Manual 14C Update

Suzanne Glatz
Planning Committee
November 3, 2016
• Manual 14C: Generation and Transmission Interconnection Facility Construction

• Proposed change to incorporate changes related to Tie Lines
• 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
Proposed Changes - External

- **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
Recommended Tie Line Process Actions

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

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

- TO submits executed copy of Wires to Wires agreement request for PJM signature.

- TO works with PJM Legal Staff to submit Wires to Wires agreement to FERC per PJM eTariff protocol.

- TO files with FERC.

- PJM high-level technical review period.

- Final PJM legal and technical review and comment period.

- PJM legal manages PJM acknowledgment and returns to TO.

- File with FERC through PJM.

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

- 240 Days

- 100 Days

- 50 Days

- 45 Days

- 15 Days

- 30 Days

- In-Service Date

Green text - TO action
Blue text - PJM action
Tie Line Technical Requirements

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 Tie Line A-C** (PJM-External)
- **New Tap Station A**
  - Transmission Owner-X (PJM BA)
- **Transmission Owner-X**
  - (PJM BA)
- **Transmission Owner-Y**
  - (External BA)
- **Station C**
  - Transmission Owner-Y (External BA)
- **Station B**
  - Transmission Owner-X (PJM BA)

**Operational Meter Location**

**Revenue Meter Location**

**138 kV**

**Internal Line A-B** (PJM)

**Tie Interconnection Point**

**TO-X Owned Line Segment (miles)**
- (PJM BA)

**TO-Y Owned Line Segment (miles)**
- (External BA)
• Proposed Text to incorporate Tie Line Process is provided in separate document