

1 **SUBJECT: Price Forecast**

2

3 **REFERENCE: Page 5**

4 **Preamble:**

5 MISO wind resource growth apparently is driven by State mandates and Federal subsidies and  
6 presumably will affect MH level of sales and sale prices.

7 Potomac only addresses the potential congestion price of the wind growth.

8

9 **QUESTION: PUB-POT 001**

10 What is the expected impact on peak and off-peak energy prices from the increased wind  
11 resources being facilitated by MISO's \$5B investment in western MISO?

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14 **RESPONSE:**

15 MISO's \$5 billion investment is addressed on page 32 (Section II.C.3.a). Therein the report  
16 explains that the \$5 billion in MISO investments is assumed to accommodate all future wind  
17 projects and that no additional congestion would arise from new wind capacity.

18

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4 **Preamble:**

5 Potomac adopted the CO2 prices developed by independent expert consultant Mr. Craig Sabine  
6 of MNP.

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9 **QUESTION: PUB-POT 002**

10 Explain the rationale for this choice. What was MNP(s) perspective on the future MISO  
11 resource mix?

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14 **RESPONSE:**

15 Potomac Economics deferred to Mr. Sabine's CO2 point of view on the CO2 price level in the  
16 reference case because Potomac Economics did not have a point of view on the level of future  
17 CO2 prices in a scenario where carbon prices are in place. Mr. Sabine is in a better position to  
18 explain the what he used for future resource mix in assessing the CO2 prices.

19

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4 **Preamble:**

5 Brattle Group made assumptions on the MISO changing resource mix. It would be useful to see  
6 how those assumptions affect MISO market prices for firm, peak market and off-peak market  
7 energy.

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9

10 **QUESTION: PUB-POT 003**

11 Please provide Potomac's view on Brattle's resource mix in 2034 vs 2013 and contrast them with  
12 respect to:

13 - coal

14 -CCGT natural gas

15 -SCGT natural gas

16 -wind

17 -nuclear

18

19

20 **RESPONSE:**

21 Brattle only provided data on MRO-W (comparable to MISO West). We did not calculate  
22 capacity on the MISO sub region basis. Please see Table below showing our MISO-wide  
23 resource mix resource for our Reference case.

Fuel Type	Potomac Economics	
	2013	2034
Coal	49%	44%
Gas	29%	31%
Wind	9%	13%
Nuclear	6%	6%
Other	7%	6%

24

25



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4 **Preamble:**

5 MH's PDP relies on average unit MISO export revenues of CAD\$96/MWh in 2033. This price is  
6 an average which includes:

7 - firm contract sales

8 - bilateral sales

9 - off-peak MISO market sales

10

11 Total Manitoba Hydro sales into MISO are forecast at 10,824/GWh in 2033, of which less than  
12 1,500 GWh are covered by fixed contract prices.

13

14 **QUESTION: PUB-POT 005a**

15 Please confirm Potomac's 2033 Locational Marginal Price (LMP) (\$/MWh) at the Manitoba  
16 Border is as follows:

17

	ON PEAK	OFF PEAK
18 Ref Case	60	43
19 Ref case No CO2	43	26
20 High Resource		
21 Low Fuel Price	35	23
22 High Growth	60	43

24

25

26 **RESPONSE:**

27 Year: 2033

28 Reference Case	On Peak	\$57.17	Off-Peak	\$43.41
29 Ref No Carbon		\$42.69		\$25.15
30 Low Fuel Price		\$34.81		\$22.86
31 High Growth		\$59.63		\$41.68

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11 Total Manitoba Hydro sales into MISO are forecast at 10,824/GWh in 2033, of which less than  
12 1,500 GWh are covered by fixed contract prices.

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14 **QUESTION: PUB-POT 005b**

15 Please indicate Potomac's view on the validity of MH's average unit export revenues.

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17

18 **RESPONSE:**

19 Regarding export revenues in any given year, we believe the projected values given by MH  
20 should be adjusted to reflect Potomac Economics price forecasts as well as three issues raised in  
21 our report in section IV.2. We explain (1) MH may be projecting dependable sales volumes to  
22 be slightly a higher than supported by historical data; (2) the pricing premium for on-peak sales  
23 may be slightly overstated based on historical patterns; and (3) real increases in capacity prices  
24 after 2034 were not justified. We did not calculate the alternative revenues that may result if  
25 these issues were taken into account.