Natural Gas Price Forecast Methodology Review

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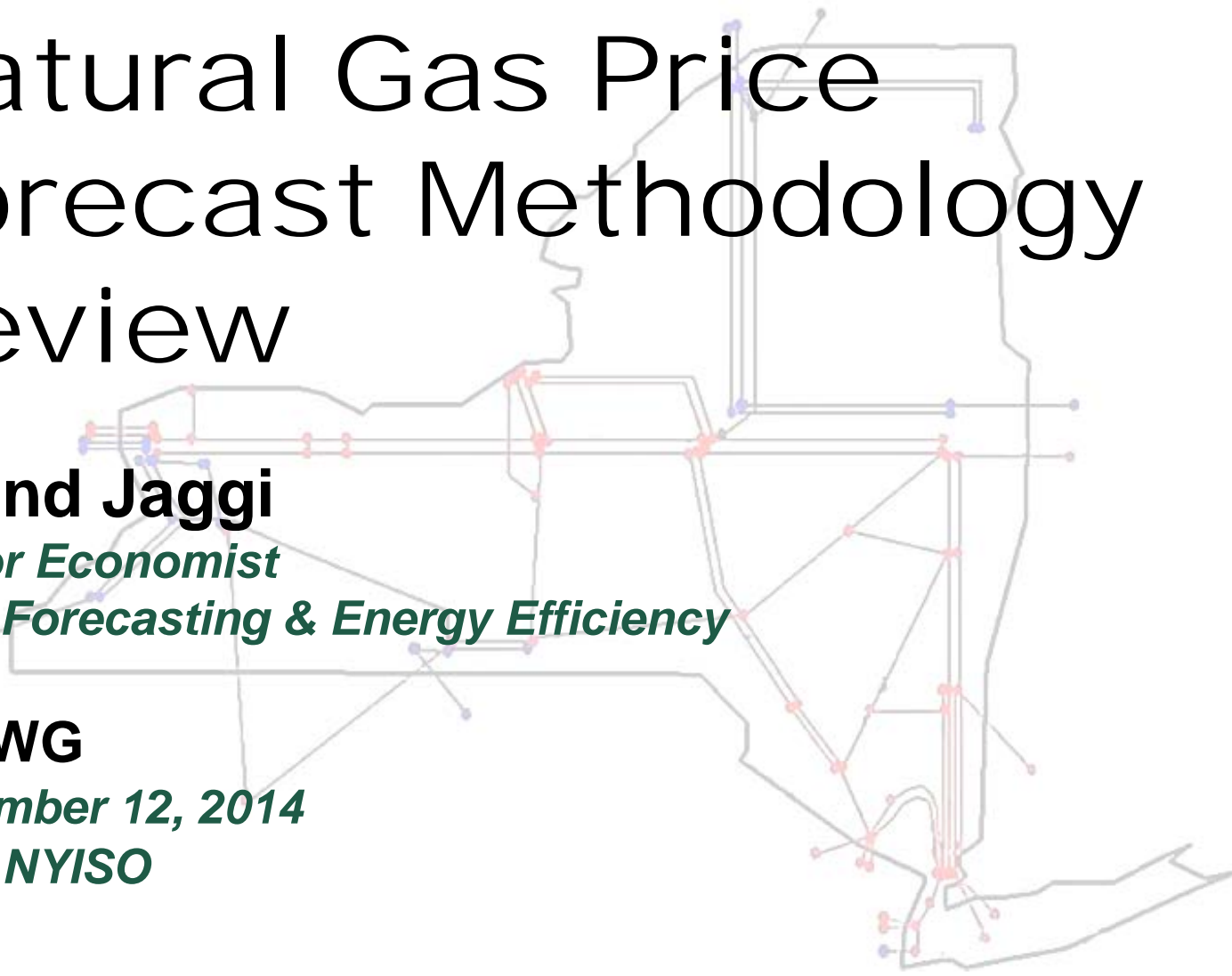
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November 12, 2014
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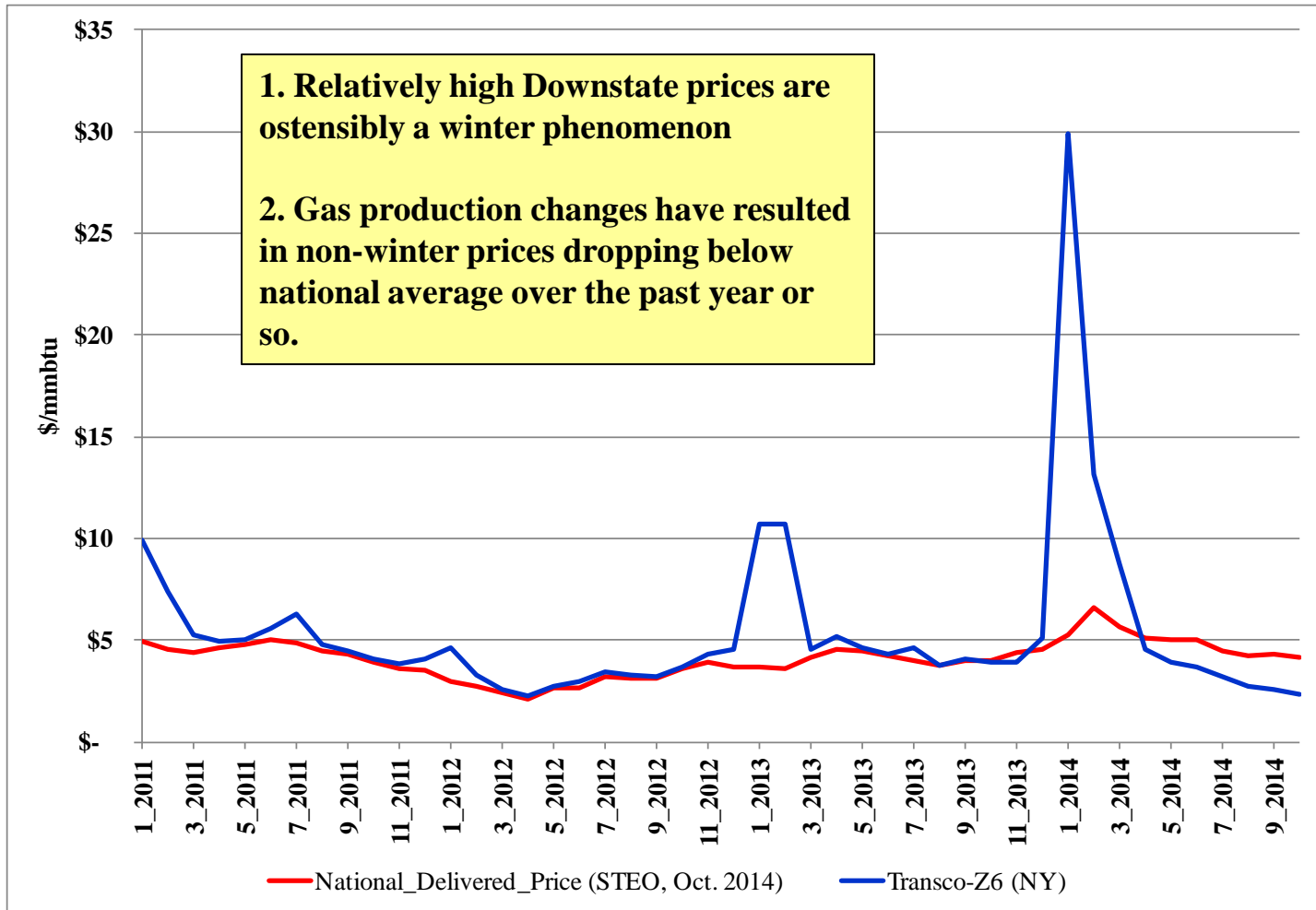
Background

- Increased gas production has led to prices dropping below recent historical averages.

- Current NYISO methodology yielded forecasts that were too high relative to recently observed historical prices.

- Current NYISO methodology is resulting in forecasts that are inconsistent with market trends as projected by many industry analysts.

- Prices in 2013/2014 spiked due to transportation and other market constraints.

- These issues have prompted review of the forecast methodology.

Recent Trends in Natural Gas Prices

1. Relatively high Downstate prices are ostensibly a winter phenomenon

2. Gas production changes have resulted in non-winter prices dropping below national average over the past year or so.

Legend: National_Delivered_Price (STEO, Oct. 2014) — Transco-Z6 (NY)

Gas Price Forecast Methodology

- ◆ ESPWG presentation on 3/12/13 detailed the current NYISO forecast methodology.

- ◆ 3 elements of the forecast for a region:

  - ▪ *EIA's latest Annual National Delivered Price Forecast published in the AEO;*

  - ▪ *NYISO's forecasted 'basis' derived from annual weighted average spot price; and*

  - ▪ *NYISO's monthly seasonality factors calculated from spot prices (yielding weekly factors via interpolation)*

Gas Price Forecast Methodology

◆ A review of existing methodology suggested that a change in the regional '*basis*'* calculation was an appropriate way to reform the forecast methodology.

* Basis is the ratio of annual hub/regional price to the annual national price.

Current Basis Calculation

- Step 1: Calculate the **12-month** volume-weighted spot price for a given year (P_{2013}).

- Step 2: Calculate Relative Price with respect to national price ($R_{2013} = P_{2013} / \text{Nat. Price}_{2013}$)

- Step 3: Calculate the forecasted basis as a **5-year** weighted average of the Relative Price with declining weights:

$$\text{Basis} = (0.375 * R_{2013}) + (0.255 * R_{2012}) +$$

$$(0.175 * R_{2011}) + (0.120 * R_{2010}) + (0.075 * R_{2009})$$

Problems with Current Methodology

- ◆ Method heavily influenced by seasonal peaks

- ◆ The rule based on using a 5-year historical weighted average fails to reflect recent impact of influx of new gas

Proposed Reformed Basis Calculation

- Step 1: Calculate the **9-month** (**no Jan, Feb, & Dec**) volume-weighted spot price for a given year (P_{2013}) .

- Step 2: Calculate Relative Price with respect to national price ($R_{2013} = P_{2013} / \text{Nat. Price}_{2013}$)

- Step 3: Calculate the basis as a **3-year** weighted average of the Relative Price with declining weights:

$$Basis = (0.5 * R_{2013}) + (0.3 * R_{2012}) + (0.2 * R_{2011})$$
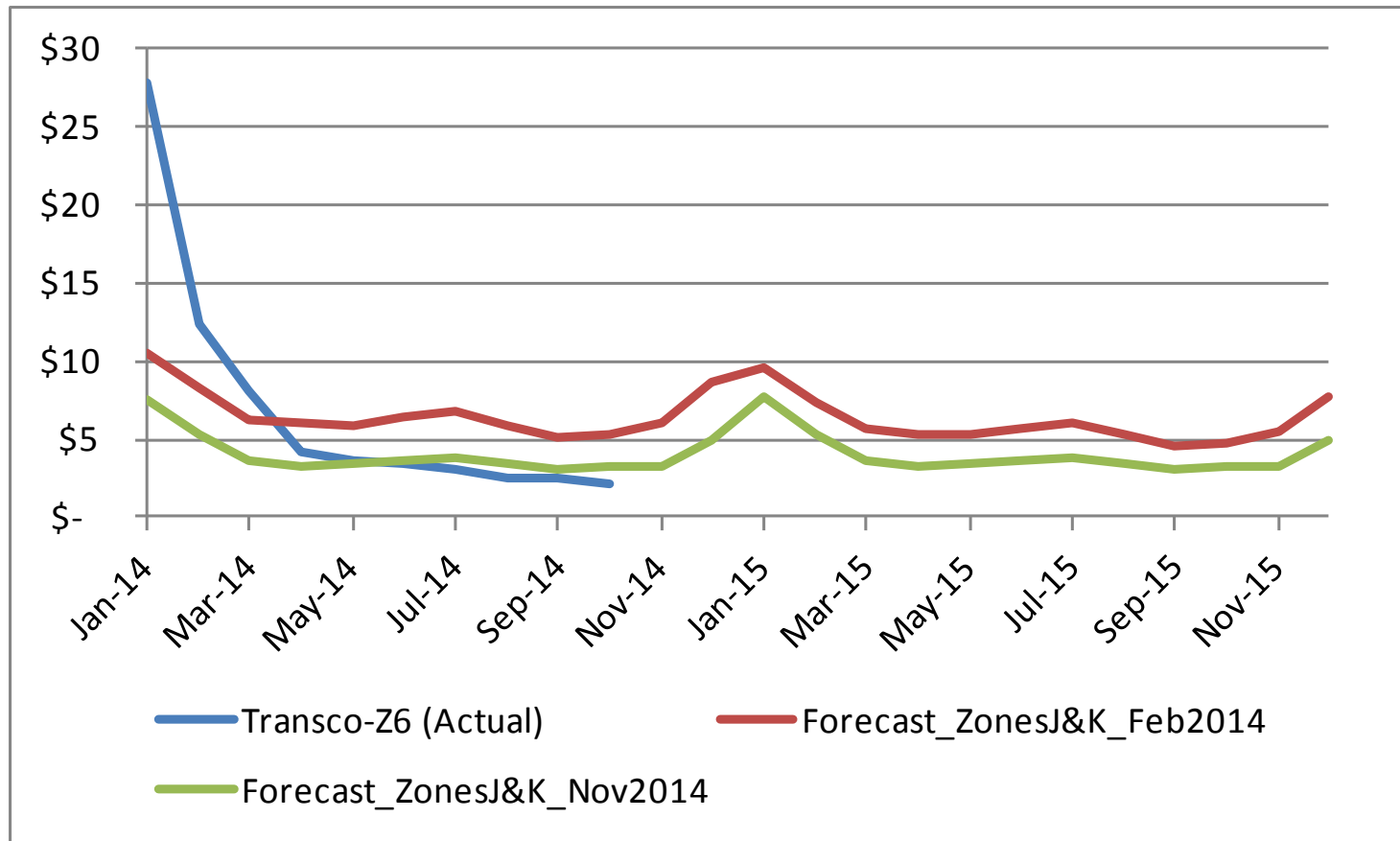
Reformed Basis Calculation

Salient changes in the *basis* calculation:

- *Omission of winter-month prices from annual 'basis' (i.e. no January, February, or December prices included) since the relationship between the non-winter hub prices and the national price is relatively stable.*

- *The forecasted 'basis' now takes into account only the last 3 years as opposed to 5 years to allow recent market patterns to influence forecast.*

- *These changes are applicable to all regional gas price forecasts the NYISO prepares.*
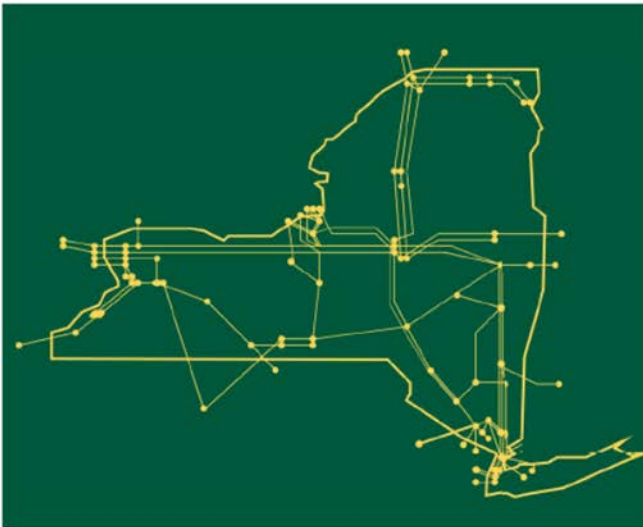
Updated Annual Gas Price Forecast
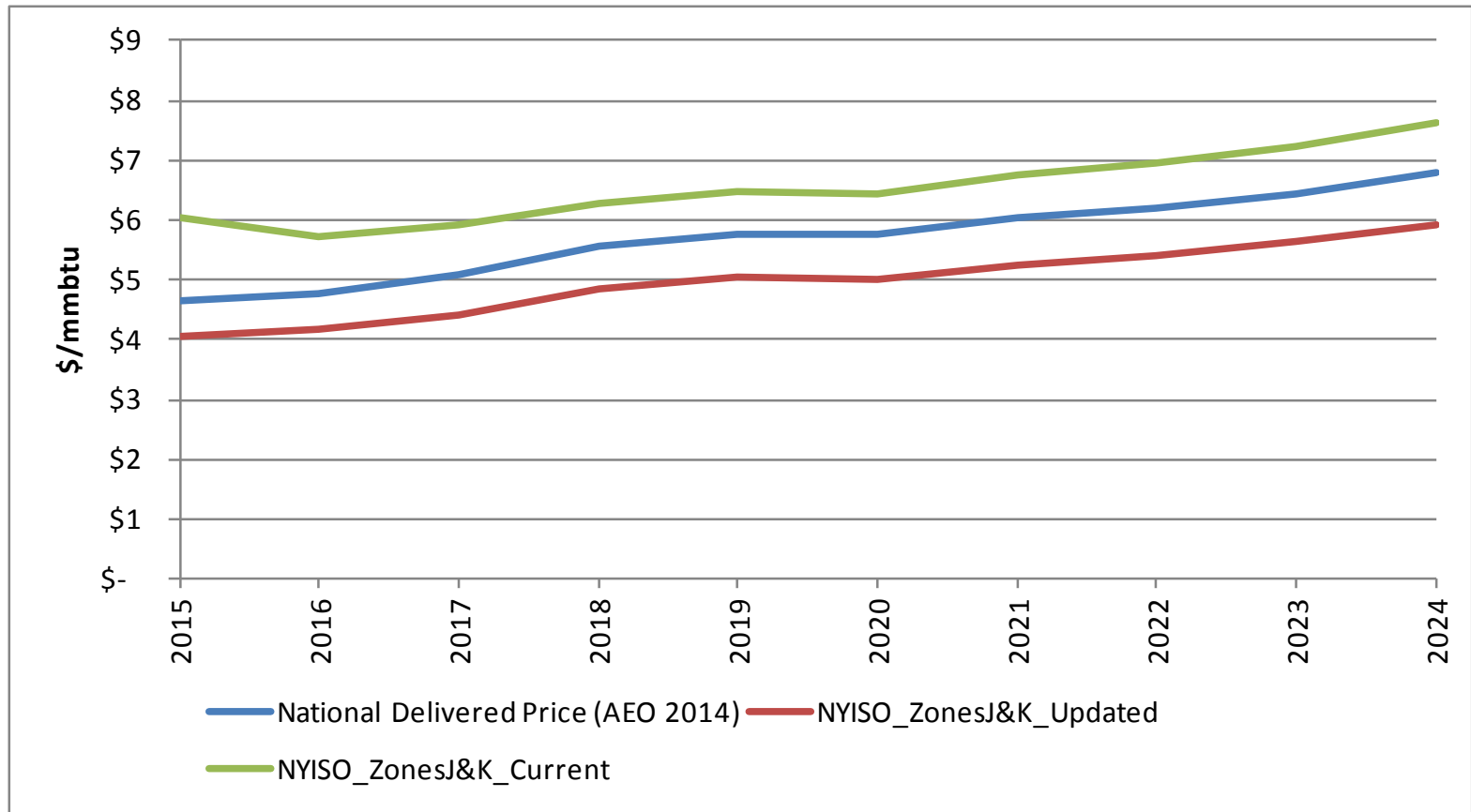
Current vs.Updated Forecast: Example

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