

# CARIS Natural Gas Price Forecast Methodology: Proposed Revision

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# Current Forecasting Methodology: 1

- NYCA is divided into 3 gas regions with each being proxy to a trading-hub: Zones A-E (Tetco M3), Zones F-I (Tenn. Z6), and Zones J&K (Transco Z6 – NY);
- Neighboring Control Areas are also represented as gas-regions based on specific hubs: ISONE-N (Algonquin CG), ISONE-S (Iroquois Z2), PJM-E (Transco Z6 – Non NY), PJM-W (Columbia), and IESO (Dawn);
- Each gas region’s weekly forecast is developed by applying a regional *basis* and a weekly calibration factor to the AEO\* national annual delivered-price forecast.

\* *EIA’s Annual Energy Outlook (AEO) is published each year.*

# Current Forecasting Methodology (cont'd)

- *Basis* = 3-year Weighted Average of  $\left\{ \frac{9\text{-month}^{**} \text{ weighted average of Hub Price} \times (1 + \alpha)}{9\text{-month weighted average of STEO}^{***} \text{ prices}} \right\}$

where  $\alpha$  = *burden* to reflect local delivery charges and taxes

- Calibration factor = 

Monthly Seasonality Factor
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 × 

Weekly ‘Spike’ normalized by month
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where all calculations are based on averages across previous 5 years.

\*\* *This calculation excludes volatile winter months (Jan, Feb, & Dec).*

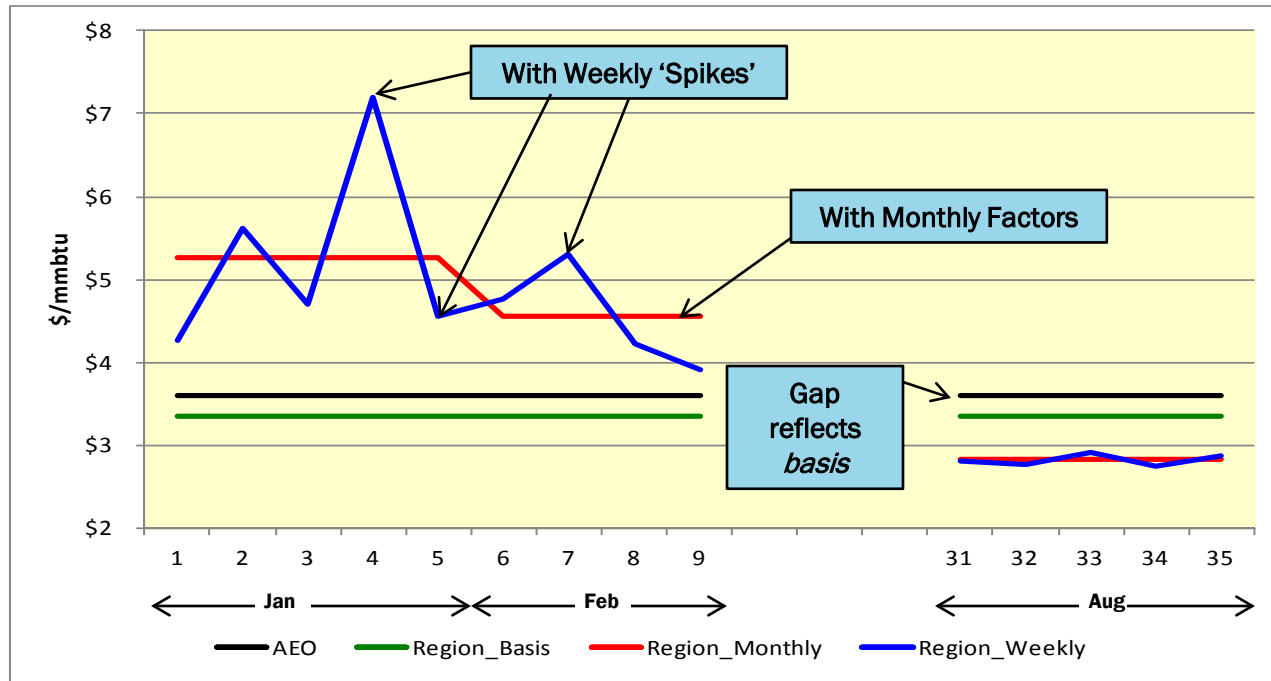
\*\*\* *EIA publishes Short Term Energy Outlook (STEO) monthly.*

# Structure of Weekly Forecast

Stage-wise Assembly of Weekly Forecast for Region ‘r’

1.  $AEO_t$  (*EIA’s Annual Energy Outlook forecast of national delivered price for year ‘t’*)
2.  $AEO_t \times Basis_r$  (*this provides the annual forecasts for Region ‘r’*)
3.  $AEO_t \times Basis_r \times Monthly\ Factor_m$  (*this translates into 12 monthly levels for year ‘t’*)
4.  $AEO_t \times Basis_r \times Monthly\ Factor_m \times Normalized\ Weekly\ Spike_w$  (*this final step yields 52 weekly prices for a given year, where ‘w’ denotes a given week*)

# Structure of Weekly Forecast (cont'd)



# Proposed Forecasting Methodology

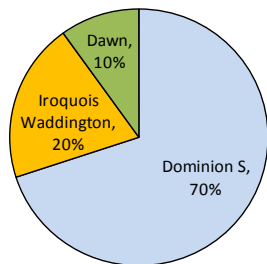
- The proposed change pertains to NYCA alone. Proxy hubs for external Control Areas remain the same.
- 2 proposed modifications to existing methodology:
  - Instead of using single hubs to proxy regional gas prices, NYISO proposes using blends of multiple hubs based on data from NYISO's Market Mitigation and Analysis (MMA) department. This data includes generator-specific hubs/pipelines as well as *burdens* (\$ and/or %) layered above hub-prices.
  - NYISO proposes to divide NYCA into 4 gas regions based on the hubs/pipelines that dominate gas acquisition: Zones A-E, Zones F-I, Zone J, and Zone K.

# Proposed Forecasting Methodology (cont'd)

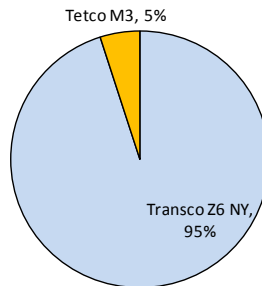
- For each gas region, the modeled forecasts will reflect capacity-weighted blended hub-prices and blended *burdens*.
- Advantages of proposed modifications:
  - More accurate representation of gas purchases by generators,
  - Structure of blends can evolve with changing market realities, and
  - System Planning assumptions move closer to those deployed in Market Mitigation practices.

# Proposed Structures of Blended Prices

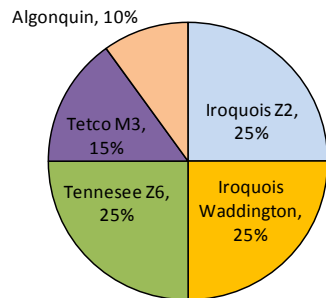
**Zones A-E**



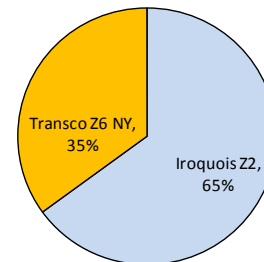
**Zone J**



**Zones F-I**

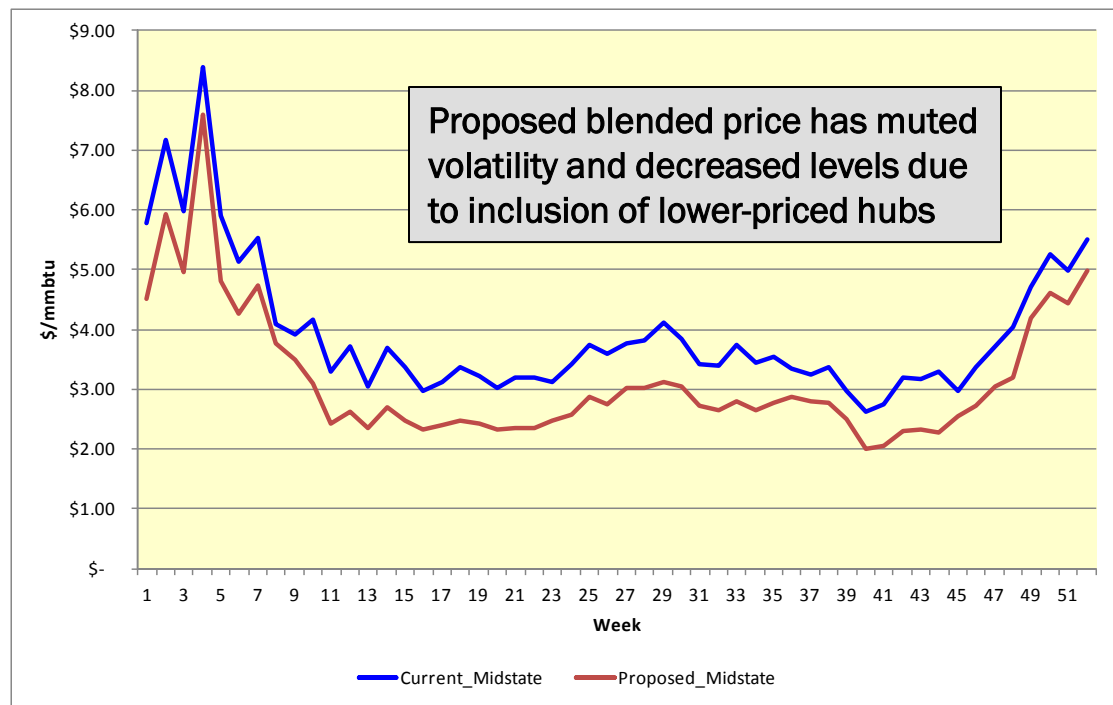


**Zone K**





# Current vs. Proposed: Illustration



Graph shows forecasts for 2018. Modeled forecasts will be presented and discussed in detail in a subsequent meeting.

# The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



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