M2M with PJM
Addressing Open JOA Items

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MIWG
March 22, 2012
Rensselaer, New York

Agenda

- Background
- Review the Open JOA Items
- Discuss Concepts Addressing the Open JOA Items
- Discuss Initiating and Closing M2M Criteria
- Review Next Steps

Background

- On December 30, 2012, the NYISO filed, with concurrence from PJM, OATT language updating the Joint Operating Agreement between NYISO and PJM allowing for the Market-to-Market Coordination implementation
- The filing left open several M2M Issues to be resolved by the end of April 2012
- This presentation will describe how the NYISO and PJM have addressed each of those items

Open JOA Items

- Method of Calculating M2M Entitlements
- Modeling of External Capacity Resources for purposes of developing M2M Entitlements
- Criteria for modeling Michigan – Ontario PARs as holding flow when developing M2M Entitlements
- Determine whether and when it is appropriate to limit M2M obligations and settlements based on the Branchburg – Ramapo 5018 thermal ratings
- Determine how to reflect PJM's service to its Rockland Electric Company load in the M2M Market Flow and M2M Entitlements processes

Method of Calculating M2M Entitlements

- This topic will cover the resolution of the following Open JOA Items
  - Method of Calculating M2M Entitlements
  - Modeling of External Capacity Resources for purposes of developing M2M Entitlements
  - Criteria for modeling Michigan – Ontario PARs as holding flow when developing M2M Entitlements
  - Determine how to reflect PJM's service to its Rockland Electric Company load in the M2M Entitlements process

Method of Calculating M2M Entitlements

- The assumptions made when determining M2M Entitlements
  - Generation and Load Patterns will source from 2009 – 2011 (three total years of data)
  - The reference set of years (2009 – 2011) for Generation and Load Patterns may be requested by either NYISO or PJM to be changed to a newer set of years (*e.g*. 2014 – 2016)
  - External Capacity Resources may be included in the Generation Pattern upon mutual agreement
  - The percentage of Rockland Electric Company ("RECo") load that is being served using the free flow western NY ties will be included in PJM's Load Pattern
  - PARs on the NY/NJ border and St. Lawrence PARs will be considered holding flow
  - PARs on the Michigan/Ontario border will be consider free flow

Method of Calculating M2M Entitlements

- The assumptions made when determining M2M Entitlements (cont)
  - Transmission Upgrades shall not cause M2M Entitlements to increase on existing M2M Flowgates
    - For example, PJM builds a new transmission line in parallel to existing M2M Flowgates:
      - NY's M2M Entitlement on the existing PJM M2M Flowgate(s) may decrease but not increase. Any delta due to the decrease in NY M2M Entitlements (from the original NY M2M Entitlements) on the original PJM M2M Flowgate(s) will be applied as an entitlement on the new transmission line when it becomes a PJM M2M Flowgate.
      - PJM's M2M Entitlement on the existing NY M2M Flowgate may also decrease but not increase

Method of Calculating M2M Entitlements

- The assumptions made when determining M2M Entitlements (cont)
  - The Non-Building market's M2M Entitlements will not increase on a net basis
    - Considering the example above, NY's M2M Entitlement on the new transmission line will be capped so that the sum of (i) this M2M Entitlement on the new transmission line and (ii) the adjusted M2M Entitlements on existing PJM M2M Flowgates does not exceed the sum of original M2M Entitlements on the existing PJM M2M Flowgate before the new transmission line was added to the model

Method of Calculating M2M Entitlements

- NYISO and PJM will reserve the right to revisit the assumptions for PARs on the Michigan/Ontario border once those PARs have been placed into service and sufficient operational experience has been collected
  - Any changes the NYISO and PJM propose based on the efficacy of the PARs or operating experience will require a FPA Section 205 filing to implement.

Method of Calculating M2M Market Flows

- This topic will cover the resolution to the following Open JOA Items
  - Method for modeling Michigan – Ontario PARs once they are in service
  - Determine how to reflect PJM's service to its Rockland Electric Company load in the M2M Market Flow calculation

Method of Calculating M2M Market Flows

- The NYISO and PJM are in the process of reaching agreement on the portion of Rockland Electric Company ("RECo") load that is being served using the free flow western NY ties will be included in PJM's real-time Generation and Load Pattern when calculating Market Flows

Method of Calculating M2M Market Flows

- RT Coordination Market Flows will be developed assuming the PARs on the Michigan/Ontario border are free flow
- Settlement Market Flows for settlement will be developed by comparing the following values:
  - Market Flows with PARs on the Michigan/Ontario border free flow (Unadjusted MF)
  - Market Flows including the impacts of PARs on the Michigan/Ontario border controlling flows (Adjusted MF)
  - M2M Entitlements (Entitlement)

Method of Calculating M2M Market Flows

- Determining the impacts of PARs on the Michigan/Ontario border
  - Determine the Market Flow on each of the four Michigan/Ontario border paths (Path MF)
  - Determine the real-time Lake Erie Circulation (LEC)
  - Determine the shift from the PARs on each of the four Michigan/Ontario border paths to the M2M Flowgate (Path SF to M2M FG)
  - The impacts can be then computed as:

Sum ((Path MF – (LEC/4))*Path SF to M2M FG) for all four paths

Method of Calculating M2M Market Flows

- Determining the Settlement Market Flow
  - When the Adjusted MF = Unadjusted MF, the Settlement MF will equal the Unadjusted MF
  - When the Adjusted MF > Unadjusted MF, the Settlement MF will be determined using the following formula:

    Min(Adjusted MF, Max(Unadjusted MF, Entitlements))
  - When the Adjusted MF < Unadjusted MF, the Settlement MF will be determined using the following formula:

    Max(Adjusted MF, Min(Unadjusted MF, Entitlements))
- The Settlement MF formulas above are in place to prevent LEC, which has many sources that PJM and NYISO cannot by themselves control, from aggravating the Market Flow that is used for settling M2M Re-dispatch Coordination

Determining the Ramapo PAR Target (Desired Flow)

- This topic will cover the resolution to the following Open JOA Items
  - Determine whether and when it is appropriate to limit M2M obligations and settlements based on the Branchburg – Ramapo 5018 thermal ratings

Determining the Ramapo PAR Target (Desired Flow)

- The Ramapo Target will be determined as follows:

(61% * PJM to NY Scheduled Interchange) +

(JK Interface Actual Flow + (RECo Load on JK contract path) – ABC Interface Actual Flow) – (JK Auto Correction Payback – ABC Auto Correction Payback)

- There is no need to limit M2M settlements for the 5018 thermal rating since PJM-NY Scheduled Interchange that would cause an overload of 5018 will be directed to the ABC and JK interfaces according to the terms outlined in OATT Schedule C
  - The interchange that flows to ABC and JK will not exceed 13% of the PJM-NY Scheduled Interchange as defined in OATT Schedule C

Initiating M2M Re-dispatch Coordination

- M2M Re-dispatch Coordination will be triggered to start manually by NYISO and PJM operations staff using the following criteria:
  - The M2M Flowgate is constrained
  - The Non-Monitoring RTO's Market Flow is greater than the Non-Monitoring RTO's M2M Entitlement on the constrained M2M Flowgate

Closing M2M Re-dispatch Coordination

- M2M Re-dispatch Coordination is not necessary when an appreciable amount of relief is not being delivered to the Monitoring RTO
- M2M Re-dispatch Coordination will be exited manually by NYISO and PJM operations staff using the following criteria:
  - The M2M Flowgate is no longer constrained (i.e. the Shadow Price = $0)

  OR

  - The M2M Flowgate is constrained
  - The Non-Monitoring RTO's Market Flow is less than than the Non-Monitoring RTO's M2M Entitlement on the constrained M2M Flowgate
  - The Non-Monitoring RTO's Shadow Price is not less than the Monitoring RTO's Shadow Price

Next Steps

- Prepare JOA revisions capturing the PJM and NYISO M2M agreements
- April 18, 2012 BIC
  - Provide M2M Entitlement levels observed through the studies completed to date
  - Provide a draft of the PJM-NY JOA revisions
- File JOA revisions addressing the open items by May 1, 2012

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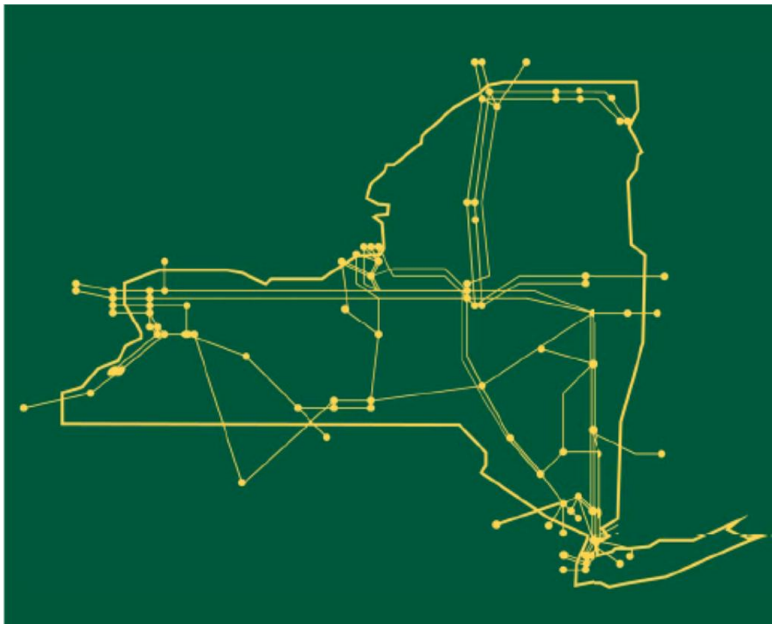

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