

Review of Export Price Forecast for NFAT

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Export Price Analysis

- Due to its competitively sensitive nature, neither the MH export price forecast nor the assumptions behind the forecast are known.
- It is not possible to draw definitive conclusions.
- Thus, I have focused on those aspects that are available
 - Supplemental information included by MH in its NFAT filing
 - The Brattle Group export price forecast

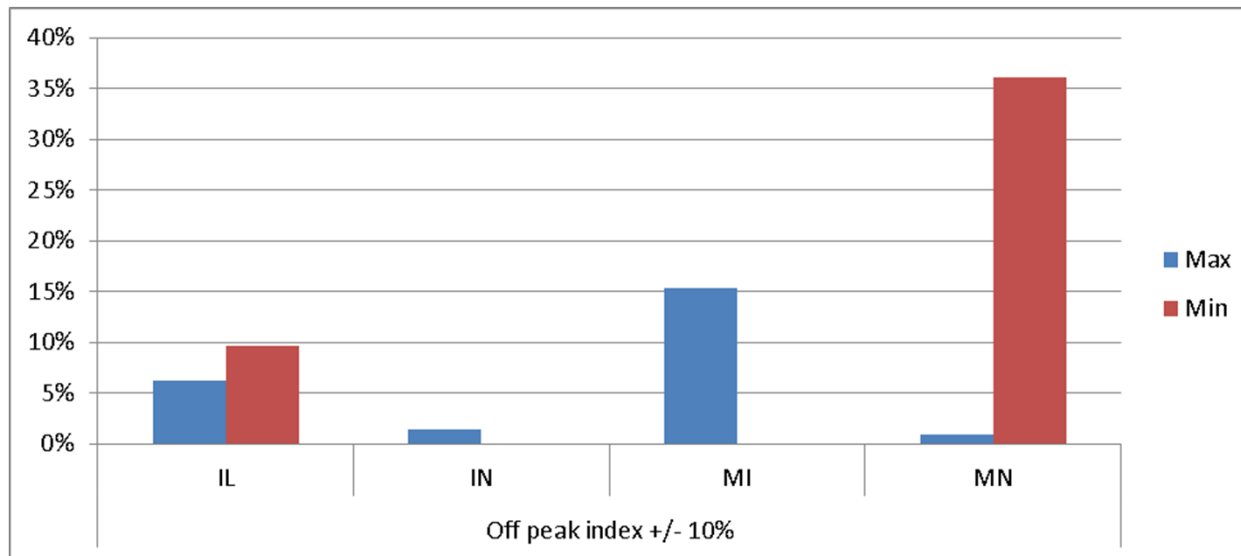
Potential Areas of Concern

- Transmission congestion
- Projected load growth in the export region
- Carbon costs

Transmission Congestion

- Transmission congestion can be significant in that it shrinks the size of the export market and reduces the price that MH receives from the exported energy.
 - A number of different public sources indicate that there is transmission congestion between the Minnesota Hub and the rest of MISO
 - Historical market prices
 - MISO transmission planning process
 - MISO Independent Market Monitor's *State of the Market Report*
 - Federal Energy Regulatory Commission

Market Prices



- Percentage of days where the off-peak index for a hub was 10 % more (blue) or 10 % less (red) than any other hub
- Data from *Megawatt Daily*, April – December 2013

Load Growth

- In its supporting information, MH provides load growth forecasts that may be inappropriate for the export region.
- MH provides a U.S. national load growth projection from the Energy Information Administration (EIA) [0.9%].
- EIA's projection for the East North Central [0.3%] and West North Central [0.6%] regions are lower than the national average.
- A higher load growth projection will result in higher export price projections.

Carbon Costs

- MH supplemental information includes costs associated with restrictions on carbon dioxide emissions in its export price forecast.
- There is considerable uncertainty as to if, when, and what degree some form of carbon restriction will be imposed in the Midwestern U.S.
- Should carbon costs fail to materialize, export prices (and revenue) will be significantly reduced.

Uncertainty of Carbon Costs

- Potomac provided 2 reference prices (one with and one without carbon costs).
- Both Potomac and MNP estimated the likelihood of carbon pricing to be 50/50.
- The inclusion of carbon costs in the individual consultant forecasts are not available due to CSI concerns

Regional Perspective

- Much of the Midwestern US has an industrial-based economy that relies on low electricity prices for their economic competitiveness. They tend to oppose environmental restrictions that threaten those prices.
 - Indiana Gov. Mitch Daniels op-ed in the Wall Street Journal (IR PUB/CAC-Gotham-4) referred to cap-and-trade of CO2 as “imperialism” with “wealthy but faltering powers – California, Massachusetts, and New York – seeking to exploit politically weaker colonies in order to prop up their own decaying economies.”

Federal Action

- US EPA is expected to release proposed performance standards for existing generation this summer.
- The politically divided Congress has not produced any legislation on greenhouse gases.
- The Obama administration has stated on multiple occasions that they will not propose a carbon tax*.

* The White House, Office of the Press Secretary, Press Release – November 25, 2012; and Ben Geman, “A Carbon Tax in Our Future?” thehill.com, February 28, 2013.

Importance of Carbon Costs

- Based on a comparison of The Brattle Group's Base and Low CO2 cases, inclusion of moderate CO2 costs will result in an increase of \$13-14/MWh in the export price.
- Alternatively, if the CO2 costs do not materialize, the price of exports would be about 20-25% lower (based on Brattle and Potomac prices).
- La Capra (Appendix 9B, Page 84) indicates that the results of having no costs for carbon “are significant with the Preferred Development Plan benefits versus All Gas over 78 years dropping by about \$340 Million.”

Export Price Comparisons

BAU/Base/Reference Export Region All Hours Energy Price Projections

	MTEP12	Brattle	Potomac
2017	29.65	30	25
2022	32.54	46	39
2027	37.78	51	43

MTEP BAU vs. Brattle Low CO2 vs. Potomac No Carbon All Hours Energy Prices

	MTEP	Brattle	Potomac
2017	29.65	30	25
2022	32.54	33	29
2027	37.78	37	31

Brattle Price Forecast

- The assumptions in the Brattle forecast regarding congestion and load growth in the export region are appropriate.
- The Brattle forecast includes carbon costs that may or may not happen in the future.
- The Brattle forecast is consistently above the Potomac forecast but similar to the MISO MTEP12 prices, especially when compared under similar carbon assumptions.
- If the Brattle forecast is actually representative of the MH forecast, the MH forecast is reasonable.
- If the MH forecast is higher than the Brattle forecast, there is cause for concern.

MH Rebuttal Evidence and New Developments

Section 8.1.4 Page 97

- “Both the Potomac and Gotham reports contain several mischaracterizations.”
 - There is very little in the rebuttal regarding my “mischaracterizations.” MH attributes an assumption on my part that is false (regarding load growth) and they consider congestion to not be significant (sections 8.1.17.1-2). Otherwise, they speak specifically to issues with the Potomac report. I fail to see how this qualifies as “several mischaracterizations.”

Section 8.1.10 Page 102

- “The Gotham report appears to assume that the indicative macro-level US electric load growth statistics outlined in Chapter 3 of the NFAT filing were provided by Manitoba Hydro to each price forecast consultant as a required input.”
 - This is false. The report clearly states that the assumptions are not known and that if they were consistent with the supplemental information, there would be cause for concern. Citing from page 1, *“Furthermore, the assumptions behind these forecasts are not available. Thus, it is not possible to speak definitively about the reasonability of the export price forecast and assumptions. Manitoba Hydro did include supporting information in its Business Case that raises concerns about the assumptions behind its export price forecast and thus, about the export price forecast itself.*
This document looks at three general areas: the applicability of the supporting information provided by Manitoba Hydro, the implication of the inclusion of carbon costs in the export price forecast, and the reasonability of the export price forecast from The Brattle Group.”

Section 8.1.11

- This section is entitled “Carbon Price Embedded within the Export Price Forecast is Reasonable”.
- It is too heavily redacted to verify this.

Section 8.1.17.1 Page 107

- MH appears to take issue with my use of “such simple and subjective terms as ‘significant’”, yet they characterize congestion as “minimal” and “relatively minor” in their response to CAC/MH I-032a.
 - Congestion has been neither minimal nor minor thus far in 2014

Average Weekly Indices for 2014

On-peak				Off-peak			
Illinois	Indiana	Michigan	Minnesota	Illinois	Indiana	Michigan	Minnesota
58.88	63.29	71.23	51.77	39.56	44.92	50.67	32.54

Average Minnesota Hub prices are 12-27% lower on-peak than their counterparts.

Average Minnesota Hub prices are 18-36% lower off-peak than their counterparts.

Data source: Megawatt Daily, MISO weekly price indices, Jan. 4 to Apr. 19

Congestion Affects Capacity Prices

- On April 15, MISO released the results of their 2014-15 Planning Resource Auction.
- See Exhibit re: MISO resource auction
- This results in a much lower price in Zone 1 and a higher price in Zones 2-7 due to capacity export limit.

Grid Parity

- As electricity prices increase, the cost of customer-owned generation becomes economically competitive.
- Beyond this point, increasing costs lead to increases in self-generation (and decreases in purchases from the utility).
- Mr. Todd from Elenchus spoke about this in the context of the domestic load forecast (April 2), but the concept is applicable to the export market as well.
- This could reduce load growth in the export region and essentially results in a cap on the electricity price.
 - The level of the cap depends on the future costs of various self-generation options.

Summary

- While the specific inputs to and results of the MH export price forecast are not public, there are some issues of which to be aware.
 - Congestion issues may limit the amount of energy that can be moved through the Minnesota region into the rest of MISO, which would reduce prices.
 - Future load in the export region may be lower than indicated by MH's supplemental information.
 - The existence, timing and magnitude of carbon costs represent a major source of uncertainty.