NYISO ICAP 2015/2016 Demand Curve Reset

ICAPWG
January 26, 2016

Today's Presentation

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- Analysis Group (AG) approach to evaluating key issues
- Summary of AG's initial recommendations on key ICAP Demand Curve reset (DCR) issues
  - DCR period
  - Method for estimating net Energy and Ancillary Service (EAS) revenues
  - Updating of gross Cost of New Entry (CONE) and net EAS revenues between DCRs
- Appendix
  - Summary of quantitative "backcasting" analysis

Summary of Preliminary Recommendations

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- **DCR Period: 4 years (currently, 3 years)**
- **Gross CONE**
  - Adjust gross CONE annually based on publicly-available inflation indices (change from pre-set, fixed escalation factors)
- **Net Energy and Ancillary Service (EAS) revenues**
  - Forecast net EAS revenues using three-year average of historical revenues (change from econometric approach)
  - Adjust historical revenues for market expectations based on publicly-traded futures contracts
  - Adjust historical revenues to reflect market conditions at the tariff-specified level of excess (i.e., minimum installed Capacity Requirement, plus MW rating of peaking unit) through GE MAPS based scaling-factors ("level of excess" adjustment)
  - Update annually based on (1) updated historical net EAS revenues (2) updated futures adjustments and (3) schedule of level of excess scaling factors
- **Annual Updates**
  - All annual updates would be completed by NYISO based on publicly available or other transparent market data

Decision Criteria

- **Economic Principles**: Each recommendation should be grounded in economic theory and reflect the structure of, and incentives in, the NYISO markets
- **Accuracy**: Choices should be made with the goal of providing accurate results that capture market expectations regarding net CONE
- **Transparency**: The DCR calculations and periodic updates to net CONE should be clear and transparent to Market Participants; calculation and update methods should be understandable and allow Market Participants to develop market expectations
- **Feasibility**: The DCR design and implementation should be practical and feasible from regulatory, administrative, and Market Participant perspectives.
- **Historical Precedence and Performance**: DCR design decisions should – where possible and relevant – be informed by quantitative analysis based on historical data, and draw from lessons learned in the NYISO, ISO-NE and PJM wholesale capacity markets
    - “Backcasting analysis” (summarized in appendix) informs deliberation on key design issues

(not all criteria are equally relevant or important across issues reviewed)

Recommendation: DCR Period

- **Recommendation: switch from current three-year period between resets to a four-year period**
  - Five or six years: Deemed not prudent
    - Forecast error increases with time
    - Fewer opportunities to incorporate stakeholder feedback
    - Higher risk that peaking unit technology and forecast elements deviate from actuals
  - Three years: Status quo
    - Accepted and understood by Market Participants
    - Frequency of reset reduces market stability, particularly if/when peaking unit technology changes
  - Four years: Recommended
    - may increase market certainty/stability vs three year reset, while reducing administrative burden for NYISO and Market Participants
    - Does not meaningfully increase risk that peaking unit technology will change between DCRs, compared to 3 years
- **Interaction with other Recommendations:**
  - Move to longer DCR period increases the value of adopting a method that includes annual updates to gross CONE and net EAS revenues
    - Annual updates must be sufficiently transparent to promote and ensure market stability

Evaluation: DCR Period

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Choices/Alternatives

- *Three Years (current)*
- *Four Years*
- *Five Years*
- *Six Years*

Recommendation

- *Four Years*
- Justification: Provides the appropriate balance of accuracy, transparency, and feasibility, particularly if paired with annual updating and a more transparent net EAS revenue estimation strategy

Decision Criterion	Evaluation
Economic Principles	• Longer DCR period may provide greater price stability, without meaningful increase in risk that peaking unit technology departs from reality
Accuracy	• Longer DCR periods potentially reduce accuracy over time, given market and technology changes • Forecast uncertainty will increase with longer DCR periods; uncertainty will be greatest for net EAS revenue estimates, assuming no updating
Transparency	• All DCR period lengths provide the same general level of transparency • Longer DCR periods offer less frequent opportunity to incorporate Market Participant feedback
Feasibility	• Four year or longer potentially reduces administrative complexity and level of effort • Recommendation for annual updating (to support longer DCR period) increases level of effort between DCRs, but reduces level of effort in each DCR process
Performance	

- **Recommendation: Estimate net EAS revenues as the 3-year rolling average of historical revenues that would have been earned by the peaking plant**
  - Rationale: Reduce complexity and improve transparency of net EAS revenue calculations; enable the periodic updating of net EAS revenue values to reduce forecast uncertainty and increase viability of longer (i.e., 4-year) DCR period
  - Net EAS revenues (initially) could be estimated for the 3-year period prior to the applicable Capability Year;
  - Annual updates would be estimated using the most recently available data at the time of the updates
    - *Timing for annual updates remains under review*
  - Method assumes the peaking plant is dispatched in both day-ahead and real-time markets; use a substantially similar "dispatch" approach as used in past resets
    - Dispatch DAM when zonal LBMP covers operating and startup costs; dispatch RTM when not committed DAM and RTM LBMP suggests economic dispatch
    - Revenues would reflect actual, historical fuel costs and LBMPs for each applicable Load Zone
    - Other non-fuel costs and operating characteristics reflect parameters defined by peaking plant unit selected at the time of the reset (remain fixed between DCRs)

Evaluation: Net EAS Revenue Estimation

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Choices/Alternatives

- *Historic* – basing net EAS revenue estimates on historic pricing
- *Historic with Futures* – basing net EAS revenue estimates on historic pricing, adjusted for futures prices for the Capability Year in question
- *Econometric* – using a forecast at the time of the DCR of market outcomes based on then-historic pricing data and econometric adjustments of key underlying market factors

Recommendation

- *Historic with Futures*

Decision Criterion	Evaluation
Economic Principles	• All approaches can in theory produce results consistent with economic principles and market structures/incentives relevant to setting net CONE • The key difference is how differences between historical outcomes and future outcomes are accounted for – i.e., Futures prices versus Econometric estimates (coupled with one-time adjustments for structural market changes) • Historic with Futures – may more accurately and quickly capture the impact of structural changes (rules, transmission, etc.) on expected prices • Over time, we expect that the combination of historical prices, futures adjustments and annual updates will better track net EAS revenues than periodic estimates (every 3- or 4 years) with the Econometric model
Accuracy	• All approaches provide an approximation of expected net EAS revenues • The econometric approach requires one-time forecasting decisions at the time of the DCR whose accuracy would be expected to decline over the time between DCRs • Historic approach with updating would capture actual market outcomes in a more timely fashion, dynamically incorporating the impact of actual market drivers and structural changes in net CONE in a measured way over time • Historic with a futures adjustment incorporates the collective expectations of market participants, in anticipation of changing market conditions and known/expected future structural changes
Transparency	• The Historic and Historic with Futures approaches are transparent, easily understood, and amenable to developing future expectations of net CONE based on Market Participant forecasts of the explicit net EAS revenue estimation and adjustment factors • Econometric approach substantially less transparent, and lacks predictability regarding changes when re-estimated with each DCR
Feasibility	• Econometric approach is familiar to NYISO and its stakeholders, and precedent exists for continuing this method going forward. On the other hand, many detailed decisions on just what to capture in the Econometric equations are equally difficult in each DCR • Historic/Historic with Futures approaches would require a change in the approach to net EAS revenue estimation in New York; however, the relative simplicity of the approaches lends to an easy transition, and may facilitate an easier DCR process in future resets
Performance	• Backcasting analysis demonstrates that the econometric approach does not lead to better or more accurate results • Historic and Historic with Futures approaches have been successfully implemented in neighboring market regions

- **Recommendation: adjust net EAS revenues using prices of reported futures contracts**
  - Purpose: Adjust historical net EAS revenues to account for differences between historical market outcomes and future market expectations
    - ➢ Reflects forward prices for delivery over the upcoming capability year (May-April), based on futures prices collected for all trading days in the month preceding the annual update for the upcoming capability year (*note: timing still under review; see annual updates*)
  - Net EAS revenues estimates for each Load Zone would be adjusted in each month using a single, NYISO-wide, monthly Futures Adjustment Factor
    - NYISO Adjustment Factor equals the load weighted average of zonal adjustment factors
    - ➢ Step 1: Estimate the Futures Adjustment, by Load Zone, as the ratio of futures for NYISO peak energy prices to the historical 3-year average of actual load-weighted monthly peak prices
    - ➢ Step 2: Translate zonal factors into a single monthly futures adjustment factor representing the load-weighted average of on-peak electricity futures across all liquid zonal products
  - Futures adjustment would be based on publicly available data
    - Backcasting analysis uses NYMEX 5 MW Peak Calendar Month Day-Ahead LMP (available historically)
    - Final updates could use public data from ICE

Evaluation: Futures Adjustment

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Choices/Alternatives

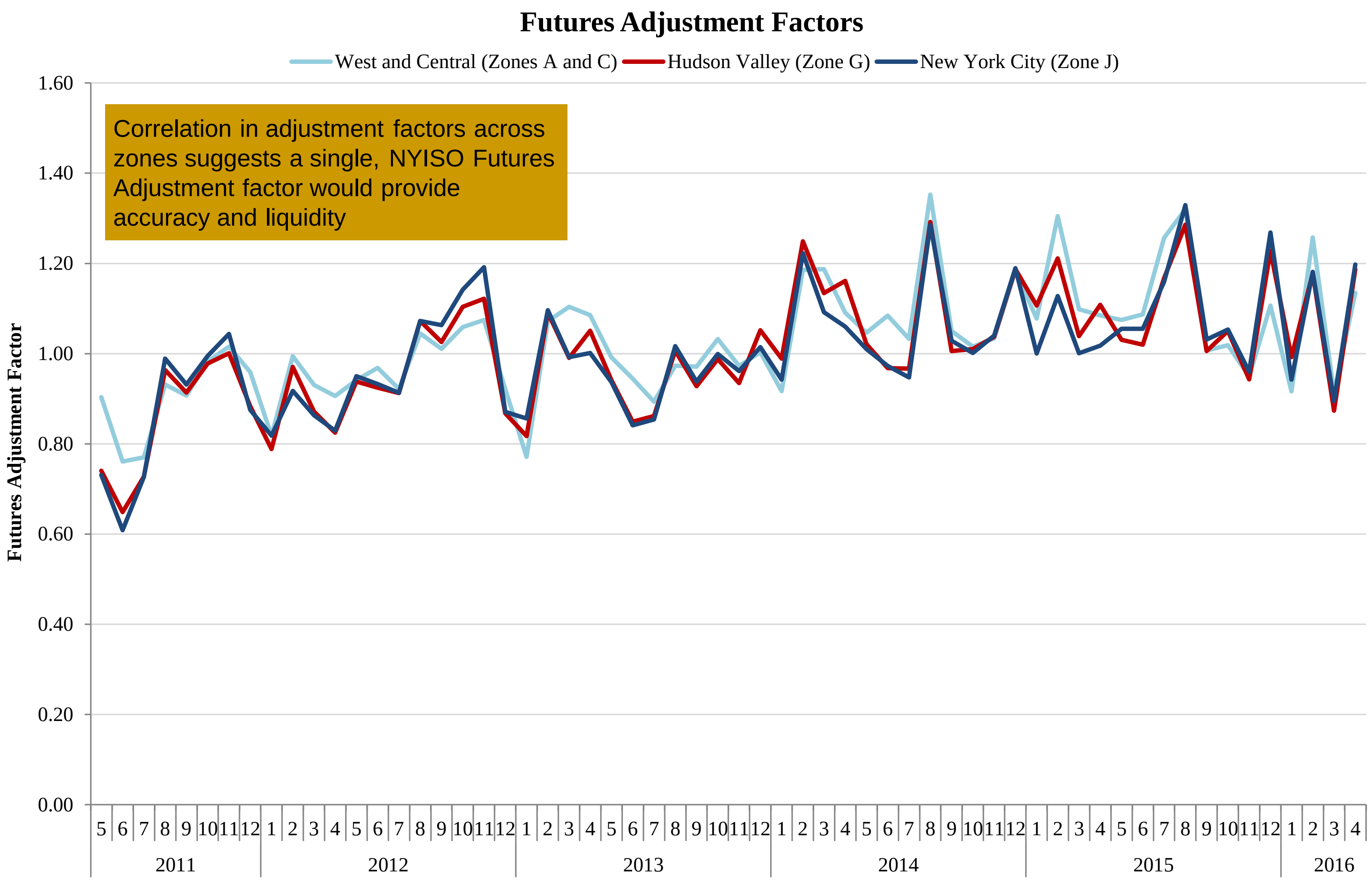
- *Futures Adjustment*
- *No Futures Adjustment*

Recommendation

- *Futures Adjustment*

Decision Criterion	Evaluation
Economic Principles	• Futures adjustment allows net EAS revenue forecasts to reflect not just historical results, but also market expectations, leading to net EAS revenue forecast more consistent with actual market dynamics
Accuracy	• Futures prices reflect actual transactions based on Market Participant expectations given on-going evaluation of market fundamentals and structural changes (including fuel pricing, market supply/demand, likely levels of shortage and scarcity, imports from/exports to (and pricing of) neighboring regions, etc. • The combination of historical and futures prices can more accurately reflect market expectations of net EAS revenues than historical prices alone • the Futures Adjustment factor is relatively constant between zones, suggesting a state-wide factor can adequately capture adjustments even with zonal price separation
Transparency	• Futures adjustment based on traded markets whose price movements are easily monitored; however, they could in theory be subject to market manipulation and or price anomalies for illiquid zonal products • State-wide adjustment factor could reduce liquidity and/or market manipulation concerns without compromising accuracy – adjustment factor (ratio of futures to historical price) is highly correlated across zones
Feasibility	• Futures adjustment requires an additional annual update, but update is based on publicly available data and can be updated at the time of each DCR • Futures Adjustment can reduce or eliminate the need for "one-time" adjustments in DCR process (e.g., to address risk, market rule changes, etc.), facilitating a more expedient and easier net EAS forecasting process
Performance	• Backcasting Analysis (appendix) suggests - on balance - improved accuracy of futures relative to no futures • Similar adjustment used in ISO-NE

Futures Adjustment



Based on December Futures contracts for settlement during the upcoming calendar year (e.g. AF in 2013 = Futures price for 2013 settlement based on Dec 2012 contract, relative to historical prices 2010-2012).

Recommendation: Level of Excess Adjustment

- **Recommendation: retain adjustment of net EAS revenues to reflect tariff-prescribed level of excess conditions**
  - Purpose: adjust net EAS revenues to approximate net EAS revenues at system conditions based on the minimum Installed Capacity Requirement plus the capacity of the peaking plant unit – if done correctly, improves the accuracy of results in approximating net CONE
  - Level of Excess Adjustment to be estimated using GE MAPS model run(s) based on most recent CARIS database to identify scaling factor for net EAS revenue estimation
    - Based on estimated LBMP at tariff-prescribed excess conditions relative to LBMP under current resource conditions
  - Adjustment would be estimated through scaling factors established at the time of the DCR
    - Update the level of excess adjustment each year based on previously-established scaling factors and then-current system excess conditions

Evaluation: Level of Excess Adjustment

Choices/Alternatives

- *Retain level of excess adjustment, with:*
  - *Annual Updates*
  - *Updated only at time of DCR*
- *Retain level of excess adjustment, estimated using:*
  - *GE MAPS and CARIS*
  - *MARS*
- *Change Tariff language to remove level of excess adjustment*

Recommendation

- *Retain level of excess, based on GE MAPS and CARIS, using annual updates*

Decision Criterion	Evaluation
Economic Principles	• Net EAS revenues should approximate net EAS at system conditions based on the minimum Installed Capacity Requirement plus the capacity of the peaking plant unit
Accuracy	• Futures Adjustment (see preceding slides) may also account (either positively or negatively) for changes in system resource capabilities; annual updates may reduce "double counting" of level of excess adjustments • MARS better captures the probabilistic nature of prices, but introduces added complexity and resources, reduces transparency, and need to vet additional inputs
Transparency	• GE MAPS and CARIS process is well understood and visible to Market Participants; provides a ready platform to estimate scaling factors • Annual updates with a schedule of pre-published scaling factors would increase transparency and facilitate annual updates
Feasibility	• Adjustment is potentially complex, requires agreement on inputs/approach
Performance	• Similar transparent updating processes are used in PJM and ISO-NE

Recommendation: Annual Updates
(Gross Cone and net EAS)

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- **Recommendation: update net CONE calculation annually, using transparent method based on accessible public data**
  - Purpose: create a more predictable and continuous evolution of net CONE between and within DCR periods; allow net CONE to evolve with changing market conditions; reduce the need for one-time forecast adjustments at the time of each reset
  - Annual updates would be formulaic, and completed annually by NYISO based on pre-specified public data or other transparent market data sources using the most recent 12 months of data available at the time of each update
    - *Timing for annual updates remains under review*
  - Gross CONE: updated annually using publicly-available inflation factors
    - Composite inflation factor (as used in PJM)
  - Net EAS revenues: same method as used in the DCR would be used in annual updates (i.e., 3-years of historical prices with futures adjustment), providing consistency across DCR periods

Recommendation: Annual Updates
(Level of Excess)

- **Update level of excess adjustment based on scaling factors established at the time of each DCR**
  - Use GE MAPS with most recent CARIS database to develop a table (schedule) of level of excess scaling factors for each zone during the DCR
  - Factors would be published at the time of the DCR, and applied annually by NYISO as an element of the annual update (see *illustrative* table of scaling factors below)
  - Each scaling factor would represent an adjustment to net EAS revenues dependent on the then-current 3-year average of System Excess, where System Excess is measured as the percentage above IRM/LCR from prior auctions
  - The table/schedule of Scaling factors for each ICAP Demand Curve would reflect adjustments as a function of resource capability (System Excess) relative to the tariff-prescribed excess level conditions
    - *E.g.,* scaling factors could be established in increments of three percentage points above at-criterion levels
  - With each annual update, NYISO would estimate the current System Excess and determine Future Adjustment factors based on the table/schedule published following the DCR

Hypothetical, Simplified **Table of EAS Scaling Factors**	
Percentage Points above Criterion	***Scaling Factor (from CARIS model runs)***
3-Year Average **>=9%**	**1.25**
9% > 3-Year Average **>= 6%**	**1.15**
6% > 3-Year Average **>= 3%**	**1.07**
3% > 3-Year Average **>= 0%**	**1.02**

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Choices/Alternatives

- *Status Quo (no annual updates other than single inflation factor)*
- *Update Gross CONE for inflation indices (composite or disaggregated)*
- *Update Net EAS for historical LBMPs*
- *Update Net EAS Futures Adjustment*
- *Update Net EAS level of excess adjustment*

Recommendation

- *Update annually for inflation indices, historical LBMPs, futures prices, and level of excess*

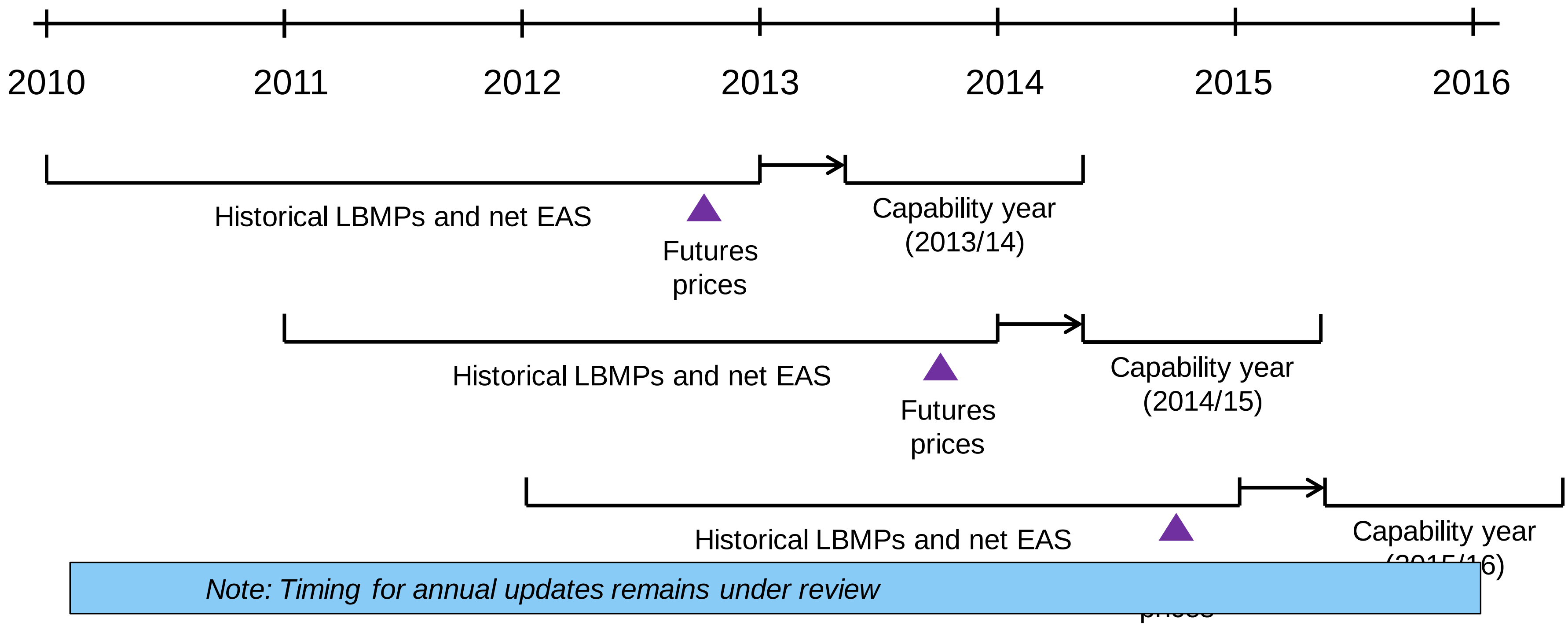
Decision Criterion	Evaluation
Economic Principles	• Market conditions affecting net CONE change over time
Accuracy	• As time between net CONE forecasts grows, the accuracy of these forecasts diminishes; updating net CONE for relevant market metrics (costs and prices) can ensure that forecasts reflects the most recent information, thus increasing forecast accuracy across the years between DCRs
Transparency	• The status quo would be the most transparent, in the sense that once the DCR is completed, the values would be known for the duration of the DCR period • However, updating for published inflation indices, posted LBMPs, and known futures market expectations would be based on pre-specified formulas and public data that may be accessed by all, allowing all Market Participants the ability to easily understand changes in net CONE
Feasibility	• The updating process could be administered by NYISO using pre-specified formulas/worksheets, and easily-accessed data. Publishing updated net CONE numbers should not require any stakeholder process
Performance	• Similar transparent updating processes are used in PJM and ISO-NE

Example: Timing of calculations

Example: calculations for 2014-15 net EAS Forecasts (results presented in backcasting analysis)

$$\text{Historical 2014/15 EAS Forecast} = \frac{\text{Historical 2011} + \text{Historical 2012} + \text{Historical 2013}}{3}$$

$$\text{Future Adjusted 2014/15 EAS Forecast} = \text{Historical 2014/15 EAS Forecast} * \frac{\text{Futures Price}}{\text{Historical LBMPs}}$$



Note: Timing for annual updates remains under review

Notes:

1. Historical LBMPs are simple averages of hourly on-peak DAM and RTM electricity prices.
2. Futures prices are the average of all monthly settlements for NYMEX 5 MW Peak Calendar Month Day-Ahead LMP Futures in the relevant month.

Appendix: Backcasting Analysis

The "backcasting" analysis is a quantitative comparison of alternative approaches to forecasting net EAS revenues

- Comparisons between forecasts can inform the choice of methodological approach
- Forecasts are also compared to "actual" net EAS revenues for hypothetical peaking units (based on AG calculations)
  - Represents "actual" net EAS revenues that would have been earned by a Frame-Class or LMS 100 unit, given historical LBMPs and as estimated by dispatch model

This is only a comparison between econometric and alternative approaches, looking backwards

- These results are only meant to inform the selection among net EAS revenue estimation approaches through first-order, "proof of concept" analysis
- The actual details of AG's recommended approach to net EAS revenue estimations are presented in the preceding slides

Methodology - Overview

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Backcasting compares three alternative approaches to forecasting net EAS revenues:

- *Econometric*: NERA estimates used in previous DCRs
- *Historical:* net EAS revenue estimates based on net EAS revenues over three prior years (similar to approach used by PJM)
- *Historical with Futures Adjustment:* net EAS revenue estimates using the Historical Approach, adjusted to account for the difference between futures contract prices to historical prices

The figures below provide comparisons among these alternatives

- Each figure provides estimates of net EAS revenues using these three approaches
  - ➢ *Note: Only the Econometric forecast includes an adjustment for level of excess (Historical, Historical with Futures and "Actual" do not include any such adjustment)*
- The figures provide forecasts in levels ($ / kw-year), along with "actual" net EAS revenues (as estimated by AG)

Methodology - Overview

All forecast methods and "actuals" rely on a similar approach which calculates net EAS revenues given a time series of LBMPs

- AG estimates rely on a dispatch logic closely matched to that used by NERA in the last DCR
- The underlying peaking plant operating data in the AG calculation rely on values assumed by NERA, when feasible; in some cases, data from the MMU State of the Market report is used

There are differences between the econometric and historical forecasts such that comparison of forecast values is not a perfect "apples to apples" result

- Econometric estimates include a level of excess adjustment, use a different approach to ancillary service (AS) revenue estimates, include one-time MAPs adjustments for resource changes, and reflect a nodal LBMP adjustment
- The historical approach calculations in our backcasting analysis mirror our methodological recommendations, but do not include a level of excess adjustment, and reflect a preliminary approach to estimating AS revenues, lag in historical prices used, futures adjustment, etc. and are intended solely for the purpose of "proof of concept" evaluation

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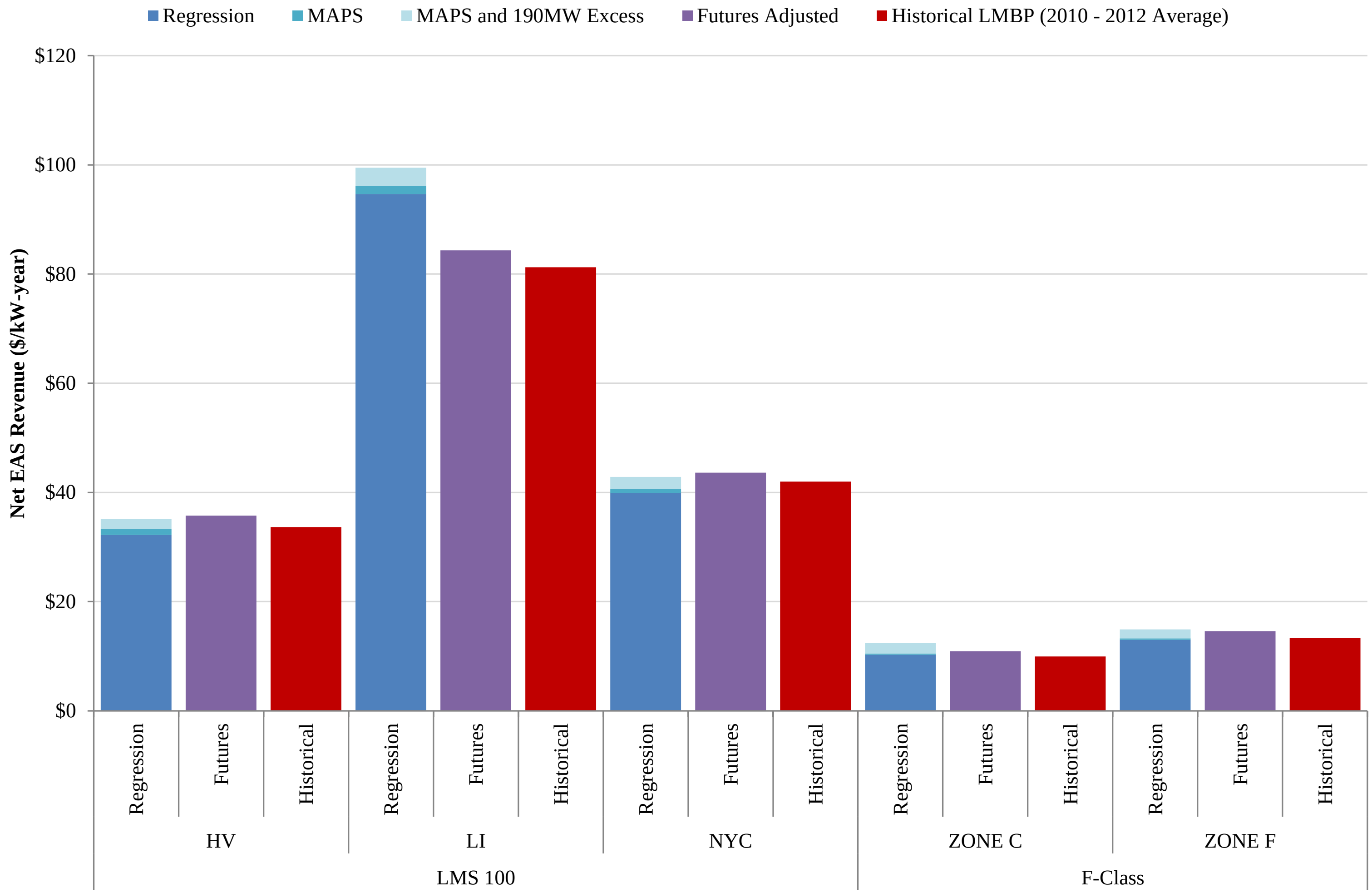
Net EAS revenue values reported in the figures are the final values approved by FERC for each DCR (including Brattle/Licata adjustments for Frame unit with SCR technology from the last reset)

As noted, the values include certain adjustments that are not yet included in the Historical or Historical with Futures Approaches (or the "actual" net EAS estimates developed by AG) notably the adjustments for the tariff prescribed level of excess conditions

- The regression and level of excess adjustments represented a relatively small total adjustment in the last DCR, with the exception of Long Island-[see following slide]

Ancillary Service revenues are based on historical settlement revenues, with an adjustment for higher energy market participation to reflect tariff-prescribed level of excess conditions

NERA Historical and Final Net EAS Revenues



Sources:
[1] NERA Economic Consulting, "Independent Study to Establish Parameters of the ICAP Demand Curve for the New York Independent System Operator," August 2, 2013, p. 81.
[2] NYMEX Futures data, pulled via SNL Financial.

The net effect of the regression model and MAPS Adjustments is relatively small relative to historical values for most regions (Source: *NERA 2013 DCR, page 81)*

Historical approach is similar to the methodology used by PJM

Net EAS revenue is estimated based on the actual net EAS revenues over a three year period resulting from dispatch model

- Present results assume a 1-year lag between the forecast year and the historical data used
- Example: CY 2014/15 forecast is developed in 2014, using a 1 year lag – with historical data for 2011, 2012, and 2013

Ancillary Service (AS) revenues are based on historical relationship between AS and energy market revenues using settlement data (2012-2014) for units in NYC and LI

Method – Futures Adjustment

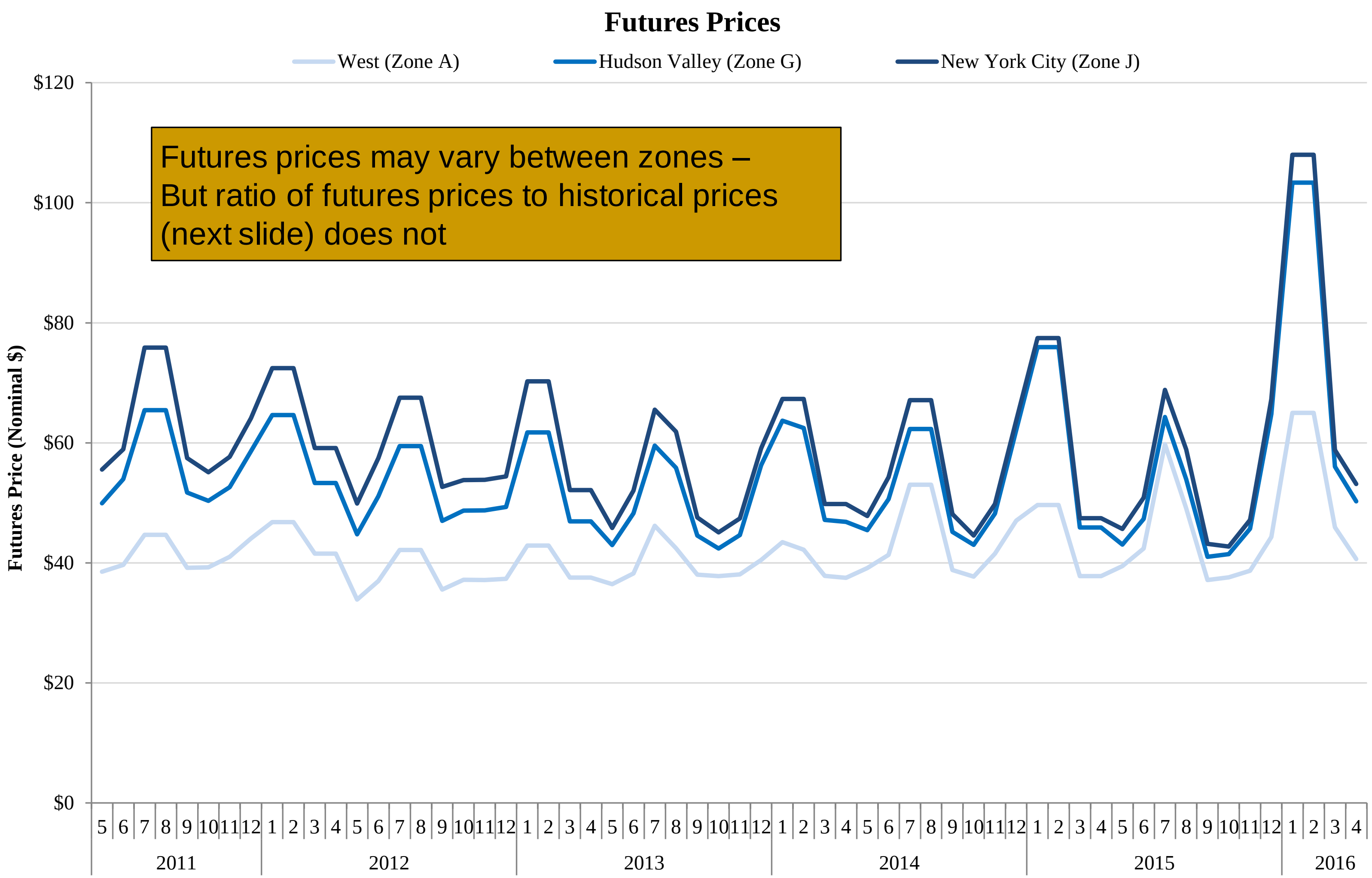
The Historical Approach with Futures Adjustment includes an adjustment for the difference between futures prices and prices during the historical period

The futures *adjustment factor* is calculated monthly and equals the ratio of monthly futures prices to historical average monthly prices (similar to the adjustment used in ISO-NE):

Adjustment Factor = (Futures Price by Load Zone / Average Historical LBMP by Load Zone)

- Current results use NYMEX on-peak futures price for a 12 month period (starting 6 months ahead) with prices calculated as the average over 4 weeks
- Review of historical futures prices indicates significant correlation in prices among the more-liquid products (see figure below), suggesting that these assumptions are reasonable

Method – Futures Adjustment



Notes:
[1] Future prices are the average of all monthly settlements for NYMEX 5 MW Peak Calendar Month Day-Ahead LMP Futures in June of the previous calendar year (SNL Financial).
[2] Due to low futures liquidity, a scaling factor was not calculated directly from Zone F futures. Instead, the Zone F scaling factor is the average of scaling factors for Zones A and C.
[3] Scaling factors for New York City were applied to Long Island.

Method – Futures Adjustment

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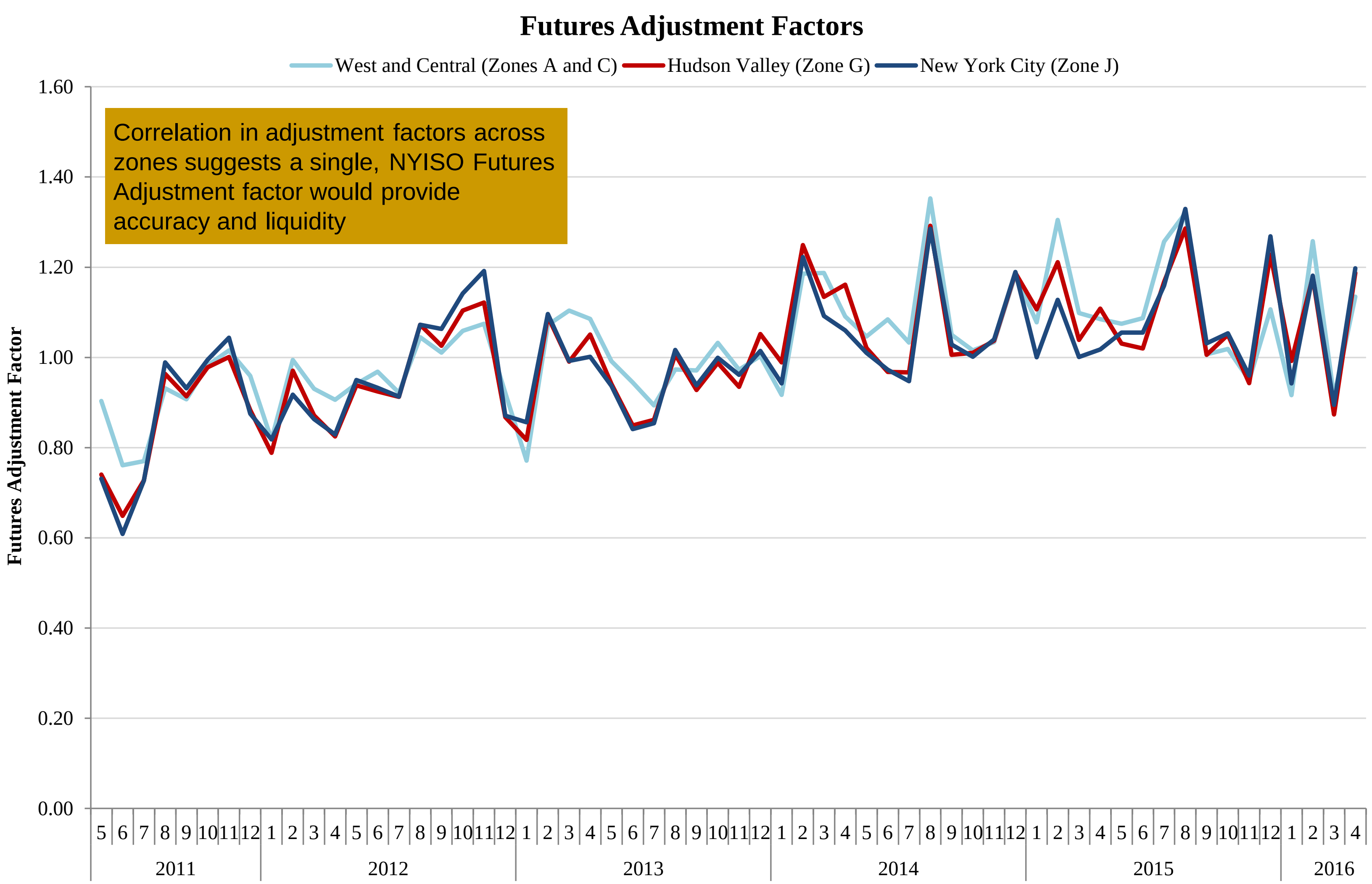

Based on December Futures contracts for settlement during the upcoming calendar year (e.g. AF in 2013 = Futures price for 2013 settlement based on Dec 2012 contract, relative to historical prices 2010-2012).

The choice of net EAS revenue estimation methodology should reflect both quantitative and qualitative factors

- Backcasting provides useful information to compare different approaches to net EAS revenue forecasting
  - The fundamental question is whether increasing the complexity of the net EAS revenue forecast approach (e.g., through detailed econometrics) improves outcomes relative to more simple and transparent approaches based on market pricing
- The backcasting analysis comes with a number of caveats:
  - No forecast approach can perfectly approximate market outcomes, so all results will vary from actual results – that is, we are not seeking the approach that matches actual results, we are assessing whether one approach more consistently approximates "actual" expected net EAS revenues for the peaking plant
  - It is difficult to identify a "best" ex-ante forecast through ex-post comparisons
- Qualitative factors are emphasized in the "decision criteria" presented in the preceding slides

Backcasting – Results (F-Frame Capital Zone F)

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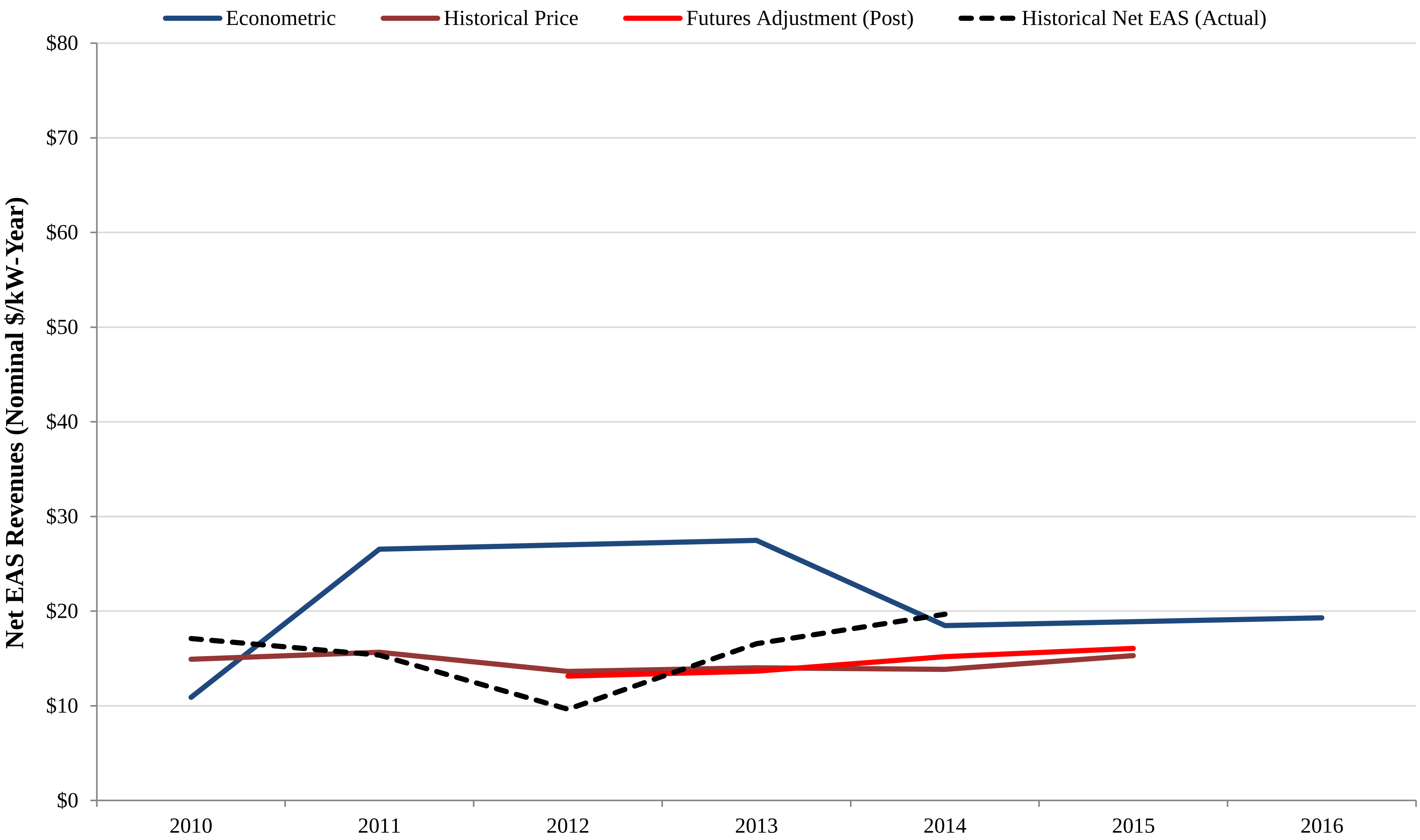
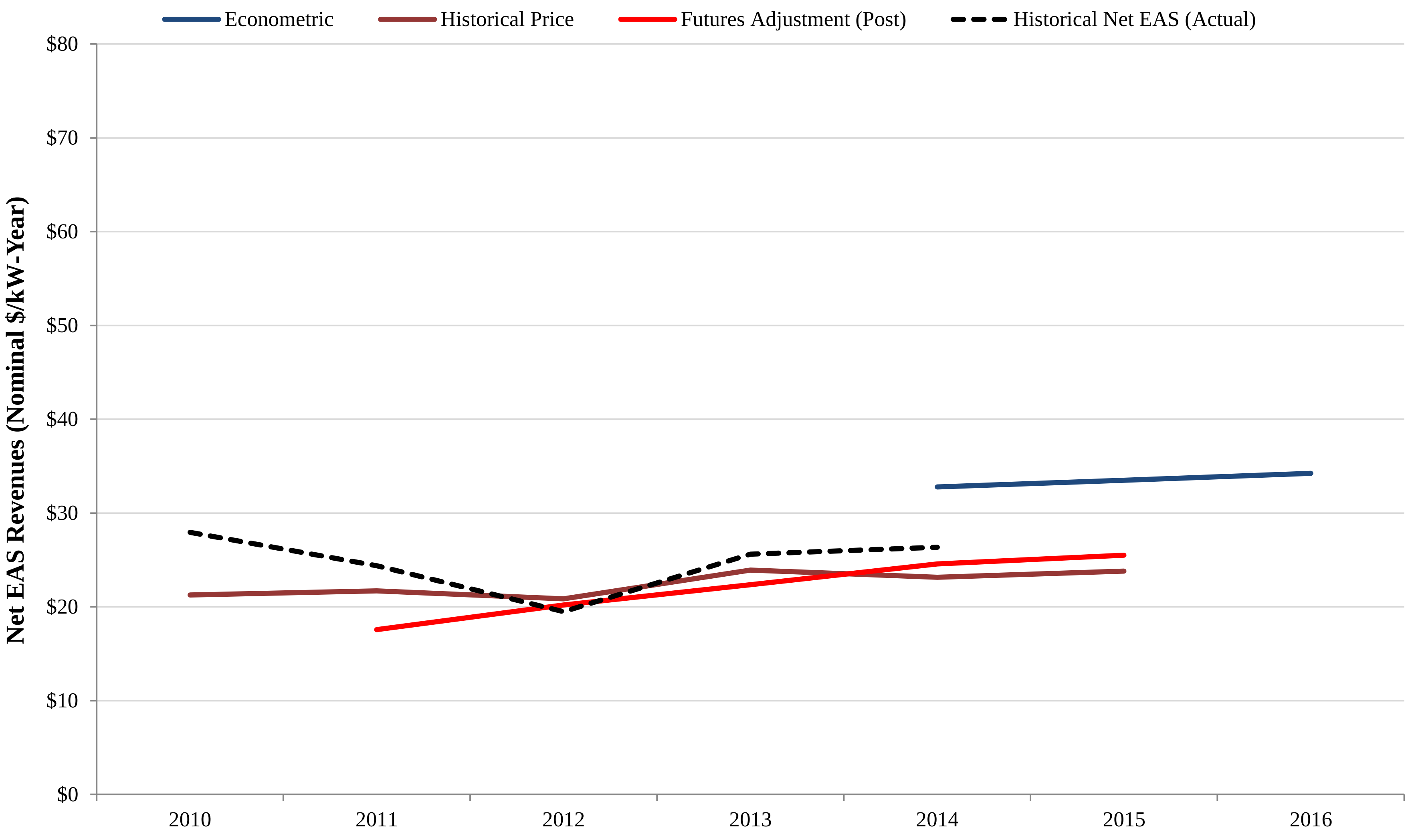


Notes:
[1] "Econometric" method from NERA/NYISO reports in the last DCR. These values include adjustments made via GEMAPS. The 2014/15 Capability Year is plotted in 2014 (etc.).
[2] "Historical Price" calculated from 3-year average of actual EAS revenues with dispatch method similar to NERA. For example, data from calendar years 2011-2013 are used to forecast 2014. Method is similar to current process in PJM.
[3] "Futures Adjustment" scales the "Historical Price" using the ratio of Historic DAM (over 3-years) to Future (1-year) energy prices. Method is similar to current process in ISO-NE.

Backcasting – Results (F-Frame Hudson Zone G)



Notes:
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[2] "Historical Price" calculated from 3-year average of actual EAS revenues with dispatch method similar to NERA. For example, data from calendar years 2011-2013 are used to forecast 2014. Method is similar to current process in PJM.
[3] "Futures Adjustment" scales the "Historical Price" using the ratio of Historic DAM (over 3-years) to Future (1-year) energy prices. Method is similar to current process in ISO-NE.

Backcasting – Results (F-Frame NYC Zone J)

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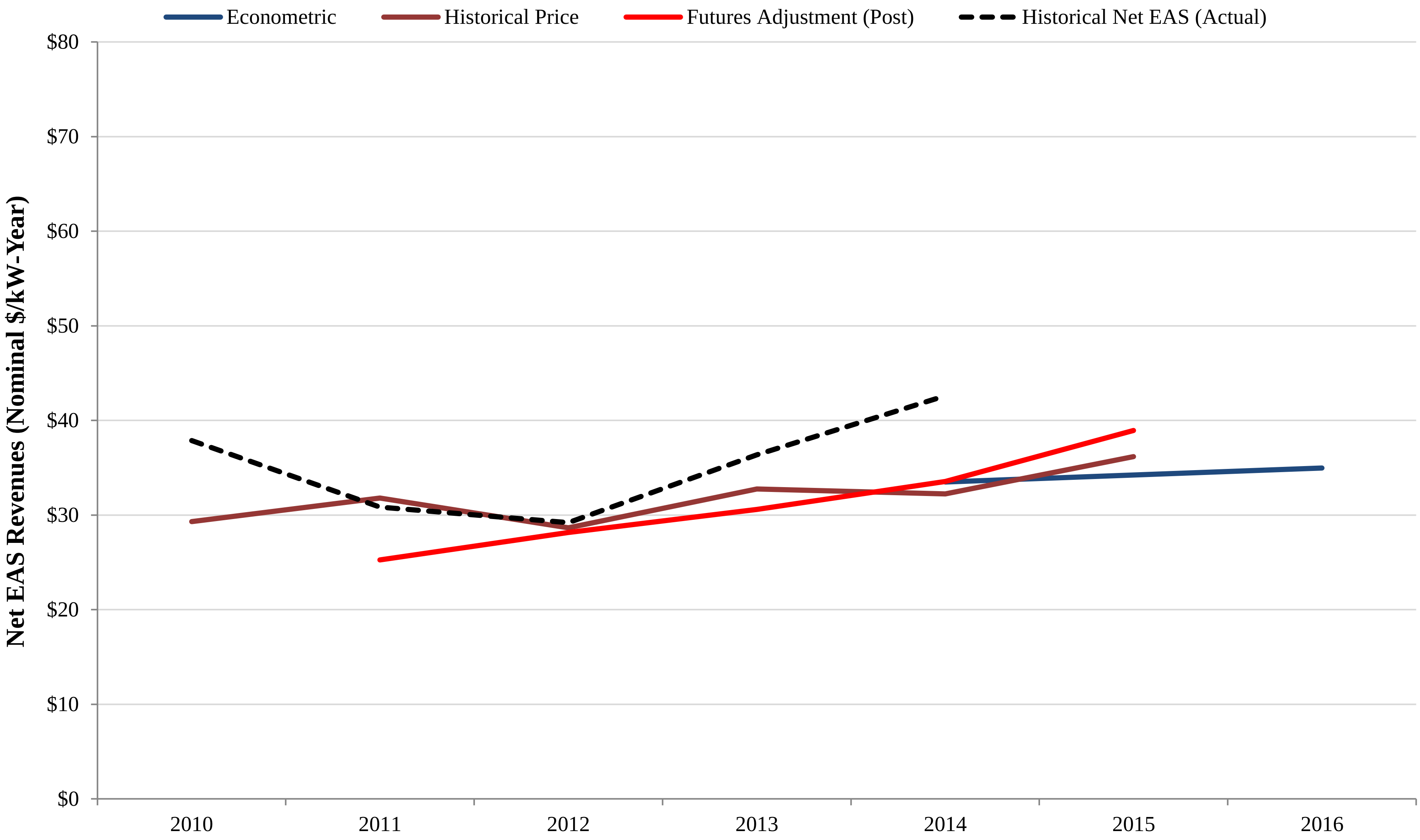

Notes:
[1] "Econometric" method from NERA/NYISO reports in the last DCR. These values include adjustments made via GEMAPS. The 2014/15 Capability Year is plotted in 2014 (etc.).
[2] "Historical Price" calculated from 3-year average of actual EAS revenues with dispatch method similar to NERA. For example, data from calendar years 2011-2013 are used to forecast 2014. Method is similar to current process in PJM.
[3] "Futures Adjustment" scales the "Historical Price" using the ratio of Historic DAM (over 3-years) to Future (1-year) energy prices. Method is similar to current process in ISO-NE.

Backcasting – Results (F-Frame LI Zone K)

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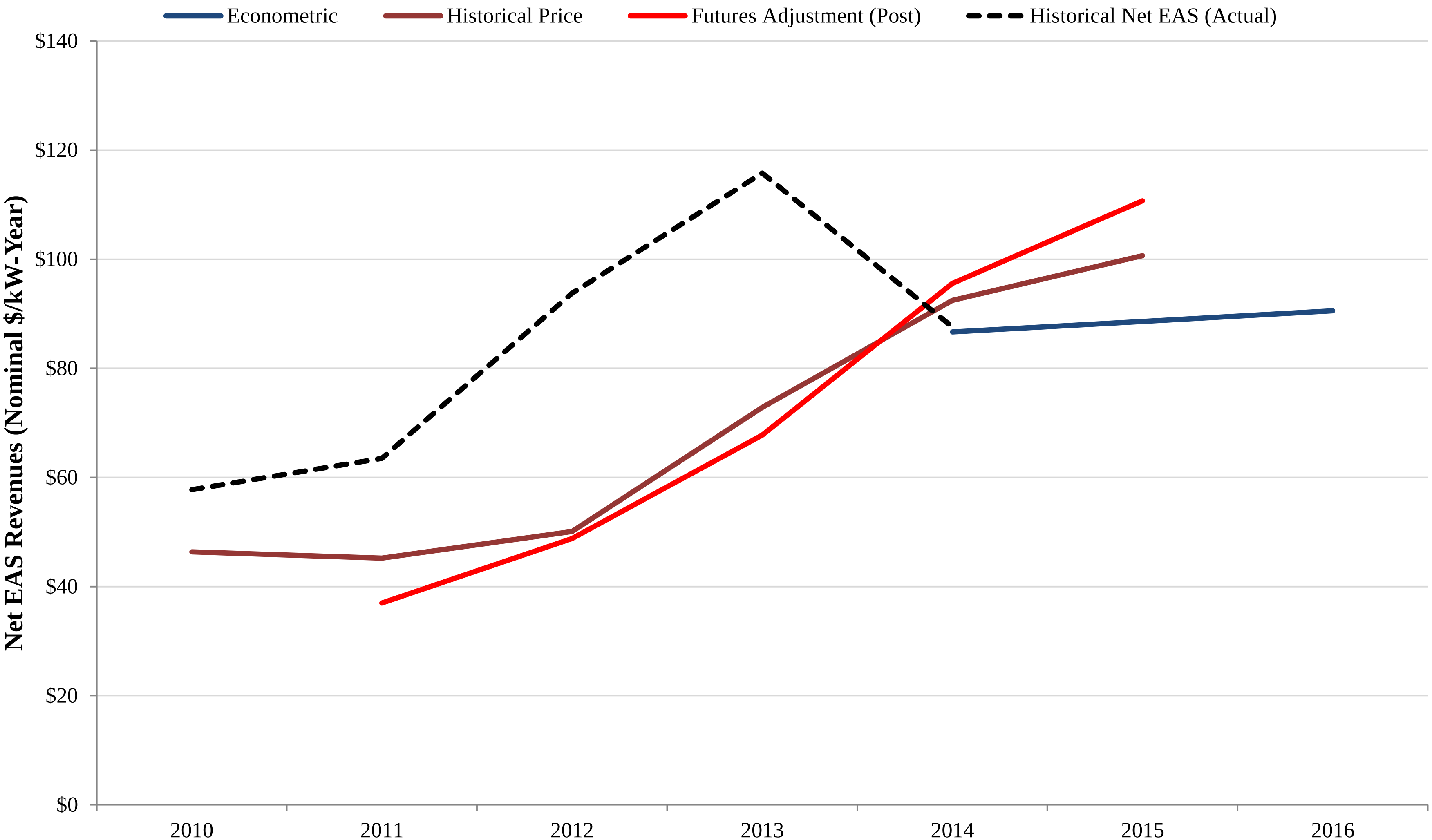

Notes:

[1] "Econometric" method from NERA/NYISO reports in the last DCR. These values include adjustments made via GEMAPS. The 2014/15 Capability Year is plotted in 2014 (etc.).

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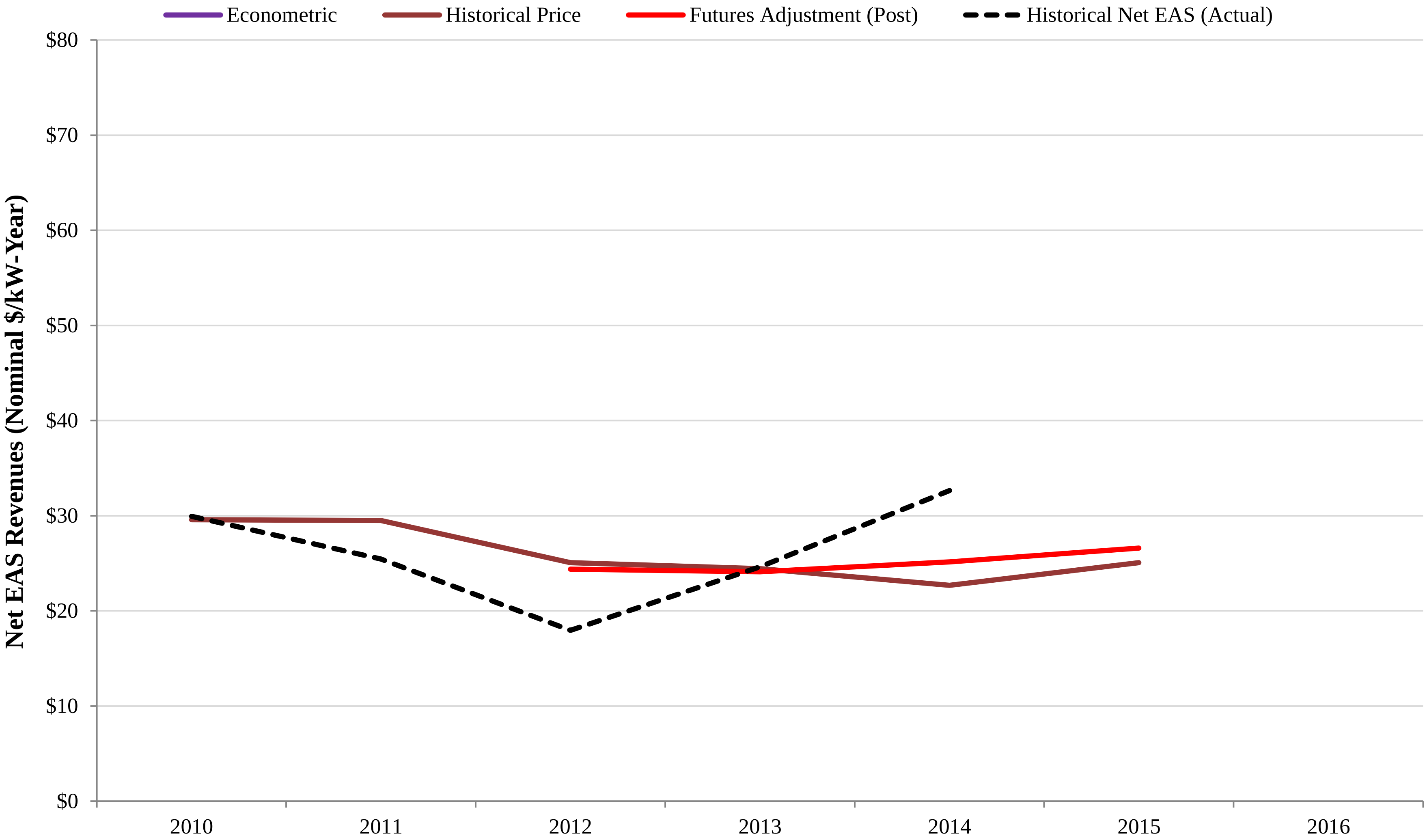
[3] "Futures Adjustment" scales the "Historical Price" using the ratio of Historic DAM (over 3-years) to Future (1-year) energy prices. Method is similar to current process in ISO-NE.

Backcasting – Results (LMS Capital Zone F)



Notes:

[1] "Econometric" method from NERA/NYISO reports in the last DCR. These values include adjustments made via GEMAPS. The 2014/15 Capability Year is plotted in 2014 (etc.).

[2] "Historical Price" calculated from 3-year average of actual EAS revenues with dispatch method similar to NERA. For example, data from calendar years 2011-2013 are used to forecast 2014. Method is similar to current process in PJM.

[3] "Futures Adjustment" scales the "Historical Price" using the ratio of Historic DAM (over 3-years) to Future (1-year) energy prices. Method is similar to current process in ISO-NE.

Backcasting – Results (LMS Hudson Zone G)

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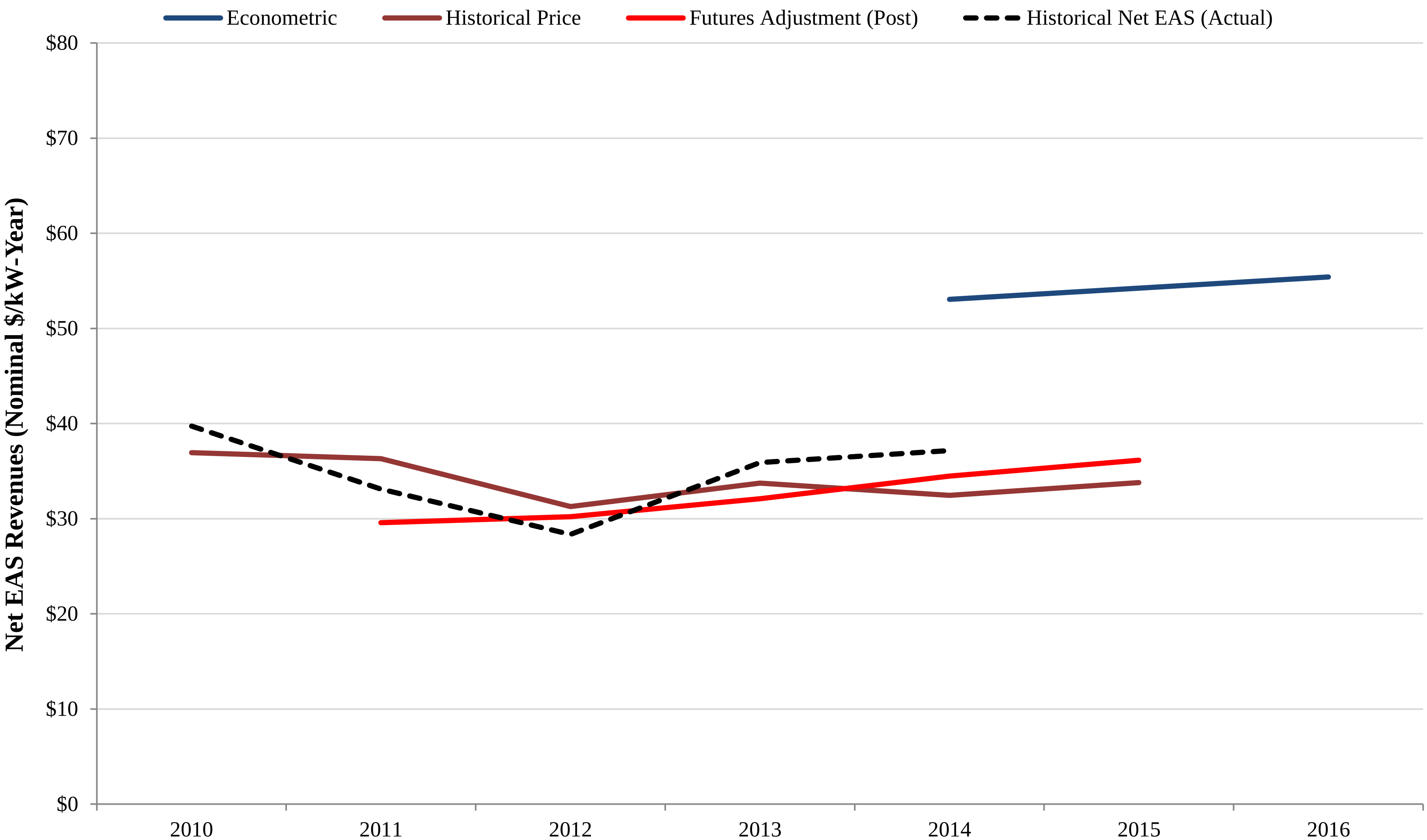

Notes:
[1] "Econometric" method from NERA/NYISO reports in the last DCR. These values include adjustments made via GEMAPS. The 2014/15 Capability Year is plotted in 2014 (etc.).
[2] "Historical Price" calculated from 3-year average of actual EAS revenues with dispatch method similar to NERA. For example, data from calendar years 2011-2013 are used to forecast 2014. Method is similar to current process in PJM.
[3] "Futures Adjustment" scales the "Historical Price" using the ratio of Historic DAM (over 3-years) to Future (1-year) energy prices. Method is similar to current process in ISO-NE.

Backcasting – Results (LMS NYC Zone J)

ANALYSIS GROUP
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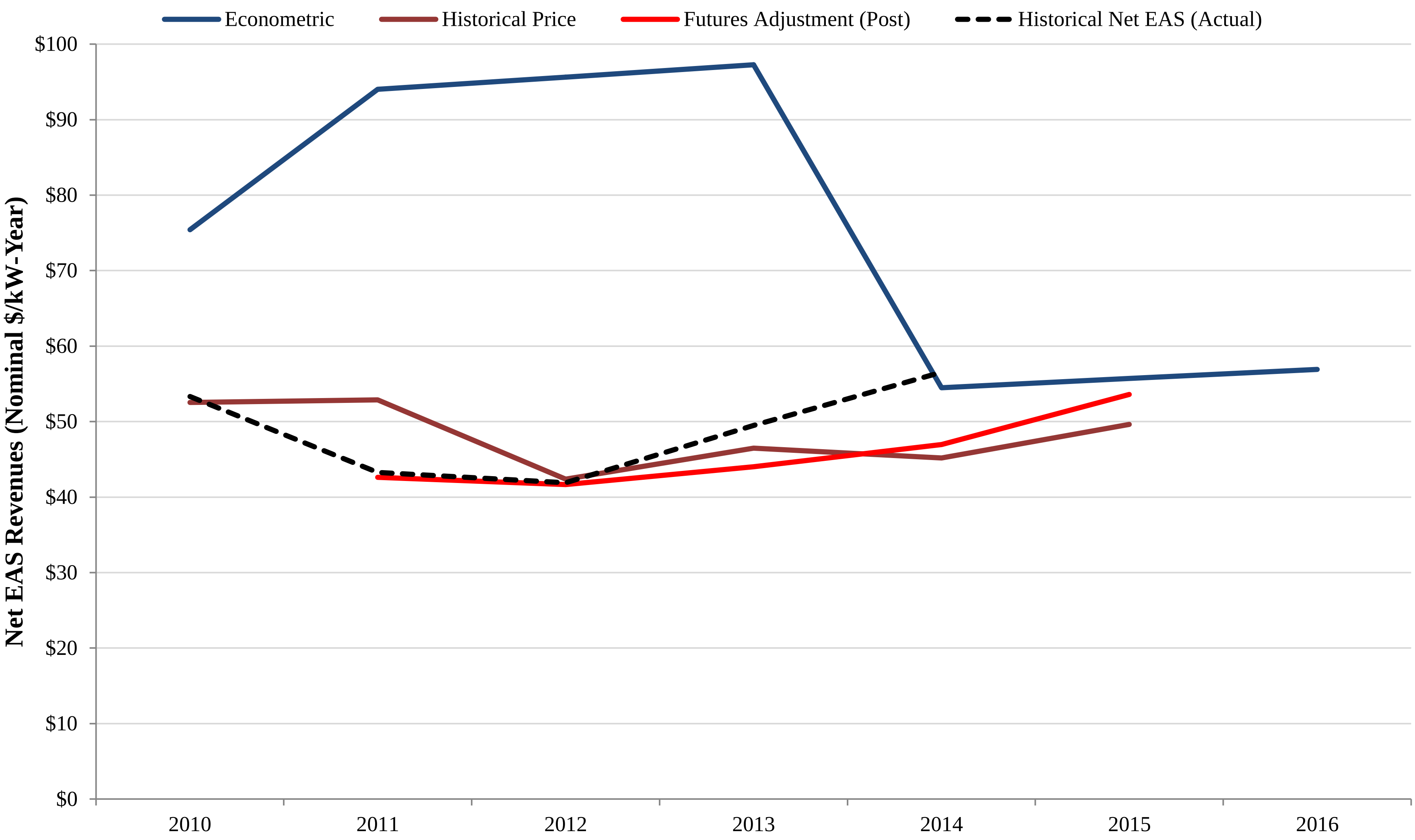


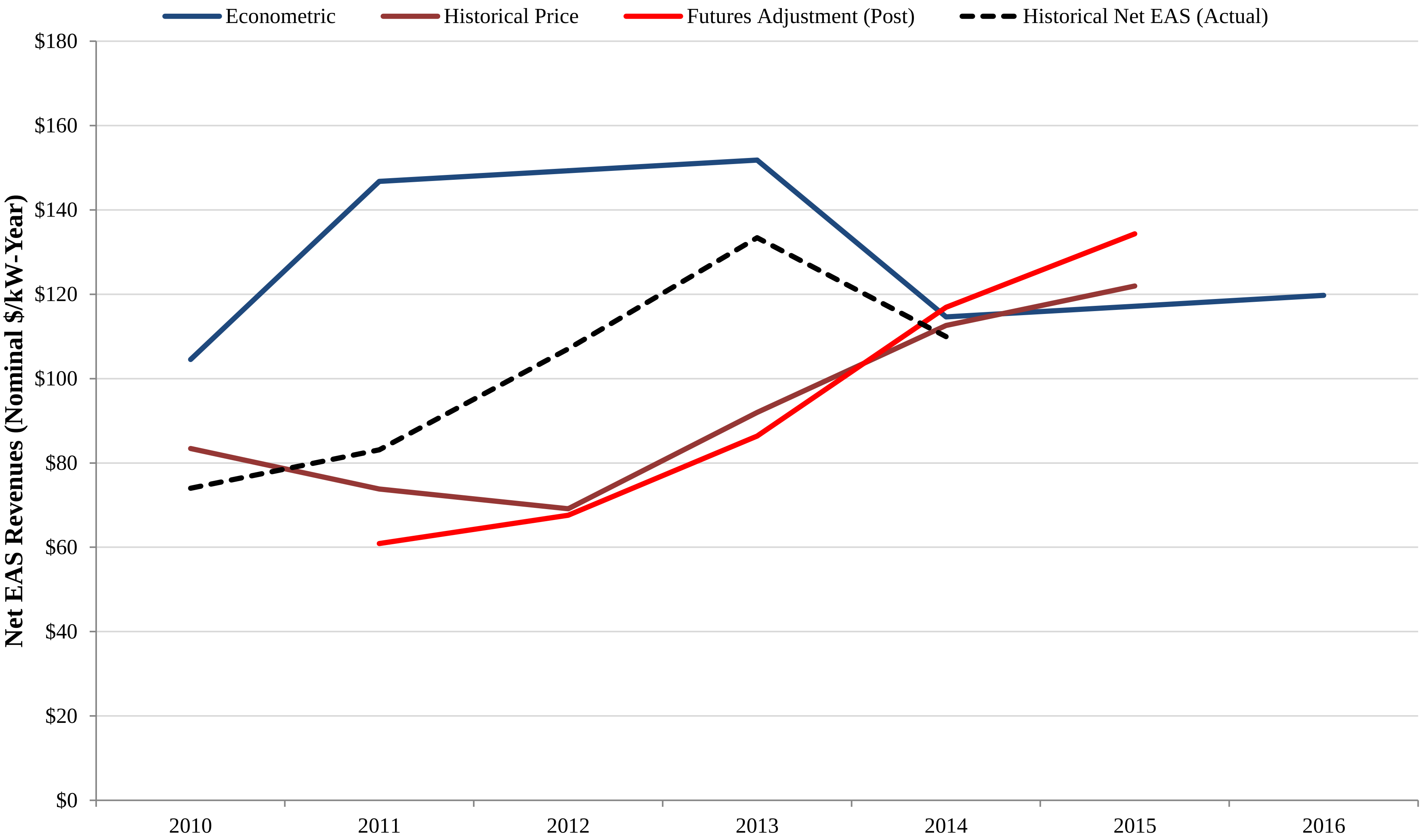
Notes:

[1] "Econometric" method from NERA/NYISO reports in the last DCR. These values include adjustments made via GEMAPS. The 2014/15 Capability Year is plotted in 2014 (etc.).

[2] "Historical Price" calculated from 3-year average of actual EAS revenues with dispatch method similar to NERA. For example, data from calendar years 2011-2013 are used to forecast 2014. Method is similar to current process in PJM.

[3] "Futures Adjustment" scales the "Historical Price" using the ratio of Historic DAM (over 3-years) to Future (1-year) energy prices. Method is similar to current process in ISO-NE.

Backcasting – Results (LMS LI Zone K)



Notes:

[1] "Econometric" method from NERA/NYISO reports in the last DCR. These values include adjustments made via GEMAPS. The 2014/15 Capability Year is plotted in 2014 (etc.).
[2] "Historical Price" calculated from 3-year average of actual EAS revenues with dispatch method similar to NERA. For example, data from calendar years 2011-2013 are used to forecast 2014. Method is similar to current process in PJM.
[3] "Futures Adjustment" scales the "Historical Price" using the ratio of Historic DAM (over 3-years) to Future (1-year) energy prices. Method is similar to current process in ISO-NE.