REVENUE ADEQUACY ANALYSIS
Revenue Adequacy Analysis : Process

1. Clean Day Ahead case
   - MCE v1.6 solved a defect that impacted congestion
   - Bid in load increased to realistic levels

2. Day Ahead model assumptions applied to TCR
   - Outages, Flowgates, Parallel Flow, Topology, Contingencies

3. “Perfect Hedges” from one on-peak hour Day Ahead injections and withdrawals as TCR inputs
   - Generation to load for all load-serving entities
   - EIS schedules for independent power producers
   - Left-over North to South gen to load
Revenue Adequacy Analysis: 3 Hedge Runs

1. ARR Allocation
   - “Perfect Hedges” as Candidate ARRs
   - Objective function maximizes awards

2. TCR Auction with Bids at Congestion Values
   - “Perfect Hedges” priced economically
   - Objective function maximizes auction revenue

3. TCR Auction with equal bids
   - Same as ARR Allocation
Revenue Adequacy Analysis: Allocation Results

1. ARR Allocation
   - “Perfect Hedges” as Candidate ARRs
   - Objective function maximizes awards

   • Total Awards: 33,025 MW
   • % of DA Injections/Withdrawals Awarded: 99.6%
   • Curtailments: small loads
   • TCR Payments: $60,898
   • 103% Funded by Day Ahead Market
Revenue Adequacy Analysis: Auction Results

2. TCR Auction with Bids at Congestion Values
   - “Perfect Hedges” priced economically
   - Objective function maximizes auction revenue

   - **Total Awards**: 19,550 MW
   - **% of DA Injections/Withdrawals Awarded**: 59.0%
   - **Curtailments**: Negative Bids
     - The auction doesn’t want negative bids that do not provide valuable counter-flow.

   - **TCR Payments**: $63,853
   - **98.5% Funded by Day Ahead Market**
Revenue Adequacy Analysis : Auction Results

3. TCR Auction with equal bids
   – Same as ARR Allocation

- Total Awards : 33,092 MW
- % of DA Injections/Withdrawals Awarded : 99.8%
- Curtailments : small loads
- TCR Payments : $61,244
- 102.7% Funded by Day Ahead Market
Revenue Adequacy Analysis: Summary

• The TCR Hedge and Day Ahead Market models are practically identical.

• Small Differences due to
  – Bus-Branch (TCR) vs. Breaker-to-Breaker (DA) Models
  – Load distribution not perfectly matched
  – Parallel Flow as Injections/Withdrawals (DA) vs. Flowgate Derates (TCR)

• The TCR Auction is designed to maximize revenue, not to accept all bids.

• Nothing in this analysis reveals concerns with the TCR market software.
Revenue Adequacy: Conclusions

• What causes revenue adequacy concerns?
  – Updates in model assumptions (like parallel flow, topology, contingencies)
  – Outages reported late, forced outages
  – Changes in flowgate designations and/or ratings
  – Bidding Behavior

• Ongoing dialogue with stakeholders
  – Congestion Hedging
  – Market Monitoring (Quarterly and Annual Reporting, MWG)