Net Energy Metering Senior Task Force (NEMSTF)
Action on Proposed Manual 28 Revisions

Joe Callis

Markets and Reliability Committee

July 26, 2012

- Net Energy Metering Senior Task Force (NEMSTF) was recommended to establish a venue and forum for Net Energy Metering (NEM) practitioners to address various impacts resulting from net injections of energy

- Chartered to examine the potential impacts of reverse power flows from NEM projects onto the PJM administered transmission system and markets and propose potential amendments to address the impacts

- Action: Vote on proposed Manual 28 revisions to:
  - Authorize creation of a new business process to trend and publish quarterly analysis of PJM load buses exhibiting reverse power flows
  - Accommodate accounting and settlement for reverse power flows via existing reconciliation processes

- Action: Vote to sunset NEMSTF

- Proposed addition of a business process in the Market Settlements area
  - PJM to begin to conduct quarterly analysis and produce a trend of net energy injections at load buses modeled in the PJM network system model (i.e., reverse power flows) in order to detect and correct any modeling issues and to identify any generation in excess of load that appears at a load bus.

- Proposed additions to PJM Manual 28: Operating Agreement Accounting
  - Revise Manual 28 to provide for use of existing reconciliation systems and meter correction processes to permit EDCs to distinguish and true-up net energy injections and properly account for such, and to implement the ongoing PJM load bus analysis described above.

3.5 State-estimated vs. Revenue-metered Energy Quantities

Real-time generation MWh are initially determined by the PJM State Estimator, however, they are replaced by revenue meter data, if the equivalent revenue meter values are available via PJM eMTR.

The total load actually served at each load bus is initially determined by the State Estimator. For each Electric Distribution Company (EDC) that reports hourly net energy flows from metered tie lines to PJM via eMTR and for which all generators within that EDC's territory report revenue meter data for their hourly net energy delivered via eMTR, the total EDC revenue-metered load is calculated as the sum of the net import energy flows reported by their tie revenue meters plus the net generation reported by the generator revenue meters. The amount of load at each of such EDC's load buses calculated by the PJM State Estimator is then adjusted, in proportion to its share of the total load of that EDC, in order that the total amount of load across all of the EDC's load buses matches its total revenue meter calculated load.

PJM will assess and trend quarterly the degree of net energy injections at load buses modeled in the PJM network system model (i.e., reverse power flows) in order to detect and correct any modeling issues and to identify any generation in excess of load that appears at a load bus. PJM will determine and use a relevant net energy injection threshold at a load bus that may impact LMP and/or load accuracy. For load buses with persistent negative MWh, PJM will work with the applicable EDC to determine if the cause is suboptimal modeling or actual reverse power flows from distribution-level system(s) to the PJM transmission system, or simply normal results due to state estimation. Properly modeled load buses with consistent excess energy injections due to distribution-level reverse power flows should be modeled as generation buses in the PJM network system model at the load bus location in order to minimize the amount of negative MWh observed at those load buses.

3.7 Reconciliation for Spot Market Energy Charges *(Excerpted)*

PJM will calculate reconciled Spot Market Energy charges for EDCs and Retail Load Aggregators **...**These charge reconciliations are then totaled for the month for each EDC or Retail Load Aggregator. Note that the reconciliation for Spot Market charges for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

4.4 Reconciliation for Regulation Charges *(Excerpted)*

PJM will calculate reconciled Regulation charges for EDCs and Retail Load Aggregators **…** These charge reconciliations are then totaled for the month for each EDC or Retail Load Aggregator. Note that the reconciliation for Regulation charges for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

5.4 Reconciliation for Operating Reserve Charges *(Excerpted)*

PJM will calculate reconciled Operating Reserve charges for EDCs and Retail Load Aggregators **…** This hourly kWh data must be reported separately for each applicable eSchedules contract, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

PJM calculates the Operating Reserve charge for Reliability reconciliations by **…**Note that the reconciliation for Operating Reserve charges for Reliability for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

PJM calculates the Reactive Services charge reconciliations by **…** Note that the reconciliation for Operating Reserve charges for reactive services for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity..

PJM calculates the Synchronous Condensing charge reconciliations by… Note that the reconciliation for Operating Reserve charges for synchronous condensing for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

6.4 Reconciliation for Synchronized Reserve Charges *(Excerpted)*

PJM will calculate reconciled Synchronized Reserve charges for EDCs and Retail Load Aggregators **…**PJM calculates the Synchronized Reserve charge reconciliations by **…** Note that the reconciliation for Synchronized Reserve charges for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

7.3 Reconciliation for Transmission Congestion Charges *(Excerpted)*

PJM will calculate reconciled Transmission Congestion charges for EDCs and Retail Load Aggregators **…**PJM calculates the Transmission Congestion charge reconciliations by **…**Note that the reconciliation for Transmission Congestion charges for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

8.3 Reconciliation for Transmission Loss Charges *(Excerpted)*

PJM will calculate reconciled Transmission Loss charges for EDCs and Retail Load Aggregators …PJM calculates the Transmission Loss charge reconciliations by …Note that the reconciliation for Transmission Loss charges for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

8.5 Reconciliation for Transmission Loss Credits *(Excerpted)*

PJM will calculate reconciled Transmission Loss credits for EDCs and Retail Load Aggregators **…**PJM calculates the Transmission Loss credit reconciliations by **…** Note that the reconciliation for Transmission Loss credits for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.

11.1 Meter Error Correction Billing *(Excerpted)*

Metering errors and corrections are reconciled at the end of each month by a meter correction charge. The monthly meter error correction charge (plus/minus) is determined by the product of the positive or negative deviation in energy amounts times the load weighted average real-time LMP for all load buses in the PJM Region, as applicable for tie meter corrections, or times the generation weighted average real-time LMP for individual generation buses for generator (or for net energy injections into the transmission system modeled as generators) meter corrections.

19.4 Reconciliation for Day-ahead Scheduling Reserve Charges *(Excerpted)*

PJM will calculate reconciled Day-ahead Scheduling Reserve charges for EDCs and Retail Load Aggregators …PJM calculates the Day-ahead Scheduling Reserve charge reconciliations by …Note that the reconciliation for Day-ahead Scheduling Reserve charges for a month may be either a positive or a negative value, and may even be such that the reconciled load responsibility MWh results in a negative load quantity.