FTR Funding Improvements:
Challenges and Opportunities for the Markets

Presented to:

Nodal Trader Conference

David Patton
Potomac Economics

October 22, 2015
FTR funding is a complicated issue and varies substantially from market to market.

FTRs play a key role in facilitating trading and conveying the economic property rights of the transmission network –

✓ Hence, how the RTOs operate the system and settle FTRs is very important.

This presentation will discuss:

✓ What causes underfunding in different markets;
✓ Who ultimately bears the costs of underfunding; and
✓ The “solutions” the RTOs have implemented to address underfunding.
The Operation of Competitive Electricity Markets

• To realize the benefits of competitive markets, RTOs must operate their respective systems well.

• One important aspect of good operations is consistent modeling of the system in the FTR market, Day-Ahead market, and Real-Time market.
  ✓ Poor consistency between the FTR and Day-Ahead Markets leads to FTR revenue shortfalls.
  ✓ Poor consistency between the Day-Ahead and Real-Time markets leads to balancing congestion.

• These costs are recovered in different ways by the RTOs:
  ✓ In PJM, FTR shortfalls and balancing congestion together are paid for by underfunding the FTRs.
  ✓ In MISO, only FTR shortfalls result in underfunding.
  ✓ In New York, FTRs are fully funding and the costs are recovered through uplift.
Congestion Costs in MISO

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day-Ahead Market</td>
<td>$842.1</td>
<td>$1,443.6</td>
</tr>
<tr>
<td>Transfer</td>
<td>$1.5</td>
<td>$59.2</td>
</tr>
<tr>
<td>South</td>
<td>$6.6</td>
<td>$354.8</td>
</tr>
<tr>
<td>Midwest</td>
<td>$834.0</td>
<td>$1,029.6</td>
</tr>
<tr>
<td>Balancing</td>
<td>-$35.9</td>
<td>-$29.9</td>
</tr>
<tr>
<td>FTR Funding</td>
<td>95.3%</td>
<td>97.4%</td>
</tr>
</tbody>
</table>

FTR Funding (%): 2013 = 95.3%, 2014 = 97.4%
Who Bears the Costs of Underfunding?

- Ultimately, the transmission customers bear the cost:
  - If shortfalls are recovered through FTR underfunding, the value of the FTRs and revenues collected for the FTR sales go down.
  - If fewer FTRs are sold, the revenues collected go down.
- There is no free lunch, an RTO cannot solve the underlying problem by simply restricting the quantity of FTRs sold.
- Effects on Traders:
  - Traders using FTRs also bear more risk, but this should be priced in the FTRs.
  - Additionally, if the RTO reduces the availability of the FTRs, traders may not be able to acquire the FTRs they desire to support their trading activities.
The only true solution is to improve the consistency between the FTR modeling the RTO’s energy markets, which will:

- Eliminate underfunding; and
- Maximize the availability of FTRs.

Virtual spread products do not cause FTR underfunding.

- However, they can increase balancing congestion when they load constraints that are modeled differently in the day-ahead market.

A partial solution:

- Allocate the FTR shortfalls to the Transmission Owners that cause them taking transmission facilities out of service.
- Allocate the balance to transmission customers.

This allocation is in place in New York, which guarantees that its FTRs are fully funded.

We have proposed the same in MISO.
FTR Funding Problems Specific to PJM

- Poor interface pricing (prices used to settle imports and exports);
  - PJM’s interface pricing methodology causes it to overpay imports and exports that affect constraints.
  - When it makes congestion payments that exceed the value of the relief provided by the import/export, it must incur duplicative congestion costs redispetching generation.
  - These excess costs manifest as balancing congestion costs and FTR underfunding.

- Allocation of balancing congestion costs to FTR holders.
  - Inconsistencies between the day-ahead and real-time market models are not allocated to FTR holders in other markets and substantially reduces funding levels in PJM.