Transmission ITP

Equipment Outages

PJM State & Member Training Dept.

PJM©2020

Objectives

Students will be able to:

- Identify how weather may influence outage planning
- Explain how to communicate a transmission equipment outage request to PJM
- Describe the Network Model to Transmission Outage Ticket Linkage process
- Explain how to modify outage requests with PJM
- Coordinate operations with neighboring systems and PJM
- Explain the notification and coordination requirements, given a real-time outage

Outage Planning and Weather

Outage Planning and Weather

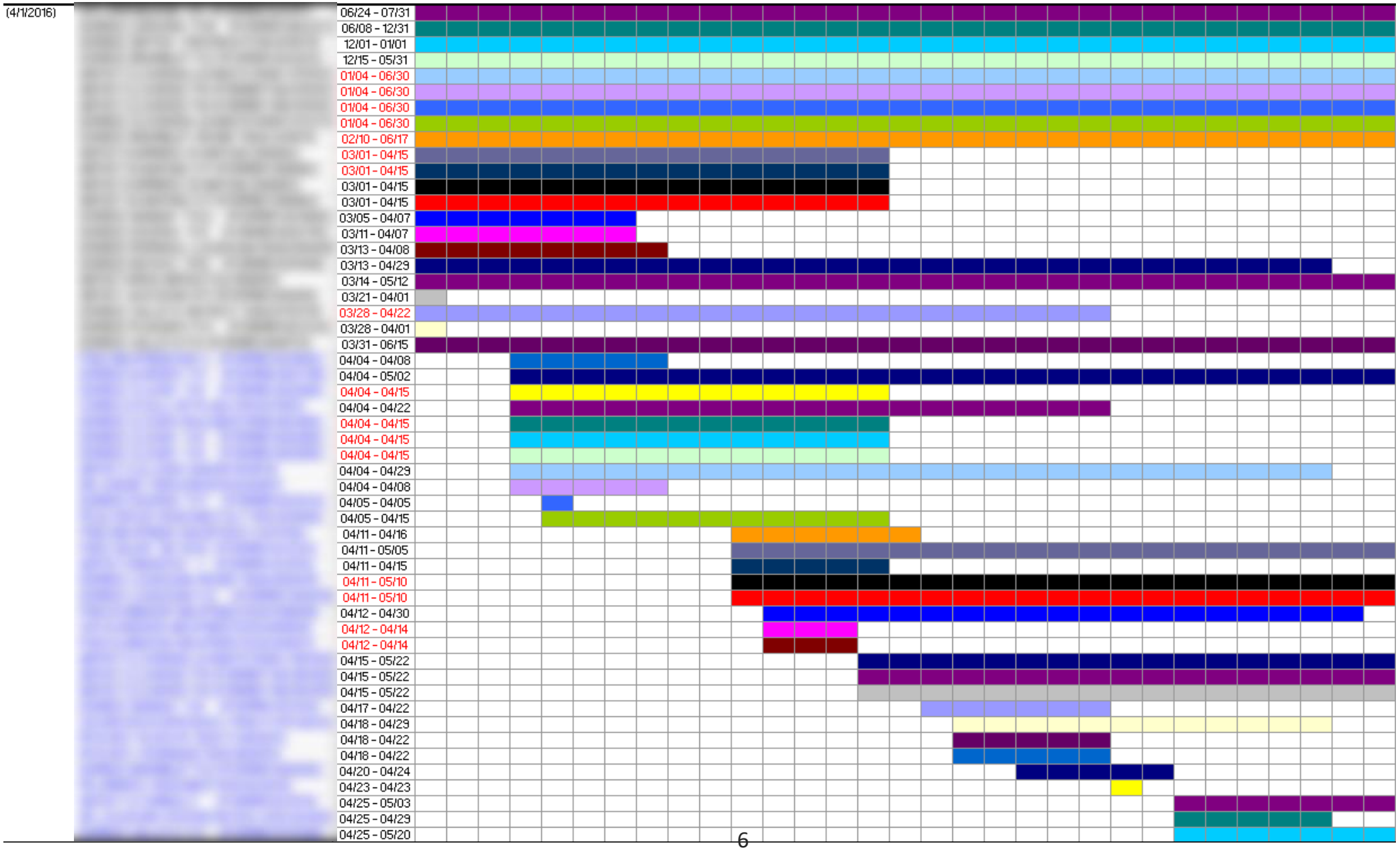
Considerations:

- Projected load levels for the day
  - PJM has guidelines for outages during peak load periods
    - Outages that could have an adverse impact to reliability should be shifted to the shoulder months (i.e., spring and fall)
- Severe Weather
  - There is a risk of losing additional facilities that could cause overloads on the system when combined with a maintenance outage

Seasonal Impacts

- Pushing outages to the shoulder months has other impacts
  - Numerous outages now fighting for a spot in an already full schedule
  - More coordination is required to ensure there are no conflicting outages (outages that should not occur at the same time)
  - Reliability of the system still has to be maintained
    - Some outages may be at risk to be cancelled
  - Generation outages also typically occur during this time of year
    - This may cause additional conflicts

Seasonal Impacts (500 & 765kV example)



Outage Reporting Guidelines

Outage Reporting Guidelines

Peak Period Outage Scheduling Guidelines

- Transmission owners should avoid scheduling any outage*:
  - In excess of 5 days in duration with a restoration time greater than 72 hours
- The peak periods are defined as:
  - Occurs from the 24th Wednesday of the calendar year through the 36th Wednesday of the same year

***these may result in increased risk to system reliability during peak summer and winter periods**

Outage Reporting Guidelines

- Peak Period Outage Scheduling Guidelines (con't)
  - These outages include those that may result in:
    - Actual or post-contingency thermal or voltage issues with insufficient generation for control
    - Constraints that are load sensitive with limited controlling actions
    - Stability issues or bottled generation

Outage Reporting Guidelines

- Peak Period Outage Scheduling Guidelines *(con't)*
  - Transmission owners shall screen for peak period outages prior to submittal in eDART and look to reschedule during shoulder months
    - The transmission owners are encouraged to schedule non-impactful outages during peak seasons
  - PJM shall screen for peak period outages when performing outage analysis
  - PJM may grant exception to ensure RTEP upgrades are installed within specified timeframes or as special circumstances warrant

Outage Reporting Guidelines

- Coordinating Outage Requests with Planned Nuclear Generation Outages
  - When a Transmission Owner submits an Outage Request that will open a Nuclear Generating Station‘s Unit Breaker the following guidelines shall be observed:
    - All Nuclear Unit breaker Outage Requests shall be coordinated closely with the Nuclear Station to coincide with a Unit outage
    - In the case that the Outage Request cannot be delayed until the next Unit Outage, the Nuclear station should be given at least six weeks notice
      - The schedule for opening the Unit Breaker must be closely coordinated with the station
      - The length of time that the breaker remains open should be minimized
    - PJM will work with the Nuclear Station‘s and the Transmission Owner‘s outage needs

Outage Reporting Guidelines

- Coordinating Outage Requests with Planned Nuclear Generation Outages
  - The Nuclear Generating Stations coordinate the scheduling of a Unit Breaker outage and internal plant equipment outages and testing to minimize station risk
    - Adherence to outage schedule and duration is critical to the plant during these evolutions
    - Any emergent plant or transmission system conditions may require schedule adjustments, which should be minimized
    - Any change to the outage schedule that impacts the Unit Breakers shall be communicated to the nuclear generator operator

Outage Reporting Guidelines

- Coordinating Outage Requests with Generation
  - Any outage request that has the potential to impact the MW output of a generation station needs to be coordinated with the generation owner/ MOC in order to minimize station risk
    - This should also be communicated to PJM especially if there is the potential to lose generation due to a transmission outage
      - Allows PJM time to study the overall impact
      - Heightened awareness that the situation could lead to a partial/ full reduction in the plant output

Outage Reporting Guidelines

- Outages for Relay Protection
  - An outage or degradation of either the primary or back-up relay protection associated with any facility 345 kV and above
    - When there is an outage of the primary relay, indicate the back-up clearing time if it is different from the primary time
  - An outage or degradation of other primary relay protection associated with any lower voltage facility near generating plants with stability issue
  - An outage of any other major relay protection scheme significant to EHV operation
  - An outage of an automatic recloser protection associated with an EHV circuit 345 kV and above, or any hotline work (reclosers in or out) on EHV facilities 345 kV and above
    - PJM dispatcher is informed prior to auto-reclosers being taken out of service
    - All unplanned outages shall be communicated to PJM Dispatch and submitted via eDART

Outage Reporting Requirements

- Transmission owners:
  - Shall submit tentative dates of all planned transmission outages of reportable transmission facilities as far as in advance as possible
  - Reasonable effort to submit one year in advance
- Transmission Owners are required to provide notice of all transmission outages:
  - Prior to the first day of the month, preceding the month of the outage
- Transmission Owners are also required to report “Hot Line Work” performed on facilities 345 kV and above

Hot Line / In-Service Work

- Why do In-service Work?
  - Reliability
  - Economics
- Type of In-service Work
  - Relay calibrations
  - Relay carrier/transfer trip test
  - Hot line work
  - Restrictions preventing auto-reclosure
- Operator Concerns
  - Increased probability of tripping
  - Awareness of work in area

On Time Rules – 4 “Buckets”

- Hotline Ticket Rule (Bucket 1): Transmission Owners are required to
  - Provide notice of all hotline transmission work, five days or less, by 0800 three days ***prior to*** the start of the outage (345kV and above)

Hotline work starting on March 16th must be submitted by
07:59 on March 13th to be on time

On Time					5 day or less hotline transmission work			
Wed March 11th	Thurs March 12th	Fri March 13th	Sat March 14th	Sun March 15th	Mon March 16th	Tues March 17th	Wed March 18th	Thurs March 19th

On Time Rules – 4 “Buckets”

- 1-Month Rule (Bucket 2): Transmission Owners are required to
  - Provide notice of all transmission outages, five days or less, ***prior to*** the first day of the month preceding the month of the outage

A 5-day outage starting in June must be submitted by 23:59 on April 31 to be on time

On Time					5-day outage							
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan

On Time Rules – 4 “Buckets”

- 6-Month Rule (Bucket 3): The TO is required to
  - Submit all outage requests in excess of 5 days in duration, prior to the 1st of the month, six months in advance of the start of the outage
- If a 6-day outage begins in October, the outage must be submitted by 23:59 on March 31 to be on time

On Time										6-day outage		
Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

On Time Rules – 4 “Buckets”

- 30-Day Rule (Bucket 4): Outages scheduled for
  - The following Planning year (i.e. June 1 – May 31), exceeding 30 days in duration
    - Submitted via eDART ***prior to*** February 1 for use in the annual FTR auction, unless the 6-month rule is more restrictive

On Time Rules – 4 "Buckets"

Example 1:

- An outage greater than 30 days starts in September. It must be submitted by:

6-month rule: Must be submitted by February 29 @ 23:59

On Time		1	2	3	4	5	6	30+ Day	Outage			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan

30-day rule: Must be submitted by January 31 @ 23:59

On Time								30+ Day	Outage			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan

- Since the 30-day rule is more conservative, it applies

On Time Rules – 4 “Buckets”

Example 2:

– An outage greater than 30 days starts in July. It must be submitted by:

6 month rule: December 31 of the year prior @ 2359

On Time	1	2	3	4	5	6	30+ Day	Outage				
Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

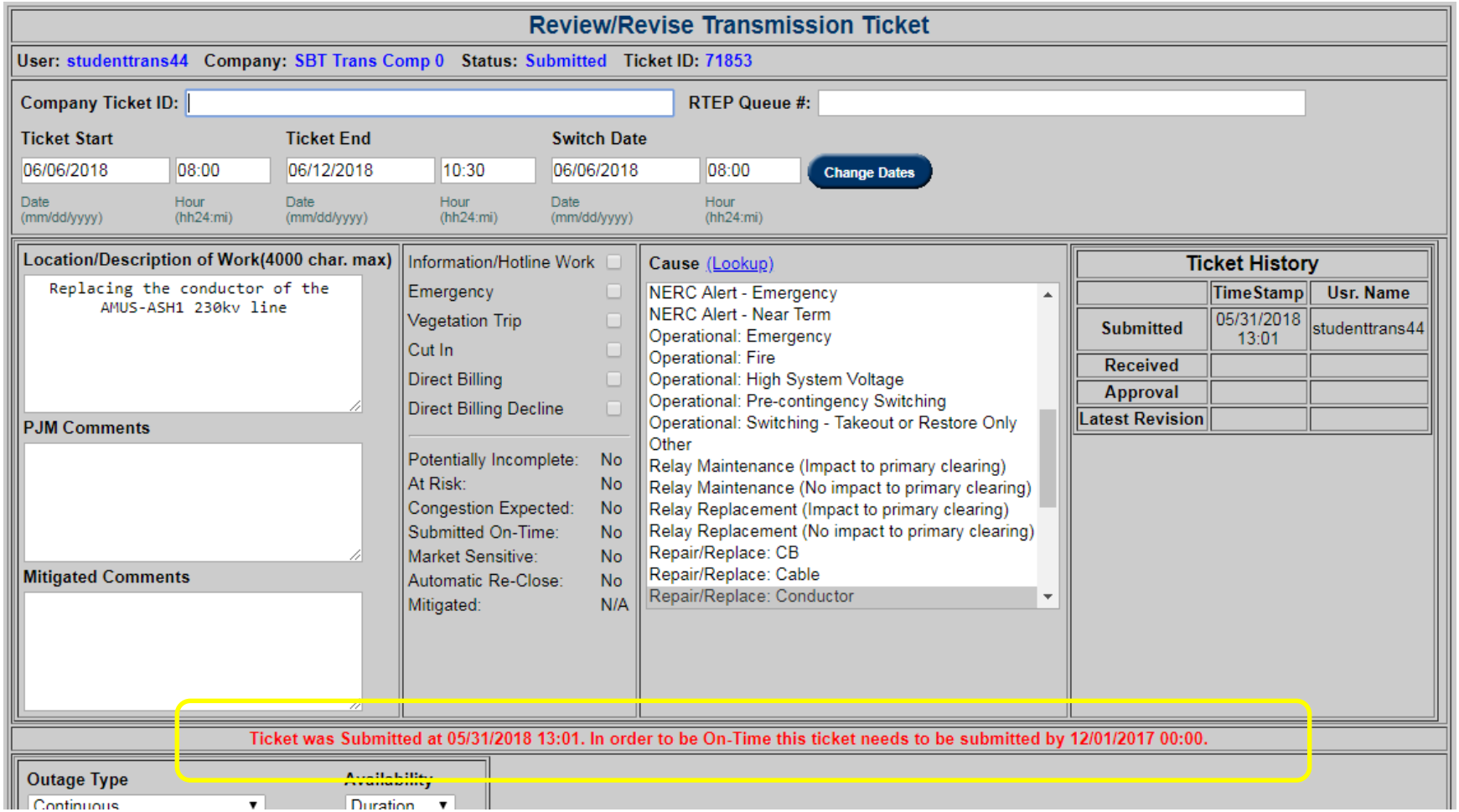
30 day rule: January 31 @ 2359

	On Time						30+ Day	Outage				
Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

– Since the 6 month rule is more conservative, it applies

Late Transmission Tickets

If a ticket was submitted “late,” reviewing the ticket will show that a comment is now displayed with the date/time the ticket should have been submitted to have been considered on time



eDART

eDART

- eDART stands for electric Dispatcher Applications and Reporting Tool
  - A suite of electronic applications used to facilitate dispatcher-to-dispatcher communications, along with other engineering communication and coordination functions with regards to:
    - Unit outage requests
    - Updates to reactive capability curves (D-curves)
    - Voltage regulator statuses among other generation and transmission functionalities

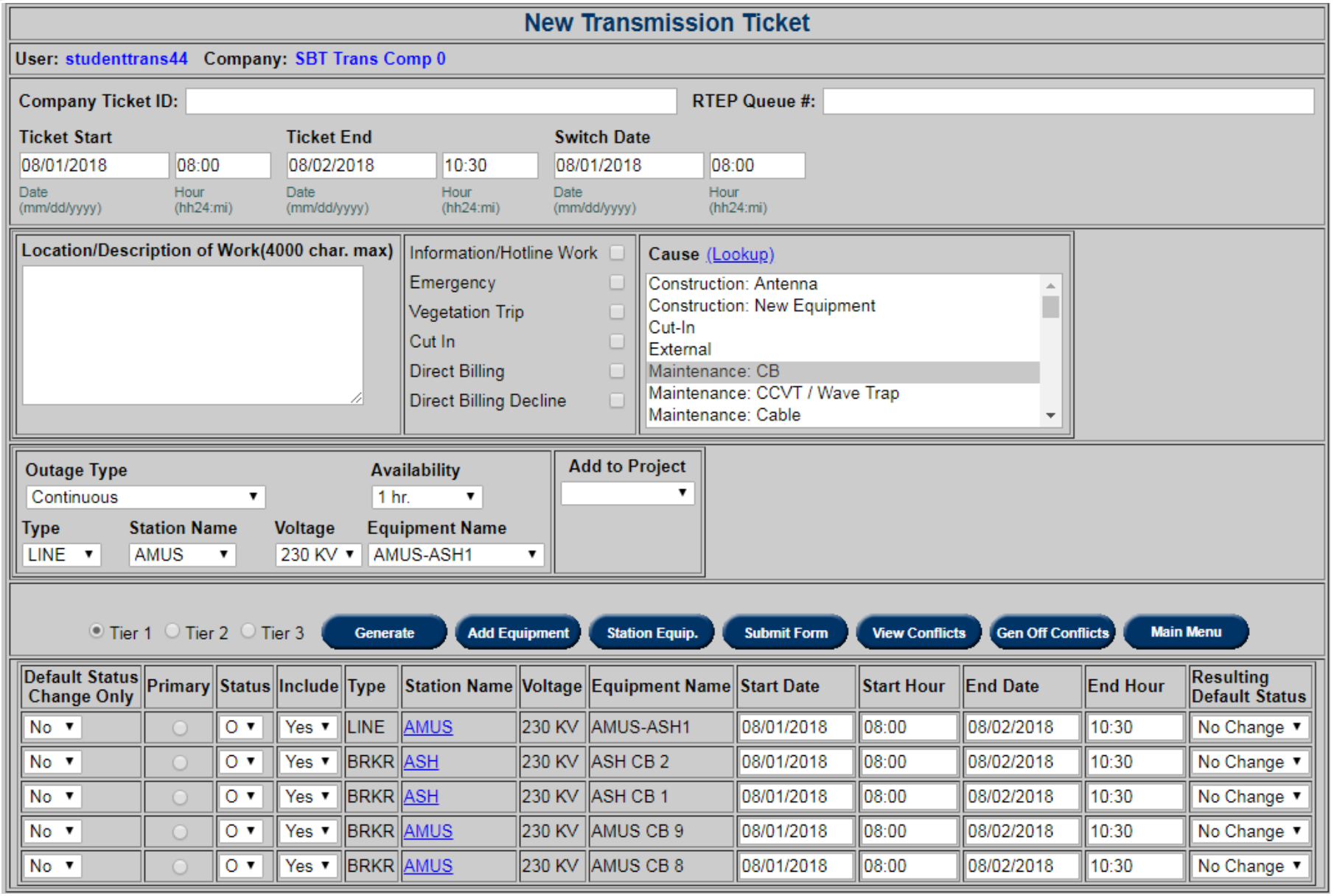
eDART

- eDART's benefits to PJM membership include:
  - A quick, 24/7 process for outage and model change request submittal
  - Easy access to comprehensive information
  - 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 to help make a comprehensive range of reports

Creating a Transmission Ticket

- Creating a New Transmission Outage Ticket - Business Rules
  - Ticket Start Date/Time must be prior to Ticket End Date/Time
  - Ticket must be submitted a minimum of 3 business days in advance of Ticket Start Date
    - Unless Emergency
  - Equipment Start and End Date/Time must be within Ticket Start and End Date/Time

Creating a Transmission Ticket



New Transmission Ticket

User: studenttrans44 Company: SBT Trans Comp 0

Company Ticket ID: RTEP Queue #:

Ticket Start		Ticket End		Switch Date	
08/01/2018	08:00	08/02/2018	10:30	08/01/2018	08:00
Date (mm/dd/yyyy)	Hour (hh24:mi)	Date (mm/dd/yyyy)	Hour (hh24:mi)	Date (mm/dd/yyyy)	Hour (hh24:mi)

Location/Description of Work(4000 char. max)

Information/Hotline Work
Emergency
Vegetation Trip
Cut In
Direct Billing
Direct Billing Decline

Cause (Lookup)

- Construction: Antenna
- Construction: New Equipment
- Cut-In
- External
- Maintenance: CB
- Maintenance: CCVT / Wave Trap
- Maintenance: Cable

Outage Type: Continuous

Availability: 1 hr.

Add to Project

Type	Station Name	Voltage	Equipment Name
LINE	AMUS	230 KV	AMUS-ASH1

Tier 1 Tier 2 Tier 3 | Generate | Add Equipment | Station Equip. | Submit Form | View Conflicts | Gen Off Conflicts | Main Menu

Default Status Change Only	Primary	Status	Include	Type	Station Name	Voltage	Equipment Name	Start Date	Start Hour	End Date	End Hour	Resulting Default Status
No		O	Yes	LINE	AMUS	230 KV	AMUS-ASH1	08/01/2018	08:00	08/02/2018	10:30	No Change
No		O	Yes	BRKR	ASH	230 KV	ASH CB 2	08/01/2018	08:00	08/02/2018	10:30	No Change
No		O	Yes	BRKR	ASH	230 KV	ASH CB 1	08/01/2018	08:00	08/02/2018	10:30	No Change
No		O	Yes	BRKR	AMUS	230 KV	AMUS CB 9	08/01/2018	08:00	08/02/2018	10:30	No Change
No		O	Yes	BRKR	AMUS	230 KV	AMUS CB 8	08/01/2018	08:00	08/02/2018	10:30	No Change

Creating a Transmission Ticket

- Location/Description of Work
  - Location of main work
    - i.e., KEENEY 51 TR or TMI-HOSENSACK 5026 line
  - Brief description of work
    - i.e., Overhaul, Relay Work, Repair, Line Work
  - Switching
    - Identify the word “SWITCHING”
    - List CBs or equipment that will be off for switching and approximate duration
      - i.e., Keeney ring CBS 240, 241 open 30 min for switching
    - If switching will last more than 1 hour, it is required to detail the switching instructions in the equipment list

Creating a Transmission Ticket

- Informational/Hotline Work: Work is being performed on selected equipment, however that equipment remains energized
  - Breaker clearances not required
- Emergency: Outage due to equipment problem or tripping and must be taken immediately
  - 3 day notice NOT required for emergency job
- Vegetation Trip: If outage was a tripping caused by tree contact, this checkbox must be checked
  - These are reported to NERC

Creating a Transmission Ticket

- Cut In: Energization of a new facility

- Direct Billing:
  - TO will pay for the localized generator controlling actions

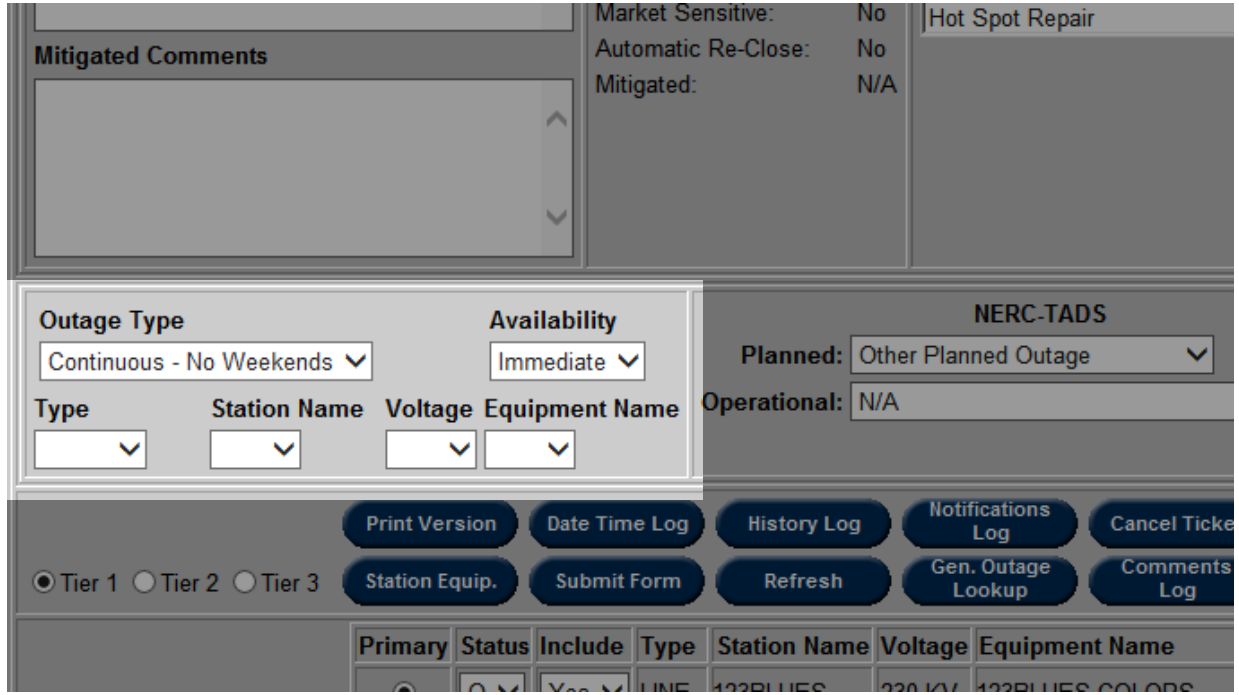
- Direct Billing Decline:
  - TO will not pay for the localized generator controlling actions, but the late RTEP outage cannot be rescheduled

Creating a Transmission Ticket

- Outage Type: Indicates when work will be performed on equipment
  - Selectable from: Daily (including weekends), Daily (no weekends), Daily (weekends only), Continuous, Continuous (no weekends), EMS Tripped

Creating a Transmission Ticket

- Realistic value to restore all equipment listed
- Selectable from:
  - Immediate, 30 min, 1 hr., 2 hr., 4 hr., 8 hr., 24 hr., 48 hr., or 72 hr., Duration
- Hot days are the major concern
  - End of Spring outage season
  - Beginning of Fall outage season



Creating a Transmission Ticket

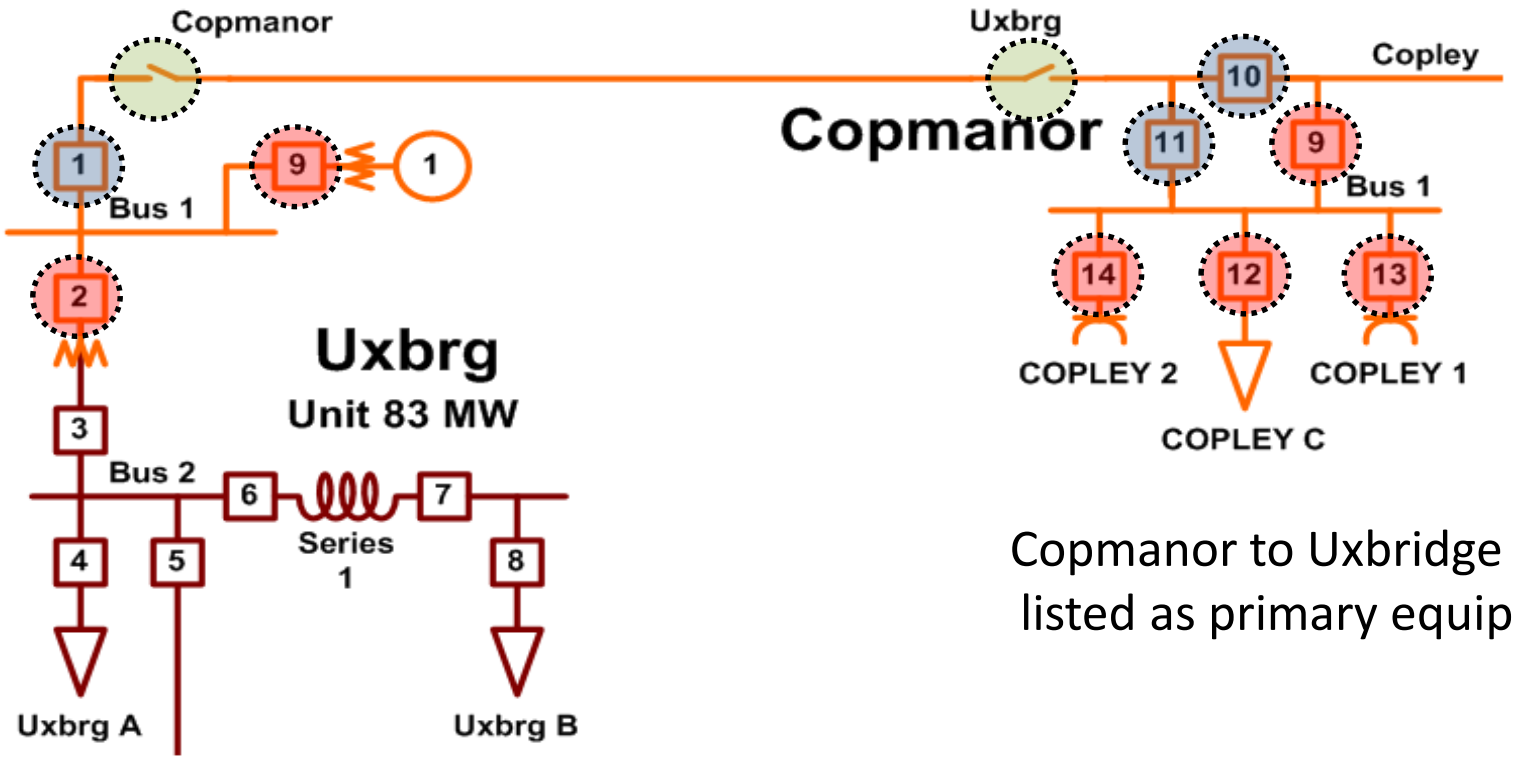
- Circuit Breaker Tiers
  - A Tier is defined as a “level” of CB or disconnect clearance for a piece of equipment
  - All CB or disconnect clearance points for an outage must be defined on the outage ticket
    - Tier selection helps accomplish this
  - Each outage ticket is referenced by a “Primary” piece of equipment
    - Tier CB and disconnects are associated with primary equipment
    - Important: Lines are listed by the first (alphabetical) Station Name

Creating a Transmission Ticket

- Circuit Breaker Tiers
  - Used to quickly retrieve clearance points (CBs or Disconnects)
  - Limitations on tiers
    - Available for all equipment EXCEPT Busses
    - Will not get clearance points beyond local substations at each end of line
    - Will not get clearance points at voltage levels other than that of the selected line

Creating a Transmission Ticket

Tier Example



Copmanor to Uxbridge line is listed as primary equipment

Tier 1 shaded green

Tier 2 shaded blue (includes tier 1)

Tier 3 shaded red (includes tier 1 and 2)

Creating a Transmission Ticket

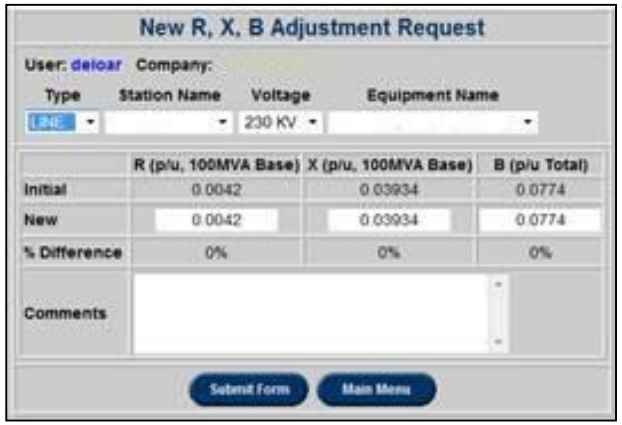
- Bus Outages
  - No busses modeled explicitly in PJMs eDART application
  - List breakers that will be open associated with bus
    - Can use tiers to accomplish this quickly
  - Mention BUS outage in Description of Work
  - Only list associated equipment (lines, transformers) if they are outaged due to bus outage

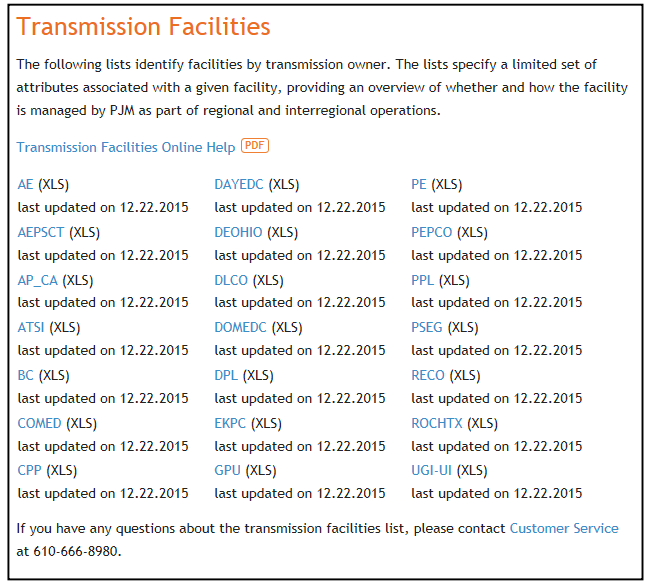
Creating a Transmission Ticket

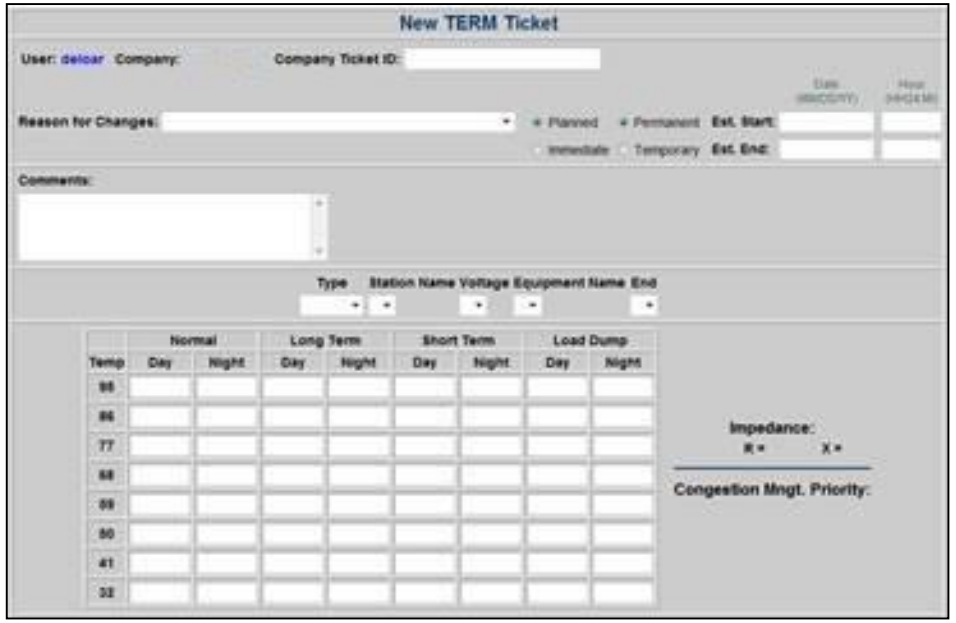
- Bus Outages
  - Request outage of Plymouth Meeting #3 bus
  - Lines remain energized from remote end
    - The lines will still be included on the ticket

Importance of Checking Cut-In Checkbox

- Additional focus also being made to ensure the following values have been implemented before allowing
energization of cut-in equipment
  - Thermal Ratings
  - Impedances
  - Contingency Definitions
  - Telemetry
  - Congestion Priority
- If identified later in a PJM analysis that a ticket should have been marked as cut-in, there could be approval/energization delays

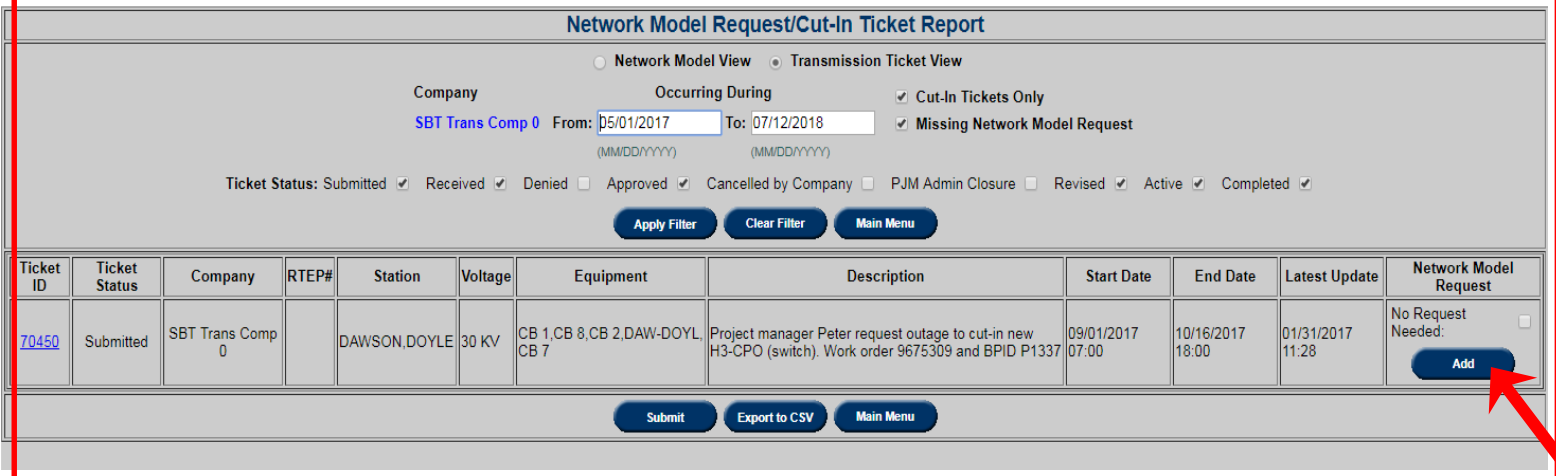






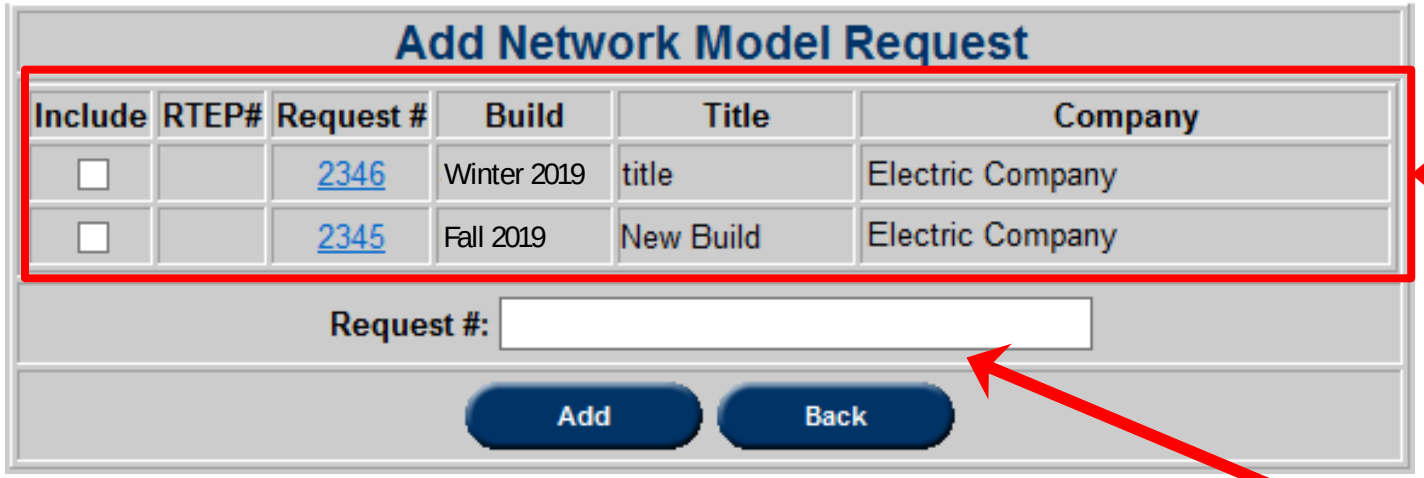
Linking Network Model Requests to Transmission Outage Tickets

Transmission Ticket View
(Linking Network Model Requests to Trans. Tickets)



- Will be replacement source for 6 week cut-in report
- Default filter 6 weeks pre to post
- The ticket linkage should **definitely** be complete at least six weeks before the start of the ticket
- Important for outage schedulers to ensure linkages are maintained
- Any cut-in tickets must have linkage to move forward w/ approvals (unless they are marked as not needed on the ticket)
- Use “Add” button to link Network Model request to outage ticket

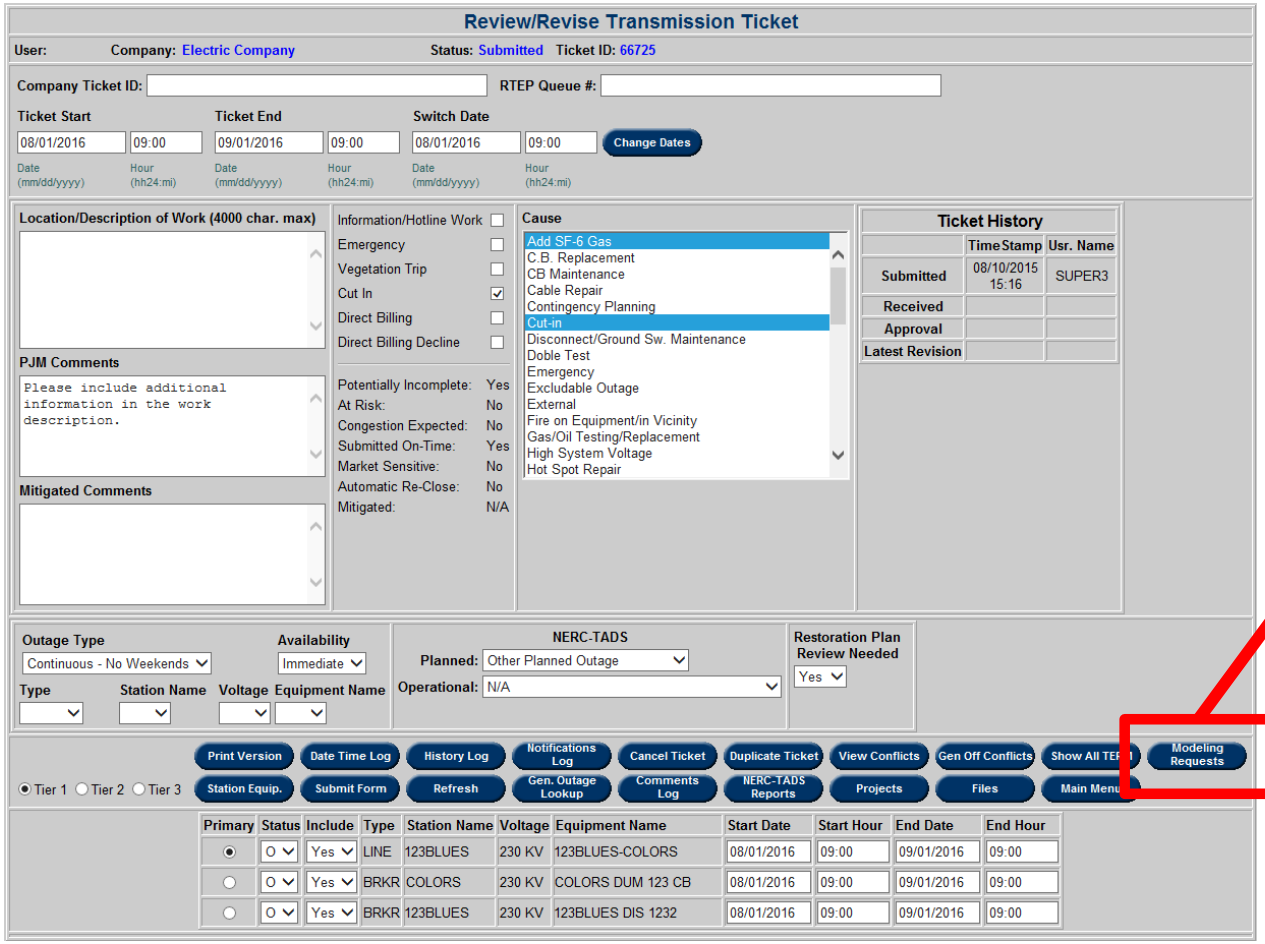
eDART Network Model to Cut-In Transmission Outage Ticket Linkage

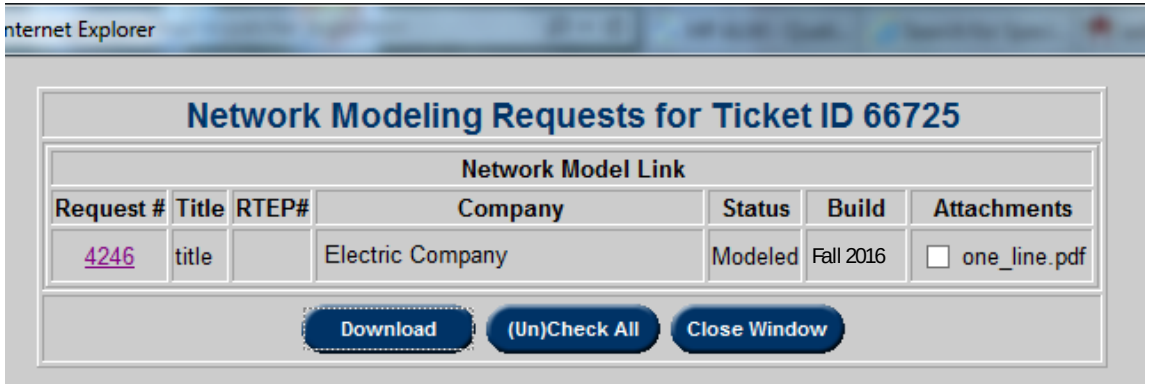


- Clicking “Add” will open form to do linkage
- The Network Model requests for builds within one year before the outage ticket start date and one year after the end date, including any of the stations in the outage tickets, will be displayed for potential linkage selection
- User can also manually enter Network Model request numbers, separated by commas, if adding multiple
- Click “Add” to submit selections

Viewing Linked Network Model Requests from Outage Tickets

- A “Modeling Requests” is on all Trans. Tickets with linked Network Model Requests
  - this will pull up a report of all linked requests w/ hyperlinks to view print versions of the requests
- Any files attached to the Network Model requests will be available for download (one lines, construction diagrams, etc.)



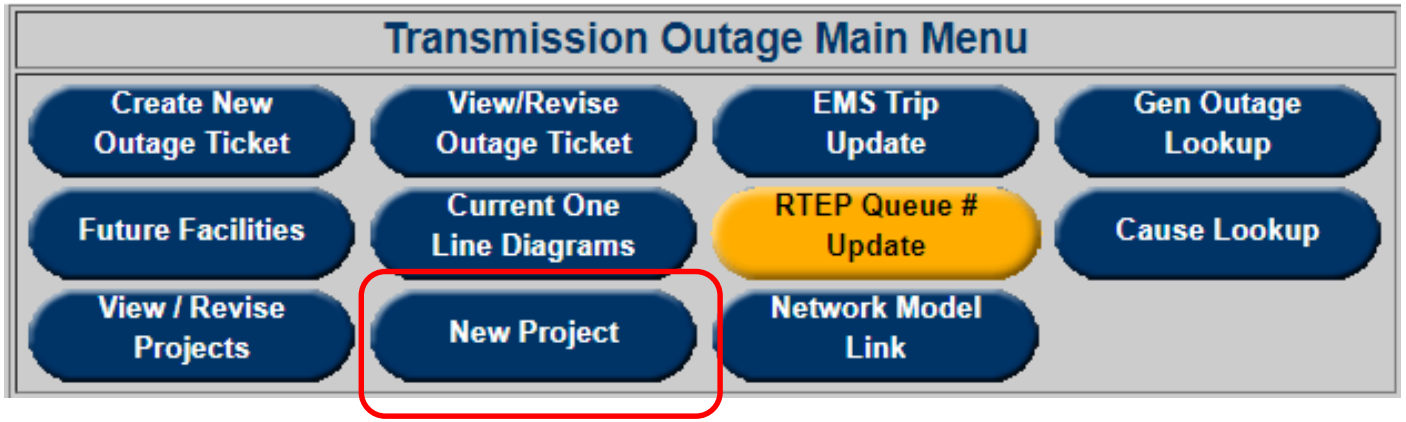


High Level Cut-in ticket Linkage Process Flow

- For any remaining cut-in ticket not linked, that are scheduled to occur within the next six weeks,
  - Your outage schedulers and company's DMS rep will be asked to make the linkage, or mark the ticket as not needing a link . . .
  - via the Transmission Ticket View of the Linkage Form
    - Check the Missing Network Model Link checkbox for easy gap filtering

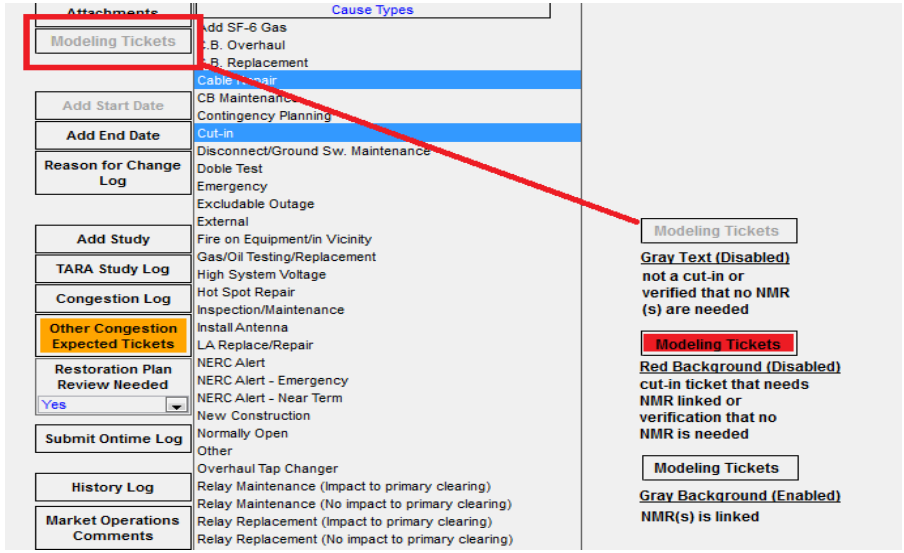
Project Tracking with Cut-In Tickets

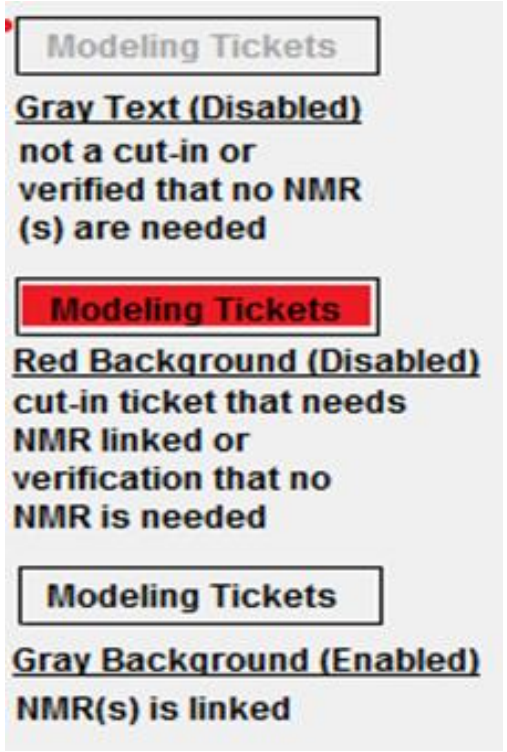
- If the cut in relates to a project and/or there are additional ‘cut-in’ tickets related to it
  - The outages should have a sequence identified on the tickets
  - A project should be created in eDART
    - This can be coordinated with outage analysis contacts at PJM
  - When possible all associated ‘cut-in’ tickets with a project should be listed in the description of work
    - Allows the ability to cross-reference information



PJMs Functionality in Transmission Outage Ticket

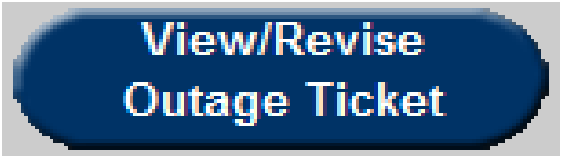
- Cut-In outage tickets can't be changed to status of Approved or Active if no Network Model request is linked or the ticket is not identified as not needing one





Revise a Transmission Ticket

- Viewing or Revising an Existing Transmission Outage Ticket
  - Transmission Outage Ticket is “locked” to changes when the Ticket is Approved
    - In order to make changes or to unlock the form you must first notify PJM verbally
    - If the ticket has a status of Submitted, then any field may be changed



Transmission Ticket Statuses

- Submitted
  - Original status of ticket upon submittal by company
- Received
  - Ticket status changed to Received by PJM upon initial review of ticket by Dispatch
  - Notifications sent to other Transmission owners through eDART

Transmission Ticket Statuses *(Con't)*

- Transmission Ticket Status Denied
  - Ticket status changed to Denied by PJM if outage request is not approved
  - Notifications sent to other Transmission Owner through eDART
    - Verbal notification given to outage submitter
- Transmission Ticket Status Approved
  - Ticket status changed to Approved by PJM if outage request is approved following detailed analysis by Reliability Engineer
  - Ticket is locked to changes
  - Notifications sent to the Transmission Owners and other Transmission Owners that have requested information for this outage through eDART

Transmission Ticket Statuses *(Con't)*

- Cancelled by Company
  - Ticket status changed to Cancelled by Company if company initiates cancellation of ticket
  - Notifications sent to all who had been previously notified through eDART
    - Verbal notification required to PJM if change affects current or next operating day
- PJM Admin Closure
  - Ticket was not closed out/canceled for reliability issues, it was closed because it had to be
  - PJM will include comments on the ticket if they are necessary

Transmission Ticket Statuses *(Con't)*

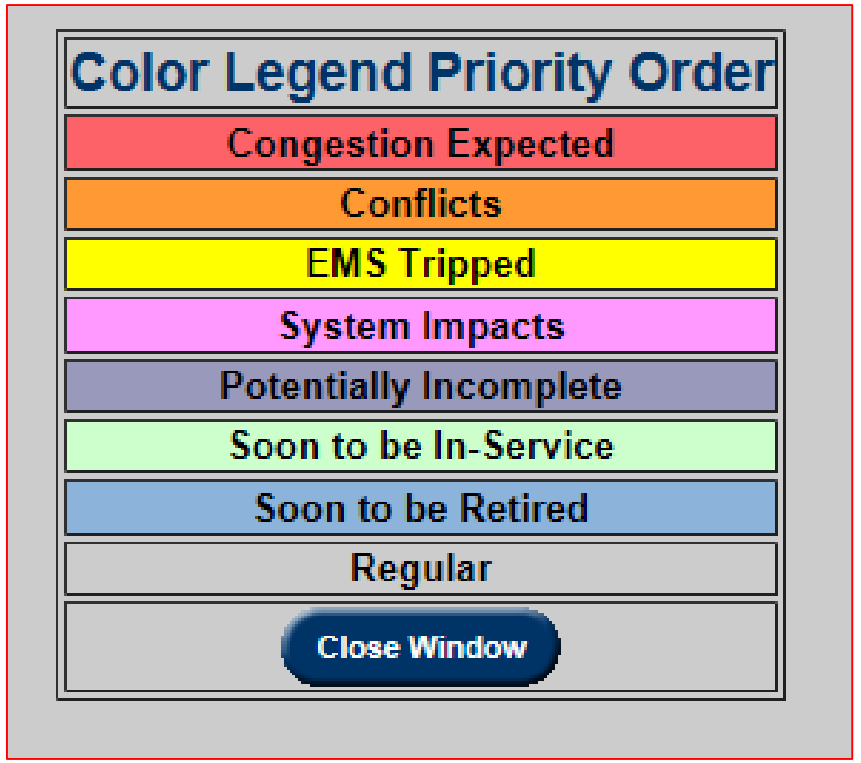
- Revised
  - Ticket status changed to Revised if any data on ticket has changed (unless ticket is active)
  - Ticket must be Received and Approved again
    - Notifications resent
- Active
  - Ticket status changed to Active upon input of an actual outage start date by PJM
    - Verbal notification required to PJM at actual start of outage ticket

Transmission Ticket Statuses *(Con't)*

- Complete
  - Ticket status changed to Complete upon input of an actual end date by PJM
    - Verbal notification required to PJM at actual end of outage ticket

Color-Coding of eDART Tickets

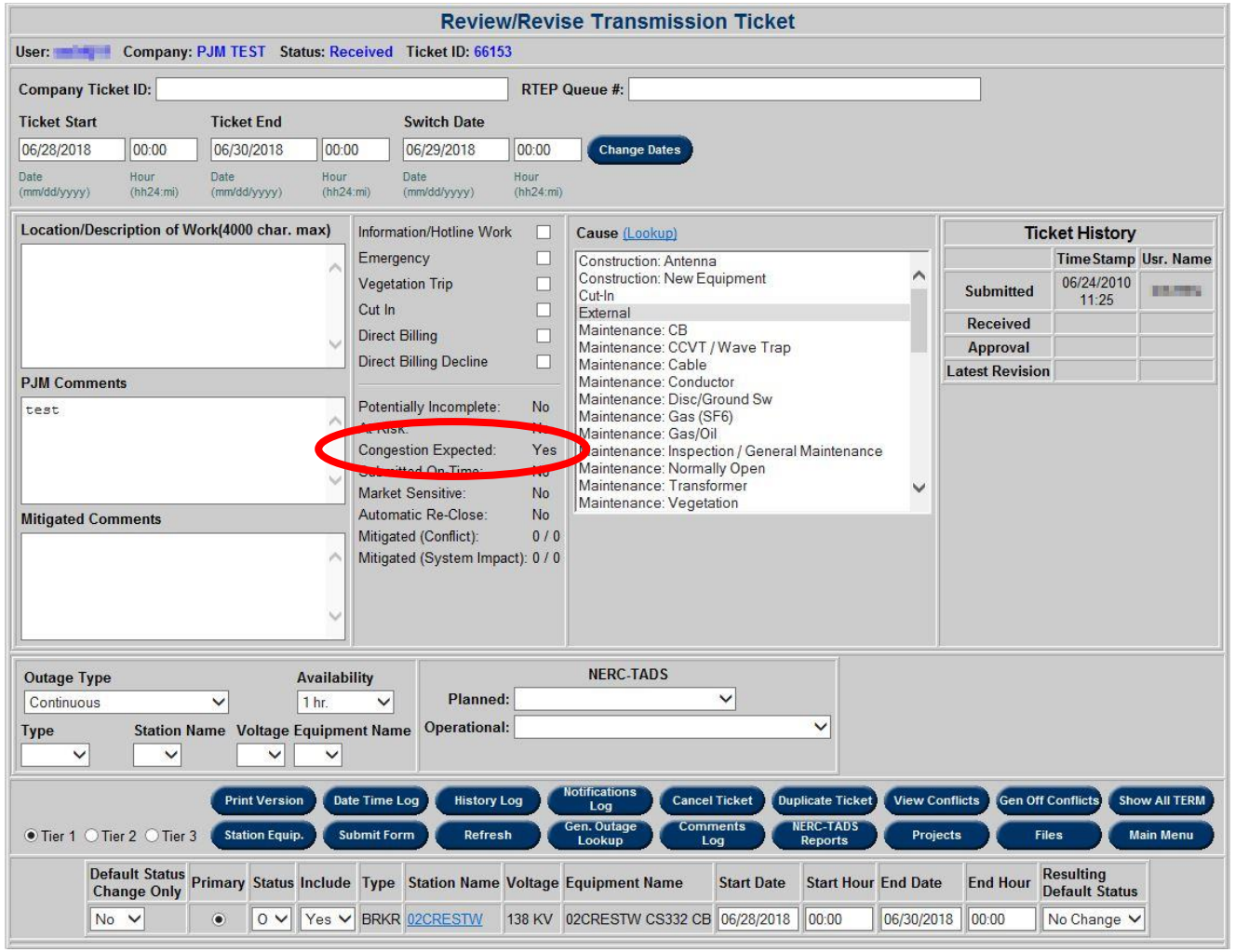
- Certain types of eDART tickets are given special Color-Coding to identify that they may require additional follow-up or attention
- If an eDART has more than one color status, it will take on the status with the highest color on the chart



Color-Coding of eDART Tickets

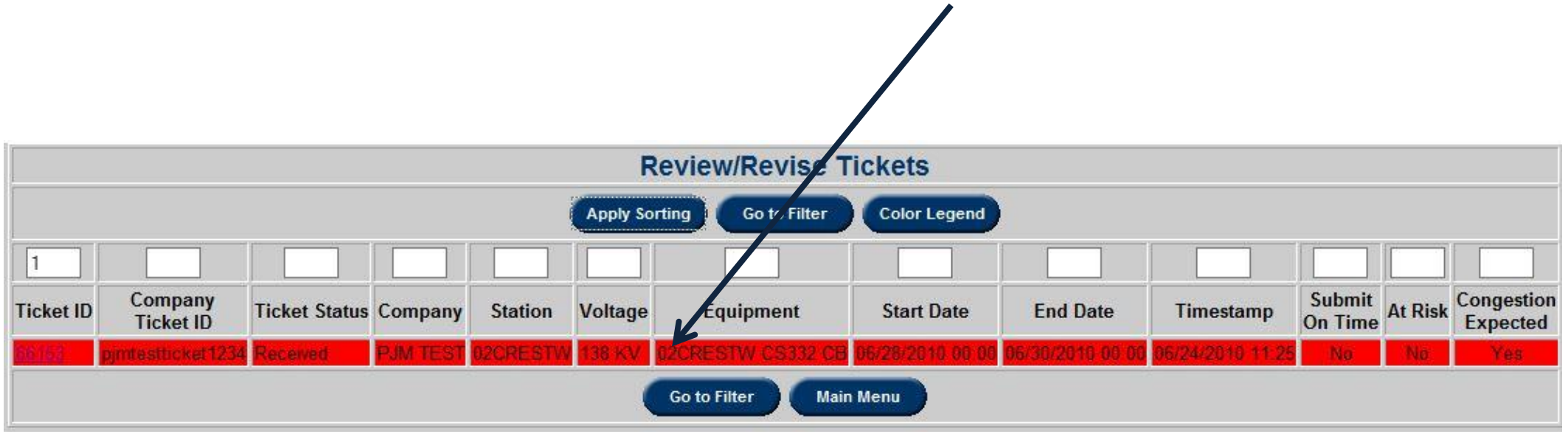
The "Congestion Expected" Flag

- PJM will check this flag when a studied outage causes the potential for off-cost operation
- Allows PJM operators to filter these outages out if necessary



Color-Coding of eDART Tickets

- An outage that is suspected to cause congestion will also be highlighted in red when viewed on the “Status Report” page….



Color-Coding of eDART Tickets

The "Conflict" Flag

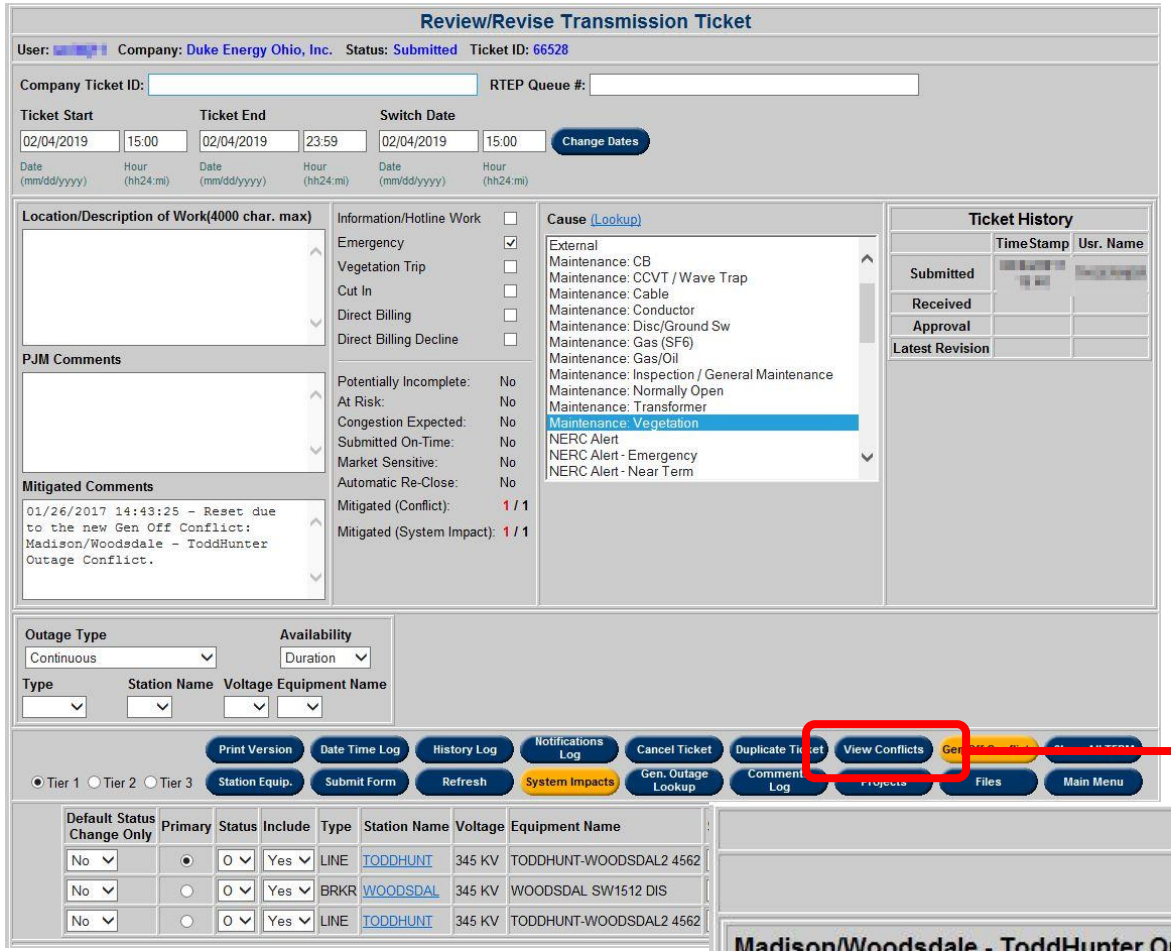
- This functionality looks at eDARTs to identify outage combinations that should never occur
  - List of scenarios to be made available within eDART for review (Initial source is PJM Planning Studies)
- Some scenarios may be cross-company
- If an outage is submitted violating a scenario, immediate feedback on impacted previously submitted tickets will be provided

Review/Revise Tickets

Apply Sorting | Go to Filter | Color Legend

Ticket ID	Company Ticket ID	Ticket Status	Company	Station	Voltage	Equipment	Start Date	End Date	Timestamp	Submit On Time	At Risk	Congestion Expected
66500	123	Submitted	Duke Energy Ohio, Inc.	PORTUNIO	345 KV	PORTUNIO 1375 CB	02/15/2011 00:01	02/18/2011 17:00	02/02/2011 10:39	No	No	No
66501	abd	Submitted	Duke Energy Ohio, Inc.	PORTUNIO	345 KV	PORTUNIO 1373 CB	02/20/2011 07:00	02/20/2011 12:00	02/04/2011 10:10	No	No	No
66528		Submitted	Duke Energy Ohio, Inc.	TODDHUNT	345 KV	TODDHUNT-WOODSDAL2 4562	02/04/2011 15:00	02/04/2011 23:59	02/04/2011 15:40	No	No	No

Color-Coding of eDART Tickets



- 'View Conflicts' button will be added to the Tickets
- Ticket specific conflicts will be available for users to see by clicking on the 'View Conflicts' button

Color-Coding of eDART Tickets

EMS Tripping Tickets

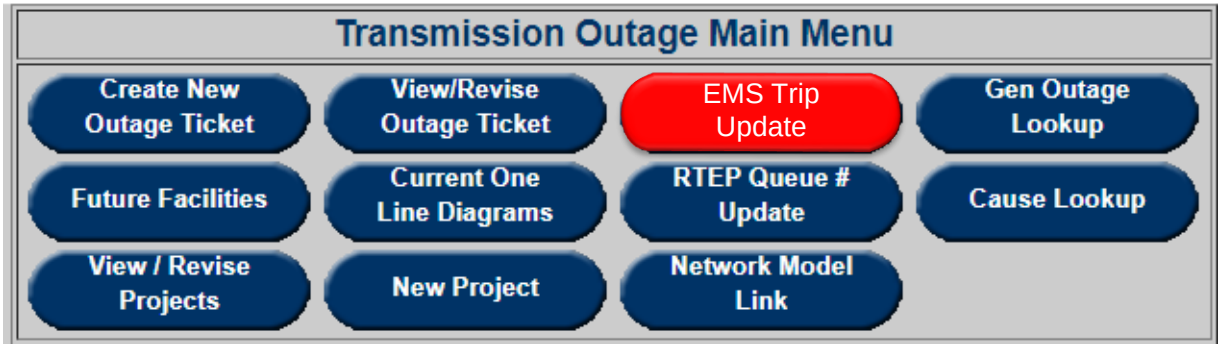
- Tripped equipment (from PJM EMS) automatically creates an eDART outage ticket
- All equipment 115kV and above
- Outage type = Tripping
- Ticket has Active status
- Start date/time = time of tripping
- End date = 7 days later
- Tier 1 equipment list is auto selected

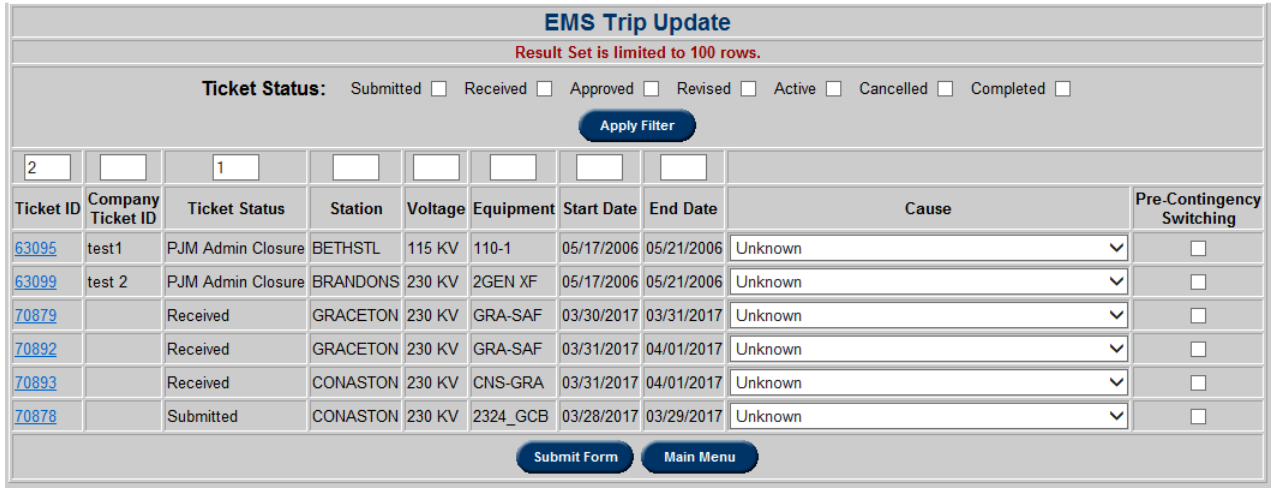
Color-Coding of eDART Tickets

- EMS Tripping Tickets created automatically by eDART are given a default cause of “Unknown”
- Tickets have the functionality to allow the Transmission Operator to
  - Associate cause for the purpose of performance compliance data gathering, and
  - Give PJM a better understanding of the reason for the outage
- “Pre-Contingency Switching” checkbox is for the outage being caused by pre-contingency switching

Color-Coding of eDART Tickets

- Form in Transmission Outage Ticket to allow TO to assign Cause Type to all EMS Trip Tickets marked “Unknown”
- User either selects a Cause Type from drop down or checks “Pre-Contingency Switching”
- Button on Transmission Outage Ticket menu will get highlighted in red if user’s company has EMS Trip Tickets marked “Unknown”
- Transmission Owner/Operator is expected to update ticket if “EMS Trip Update” Button is shown

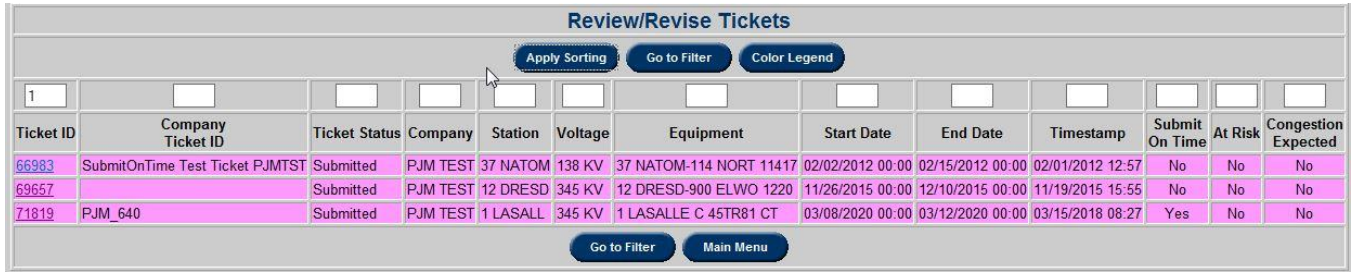




Color-Coding of eDART Tickets

"System Impact" Flag

- PJM has the capability to permanently link comments to specific outages in eDART
  - Allows the reliability engineers to pre-screen outages based on known impacts to generation, thermal overloads, voltage violations, stability restrictions, etc. before studying the outage
  - Serves a reminder for the PJM folks, could be useful to the TO's as well. Outages that have System Impact notes available will be highlighted in purple on the "Status Report" page



Review/Revise Tickets

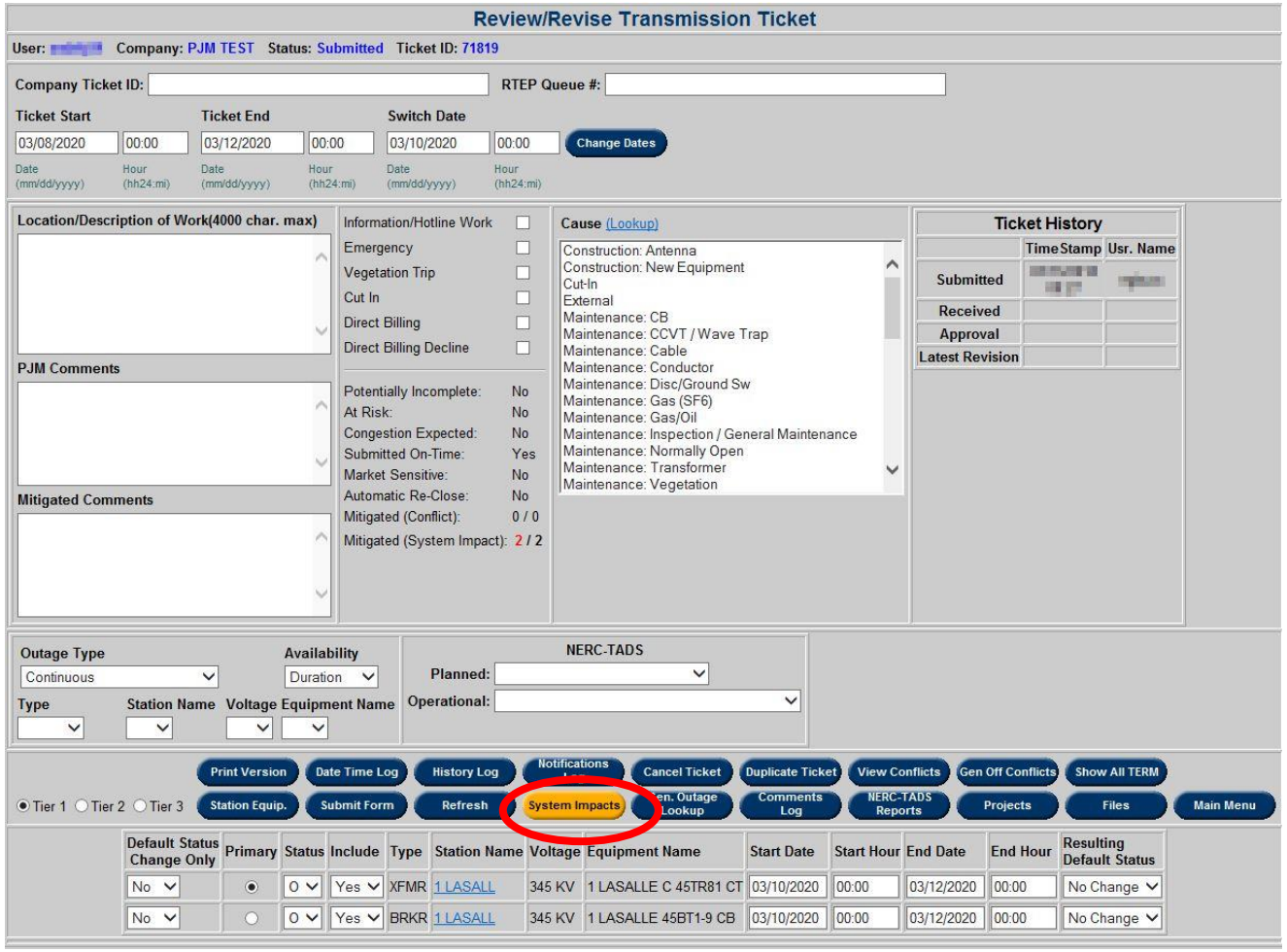
Apply Sorting | Go to Filter | Color Legend

Ticket ID	Company Ticket ID	Ticket Status	Company	Station	Voltage	Equipment	Start Date	End Date	Timestamp	Submit On Time	At Risk	Congestion Expected
66983	SubmitOnTime Test Ticket PJMTST	Submitted	PJM TEST	37 NATOM	138 KV	37 NATOM-114 NORT 11417	02/02/2012 00:00	02/15/2012 00:00	02/01/2012 12:57	No	No	No
69657		Submitted	PJM TEST	12 DRESD	345 KV	12 DRESD-900 ELWO 1220	11/26/2015 00:00	12/10/2015 00:00	11/19/2015 15:55	No	No	No
71819	PJM_640	Submitted	PJM TEST	1 LASALL	345 KV	1 LASALLE C 45TR81 CT	03/08/2020 00:00	03/12/2020 00:00	03/15/2018 08:27	Yes	No	No

Go to Filter | Main Menu

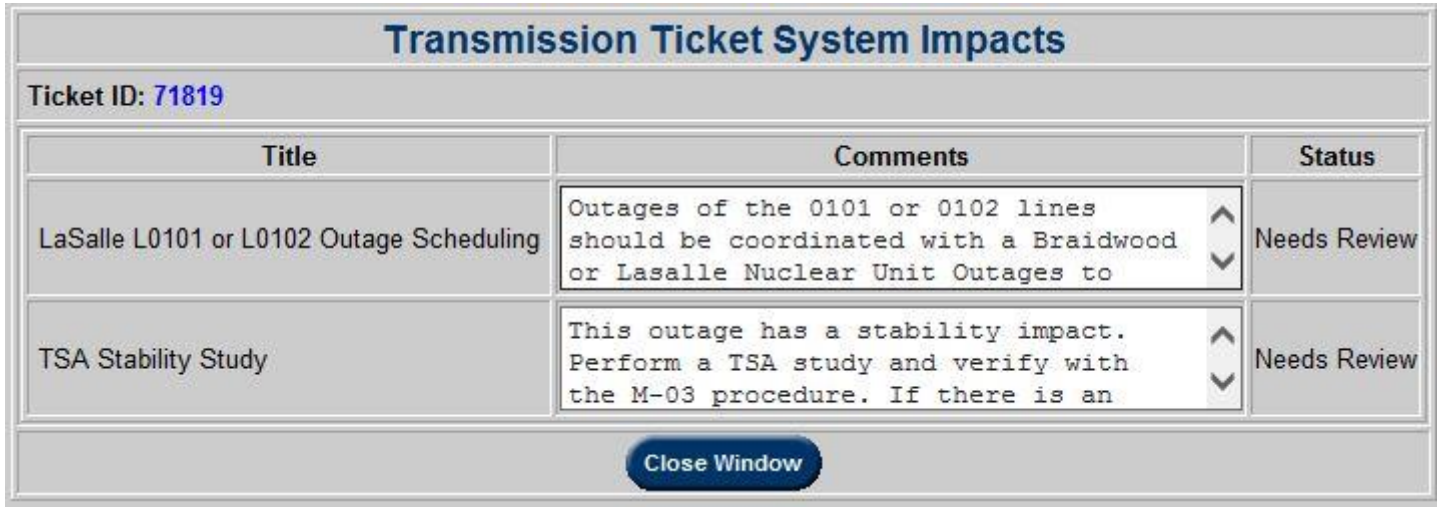
Color-Coding of eDART Tickets

- The eDART ticket for those outages will have an additional button labeled “System Impacts”



Color-Coding of eDART Tickets

- Clicking on the “System Impacts” button will bring up a screen detailing the linked comments



Transmission Ticket System Impacts

Ticket ID: 71819

Title	Comments	Status
LaSalle L0101 or L0102 Outage Scheduling	Outages of the 0101 or 0102 lines should be coordinated with a Braidwood or Lasalle Nuclear Unit Outages to	Needs Review
TSA Stability Study	This outage has a stability impact. Perform a TSA study and verify with the M-03 procedure. If there is an	Needs Review

Close Window

Color-Coding of eDART Tickets

The "Potentially Incomplete" Flag

- Added to transmission outage tickets to flag tickets that may need further review by PJM
- Potentially Incomplete is flagged if:
  - All outaged equipment in the ticket are breakers and the ticket is not Information/Hotline Work
  - Location/Description of Work field needs more information
- PJM will determine if non-BRKR facility should be added or more description text is necessary
  - Example: Ticket where BRKR on either side submitted w/o submitting LINE have company add LINE to the ticket

Color-Coding of eDART Tickets

- Potentially incomplete ticket can be Cancelled or Denied but no other status change is allowed until Potentially Incomplete is unchecked
- PJM can remove flag once issue resolved and continue normal status change
- Potentially Incomplete tickets will be highlighted in Lavender

Color-Coding of eDART Tickets

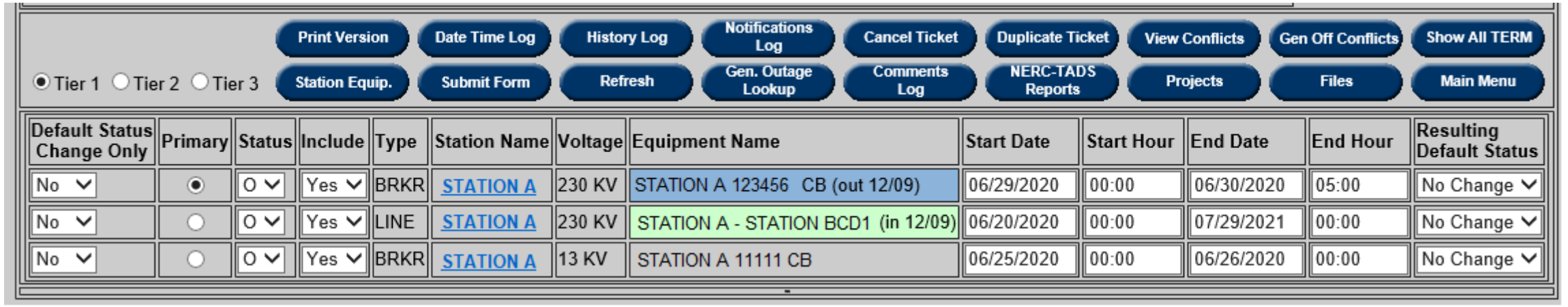
- PJM Comments automatically added when a ticket is flagged as Potentially Incomplete
  - If Location/Description of Work field has less than a pre-determined number of characters:
    - PJM Comments = "Please include additional information in the work description"
  - If all outaged equipment in the ticket are breakers and the ticket is not Information/Hotline Work:
    - PJM Comments = "Please include applicable non-BRKR facilities“
- Both comments are added if both of the conditions above persist

Color-Coding of eDART Tickets

The "Soon to be In-Service" Flag

The "Soon to be Retired" Flag

- These flags are shown for equipment that will be going into service or removed from service during the next model build



Default Status Change Only	Primary	Status	Include	Type	Station Name	Voltage	Equipment Name	Start Date	Start Hour	End Date	End Hour	Resulting Default Status
No	◉	O	Yes	BRKR	STATION A	230 KV	STATION A 123456 CB (out 12/09)	06/29/2020	00:00	06/30/2020	05:00	No Change
No	○	O	Yes	LINE	STATION A	230 KV	STATION A - STATION BCD1 (in 12/09)	06/20/2020	00:00	07/29/2021	00:00	No Change
No	○	O	Yes	BRKR	STATION A	13 KV	STATION A 11111 CB	06/25/2020	00:00	06/26/2020	00:00	No Change

Communications and Notifications

Communications

- Verbal Notification required **to PJM** for:
  - Problems with entering tickets through eDART
  - Any change to ticket (dates, equipment) which affects the current or next operating day
  - Transmission trippings
    - Also submit an outage ticket
    - If return date is unknown, use end of estimated month at 23:59

Communications

- Verbal Notification required **to PJM** for:
  - Switching, when it is ready to begin (permission to proceed):
    - Must be within a half hour before the equipment is removed from the system
    - To allow PJM to perform final reliability studies
    - If the equipment is not removed in a half hour you will have to call PJM back to reobtain approval
  - Actual start and end time of outage tickets
    - PJM will then update the ticket in eDART

Communications

- Verbal Notification will be given **from PJM** for:
  - Denial of an outage request
  - Questions about submitted outage request
  - Any special requirements for outage
  - 500 kV and above switching messages
    - via All-Call

Communications and Notifications

Notifications - Receiving

- Notifications will be made based on updated Reportable Transmission Facilities list
  - Notifications can be found in eDART
- eDART will allow those who are notified to view Transmission Outage Tickets
- Notifications must be acknowledged by receiving company through eDART

Communications and Notifications

Real Time Outage Communication Process

- **PJM Member Company Actions:**
  - Notifies PJM System Operator verbally 1/2 hour prior to scheduled outage of any Designated Transmission Facility
  - If 500 kV or above outage, notifies PJM again verbally, just prior to switching to verify conditions
  - Notifies PJM verbally when facility is out of service
  - Ensures that outaged facilities are properly represented in real-time system models

Communications and Notifications

Real Time Outage Communication Process

- **PJM Actions:**
  - Verifies outage will not adversely impact Control Area reliability
  - If 500 kV or above, notifies other PJM Member Companies of outage via All-Call
  - Notifies other affected Control Areas verbally

Questions?

PJM Client Management & Services

Telephone: (610) 666-8980

Toll Free Telephone: (866) 400-8980

Website: www.pjm.com

The Member Community is PJM's self-service portal for members to search for answers to their questions or to track and/or open cases with Client Management & Services

Resources & References

PJM. (2019). *PJM Manual 3: Transmission Operations (rev 55).* Retrieved from https://www.pjm.com/~/media/documents/manuals/m03.ashx