

Synchronized Reserve Event Actions and Expectations

Opportunity Statement

A synchronized reserve event is an emergency procedure issued by PJM to deploy synchronized reserve in order to maintain power balance in accordance with NERC BAL standards. A synchronized reserve deployment event can be called due to a variety of system conditions, including but not limited to:

- Loss of a large generator
- Loss of multiple smaller generators in a short time period
- Loss of one or more transmission elements that results in power import limitations to a wide area
- Sudden or unexpected increase in load
- System frequency decline due to external events

When synchronized reserves need to be deployed, PJM operators initiate the event through an All-Call and not RT SCED cases. The All-Call to members instructs all resources to manually increase their output to full. The Market tools for dispatching resources based on economic order are not consistently utilized during a synchronized reserve event. Furthermore, with the lack of clear rules addressing the process for approving RT SCED cases around a synchronized reserve event, the following challenges and inefficiencies materialize which should be mitigated or corrected via rule and process changes:

1. The pre-event RT SCED case dispatch signals and prices may remain in effect, when a new RTSCED case that reflects the unit loss is not yet approved. The RTSCED case approved prior to the event does not adequately reflect the verbal instructions from the PJM operator, nor do they adequately reflect the system conditions during the synchronized reserve event.
2. New and existing transmission system constraints are not controlled, which can result in constraints being briefly violated and require manual operator intervention to correct.
3. The level of unit response is not controlled or limited by PJM in any manner. This results in a mix of over and under response across different units depending on how they respond.
4. As generators shift from following RT SCED dispatch signals to manual control, PJM tends to experience a slow initial recovery, followed by an extended over response.

The status quo has proven sufficient to meet NERC BAL recovery compliance, but PJM sees an opportunity to improve two main aspects – a controlled deployment of synchronized reserves utilizing RTSCED and energy price alignment with these actions. A more controlled deployment of synchronized reserves will improve system reliability during and after a reserve deployment event by ensuring continued BAL recovery compliance, coupled with control of constraints and post event generation to load balancing.