4. B – APPLICATION OF FIRM FLOW ENTITLEMENTS AND TRANSMISSION OUTAGES IN FORWARD PROCESSES
Both the Financial Transmission Right (FTR) and Day-Ahead (DA) Market use Entitlement based limits
- Market limits based upon FFE estimate in DA and FTR

Real-Time (RT) Market approach is based upon economic dispatch (Market-to-Market) or relief obligations from the IDC
- DA uses an estimate of the Firm Flow Entitlements that are ultimately settled based upon RT dispatch/binding
- Joint Operating Agreement (JOA) settlement based upon difference between FFE and calculated Market Flow (MF)
- Both Credits and Charges impact Revenue Neutrality Uplift (RNU) charge type
• Limit approach prescribed in E & OR tariff - Rate Schedule No. 5
  - Attachment 3 – Interregional Coordination Process, Section 4 - Day-Ahead Energy Market Coordination

• External M2M constraints limits
  - $F_{\text{FFE}}_{\text{Non-Monitoring RTO (NMRTTO)}}$

• Internal M2M constraints limits
  - $\text{FG Limit} - F_{\text{FFE}}_{\text{NMRTTO}} - \text{LoopFlow}_{\text{Non-JOA-parties}}$
- RT Excess Congestion Fund (ECF)
  - Results from the differences between DA and RT positions when RT is binding

- FTR Funding shortfall
  - Results from the difference between FTR and DA positions when DA is binding

- Flow differences between markets are due to:
  - Topology Differences (planned vs. actual outages)
  - Sensitivity Cutoff differences (FTR = 0%, DA = 1.5%)
  - Constraint modeling (Limits, monitored elements, FFEs)
  - Loop flow modeling/assumption differences
Excess Congestion Fund Performance (MISO)

Implementation of Improved Loopflow/FFE Management Techniques

Net of RTCC and JOA
• MISO’s FTR Market funding was less than 90% between 2008 and mid-2010

• Several actions led to improvements of FTR Shortfall:
  - Modeling of Real Time and Day Ahead Transmission constraints into FTR Market
  - Improved modeling assumptions
  - Transmission outage inclusion criteria

• Process improvements/efficiencies implemented
Internal Analysis Improvements (MISO)

Determined which categories could be directly improved without market changes

**FTR Shortfall**

- **Topology**
  - Outages
  - Excluded by Market Rules
  - Submitted Post-Auction

- **Non-Topology**
  - Network Topology
  - Phase Shifters
  - Constraint Management
  - Unpurchased Capacity

**Actionable** vs. **Market Bias**
Lessons Learned

• Forward markets should strive to converge with the real-time market
• High level of communication and coordination between the FTR, DA, and RT groups is required
• Investing time on internal analysis and process improvement was essential
Questions

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