Market Settlement Subcommittee

NEM Status and Use Case for Current / Proposed Approaches to NEM Excess Injection Accounting
(Negative eSchedule vs. Positive eMeter)

4/9/2013
PHI’s NEM Status

• PHI has successfully completed the interconnection of over 7,200 customers

• Density of solar requests in NJ requires detailed studies to prevent flicker and other power quality issues for customers on the circuit with high solar penetration (high voltage complaints are on the rise)

• Saturated circuits can cause voltage fluctuations that are outside of company criteria, ANSI Standards or regulated requirements

• In NJ, 5 out of 300 circuits are closed to any new intermittent generation

• Up to 49 additional circuits are restricted from solar installations above 250 KW based on active/pending requests. These “Restricted Circuits” already have 3 MW of large (>250 kW) projects active or pending.
PHI’s Approach

• Current
  – For Interval-Metered Customers
    • Allow hourly negative load values to be aggregated with supplier’s positive load (must be net positive for inSchedule)
  – For NONinterval-Metered Customers
    • Negative load values are set to zero by the billing system and carried forward to the next billing period

• Proposed
  – For Interval-Metered Customers
    • Identify and aggregate hourly excess generation
      – Set inSchedule load to zero
    • Establish eMTR pricing nodes (initially, one per jurisdiction)
    • Upload hourly excess to the PJM pricing node by the daily deadline
      – If Data is not available in time, will submit a Monthly Meter Correction
  – For NONinterval-Metered Customers
    • Identify monthly excess generation
    • Determine hourly allocation (i.e., on-peak period, etc.)
    • Allocate over the month and upload an adjustment to the settlement B reconciliation
Discussion

• Use case based on 85 MW Net Energy Metered excess injection
• Current state - using a negative eSchedule approach reduces the hourly load responsibility of the supplier of record, but doesn’t necessarily allocate the value of the NEM excess generation to the party responsible for purchasing the output.
  – PJM is unable to “see” the true zone load when “negative eSchedules” are used because the excess off-sets actual load; generation is accounted for as load, negative load in this instance, and the zone’s load is understated
  – PJM’s eSchedule system cannot process negative, hourly values.
  – Any non-interval metered excess (credit) flows to all suppliers as “negative load” via UFE resulting in lower energy responsibilities
  – Fairly easy to implement

• Proposed state – using a positive eMeter value to properly account for the NEM excess as a generator
  – PJM sees the true zone load via PJM eMTR
  – Generation (eMTR) and Load (eSchedules) are properly accounted-for
  – NEM excess is paid / distributed to the entity that has title to the generation output
    • Provides source of revenue to third-party supplier, default supplier, and / or EDC to pay NEM customer for excess generation, in accordance with state retail tariffs
  – Requires ability to capture the next day within EDC zonal bus models and settlement systems, the previous day’s hourly interval-metered excess net generation from NEM facilities and report that generation into PJM eMTR
Zone Load (PJM - eMTR)

Gen (net) 75 MW

Tie IN (1900 MW)

Gen (net) 50 MW

Tie OUT (0 MW)

Gen (net) 75 MW

Tie IN (0 MW)

Tie OUT (100 MW)

Zone Load = (1900-0) + (0-100) + 75 + 50 + 75 = 2000 MW

Zone Load (Settlement)

MW

500 kV Losses

eMTR Zone Load

Initial Zone Load

Initial Settlement Total Load

Residential Load w/ Losses

Commercial Load w/ Losses

Industrial Load w/ Losses

Lighting Load w/ Losses

Hours

1 hour

Negative “load” applied for excess NEM injection (65 MW)

UFE includes 20 MW of NEM Excess Injection

Zone Load = [RES Load (kw) * 1.06 + UFE] + [MGS Sec (kw) * 1.06 + UFE] + [AGS Pri (kw) * 1.04 + UFE] + [GSTTOU (kw) * 1.02 + UFE] + [OL (kw) * 1.06 + UFE]

Zone Load = [1035 MWh * 1.06 + 55 MWh] = 1152 + [300 MWh * 1.06 + 31 MWh] = 349 + [200 MWh * 1.04 + 19 MWh] = 227 + [150 MWh * 1.02 + 9 MWh] = 162 + [100 MWh * 1.06 + 4 MWh] = 110

2000 MWh

Current – Negative eSchedules to “Account” for Excess NEM Injection

65 MW of NEM Excess (interval-metered negative load) and 20 MW of NEM Excess ("carried forward")

Reconciliation Factor is used to scale the Initial Zone Load to the eMTR Zone Load...theoretically, it should be the amount of the 500 kV losses
Proposed – Positive eMTR to Properly Account for Excess NEM Injection
85 MW NEM Excess aggregated to pnodes (assumes all NEM Excess is interval-metered)

Zone Load (PJM - eMTR)

Zone Load = (1900-0) + (0-100) + 75 + 50 + 75 + 40 + 30 + 15
= 1900 - 100 + 75 + 50 + 75 + 85
= **2085** MW

Zone Load (Settlement)

Zone Load = [RES Load (kw) * 1.06 + UFE] + [MGS Sec (kw) * 1.06 + UFE] + [AGS Pri (kw) * 1.04 + UFE] + [GSTTOU (kw) * 1.02 + UFE] + [OL (kw) * 1.06 + UFE]

Zone Load = [1080 MWh * 1.06 + 47 MWh]= 1192 + [320 MWh * 1.06 + 27 MWh] = 366 + [215 MWh * 1.04 + 15 MWh] = 239 + [160 MWh * 1.02 + 7 MWh] = 170 + [110 MWh * 1.06 + 2 MWh] = 118

**2085** MWh

Reconciliation Factor is used to scale the Initial Zone Load to the eMTR Zone Load...theoretically, it should be the amount of the 500 kV losses.