

July 8, 2024, Synchronized Reserve Performance Inquiry Results

OC

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Synchronized Reserve Response Issues

- **Synchronized reserve resources have had a poor performance record.**
- **In response, PJM increased the synchronized reserve requirement.**
- **To address the poor performance, PJM proposed improved communications with synchronized reserve resources (pending FERC approval).**
- **PJM plans to use existing Automatic Generator Control (AGC) system to provide the synchronized reserve signal.**
- **The IMM's investigation shows that more needs to be done in order to ensure better performance.**

Reserve Performance Inquiry

- The IMM contacted resources regarding their underperformance during the July 8, 2024, synchronized reserve event.
- **Goals:**
 - Continue understanding of reasons for underperformance.
 - Estimate the amount of underperformance that should be considerably improved by the new deployment method.
- **Results:**
 - 153 resources of interest identified and contacted, representing approximately 1,669 MW of shortfall. IMM did not contact 87 MW of shortfall.
 - 146 resources have responded and have been categorized by primary cause of shortfall, representing approximately 1,631 MW (93% of the total 1,755 MW of shortfall).
- **Future work:**
 - Continue conversations with market participants.
 - Continue contacting resources for more recent events.

Category Definitions

- **Similar to categories used in PJM presentation to the OC on 2023-10-05.¹**
- **Differ slightly from PJM's definitions, with a focus on communication**
- **Focusing on stated primary reasons. Some shortfall was or would have been from a combination of factors.**

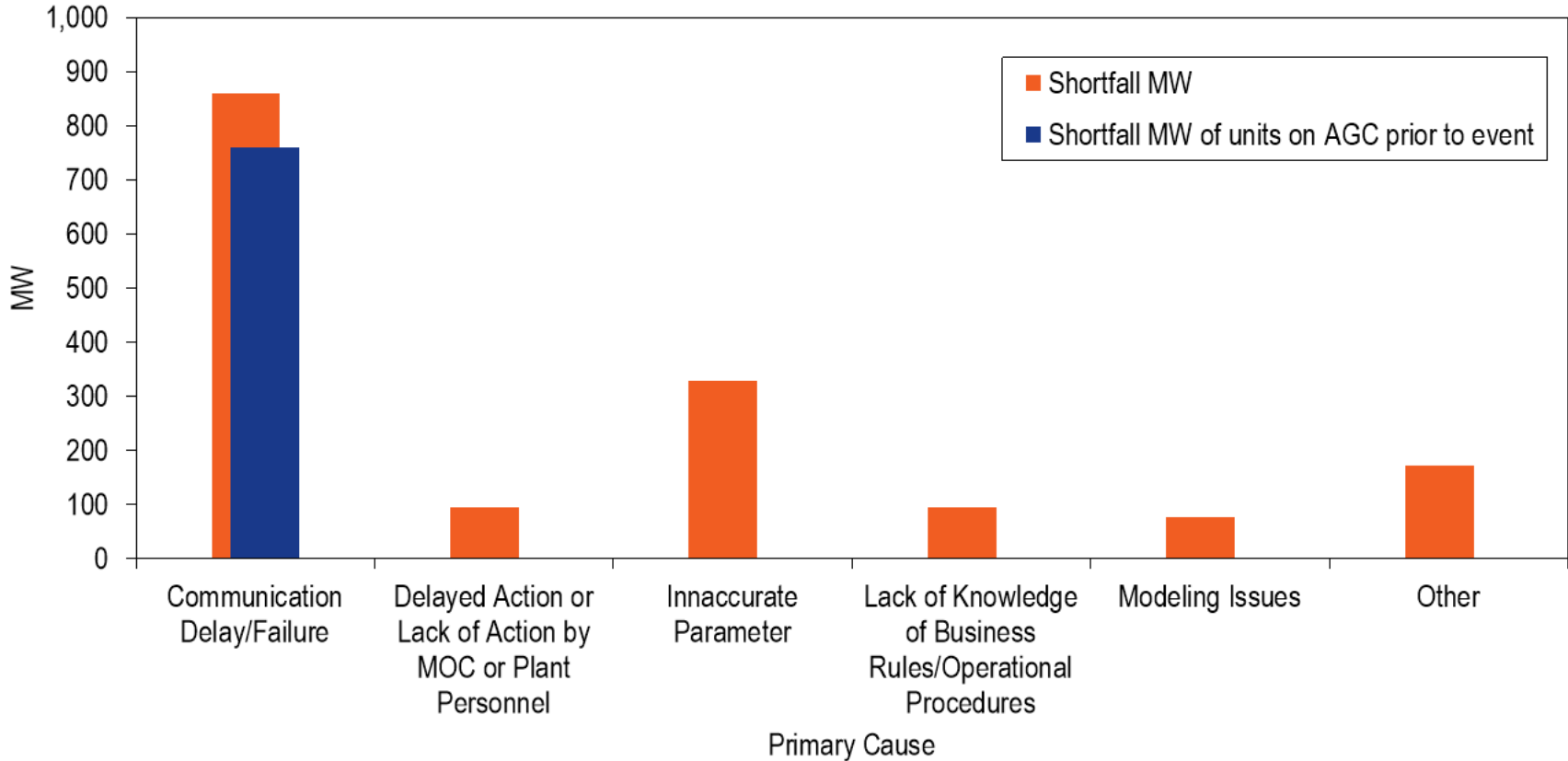
1: <https://pjm.com/-/media/committees-groups/committees/oc/2023/20231005/20231005-item-16---sync-reserve-performance-outreach-results.ashx>

Category Definitions

Category	Definition	Comment
Delayed Action or Lack of Action by MOC / or Plant Personnel	Incorrect action or lack of action taken by MOC operator or plant personnel after contact/notification	
Lack of Knowledge of Business Rules/Operational Procedures	Contact/notification was made, but MOC operator did not know what to do when spin event was called	
Followed Basepoint Instead of Loading Reserves	Followed basepoint when unit should have come off AGC and fulfilled reserve assignment	Category merged with Communication Delay / Failure
Communication Delay / Failure	Delay in receiving All Call or notice from MOC to plant information reached operators too late to perform, or operators were not contacted. This includes time for the ALL-CALL and intra-company communication.	
Modeling Issues	Transition time to put equipment in or out of service impacts ability to respond, which is not always captured well by parameters like ramp rates	
Inaccurate Parameters	Either 'Condense to Gen Time' or ramp rates incorrectly reported by the market participant in Markets Gateway Ramp rates, economic maximums, offer amounts, and other parameters overstated resource ability	
Other	Other causes grouped for confidentiality	New Category

- **Redlines show changes from previous definition.**

Shortfall MW by Primary Cause



Statistics Relevant to New Deployment Method

- **The largest primary cause was communication issues, as defined by resource owners.**
 - **This included 861 MW of shortfall.**
 - **This included 760 MW of units that were following AGC.**
- **Total Shortfall MW known to be following AGC when the event started was 970 MW.**
 - **Some units following AGC would have been limited by ambient conditions and other factors.**

New Communication Method

- **Proposal is to use existing AGC system to provide synchronized reserve signal to resources.**
- **Based on the communication method proposed, units on AGC are expected to perform to their assignment unless there are technical issues (e.g. derate).**
- **Of the 1,631 MW of shortfall in the IMM review:**
 - **Units on AGC without technical issues: 760 MW**
 - **Units on AGC with technical issues: 210 MW**
 - **Total units on AGC: 970 MW (59 percent of shortfall MW from resources contacted and that responded)**

July 8, 2024, Event Response

- The performance rate during the July 8th event was 46 percent.
- If all units on AGC that had communication delays / failure had responded, the performance rate would have been 69 percent.
- If all units on AGC had responded, the performance rate would have been 76 percent.
- This means that other issues still need to be addressed.

	Actual Response	Actual Response + 760 MW	Actual Response + 970 MW
Response	1,479	2,239	2,449
Assigned	3,234	3,234	3,234
Performance	46%	69%	76%

Continued Issues

- **Some modeling issues can be addressed by requesting synchronized reserve max (with proper documentation).**
- **Shortfalls caused by communication delays from units not on AGC should be addressed.**
- **Shortfalls caused by communication failure from units that rely on MOC instructions should be addressed.**
- **Shortfalls caused by inaccurate parameters (e.g. ramp rates, economic max) should be minimized. Generators must update their limits when ambient conditions change.**

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