Recommendations for Forecasting Gas, Energy, and Ancillary Services Prices

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THE **Brattle** GROUP

Approach to forecasting gas and electric prices

1. Identify hubs with sufficiently liquid futures

2. Map each zone to its corresponding hub (from 1)

3. Develop future *monthly* zonal prices by applying basis to hub price

4. Develop future *hourly* prices by applying historical hourly ÷ monthly average price
   - Three separate historical years
   - DA and RT shapes
   - Similar, but daily, for gas

This high-level approach remains the same, but there are a few details that have been changed or better specified since last week…

Options for Basis Differentials

Historical Price Differentials	• Too slow to incorporate market changes
Near-Term Zonal Forwards	• Not sufficiently liquid
LT FTR Prices + Historical Losses	• Captures forward market expectations • Losses are relatively stable

Results using either forward-looking approach are aligned

Example: APS (On-Peak)

Zonal Futures

Estimated Futures
based on Hubs & FTRs

Sources and notes: Zonal futures prices from Bloomberg; estimated futures based on Brattle analysis of PJM FTR and Bloomberg Futures data.
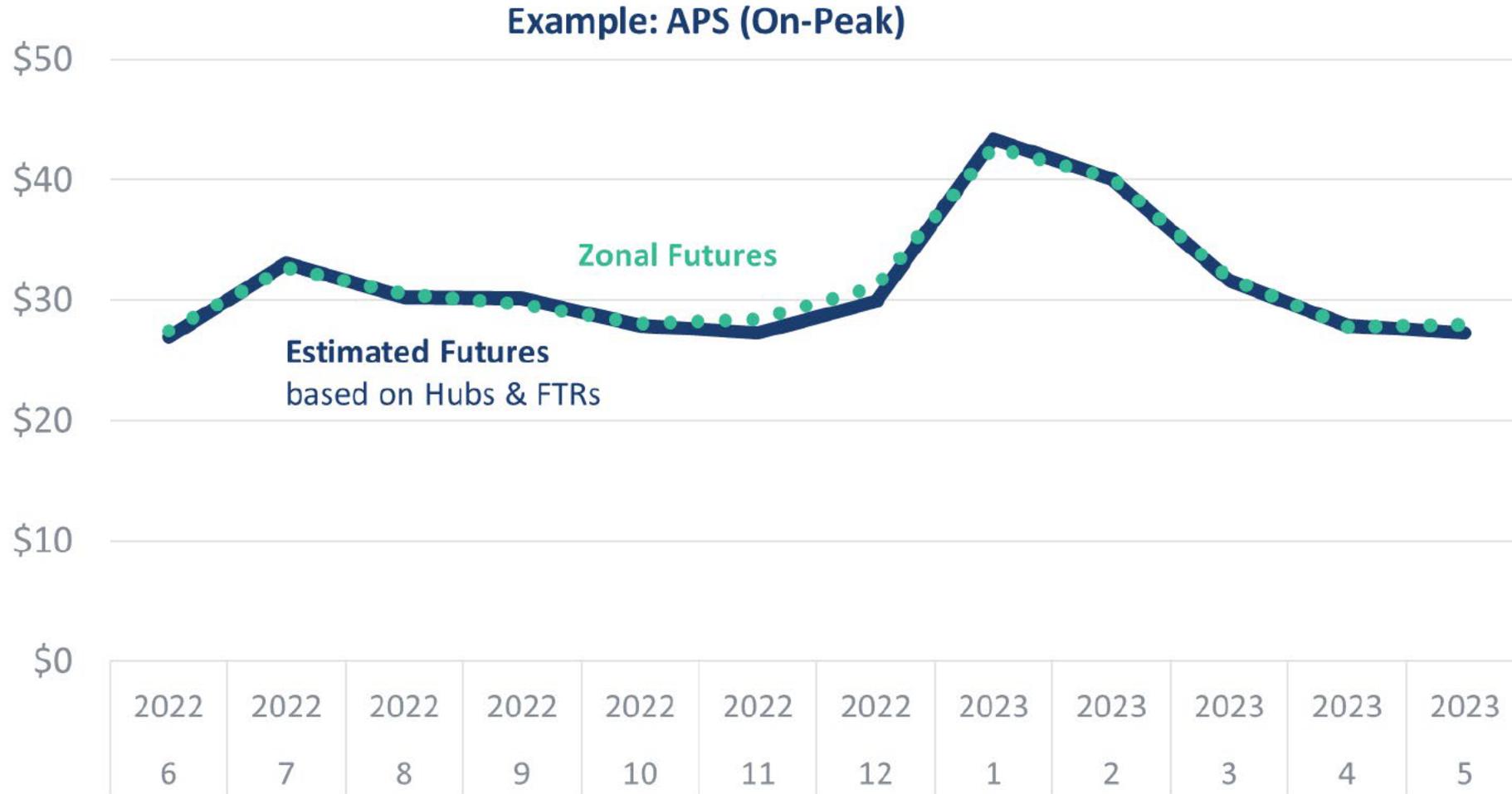
Changes to gas price forecast methodology

Liquid Hubs   *mapping*   **Illiquid Hubs**

Dominion South

Michcon

Chicago

Transco Zone 6 (non-NY)

Columbia-Appalachia TCO

TETCO M3

Transco Zone 5

Transco Zone 6 (NY)

Tennessee 500L

historical basis
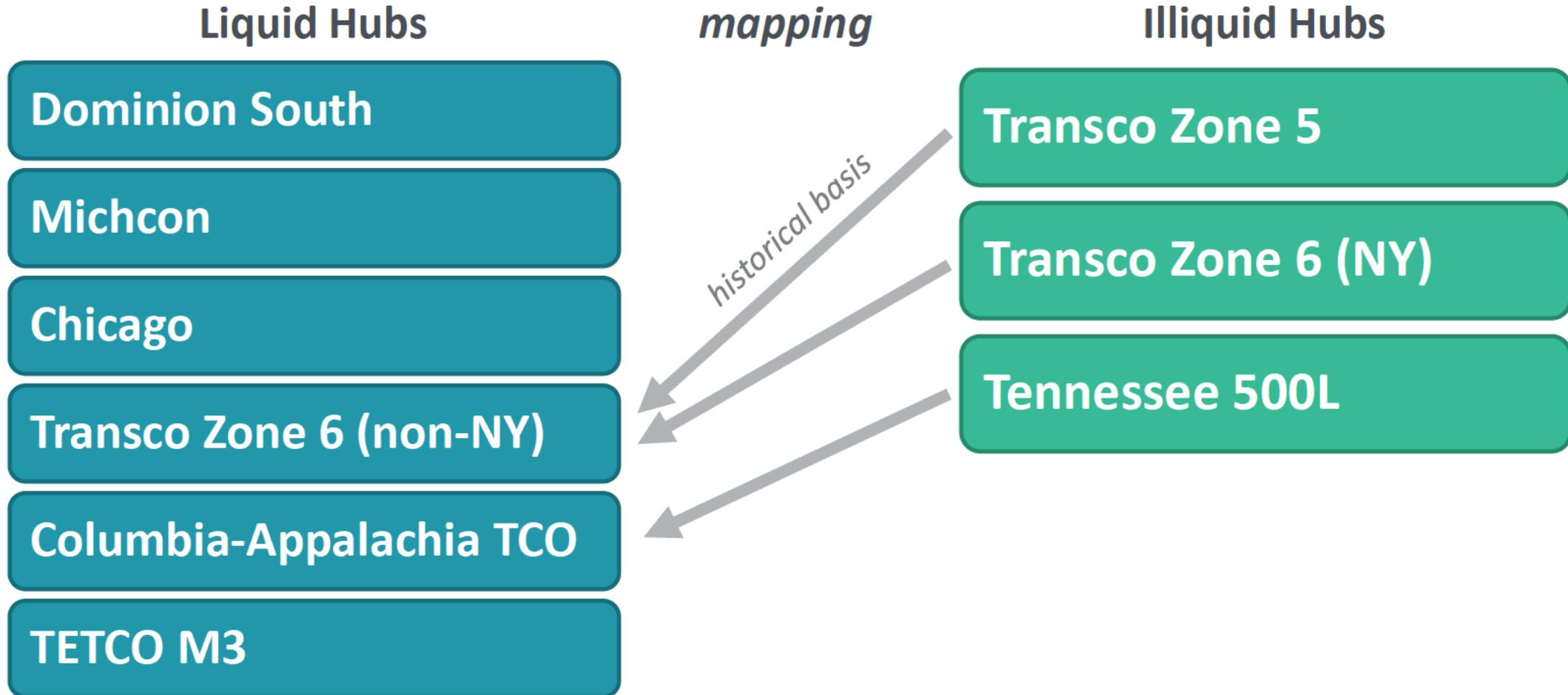
Forecasting Ancillary Services

- No forward AS markets
- Correlation with energy allows scaling historical AS prices to future ÷ historical energy prices
- Considered Reserve Pricing Reforms

**RTO Synchronized Reserve vs.
W Hub On-Peak Prices**
(Monthly Averages)
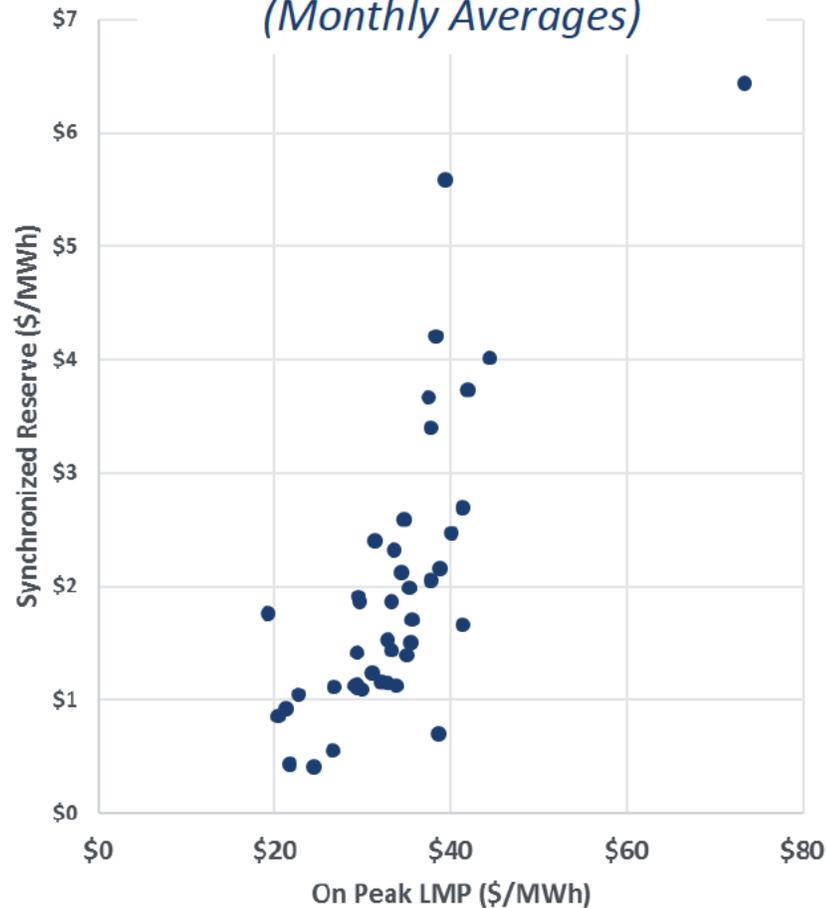
**Regulation A vs.
W Hub On-Peak Prices**
(Monthly Averages)
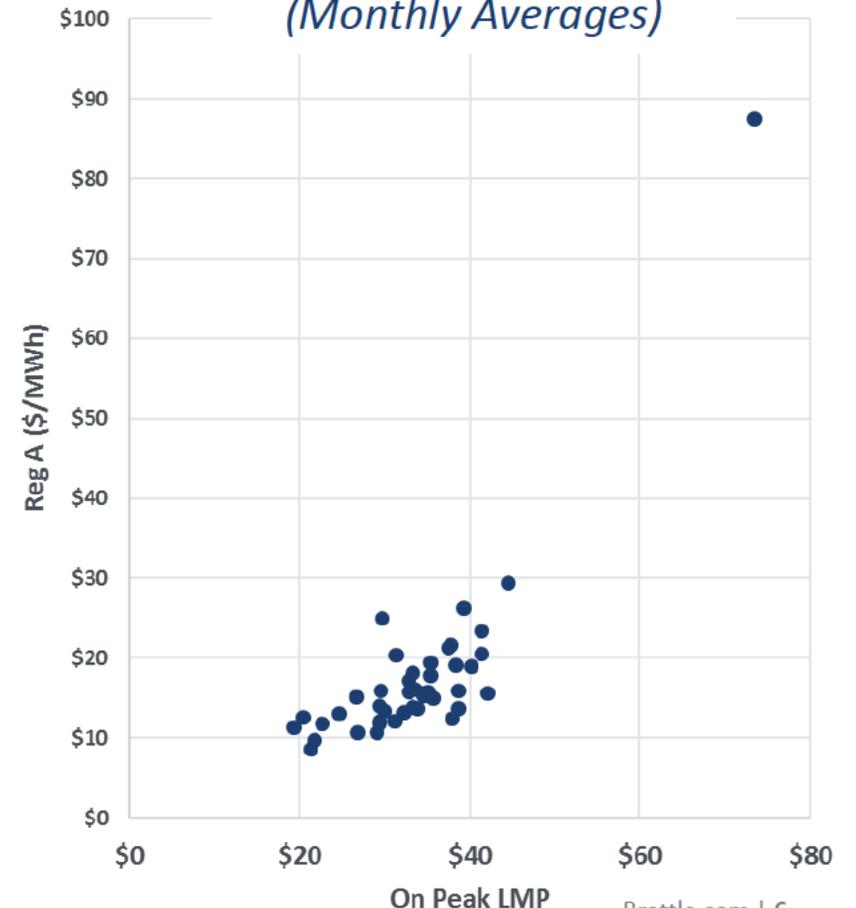
Sources and notes: Brattle analysis of historical energy and AS prices from PJM.

Clarity in the face of complexity

That's the Power of Economics

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