

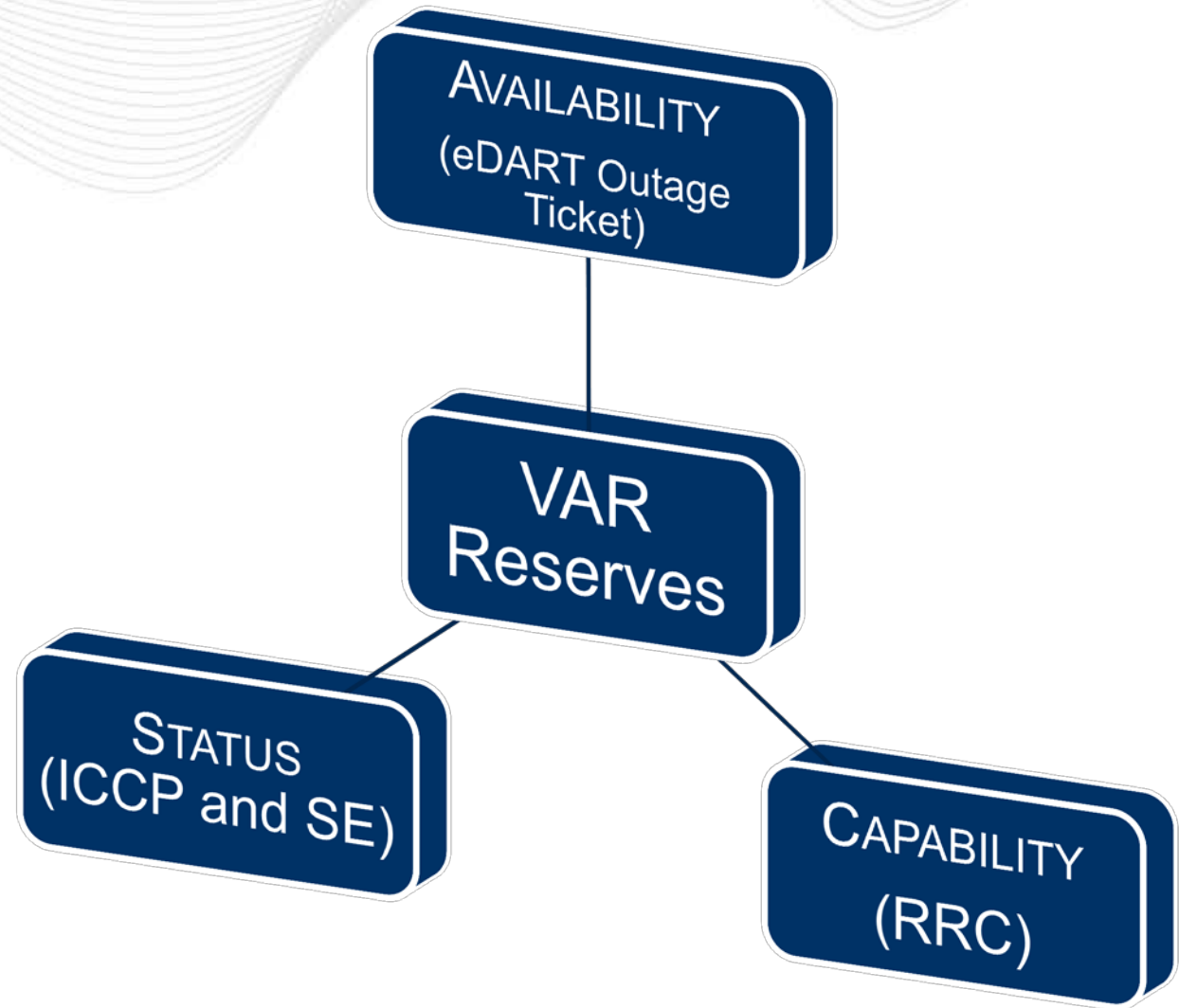


Reactive Reserve Check (RRC) Refresh



Dispatcher Training Subcommittee
09/19/2017
David Hislop
Mgr, Outage Analysis Technologies

- M-03, Transmission Manual, Section 3.12
- PJM leverages a process known as a Reactive Reserve Check (RRC) to assess the RTO's and its member's position with respect to dynamic and static reactive (var) power.



- ✓ Operators (PJM & Member TO) utilize PJM data to discern issues and recognize differences in PJM and Member's data.
- ✓ Remedy lies not within RRC. RRC is a tool to Assess the Reactive Reserve state, and the quality of the components within the solution.
- ✓ Resolve differences by:
 - Updating eDART Tickets,
 - Informing PJM if non-telemetered devices are in the wrong state or derated,
 - Informing PJM if EMS modeling is incorrect.

- Phase 1a (9/28 release):
 - Availability of RRC Self-Check download.
- Phase 1b (Q4 2016):
 - Availability of RRC Self-Check data; updated every 5 minutes.
- Phase 2 – 2017 (7/26 release):
 - Ability for PJM to issue new RRC.
 - Functionality to retrieve/submit real time reserve values.
 - **Parallel Operations*** with current RRC; issued concurrently.

* Anticipated to remain in Parallel Ops post-ICCP implementation, ~ Q4 2017.

- When New RRC is issued, the RRC Self Check button is replaced with Submit RRC button.
- User can acknowledge reserve values displayed.
 - Click Submit.
- User can enter reserve values and acknowledge submissions.



MVAR Reserve Check Company Data

Company: Request ID: 725
User Name:

Request Timestamp: 07/31/2017 12:05
Posted Timestamp:
Data Updated: 07/31/2017 12:05

Peak MVAR Reserve Totals

Company	Capacitors			Reactors			SVCs/Statcom			Units/Condensers	PJM Note	Company Response
	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.	PJM Values		
	426.85	426.85								1842.54		
	4	0 of 4	4 of 4							49		

Capacitors
 Reactors
 SVCs/Statcom
 Units/Condensers
 All
 Unacknowledged Only
 Adjusted Values Only

Name:
 Min KV:
 Max KV:
 SE Status:

Discrepancies Only:
 Acknowledge Type:

Refresh Main Menu Help Color Legend

Capacitors (1-4 of 4)

1	2	3													
Company	Station/Equipment Name	Zone	KV	eDART Availability	SE Status	SE KV	SE MVAR	Rated MVAR			Lagging Reserve MVAR			Acknowledge Type	Override ICCP
								PJM	Company	Delta	PJM	Company	Delta		
			13	Y	Offline	13.70	0.00	5.40	<input type="text"/>		5.40				
			13	Y	In-Service	13.87	5.45	5.45	<input type="text"/>		0.00				
			115	Y	Offline	113.77	0.00	60.00	<input type="text"/>		60.00				
			230	Y	Offline	233.16	0.00	356.00	<input type="text"/>		356.00				

Capacitors (1-4 of 4)

Submit Refresh Main Menu Help

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MVAR Reserve Check Company Data

Company: Request ID: 725 Request Timestamp: 07/31/2017 12:05
 User Name: Posted Timestamp: Data Updated: 07/31/2017 12:05

Peak MVAR Reserve Totals

Company	Capacitors			Reactors			SVCs/Statcom			Units/Condensers		PJM Note	Company Response
	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Values		
	426.85	426.85								1842.54			
	4	0 of 4	4 of 4							49			

Capacitors
 Reactors
 SVCs/Statcom
 Units/Condensers

All
 Unacknowledged Only
 Adjusted Values Only

Name: Min KV: Max KV: SE Status:

Discrepancies Only: Acknowledge Type:

Capacitors (1-4 of 4)

Company	Station/Equipment Name	Zone	KV	eDART Availability	SE Status	SE KV	SE MVAR	Rated MVAR			Lagging Reserve MVAR			Acknowledge Type	Override ICCP
								PJM	Company	Delta	PJM	Company	Delta		
			13	Y	Offline	13.70	0.00	5.40	<input type="text"/>	Delta	5.40				
			13	Y	In-Service	13.87	5.45	5.45	<input type="text"/>	Delta	0.00				
			115	Y	Offline	113.77	0.00	60.00	<input type="text"/>	Delta	60.00				
			230	Y	Offline	233.16	0.00	356.00	<input type="text"/>	Delta	356.00				

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.

MVAR Reserve Check Company Data

Company: Request ID: 725 Request Timestamp: 07/31/2017 12:05
 User Name: Posted Timestamp: Data Updated: 07/31/2017 12:05

Peak MVAR Reserve Totals

Company	Capacitors			Reactors			SVCs/Statcom			Units/Condensers		PJM Note	Company Response
	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.	PJM Values			
	426.85	426.45								1842.54			
		1 of 4	0 of 4							49			

Capacitors
 Reactors
 SVCs/Statcom
 Units/Condensers
 All
 Unacknowledged Only
 Adjusted Values Only

Name: Min KV: Max KV: SE Status: Both v
 Discrepancies Only: Acknowledge Type: All v

Capacitors (1-4 of 4)

Company	Station/Equipment Name	Zone	KV	eDART Availability	SE Status	SE KV	SE MVAR	Rated MVAR			Lagging Reserve MVAR			Acknowledge Type	Override ICCP
								PJM	Company	Delta	PJM	Company	Delta		
			13	Y	Offline	13.70	0.00	5.40	5.00	0.40	5.40	5.00	0.40	U	
			13	Y	In-Service	13.87	5.45	5.45			0.00				
			115	Y	Offline	113.77	0.00	60.00			60.00				
			230	Y	Offline	233.16	0.00	356.00			356.00				

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

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

- I → ICCP: reserve values from ICCP data.
- X → XML: RRCRevise upload.
- U → UI: web UI.

New Reactive Reserve Check

Submit RRC

RRC Report Search

RRC Report Search

Company: User Name:

Request Number:

From Date: To Date:
(MM/DD/YY) (MM/DD/YY)

Last 30 Days:

Apply Filter

Most Recent

Main Menu

RRC Report

Company: User Name:

Report ID	Request Timestamp	Posted Timestamp
728	07/31/2017 18:09	
727	07/31/2017 16:10	07/31/2017 17:05
726	07/31/2017 14:09	07/31/2017 15:10
725	07/31/2017 12:05	07/31/2017 13:09
724	07/31/2017 10:05	07/31/2017 11:04
723	07/31/2017 08:04	07/31/2017 09:04

MVAR Reserve Check Company Data

Company: Request Timestamp: 07/31/2017 12:05
Request ID: 725 Posted Timestamp: 07/31/2017 17:05
User Name: Data Updated: 07/31/2017 12:05

Peak MVAR Reserve Totals

Company	Capacitors			Reactors			SVCs/Statcom			Units/Condensers			PJM Note	Company Response
	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.	PJM Values	Company Adj. Values	Unackn.		
	426.85	426.45								1842.54				
	4	1 of 4	0 of 4							49				

Capacitors Reactors SVCs/Statcom Units/Condensers

All Unacknowledged Only Adjusted Values Only

Name: Min KV: Max KV: SE Status: Both

Discrepancies Only: Acknowledge Type: All

Refresh

Main Menu

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Color Legend

Capacitors (1-4 of 4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Company	Station/Equipment Name	Zone	KV	eDART Availability	SE Status	SE KV	SE MVAR	Rated MVAR			Lagging Reserve MVAR			Acknowledge Type	Override ICCP
								PJM	Company	Delta	PJM	Company	Delta		
			13	Y	Offline	13.70	0.00	5.40	5.00	0.40	5.40	5.00	0.40	U	
			13	Y	In-Service	13.87	5.45	5.45			0.00				
			115	Y	Offline	113.77	0.00	60.00			60.00				
			230	Y	Offline	233.16	0.00	356.00			356.00				

Capacitors (1-4 of 4)

Submit

Refresh

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RRC Features




- Exposes PJM EMS data to TO
- Available 24x7 (Self-Check)
- Points out potential discrepancies

Impacts of RRC



- For some TO's, more data than a human can process in 5 minutes
- Resolve issues outside of RRC
- Focus change: *Report then Review*



This is key. *PJM cannot assess an RRC until the TO's submit the data.*

- ✓ SUBMIT, then review when in an RRC.
- ✓ REVIEW can take place 24x7 thru Self-Check

eDART Sandbox (Training) environment:

- RRC issued every other hour.
- RRC remains open for an hour.
- In alternating hours, Self-Check is available.

RRC Report		
Company: PJM TEST User Name: egbuoc		
Report ID	Request Timestamp	Posted Timestamp
1306	09/15/2017 12:03	09/15/2017 13:03
1305	09/15/2017 10:03	09/15/2017 11:03
1304	09/15/2017 08:03	09/15/2017 09:03
1303	09/15/2017 06:03	09/15/2017 07:03
1302	09/15/2017 04:03	09/15/2017 05:03
1301	09/15/2017 02:03	09/15/2017 03:03
1300	09/15/2017 00:03	09/15/2017 01:03
1299	09/14/2017 22:03	09/14/2017 23:03
1298	09/14/2017 20:03	09/14/2017 21:03
1297	09/14/2017 18:03	09/14/2017 19:03
1296	09/14/2017 16:03	09/14/2017 17:03

eDART Production environment:

- Self-Check available to TOs whenever no RRC issued.
- RRC initiated in New RRC whenever issued in legacy RRC.

- TOs can submit New RRC data via ICCP for the following measurements:

Measurement
Capacitor Rated MVAR
Reactor Rated MVAR
SVC/STATCOM High MVAR Limit
SVC/STATCOM Low MVAR Limit

- If you are interested in submitting the data via ICCP, please ask your telemetry group to reach out to PJMTelemetrySupport@pjm.com

- TOs should provide the following to PJM Telemetry Support Group if they want to send RRC data via ICCP:
 - ICCP Object ID
 - Equipment Name
 - Measurement Description
- PJM can also provide the TO with a list of all Capacitors/Reactors, SVCs and STATCOMs modeled in PJM's EMS.

Questions? Contact RRCHelp@pjm.com