that the outage is/was due to equipment problem or tripping and must be taken ASAP and without giving the proper notice to PJM. If **Emergency** is checked, the “Emergency” **Cause** is also selected.
- **Vegetation Trip:** Checking this field would indicate that the outage includes vegetation work (for example, tree contact).
- **Cut-In:** Checking this field would indicate energizing a new piece of equipment, a reconfigured/reconductored facility, an impedance change to a facility, or the return of a facility that has been out of service for over a year. If **Cut-In** is checked, the “Cut-In” **Cause** is also selected.
- **Direct Billing:** Checking this field would indicate that the TO will pay for the localized generator controlling actions. If checked, late RTEP outage will proceed as scheduled.
- **Direct Billing Decline:** Checking this field would indicate that the TO will not pay for the localized generator controlling actions but the late RTEP outage cannot be rescheduled.
- **Cause:** Select any reasons for the outage. An outage may have multiple causes. To select multiple causes, hold the “CTRL” key and click through any pertinent causes. Click on **Lookup** to view the causes and their descriptions. Only see **Cause Types**.
- **Outage Type:** This field indicates when work will be performed on the equipment. Options include: “Continuous,” “Continuous – No Weekends,” “Daily – Including Weekends,” “Daily – No Weekends,” “Daily – Weekends Only” and “EMS Tripped.”
- **Availability:** This field refers to the haste with which equipment can be placed back in service in an emergency. Options include: “Immediate,” “Duration,” and options up to 72 hours.
- **Type:** Select type of equipment (transmission lines = “LINE,” capacitors = “CAP,” breakers = “BRKR,” transformers = “XFMR,” etc) in this field.
- **Station Name:** In this field, select the name of the station based on type already selected. Only stations which have equipment of the previously selected type will be available to select.
- **Voltage**: In this field, select voltage at selected station.
- **Equipment Name**: In this field, select specific piece of equipment based on type, station and voltage selected.
- **NERC-TADS**: The **NERC-TADS** field is only available for TOs who opted to use eDART to gather information for Transmission Availability Data System (TADS) reporting.
- **Cause Codes for NERC TADS**
  - Planned Outage Cause Code (does not apply to auto re-close tickets).
  - Operational Outage Cause Code (does not apply to auto re-close tickets).
  - Shared Common Structure (only applies to auto re-close tickets).
  - Fault Type (only applies to auto re-close tickets).
  - Outage Initiation Code (only applies to auto re-close tickets).
  - Sustained Cause Code (only applies to auto re-close tickets).
  - Outage Mode Code (only applies to auto re-close tickets).
- **Add to Project**: Select a transmission project in order to add the new ticket to a group of similar tickets.

### Cause Types

The following cause types are available for Transmission tickets.

For the most up to date list of cause types and retired causes, an XML download is available via the Web and Browserless interfaces. For the Browserless interface, type=transmissioncauses.

<table>
<thead>
<tr>
<th>Cause ID</th>
<th>Cause Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>Unknown</td>
<td>Automatic Outage caused by unknown causes.</td>
</tr>
<tr>
<td>-1</td>
<td>Other</td>
<td>Outage for reasons not included in the above list.</td>
</tr>
<tr>
<td>2</td>
<td>Repair/Replace: CB</td>
<td>Planned Outage associated with a replacement of a circuit breaker (CB), including testing of facilities in support.</td>
</tr>
<tr>
<td>5</td>
<td>Maintenance: Disc/Ground Sw</td>
<td>Planned Outage associated with manual or automatic substation equipment utilized in electrical grounding and the protection of other substation equipment, typically Disconnects and Ground Switches.</td>
</tr>
<tr>
<td>7</td>
<td>Repair/Replace: Insulator</td>
<td>Outage for the purpose of repairing or replacing transmission insulators, including testing of facilities in support of repair/replacement.</td>
</tr>
<tr>
<td>9</td>
<td>Construction: Antenna</td>
<td>Planned Outage associated with antenna construction.</td>
</tr>
<tr>
<td>10</td>
<td>Operational: Switching - Takeout or Restore Only</td>
<td>Outage of transmission system equipment during the initial takeout (outage start) or restoration (outage end), for work in proximity to, but not upon said equipment, in order to provide a minimum clearance distance from any energized equipment.</td>
</tr>
<tr>
<td>Cause ID</td>
<td>Cause Name</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>11</td>
<td>Repair/Replace: Conductor</td>
<td>Outage for the purpose of repairing or replacing transmission lines, excluding underground cable (Repair/Replace Cable), including testing of facilities in support of repair/replacement.</td>
</tr>
<tr>
<td>12</td>
<td>Repair/Replace: Storm Damage</td>
<td>Outage associated with damage caused by weather, including lightning.</td>
</tr>
<tr>
<td>13</td>
<td>Maintenance: Gas (SF6)</td>
<td>Outage associated with the replacement of Sulfur Hexafluoride (SF6) in gas insulated substation (GIS) equipment, including testing of facilities in support.</td>
</tr>
<tr>
<td>14</td>
<td>Repair/Replace: Tap Changer</td>
<td>Outage to replace the mechanism utilized to adjust the turns ratio of a transformer, including testing of facilities in support.</td>
</tr>
<tr>
<td>15</td>
<td>Maintenance: Gas/Oil</td>
<td>Outage to facilities for the purpose of replacing/testing gas/oil insulated facilities, excluding Sulfur Hexafluoride (SFG) type.</td>
</tr>
<tr>
<td>16</td>
<td>Testing: Doble</td>
<td>Planned Outage associated with power factor testing on transformers, cables, and other electric equipment.</td>
</tr>
<tr>
<td>17</td>
<td>Safety: Clearance</td>
<td>Outage of transmission system equipment for duration of outage, for work in proximity to, but not upon said equipment, in order to provide a minimum clearance distance from any energized equipment.</td>
</tr>
<tr>
<td>18</td>
<td>Operational: Fire</td>
<td>Operational Outage caused by, or taken to alleviate concerns with, fire or smoke.</td>
</tr>
<tr>
<td>19</td>
<td>Repair/Replace: Cable</td>
<td>Outage associated with the repair of underground (UG) transmission equipment, including testing of facilities in support.</td>
</tr>
<tr>
<td>20</td>
<td>Maintenance: Vegetation</td>
<td>Outage for the purpose of removing vegetation, such as those in support of the NERC FAC-003 standard.</td>
</tr>
<tr>
<td>21</td>
<td>Construction: New Equipment</td>
<td>Planned Outage associated with construction of electric facilities, including testing of facilities in support of construction.</td>
</tr>
<tr>
<td>22</td>
<td>Repair/Replace: Lightning Arrestor</td>
<td>Outage associated with the repair or replacement of a lightning/surge arrester, which protect substation equipment from the over-voltage transients effects induced by lighting and switching events.</td>
</tr>
<tr>
<td>24</td>
<td>Maintenance: Inspection / General Maintenance</td>
<td>Planned Outage associated with maintenance of electric facilities, including testing of facilities in support of maintenance.</td>
</tr>
<tr>
<td>25</td>
<td>Repair/Replace: Hot Spot</td>
<td>Outage taken to repair electrical equipment and prevent catastrophic equipment failure due to overheating.</td>
</tr>
<tr>
<td>26</td>
<td>Maintenance: CB</td>
<td>Planned Outage associated with the maintenance of a circuit breaker, including testing of facilities in support.</td>
</tr>
<tr>
<td>27</td>
<td>Operational: Pre-contingency Switching</td>
<td>Operational Outage taken to keep the transmission system within System Operating Limits, excluding High System Voltage.</td>
</tr>
<tr>
<td>28</td>
<td>External</td>
<td>Outage to facilities outside the PJM Reliability Coordinator Area,</td>
</tr>
<tr>
<td>Cause ID</td>
<td>Cause Name</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Maintenance:</strong></td>
<td><strong>Outage associated with metering or protective relaying equipment. This includes capacitor voltage transformers (CVT or CCVT) and wave traps.</strong></td>
</tr>
<tr>
<td>30</td>
<td><strong>CCVT / Wave Trap</strong></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td><strong>Maintenance: Normally Open</strong></td>
<td><strong>Outage to perform maintenance/repairs/testing on a piece of equipment that is Normally Open, and will remain a Normally Open piece of equipment at the conclusion of the outage.</strong></td>
</tr>
<tr>
<td>32</td>
<td><strong>Operational: Emergency</strong></td>
<td><strong>Operational Outage that are taken for the purpose of avoiding risk to human life, damage to equipment, damage to property, or similar threatening consequences.</strong></td>
</tr>
<tr>
<td>48</td>
<td><strong>Maintenance: Cable</strong></td>
<td><strong>Outage associated with the maintenance of underground (UG) transmission equipment, including testing of facilities in support.</strong></td>
</tr>
<tr>
<td>49</td>
<td><strong>Maintenance: Conductor</strong></td>
<td><strong>Outage associated with the maintenance of transmission lines, excluding underground cable, including testing of facilities in support.</strong></td>
</tr>
<tr>
<td>50</td>
<td><strong>Maintenance: Transformer</strong></td>
<td><strong>Outage associated with the maintenance of a transformer, including testing of facilities in support.</strong></td>
</tr>
<tr>
<td>51</td>
<td><strong>Repair/Replace: Disc/Ground Switch</strong></td>
<td><strong>Outage associated with the repair or replacement of manual or automatic substation equipment utilized in electrical grounding and the protection of other substation equipment, including testing of facilities in support.</strong></td>
</tr>
<tr>
<td>52</td>
<td><strong>Repair/Replace: Transformer</strong></td>
<td><strong>Outage associated with the repair or replacement of a transformer, including testing of facilities in support.</strong></td>
</tr>
<tr>
<td>53</td>
<td><strong>Repair/Replace: Pole/Tower</strong></td>
<td><strong>Outage for the purpose of repairing or replacing transmission support structures (pole-type and lattice/tower-type), including testing of facilities in support.</strong></td>
</tr>
<tr>
<td>54</td>
<td><strong>Safety: Painting Equipment</strong></td>
<td><strong>Planned Outage associated with painting of transmission support structures (pole-type and lattice/tower-type) and/or substation equipment for the purpose of maintenance.</strong></td>
</tr>
<tr>
<td>65</td>
<td><strong>Cut-In</strong></td>
<td><strong>Outage with potential impact to PJM with respect to its EMS model, Monitored Priorities, Ratings, Contingencies, and/or SDX Mapping. Typically combined with another Cause Type.</strong></td>
</tr>
<tr>
<td>67</td>
<td><strong>Relay Maintenance (No impact to primary clearing)</strong></td>
<td><strong>Planned Outage for Protection System equipment maintenance/testing which either does NOT impact the primary clearance, or leaves secondary intact with duplicate performance characteristics to that of the primary, for one or more pieces of equipment.</strong></td>
</tr>
<tr>
<td>68</td>
<td><strong>Relay Maintenance (Impact to primary clearing)</strong></td>
<td><strong>Planned Outage for Protection System equipment maintenance/testing which either removes the primary clearance from service, or alters the performance characteristics of, for one or more pieces of equipment.</strong></td>
</tr>
<tr>
<td>69</td>
<td><strong>Relay</strong></td>
<td><strong>Planned Outage for Protection System equipment replacement</strong></td>
</tr>
</tbody>
</table>

but contained within the PJM EMS model.
<table>
<thead>
<tr>
<th>Cause ID</th>
<th>Cause Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>Relay Replacement (No impact to primary clearing)</td>
<td>Planned Outage for Protection System equipment replacement which either does NOT impact the primary relaying, or leaves secondary intact with duplicate performance characteristics to that of the primary, for one or more pieces of equipment.</td>
</tr>
<tr>
<td>71</td>
<td>NERC Alert</td>
<td>PJM NRITF Rule: Planned Outage on any facility experiencing sag or clearance issues but not deemed to have an imminent public safety issue or emergency condition.</td>
</tr>
<tr>
<td>72</td>
<td>NERC Alert - Emergency</td>
<td>PJM NRITF Rule: Operational Outage on any facility experiencing sag conditions that are determined to pose a risk for an imminent public safety issue or emergency condition.</td>
</tr>
<tr>
<td>73</td>
<td>NERC Alert - Near Term</td>
<td>PJM NRITF Rule: Planned Outage on any facility experiencing sag or clearance issues for field discrepancies where no interim solution is available, where Outage is submitted to PJM 5 business days in advance.</td>
</tr>
<tr>
<td>74</td>
<td>Operational: High System Voltage</td>
<td>Operational Outage taken to maintain the voltage on the transmission system within desired levels (i.e., voltage control) during periods of light load, such as during a Minimum Generation Advisory/Alert/Warning/Event.</td>
</tr>
</tbody>
</table>

**Equipment List**

The Tier level corresponds to each zone of protection around a piece of equipment as defined in the PJM EMS model. For example, the user selects a “primary” piece of equipment. This Primary Equipment is a line, transformer, bus or circuit breaker where most or the entire maintenance job is concentrated. Then a tier level is selected based on the clearance points of this primary equipment. The tier level is used to select what circuit breakers (CB) or disconnect clearances are associated with this primary equipment. The Tier level corresponds to each zone of protection around a piece of equipment as defined in the PJM EMS model and its value, and the list of associated equipment, increases with movement outward from the Primary Equipment.

For example, if **Tier 1** is selected, the first or inner-most clearance points that are defined for the Primary Equipment will be selected and copied into the outage ticket. Selecting **Tier 2** will include all items defined for both **Tier 2** and **Tier 1**. Selecting **Tier 3** will include all items in **Tiers 3, 2 and 1**.
To add equipment in tiers, select the piece of equipment, select the tier level and click the **Generate** button. From there, the user can refine the equipment list. Select “Yes” or “No” in the **Include** column and “O(pen)” or “C(losed)” in the **Status** column.

- **Add Equipment:** Add only the specific equipment selected from the **Type**, **Station Name**, **Voltage** and **Equipment** dropdowns to the Equipment List (tier level is ignored). Each piece of equipment may have different **Start/End** times.
- **Station Equip.:** This button gives the user the option to add equipment from list of equipment at each station. Select a **Station Name** to view station equipment list. Change **Include** to “Yes” for equipment to be added to outage ticket and click the **Submit Form** button.
**Note:** It is only necessary to list CBs or equipment that will change state for takeout/restore if switching will last more than 1 hour.

<table>
<thead>
<tr>
<th>Status</th>
<th>Include</th>
<th>Type</th>
<th>Station Name</th>
<th>Voltage</th>
<th>Equipment Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No</td>
<td>BRKR</td>
<td></td>
<td>115 KV</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No</td>
<td>BRKR</td>
<td></td>
<td>115 KV</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No</td>
<td>BRKR</td>
<td></td>
<td>34 KV</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No</td>
<td>BRKR</td>
<td></td>
<td>34 KV</td>
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</tr>
<tr>
<td>0</td>
<td>No</td>
<td>BRKR</td>
<td></td>
<td>34 KV</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No</td>
<td>BRKR</td>
<td></td>
<td>34 KV</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No</td>
<td>XFMR</td>
<td></td>
<td>115 KV</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No</td>
<td>XFMR</td>
<td></td>
<td>115 KV</td>
<td></td>
</tr>
</tbody>
</table>
Default Status Changes

The Default Status Switch Tracking is a functionality for Transmission Owners to indicate the Default Status of equipment after an outage. It’s an optional field that’s available for all outaged equipment by changing the Resulting Default Status field. Equipment can be added to a Transmission ticket for Default Status change only (equipment is not part of an outage). Primary equipment cannot be Default Status Change Only, meaning the Default Status Change Only field cannot be set to “Yes”. The Default Status is updated in eDART at the Ticket End.

For outaged equipment:

<table>
<thead>
<tr>
<th>Default Status Change Only</th>
<th>Primary Status Include</th>
<th>Type</th>
<th>Station Name</th>
<th>Voltage</th>
<th>Equipment Name</th>
<th>Start Date</th>
<th>Start Hour</th>
<th>End Date</th>
<th>End Hour</th>
<th>Resulting Default Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>133 kV</td>
<td>WFRSH</td>
<td>Yes</td>
<td>No Change</td>
<td>04/01/2016</td>
<td>09:00</td>
<td>05/01/2016</td>
<td>09:00</td>
<td>Open</td>
</tr>
</tbody>
</table>

- “No” for outaged equipment
- Select Default Status “No Change” selected by default

For non-outaged equipment:

<table>
<thead>
<tr>
<th>Default Status Change Only</th>
<th>Primary Status Include</th>
<th>Type</th>
<th>Station Name</th>
<th>Voltage</th>
<th>Equipment Name</th>
<th>Start Date</th>
<th>Start Hour</th>
<th>End Date</th>
<th>End Hour</th>
<th>Resulting Default Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>133 kV</td>
<td>WFRSH</td>
<td>Yes</td>
<td>Closed</td>
<td>04/01/2016</td>
<td>11:11</td>
<td>04/03/2016</td>
<td>11:11</td>
<td>Open</td>
</tr>
</tbody>
</table>

- Select and add equipment
- Set to “Yes”
- Must be Open or Closed

The default status changes are added to the Ticket Print Version and are only visible to the ticket owner (X owner) and PJM.
SVC Outages

Reactive devices such as Static VAR Compensators are Transmission assets but modeled as Gens in the PJM EMS system. The Transmission Owner can work with PJM Outage Coordinators to identify such devices and flag them as SVCs. This will make them available to be selected on transmission tickets.

Tickets created for SVCs cannot include other equipment types as different information is required for them.

To create outage ticket for SVC select GEN from Type drop down

- Enter Min Var and Max Var:
  - Min Var: minimum output available during outage
  - Max Var: maximum output available during outage

- Business rules:
  - For ticket with Open (O) or Open Ended (E) equipment status, Min Var & Max Var must be zero.
  - For ticket with Closed (C) equipment status:
    - Min Var ≤ Max Var.
    - Min Var & Max Var cannot be zero.

Color Legend

On various eDART transmission ticket reports, the list of tickets is color coded in the order of priority outlined in the Color Legend as determined by PJM. For example, an outage ticket that is flagged as having System Impacts (pink) and Congestion Expected (red) will be highlighted
• **Congestion Expected:** PJM has determined that this outage may cause congestion. This is indicated by a red highlight.

• **Conflicts:** This ticket is scheduled at the same time as other tickets, the combination of which has been flagged as potentially causing transmission reliability issues. This is indicated by an orange highlight.

• **EMS Tripped:** This ticket was created due to emergency tripping of LINE or XFMR. This is indicated by a yellow highlight.

• **System Impacts:** If a ticket is flagged as having potential system impacts, the user can open the ticket and click on the **System Impacts** button to read text that describes the potential impact of the outage. This is indicated by a pink highlight.

• **Potentially Incomplete:** Additional information may be needed on ticket. PJM Comments will include a note of additional information required. This is indicated by a purple highlight.

**Filtering**

**Filtering** is a very useful tool to view only information that is relevant to the search the user is performing. This tool can be found on many links on the Transmission Tickets application. For each of the filtering sections none, some, or all of the fields can be filled in by the users in order to filter information. As an example, the **View/Revise Outage Tickets** section is shown below. Also note in the **Ticket Selection Form** that **EMS Tripped** is **not** selected by default.
### Ticket Statuses
Options for this field include “Submitted,” “Received,” “Denied,” “Approved,” “Cancelled by Company,” “PJM Admin Closure,” “Revised,” “Active,” and “Completed.” The user can select one or none of these options from the drop down.

### Ticket Start and End dates
All tickets displayed will have started on or between the specified start dates entered by the user, and ended on or between the end dates entered by the user. See the following example for more information.
In the example above, notice that the Ticket Start Date and Ticket End Date span a wide range of dates. The result for filtering criteria is to return the results in order of Ticket ID starting with the smallest.

In the Historical Outages example below, if the user enters Start and End Dates and leaves the Effective During box unchecked, then only tickets that started or ended on those dates will be visible.
To view tickets from between those dates, check the checkbox under Effective During.
Sorting

Sorting is a simple way to organize filtered results. Once a filter is applied, the tickets will be sorted by **Ticket ID** by default. In some sections of eDART’s Transmission tools suite, it is possible to sort on multiple columns based on user defined sort order. To sort on multiple columns, enter the desired sort order in the textboxes above the column name and click on the **Apply Filter** button. Delete numbers over any columns that should not be included in a sort. This type of sorting can be done whenever there are text boxes above field names. In the **Status Report** example below, the tickets are sorted first by the **Company Ticket ID** and then by the **Station** name.

View / Revise Ticket

In order to view or revise any existing tickets, select the **View/ Revise Ticket** button on the **Transmission Tickets Main Menu** to open the **Ticket Selection Form**.
Select or enter any desired filtering criteria and click on Apply Filter button. If no filtering criteria are used, all outage tickets except EMS Tripped tickets will be displayed. The Review/Revise Tickets page displays the result of the selected filtering criteria.

By default, tickets are sorted in ascending order of the Ticket ID.

Click on a Ticket ID to open up a ticket for reviewing and/or revising. After updating the desired fields, click the Submit Form button.

A ticket may be revised if the ticket has a status of “Submitted” or “Received”. Tickets are “locked” if the status is changed to “Approved” and company would need to notify PJM to make
changes or to unlock the ticket. If ticket is locked, “This ticket has been locked by PJM. Please contact dispatch to have this ticket unlocked!” will be displayed. **Exception:** NERC TADS, RTEP Queue # and Direct Billing information may be updated on locked tickets using the appropriate update forms.

Additional Ticket Fields

- **Potentially Incomplete:** This field indicates if the ticket may need further review. If “Yes,” PJM Comments will include a note of additional information required.
- **At Risk:** This field indicates that there is a high risk of being denied due to the possibly of jeopardizing system reliability.
- **Congestion Expected:** This field indicates that the outage is expected to cause congestion. Localized generator controlling actions may be needed.
- **Submitted On-Time:** This field indicates if the ticket is on-time or late according to business rules. If “No,” a note is displayed in red stating when the ticket should have been submitted in order to be on time.
- **Market Sensitive:** If “Yes,” access to outages for the unit will be restricted. Some
outages are marked as market sensitive due to the potential impact public access would have on the market.

- **Automatic Re-Close**: This field indicates that the outage is an auto re-close outage. The outage type is EMS Tripped and duration is less than 10 minutes.
- **Mitigated**: indicates if existing conflicts have been resolved or not. If N/A, ticket does not have any conflicts. Mitigated reset to ‘No’ if Date and/or Equipment information change in ticket or in any conflicting tickets.
- **Print Version**: This button opens a read only printable version of the ticket with history and date logs.
- **Date Time Log**: This button opens a log of all ticket Start and End Date/Time entries.
- **History Log**: This button opens a log of ticket status changes.
- **Notifications Log**: This button opens a list of other companies notified of the outage.
- **Cancel Ticket**: This button cancels the ticket and changes ticket status to Cancelled by Company. “Active” tickets cannot be cancelled.
- **Duplicate Ticket**: This button creates a new ticket with the same information (new ticket Start/End Date/Time must be entered for new ticket). Useful for daily jobs.
- **View Conflicts**: Displays report of any tickets that are in conflict with the parent ticket.
- **Gen Off Conflicts**: Displays report of any situations where transmission outages cause generators to be offline.
- **Station Equip**: This button gives the user the option to add equipment from list of equipment at each station. Select a Station Name to view station equipment list. Change Include to “Yes” for equipment to be added to outage ticket and click the Submit Form button.
- **Refresh**: This button reloads the ticket’s entry.
- **Gen. Outage Lookup**: This button provides a list of generator outages occurring from the Start Date to the End Date of the transmission outage ticket. Only outages to generators for which TO is an approved viewer will be displayed.
- **Comments Log**: This button opens a log of Location/Description and PJM Comments entries.
- **NERC-TADS Reports**: Opens NERC-TADS Report form for ticket with choices to Display or Download TADS report or return to the ticket. Only available for TOs who opted to use eDART to gather TADS data.
- **Files**: Opens the Transmission Ticket Files window where users can upload files to be attached to outage ticket. List of supported file types also available.
- **Projects**: This button opens a list of projects that the current ticket belongs to as well as a list of projects the ticket can be added to.
- **Modeling Request**: Displays list of Network Model requests this transmission outage ticket is linked to. Button is not displayed if ticket is not linked to any Network Model change request.
- **Show All TERM**: Displays list of TERM tickets this transmission outage ticket is linked to. List is blank if ticket is not linked to any TERM ticket.
**eDART Transmission Ticket Status**

- **Submitted**: The original status of the ticket upon submittal.
- **Received**: Initial review of ticket by PJM Dispatch or OPD (Operations Planning Department) completed.
- **Approved**: Outage request is approved by PJM following detailed analysis.
- **Revised**: Data on a “submitted,” “received” or “approved” ticket has changed. Ticket must be “Received” and “Approved” again.
- **Active**: The ticket status is changed to “Active” upon receipt of verbal notification from company at actual start of outage.
- **Complete**: The ticket status is changed to “Complete” upon receipt of verbal notification from company at actual end of outage.
- **Denied**: Outage request is not approved by PJM. If this occurs, verbal notification is given to the company with the outage request.
- **Cancelled by Company**: Company initiates cancellation of the ticket. A verbal notification to PJM is required if the change affects current or the next operating day.
- **PJM Admin Closure**: PJM initiates cancellation of the ticket. If this occurs, verbal notification is given to the company with the outage request.

**EMS Trip Update**

The **EMS Trip Update** form allows the TO to associate outage cause(s) to the system generated EMS Trip tickets for the purpose of performance compliance data gathering and to give PJM a better understanding of the reason for the outage.

Click the **EMS Trip Update** button on the **Transmission Outage Main Menu** and filter by **Ticket Status** to display list of tickets that can be updated.

*Note: EMS Trip Update button is not visible if there are no EMS Tripped tickets with Unknown cause.*
After applying any necessary EMS Trip Updates, click the **Submit Form** button to complete the task.

- **Ticket Status Filter**: A check box is available for every potential Ticket Status. In this instance, as many checkboxes as desired may be selected. After selecting any desired boxes, click the **Apply Filter** button.
- **Ticket ID**: Each Ticket ID listed is also a hyperlink to open up the ticket for reviewing.
- **Cause**: Select reason for outage from the drop down list.
- **Pre-Contingency Switching**: This field is a checkbox to indicate that the outage was caused by pre-contingency switching. Pre-Contingency switching is switching that occurs to avoid a foreseen problem or cost.

### Gen Outage Lookup

A TO can look up generator outages at stations for which the TO is an approved transmission viewer. Gen Outage Lookup is useful for TOs who may want to take advantage of a generator outage and schedule maintenance outages to non-generation equipment at a generator station during a generation outage.

Click the **Gen Outage Lookup** button on the **Transmission Outage Main Menu** and filter by **Station(s)**, **Start Date** and **End Date** to display the list of generator outages that are scheduled during the entered date range.

Outages scheduled for the selected stations are highlighted in **yellow**. Outages to other stations for which TO is an approved transmission viewer are also displayed. If there is a unit that a
company or TO believe they should be able to view in their transmission zone, please contact address RTGenData@pjm.com along with Attachment J of PJM Manual 14D “Generator – Data Release Matrix” detailing which generator(s) are included in the request.

Future Facilities

The eDART Future Facilities report lists all the TO’s facilities that are flagged as future along with the date they are expected to be modeled in PJM’s EMS.

Click the Future Facilities button on the Transmission Outage Main Menu and filter by Zone and/or PJM EMS Date as desired. The report is limited to 400 rows.
- **Create Cut-In Ticket**: Check this box and enter **Start Date/Time** and **End Date/Time** to create a cut-in ticket for the future equipment. **Description** on ticket will read “Automatically created ticket using Future Facilities Form.”

- **Cut-In Ticket ID**: If a non-cut-in ticket exists for the future equipment, the ticket ID will be listed in the drop down and can be selected. If an available ticket ID is selected, **Cut-In** is checked on the ticket. If a cut-in ticket exists for the future equipment, click the “View” hyperlink to view the ticket.

### Current One Line Diagrams

To view one-line diagrams, click the **Current One Line Diagrams** button from the Transmission Outage Main Menu.

By signing the Model Sharing Non-Disclosure Agreement, users with transmission access in eDART are authorized to view one-line diagrams. Note that users must renew their Model Sharing NDA sign-off monthly.

Select the desired file format (SVG, PDF or Visio), **Company** and **File** (one per station) then click **Download**.

To download diagrams for all stations in PJM, select “PJM_RTO” as the **Company** and the zip file.
To download diagrams for all the stations in a company at one time, select the **Company** and chose the zip file.

### One Line Diagram Download

![One Line Diagram Download](image)

### RTEP Queue Number Update

**RTEP Queue #** and **Direct Billing** information can be updated on a ticket after it has been submitted. The **RTEP Queue # Update** form can be used to update this information on tickets that have been locked by PJM.

### Transmission Outage Main Menu

![Transmission Outage Main Menu](image)

Click the **RTEP Queue # Update** button on the **Transmission Outage Main Menu** and filter by the available criteria on the **RTEP Queue # Update Selection Form**.
Update the **RTEP Queue #, Direct Billing** and **Direct Billing Decline** information as needed and click **Submit Form**.

![RTEP Queue # Update Selection Form](image)

---

**Cause Lookup**

A list of Transmission Outage Cause Types and Definitions can be accessed via the **Cause Lookup** button.
### Transmission Outage Cause Lookup

<table>
<thead>
<tr>
<th>Cause</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction: Antenna</td>
<td>Planned Outage associated with antenna construction.</td>
</tr>
<tr>
<td>Construction: New Equipment</td>
<td>Planned Outage associated with construction of electric facilities, including testing of facilities in support of construction.</td>
</tr>
<tr>
<td>Cut-In</td>
<td>Outage with potential impact to PJM with respect to its EMS model. Monitored Priorities, Ratings, Contingencies, and/or SDX Mapping. Typically combined with another Cause Type.</td>
</tr>
<tr>
<td>Excludable Outage</td>
<td>Outage that is EITHER covered by another outage ticket OR created for the sole purpose of application testing and not an actual facility outage.</td>
</tr>
<tr>
<td>External</td>
<td>Outage to facilities outside the PJM Reliability Coordinator Area, but contained within the PJM EMS model.</td>
</tr>
<tr>
<td>Maintenance: CB</td>
<td>Planned Outage associated with the maintenance of a circuit breaker, including testing of facilities in support.</td>
</tr>
<tr>
<td>Maintenance: CCVT / Wave Trap</td>
<td>Outage associated with metering or protective relaying equipment. This includes capacitor voltage transformers (CVT) and wavetaps.</td>
</tr>
<tr>
<td>Maintenance: Cable</td>
<td>Outage associated with the maintenance of underground (UG) transmission equipment, including testing of facilities in support.</td>
</tr>
<tr>
<td>Maintenance: Conductor</td>
<td>Outage associated with the maintenance of transmission lines, excluding underground cable, including testing of facilities in support.</td>
</tr>
<tr>
<td>Maintenance: Disc/Ground Sw</td>
<td>Planned Outage associated with manual or automatic substation equipment utilized in electrical grounding and the protection of other substation equipment, typically Disconnects and Ground Switches.</td>
</tr>
<tr>
<td>Maintenance: Gas (SF6)</td>
<td>Outage associated with the replacement of Sulfur Hexafluoride (SF6) gas insulated substation (GIS) equipment, including testing of facilities in support.</td>
</tr>
<tr>
<td>Maintenance: Gas/Oil</td>
<td>Outage to facilities for the purpose of replacing/testing gas/oil insulated facilities, excluding Sulfur Hexafluoride (SF6) type.</td>
</tr>
<tr>
<td>Maintenance: Inspection / General Maintenance</td>
<td>Planned Outage associated with maintenance of electric facilities, including testing of facilities in support of maintenance.</td>
</tr>
<tr>
<td>Maintenance: Normally Open</td>
<td>Outage to perform maintenance/repairs/testing on a piece of equipment that is Normally Open, and will remain a Normally Open piece of equipment at the conclusion of the outage.</td>
</tr>
<tr>
<td>Maintenance: Transformer</td>
<td>Outage associated with the maintenance of a transformer, including testing of facilities in support.</td>
</tr>
<tr>
<td>Maintenance: Vegetation</td>
<td>Outage for the purpose of removing vegetation, such as those in support of the NERC FAC-003 standard.</td>
</tr>
<tr>
<td>NERC Alert</td>
<td>PJM NRITF Rule: Planned Outage on any facility experiencing sag or clearance issues but not deemed to have an imminent public safety issue or emergency condition.</td>
</tr>
<tr>
<td>NERC Alert - Emergency</td>
<td>PJM NRITF Rule: Operational Outage on any facility experiencing sag or clearance issues that are determined to pose a risk for an imminent public safety issue or emergency condition.</td>
</tr>
<tr>
<td>NERC Alert - Near Term</td>
<td>PJM NRITF Rule: Planned Outage on any facility experiencing sag or clearance issues for field discrepancies where no interim solution is available, where Outage are submitted to PJM 5 business days in advance.</td>
</tr>
<tr>
<td>Operational: Emergency</td>
<td>Operational Outage that are taken for the purpose of avoiding risk to human life, damage to equipment, damage to property, or similar threatening consequences.</td>
</tr>
<tr>
<td>Operational: Fire</td>
<td>Operational Outage caused by, or taken to alleviate concerns with, fire or smoke.</td>
</tr>
<tr>
<td>Operational: Pre-contingency Switching</td>
<td>Operational Outage taken to keep the transmission system within System Operating Limits, excluding High System Voltage.</td>
</tr>
<tr>
<td>Operational: Switching - Takeout or Restore Only</td>
<td>Outage of transmission system equipment during the initial takeout (outage start) or restoration (outage end), for work in proximity to, but not upon said equipment, in order to provide a minimum clearance distance from any energized equipment.</td>
</tr>
<tr>
<td>Other</td>
<td>Outage for reasons not included in the above list.</td>
</tr>
</tbody>
</table>

| Rule Maintenance / Impact     | Planned Outage for Restrictions System equipment maintenance which affects the primary clearing operation.                                                                                                    |
New Project

The New Project button is used to give TOs and PJM the ability to group transmission outage tickets into Transmission projects. TOs can create, edit, and archive projects as well as add/remove their outage tickets to/from the projects. Tickets from different companies can belong to a project. To add another company’s ticket to your project contact the eDART team at eDartHelp@pjm.com.

To create a new project, click the New Project button in the Transmission Outage Main Menu. Enter a name (50 character limit) and description (4000 character limit) for the project and click Submit Form.

View/Revise Project
The **View/Revise Projects** button is used to edit Transmission projects once they have been created. From the **Transmission Outage Main Menu** click **View/Revise Projects**.

From here, all active projects are displayed by default. To include inactive projects, uncheck the **Active Projects Only** check box.

Projects can also be searched for by project name using the **Project** search box and clicking **Search**.

To edit a project, click the **Project Name**.

Select a **Project Name** to edit both the project name and description, as well as flag a project as active or inactive. TOs can also add and remove tickets to/from a project. To add tickets, click the **Add Tickets** button.
Click **Add Tickets**, filter outage tickets based on relevant criteria and click **Apply Filter** to find tickets to be added to a project.

Tickets can be viewed in more detail by clicking the individual ticket IDs of a ticket. To add a ticket to the project click the check box in the **Add** column for each ticket to be added and click **Submit Form**.

To remove tickets from a project, check the box in the remove column next to the ticket(s) to be removed and click **Submit Form**.
Network Model Link
Network Model Link functionality allows PJM and TOs to link Network Model Requests and Transmission Outage Tickets. This is primarily for Cut-In tickets; however, any Transmission Outage Ticket may be linked as well. This facilitates conversation between modelers, outage schedulers & dispatch staff. This functionality is also available from the Network Model Main Menu – Cut-In Ticket Link button.

Click on Network Model Link to open the Network Model Request/Cut-In Ticket Report. By default, the Transmission Ticket View is displayed and the filters are set to return Cut-In Tickets that are not currently linked to a Network Model Request.

Use the filters to search for desired Transmission Outage Tickets and click Apply Filter.
Check the **No Request Needed** box to indicate that the ticket is not related to any model change requests.

Click **Add** to link a ticket to a model change request.

The **Add Network Model Request** form displays requests for model builds within one year before outage ticket start date and one year past the ticket end date that include any of the stations in the outage tickets. If the desired model change request is not listed, add other model requests by typing in the Request ID. Enter comma separated list to link multiple requests at one time.

![Add Network Model Request Form](image)

Linked modeling request information can be viewed from the transmission ticket via the **Modeling Requests** button.

Note that Cut-In outage tickets cannot be Approved or Activated if no model request linked or ticket not identified as not needing one.

![Network Modeling Requests for Ticket ID 66689](image)

**Transmission Reports**

**Status Report**

To open the **Status Report**, click the **Status Report** button in the Transmission Outage Main Menu under the section **Transmission Reports**.
The default setting in **Status Report** produces a report on currently active tickets. Filtering can be used to produce reports for tickets or notifications with other statuses. Additionally, sorting can be used to select criteria to sort the report results by.

Select a particular **Ticket ID** to view more information on the outage ticket. Status reports can also be filtered to display **Notifications** instead of tickets. It is a list of outage tickets for equipment for which the TO has been granted notification access.

**Transmission Outage Tickets Report**

To access the **Transmission Outage Ticket Report**, click the **Trans. Outage Tickets Report** button in the **Transmission Outage Main Menu** under the section **Transmission Reports**.

On the Transmission Outage Report Selection form, filter outage tickets based on relevant criteria. After selecting the desired criteria, click on the **Apply Filter** button to create a filtered report of tickets.
The resulting report is a detailed view of information in the tickets or notifications.

Tickets Active Tomorrow

To open the **Tickets Active Tomorrow** report, click the **Tickets Active Tomorrow** button in
the Transmission Outage Main Menu under the section Transmission Reports.

This report includes outages that are beginning tomorrow, started earlier but are ongoing as of tomorrow, and ongoing but scheduled to end tomorrow.

**Conflicts**

Outage conflict scenarios have been created to flag outages that when scheduled together, have historically caused unreliable transmission issues. Through this functionality, facilities which potentially should not be outaged at the same time can be flagged for review. There are three types of scenarios:

- **Group Scenario Conflicts**: These are conflicts where only a certain number of facilities in a group (e.g. 1 of 2; or 2 of 3 lines) can be out together.
- **Facility Scenario Conflicts**: These are conflicts where several pieces of equipment (secondary) including generator units cannot be out of service together with one specific piece of equipment (primary).
- **Gen Off Scenario List**: These are conflicts where transmission outages would result in the need for generators to be offline. Once these facilities and units are identified, scenarios are created in eDART. As new transmission tickets are submitted, eDART will check the facilities on the ticket to see if they are part of a conflict scenario. It will then check for any conflicting tickets occurring at the same time. If there are, it will flag the outages as in conflict.
Conflicting Outages
Under the Conflicts section on the Transmission Outage Main Menu, click on the **Conflicting Outages** button to search for conflicts.

Users can use filtering criteria to view specific tickets, or a list of tickets that are in conflict with one another. Ticket conflicts are displayed per scenario.

Select/enter the desired criteria and click **Apply Filter** to view the **Conflicting Outages Report**.
When one of the tickets from the filter is selected, the **View Conflicts** button is highlighted to denote that it is in a Group or Facility Conflict with another ticket(s). The **Gen Off Conflicts** button is highlighted to denote that it has a Gen Off Conflict.
Select View Conflicts to see the ticket(s) which the chosen one is in conflict with. The following image is an example of results.
**Current Mitigated:** indicates if existing conflicts have been resolved or not. If N/A, ticket does not have any conflicts. **Mitigated** reset to ‘No’ if Date and/or Equipment information change in ticket or in any conflicting tickets.

**Current Mitigated Comments:** eDART logs new conflicts as conflict analysis is performed. Comments on conflict resolution can also be entered in this field.

**Load Existing Conflicts:** select ‘No’ to view New Conflicts that may be present if equipment or outage date changes are made to the ticket.

**Note:** TOs can only view generator outage information for units of which their company can view outage data. “Contact PJM for more info.” displayed if TO does not have permission to view unit outage information.

An email is sent from eDART to each TO on the 1st of every month letting them know what conflicts they have in eDART. That email is also sent to the PJM Outage Conflict group email address – outage_conflicts@pjm.com. The attachment is password protected. For issues with the password, users can contact the PJM Outage Conflict group.

Another email is sent from eDART to each TO on the 16th of every month showing the TO’s late outages which start from the first day of the following month and are either greater than 30 days in duration OR less than 30 days in duration and flagged as Congestion Expected. That email is also sent to the PJM Outage Conflict group email address – outage_conflicts@pjm.com. The attachment is password protected. For issues with the password, users can contact the PJM Outage Conflict group.

**Conflicting Identifier Facility List**
Facility Scenarios have a primary facility and a list of other associated facilities. If an outage exists on the primary facility, associated facilities cannot have an outage simultaneously. To view the list of conflicting facilities, click on the **Confl. Identifier Facility List** button.

This will take the user to a filter page where specific conflicting facilities can be searched for.

After selecting any desired criteria, click the **Apply Filter** button to produce a report.

Select a specific scenario **Title** to view more information.
The Review Needed checkbox should only be checked after a member company or PJM has studied the scenario and believes there is an issue. Enter Review Comments stating what changes may be needed.

If during PJM’s 1-month and 6-month outage studies, it is discovered that two tickets are in conflict with one another but after performing the study there does not seem to be an issue, such a scenario needs to be examined further and the Needs Review checkbox is checked. PJM does quarterly reviews of scenarios in greater detail. During that time, a scenario that needs review is looked at by PJM and is either edited or deactivated.

If a modification is made to a scenario (i.e. if the box is checked or additional comments are made), an email is sent to outage_conflicts@pjm.com stating such. Additionally, an alert (increase in Review Needed count) appears in eDART showing that there is a scenario that needs review as seen in the image below.

Conflicting Identifier Group List
Group Scenarios contain a list of facilities, along with a number representing the amount of facilities in the group that can be outaged simultaneously. To view the list of conflicting groups, click on the **ConfId Identifier Group List** button.

This will take the user to a filter page where specific conflicting groups can be searched for.

After selecting any desired criteria, click the **Apply Filter** button to produce a report.

Select a specific scenario **Title** to view more information.
The **Review Needed** checkbox should only be checked after a member company or PJM has studied the scenario and believes there is an issue. Enter **Review Comments** stating what changes may be needed. If a modification is made to a scenario (i.e. if the box is checked or additional comments are made), an email is sent to outage_conflicts@pjm.com stating such.

**Gen Off Scenario List**
Gen Off scenarios identify the minimum number of units (Min Units Out) from a group of units that must be outaged given the outage of an individual transmission facility. To view the list of conflicting groups, click on the **Gen Off Scenario List** button.

This will take the user to a filter page where specific offline generators can be searched for.

After selecting any desired criteria, click the **Apply Filter** button to produce a report.

Select a specific scenario **Title** to view more information.
The **Review Needed** checkbox should only be checked after a member company or PJM has studied the scenario and believes there is an issue. Enter **Review Comments** stating what changes may be needed. If a modification is made to a scenario (i.e. if the box is checked or additional comments are made), an email is sent to outage_conflicts@pjm.com stating such.

**Review Log:** History Log of **Review Needed** value and **Review Comments**. **Review Log** button only visible if **Review Needed** value or **Review Comments** have been changed since creation of the scenario.
Example

• Given:
  – Min units out = 4
  – Units in scenario = Gen Units 1-4
  – All unit outages are full outages.
  – Transmission ticket duration: 10/22-11/22
• Results:
  – Actual Units Out = 2
    • Units 1 & 2 not out entire trans ticket length
NERC-TADS

NERC (North American Electric Reliability Corporation) requires that TOs submit TADS (Transmission Availability Data System) data beginning in January, 2010. eDART has an optional NERC-TADS functionality for TOs to gather TADS data for submission to NERC. NERC also requires TADS reporting for Auto Re-Close tickets, which are user entered EMS Trip tickets for outages lasting less than 10 minutes.

Note: This functionality is not available to all users/members. TOs can opt to be designated as NERC TADS Optional (TADS data does not need to be entered in eDART) or NERC TADS Required (TADS data needs to be entered in eDART). To opt in as either of these roles please contact eDARThelp@pjm.com.

NERC-TADS Report

This displays the TADS data entered on outage tickets for the selected date range. This information can be downloaded, saved and uploaded to the NERC website. Click on the NERC-TADS Report Button from the Transmission Outage Main Menu to access the reports.

Report can also be displayed for entered Ticket ID.

Reports 4.1, 4.2 and 4.3 are reports for auto-reclose outages.

- **Report 4.1:** AC Line Auto-Reclose Outages of 200kv+.
- **Report 4.2:** DC Line Auto-Reclose Outages 200kv+.
- **Report 4.3:** Transformer auto-reclose outages for high side 200kv+.

Reports 6.1, 6.2 and 6.3 are reports for non-automatic outages.

- **Report 6.1:** AC Line Outages 200kv+ Excluding EMS Trip Tickets.
- **Report 6.2:** DC Line Outages 200kv+ Excluding EMS Trip Tickets.
- **Report 6.3:** Transformer Outages for High Side 200kv+ Excluding EMS Trip tickets.
Tickets can be filtered by **Ticket ID** or date range.

- **Display:** Show the **NERC-TADS Report** on the screen.
- **Download:** The report can be saved on a hard drive in Extensible Markup Language (XML) format. The user can log in to the NERC TADS website to post the saved files.

**Report 4.1: AC Circuit Automatic Outages**

Fields include:

- **Outage ID Code:** The eDART Ticket number.
- **Voltage Class:** The voltage range of the outaged equipment.
- **AC Substation Name #1:** The eDART Station Name.
- **To Element Identifier (AC Circuit):** The eDART Equipment Name for AC line.
- **OH or UG:** Whether Overhead (DC Circuit that is not an underground circuit) or Underground (DC Circuit that is either below ground or below water).
- **Start Time:** The date and time that the outage started. It is a combination of Active Log and Equipment Start Date/Time.
- **Outage Duration:** The duration of an outage calculated as Active Log/Equipment End Date – Active Log/Equipment Start Date.
- **Shared Common Structure:** Does this substation share a structure with another substation, “Yes” or “No?”
- **Fault Type:** Describes the fault, if any. An Element Outage can have “No Fault,” ‘Phase-to-Phase (P-P),” “Single phase-to-ground (P-G),” “phase-to-phase-to-ground (P-P-G),” “3P,” “3P-G,” or “unknown.”
- **Initiation Cause Code:** This field describes where an Automatic Outage was initiated on the power system.
• **Sustained Cause Code:** This field contains the Automatic Outage Cause Code that describes the cause that contributed to the longest duration of the outage.

• **Outage Mode Code:** This field describes whether an Automatic Outage is related to other Automatic Outages.

• **Outage Continuation Code:**
  - If “0”: outage begins and ends within reporting year.
  - If “1”: outage begins in reporting year but continues into next reporting year.
  - If “2”: outage started in a previous year.

**Report 4.2:** DC Circuit Automatic Outages

<table>
<thead>
<tr>
<th>Outage ID Code</th>
<th>Voltage Class</th>
<th>AC/DC Terminal Name #1</th>
<th>To Element Identifier (DC Circuit)</th>
<th>Off or On</th>
<th>Start Time</th>
<th>Outage Duration HHHH:MM</th>
<th>Fault Type</th>
<th>Initiation Code</th>
<th>Sustained Cause Code</th>
<th>Outage Continuation Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>210501</td>
<td>250-259 kv</td>
<td>BRANDONSF</td>
<td>B5A-WAGU</td>
<td>OH</td>
<td>11/01/2011 00:12</td>
<td>0:00</td>
<td>Single P-C fault</td>
<td>Element Initiated</td>
<td>Foreign Interference</td>
<td>Common Mode</td>
</tr>
</tbody>
</table>

**Report 4.2 Specific Fields:**

- **AC/DC Terminal Name #1:** The eDART DC Station Name.
- **To Element Identifier (DC Circuit):** The eDART Equipment Name for DC line.

**Report 4.3:** Transformer Automatic Outages

<table>
<thead>
<tr>
<th>Outage ID Code</th>
<th>To Element Identifier (Transformer)</th>
<th>Start Time</th>
<th>Outage Duration HHHH:MM</th>
<th>Fault Type</th>
<th>Initiation Code</th>
<th>Sustained Cause Code</th>
<th>Outage Continuation Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>123456789</td>
<td>GEN XF</td>
<td>11/12/2010 00:00</td>
<td>DDS</td>
<td>No Fault</td>
<td>Element Initiated</td>
<td>Weather</td>
<td>Dependent Mode</td>
</tr>
</tbody>
</table>

**Report 4.3 Specific Fields:**

- **High-Side Voltage Class:** For Transformers, the **Voltage Class** reported will be the high-side voltage, even though the cut-off voltage used in the definition is referenced on the low-side.

**Report 6.1:** AC Circuit Non-Automatic Outages
Report 6.1 Specific Fields:

- **Non-Automatic Outage Type**: Whether “Operational” (Non-Automatic Outage for the purpose of avoiding an emergency or to maintain the system within operational limits and that cannot be deferred) or “Planned” (Non-Automatic Outage with advance notice).

- **Planned Outage Cause Code**: One of the following: “Maintenance and Construction,” “Third-Party Requests” or “Other Planned Outages.”

- **Operational Outage Cause Code**: One of the following: “Emergency,” “System Voltage,” “System Operation” or “Other.”

Report 6.2: DC Circuit Non-Automatic Outages

Report 6.3: Transformer Non-Automatic Outages

Report 6.3 Specific Fields:

- **Located at (AC Sub. Name)**: the eDART Station Name.
**Ticket Update**

If a TO is designated as NERC TADS optional, a company user can either enter/update TADS information when creating a ticket or revise an unlocked ticket by using the **NERC-TADS Ticket Update** form which can be accessed from the Ticket Update button.

![NERC-TADS Interface](image)

The **NERC-TADS Ticket Update** can be used whether the ticket is locked or not. For the **NERC-TADS Ticket Update** page, filtering is available by **Ticket Status**, **Ticket ID/Company ID** and date range.

![Filtering Page](image)

The update can be submitted from the filtering page, or by selecting a specific Ticket ID and updating that ticket.

- **Planned Outage Cause**: One of the following: “N/A,” “Third Party Request,” “Other Planned Outage,” or “Maintenance and Construction.”
- **Operational Outage Cause**: One of the following: “N/A,” “System Voltage,” “System Operation,” “Other,” and “Emergency.”
Ticket Date Exception

The **NERC-TADS Ticket Date Exception** form displays tickets with equipment that have different start or end times from the ticket start and end times. Filtering is available by **Ticket Status**, **Ticket ID**, and date range. To access this report, click on the **Ticket Date Exception** button from the **Transmission Tickets Main Menu**.

NERC TADs data may not be required for all tickets as it serves as additional information and updates may not be needed on all tickets displayed.
Click on a **Ticket ID** to open a ticket and update the TADS data.
Transformer Selection

All transformers where the low-side voltages of 200 kV or higher are TADS reportable. However, the TO can select other transformers to be reported. The list of transformers must be filtered by Station Name and/or Effective Date. Voltage class information for transformers less than 200kV will not be displayed on the reports. To access this list, click on the Transformer Selection button from the Transmission Tickets Main Menu.

Once clicked, the user will be able to select the equipment that are NERC-TADS reportable.

- **Effective Date**: The date that the facility was added to the transformer model in eDART.
- **Terminate Date**: The date that the facility was removed from the transformer model in PJM’s EMS. (Transformers highlighted in yellow have been terminated/retired).
- **NERC-TADS Reportable**: Check this for transformers that should be included in the NERC TADS 4.3 and 6.3 reports.

**Generation Reports**

**Generation Acknowledgment Required**

To reach the **Generation Acknowledgment Required** report, click the **Generation Ack. Required** button in the **Transmission Outage Main Menu** under the section **Generation Reports**.

This will bring the user to a list of required acknowledgments. From here, transmission owners can determine the acknowledgement for each ticket in the list.

- **Ack.**: The user can check this box for tickets and click on the **Acknowledge** button to acknowledge selected tickets.
- **Ticket ID**: This refers to the ticket identification number given to a ticket in the PJM eDART system.
- **Ticket Status**: The status of the generator outage ticket.
- **Company**: The entity that owns the generator.
- **Unit Name**: The name given to a generation unit by a company.
- **Reduct.**: The total megawatt reduction of an outage.
- **Est. Start**: The estimated start of equipment outage.
- **Est. End**: The estimated end of equipment outage.
Owners Report

To open the Owners Report section, click the Owners Report button in the Transmission Outage Main Menu under the section Generation Reports.

The purpose of the Owners Report is to provide access to other companies to view any outages created by the company that has the right to report outages on the facility they jointly own.

The Owners Report displays generator outage tickets for generators in the TO’s transmission zone, or for which the TO is an approved viewer. To view the Owner’s Report, select any desired filtering criteria and click the Apply Filter button.
Fields include: *(Note The fields displayed may vary depending on the gen. outage ticket type. See the Gen. Outage Ticket sections of the eDART Users Guide for more information.)*

- **Ticket ID:** This refers to the ticket identification number given to a ticket in the PJM eDART system.
- **Comp. Ticket ID:** This refers to the ticket identification number given to a ticket by a company’s own internal identification system.
- **Unit Type:** The generation method of a unit.
- **Outage Type:** Outage types include “Planned,” “Maintenance” or “Unplanned.”
- **Unit Name:** The name given to an individual unit.
- **ICAP:** This field refers to the Installed Capacity of the unit.
- **Reduction:** This field refers to scheduled reduction in capacity in the ticket.
- **Est. Start/End:** The estimated start/end of outage.
- **Actual Start/End:** The actual start/end of outage.
- **Cause:** The circumstances leading to or requiring an outage.
- **Submitted/Approved Timestamp:** The official times for the submittal and approval of an outage.
- **Status:** The status of an outage ticket, including “Complete,” “Active” and others.
- **Blackstart/Blackstart in Service Date:** Indicates if unit is a Blackstart unit and if so, the unit’s blackstart in-service date.
- **Critical Load/Non-Critical Load:** Indicates whether unit is Critical Load unit or not.
- **BS Terminate Date:** Date unit is no longer a blackstart unit.
- **Est. Retirement Date:** Estimated retirement date of unit.

Select a **Ticket ID** and more detailed information about the specified ticket will appear. To acknowledge the ticket, click the **Acknowledge** button.

---

**D-Curve Report**

To open the **D-Curve Report**, click the **D-Curve Report** button in the **Transmission Outage Main Menu** under the section **Generation Reports**.
This shows the D-Curve for each unit. This process was added to keep all the Generation Operators, Transmission Operators and PJM Dispatch in sync with the reactive capability of the system. Transmission Owners can review curves for accuracy and EMS update. After the company reviews it, they can click the **Acknowledge** button on D-Curve report.

To save a D-Curve information file, select **Download All** and then select a destination for the file. To view the records, click **Submit Form**.

When a Transmission Operator is asked to review capability curves, a notification message will be posted to the log-in screen labeled “Application Message.”
Generation Operators will update the D-Curve information in their systems. The D-Curve Report button will change to RED on the Transmission Menu and remain so until company completes the review process by acknowledging the information in their system.

Once the information is entered for all units, the Transmission Operator can acknowledge the report by clicking the Acknowledge button on the D-Curve Report. The D-Curve Report button will then return to its BLUE color.

The D-Curve Report is a report of the reactive capability of the generators in TO’s transmission zone. The user can execute a search by only name or no criteria to get all units. To produce the report, click the D-Curve Report button.

- **Unit Name:** The name given to the unit by the company.
- **Unit Type:** This refers to the kind of generator the unit is. Examples include: “Steam/Fossil,” “Nuclear,” “Hydro” and more.
- **Installed Capacity:** This field refers to the amount of MW a unit can put out.
- **Voltage Control Philosophy:** This field describes how voltage support is assigned for
the unit; either “Voltage Schedule” or “Reactive Power Schedule.”

- **Metered MVAR Value:** The point/side from which PJM receives telemetry or metering information; one of the following: “Low-side Gross,” “Low-side Net” or “High-side Net.”
- **Power System Stabilizer:** This field indicates whether the TO has designated the unit as having a Power System Stabilizer (PSS) or not.
- **EMS Equipment Name:** The unit name as displayed in PJM’s EMS.
- **MW Point/MVAR Min/MVAR Max:** The capability of unit to supply or absorb VARS based on MW loading.

D-Curve values are reviewed every year in April and October. In May and November, TOs and PJM will review eDART data and update their EMS systems.

**Notification Reports**

**Transmission Acknowledgment Required**

To open the Transmission Acknowledgment Required report, click the Trans. Ack. Required button in the Transmission Outage Main Menu under the section Notification Reports.

This will bring the user to a list of required acknowledgments. From here, transmission owners can determine the acknowledgement for each ticket in the list.
- **Ack.**: The user can check this box for tickets and click on the Acknowledge to acknowledge selected tickets.
- **Ticket ID**: Click on Ticket ID to view ticket.
- View and acknowledge tickets from other companies.
Ticket/Notification Counter

This section displays the number of tickets/notifications that are in each status currently. In the example displayed below, there are 18 tickets and 2 outage notifications in the Submitted status category. Tickets listed as Incomplete are flagged as Potentially Incomplete. These tickets also count toward the total number of submitted tickets.

Notifications Report

To open the Notifications Report section, click the Notifications Report button in the Transmission Outage Main Menu under the section Notification Reports.
Choose the **Zone** and **Station Name** in the **Company Notification Report Filter** to get a list of equipment within the Zone and Station that the company has requested notification on. Notifications are sent on outages for the listed equipment.

- **Notification Type:**
  - If “X”: The TO owns the facility.
  - If “Y”: The TO receives notification on outages scheduled for the facility.
- **Remove From List:** Select “Yes” and click the **Submit Form** button to remove equipment from the notification list.

**Notifications Request Form**

To open the **Notifications Request Form**, click the **Notifications Request Form** button in the **Transmission Outage Main Menu** under the section **Notification Reports**.

Using the **Notifications Request Form**, those with permission can modify the list of users.
receiving notifications for a company. To request notification adjustment for a company’s facilities, the user must have formal permission via the company’s SOS-T representative. The representative must email eDART Equipment Notification (eDartEquipmentNotification@pjm.com) stating their approval.

Facility Outages Reports

These reports allow the user to view the eDART current, future, historical and EMS Trip outages. The EMS Trip outages are also reported in the PJM Open Access Same-Time Information System (OASIS). For more information on OASIS, go to http://www.pjm.com/markets-and-operations/etools/oasis.aspx.

Current & Future

To view a report of non-market sensitive current and future transmission outages in eDART, click the Current & Future button in the Transmission Outage Main Menu under the section Facility Outages Reports and search for reports using the filter criteria in the Current & Future Outages Filter window.
By default, all **Cause** types are selected. Users can select one or more Cause types by holding down the “Shift” key and selecting other Cause types.

User must select a Company and a Zone or enter a Ticket ID. After filling out other desired criteria, select **Submit Form** and a list similar to the one below will appear.

**Historical**

To open the **Historical** outages report, click the **Historical** button in the **Transmission Outage Main Menu** under the section **Facility Outages Reports**.

The Historical report is a report of past tickets in the status of “Complete.”
Submit Form: View a report based on any selected criteria.
Download: Download the report in Extensible Markup Language (XML).

Tickets are sorted by start date.

EMS Outage List

The EMS outage list is a report of facilities in outage posted in OASIS every 15 minutes.

To open the EMS Outage List report, click the EMS Outage List button in the Transmission Outage Main Menu under the section Facility Outage Reports.
Tickets can be sorted by Voltage or Type. All tickets for the specified information will appear in order of Station Name.

Ticket ID # of “0” indicates the outaged equipment is not in any current active eDART tickets entered by PJM TOs.

Note: eDART will create automatic tickets for outage lines and transformers as described in the EMS Trip Section.

![EMS Outage List as of: 01/17/2017 09:21](image)
XML and Browserless Functionality

eDART has three member facing interfaces as shown in the image below. Members can link their in-house applications to eDART via the Browserless XML interface.
XML Documentation Page


This leads to the page below. The eDART page can also be reached by visiting http://www.pjm.com/markets-and-operations/etools/edart.aspx.
**Browserless Zip File** – Zip File containing everything needed for most eSuite tools’ browserless functionality.

**XML Data Dictionary** – Reference guide for all tags in eDART XML documents.

**IRC Browserless Guide** – A guide explaining how to perform browserless IRC uploads and downloads.

**Filetransfer-15.3.0** – A .zip file containing the latest filetransfer.jar that is required in order to execute browserless uploads and downloads.

**eDART REST API Guide** – A guide explaining how to use the eDART browserless API through REST-like http calls directly to the server URLs.

**eDART REST-15.4.0 jar with Dependencies** – A .zip file containing the latest edartrest.jar that is required in order to execute REST mode for browserless functions.

**eDART REST-15.4.0 Client Sources** – Contains client sources for eDART REST API.
Schema Diagrams - Pictorial representation of elements (Tag).

Schema Documentation - details the property of each element in the schema.

XSD - XML Schema diagrams for each upload/download.

Examples – Several XML Upload and Download example files are available for reference. Below is a sample entry from the Data Dictionary: the reference guide for all tags in eDART XML.
<table>
<thead>
<tr>
<th>C</th>
<th>D</th>
<th>Programming Comments</th>
</tr>
</thead>
</table>
|    | Yes                      | `<xml version="1.0" encoding="UTF-8"?>
<edart xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
  xsi:noNamespaceSchemaLocation="transcreate.xsd">` |
|    | Yes                      | Subelement of edart. Multiple tickets can be submitted at one time. If there are multiple tickets each ticket must be seperated by this tag. |
|    | No                       | Subelement of newtranstic.                                                            |
| varchar2 (see schema) | No                       | Subelement of newtranstic.                                                            |
|    | Yes                      | Subelement of newtranstic.                                                            |
|    | Yes                      | Subelement of interval_definition.                                                    |
| yyyy-mm-dd | Yes                      | Subelement of interval_start. Date format is yyyy-dd-mm                                |
| 24hr:mm:ss | Yes                      | Subelement of interval_start. Time format is 24hr:mm:ss. Time is in EPT (Eastern Prevailing Time) |
| yyyy-mm-dd | Yes                      | Subelement of interval_definition.                                                    |
| yyyy-mm-dd | Yes                      | Subelement of interval_end. Date format is yyyy-dd-mm                                  |
| 24hr:mm:ss | Yes                      | Subelement of interval_end. Time format is 24hr:mm:ss. Time is in EPT (Eastern Prevailing Time) |
| Boolean (True/False) | No                       | Attribute of ticket_type. Submit either "false" or "true"                              |
| Boolean (True/False) | No                       | Attribute of ticket_type. Submit either "false" or "true"                              |
| Boolean (True/False) | No                       | Attribute of ticket_type. Submit either "false" or "true"                              |
Following is an example for a new transmission outage ticket (transticcreate.xml).

```xml
<?xml version="1.0" encoding="UTF-8" ?>
  <newtranstic>
    <company_ticket_id>foxbar3e</company_ticket_id>
    <interval_definition>
      <interval_start>
        <date>2018-07-03</date>
        <time>22:00:00</time>
      </interval_start>
      <interval_end>
        <date>2018-07-04</date>
        <time>22:00:00</time>
      </interval_end>
    </interval_definition>
    <outage_type>Continuous</outage_type>
    <ticket_type_info/>
    <description>Yearly maintenance work</description>
    <availability>Immediate</availability>
    <equipment_status>0</equipment_status>
    <ta_id>99999</ta_id>
  </newtranstic>
</edart>
```

- **Company Ticket ID** - The company can fill out this section for internal records.
- **Interval** - Add the start and end date here.
- **Outage and equipment details** - Multiple equipment tags can be included.
- **Switch date for the ticket** - The start and end date of the equipment that was added.
- **Cause of the outage** - Multiple cause tags can be included.
A Schema Diagram is a pictorial view of the elements that are included in the specific XML file:

All these elements can be accessed by the user and used to create the desired ticket/report submission via an XML file.
Schema Documentation details the property of each element in the schema.

Elements are shown with detailed explanation.

At the beginning of the documentation the user can view all the elements that are used in the schema.

Click the element name to see more details about the element.
eDART XML File Upload

XML (Extensible Markup Language) Upload functionality allows users to submit information to eDART via uploaded files. Files can be uploaded to do the following:

- Create, Review and Revise Generation, Transmission and TERM outage tickets.
- Insert, Update and Delete PSSE (Power System Simulator for Engineering) mappings in NERC Data (North American Electric Reliability Corporation).
- Give information for TERM (Transmission Equipment Ratings Monitor) and provide other functionalities.

Only users with Generation or Transmission Read and Write access will be able to upload files to eDART.

After logging into eDART, select the Upload button.

Click Browse to locate the file to be uploaded. After selecting a file for upload, click Push here to submit file. A confirmation page will be displayed once the upload is successful. If an upload is unsuccessful, an error message will appear.
eDART XML File Download

XML Download allows users to download various tickets, ratings, facilities list, reports and other information in XML format.

After logging in to eDART, select the **Download** button from the left menu. Next, select a **Download Type** from the dropdown menu by clicking on the arrow on the right.

By selecting desired download type, one can download specific information as required.

Once a category has been selected, select preferences from the fields generated for the specific file type, then either download or view the file. To download and save the file, check the box next to the field **Save as a File** in the **Download** box.
An example of the download options available to users is the **Equipment Information** file. The checkboxes allow for more information to be provided in the XML file. Checking “Include ‘Y’ notification equipment” will also include equipment for which ratings cannot be changed.

One of the TERM XML download options available to users is the **Equipment Report** file, containing various ratings information on equipment. Checking “Include ‘Y’ notification equipment” includes equipment for which ratings cannot be changed.
One of the TERM XML download options available to users is the Ticket Attachments file. A list menu displays all TERM tickets with attachments of any kind. Downloading and opening the file provides the XML-encrypted version of attached files on the selected ticket.

The Limitation Report file is a reference guide for limitation IDs and their corresponding limitation codes that users need to upload a bulk TERM ratings file.
The **RXB Adjustment Report** provides all R, X, and B values that have been adjusted on any equipment, over the specified date range. Date fields are presented on the download screen.

The **TERM Reason Report** file is a reference guide for “Reasons for Change” that are needed on each TERM ticket when doing an XML upload ticket.
Users can download individual TERM tickets from the TERM Ticket file screen. There are two radio buttons: Revise and Review. “Revise” provides less detail on the ticket since it is made for a quick re-upload. “Review” has more detail, and can include attachment information if the checkbox is marked.
Users can download all TERM tickets within a specified date range from the TERM Ticket file screen using the date fields provided. There are two radio buttons: Revise and Review. “Revise” provides less detail on the ticket since it is made for a quick re-upload. “Review” has more detail, and can include attachment information if the checkbox is marked.
Browserless Upload Example

This example will show how to perform a Browserless upload of a Generation Ticket. Users must unzip and save the contents of the “Browserless XML Upload/Download Zip file” which can be found here: [http://pjm.com/pub/etools/edart/xmldocs/xmldoc.html](http://pjm.com/pub/etools/edart/xmldocs/xmldoc.html).

<table>
<thead>
<tr>
<th>Description</th>
<th>File Name</th>
<th>Modification Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>XML data dictionary</td>
<td>edartxmldataictionary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRC Browserless Guide</td>
<td>New IRC Browserless (PDF)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>filetransfer-15.3.0.jar</td>
<td>filetransfer-15.3.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eDART REST API Guide</td>
<td>REST API Guide (PDF)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eDART REST-15.4.0 jar with Dependencies</td>
<td>eDART REST-15.4.0 Sources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eDART REST-15.4.0 Client Sources</td>
<td>eDART REST-15.4.0 Sources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Not all files saved are related to eDART Browserless interface. The Microsoft Word document that is downloaded is called “browserless_file_transfer update 7.0.doc” and it contains all of the information needed to use any of the files contained in the zip file.

Once the files have been saved to a location on the user’s computer, right click the file “edartup.bat” and select “Edit.”
This will open the text file with editable code.

```bash
echo off
java -jar filetransfer.jar debug=true username=name password=XXXXX app=edart action=upload source=source/source.xml result=result/resultgentic.xml pause
```
The user must add a parameter to the code that states to which environment the ticket should be uploaded. Add the line “sandbox=true” to upload in the Training environment. To upload a ticket in the Production environment, enter “sandbox=false” or remove the statement. The beginning of the code should look similar to the following (Note: A space is required between each statement. A new line is not required; this is used as a visual aid. If the user supplies a new line, the parameter from this point on will be ignored.).

```bash
echo off
java -jar filetransfer-15.3.0.jar
debug=true
username=foo (insert the eDART issued username)
password=bar (insert the password for the corresponding username)
app=edart
action=upload
source=c:/source/source.xml (location of file to be uploaded)
result= c:/result/result.xml (location of returned eDART reply. If result file not designated, result will be saved as ‘result.xml’ in current directory.)
```

Save the changes made to edartup.bat. Ensure that the “filetransfer-15.3.0.jar is saved to the same location as the other files; this is necessary to run the file properly.

Next, execute the “edartup.bat” file by double-clicking the file.

This is a general overview, for more specific information on code statements please refer to the “browserless_file_transfer update 7.0.doc” which is included in the zip file initially downloaded.
**Browserless Download Example**

This example will show how to perform a Browserless download of a Generation or Transmission Ticket. Users must unzip the “Browserless XML Upload/Download Zip file” which can be found here: [http://pjm.com/pub/etools/edart/xmldocs/xmldoc.html](http://pjm.com/pub/etools/edart/xmldocs/xmldoc.html).

Not all files saved are related to eDART Browserless interface. The Microsoft Word document that is downloaded is called “browserless_file_transfer update 7.0.doc” and it contains all of the information needed to use any of files contained in the zip file.

Once the files have been saved to a computer, right click the file “edartdown.bat” and select Edit.”
This will open the text file with editable code. The user must add a parameter to the code that states to which environment the ticket should be downloaded. Add the line “sandbox=true” to download in the Training environment. To download a ticket in the Production environment, enter “sandbox=false” or remove the statement.

```
java -jar filetransfer.jar username=userid password=XXXX type=transmission app=edart action=download incdates=false id=123456 result=result/trans3c.xml
pause
```
The beginning of the code should look similar to the following: *(Note: A space is required between each statement. A new line is not required; this is used as visual aid. If the user supplies a new line, the parameter from this point on will be ignored.)*.

```bash
echo java -jar filetransfer-15.3.0.jar
username= (insert the eDART issued username)
password= (insert the password for the corresponding username)
type =transmission (chose generation or transmission)
incdates=false (designates whether to include date logs. If not entered, defaults to false.)
transtype=review (this line can be removed if other download types are chosen. Alternatively, the phrase can be transtype=revise)
app=edart
action=download
id=123456 (an existing ticket id)
result=c:/result/result.xml (where the user wishes to save the results)
```

Save the changes made to edartdown.bat. Ensure that the “filetransfer-15.3.0.jar” file is saved to the same location as the other files; this is necessary to run the file properly.

Once the code is accurate, execute the “edartdown.bat” file and the ticket is downloaded to the location the user specified.

This is a general overview, for more specific information on code statements and other parameters and download types please refer to the “browserless_file_transfer update 7.0.doc” which is included in the zip file initially downloaded.
Network Model

General

The PJM Energy Management System (EMS) Model is kept current through regularly scheduled updates based upon information recorded in eDART’s Network Model Application. As described in Manual 03A Energy Management System Model Updates and Quality Assurance, PJM routinely performs a “Summer” and a “Winter” EMS Model Build. The “Summer” build occurs just prior to the summer peak load period (late May) and should include any new projects which impact the model through the following December. The “Winter” build occurs just prior to the winter peak load period (mid December) and should include any new projects which impact the model through the end of May of the following year.

In addition to the “Summer” and “Winter” builds, “Spring” and “Fall” builds are scheduled. These builds provide an opportunity for Transmission Owners (TOs) to review how PJM modeled their planned changes and also permits PJM staff time to adjust external models.

Select ‘Model Build Schedule’ from the list of PDF to view the build schedule from PJM at: http://www.pjm.com/committees-and-groups/subcommittees/dms.aspx

The eDART Network Model application, a ‘front-end’ tool, is used to gather information about upcoming electric grid modifications. These modifications may include construction of new substations and lines, or modifications to existing substations in the model. Projects (also known as Network Model Change Requests) submitted to Network Model do not directly modify or update the EMS model.

Projects in Network Model are broadly categorized as either Transmission or Generation projects. Transmission Owners (TOs) are required to submit model modifications to PJM to provide data and one-line diagrams needed to represent planned system transmission changes. PJM’s Interconnection Coordination and Model Management representatives work together to identify, document and model planned generation projects.

Data submitted through Network Model requires processing by PJM staff. PJM staff review the projects that have been submitted and approve projects if appropriate. In some cases, PJM may require more details, while in other cases PJM will simplify the project. PJM staff will prepare a project package and code the information necessary, including one-lines to model both the present and the new configuration for all projects that are expected to impact the on-line models.
After new equipment is modeled in the production EMS database, TOs and/or Generation Operators (GOs) are responsible for working with PJM staff to set up telemetry links for supporting digital and analog data. In addition, two to four weeks prior to going into service, TOs and/or GOs are required to provide thermal ratings for new lines, transformers, series devices, phase shifters, etc., using eDART’s TERM application. Users can implement these ratings at any time after new equipment is modeled and in production even if the equipment is not yet in-service.


**Business Rules**

- In order to view one line diagrams, users must understand and accept the following:
  - Information is confidential and/or proprietary.
  - Disclosure of information may create legal liability.
  - In exchange for use of website, users must protect confidentiality of information provided.
  - Information should only be accessed by employees who need the information.
  - Take action to prevent improper use.
  - Failure to protect confidentiality of information may result in terminated access.
  - Agree to hold PJM harmless in a claim arising from a personal breach of the agreement of use.

- TOs are required to sign and renew monthly a Non-Disclosure Agreement (NDA) before they are granted access to substation one-lines for other cooperating TOs. **If a TO does not sign and fill out the NDA, they will not be granted access to view other transmission zone one-lines.**

**PJM EMS Model Change Request Process Overview**

Some users prefer to create a single, comprehensive project, under one ID, to capture all substation and line changes associated with a particular construction project. Other users prefer to break down larger projects, submitting multiple Projects or Change Requests representing for the individual substations affected by the construction.

After deciding how they plan to submit the project information, users must provide the data to depict the required system modifications. The application allows the user to view existing data from the PJM model data, as well, as substation one-lines taken at the time of the last build. The
user is required to enter data such as circuit parameters and equipment names and has the option to attach circuit or substation diagrams and other types of files such as spreadsheets.

Users can also review and revise existing project information, view project status and communicate project information to others via email.

Note: Some other pertinent data such as voltage limits and contingency representations must be coordinated directly with PJM staff and cannot be processed in Network Model.

**Project or Ticket Life-Cycle (eDART Network Model Ticket Status)**

The status of any new project created by a TO is automatically designated as *Submitted*. If the TO or PJM staff member modifies any of the project information, the status is changed to *Revised*.

Once the decision has been made that a change request should be modeled at PJM, a project package is created and the project status is changed to *Approved*. The project package contains all the information necessary to code the project and develop substation one-line diagrams. The package is circulated internally at PJM. If an *Approved* project is opened by a user and any data is modified, the project status is changed to *Revised*. Once approved, a PJM engineer will model the project package into the build in IMM. The status is then changed to *Modeled*.

A new model, including all the required seasonal build changes, is placed into production only after coding, preparing one-lines and performing extensive, off-line testing. Any new projects which have been incorporated in the build are then changed to a status of *Implemented*. Once the telemetry has been linked for the project, the project is considered *Complete*.

PJM reserves the right to deny or cancel projects which do not significantly impact the PJM EMS model.
The window below describes the **Status Definitions** associated with Network Model projects.

<table>
<thead>
<tr>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submitted</td>
<td>- Change Request has been submitted to PJM. Revisions are permitted in this status, but the Change Request will remain Submitted.</td>
</tr>
<tr>
<td>Received</td>
<td>- Acknowledgement that PJM received the Change Request. Applies to Submitted and Revised Change Requests. Revisions are permitted in this status.</td>
</tr>
<tr>
<td>Revised</td>
<td>- The Change Request has been revised after being in a status of Revised, Received or Approved.</td>
</tr>
<tr>
<td>Approved</td>
<td>- Change Request has been reviewed and approved by PJM. Revisions are permitted in this status.</td>
</tr>
<tr>
<td>Implemented</td>
<td>- Change Request has been implemented into PJM EMS.</td>
</tr>
<tr>
<td>Complete</td>
<td>- Change Request has been physically implemented.</td>
</tr>
<tr>
<td>Cancelled by Company</td>
<td>- Change Request has been cancelled by PJM.</td>
</tr>
<tr>
<td>Cancelled by PJM</td>
<td>- Change Request has been cancelled by the company.</td>
</tr>
<tr>
<td>Denied</td>
<td>- Change Request has been denied by PJM.</td>
</tr>
<tr>
<td>Modeled</td>
<td>- Modeled in IMM.</td>
</tr>
</tbody>
</table>

**Network Model Main Menu**

Select the Network Model function from the list of eDART applications to view the Network Model Main Menu. From this menu, users select one of six options as shown. These options include creating a new Change Request (or project), Viewing or Revising an existing Change Request, Selecting and Reviewing Substation One Line Diagrams, viewing a list of their Future Facilities, a cut-in linkage between transmission outage and network model request tickets, and the ability to update longitude and latitude coordinates for equipment.

Network Model limits user access to Change Request and One-line information. Users have the option to share one-line information with other TOs. If a TO elects to share this information, they must sign a Non-Disclosure Agreement and work with PJM staff to permit appropriate access.

Below the **Network Model Main Menu** buttons consists a summary of the number of change requests made. Each total is group by the status of the requests. These statuses include ‘Submitted’, ‘Revised’, ‘Approved’, and ‘Implemented.’ To view the tickets for a particular status, click the numbers under the ‘Total’ column.
Creating New Change Requests

To submit a request for a Network Model change, click the **Create New Change Request** button from the **Network Model Main Menu**.
The **Create New Change Request** button will open the first of two **New Network Model Change Request** windows. Depending upon the project or Change Request scope, the user must identify the substation or substations which will be impacted by the planned change. In the first window, users may identify existing substations to be modified by selecting from a list menu. Users can also specify a new substation name or substations names in the fields in the right side of the window. To select more than one station, users must hold the “CTRL” key and then click as many other station names as necessary. All highlighted station names will be included.

![New Network Model Change Request](image)

To reset the window, click the **Refresh** button. To return to the **Network Model Main Menu**, click the **Main Menu** button. After entering all necessary station information, click the **Submit Form** button.
Clicking **Submit Form** from the first window will open a second window or form, also called **New Network Model Change Request**. This form has fields for additional project description. This action also automatically assigns a unique Project ID and a Status of Submitted.

Users should provide a change request **Title**, **Type**, **Description**, and **Target Model Build** along with an **In-Service Date** or checking the **Already In Service** box. (Note that depending upon the circumstances, PJM staff may opt to implement the model relying upon assumed or characteristic parameters from similar projects.)

When entering a Change Request **Title**, users are encouraged to provide meaningful information, starting with a 2-5 character pneumonic for the TO, and clearly indicating the nature of the project. If space permits, also note adjacent substations that may be impacted by the project. This will assist other users when viewing Change Request reports available through the Network Model application.

The user must select a **Type**. The three type options are “Project (New Equipment),” “Update (Existing Equipment),” or “Equip Name Cleanup.” Users must also select a **Target Model Build** time period from the dropdown. Lastly, users must enter an **In-Service Date** before proceeding or check the **Already in Service** box.

The form also permits the user to cross-reference the project with a **Company Project ID** and also an **RTEP/Gen Queue** identifier. **Company Project IDs** are assigned by the user’s organization, and this information is not used by PJM. TOs are encouraged to provide cross-references to the PJM **RTEP/Gen Queue** if appropriate, or work with PJM staff to provide this information.
Users can click the **Refresh** button to reset the window or the **Main Menu** button to return to the **Network Model Main Menu**. Clicking the **Submit Form** button will yield a statement concluding the Network Model Change Request was successfully submitted.

Click the **Continue** button, to view the complete **Network Model Change Request** form:

Clicking the **Stations** button takes the user to **Manage Stations to Model Change Request** screen. From this screen, users can select existing stations that will require modification. To select more than one station, click a station name and hold the “CTRL” key. While holding “CTRL,” click as many other station names as necessary. All highlighted station names will be included. Additionally, users can type in new station names in the fields in the right side of the window.
Users can also delete stations by using the “Change Request Stations” section of the Manage Stations to Model Change Request window. To delete stations, click the corresponding checkbox for any stations to be deleted, and click the Submit Form button.

Users can also download or display any available one-line diagrams for any selected stations from the Manage Stations to Model Change Request window.

To reset the Manage Stations to Model Change Request window, click the Refresh button. To return to the Network Model Change Request window, click the Back button.
From the **Network Model Change Request** form, the user can also click any one of the seven (7) different equipment types:

1. Switching Devices;
2. Reactive Devices;
3. Loads;
4. Lines;
5. Phase Shifters;
6. Series Devices;
7. Transformers.

Clicking an equipment type will take users to another form where users can **edit** attributes for equipment already in the PJM EMS model (flagged with a status of Original) or add new pieces of equipment. See “Network Model Change Request” for an example depicting Lines information. To modify the attributes of a specific piece of equipment, users click the Edit button adjacent to the equipment to be modified and click **Add New**. The voltage, B3 Name, etc. will populate the first row and can then be adjusted as required. If the first row is left blank, the user can populate that row with attributes of a new piece of equipment after clicking **Add New**. After modifying the data or entering data for new equipment, users must click **Submit**.
**Form.** The new equipment will move downward in the form and the first row will be ready again for more modifications or additions. Note that the user can also retire equipment.

After an **Edit** radio button is selected from an equipment type window (e.g., **Lines**), Fig NM 10), users can click the **Restore Original** button to eliminate any changes in progress.

For convenience, users can also click the **Back** button from an equipment type window to return to the **Network Model Change Request** window.

Required fields differ based on the type of equipment. If a required field has not been filled out and the user clicks **Submit Form**, eDART will produce an error message. If there are more than one required fields unfilled, eDART will prioritize fields in order (see examples below).
View/Revise Change Request

Click the View/Revise Change Request button from the Network Model Main Menu to verify that change requests were successfully submitted.

The View/Revise Change Request button will open the Network Model Change Request Selection Form. This form works like a filter. The form will only return change requests that match the entered criteria. The form also allows users to select whether they want to view Tie Lines Only or Telemetry Reviews Only, and if they want their report to Contain Attachments, Generators, or equipment that are Already In Service. Click the corresponding checkboxes to select those options. To select more than one status, click a status and hold the “CTRL” key. While holding “CTRL,” click as many other statuses as necessary. All highlighted statuses will be included.

Click the Refresh button to reset the window. Click the Main Menu button to return to the Network Model Main Menu. Click the Apply Form to open a Change Request Report.

By default, tickets listed in the Change Request Report are sorted based on the Req. ID field, but users can also define a multi-column, sort order. The data is sorted in the order specified in the text box over the column name. For example, to sort by “Title” and then “Company”, enter
the digit “1” in the box over **Title**, “2” over **Company** and click **Apply Filter**. Numbers over columns that are not to be sorted must be deleted.

<table>
<thead>
<tr>
<th>Email</th>
<th>Req. ID</th>
<th>Company</th>
<th>Title</th>
<th>Station (all)</th>
<th>Target Build</th>
<th>Actual Build</th>
<th>Status</th>
<th>Submit On-Time</th>
<th>In-Service Date</th>
<th>MC</th>
<th>MM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10605</td>
<td>test</td>
<td>test</td>
<td></td>
<td>Spring 2017</td>
<td></td>
<td>Approved</td>
<td>On-Time</td>
<td>04/19/2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10615</td>
<td>Test</td>
<td>test</td>
<td></td>
<td>Winter 2017/18</td>
<td></td>
<td>Submitted</td>
<td>On-Time</td>
<td>12/30/2016</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To return to the **Network Model Change Request Selection Form**, click the **Go To Filter** button. Click on the **Main Menu** button to return to the **Network Model Main Menu**. The **Email** functionality is also available for use on this page.

To view or change any data or files associated with a specific **Network Model Change Request**, select the Request ID (**Req. ID**)
From the **Network Model Change Request** form, users can modify data for that project. They can change the Title or Type, modify the description, plus view and change information about specific equipment types and also add or delete reference files attached to that project. Users can also cancel requests by clicking the **Cancel Request** button or reset the data for the **Network Model Change Request** by clicking the **Refresh** button.

![Network Model Change Request Form](image)

Users can add or remove stations from a change request by clicking the **Stations** button which takes users to the **Manage Stations to Model Change Request** form.

In the **Manage Stations to Model Change Request** screen, users can add stations by selecting existing stations from the multi-select menu. To select more than one station, click a station name and hold the “CTRL” key. Afterward, click as many other station names as necessary. All highlighted station names will be included. Additionally, users can type new station names in the fields in the right side of the window.
By clicking the corresponding checkbox in the “Change Request Stations” section of the Manage Stations to Model Change Request window and clicking Submit Form, users can delete a station or stations. Users can also download or display any available one line diagrams for any selected stations from the Manage Stations to Model Change Request window.

To reset the Manage Stations to Model Change Request window, click the Refresh button. To return to the Network Model Change Request window, click the Back button.

From the buttons at the bottom of the Network Model Change Request form, users can select the Status History button and view a change request’s history.

In addition, from the Network Model Change Request form, users can select a type of equipment to add or edit equipment entries in a Network Model Change Request.

Clicking a type of equipment will take the user to a window specific to that equipment type. Below is an example of how to work through a Lines window. For example, clicking the Lines link above the list of line equipment will produce an editable list equipment (in a Lines window) as shown in the example below:
Either enter information in the first row and click the **Add New** button to add a piece of equipment, or click an **Edit** radio button to edit an existing piece of equipment. After completing an edit, click **Submit Form** button.

From an equipment type window, users can also click the **Restore Original** button to eliminate any changes in progress. This option only appears if users have clicked an **Edit** radio button.

Users can also click the **Back** button to return to the **Network Model Change Request** window.

Required fields differ based on the type of equipment. If a required field has not been filled out and the user clicks **Submit Form**, eDART will produce an error message telling the user which required field must be filled. If there are more than one required fields unfilled, eDART will prioritize certain fields first.
Email

Users have the ability to send change request information by email from various menus on the Network Model application.

The first location where this functionality can be found is on the Change Request Report page. To email change request details, click the Email button or check the Email box as appropriate and fill out the form with all of the information to be emailed. Some fields may change based on the section where the email was initiated.

Users can also access the email function from the Network Model Change Request page. This allows users to send emails regarding specific network change requests.
File Upload

Users have the ability to upload supporting documentation using the Files button located at the bottom of the Network Model Change Request form.

Within the Change Request Files window, users can reset the window with the Refresh button, use the Back button to return to the Network Model Change Request window or click Supported File Types to view the file types supported by the application.
To upload a file, click **Browse** and select a file.

Users can download attached files by selecting the desired files and clicking on the **Download** button. Deleting attached files can also be done by first selecting the desired file and clicking **Delete**.

<table>
<thead>
<tr>
<th>Select</th>
<th>File Name</th>
<th>Upload Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test1.xlsx</td>
<td>12/20/2016 10:07</td>
</tr>
</tbody>
</table>

**Change Request Files**

| Change Request ID: **10616** | Space Remaining: **10,477,058 bytes** |

**File to upload:**

**Submit File**

**Supported File Types**

**Refresh**

**Back**
Current One Line Diagrams

To view one-line diagrams, click the Current One Line Diagrams button from the Network Model Main Menu.

This will bring the user to the eDART Line Diagrams XML File Download window. Use the “Line Diagrams to Download” section to select which diagrams to view. To save a copy of the diagrams, click the Save as a File checkbox before clicking Download. If Save as a File is not selected, diagrams will appear in the browser.

Users can also use this window to navigate to other eDART downloads. Selecting another download type will bring the user to a new window.
<table>
<thead>
<tr>
<th>Company</th>
<th>Last Update</th>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>test</td>
<td>12/20/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/20/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/20/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/20/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/20/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/20/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/20/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/20/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/18/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/18/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/19/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/15/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/16/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/16/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/16/2016 09:07</td>
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<td>test</td>
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<tr>
<td>test</td>
<td>12/16/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/15/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/15/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/15/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/03/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/03/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/03/2016 09:07</td>
<td>Download</td>
</tr>
<tr>
<td>test</td>
<td>12/03/2016 09:07</td>
<td>Download</td>
</tr>
</tbody>
</table>
Future Facilities

The eDART Future Facilities report lists all the TO’s facilities flagged as future along with the date they are expected to be modeled in PJM’s EMS.

The eDART Future Facilities report can be sorted. By default, tickets are sorted based on the Station and Equipment field. It is also possible to sort on multiple columns based on a user defined sort order. The columns will be sorted in the numerical order as specified in the text box under the column name. For example, to sort by “Voltage” first and then “Company”, enter the digit “1” in the box under Company and “2” under Voltage and then click on the Apply Filter button at the top. The results will be displayed in the desired sort order as shown below. It is necessary to delete numbers that are over any columns that are not to be sorted.

Users can also filter the eDART Future Facilities report by zone and/or PMJ EMS date by selecting options from the Zone and PMJ EMS Date dropdown menus.

Users can view existing eDART Future Facilities cut-in tickets by clicking “View” within the Cut-In Ticket ID field. Additionally, users can add cut-in tickets to a future facility by clicking a Create Cut-In Ticket checkbox and adding a Start Date/Time and End Date/Time to the corresponding ticket.
Tickets created with the **eDART Future Facilities** report window will resemble the following:
Cut-In Ticket Link

Cut-In ticket reports can be accessed through the Network Model Main Menu by clicking the Cut-In Ticket Link button.

This will direct the user to the Network Model Request/Cut-In Ticket Report page with Network Model View by default. The page includes a number of fields that can be selected or entered. Beginning with the Build Date Range, the user can select or enter the desired time frame for network model requests between scheduled build dates. However, the range is set to plus-minus 6 months if the user wishes not to adjust the dates. Once the dates are selected, the option to select a specific station is available under the Station dropdown menu. Checkboxes can be marked to exclude or include network model tickets that are completed, cancelled, or missing transmission ticket. Clicking the Apply Filter button will bring up the results based on the user’s selection. If the user desires to start the search over, the Clear Filter button can be selected. Main Menu will direct the user back to the Network Model Main Menu.

Within the results, the user can view, edit, or export the tickets. By clicking on the Req ID field will allow the client to view and edit a network model ticket. If there are no transmission outage
tickets linked to the network model request, it can be added by clicking on the Add button and entering in the corresponding transmission outage ticket number. Once added, the Network Model Request/Cut-In Ticket Report will display the new linkage.

Clicking Submit on the Network Model Request/Cut-In Ticket Report page will save the changes. To receive a summary of the results, the Export to CSV button can be clicked.
Clicking on the **Transmission Ticket View** radio button on the **Network Model Request/Cut-In Ticket Report** page will bring the user to a new screen that displays the available filters to search for transmission tickets. The page includes a number of fields that can be selected or entered. Beginning with **Occurring During**, the user can select or enter the desired time frame for when transmission outages happened or scheduled to happen. If the user does not wish to change the date, the range is automatically set to plus 6 weeks. The **Ticket Status** can be filtered by checking and unchecking the desired statuses. Checkboxes next to the date inputs can be marked to exclude or include tickets with cut-in tickets only or tickets with missing network model requests. Clicking the **Apply Filter** button will bring up the results based on the user’s selection. If the user desires to start the search over, the **Clear Filter** button can be selected. **Main Menu** will direct the user back to the **Network Model Main Menu**.

Within the results, the user can view or export the tickets. By clicking on the **Ticket ID** field will allow the client to view a transmission ticket. If there are no network model request tickets linked to the transmission outage ticket, it can be added by clicking on the **Add** button and entering in the corresponding network model request ticket number. The users also have the option of checking the **No Request Needed** checkbox if no link is required. Once added, the **Network Model Request/Cut-In Ticket Report** will display the new linkage.
Clicking **Submit** on the **Network Model Request/Cut-In Ticket Report** page will save the changes. To receive a summary of the results, the **Export to CSV** button can be clicked.
Lat/Long Update

Transmission Owners (TOs) have the ability to enter station coordinates through eDART’s Network Model Main Menu using the Lat/Long Update button. If there are missing station coordinates, the button will be displayed in red and indicate how many are missing.

Through the link, the user would be able to add, edit, and view coordinates. By default, the Missing Lat/Long checkbox will be selected and a list of stations with missing coordinates will appear. From there, the latitude and longitude points can be entered and submitted. The user can also view all stations by deselecting the Missing Lat/Long checkbox and clicking Apply Filter. The Station field can be filled in to search for a specific station location. If the user desires to reset the search, the Clear Filter button can be selected and the default search will appear. Main Menu will direct the user back to the Network Model Main Menu.

History Log will bring the user to a new page which consists of a history log of changes. By default, changes made in the last 60 days will appear. If the user wishes to view all changes, the
**Updated Last 60 Days** checkbox can be unselected. Searches can be filtered further by entering or selecting information in the **Station**, **From Date**, and **To Date** fields. Clicking Apply Filter will display the new results.

<table>
<thead>
<tr>
<th>User Name</th>
<th>Zone</th>
<th>Station</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Time</th>
<th>Archive</th>
</tr>
</thead>
<tbody>
<tr>
<td>tester</td>
<td>PJM</td>
<td>Test1</td>
<td>48</td>
<td>-100</td>
<td>12/15/2016 16:45</td>
<td></td>
</tr>
</tbody>
</table>
Black Start

Black Start application is a comprehensive database of all the cranking path facilities and incorporates the restoration plans and plan review process into eDART.

Per NERC Standard EOP (Emergency Operations Planning) 005-1, a cranking path is “a portion of the electric system that can be isolated and then energized to deliver electric power from a generation source to enable the startup of one or more other generating units.” (http://www.nerc.com/docs/standards/sar/Phase_III-IV_Set2_D2_Redline.pdf)

Business Rules

NERC Standards EOP-005-2 and EOP-006-2 outline the business rules relating to the System Restoration Plans and the plan review process. Some of the standards are mentioned below.


R3. Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator annually on a mutually agreed predetermined schedule. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]

R3.1. If there are no changes to the previously submitted restoration plan, the Transmission Operator shall confirm annually on a predetermined schedule to its Reliability Coordinator that it has reviewed its restoration plan and no changes were necessary. (Retirement approved by FERC effective January 21, 2014.)

R4. Each Transmission Operator shall update its restoration plan within 90 calendar days after identifying any unplanned permanent System modifications, or prior to implementing a planned BES modification, that would change the implementation of its restoration plan. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]

R4.1. Each Transmission Operator shall submit its revised restoration plan to its Reliability Coordinator for approval within the same 90 calendar day period.

R5. Each Reliability Coordinator shall review the restoration plans required by EOP-005 of the Transmission Operators within its Reliability Coordinator Area. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]

R5.1. The Reliability Coordinator shall determine whether the Transmission Operator’s restoration plan is coordinated and compatible with the Reliability Coordinator’s restoration plan and other Transmission Operators’ restoration plans within its Reliability Coordinator Area. The Reliability Coordinator shall approve or disapprove, with stated reasons, the Transmission Operator’s submitted restoration plan within 30 calendar days following the receipt of the restoration plan from the Transmission Operator.

Approved Restoration Plans

The Approved Restoration Plans report allows users to see their company’s currently approved Restoration Plans in production. Users also have the option to toggle from My Company to Other to view reports outside the scope of their company. Retired plans are excluded from report.

- **Plan Name**: Hyperlink to download latest Restoration Plan and Attachment G.
- **Restoration Plan Updated**: The date of when the Restoration Plan was last updated.
- **History**: Hyperlink to History Log of restoration plan status changes.
• **Submit Update:** Opens file upload page for submission of updates to restoration plan and information contained in Attachment G.

<table>
<thead>
<tr>
<th>Submit Update</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Next Plan:</strong></td>
</tr>
<tr>
<td><strong>Effective Date:</strong></td>
</tr>
</tbody>
</table>

**Date submitted to PJM for approval (must be 30 days prior to Effective Date for the Annual Update)**

PJM approval indicates that the plan has been reviewed and accepted and is compatible with the RC restoration plan and other TO Restoration Plans as per EOP-300, R5.1. Any required changes are communicated to plan censor. The PJM approval will be provided via the eDART tool.

**Point of Contact:** [Name, Function/Title and Department]

**Company:** [Company Name]

**Phone Number:** [Phone Number]

**e-Mail:** [Email Address]

---

**Attachment G**

1. **When was the Restoration Plan last updated:** [mm/dd/yyyy]

   - **Reason for this update:**
     - Planned BES modification (Complete Items 1-2 and 5-8 only)
     - Unplanned permanent BES modification (Complete Items 1-2 and 5-8 only)
     - Other

   **Comments:**

2. **Relationships and Responsibilities:**

   - Have there been any significant changes to the plant's identified responsibilities and relationships, since the last update?
     - No
     - Yes

   **Comments:**

3. **Restoration Plan Components:**

   - Verify that the Restoration Plan includes the following components (per R1 of EOP-300-3) and list the page number where it can be found or an explanation as to why the component was not included. This item is only required for the Annual Review.

   - **R1.1 Strategies for system restoration that are coordinated with the Reliability Coordinator's high level strategy for restoring the Interconnection:**
     - Included
     - Not Included
     - Reason for not including:

   - **R1.2 A description of how all Agreements or mutually agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration:**
     - Included
     - Not Included
     - Reason for not including:

   - **R1.3 Procedures for restoring Interconnections with other Transmission Owners/Operators under the direction of the Reliability Coordinator:**
     - Documented in [A-20], Section 3.1.6 and 7.2 (Optional for TO plans)

---

**Retire:** User can retire current restoration plan by uploading Attachment G with retirement reason on the **Restoration Plan Retirement Reason** page.
**Annual Deadline:** Displays the agreed upon plan annual review dates where applicable  
**Attachment G Form:** Option to download a blank Attachment G form.
Annual Deadline

The Annual Deadlines report displays the agreed upon plan annual review dates where applicable.

<table>
<thead>
<tr>
<th>Plan ID</th>
<th>Plan Name</th>
<th>TO Submission Plan Deadline</th>
<th>PJM Review Plan Deadline</th>
<th>TO Publishes Approved Plan Deadline</th>
<th>TO Restoration Plan Effective Date</th>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Plan Number 1</td>
<td>08/24</td>
<td>09/08</td>
<td>09/22</td>
<td>09/23</td>
<td>View</td>
</tr>
<tr>
<td>3</td>
<td>Plan Number 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>View</td>
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<tr>
<td>12</td>
<td>Plan Number 3</td>
<td>09/10</td>
<td>09/25</td>
<td>10/09</td>
<td>10/10</td>
<td>View</td>
</tr>
<tr>
<td>13</td>
<td>Plan Number 4</td>
<td>10/24</td>
<td>11/08</td>
<td>11/22</td>
<td>11/23</td>
<td>View</td>
</tr>
<tr>
<td>29</td>
<td>Plan Number 5</td>
<td>10/17</td>
<td>11/01</td>
<td>11/15</td>
<td>11/16</td>
<td>View</td>
</tr>
</tbody>
</table>

Date updates are made by PJM based on calculation of date provided for the TO Restoration Plan Effective Date (T) by members.

- TO Submission Plan Deadline (T-30).
- PJM Review Deadline (T-15).
- TO Publishes Approved Plan Deadline (T-1).
- TO Restoration Plan Effective Date (T)

- **History**: Log of deadline changes made per restoration plan.

History

There are two types of History Logs available in this application:

- **Restoration Plan History Log**: displays log instances a plan went through during the update process with the final plans and Attachment G. Accessible from the Approved Restoration Plans report and Restoration Plans Report.
- **Restoration Plan Update History Log**: displays log of changes made to each update per log instance of restoration plan. Accessible from Pending Restoration Plans report and Restoration Plan History Log.
Email Notifications

Email notifications are sent to SOS-T rep by default. If emails should be sent to additional recipients, please inform cpaths@pjm.com or eDART Help (edarthelp@pjm.com).

- Daily emails are sent when cranking path facility is added or removed.
- Daily email of transmission tickets Submitted or Revised on that day are sent where:
  - Cut-In = TRUE & cranking path equipment is included.
  - Cut-In = TRUE & Outage Duration > 30 days.
  - Restoration Plan Review Needed = YES.
- Emails also sent when:
  - Update Status Changes.
  - Restoration plan review deadline is in 30 days or any day in the next week (next 7 days).
  - Installed capacity of Critical Load or Blackstart unit is changed to 0 (unit is in Transmission Zone or cranks critical load in TZ).
  - Critical Load or Blackstart unit is added or removed.
- Whenever PJM completes quarterly model build, email sent listing:
  - Cranking Path facilities removed from model.
  - LINEs and XFMRs added to stations that are currently part of a cranking path.
Pending Restoration Plans

The **Pending Restoration Plans** report displays the latest versions of the restoration plans that are being reviewed. It is used for the coordination of the plan review process.

- **Plan Name**: Only displayed as a hyperlink if files have been uploaded for update request.
- **Update Status**: Status of the current review for the plan. Options are:
  - **Update Required**: An update is required from the TO.
  - **Pending Approval**: Submitted update is currently being reviewed by PJM and will either require another update from the TO or be approved. If additional information is required, status is reverted to **Update Required**.
  - **Approved**: Update to the plan was approved.
  - **No Update Pending Approval**: No Update Needed Attachment G has been submitted and is currently being reviewed by PJM.
  - **Cancelled by Company**: Update request cancelled by the TO. Only valid for update requests initiated by TO.
  - **Cancelled by PJM**: Update request cancelled by PJM.
- **Plan Status**: Official status of the plan outside of the update process. Options are: Pending Approval, Approved, Pending Retirement and Retired.
- **Restoration Plan Updated**: Time of last plan update.
- **No Update Needed**: User can indicate that update is not needed by submitting Attachment G with the reason on the **No Update Needed Reason** page.

  ![No Update Needed Reason](image)

- **Next Update Request**: Deadline by which the plan has to be updated for the given update reason.
- **Update Reason**:
  - Company Request: Plan update submitted from **Approved Restoration Plans** form.
  - Annual: Part of an annual review.
    - Ticket: Result of a change from a transmission ticket; **Restoration Plan Review Needed** (Go to Restoration Plan Review section in this document for more information) set to ‘Yes’. Click on the Ticket ID to open the print version of the ticket.
  - PJM Request: Manual override or PJM request.
- **History**: Hyperlink to History Log of restoration plan update status changes.

  ![Restoration Plan Update History Log](image)

- **Submit Update**: Opens file upload page for submission of updates to restoration plan and Attachment G.
Queue: displays the number of upcoming plan reviews. The updates can only be made one at a time. Also, if the information supplied for the current update applies to other updates in the queue, the TO can upload the plan and Attachment G via the No Update Needed form to say so.
- **Annual Deadline:** Displays the agreed upon plan annual review dates where applicable.

- **Add New Plan:** Opens Add Restoration Plan page for TO to enter new plan name and upload restoration plan file and Attachment G.
- **Color Legend:** The color legend refers to when Plan Updates are due.
The **Restoration Plans Report** displays the changes made to the Restoration Plans.

Users can filter by the plan update status. By default, **Updated last 60 Days** and **Approved** are checked.
TERM

In addition to being a ratings database, Transmission Equipment Rating Monitor (TERM):
- Prepares files for transferring ratings to the PJM EMS;
- Provides feedback to users concerning the status of ratings tickets;
- Provides information concerning effective, or current, facility ratings for each TO;
- Maintains an audit trail of rating changes;
- Supports bulk rating uploads;
- Provides various reports to users concerning select equipment attributes (e.g., impedances).

Each rating change submitted to PJM via TERM is assigned a unique number. After submitting a rating change ticket, PJM’s Real Time Data Management Department (RTDM) staff members:
- Analyze the rating changes;
- Coordinate tie-line changes with all stakeholders;
- Transfer ratings data to the PJM EMS;
- Notify PJM operations and markets personnel of ratings changes;
- Update the TERM ticket with relevant information.
Business Rules

Key guidelines for the Ratings Process:

1. TOs rate facilities consistent with their internal, documented methodologies.
2. TOs provide Normal, Long Term Emergency (LTE), Short Term Emergency (STE) & Load Dump (LD) ratings.
3. TOs provide ratings for each of eight (8) temperature sets (32/41/50/59/68/77/86/95 °F).
4. TOs may differentiate Day and Night ratings for these temperature sets.
5. TO Emergency ratings apply to both Long-Term (LTE) & Short-Term Emergency (STE) ratings.
6. STEs can be higher than LTEs only if SOS-T approves a special operations guideline, order, procedure or bulletin (documented in M3). For example, facilities approved as part of PJM’s post-contingency overload program will have STEs > LTEs or part of a common trench or common cooling system.
7. Load Dump ratings are defined as limits which can be safely operated for up to 15 minutes before automatic schemes will trigger.
8. Normal Ratings should be greater than Long Term/Load Dump ratings
9. Long term or Short term emergency ratings are greater than the load dump rating
10. Ratings are generally expected to increase as temperature decreases.
11. If temperature-dependent ratings are not available, PJM will assign Summer ratings to the Summer temperature sets; and, Winter ratings to the Winter temperature sets.
12. All tickets must have a limitation.
13. If a rating change is longer than six (6) months then it should be marked as a permanent ticket.
14. If a rating change is shorter than six (6) months then it should be marked as a temporary ticket.
15. As a general rule, PJM requires ratings for all radial, non BES (Bulk Electric System) facilities.
16. The estimated start date cannot be more than seven (7) days in the past.

When logged into eDART, click on the TERM button on the left menu to open the TERM Main Menu.
Create New Ticket

This function allows TOs to enter ratings in the New TERM Ticket form. Each ticket is automatically given a unique Ticket ID.

In order to create a TERM Ticket, select the Create New Ticket button to open the New TERM Ticket form as shown below:
Ticket Fields

- **Company Ticket ID:** Optional field for the company internal ticket number. This field needs to be unique.
- **Reason for Changes:** This is the reason the ticket was created. The list of reasons can be changed upon request. The list can also be downloaded.
- Enter the **Est. Start**, and if applicable, the **Est. End Date**, along with whether the change is **Planned/Immediate** or **Permanent/Temporary**. If a ticket is temporary, users must enter an **End Date**.
- **Planned/Immediate:** Planned is for rating changes that are scheduled previously in a timely manner.
- **Permanent/Temporary:** Permanent/Temporary (generally less than six months), one must be selected. Permanent is set as default. If Permanent is selected Est. End Date and Time is not needed.
- **Type:** The type of equipment. Includes XFMRs, LINES, BRKRs and SDs.
- **Station Name:** The name of the station where the equipment is located.
- **Voltage:** The voltage of the station.
- **Equipment Name:** The name of the equipment selected to create or change ratings.
- **End**: END A or END B for a LINE and HIGH/LOW for a XFMR.
- **Normal**: The rating under normal operating condition.
- **Long Term/Short Term**: The ratings when the facility is operating under contingency.
- **Load Dump**: 15 minute rating before load shedding is required.
- **Day**: Rating during the day.
- **Night**: Rating during the night.
- **Default Ratings**: This button is only available after equipment specifications have been entered. Press this button to update the ratings with the default ratings previously placed in eDART. Otherwise, input new ratings in the empty fields.
- **Impedance/Charging**: This area will automatically be displayed after ratings have been entered.
  - **R** and **X** values make up the electrical impedance (A physical characteristic of the equipment used in the field that describes their resistance to the flow of electricity. The higher the impedance, the harder it is to push current across the device. The **B** value is the charging value, which is used only for lines. When there is a flow through the line, the conductors conduct and the line charges. The **B** value is the rate at which it charges.
- **Adj. %**: To change all of the ratings by the same percentage at once, enter a percentage as a number (For example; for a 1% change, enter a 1.) and click the Apply button.

After entering ratings, the percent change will be available by clicking on the % of Change button right next to the Main Menu button. Users can click the Main Menu button to return to the TERM Main Menu.
When satisfied, click the Back button in the Changing Percentage window and click the Submit Form button in the New TERM Ticket window. This leads to the Limitation Addition window.

To add a limitation, choose from the criteria in the menus under Limitation Addition. Multiple items from each field may be selected by selecting an item, holding the “Ctrl” key, and then clicking on any other field(s). Next, click the Add Limitation button.

Note: Adding a limitation is mandatory for approval.
If one or more of the records seems incorrect, click the checkbox under **Remove** for each incorrect record and click the **Submit Form** button to remove the incorrect records. To re-enter records or add other limitations, click the **Add Limitation** button again. When finished, click the **Go to Ticket** button to return to the newly created ticket. At this point records can be edited. The **Rate Changes** table displays the current ratings.
To add supporting documentation, click the **Files** button and browse for a file. After selecting a file, click the **Submit File** button. To view supported file types, select **Files** and the following screen will appear. The right screen shows the **Supported File Types**. This is done to coordinate between TOs or GOs that do not necessarily have access to the specific equipment. By uploading the ratings they can alert the interested parties about the changes made.
• **History Log**: Allows users to view the history of all the people who made any changes to the status of the ticket. This includes users who submitted, revised, approved and implemented the ticket.

![History Log](image)

• **Notifications Log**: This pop up box displays the companies that have notification rights to the facility and shows whether or not the companies have acknowledged the ticket and rating changes. This helps when a TO does not have access to certain equipment but only gets notified if any changes are made. This feature is especially useful in a Tie-Line situation.

![Notifications Log](image)

---

*View / Revise Ticket*
This function allows users to enter desired filtering criteria in order to view certain specified tickets. By default, tickets are sorted in ascending order of the Ticket ID.

In order to view or revise any of the existing tickets, select the View/Revise Ticket button on the TERM Main Menu to open the View/Revise Reports Filter.

- **Group Name**: Is in direct relation to the Bulk Upload functionality.
- **Tickets**: This will filter only the tickets.
- **Notifications**: This will filter only the notifications.
- **Shared Tickets**: A ticket that can be seen by multiple companies.

Search for tickets using the filter criteria or click on the Apply Filter button which displays all the tickets. The filters can be used in any combination; however the data displayed will need to meet all criteria selected. After clicking the Apply Filter button, the results page will be displayed as shown below:
By default, tickets are sorted based on the **Ticket ID**. It is also possible to sort on multiple columns based on a user defined sort order. The columns will be sorted in the numerical order as specified in the text box under the column name. For example, to sort by “Ticket Type” first and then “Company”, enter the digit “1” in the box under **Ticket Type** and “2” under **Company** and then click on the **Apply Filter** button at the top. The results will be displayed in the desired sort order as shown below. It is necessary to delete numbers that are over any columns that are not to be sorted. Click on the **Go To Filter** button to return to the **View/Revise Reports Filter**, or click on the **Main Menu** button to return to the **TERM Main Menu**.

In order to open a specific ticket, click on the “**Ticket ID**” field for that ticket and this will open the **TERM Ticket Revision** form which can be used to update the ratings and comments or duplicate the ticket if changes to the date are needed as discussed above.
**Term Ticket Revision**

**Ticket ID:** 11394  
**Company:** Reliability and Markets

**Reason for Change:** Summer/Winter changeover  
**Ticket Status:** Implemented  
**Ticket Type:** Planned - Permanent  
**Dynamic:** No  

**Date:** 05/15/2004  
**Hour:** 00:01  
**Actual Start:** 05/17/2004 08:17

**PJM Comments:**

Congestion Value was change as of 09/29/2007 08:29

**Type:** LINE  
**Station Name:**  
**Voltage:** 34 KV  
**Equipment Name:**  
**End:** END A

<table>
<thead>
<tr>
<th>Temp</th>
<th>Normal Day</th>
<th>Normal Night</th>
<th>Long Term Day</th>
<th>Long Term Night</th>
<th>Short Term Day</th>
<th>Short Term Night</th>
<th>Load Dump Day</th>
<th>Load Dump Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
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<td>54</td>
<td>54</td>
</tr>
</tbody>
</table>

**Impedance/Charging:**

\[ R = 0.0016 \]

**Congestion Mgmt. Priority:**

Reliability & Markets
**Bulk Upload**

In order to upload a number of tickets in a bulk, select the **File Bulk Upload** button on the **Term Main Menu** to open the **eDART TERM Bulk Upload**.

Select the reason and which file to upload (it must be an .xls file). This procedure can be done multiple times. Users can click **Help**, which will download an example Excel bulk upload file. Users can refer to the **XML File Download** (pp. 137) section, in regards to the **Limitation Report** file, to use in filling out the bulk upload file with limitation codes.

If everything was uploaded correctly the screen above will be shown, which will let the TOs know that the data has been submitted to PJM.

Warnings may occur for different reasons but PJM will still receive the upload. The user can re-upload the ratings if necessary or if any mistakes were made.
Errors during upload can occur. These errors can be caused by multiple reasons. An example of a fatal error is when a user tries to upload ratings changes for equipment that the user’s company does not own. If such errors occur, the TOs must fix the errors to submit the rating to PJM.

**Effective Ratings**

In order to view the effective ratings available for certain equipment, select the **Effective Ratings** button on the **TERM Main Menu**. Drop down menus will expand as each previous field is populated.
Historical Bulk Report

In order to access the history report bulk uploads done in the past, select the Historical Bulk Report button on the Term Main Menu to open the Historical Bulk Report page shown below:
TERM Reports

When logged into eDART, click on the TERM button on the left menu to open the TERM Main Menu and see the TERM Reports section as shown below:

Status Reports

In order to access status reports for certain equipment and/or companies, select the Status Reports button on the TERM Reports to open the Status Report page.

This function allows the user to view a detailed report of Tickets or Notifications. A user can use available filtering criteria to view report details for specific tickets or notifications. The Status Report can be sorted and filtered by Ticket Status, Last 30 Days, Exclude or Include special type of tickets and those that have No Actual Start Date.
By default, tickets are sorted based on the **Ticket ID**. It is also possible to sort on multiple columns based on a user defined sort order. The columns will be sorted in the numerical order as specified in the text box under the column name. For example, to sort by “Ticket Type” first and then “Company”, enter the digit “1” in the box under **Ticket Type** and “2” under **Company** and then click on the **Apply Filter** button at the top. The results will be displayed in the desired sort order as shown below. It is necessary to delete numbers that are over any columns that are not to be sorted. Click on the **Ticket ID** to open up the ticket. Click on the **Main Menu** button to return to the **TERM Main Menu**.

**Recently Restored**

In order to access recently restored tickets for certain equipment and/or companies, select the **Recently Restored** button on the **TERM Reports** to open the **Recently Restored Filter** shown below:

This function allows the user to view a detailed report of TERM tickets that were recently changed to Restore status.

Using the **Recently Restored Filter**, users can filter for **Tickets**,** Notifications**, or **Shared Tickets**. Additionally, users can choose to include **Dynamic Tickets**, select **Unit Types** and **Outage Types** to filter by and specify equipment at specific **Stations**, or with specific **Voltage** levels. Very narrow filters are available through **Ticket ID** and **Equipment Name** filters. Users can also sort by **Reasons for Change**.
History Report

In order to access the history report of tickets for certain equipment and/or companies, select the History Report button on the TERM Reports to open the Historical Report Filter shown below:

This displays a detailed view of all the tickets that apply to the filtering options:
Click an **Overview** link to open a window with a detailed view of the ticket as shown below:

![Ticket Details](image)
Expiring Temporary Tickets

The **Expiring Temp. Tickets** button shows a list of tickets that will expire within the next 24 hours. The button will appear red when there are tickets expiring. Click on a **Ticket ID** to view the ticket in its entirety.

<table>
<thead>
<tr>
<th>Ticket ID</th>
<th>Company</th>
<th>Ticket Status</th>
<th>Type</th>
<th>Station Name</th>
<th>Voltage</th>
<th>Equipment Name</th>
<th>Est. Start</th>
<th>Est. End</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>1502984</td>
<td>PJM TEST</td>
<td>Implemented w/o Approve</td>
<td>LINE</td>
<td>138 KV</td>
<td></td>
<td></td>
<td>08/02/2015</td>
<td>09/02/2015</td>
<td>END B</td>
</tr>
<tr>
<td>1505824</td>
<td>PJM TEST</td>
<td>Implemented w/o Approve</td>
<td>LINE</td>
<td>345 KV</td>
<td></td>
<td></td>
<td>08/02/2015</td>
<td>09/02/2015</td>
<td>END B</td>
</tr>
</tbody>
</table>

Users will be able to click on each ticket in the list and make any updates necessary.

Unrated Facilities Report

Clicking on the **Unrated Facilities** button will bring up a list of the facilities that are not rated in eDART. Users can search for a specific equipment or hit **Apply Filter** to search for all unrated equipment. Users will see a similar list below.
**Base Data**

![Base Data Image]

**Adjust R, X, B**

The R, X, B ticket was created to allow the TOs to adjust the impedance and charging values.

In order to modify or create new R, X, B Values, select the **Adjust R, X, B** button on the **TERM Main Menu** under the **Base Data Tab** to open the **New R, X, B Adjustment Request**.

![New R, X, B Adjustment Request Image]

After inputting the equipment to be changed, the window will expand to include fields to make adjustments.
Enter new impedances in the “New” row under the “Initial” column. After entering new impedances, the “% Difference” row will automatically calculate the percent difference to show the how much it changed. In the “Comments” field, enter the reason for adjustment and any other pertinent information.

**Adjust Tariff Data**

In order to access status updates for certain equipment, click the **Adj. Tariff Data** button on the **TERM Main Menu** under the **Base Data Tab** to open the **Tariff Facilities Update Form**.

These priorities decide how PJM monitors the equipment. The priority of a facility can change anytime with prior notice from PJM or the TO. TO’s DMWG (Data Management Working Group) contact will be notified when PJM initiates the change.
When new equipment is added to eDART, it is flagged as a Bulk Electric System (BES) if the voltage is equal to or greater than 100kV. The new columns added to the chart are as follows:

- Current BES: read only field to display BES status.
- Adjusted BES: drop down field to change BES status.

R, X, B Adjust Report

In order to access the impedances report of tickets for certain equipment and/or companies, select the R, X, B Adjust Report button on the Base Data to open the R, X, B Adjustment Report shown below:

This function allows the user to view a report of all the adjustment made to the R, X, B values. These results can be filtered.

Users can view R, X, B values in the R, X, B Adjustment Report window. Additionally, users can adjust and/or cancel tickets by using the Status drop down box and selecting Cancelled by
Company. After changing the Status field, click Submit Form to make changes. To adjust R, X, B values, click the Adjust R, X, B button.

Refer to the R, X, B Values section for more on adjusting R, X, B values.

Adjusted Tariff Data Report
The ‘Adj. Monitored Status Report’ has been changed to ‘Adj. Tariff Data Report’

Columns reflecting Current and Adjusted BES have been added to the report.

Company Notification Request and Reports
In order to access the Notification Report, select the TERM button to view the TERM Main Menu, and look for the Notification Report category shown below:

![Notification Reports]

Acknowledgements Required

Using the **Ack. Required** button, users can view and acknowledge TERM tickets. Click an “Ackn.” checkbox and click the **Acknowledge** button to acknowledge a ticket. Click the **Main Menu** button to return to the TERM Main Menu.

![TERM Notifications Requiring Acknowledgement]
Notifications Report

From the TERM Main Menu, click the Notifications Report button to go to the Company Notification Report Filter. From here, users can select a “Zone” and a “Station Name” to filter by. After selecting appropriate filter criteria, click the Submit Form button to view a Company Notification Report, or click the Main Menu button to return to the TERM Main Menu.

![Company Notification Report Filter](image)

There are two types of notification, X and Y.

- **X Notification** is for companies that have total access to the equipment and can submit new ratings or change existing ones.
- **Y Notification** is for companies that only get notified of any changes made to the equipment, with no way to actually make changes to the equipment directly.
In the **Company Notification Report**, users can modify which units they receive notifications about. Use the “Remove from List” drop down menu to select whether to receive notifications for a unit. After selecting “Yes” or “No,” click the **Submit Form** button to make the changes. Alternatively, click the **Back** button to return to the **Company Notification Report Filter**, or click the **Main Menu** button to return to the **TERM Main Menu**.

![Company Notification Report](image)

The following message will appear if a user tries to change notification settings but does not have the privileges necessary to adjust notification rights for their company. Click the **Back** button to exit the error window.

![Company Notification Report Error](image)
Notification Request Form

From the TERM Main Menu, click the Notifications Request Form button to go to the Notification Request Form Filter.

Users can filter by “Zone,” “Station,” “Voltage,” “Type,” “End,” and “Equipment Modeled Since Date.” Click the Submit Form button to produce the a Company Notification Request Form for all pieces of equipment relevant to the filter, or click the Main Menu button to return to the TERM Main Menu.

From the Company Notification Request Form, use the drop down menus to identify which level of notification to request. After making all appropriate selections, click the Submit Form button to submit the notification requests. Alternatively, click the Back button to return to the Notification Request Form Filter, or click the Main Menu button to return to the TERM Main Menu.
Reactive Reserve Check

PJM Dispatch requests Reactive Reserve data from Transmission Owners (TOs) for the generating units within their zone. Using the Reactive Reserve application, an “All Call” is sent to Local Control Centers (LCC) and Market Operation Centers (MOC): TOs are responsible for submitting Reactive Reserve Check (RRC) data; MOCs should verify reactive capabilities of their units. After TOs submit RRC data, PJM summarizes and posts the data.

Business Rules

- TOs cannot submit RRC data until PJM creates a new RRC for their zone(s).
- TOs can make necessary reactive reserve data resubmissions before PJM posts the new reactive reserve report.

Manual Reference: PJM M-14D, Generator Operational Requirements, Attachment D.

Submit RRC Data
When logged into eDART, click on the **Reactive Reserve** button on the left menu to open the **Reactive Reserve Check** main menu. Click the **Submit RRC Data** button to open the **RRC Company Data** form and enter RRC data:

![Reactive Reserve Check](image)

After opening the **RRC Company Data** form, the following screen displaying Capacitors will appear. The equipment type filters can be used to switch from Capacitors to Reactors, SVCs/Statcom, and Units/Condensers.
### Capacitors/Reactors

- Equipment can be filtered by type, name, voltage and SE status.
- PJM can include notes to all and/or specific TOs.
- User can add note to PJM.

### SVCs/Statcom

- Equipment can be filtered by type, name, voltage and SE status.
- PJM can include notes to all and/or specific TOs.
- User can add note to PJM.

Enter reserve values as needed.
Units/Condensers

Equipment can be filtered by type, name, voltage and SE status.

Other Notes

ICCP values retrieved when RRC issued. User can override ICCP values if needed.

Clicking Submit acknowledges reserve values: company entered or PJM values.

• PJM can include notes to all and/or specific TOs.
• User can add note to PJM.
**RRC Report Search**

To view historical summaries of the RRC Reports, click the RRC Report Search button to search for reports using the available filter settings. The From Date and To Date fields are used to filter by the Report Timestamp (when the RRC was requested). By default, reports are displayed for the last 30 days. Uncheck Last 30 Days to view all historical reports.

The following menu path shows how to progress through each step.
**Reactive Reserve Check Color Legend**

<table>
<thead>
<tr>
<th>Color Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>eDART Unavailable and SE MVAR is not 0</td>
</tr>
<tr>
<td>Mismatch between eDART AVR and EMS AVR</td>
</tr>
<tr>
<td>Future or Retired Equipment</td>
</tr>
<tr>
<td>Regular</td>
</tr>
<tr>
<td>Close Window</td>
</tr>
</tbody>
</table>

**eDART Unavailable and SE MVAR is not 0**
- Whenever eDART identifies a facility as unavailable, but the PJM EMS SE MVAR output indicates that the facility is in-service

**Mismatch between eDART AVR and EMS AVR**
- Whenever an eDART AVR ticket exists, but the PJM EMS has the AVR in AUTO mode
- Whenever no eDART AVR ticket exists, but the PJM EMS has the AVR in Manual Mode

**Future or Retired Equipment**
- Whenever a facility is marked as retired or future in the eDART database

**Instantaneous Reserve Check**

Instantaneous Reserve Check (IRC) is used to verify that enough reserve generation is available. All generators must report their reserve information to PJM when requested. PJM initiates IRCs and TOs are expected to respond in a timely fashion. IRCs are performed at least twice per day and the results are used to initiate some emergency procedures. There are separate reports for PJM Mid-Atlantic Region, Western Region, Southern Region and Northern Illinois.

After logging into eDART, click on **Instantaneous Reserve Check** button as highlighted in the left menu to access the **Instantaneous Reserve Check** menu.
Submit IRC Data

Generation Read and Write users can submit their IRC data using the Submit IRC Data button when PJM requests for IRCs.
After clicking the **Submit IRC Data** button, the user will be taken to the **IRC Company Data** window. Users should submit data for each appropriate field. Because PJM initiates an IRC about twice a day, IRC data should be submitted about twice a day. PJM typically initiates an IRC during the morning and during the afternoon. Users will only see columns for fields they have permission for.

After entering all IRC data, users should click the **Submit Form** button to submit their data to PJM. From the **IRC Company Data** window, users can also click the **Refresh** button to reset their window, or click the **Main Menu** button to return to the **Instantaneous Reserve Check** menu.

After clicking the **Submit Form** button, users will be taken to a confirmation window. To exit this window, click the **Continue** button.
**IRC Report Search**

To look up past IRC reports, click the **IRC Report Search** button from the **Instantaneous Reserve Check** window.

Clicking the **IRC Report Search** button will take users to the **IRC Report Search** window where users can enter filter criteria to find IRC reports. If users are looking for a specific IRC report, users can enter the given “Request Number” into the **Request Number** field. Additionally, users can enter a date range by using the **From Date** and **To Date** fields. Only entries between the two entered dates will return. Users can click the **Last 30 Days** checkbox to get results from only the last 30 days. If users want to view the most recent IRC report, they can click the **Most Recent** button. Finally, to return to the **Instantaneous Reserve Check** menu, click the **Main Menu** button.

After entering any desired filter criteria, click the **Apply Filter** button to go to an **IRC Report** window.
Users can select an IRC Report ID number to see the details of that report. To exit the IRC Report, click the Back button.

Clicking a Report ID number will open an IRC Company Data window. An example of an IRC result can be found below.
Minimum Generation Report

The Minimum Gen. Report application is used to alert the user that system conditions may require the use of minimum generation emergency procedures. For more detailed information, consult PJM Manual M-13.

Members can:
- Check and update unit data in PJM computer systems
- Check if unit maintenance could be scheduled over light load period

Current MinGen

Once PJM has issued a minimum generation alert, the Current MinGen button will be available for users to report their emergency reducible information. Click the Current MinGen button from the Minimum Generation main menu to access the Emergency Reducible Generation form.

Transmission Owners cannot submit Minimum Gen. Reported data. Generation Owners must enter any prior information under Reported in Minimum Gen.
- **Total Reducible Generation:** Enter the total reducible generation available for both the declaration and the event. Joint-owned generation is reported by the operating company.

- **Reducible on Declaration:** Enter the emergency reducible generation that will begin reducing down when PJM makes the Minimum Generation Emergency Declaration, before the actual Minimum Generation event.

Generation and Transmission Owners can use **Emergency Reducible Generation** to enter the **Actual** generation reduced at **Declaration** and **Event** after the fact.

After entering all known data, select **Submit**. A successful submission will yield the following message.

![Emergency Reducible Generation](image)

### Reports

To view **Minimum Generation Reports**, click the **Reports** button in the **Minimum Generation** main menu window.
Transmission and Generation owners can enter a specific **Request ID** to apply the filter for the **Minimum Generation Report**; alternatively, users can enter either a **From Date** or a **To Date** to view a specific timeframe. Once the filter settings have been set, clicking **Apply Filter** will display a list of requests matching the filter criteria.

![Minimum Generation Report](image)

Clicking on a **Request ID** will open up data for individual entries (notice that the Cancelled dates are shown to inform members the completion date of the Minimum Generation Report). Users can click the **Main Menu** button to return to the **Minimum Gen. Report** menu.
The **MinGen Alert, Lambda Signal to Zero** and **MinGen Declaration** are all timestamps for different stages of the Emergency Reducible Generation process. These sections are all completed by PJM Dispatch.
PJM Status Report

PJM Status Reports application includes the Current, Peak and Gen Checkout reports.

When logged into eDART, click on the **PJM Status Report** button on the left menu to open the **PJM Status Report** main menu.

View Current System Report

On the PJM Status Report main menu, click View Current System Report to open the Current System Report form. The report is updated every 15 minutes by PJM.
Current System Report Fields:

- **Date & Time:** Displays the time period for which the System Status Report was prepared.
- **Net Installed Capacity:** The MW total of all PJM installed capacity for the report period.
- **Reductions:** The MW amount of generation reductions entered into eDART by the Generation Owners/Operators for the report period.
- **Available System Capacity:** The net installed capacity minus the generation reductions.
- **Unscheduled Capacity:** The internal generation not scheduled for load and reserves.
- **Scheduled Capacity:** The internal generation scheduled for load and reserves.
- **Interchange:** The total energy breakdown of the energy transferred between the PJM control area and each individual neighboring control area.
- **Load:** The total energy in MW being delivered to customers at the time of the report.
- **Reductions:** Displays the MW breakdown of the total reduction values by reduction type.
  - **Unplanned:** An outage that cannot be postponed beyond the end of the next weekend.
  - **Planned:** An outage of predetermined length, scheduled well in advance of its occurrence.
  - **Maintenance:** An outage that can be postponed beyond the end of the next weekend but requires the unit to be removed before the next planned outage.
- **Refresh:** Refreshes the page and displays the most current System Report.
- **Main Menu:** Click to return to the PJM Status Report menu.
View Today’s Peak Report

To view the current day’s peak system report, click the View Today’s Peak Report button from the PJM Status Report main menu. The Today’s Peak Report is generated for the projected peak of the day (usually occurring at 07:00 during the winter season and 16:00 during the summer season) and is similar in format to the Current System Report.
Control Zone Details: Shows the breakdown of capacity, interchange, load, and reductions by Control Zone, not just by the transmission operator but as a whole.
**View Previous Peak Report**

Historical Peak reports can be found using the using the View Previous Peak Report button from the PJM Status Report main menu. This will open a new page where the user can filter for reports:

- **Request ID:** Enter the Request ID of a specific report to view its data.
- **Report Date:** Enter From and To dates to browse Previous Peak Reports within that range.
- **Apply Filter:** Submit filter data to browse Previous Peak Reports.
- **Most Recent:** Clicking Most Recent will bring up the most recent System Report.

Once a report is chosen within the Peak Report Log, a report similar to the Current System Report will appear.

- **Control Zone Details:** Shows the breakdown of capacity, interchange, load, and reductions by Control Zone, not just by the transmission operator but as a whole.

The menu path chart on the following page shows progress through the entire function.
Gen Checkout – Today

Click the Today button to view the reports that have been initiated on the current date. Information for the current date will be visible from 4:15 pm (16:15) to midnight.

To view a Gen Checkout report for the current day, click Today in the Gen Checkout section of the PJM Status Report menu.

The image above displays breakdown information for the units (by type) that meet the filtering criteria for the specified date. New filters have been added to the Breakdown report to display units in or close to violations.

- Regular Records: display units with periods of no violation (grey)
- Warning Records: display units with periods exceeding warning level (yellow)
- Violation Records: display units with periods exceeding acknowledgement level (red)
- **Diff. Tolerance**: will limit report to units where the:
  \[|\text{Adj. ICAP Diff}| > \text{Diff. Tolerance} \text{ OR } |\text{Adj. ICAP RPM}| > \text{Diff. Tolerance}\]

By default, all the checkboxes are checked, and the Diff. Tolerance value is 0 MW. The added columns reflect new calculations.

- **Period**: Peak periods as outlined by PJM (Mid = 0300, Day = 1000, Eve = 2000)
- **Reduct.**: Sum of all tickets excluding ambient air tickets.
- **Amb. Adj.**: Sum of reduction of Ambient Air Generator Outage Tickets for unit at time of Period multiplied by -1. Amb. Adj. = (-1) * Reduction
- **Econ Max.**: Econ Max for a period assigned in eMarket
- **Emerg. Max**: Emerg. Max for period assigned in eMarket
- **Adj. Cap. ICAP**: Calculation of capacity remaining after Generator Outage Ticket Reduction. \[\text{AC} = \text{ICAP} + \text{Amb. Adj.} - \text{Reduct.} - (\text{Emerg Max} - \text{Econ Max})\]
- **Adj. ICAP Difference**: Calculation of difference between eMarket values and Adj. Capacity. \[\text{Diff} = ((\text{Adjusted Cap. ICAP} - \text{Economic Max}) / \text{Adjusted Cap ICAP}) \times 100\%\]
- **Adj. RPM Difference**: \[\text{Diff} = ((\text{Adjusted Cap. RPM} - \text{Economic Max}) / \text{Adjusted Cap RPM}) \times 100\%\]
Clicking on a unit name will yield a pop-up screen detailing a history report of submitted tickets for the selected unit.

If there are reports for the current date, a list of them will appear. If not, the box below will appear.

Click the Back button to return to the PJM Status Report menu.
**Gen Checkout – Tomorrow**

Reports for tomorrow’s date are not posted until 4:15 of today’s date.

- **Period**: Peak periods as outlined by PJM (Mid = 0300, Day = 1000, Eve = 2000)
- **Reduct.**: Sum of all tickets excluding ambient air tickets.
- **Amb. Adj.**: Sum of reduction of Ambient Air Generator Outage Tickets for unit at time of Period multiplied by -1. Amb. Adj. = (-1) * Reduction
- **Econ Max.**: Econ Max for a period assigned in eMarket
- **Emerg. Max.**: Emerg. Max for period assigned in eMarket
- **Adj. Cap. ICAP**: Calculation of capacity remaining after Generator Outage Ticket Reduction. AC = ICAP + Amb. Adj. - Reduct – (Emerg Max - Econ Max)
- **Adj. ICAP Difference**: Calculation of difference between eMarket values and Adj. Capacity.
  \[ \text{Diff} = \left( \frac{\text{Adjusted Cap. ICAP} - \text{Economic Max}}{\text{Adjusted Cap. ICAP}} \right) \times 100\% \]
- **Adj. RPM Difference**:
  \[ \text{Diff} = \left( \frac{\text{Adjusted Cap. RPM} - \text{Economic Max}}{\text{Adjusted Cap RPM}} \right) \times 100\% \]
The image above displays breakdown information for the units (by type) that meet the filtering criteria for the specified date. Filters have been added to the Breakdown report to display units in or close to violations.

- Regular Records: display units with periods of no violation (grey)
- Warning Records: display units with periods exceeding warning level (yellow)
- Violation Records: display units with periods exceeding acknowledgement level (red)
- Diff. Tolerance: will limit report to units where the:
  \[|\text{Adj. ICAP Diff}| > \text{Diff. Tolerance} \text{ OR } |\text{Adj. ICAP RPM}| > \text{Diff. Tolerance}\]

If there are any reports for tomorrow, a list of them will appear. If not, the box below will appear.

Click the Back button to return to the PJM Status Report menu.
**Gen Checkout – Historical**

To access Gen Checkout reports for a specific time range, click **Historical** from the **PJM Status Report** menu.

Users must enter a date for a **Gen Checkout** to view information. Users can also filter by **Company**, **ASM**, **Zone**, **Type** and/or **Period** of day. The **Breakdown** information appears by default, but users can view just **Totals**. After selecting any desired criteria, click the **Apply Filter** button to view **Gen Checkout** information. Users can also click the **Main Menu** button to return to the **PJM Status Report** window.
If there is a line highlighted in red, this means that there is a problem with that entry that should be corrected ASAP.

- **Period:** Peak periods as outlined by PJM (Mid = 0300, Day = 1000, Eve = 2000)
- **Reduct.:** Sum of all tickets excluding ambient air tickets.
- **Amb. Adj.:** Sum of reduction of Ambient Air Generator Outage Tickets for unit at time of Period multiplied by -1. Amb. Adj. = (-1) * Reduction
- **Econ Max.:** Econ Max for a period assigned in eMarket
- **Emerg. Max:** Emerg. Max for period assigned in eMarket
- **Adj. Cap. ICAP:** Calculation of capacity remaining after Generator Outage Ticket Reduction. \( AC = ICAP + Amb.\ Adj. - \text{Reduct} - (Emerg\ Max - Econ\ Max) \)
- **Adj. ICAP Difference:** Calculation of difference between eMarket values and Adj. Capacity. 
  \[ \text{Diff} = \frac{(\text{Adjusted Cap. ICAP} - \text{Economic Max})}{\text{Adjusted Cap ICAP}} \times 100\% \]
- **Adj. RPM Difference:**
  \[ \text{Diff} = \frac{(\text{Adjusted Cap. RPM} - \text{Economic Max})}{\text{Adjusted Cap RPM}} \times 100\% \]

The image above displays breakdown information for the units (by type) that meet the filtering criteria for the specified date. New filters have been added to the Breakdown report to display units in or close to violations.

- Regular Records: display units with periods of no violation (grey)
- Warning Records: display units with periods exceeding warning level (yellow)
- Violation Records: display units with periods exceeding acknowledgement level (red)
- Diff. Tolerance: will limit report to units where the:
  \[ |\text{Adj. ICAP Diff}| > \text{Diff. Tolerance OR } |\text{Adj. ICAP RPM}| > \text{Diff. Tolerance} \]

Click the Back button to return to the PJM Status Report menu.
**Gen Checkout – Ack. Reports**

To access the **Acknowledgement Reports** for a specific time range, click the **Ack. Reports** button from the **PJM Status Report** menu.
To view a report on a specific date, enter the date next to **Report Date**. To view all reports from the past 30 days, check the box next to **Last 30 Days**. To see all of the reports between a specified date range, enter the **From** and **To Dates** that to be viewed. After specifying the information to be viewed, click the **Apply Filter** button and a list will appear in order of the most recent report date.
*Gen Checkout – Unit Translation Report*

To view a report matching the unit names in eDART to the unit names in the Gen Checkout reports and PJM’s EMS, click **Unit Transition Report** from the **PJM Status Report** menu.
The **Unit Translation Report** window will open up. Users can select a **Control Zone** and **Unit Type** to view information on units in that zone and of the selected type. Click the **Apply Filter** button to generate a list of reports. When finished, select **Main Menu** to return to the **PJM Status Report** menu.

NERC Data

NERC Data is used to transfer outage and load forecast data to NERC SDX (System Data Exchange). The capacity and EMS model used in eDART is translated to the PSSE (Power System Simulator Engineering) model for generators and transmission facilities. Please note that the NERC Data functionality is not visible to most members and is only for special cases, this is because NERC Data is generally used by PJM only.

The NERC Data application allows the Generation Read/Write user to submit and/or update PSSE Identifiers (PSSE Stations and PSSE ID) for the generators in the user’s company. The NERC Data also allows the Transmission Read/Write users to update or submit new PSEE Identifiers for the lines, breakers and other equipment present in the user’s company. If the company has access to NERC Data, Read Only users can view and filter the information in the list of generators and transmission facilities but cannot submit any changes.

When logged in to eDART, click on the NERC Data button from the left menu to open the NERC Data Menu as shown below.

*Note* Not all buttons visible to users; ability to see buttons depends on qualifications.

PSSE Identifier Transmission
This form is used to translate EMS model to PSSE model so that Transmission outages can get transferred to NERC SDX. In order to create a PSSE Identifier for transmission, click the **PSSE Identifier Transmission** button from the **NERC Data Menu**.

![NERC Data Menu](image)

To search for PSSE identifiers, choose some or all of the information from the drop down menus (note that Type must be chosen first, and then Station Name will be made available, etc.). Additionally, the **Equipment Modeled as of** field allows users to find PSSE identifiers based on the date they were modeled into the system.

![PSSE Identifier Transmission](image)

After filling out the filter form and clicking **Apply Filter**, the PSSE entry form should appear.

![PSSE Identifier Transmission](image)

**From the PSSE Identifier Transmission** window, users can click the **Main Menu** button to return to the **NERC Data Menu**, or add another PSSE ID with the **Add PSSE ID** button. Additionally identifiers can be modified and saved with the **Submit Form** button, and users can filter for other identifiers with the **Apply Filter** button.
In the **PSSE Identifier Transmission** window, select **Add PSSE ID**.

All fields on the **Add PSSE Identifier Transmission** window are mandatory. Select information from each drop down menu, including **Type**, **Station Name**, **Voltage**, and **Equipment Name**. Enter information in the PSSE Identifier fields **Station A**, **Station B**, and **ID**. Note that the character length of Station A and Station B must be exactly 18 and the ID length must be between 1 and 2.

**Station A** and **Station B** denote the bus names where the line begins and ends, respectively. Sometimes there are multiple lines from one station to the next, thus the **ID** number identifies the specific line that is being referred to. An ID can be the same for several PSSE identifiers since several transmission types may be linked to the same equipment.

After the form has been submitted, the **Main Menu** button will go back to the **NERC Data Menu**.

**PSSE Identifier Generation**
This is the capacity model to send Generator outages to NERC SDX. To search for a PSSE Identifier for generation, click the **PSSE Identifier Generation** button on the **NERC Data Menu**.

Select a **Type** from the dropdown menu, select **Apply Filter** and a list of PSSE’s and the corresponding **Type**, **Commercial Name**, **Station** and **ID** will appear like the example below.

To modify data, change the information in open fields and click the **Submit Form** button. To find identifiers for other types, select another type from the **Type** drop down menu and click the **Apply Filter** button. To return to the **NERC Data Menu**, click the **Main Menu** button.

**NERC Load Forecast Report**
This functionality is only for cases where PJM asks Transmission Owners to manually provide load information instead of using the forecast. This is generally only used for a limited time such as aftermarket interactions or other special circumstances. This application transfers hourly, daily, weekly, and monthly forecast loads to SDX. To input data for or view the load forecast for today or several days in the future, select NERC Load Forecast Report button from the NERC Data Menu.

From the NERC Load Submissions button, select a radio button from Hourly, Daily, Weekly or Monthly. Next, select a date. This will produce a load submissions form. Enter any necessary information and click the Submit Form button. To close the NERC Load Submissions form, click the Exit button.

The following page provides a visual of the blank NERC Load Submissions form.
### NERC Load Submissions

**Company:** Electric Company

- **Hourly**  
- **Daily**  
- **Weekly**  
- **Monthly**

**Date:** 06/20/2016

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Facility Data – Retired 5/29/2019

Facility Data allowed TOs to update facility clearing times data. The data was used in PJM TSA (Transient Stability Analysis) tool for dynamic studies.

Retired as TSA has alternate sources for the required data.
Resources

In this section, users can find links to various eDART related PJM resources.

General eDART Questions: edarthelp@pjm.com


eDART Forum and eDART XML Forum page: https://pjm.com/committees-and-groups/tech-change-forum/edart-forum


eDART FAQs: http://www.pjm.com/FAQs.aspx#eDARTFAQs
