Dynamic Transfers: Market-to-Market Flowgate Test

Interregional Market Operations
PJM Interconnection

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Contents

I. Background

The Market-to-Market (M2M) Flowgate Test is one of the requirements that an external resource must satisfy in order to become a pseudo-tie within the PJM Balancing Authority Area (BAA). This requirement is as follows:

- There must be at least one generation resource that has a historic economic minimum offer lower than its historic economic maximum offer, located inside the metered boundaries of the PJM region, that has a minimum impact of 1.5% on each Coordinated Flowgate for which coordination between PJM and a neighboring entity can occur due to the potential Pseudo-Tie[1].

The 1.5% threshold impact is targeted at avoiding less than optimal dispatch. It ensures that all flowgates impacted by pseudo-ties have some level of controllability with PJM internal resources to help ensure reliability and avoid excess congestion costs on external facilities. The 1.5% value also aligns with the current minimum percentage impact threshold at which PJM, in managing congestion, would typically re-dispatch a generation resource that impacts the congested flowgate.

II. Market-to-Market Flowgate Test

The M2M Flowgate Test consists of multiple steps. These steps, as described below, are performed using the most current Interchange Distribution Calculator (IDC) model available at the time of the Pseudo-Tie request. This model is provided by the Interchange Distribution Calculator Working Group (IDCWG) and Siemens, and includes system modeling for the eastern interconnection. Siemens PTI PSS-MUST or PowerGEM Tara programs are used to perform sensitivity analyses to determine the percent impact, or Generation-to-Load Distribution Factor (GLDF), the requesting Pseudo-Tie and each internal dispatchable PJM generator has on each future flowgate.

Test Steps:

1. Identify flowgates impacted by the requested pseudo-tie pursuant to any interregional agreements.

   PJM sends requests to external entities asking that they provide PJM with a list of potential flowgates that would result from the requested pseudo-tie. These requests are not limited to the Native Balancing Authority (Native BA) in which the requesting pseudo-tie resides. All neighboring entities or entities for which PJM has a congestion management agreement are asked to submit potential flowgates for analysis. Flowgates contained in the Book of Flowgates (BoF), which are provided by OATI, are included in the list of potential flowgates that will be analyzed.

   The list of flowgates is then determined in alignment with the flowgate testing procedures mandated in the CMP[2]. This involves calculating the GLDF for the pseudo-tie (Study 2) in order to assign it a Historic Control Area or Local Balancing Authority (LBA). If this analysis yields a GLDF of ≥5 % for the requesting pseudo-tie for any flowgate, the flowgate is eligible for coordination and included in the list of flowgates. If this analysis yields a GLDF of 3-5% for the requesting pseudo-tie for any flowgate, an N-1-1 (Study 3) analysis is performed on this flowgate that includes the evaluation of an expanded list of contingencies. If the Study 3 analysis yields a GLDF of ≥5% on any flowgate from the Study 2 analysis that the requesting pseudo-tie had a 3-5% GLDF, the flowgate is eligible for coordination, and included in the list of flowgates.

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[1] OATT Attachment DD.5.5A and PJM Manual 12 Attachment F.2

[2] MISO-JOA Attachment 2 Section 3.2

2. Identify dispatchable internal PJM generation.

    The list of dispatchable internal PJM generation includes generation physically located inside of the PJM BAA and is defined as having bid-in Day Ahead operating parameters providing an economic minimum less than the economic maximum for at least 50% of the hours in the previous year at the time of the study. This list does not include any current or eligible pseudo-tie generation because these resources are not physically located inside the PJM BAA. This list will be updated annually.

3. Perform analysis to determine the percentage of impact (shift factor) for a transfer of flow from the flexible internal PJM generation with respect to the PJM RTO load on eligible flowgates previously identified.

    This is achieved by performing an analysis using PSS-MUST or Tara and the IDC model to simulate PJM internal generation serving PJM load and determining each generator's GLDF for each eligible flowgate. This analysis includes no transmission outages, and all pseudo-tie generation is excluded.

4. Identify which eligible flowgates have a dispatchable internal PJM generator with at least ±1.5% impact.

    Using the GLDF from the previous step, eligible flowgates are categorized as either those that have an internal PJM generator with at least a ±1.5% GLDF on the flowgate or those that do not.

    If there are any eligible flowgates that do not have an internal PJM generator with at least ±1.5% impact, the resource fails the M2M Flowgate Eligibility Test and will not be approved for implementation.