FTR Credit Calculation Education

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Credit
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Financial Risk Management Senior Task Force
• Minimum Participation Requirements
• Minimum Capitalization Requirements
• FTR Credit Requirements:
  – Path Specific
  – Volumetric
  – Mark-To-Auction
Participation Requirements
Minimum Participation Requirements (§I)

- Market Participation Eligibility Requirements (§I.A)
  - “[Qualify] to be eligible to transact in the PJM Markets”
- Risk Management and Verification (§I.B)
  - Risk policy review of non-hedging FTR Participants
  - Risk Policy review on random selection of all Participants
- Capital (§I.C) “… the minimum financial requirements appropriate for the PJM Market(s) in which [the Participant] transacts”
  - Minimum Capitalization (§I.C.1)
  - Provision of Collateral (§I.C.2)
May “qualify” to participate in PJM markets in one of five ways
- Appropriate Person (per Commodity Exchange Act)
- Eligible Contract Participant (per Commodity Exchange Act)
- Physical Market Participant providing
  - Generation, transmission, distribution, electric energy services necessary for reliability
- Unlimited Corporate Guaranty from an issuer with at least $1 million of total net worth or $5 million of total assets
- Letter of credit of at least $5 million that can't be used for trading credit requirements
Capitalization Requirements
Minimum Capital requirement may be satisfied by either

- Capitalization\(^1\) - or -
  - FTR Participants
    - $1 million tangible net worth or $10 million tangible assets
  - Other Participants
    - $500,000 tangible net worth or $5 million tangible assets

- Collateral
  - FTR and Virtual - $500,000 + 10% reduction on remaining collateral
  - Virtual - $200,000 + 10% reduction on remaining collateral
  - All other - 10% reduction on all collateral

\(^1\) May also utilize guaranty under provisions in the Tariff
Credit Requirements
FTR Credit Calculation

• FTR Credit Requirement has three components
  – Path-specific component – including:
    • Cleared price minus historical reference value (includes adjustments for RTEP upgrades)
    • Undiversified adder (if any)
  – 10¢ Per-MWh minimum
  – Mark-to-Auction (MTA)
    • Cleared FTR prices marked against Auction Reference Prices
All Bid and Held positions must be supported by collateral (cash or LC)
Unsecured credit is not available for FTR Participation
• Monthly Path-Specific Credit Requirements calculate credit based on:
  
  – Historical Values calculated as the monthly weighted average Day-Ahead congestion prices of the past three calendar years (50%-30%-20%)
  
  – Adjusted Historical Values
    • When transmission congestion decreases due to certain transmission upgrades
    • The transmission upgrades to be modeled for this purpose shall only include those upgrades that, individually, or together, have 10% or more impact on the transmission congestion on an individual constraint or constraints with congestion of $5 million or more affecting a common congestion path.
• All values are calculated on a monthly/FTR basis
• Separate Historical and Adjusted Historical Values for on-peak, off-peak, and 24-hour FTRs
• Each historical and adjusted value has a discount factor applied
  – Discount by 10% when calculating credit requirements for FTR paths with positive expected value
  – Add 10% when calculating credit requirements for FTR paths with negative expected value
• For each FTR, calculate:
  – Cleared Price minus (the Historical Value times the discount factor)
  – Cleared Price minus (the Adjusted Historical Value times the discount factor)
• Take the maximum of those two values
  – Multiply Sell trade types by negative one
After each Path-Specific Credit Requirement is determined, sum all FTRs within that month
   - For cleared FTRs, negative credit requirements will net with positive credit requirements within a month
   - For bid FTRs, negative credit requirements do not net with positive credit requirements within a month
• Additional Credit Requirements for Undiversified Portfolios
  – An Undiversified Portfolio is one which is net counterflow. This means that the total value of the portfolio is negative based on FTR auction clearing prices.
  – The FTR portfolio is the cumulative position for all current and future FTRs cleared in previous auctions and FTRs cleared in any current preliminary auction.
  – For customer accounts that are Undiversified in a month, the FTR Credit Requirement will be increased by an amount equal to three times the absolute value of the FTR Portfolio Auction Value in that month, including the tentatively cleared solution.
• Example:

<table>
<thead>
<tr>
<th>Trade Type</th>
<th>Cleared Price ($)</th>
<th>Cleared MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path A</td>
<td>Buy -50</td>
<td>8</td>
</tr>
<tr>
<td>Path B</td>
<td>Buy 20</td>
<td>3</td>
</tr>
<tr>
<td>Path C</td>
<td>Buy 30</td>
<td>2</td>
</tr>
<tr>
<td>Path D</td>
<td>Sell 40</td>
<td>1</td>
</tr>
</tbody>
</table>

• Net Cleared Buy Bid Cost = (-50*8)+(20*3)+(30*2) = -$280
• Net Cleared Buy Bid MW = 8 + 3 + 2 = 13 MW
• Net Cleared MW = 8 + 3 + 2 – 1 = 12 MW

• Undiversified = (-$280 ÷ 13MW) * 12MW * -3 = $775.38
• The 10¢/MWh Minimum is calculated as
  – The MW of the FTR times the number of class hours in that month multiplied by 10¢
    • For cleared positions, “Sell” FTR MWh are subtracted from the portfolio total; prior to clearing, the MWh for “Sell” FTR MWh will not be included in the portfolio total.
  – Sum over the entire month to determine the monthly per-MWh Minimum
• If the monthly path-specific requirement plus any applicable increase related to the portfolio diversification results in a value that is less than the monthly per-MWh Minimum, the credit requirement for the month will be set equal to the monthly per-MWh minimum value
• Any applicable ARR Credits are then subtracted from the monthly credit requirements
  – Negative ARR Credits may result in a credit requirement
• All positive monthly subtotals are then summed to determine the initial margin for the portfolio
• The Mark-to-Auction Value is calculated as:
  – Use the most recently available cleared auction price applicable to the FTR minus the original transaction price of the FTR, multiplied by the transacted quantity.
  – Sum over all the months remaining in the applicable FTR period and for all cleared FTRs and bilateral trades in the customer account.

• If the resultant value is negative, then add the absolute value to the result from summing all positive months.
PJM may issue Intra-Auction Collateral Calls based on tentatively cleared auctions

- Diversification and Mark-to-Auction checks are performed using auction prices from the tentatively cleared auctions
- PJM issues a collateral call for additional credit as required
- Participants bids are removed from auction if the collateral call is not satisfied by 4:00 pm the next business day
Post-Auction Collateral Calls

• Post-Auction Collateral Calls are a possibility after the auction clears, even if bids were removed
• Collateral calls are issued once the auction clears and need to be cured by 4pm on the second business day
• If a member does not post the collateral then the freeze remedy is applied
  – All credit-screened market activity (i.e. virtuals, imports/exports, RPM), except for FTR Sells, will be frozen
  – FTR Sells are only permitted if it lowers the credit requirement
• If the collateral call is not met by the next consecutive auction then the member will be in default
  – The four rounds of the annual auction are considered to be a single consecutive auction