Process for Biasing Flowgate/Nomogram Operating Limits for Day Ahead & Real Time Markets

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Outline

- Biasing Process
- Key reasons for Biasing needs
- Biasing & Constraint Enforcement
  - Pre vs Post LMP Market
- Biasing Examples

Biasing Process: Key points

- Biasing done only on an as needed basis for DA & RT runs
- Biasing done only for select flowgates

  (currently only about 30 flowgates are actively biased out of approximately 5000 total flowgates)
- No scheduling limits altered as part of biasing process
- RTM biasing requirements depend on congestion experienced in Real Time & DAM uses RT biasing levels as one of the inputs to determine DA biasing levels.

Key Reasons for Biasing needs

1. To align market flows with actual flows
2. To accommodate mismatch due to inherent design differences of DAM, RTUC and RTD
3. To allow reliability margins
4. To adjust margins for flowgates impacted by telemetry issues.

Key Reason #1: Biasing to align market & actual flows

Reasons for flow anomalies (market vs actual):

- Unscheduled flow
- Difference in Load Distribution
- Resource Deviations
- External network model limitations
- Network modeling differences

Key Reason # 2: Biasing to accommodate inherent design of DAM, RTUC & RTD runs

- Different optimization intervals for different market runs-
  - DAM – 1 hr
  - RTUC – 15 min
  - RTD – 5 min
- Level of biasing in DAM will depend on level of predictable conditions that are forecast to arise in RTM
- Level of biasing in RTUC will depend on Real-Time condition but in general RTUC bias >= RTD bias.

Key Reason # 3: Biasing to maintain Reliability Margin

Reasons why reliability margins are needed for select flowgate constraints:

- Contingency Reserve procurement & constrained transmission
- AGC awards & dispatch may worsen some transmission constraints
- Intermittent resource deviations – DA schedules vs RT dispatch for intermittent resources may worsen transmission constraints
- Adverse Operating conditions in Real Time.

Key Reason # 4: Biasing to account for Telemetry Issues

- Due to lack of telemetry some constraints are “un-enforced” until actual loading condition arise
- If PTO reports a violation or if SE Solution shows a violation, constraint may need to be enforced in the market, with a bias
- Going forward, increased telemetry may be needed.

Constraint Enforcement & Biasing: Pre vs Post LMP Market

- Pre-LMP Market:
  - In Day Ahead, no Intra-zonal flow-limit constraints enforced; only Inter-Zonal scheduling limits enforced
  - In Real Time, Reliability Margins for Intra-zonal constraints were maintained using OOS dispatches.
- Post-LMP Market:
  - A majority of Intra-Zonal & Inter-Zonal flow-limit constraints & all Scheduling limit constraints are enforced in Day Ahead & Real Time
  - Biasing done in Day Ahead and Real Time, on an as needed basis.

Biasing Examples

Assuming

A = Normal limit for a flowgate

B = Calculated market flow (from closest RTD)

C = Actual flow (from telemetry)

If biasing needed, then new flow limit is calculated by the formula:

D (New limit for the flowgate) = A – (C – B)

Also, the Bias Percentage for this flowgate is calculated by the formula:

E (Bias %) = 100 * D/A

- Example 1. If, A = 500, B = 475, C = 550.
  Then, D (New flow limit for the market) = 425.
  E (Bias %) = 85%
- Example 2. If, A = 500, B = 525, C = 475.
  Then, D (New flow limit for the market) = 550.
  E (Bias %) = 110%

Questions

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