Con Edison
Circuit Breaker Proposal

December 19, 2000

Objectives

- To replace the ISO's normal mechanism for determining energy market prices (LBMPs) when the market is determined to not be workably competitive
- To establish LBMPs using generator bids that reflect competitive bidding behavior
- To ensure that consumers pay a just and reasonable rate for energy obtained from the ISO's energy markets
- To encourage the development of a competitive electricity market

Circuit Breaker (CB) Components

- A triggering mechanism:
  - an objective measurement for determining when the energy market is not workably competitive
- Reference bid determination:
  - a specific mechanism for establishing appropriate bids when the energy market is not workably competitive

Triggering Mechanisms

- Market “tightness” test
  - if the available supply of generation to a transmission constrained zone is less than 130% of the forecasted load in any hour
- Market concentration test
  - if the market concentration of the supply within a transmission constrained zone exceeds a threshold value
- If either condition occurs, the circuit breaker is triggered

Market Concentration Test

- Potential markets: all of New York State, NYC, Long Island and the New York East market.
- Concentration of "residual" generation ownership will be determined using the Herfindahl-Hirschman Index (HHI):
  - HHI equals the sum of the squares of the market shares of all competitors
  - A market with 4 equal sized competitors (25% share each) has an HHI of $25^2 + 25^2 + 25^2 + 25^2 = 2500$
- Circuit breaker is triggered if HHI > 2500.
- "Residual" generation is defined as the generation available within the constrained transmission zone after SCUC schedules to meet total forecasted load in the zone.

Market Concentration - Example

- NYC zone is found to be constrained from other zones based on the available LBMPs.
  - Peak load in zone is 10,000 MW
  - 4500 MW is scheduled from outside the zone
  - 8500 MW of generation is located in zone, so 5500 MW needed within zone
  - 5500 MW from within zone has been scheduled in SCUC and the residual 3000 MW of generation is owned as follows: Owner A: 1200 MW, Owner B: 900 MW, Owner C: 600 MW, Owner D: 300 MW
  - Residual generation HHI = $40\%^2 + 30\%^2 + 20\%^2 + 10\%^2 = 3000$
- Circuit breaker is triggered, so generation bids of all 5500 MW needed within the zone is subject to mitigation.

Reference Price

- Two possible approaches:
  - historical accepted bids by a generator during similar time periods (on or off-peak) and for similar output (minimum load, 1/2 load, full load, etc.) adjusted for changes in fuel prices
  - a reference price formula that utilizes the generator's physical characteristics (capacity and heat rate), a fuel price index, variable O&M, etc. to establish a generation bid in $/MWh
- The NYISO already utilizes both of these approaches to establish bid prices for the NYC market power mitigation measures.

Process

- NYISO day ahead commitment software (SCUC) begins processing using “as-submitted” bids.
- NYC market power mitigation measures are then implemented in SCUC.
- Total forecasted load requirements and local reliability rules are included in commitment and dispatch.
- Determine the relevant geographic markets within New York using differences in LBMPs to establish constrained zones.
- For each relevant geographic market, determine the market “tightness” measure and the market concentration measure (“residual” generation HHI).

Process (cont.)

- If the “tightness” or concentration tests trigger the circuit breaker, then generator bids are replaced with the appropriate reference price bid.
- If a generator’s bid is less than the reference price bid, the original generator bid will remain in SCUC and also in the balancing market evaluation (BME).
- Using the mitigated bids, SCUC establishes day ahead LBMPs.
- A similar analysis will occur in the BME for the real time market.
- Startup and minimum generation bids will also be mitigated.