Manual 14C Update

Suzanne Glatz
Manager, Infrastructure Coordination
Planning Committee
December 15, 2016
Manual 14C Review Changes

• Manual 14C: Generation and Transmission Interconnection Facility Construction

• Proposed section to incorporate changes related to Tie Lines
  – Language and recommended Tie Line Process was updated to reflect feedback from Stakeholders
Technical information is required to be submitted by the TO to PJM at least 8 months prior to energization of a new/modified Tie Line. This information and lead time is required to ensure that the PJM operations model is updated and that all required operational/revenue meters are installed prior to expected energization. This information is typically included in the Interconnection Agreement (Wires-to-Wires). M3A will be updated with additional detail to clarify the process for submittal of the one line and related information.

- Interconnection One Line Diagram (sample included on the next slide) showing:
  - Topology of new interconnected facilities identifying new/modified Tie Line
  - Clearly established point(s) of interconnection/ownership boundaries
  - Clearly identified location and type of metering (operational/revenue-grade) installations
- Description of Point(s) of Interconnection identifying facility ownership & demarcation points
- Agreed upon primary meter location for new/modified Tie Line
- Expected date(s) for new/modified Tie Line energization
Sample Tie Line Interconnection One-Line Diagram

New Tap Station A
Transmission Owner-X
(PJM BA)

138 kV

Internal Line A-B
(PJM)

New Tie Line A-C
(PJM-External)

Station B
Transmission Owner-X
(PJM BA)

Station C
Transmission Owner-Y
(External BA)

Operational Meter Location
Revenue Meter Location
Recommended Tie Line Process Actions

1. TO submits EMS Network Model ticket and interconnection one-line diagram depicting line ownership and metering location.

2. PJM high-level technical review period (240 Days).

3. TO submits Wires to Wires agreement for legal and technical review.

4. Final PJM legal and technical review and comment period (100 Days).

5. TO presents at SOS-T (60-90 days).

6. PJM legal manages PJM acknowledgment and returns to TO (50 Days).

7. TO presents executed copy of Wires to Wires agreement request for PJM signature (45 Days).

8. TO works with PJM Legal Staff to submit Wires to Wires agreement to FERC per PJM eTariff protocol (15 Days).

9. TO files with FERC (30 Days).

10. File with FERC through PJM.

11. In-Service Date.

Green text - TO action
Blue text - PJM action
• Proposed Text to incorporate Tie Line Process is provided in separate document
Background on Tie Line Process
Tie Line - Background and Recent History

- PJM has encountered deficiencies in the existing process for cutting in Tie Lines
  - Compliance Risk: Inaccurate external Tie Line modeling
    - PJM RTO ACE error and inadvertent after the Tie was placed into service
    - PJM over generation and Eastern Interconnection Time Error Corrections for fast clock were made until the Tie was added to the PJM model
    - Non-compliant with NERC Standard BAL-005 R12
  - Operational Risk
    - PJM delayed the energization of a critical new external transmission line due to the unavailability of required metering to support the interconnection
    - Not having reviewed the Interconnection Agreement with sufficient notice prior to the energization date led to significant concerns about operational control and outage coordination
Background and Recent History

- Mainesburg Substation – Tapping Homer City Watercure 345kV line
  - Tie line agreement was submitted weeks prior to schedule IS date
  - Required months to reach agreement on metering with NYSEG and resolve IA language
  - Project delayed 6 months

- Bosserman Substation - New 138kV substation tapping tie lines with NIPSCO
  - Project impacted multiple 138kV tie lines
  - Required over 4 months to clarify one line and resolve just the metering arrangement
  - Project IS delayed to accommodate additional metering installation work

- Farragut-Marion 345 kV line – modified an existing tie line
  - Tie line changes were not flagged in model change process until late in project
  - No wires agreement was submitted prior to energization
  - Multiple model issues due to inadequate time to address specific project modeling needs
After reevaluating the process, PJM identified opportunities for improvement and created an updated methodology. This will result in more accurate modeling and efficient cut-in of future Tie Lines.

- An internal focus group was created to holistically review and evaluate the Tie Line cut-in process.
- Reviewed case studies and implemented recommendations resulting from an Apparent Cause Analysis.
• Workflow Management
  – PJM will utilize a software tool to automate and communicate each step throughout the cut-in process.

• Increased communication
  – Continuation of the Tie Line focus group to analyze progress and any additional areas for improvement.
  – Monthly check-in meetings to review upcoming cut-ins
• Communication
  – Upon cut in, PJM hosts a conference call with all parties involved to confirm the accuracy of all data.

• Interconnection Agreement Submission
  – PJM has developed a web page (Tie Lines) for members to submit draft Interconnection Agreements

• Manual Updates – detailed on separate attachment

• Timing of Interconnection Agreement submission
  – Timeline developed to better align with the current requirements for Network Model updates