



PJM eDART Voltage Schedules for Generation Owners

- The Voltage Schedules tool is a new eDART web-based tool to aid compliance monitoring of Voltage Schedule communication between PJM, Transmission Owners and Generation Owners.
- This allows Transmission Owners to specify, and PJM to approve, Voltage Schedules for units in their zones.
- Includes new ticket (record) type, handling of exemptions, reporting, processing and seasonal verification.

TO

Specify

TO-Specified or PJM Default Voltage Schedule

Specify Voltage Schedule Type: Voltage, Power Factor, or Reactive Power

Provide Target Voltage Schedule & Tolerance Band

Attach Voltage Schedule Letters (Optional)

Submit Exemption Requests

PJM

Review

Maintain List of Applicable Units (M-03 Sect. 3.11)

Review and Acknowledge Voltage Schedules

Coordinate adjacent TO/External Voltage Schedules

Approve Exemption Requests

Initiate **Annual** Voltage Schedule Reviews

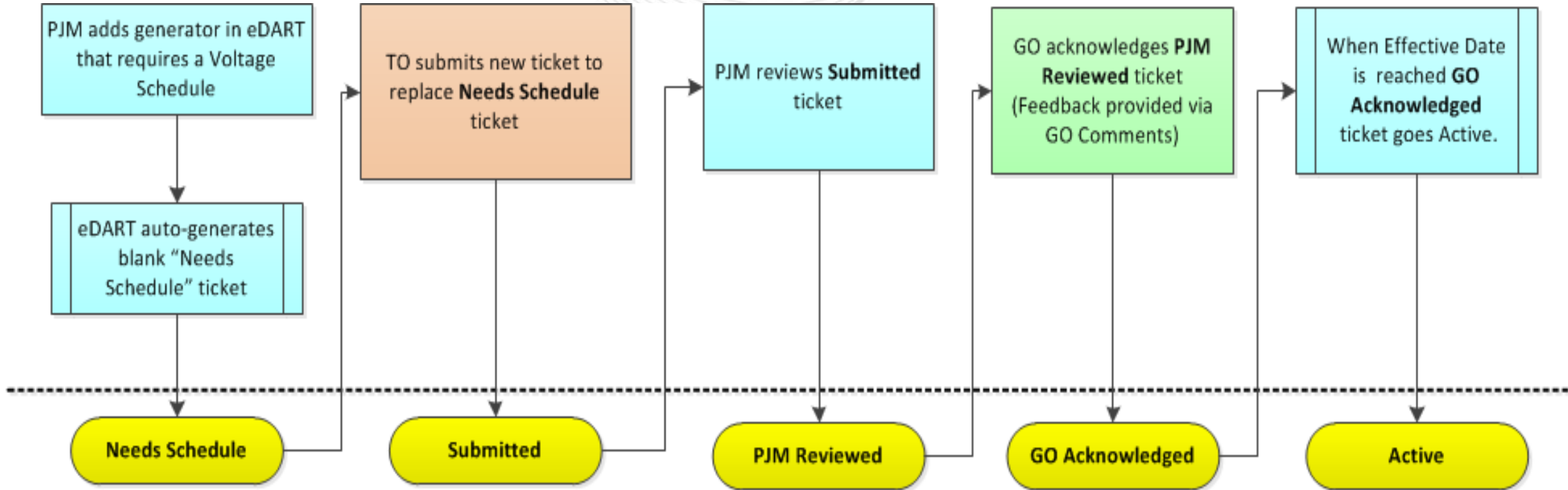
GO

Acknowledge

Acknowledge Voltage Schedules

Provide feedback on Voltage Schedule through GO Comments

Voltage Schedules Ticket Process Flow



eDART Voltage Schedules Ticket Statuses

- Per PJM Manual 3 section 3.11, PJM has the following criteria for generators that require a Voltage Schedule:
 - Individual generating units greater than 20 MVA
 - Generators that aggregate to 75 MVA or greater that are connected to a common bus
 - Black start generators
 - Any other Generation Owners that request a voltage schedule
- Generators added to eDART that meet the above criteria will have a blank *Needs Schedule* ticket automatically entered requiring a new Voltage Schedule ticket to be submitted by the TO.

1. PJM adds a new generator and a blank Voltage Schedules ticket is created.
2. TO creates new Voltage Schedules ticket to replace the blank one.
3. PJM reviews the ticket submitted by the TO.
4. If PJM approves, the ticket will be available to GO for acknowledgement.
5. If GO acknowledges, the ticket becomes “Active”.

1. TO creates new Voltage Schedules ticket for unit for a future effective date.
2. PJM reviews the ticket submitted by the TO.
3. If PJM approves, the ticket will be available to GO for acknowledgement.
4. If GO acknowledges, the ticket becomes “Active” and “Completes” the prior Voltage Schedules ticket for that unit on the effective date.



eDART Voltage Schedules – Application Walkthrough

- Feedback
- My eDART
- Upload
- Download
- Hydro Calculator
- Gen. Tickets**
- Trans. Tickets
- Instantaneous Reserve Check
- Minimum Gen. Report
- PJM Status Report
- NERC Data
- Facility Data
- Online Help
- Logout

- After logging into eDART, click on the Generation Tickets Button to access the Generator Tickets Main Menu.
- The Generator Outage Main Menu is shown on the right.

Generator Tickets Main Menu

Summer Peak Period Maintenance Margin Season	
Start: 06/13/2022 End: 09/09/2022	
Current Maintenance Margin	
Mid-Atlantic	N/A
Western-Southern	0

Create New Ticket
Opportunity Window
View/Revise Ticket

	MW	Volt. Reg.	MVAR	Governor	MVAR Test	PSS
Submitted Tickets	5	6	31	18	8	10
Revised Tickets	10	1	4	9	3	0
Current Tickets	4	0	0	0	0	0
Approved Tickets	9	0	1	0	1	0
Future Tickets	5	0	0	0	1	1
Approved No Start	4	0	0	0	1	0
Active Beyond End	4	0	0	0	0	0
Recalled Tickets	0					
Forced Tickets						
Tickets History						

Owners Report
Maint. Margin Log
D-Curve Report

Black Start
Black Start Test Download
Black Start Calculator

Data Request
Voltage Schedules
Voltage Schedules Criteria

- Click on the Voltage Schedule button and you will arrive at the Voltage Schedule Page
- Button will be red if there is a required action by the GO

Voltage Schedules Starting Screen

Voltage Schedule (as of 05/11/2022 15:10)

Needs Schedule (63 / 2)
 Submitted (9 / 0)
 Pending Review (0 / 0)
 TO Review (0 / 0)
 PJM Reviewed (3 / 0)
 GO Acknowledged (1 / 0)
 Saved (2 / 0)
 Active (6 / 0)
 Completed (0 / 0)
 Canceled by TO (0 / 0)
 Canceled by PJM (1 / 0)
 In Effect
 Canceled Prev. Ack. (0 / 0)
 Late (6 / 0)
 GO Comments (0 / 0)

Trans. Owner:
 Unit Type:
 Gen. Owner:
 Unit Name:
 Trans. Zone:
 Ticket #:
 From Date:
 To Date:
 Incl. Hist.:
 Eff. Date:
 TO Date:
 GO Date:

Filter Menu: Use this to filter and find tickets.

Command Buttons: Use these for actions, navigation and access to Help files

Voltage Schedule Tickets

Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status	Comments
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper			
<input type="radio"/> 3006	GO Company A TO Company X	XX	Test Unit 1 TEST 13 KV UNIT 1 Test 13 kV Bus A	Voltage(KV)	13.0	11.0	15.0	13.0	11.0	15.0				03/29/2022	Active	TO: <input type="text"/> GO: <input type="text"/> PJM: <input type="text"/>
<input type="radio"/> 2679 Download	GO Company A TO Company X	XX	Test Unit 2 TEST 13 KV UNIT 2 Test 13 kV Bus B	TO Exempt										03/26/2022	Active	TO: <input type="text"/> GO: <input type="text"/> PJM: <input type="text"/>
<input type="radio"/> 2642	GO Company B TO Company X	XX	Test Unit 3 TEST 13 KV UNIT 3 Test 13 kV Bus C	Reactive(MVAR)	110.0	100.0	130.0							03/29/2022	Active	TO: PJM is entering TO comments for Active GO: PJM is entering GO comments for Active PJM: PJM Comments
<input type="radio"/> 3007	GO Company B TO Company X	XX	Test Unit 4 TEST 13 KV UNIT 4 Test 13 kV Bus D	PowerFactor(PF)	1.00 Unity	0.98 Lead	0.98 Lag							06/01/2021	Active	TO: Test PF Schedule GO: No concerns with this Voltage Schedule PJM: <input type="text"/>

Voltage Schedule Tickets: Summary list of all tickets from selected filters

Click Edit button to open Voltage Schedules Ticket Details

Status filters

Voltage Schedule (as of 05/11/2022 15:13)

<input type="checkbox"/> Needs Schedule (63 / 2)	<input type="checkbox"/> Submitted (9 / 0)	<input type="checkbox"/> Pending Review (0 / 0)	<input type="checkbox"/> TO Review (0 / 0)	Trans. Owner <input type="text"/>	Unit Type <input type="text"/>
<input checked="" type="checkbox"/> PJM Reviewed (3 / 0)	<input type="checkbox"/> GO Acknowledged (1 / 0)	<input type="checkbox"/> Saved (2 / 0)	<input type="checkbox"/> Active (6 / 0)	Gen. Owner <input type="text"/>	Unit Name <input type="text"/>
<input type="checkbox"/> Completed (0 / 0)	<input type="checkbox"/> Canceled by TO (0 / 0)	<input type="checkbox"/> Canceled by PJM (1 / 0)		Trans. Zone <input type="text"/>	Ticket # <input type="text"/>
<input type="checkbox"/> In Effect	<input type="checkbox"/> Canceled Prev. Ack. (2 / 0)	<input type="checkbox"/> Late (0 / 0)	<input type="checkbox"/> GO Comments (0 / 0)	From Date <input type="text"/>	To Date <input type="text"/>
				Incl. Hist. <input type="checkbox"/>	Eff. Date <input checked="" type="checkbox"/>
				TO Date <input type="checkbox"/>	GO Date <input type="checkbox"/>

Buttons: Apply Filter, Clear Filter, CSV Export, Main Menu, Help, TO Schedule Philosophy

Complex filters

Date filters

Voltage Schedule Ticket Details

Unit & Regulated Bus Identification

Voltage Schedule Type Selection

Voltage Schedules Target and Bandwidths

Voltage Schedule Load Conditions

Effective Date

Voltage Schedule Ticket Details (as of 05/10/2022 16:48)

Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper		
3030	GO Company A	XX	Test Unit 1	Voltage	525.0	5.0	5.0							05/12/2022	Submitted
	TO Company X		TEST 500 KV UNIT 1	(KV)		520.0	530.0								
			Test 500 kV Bus A												

TO Comments:
 GO Comments:
 PJM Comments:

Needs Schedule (63 / 2)
 Submitted (9 / 0)
 Pending Review (0 / 0)
 TO Review (0 / 0)
 PJM Reviewed (3 / 0)
 GO Acknowledged (1 / 0)
 Saved (2 / 0)
 Active (6 / 0)
 Completed (0 / 0)
 Canceled by TO (0 / 0)
 Canceled by PJM (1 / 0)
 In Effect
 Canceled Prev. Ack. (0 / 0)
 Late (6 / 0)
 GO Comments (0 / 0)

Trans. Owner:
 Gen. Owner:
 Trans. Zone:
 From Date:
 To Date:
 Incl. Hist.
 Eff. Date
 TO Date
 Unit Type:
 Unit Name:
 Ticket #:

Comment Entry

Ticket Status

Voltage Schedule Tickets																
Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status	Comments
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper			
3115 Download	GO Company A	XX	New Test Unit 1	Voltage(KV)	525.0	517.0	533.0						05/12/2022	PJM Reviewed	TO: <input type="text"/>	
	TO Company X		TEST 500 KV UNIT 1												GO: <input type="text"/>	
	TEST 500 KV West Bus		PJM: <input type="text"/>													

- Click download link to download file(s) as a zip file
- Extract and open attached file(s) using Windows Explorer file options

The screenshot shows a Windows Explorer window with the file 'Test Unit_Voltage_Schedule_Letter' (Adobe Acrobat Document, 160 KB) in the Downloads folder. Below it, the Adobe Acrobat Reader window is open, displaying the PDF content. The document title is 'Test Unit_Voltage_Schedule_Letter.pdf - Adobe Acrobat Reader'. The content includes a 'Protected View' warning and a 'TARGET VOLTAGE SCHEDULE AND RANGE' section.

Test Unit Owner

TARGET VOLTAGE SCHEDULE AND RANGE

Target Voltage Schedule and Range

Generator	Maximum Voltage (kV)	Minimum Voltage (kV)	Voltage Range (kV)	Monitored Bus
Test Unit 1	517	533	525 +/-8 kV	Test 500 kV West bus

Operation Outside of Target Voltage Schedule and Range

Unless instructed otherwise by PJM and /or TO Company X, your generating station personnel are directed to operate Generators in the automatic voltage control mode controlling voltage and, after notification to the TO Company X Dispatcher, adjust generator excitation and other reactive resources to maintain the transmission voltage level at the Interconnection Substation in accordance with the Target Voltage Schedule and Range.

To comply with VAR-002 and PJM Manual 14D Section 7.1.2, notifications of unplanned outages on automatic voltage regulators (AVR) and/or power system stabilizers (PSS) must be communicated to TO Company X and PJM as soon as possible, but not later than within 30 minutes of the occurrence.

- **Normal Target:** This is the target value.
 - Unit differs per schedule type.
- **Lower Limit:** The lower limit of the target value
- **Upper Limit :** The upper limit of the target value
- **Light and Heavy values** are not required but can be added if the TOs choose.

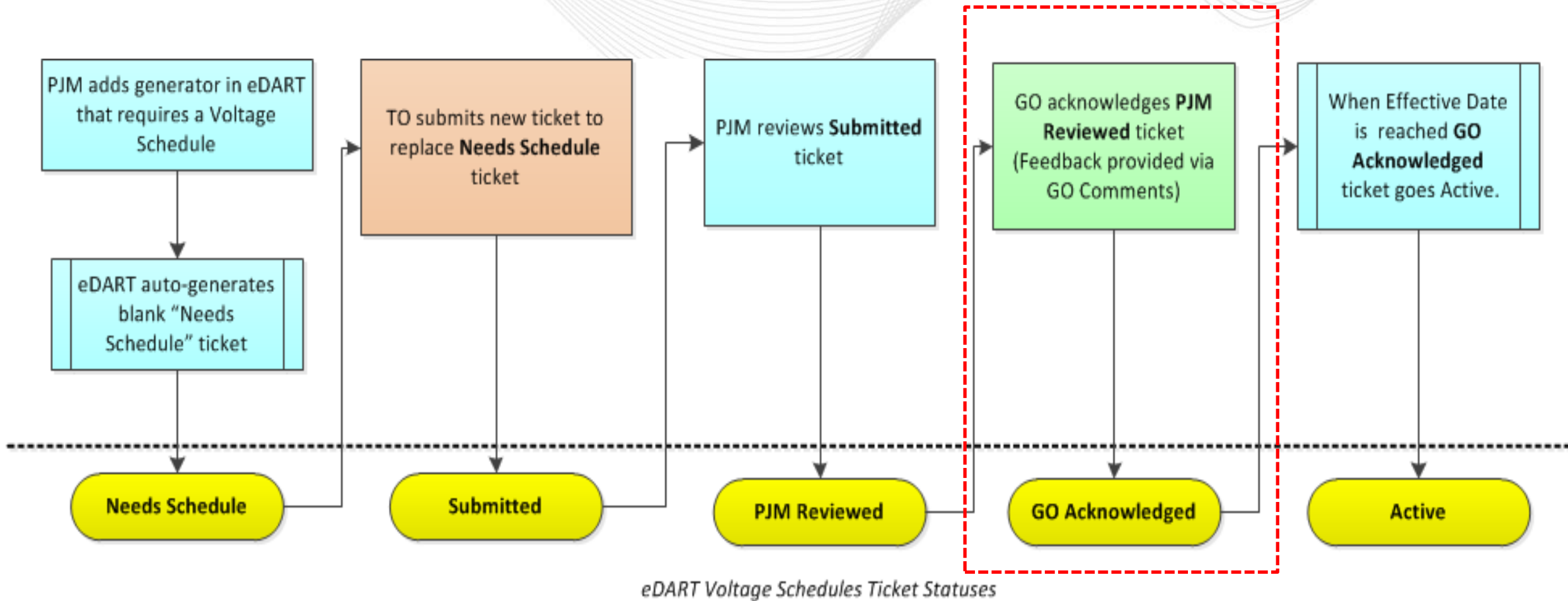
Voltage Schedule Type	Normal			Light			Heavy		
	Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper
Voltage <input type="text" value="v"/> (KV)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

The effective date is the day the ticket becomes “In Effect”.

- This applies to all 4 Voltage Schedules Types
- This date cannot be the day the ticket was submitted.
 - Earliest Effective Date allowed is the next day (submission date + 1 day)
- No two tickets can start on the same day.
 - Error returned if user submits a future ticket with the same effective date as one that already exists for the unit.



Voltage Schedules Ticket Process Flow – GO Task



Notifications: The GO will be notified of a PJM Reviewed voltage schedule ticket requiring a acknowledgement by the GO Voltage Schedules button turning **Red** AND an email notification to the GO email address.

Required Action:

- Review the specified voltage schedule as well as any attached files that are included with the ticket by clicking the download link on the tickets listing.
- Acknowledge ticket by changing status to GO Acknowledged and submitting form preferably before the ticket Effective Date.

Optional Action:

- Provide feedback on proposed Voltage Schedule by entering comments in the GO Comments text field

Voltage Schedule Ticket Details (as of 05/11/2022 15:22)

Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper		
3115	GO Company A	XX	New Test Unit 1	Voltage (KV)	525.0	8.0	8.0							PJM Reviewed GO Acknowledged Status Date: 05/11/2022 00:02 Last Modified Date: 05/11/2022 00:02	
	TO Company X		TEST 500 KV UNIT 1		517.0	533.0									
				TEST 500 KV West Bus											

TO Comments:
 GO Comments:
 PJM Comments:

Needs Schedule (34 / 0)
 Submitted (2 / 0)
 Pending Review (0 / 0)
 TO Review (1 / 0)
 Trans. Owner:
 Unit Type:

PJM Reviewed (2 / 0)
 GO Acknowledged (0 / 0)
 Saved (0 / 0)
 Active (6 / 0)
 Gen. Owner:
 Unit Name:

Completed (0 / 0)
 Canceled by TO (0 / 0)
 Canceled by PJM (0 / 0)
 Trans. Zone:
 Ticket #: 3115

In Effect
 Canceled Prev. Ack. (0 / 0)
 Late (2 / 0)
 TO Comments (0 / 0)
 From Date:
 To Date:
 Incl. Hist.
 Eff. Date
 TO Date:
 Date:

- Apply Filter
- History Log
- Submit Form**
- Close
- Main Menu
- Help
- TO Schedule Philosophy

Provide feedback via GO Comments (optional)

Click Submit Form

Change ticket status to GO Acknowledged

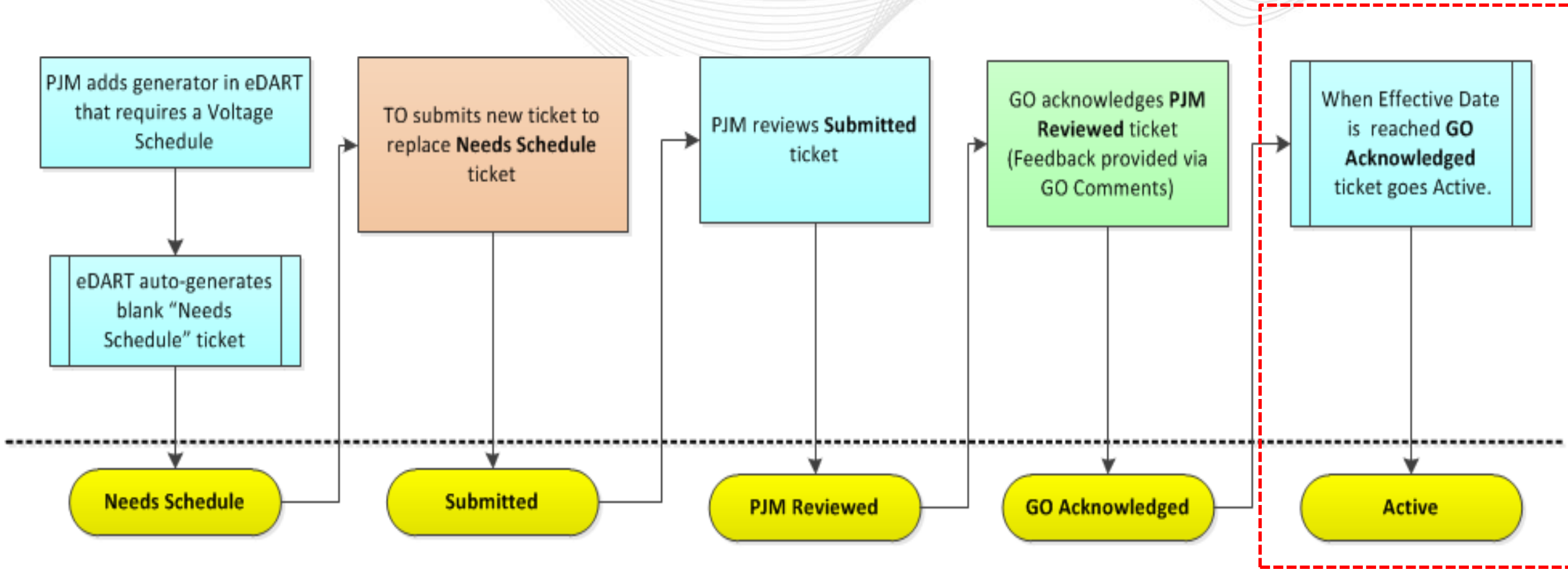
Voltage Schedule Tickets

Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status	Comments
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper			
<input checked="" type="radio"/> Download	GO Company A TO Company X	XX	New Test Unit 1 TEST 500 KV UNIT 1 TEST 500 KV West Bus	Voltage(KV)	525.0	517.0	533.0							05/12/2022	PJM Reviewed	TO: <input type="text"/> GO: <input type="text"/> PJM: <input type="text"/>

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<vs:voltageSchedules xsi:schemaLocation="http://www.pjm.com/external/schemas/voltageschedule/v1 voltageschedule.xsd"
xmlns:vs="http://www.pjm.com/external/schemas/voltageschedule/v1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <voltageSchedule>
    <ticketId>2001</ticketId>
    <status>GO Acknowledged</status>
    <toComments>GO Acknowledgement of Voltage Schedule</toComments>
  </voltageSchedule>
</vs:voltageSchedules>
```

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<vs:voltageScheduleResponses xsi:schemaLocation="http://www.pjm.com/external/schemas/voltageschedule/v1"
xmlns:vs="http://www.pjm.com/external/schemas/voltageschedule/v1 voltageschedule.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <voltageScheduleResponse>
    <uploadStatusMessage>Ticket Updated Successfully.</uploadStatusMessage>
    <ticketId>2001</ticketId>
    <ticketStatus>GO Acknowledged</ticketStatus>
  </voltageScheduleResponse>
</vs:voltageScheduleResponses>
```

Voltage Schedules Ticket Process Flow



eDART Voltage Schedules Ticket Statuses

- A ticket in GO Acknowledged status will turn active once the effective date of the ticket has been reached.
- Old Active Voltage Schedule tickets are automatically completed once a new GO Approved ticket turns Active by reaching its Effective Date.
- Active tickets are highlighted by a mint-green tab on the Voltage Schedule Tickets listing.

Voltage Schedule Ticket Details (as of 05/12/2022 13:28)

Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper		
3115	GO Company A	XX	New Test Unit 1	Voltage (KV)	525.0	8.0	8.0							05/12/2022	Active Status Date: 05/12/2022 00:02 Last Modified Date: 05/12/2022 00:02
	TO Company X		TEST 500 KV UNIT 1		517.0	533.0									
			TEST 500 KV West Bus												

TO Comments:
 GO Comments:
 PJM Comments:

Needs Schedule (34 / 0)
 Submitted (2 / 0)
 Pending Review (0 / 0)
 TO Review (1 / 0)
 PJM Reviewed (1 / 0)
 GO Acknowledged (1 / 0)
 Saved (0 / 0)
 Active (6 / 0)
 Completed (0 / 0)
 Canceled by TO (0 / 0)
 Canceled by PJM (10 / 0)
 In Effect
 Canceled Prev. Ack. (0 / 0)
 Late (2 / 0)
 GO Comments (1 / 0)

Trans. Owner:
 Unit Type:
 Gen. Owner:
 Unit Name:
 Trans. Zone:
 Ticket #:
 From Date: To Date:
 Incl. Hist. Eff. Date TO Date GO Date

- Apply Filter
- Clear Filter
- History Log
- Close
- Main Menu
- Help
- TO Schedule Philosophy

Voltage Schedule Tickets

Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status	Comments
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper			
3115 Download	GO Company A	XX	New Test Unit 1	Voltage(KV)	525.0	517.0	533.0						05/12/2022	Active	TO: <input type="text"/> GO: <input type="text" value="GO Company A has no concerns with the"/> PJM: <input type="text"/>	
	TO Company X		TEST 500 KV UNIT 1													
			TEST 500 KV West Bus													

Voltage Schedule Criteria

Submission, by TO, and review of Voltage Schedule (VS) Criteria is in accordance with VAR-001-5 R5.3 standard.

Status Definitions

- **Submitted:** new VS Criteria status when submitted to PJM
- **Approved:** VS Criteria reviewed and approved by PJM
- **Denied:** VS Criteria reviewed and not approved by PJM
- **Active:** Approved VS Criteria is in effect
- **Completed:** VS Criteria is no longer in effect; may be replaced by a new Active VS Criteria
- **Cancelled:** VS Criteria cancelled by PJM or TO

- My eDART
- Upload
- Download
- Gen. Tickets**
- Trans. Tickets
- Instantaneous Reserve Check
- Minimum Gen. Report
- PJM Status Report
- NERC Data
- Online Help
- Feedback
- Logout

- After logging into eDART, click on the Generation Tickets Button to access the Generation Outage Main Menu.
- The Generation Outage Main Menu is shown on the right.

Generator Tickets Main Menu

Summer Peak Period Maintenance Margin Season	
Start: 06/13/2022 End: 09/09/2022	
Current Maintenance Margin	
Mid-Atlantic	N/A
Western-Southern	0

[Create New Ticket](#)
[Opportunity Window](#)
[View/Revise Ticket](#)

	MW	Volt. Reg.	MVAR	Governor	MVAR Test	PSS
Submitted Tickets	5	6	31	18	8	10
Revised Tickets	10	1	4	9	3	0
Current Tickets	4	0	0	0	0	0
Approved Tickets	11	0	1	0	1	0
Future Tickets	7	0	1	1	1	1
Approved No Start	4	0	0	0	1	0
Active Beyond End	4	0	0	0	0	0
Recalled Tickets	0					
Forced Tickets						
Tickets History						

[Owners Report](#)
[Maint. Margin Log](#)
[D-Curve Report](#)

[Black Start Test Upload](#)
[Black Start Test Download](#)
[Black Start Calculator](#)

[Data Request](#)
[Voltage Schedules](#)
[Voltage Schedules Criteria](#)

Click on the Voltage Schedules Criteria button and you will arrive at the Voltage Schedules Criteria Report

Only Active and Completed VS Criteria can be viewed

Voltage Schedule Criteria Report

Status: Active Completed Include Joint Owned: Include Historical: From Date: To Date:

[Apply Filter](#) [Refresh](#) [Main Menu](#)

ID	Company	Status	Eff. Date	Start Date	End Date	Criteria	Files
2125		Active	04/13/2022	04/13/2022			Download (0 files)

[Apply Filter](#) [Refresh](#) [Main Menu](#)

Check 'Include Notifications' to include VS Criteria from TOs of Informational VS Tickets

Check to include VS Criteria completed or cancelled 40 or more days ago

Voltage Schedule Criteria Report

Status: Active Completed Include Joint Owned: Include Historical: From Date: To Date:

[Apply Filter](#) [Refresh](#) [Main Menu](#)

ID	Company	Status	Eff. Date	Start Date	End Date	Criteria	Files
2125		Active	04/13/2022	04/13/2022			Download (0 files)

[Apply Filter](#) [Refresh](#) [Main Menu](#)

Click to download zip of attached files and text file with information in Criteria field

eDART Voltage Schedules – Appendix

- **Submitted:** The ticket is submitted and ready for PJM to review.
- **Saved:** This is a save state for TOs. TOs can close the ticket and come back to work on it at a later time.
- **TO Review:** PJM sent ticket back to TO with comments for review.
- **PJM Reviewed:** PJM has reviewed the ticket and it is pending GO acknowledgement.
- **GO Acknowledged:** GO has acknowledged ticket.

- **Active:** The ticket is in effect.
- **Completed:** The ticket has been replaced by another active ticket for that unit.
- **Canceled by TO:** TO canceled the ticket.
- **Canceled by PJM:** PJM canceled the ticket.

There are 4 types of Voltage Schedules tickets:

- Voltage
- Power Factor
- Reactive
- TO Exempt

Required fields:

- Normal (Target Value, Lower Limit, and Upper Limit in KV)
- Effective Date
- Status
- Bus Name

Voltage Schedule Ticket Details (as of 05/16/2022 11:46)															
Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper		
2007	Test GO Company 1 Test TO Company 1	xx	Test Unit1 Test Equipment 1 Test 1	Voltage (KV)	100.0	2.0 98.0	3.0 103.0	80.0	1.0 79.0	4.0 84.0	150.0	1.0 149.0	2.0 152.0	05/01/2023	Submitted Status Date: 05/16/2022 11:27 Last Modified Date: 05/16/2022 11:27
TO Comments: Test		GO Comments:			PJM Comments:										

```
<voltageSchedule>
  <ticketId>1234</ticketId>
  <toCompany>TO Company</toCompany>
  <unitNumber>111111</unitNumber>
  <scheduleType>Voltage</scheduleType>
  <effectiveDate>2023-05-01T00:00:00.000-04:00</effectiveDate>
  <status>Submitted</status>
  <busName>Test 1</busName>
  <toComments>Test Comments</toComments>
  <normalValues>
    <target>100</target>
    <lowerBound>2</lowerBound>
    <lowerValue>98</lowerValue>
    <upperBound>3</upperBound>
    <upperValue>103</upperValue>
  </normalValues>
  <lightValues>
    <target>80</target>
    <lowerBound>1</lowerBound>
    <lowerValue>79</lowerValue>
    <upperBound>4</upperBound>
    <upperValue>84</upperValue>
  </lightValues>
  <heavyValues>
    <target>150</target>
    <lowerBound>1</lowerBound>
    <lowerValue>149</lowerValue>
    <upperBound>2</upperBound>
    <upperValue>152</upperValue>
  </heavyValues>
</voltageSchedule>
```

Required Fields.

- Normal (Target Value, Lower Limit in %, and Upper Limit in %)
- Lead, Lag and Unity
- Effective Date
- Status
- Bus Name

Voltage Schedule Ticket Details (as of 05/16/2022 13:02)															
Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper		
1540	Test GO Company	XX	Test Unit	PowerFactor ▾ (PF)	0.70	25.00 %	50.00 %	0.90	20.00 %	40.00 %	1.00	10.00 %	50.00 %	05/17/2022	Submitted ▾
	Test TO Company		Test Equipment	Lag ▾	0.88 Lag	0.35 Lag	Lead ▾	0.72 Lead	0.74 Lag	Unity ▾	0.90 Lead	0.50 Lag	06/08/2020 11:22 Last Modified Date: 05/16/2022 00:02		
			Test Bus												
TO Comments:		Revising PowerFactor values			GO Comments:					PJM Comments:					

```
<voltageSchedule>
  <unitNumber>1234</unitNumber>
  <scheduleType>PowerFactor</scheduleType>
  <effectiveDate>2023-11-01T00:00:00.000-04:00</effectiveDate>
  <status>Submitted</status>
  <busName>Test</busName>
  <normalValues>
    <target>0.8</target>
    <pfType>Lead</pfType>
    <lowerBound>2</lowerBound>
    <lowerValue>0.78</lowerValue>
    <lowerPfType>Lead</lowerPfType>
    <upperBound>2</upperBound>
    <upperValue>0.82</upperValue>
    <upperPfType>Lead</upperPfType>
  </normalValues>
  <lightValues>
    <target>0.8</target>
    <pfType>Lag</pfType>
    <lowerBound>1</lowerBound>
    <lowerValue>0.81</lowerValue>
    <lowerPfType>Lag</lowerPfType>
    <upperBound>1</upperBound>
    <upperValue>0.79</upperValue>
    <upperPfType>Lag</upperPfType>
  </lightValues>
  <heavyValues>
    <target>1</target>
    <pfType>Unity</pfType>
    <lowerBound>2</lowerBound>
    <lowerValue>0.98</lowerValue>
    <lowerPfType>Lead</lowerPfType>
    <upperBound>2</upperBound>
    <upperValue>0.98</upperValue>
    <upperPfType>Lag</upperPfType>
  </heavyValues>
</voltageSchedule>
```

Required fields:

- Bus Name
- Normal (Target Value, Lower Limit, and Upper Limit in MVAR)
- Effective Date
- Status

Voltage Schedule Ticket Details (as of 05/16/2022 12:24)															
Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper		
1262	Test GO Company 1	XX	Test Unit	Reactive (MVAR)	235.0	5.0	12.0	230.0	6.0	11.0	240.0	3.0	5.0	05/17/2022	PJM Reviewed Status Date: 10/28/2019 15:17 Last Modified Date: 05/16/2022 00:02
	Test TO Company 1		Test Equipment		230.0	247.0	224.0	241.0	237.0	245.0					
	Test Bus														
TO Comments: Test		GO Comments:			PJM Comments:										

```
<voltageSchedule>
  <ticketId>1234</ticketId>
  <toCompany>TO Company</toCompany>
  <unitNumber>1111</unitNumber>
  <scheduleType>Reactive</scheduleType>
  <effectiveDate>2023-04-01T00:00:00.000-04:00</effectiveDate>
  <status>Submitted</status>
  <busName>test</busName>
  <toComments>Test Reactive Voltage Schedule</toComments>
  <normalValues>
    <target>500</target>
    <lowerBound>4</lowerBound>
    <lowerValue>496</lowerValue>
    <upperBound>2</upperBound>
    <upperValue>502</upperValue>
  </normalValues>
  <lightValues>
    <target>550</target>
    <lowerBound>3</lowerBound>
    <lowerValue>547</lowerValue>
    <upperBound>5</upperBound>
    <upperValue>555</upperValue>
  </lightValues>
  <heavyValues>
    <target>480</target>
    <lowerBound>1</lowerBound>
    <lowerValue>479</lowerValue>
    <upperBound>4</upperBound>
    <upperValue>484</upperValue>
  </heavyValues>
</voltageSchedule>
```

- TO Exempt Tickets allow Transmission Owners to request a Voltage Schedule exemption for units that meet PJM's criteria.

Voltage Schedule Ticket Details (as of 05/16/2022 12:39)

Ticket #	GO Company TO Company	TR Zone	Unit Name Equipment Name Bus Name	Voltage Schedule Type	Normal			Light			Heavy			Effective Date	Status
					Target	Lower	Upper	Target	Lower	Upper	Target	Lower	Upper		
1121	Test GO Company 1 Test TO Company 1	XX	Test Unit1 Test Equipment 1 N/A	TO Exempt									05/17/2022	PJM Reviewed Status Date: 09/03/2019 15:33 Last Modified Date: 05/16/2022 00:02	

TO Comments: GO Comments: PJM Comments:

Needs Schedule (63 / 2)
 Submitted (13 / 0)
 Pending Review (0 / 0)
 TO Review (0 / 0)
 PJM Reviewed (3 / 0)
 GO Acknowledged (1 / 0)
 Saved (2 / 0)
 Active (6 / 0)
 Completed (0 / 0)
 Canceled by TO (0 / 0)
 Canceled by PJM (1 / 0)
 In Effect
 Canceled Prev. Ack. (0 / 0)
 Late (6 / 0)
 GO Comments (0 / 0)

Trans. Owner: Unit Type:
Gen. Owner: Unit Name:
Trans. Zone: Ticket #:
From Date: To Date: Incl. Hist. Eff. Date TO Date GO Date

```
<voltageSchedule>  
  <ticketId>1234</ticketId>  
  <toCompany>TO Company</toCompany>  
  <unitNumber>1111</unitNumber>  
  <scheduleType>TO Exempt</scheduleType>  
  <effectiveDate>2023-05-17T00:00:00.000-04:00</effectiveDate>  
  <status>Saved</status>  
  <busName>N/A</busName>  
  <toComments>TO Exempt Voltage Schedule</toComments>  
</voltageSchedule>
```


For more information please refer to [edart-user-guide.ashx \(pjm.com\)](https://www.pjm.com/-/media/etools/edart/edart-user-guide.ashx)
(<https://www.pjm.com/-/media/etools/edart/edart-user-guide.ashx>)

For more information about VS XML Upload/Download please refer to
[Dart Browserless User Guide \(pjm.com\)](https://www.pjm.com/-/media/etools/edart/dart-browserless-user-guide.ashx)
(<https://www.pjm.com/-/media/etools/edart/dart-browserless-user-guide.ashx>)

For additional help, please contact VoltageSchedules@pjm.com