M2M with PJM

JOA Update

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Agenda

- Background
- Progress to Date
- Overview of JOA Updates
- Settlement Example
- Next Steps

Background

- On December 24, 2012, PJM and the NYISO submitted a joint request in Docket No. ER12-718 for a limited waiver of Sections 7 and 10 of OATT Attachment CC, Schedule D when
  - *the data link between the RTOs fails; or*
  - *either RTO's energy management system ("EMS") or real-time dispatch fails or is unavailable*
- This waiver expires June 30, 2013

Progress to Date

- The NYISO and PJM ("the RTOs") activated the M2M provisions of the JOA
- The RTOs have successfully performed both M2M redispatch and Ramapo PAR coordination
- The RTOs have begun capturing updates to the JOA to include the waiver language and make clearer the intent of certain provisions

Overview of JOA Updates

- Section 6.1 – makes clearer that each RTO is computing entitlements using its static model
- Section 6.3 – includes a provision that allows the RTOs to deal with entitlement impacts from transmission upgrades that are not reflected in the detailed representation of an RTO's static model

Overview of JOA Updates

- Section 7 – Ministerial changes capturing the renumbering of sections and use of standard language
- Section 8 – Makes the settlements calculations clearer

Overview of JOA Updates

- Section 9 – Clarifies that the special price convergence process should not result in operationally inefficient redispatch of generation and allows the Non-Monitoring RTO to prevent such redispatch if it could impact system reliability

Overview of JOA Updates

- Section 10 – Ministerial changes
- Section 10.1.5 – Updates this section to include the waiver language
- Section 10.2 – Ministerial changes and updates to more clearly indicate what is allowed when there is a discrepancy between the RTOs on what data was exchanged for M2M coordination

Overview of JOA Updates

- Sections 11.2 and 11.3 – Ministerial changes

Settlement Example

- As requested at the last MIWG meeting, the intention of this example is to illustrate how the equations in Section 7.2 and Section 8 work together
- Ramapo Assumptions
  - *Ramapo (for both PARs) Actual Flow = 400MW, JK Actual Flow = 1050MW, ABC Actual = 950MW, RECo Load = 300MW*
  - *PJM to NY Interchange = 500MW, JK Auto Correction Factor = 0MW, ABC Auto Correction Factor = 0MW*
  - *Ramapo PSF (for both PARs) to NY Constraint = -40%, Ramapo PSF (for both PARs) to PJM Constraint = -22%*

Settlement Example (2)

- NY Flowgate Assumptions
  - *PJM MF = 60MW, PJM Entitlement = 55MW*
  - *NY (Monitoring RTO) Shadow Price from RTD = $80*
- PJM Flowgate Assumptions
  - *NY MF = 40MW, NY Entitlement = 45MW*
  - *PJM (Monitoring RTO) Shadow Price from RT SCED = $70*
  - *NY (Non-Monitoring RTO) Shadow Price from RTD = $70*
- Interval Length is 5min (300sec)
- Payment Convention
  - *Positive (+) Invoice $ = NY Pays PJM*
  - *Negative (-) Invoice $ = PJM Pays NY*

Settlement Example (3)

- Ramapo Target (Section 7.2.1)
  - *= 61%*PJM/NY Interchange + (JK Actual Flow + 80%*RECo Load – ABC Actual Flow) – (JK Auto Correction Factor – ABC Auto Correction Factor)*
  - *= 61%*500MW + (1050MW + 80%*300MW – 950MW) – (0MW – 0MW)*
  - *= 305MW + (1050MW + 240MW – 950MW) = 645MW*
- Congestion Cost at Ramapo (Section 7.2.2)
  - *NY Cost = Ramapo PSF (for both PARs) to NY Constraint * NY Shadow Price from RTD = -40% * $80 = -$32*
  - *PJM Cost = Ramapo PSF (for both PARs) to PJM Constraint * PJM Shadow Price from RT SCED = -22% * $70 = -$15.40*

Settlement Example (4)

- Ramapo PAR Settlement (Section 8.3)
  - *Ramapo (for both PARs) Actual Flow = 400MW*
  - *Ramapo Target = 645MW*

  When Target > Actual for the interval,

  - *PJM Ramapo Payment = $0*
  - *NY Ramapo Payment = Congestion Cost at Ramapo (NY Cost)*(Ramapo Target – Ramapo Actual)*(Interval Length in Secs/3600sec) = -$653.33*
    - *= -$32 * (645MW – 400MW) * (300sec/3600sec)*

Settlement Example (5)

- Redispatch Settlement (Section 8.2)
  - *When MF > Entitlement,*

*Monitoring RTO Payment = Monitoring RTO Shadow Price * (MF – Entitlement) * (Interval Length in seconds/3600sec)*

  - *Monitoring RTO (NY) Payment for NY Flowgate = $80*(60MW – 55MW)*(300sec/3600sec) = $33.33*
  - *When MF < Entitlement,*

*Non-Monitoring RTO Payment = Non-Monitoring RTO Shadow Price * (Entitlement – MF) * (Interval Length in seconds/3600sec)*

  - *Non-Monitoring RTO (NY) Payment for PJM Flowgate = $70*(45MW – 40MW)*(300sec/3600sec) = $29.17*

Settlement Example (6)

- M2M Settlement (Section 8.4)
  - *M2M NYISO Settlement = Monitoring RTO (NY) Payment for NY Flowgate - Non-Monitoring RTO (PJM) Payment for NY Flowgate*

    M2M NYISO Settlement = $33.33 - $0 = $33.33
  - *M2M PJM Settlement = Monitoring RTO (PJM) Payment for PJM Flowgate - Non-Monitoring RTO (NY) Payment for PJM Flowgate*

    M2M PJM Settlement = $0 - $29.17 = -$29.17
  - *M2M Settlement = M2M PJM Settlement – M2M NYISO Settlement + PJM Ramapo Settlement + NY Ramapo Settlement*
  - *M2M Settlement = -$29.17 - $33.33 + $0 + -$653.33 = -$715.83**

    **Since the settlement is negative PJM would pay NYISO*

Next Steps

- If necessary, review JOA language at the April 23, 2013 MIWG
- Request approval of JOA language at the May 8, 2013 BIC
- Request approval of JOA language at the May 29, 2013 MC

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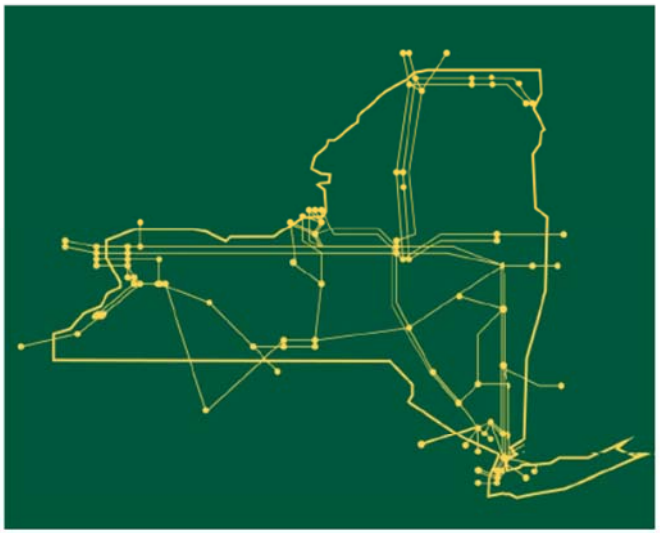

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