

### Wind and Solar Resource Dispatch in Real-time Market Clearing Engines

#### Problem / Opportunity Statement

Wind and Solar resources have become an increasing portion of the PJM generation mix with many more projects expected in the next five to ten years. As the number of Wind and Solar Resources grows, it becomes increasingly difficult to manage the dispatch of these resources in PJM's Real-time market clearing engines (MCEs) due to the increased variable output of capability of these resource types, extremely fast response rates, and often outdated input parameters to the Market Clearing Engines (MCEs). These characteristics of the evolving resource mix raises questions and opportunities to address concerns related to PJM's ability to accurately forecast near term changes in resource output and reliably dispatch in Real-time. Known concerns include but are not limited to:

1. Extremely fast responding resources leading to volatile Area Control Error (ACE) fluctuations
2. Extremely fast responding resource for Energy and transmission constraint control
3. Stale resource input parameters (economic limits, ramp rates, etc.) not in alignment with Real-time capabilities leading to a dispatch based on outdated information;
4. Limited usage of intermittent forecasts in the PJM Real-time MCEs

The recent, related [Renewable Dispatch initiative](#), explicitly exclude markets calculations from its scope. The intention of this problem statement is to modify existing or propose new Real-time MCE design features required to efficiently manage the dispatch of Wind and Solar Resources. PJM sees an opportunity to improve several key aspects of its applications and increase reliability by managing these Resources during Real-time operations, especially within the constraint control and energy balancing calculations.