Reactive Reserve Check (RRC) Refresh

Dispatcher Training Subcommittee
09/19/2017
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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 respective to dynamic and static reactive (var) power.
In a perfect world …

✔ 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.
Reactive Reserve Check (RRC) Refresh

- 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 Timestamp:** 07/31/2017 12:05

**Request ID:** 725

**User Name:**

**Posted Timestamp:**

**Data Updated:** 07/31/2017 12:05

## Peak MVAR Reserve Totals

<table>
<thead>
<tr>
<th>Company</th>
<th>Capacitors</th>
<th>Reactors</th>
<th>SVCs/Statcom</th>
<th>Units/Condensers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PJM Values</td>
<td>Adj. Values</td>
<td>Unackn.</td>
<td>PJM Values</td>
</tr>
<tr>
<td>426.85</td>
<td>426.85</td>
<td>4 of 4</td>
<td>4 of 4</td>
<td>1942.54</td>
</tr>
</tbody>
</table>

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

### Capacitors (1-4 of 4)

<table>
<thead>
<tr>
<th>Company</th>
<th>Station/Equipment Name</th>
<th>Zone</th>
<th>KV</th>
<th>eDART Availability</th>
<th>SE Status</th>
<th>SE KV</th>
<th>SE MVAR</th>
<th>Rated MVAR</th>
<th>Lagging Reserve MVAR</th>
<th>Acknowledge Type</th>
<th>Override ICCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Y</td>
<td>Offline</td>
<td>13.70</td>
<td>0.00</td>
<td>5.40</td>
<td>5.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Y</td>
<td>In-Service</td>
<td>13.87</td>
<td>5.45</td>
<td>5.45</td>
<td>0.00</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>115</td>
<td>Y</td>
<td>Offline</td>
<td>113.77</td>
<td>0.00</td>
<td>60.00</td>
<td>60.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>239</td>
<td>Y</td>
<td>Offline</td>
<td>233.16</td>
<td>0.00</td>
<td>356.00</td>
<td>356.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Footer

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PJMc2017
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.
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.

Clicking Submit acknowledges reserve values: company entered or PJM values.
## RRC Design Features and Impacts

### 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

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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.

**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:

<table>
<thead>
<tr>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacitor Rated MVAR</td>
</tr>
<tr>
<td>Reactor Rated MVAR</td>
</tr>
<tr>
<td>SVC/STATCOM High MVAR Limit</td>
</tr>
<tr>
<td>SVC/STATCOM Low MVAR Limit</td>
</tr>
</tbody>
</table>

• 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