Market Power
During Periods of Scarcity

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The presenter’s views do not necessarily represent the views of the Federal Energy Regulatory Commission.
Pricing Philosophy Near and During Operating Reserve Shortages

- Generator offers should reflect marginal cost
  - Offers mitigated if generator is deemed to have market power
  - Offers are not mitigated otherwise

- Operator actions taken to avoid operating reserve shortages would ideally be reflected in the energy price

- Set energy and ancillary service prices based on administrative pricing rules during operating reserve shortages that are broadly consistent with load valuation
Mitigation Rules

- Two basic steps
  - Identify resources that have market power
  - Require resources with market power to bid at “reference cost”

- Two general methods for identifying resources with market power
  - Structural test (three pivotal supply)
  - Conduct and impact test

- Reference cost - estimate of variable operating cost
  - Estimate by either system operator or market participant
  - Based on cost fundamentals (fuel cost, heat rate) and/or historic bids or historic energy prices (lowest quartile)
Mitigation Rules (cont’d)

- **Structural test (three pivotal supplier test)**
  - Assess whether three suppliers are jointly pivotal in constrained area
  - Mitigation rules either only mitigate pivotal suppliers (PJM) or all suppliers that can impact the price of a ‘non-competitive’ constraint subject to mitigation (California ISO)

- **Conduct & Impact thresholds**
  - Resources bids are mitigated to reference levels if bid and impact exceed pre-determined thresholds
  - Two types of thresholds
    - chronically constrained areas have more stringent thresholds
    - transient constraints have less stringent thresholds
Accounting for Operator Actions to Avoid Reserve Deficiency

- Concern: some actions that system operator takes to avoid reserve deficiencies may suppress the energy price and therefore disrupt price signals

- Example operator actions
  - Deploying “emergency” demand response
  - Temporary voltage reduction
  - Emergency purchases

- Rules dictating when operator action can occur (before or during reserve deficiency) differ by market
Administrative Pricing During Operating Reserve Shortages

- Once the market is experiencing an operating reserve shortage, administrative pricing rules set the energy and ancillary services prices.

- Rules may distinguish between:
  - Reserve product experiencing the deficiency
  - Magnitude of the deficiency
  - Location of the reserve deficiency (local or system-wide)

- Can be thought of as the price above which the system operator will stop attempting to resolve the deficiency.
## Administrative Pricing Example

<table>
<thead>
<tr>
<th>Product</th>
<th>Location</th>
<th>Shortage Amount (MW)</th>
<th>Shortage Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation</td>
<td>NYCA</td>
<td>0 to 25</td>
<td>$80</td>
</tr>
<tr>
<td>Regulation</td>
<td>NYCA</td>
<td>&gt;25 to 80</td>
<td>$180</td>
</tr>
<tr>
<td>30 Minute Total</td>
<td>West</td>
<td>ALL</td>
<td>$200</td>
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<tr>
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<td>East</td>
<td>ALL</td>
<td>$225</td>
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<tr>
<td>30 Minute Total</td>
<td>LI</td>
<td>ALL</td>
<td>$250</td>
</tr>
<tr>
<td>Transmission</td>
<td>ALL</td>
<td>0 to 5</td>
<td>$350</td>
</tr>
<tr>
<td>Regulation</td>
<td>NYCA</td>
<td>&gt;80</td>
<td>$400</td>
</tr>
<tr>
<td>10 Minute Total</td>
<td>West</td>
<td>ALL</td>
<td>$650</td>
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<td>10 Minute Total</td>
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<td>ALL</td>
<td>$1,150</td>
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<tr>
<td>10 Minute Spinning</td>
<td>West</td>
<td>ALL</td>
<td>$1,175</td>
</tr>
<tr>
<td>Transmission</td>
<td>ALL</td>
<td>&gt;5 to 20</td>
<td>$1,175</td>
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<td>ALL</td>
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<td>East</td>
<td>ALL</td>
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<tr>
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<tr>
<td>Transmission</td>
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<td>&gt;20</td>
<td>$4,000</td>
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