

# Circuit Breaker

EPFSTF

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IMM



Monitoring Analytics

# Circuit Breaker Concept

- **The desire for a circuit breaker in energy market design is a recognition that there are market design problems in the energy market.**
- **The circuit breaker is intended to limit the effect of inefficient pricing on the market.**
- **Identified issues**
  - **Additivity of reserve penalty factors (ORDC)**
  - **Use of transmission constraint penalty factors (TCPF)**
- **The underlying issues should be addressed.**
- **A circuit breaker should target the specific issues identified, rather than applying a general price cap.**

# Problem with Price Caps

- **A cap on overall LMP would suppress efficient pricing.**
- **LMPs resulting from cost-based offers using correct short run marginal costs including fuel costs should not be capped.**
  - **Address fuel cost policies**
  - **Address VOM in offer caps**
  - **Address market power in the natural gas market**
- **FERC Order 831 caps offers at the greater of \$1,000 per MWh or short run marginal cost up to \$2,000 per MWh.**

# Transmission Constraint Penalty Factor

- **SCED prices at the TCPF when flows exceed the constraint limit in SCED, as reduced from the actual line limit by PJM.**
- **SCED Limit = Line Limit x Limit Control Percent**
  - **PJM should not use limit control percent under circuit breaker.**
- **When the actual or contingency flow is less than the line limit but above the line limit PJM enters in SCED, prices are artificially high.**
- **Under the circuit breaker, dispatch and pricing should be based on 100 percent of the line limit used in operations.**

# Circuit Breaker Trigger

- **Triggers should be clear and not discretionary.**
- **Circuit breaker applies immediately with the trigger for the entire RTO and reserve subzone.**
- **Emergency actions should be a trigger.**
  - **Manual load dump**
  - **Voltage reduction**
  - **Call for demand side resources**
- **Catastrophic force majeure should be a trigger.**
  - **Same criteria as used for capacity performance**
- **Localized events trigger circuit breaker for entire RTO.**

# IMM Circuit Breaker Proposal

- **Circuit Breaker method**
  - **Only use one ORDC penalty factor in LMP: \$850 per MW.**
    - Only one penalty factor added to LMP for shortage pricing.
    - No additivity of multiple ORDC penalty factors.
  - **All reserve prices are capped at \$850 per MW.**
    - No additivity of ORDC penalty factors.
  - **Transmission constraint penalty factors**
    - No use of limit control less than 100% in RT SCED and LPC.
  - **No virtuals.**

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