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**MH/DAYMARK (EXPORTS) I – 1****Reference:**

Daymark Report on Export Pricing and Revenues Review, Appendix B

**Question:**

- a) Please confirm that Daymark reviewed and/or considered the following reports in the preparation of the Export Pricing and Revenues Review:
  - i. MTEP17 MISO TRANSMISSION EXPANSION PLAN, draft dated October 2017.
  - ii. 2016 OMS MISO Survey Results, dated June 2016.
  - iii. 2016 STATE OF THE MARKET REPORT FOR THE MISO ELECTRICITY MARKETS dated June 2017.
  - iv. Staff Report to the Secretary on Electricity Markets and Reliability dated August 2017.
  - v. Minnesota Power Press Release dated June 7, 2017 titled Minnesota Power proposes next step in EnergyForward plan.
  - vi. Northern States Power Company-Minnesota, an Xcel Energy Company Upper Midwest Resource Plan 2016 – 2030.
- b) If confirmed, please file the above noted documents.

**Response:**

- a) Confirmed. Citations and sources for each of these documents are included in our Appendix B.
- b) Each of these documents are provided as attachments to this response.

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## MH/DAYMARK (EXPORTS) I – 2

### Reference:

Daymark Report on Export Pricing and Revenues Review, Section 3: Expected New Generation Over the Next 20 Years.

### Preamble:

Daymark states in its report at page 18 as follows:

“The potential significant amount of generation retiring over the next few years will create a need for new resources in the region. In its draft MTEP17, MISO indicates that in order to maintain resource adequacy within its footprint, close to 4.5 GW of new resources are projected to enter the market as described in the Table 5, below. The table’s resource projections are based on the latest Organization of MISO States-MISO survey results.”

Manitoba Hydro notes that Table 5 is a reproduction of Table 6.2-1 from the draft MTEP17 Book 2 / Resource Adequacy dated October 2017. Footnote 24 on page 18 references the 2016 OMS – MISO Survey results.

### Question:

- a) Please explain how Daymark considered in its analysis the information from the MTEP17 REPORT Book 2 / Resource Adequacy that states at page 15 the following:

“Demand Growth

In 2018, MISO anticipates that the MISO Region’s coincident demand will be 125,921 MW, which is a 50/50 weather-normalized load forecast. Load-serving entities submit demand forecasts for the upcoming 10 years. MISO utilizes these forecasts to calculate a MISO business-as-usual load growth. Based on these forecasts, MISO anticipates a system-wide average growth rate of 0.3 percent for the period from 2018 to 2028.”

- b) Please explain how Daymark considered in its analysis the information from the MTEP17 MISO Transmission Expansion Plan Executive Summary that states at page 5 the following:

“With the addition of the latest Interconnection Requests submitted for the August 2017 Queue Cycle, MISO’s Generator Interconnection Queue has grown to more than 350 projects totaling 58 GW. This is an unprecedented amount of requested generation driven by phase-outs of wind production tax credits and investment tax credits for solar, expected coal retirements and state renewable portfolio standards. MISO’s West Region<sup>7</sup> alone faces more than 22 GW of generation (Figure 1.2 and Figure 1.3) under study and will require significant transmission to interconnect even a fraction of that level of new resources.”

**Response:**

Daymark notes that footnote 23 indicates that Table 5 is Table 6.2-1 from the MTEP draft. Footnote 24 refers to the Survey that is a companion document to the MTEP draft.

- a) The demand forecast is presented in Table 5 of the Daymark report (Table 6.2-1 of the MTEP). That forecast is an input to the resource adequacy analysis presented in that table.
- b) The cited passage from Daymark’s report does not consider the quoted text. That text refers to uncommitted resources that may be available to meet the needs in the market.

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**MH/DAYMARK (EXPORTS) I – 3****Reference:**

Daymark Report on Export Pricing and Revenues Review, Figure 8: MTEP 17 Retirement Assumptions by Zone by 2031, page 16.

**Preamble:**

Daymark states in its report at page 16:

“Furthermore, in the draft MTEP17, MISO projects a range of approximately 8 to 24 GW of coal retirements between now and 2031, with 1.7 to 4.8 GW of that amount in MISO zones 1 and 2 (zones neighboring Manitoba). These values are shown in Figure 8.”

**Question:**

Please confirm that MTEP17, Book 2, P.12, figure 6.1-5 shows that Zone 1 has a registered maximum capacity for wind generation of 4,703 MW, and Zone 2 has registered maximum capacity for wind generation of 636 MW.

**Response:**

Confirmed.

Daymark notes that the registered maximum data reported in that figure is the installed MW of wind in each zone for the 2017-2018 planning year. That figure presents the allocation of capacity credit to the existing wind resources in the system, totaling 15,910 MW of registered maximum capacity in the MISO market.

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**MH/DAYMARK (EXPORTS) I – 4****Reference:**

Daymark Report on Export Pricing and Revenues Review, page 27.

**Preamble:**

Daymark states in its report at page 27: “The recent retirements of various resources have reduced the amount of surplus, changing the market dynamics and potentially resulting in higher prices to incentivize new investment.”

**Question:**

- a) Please explain how Daymark considered that MTEP Report Book 3, P. 12, figure 7.2-3 highlights that Zone 1 is the highest beneficiary to MTEP 17’s MVP portfolio benefits into its analysis of additions and retirements.
- b) Please explain how Daymark considered that in MTEP Report Book 3, P. 13 that MISO believes that MVP portfolio projects increase deliverable wind resources, increases average wind output and reduces carbon emissions into its consideration of capacity and additions and retirements.

**Response:**

- a) The statement cited in the preamble refers to the retirements in recent years, described in the first paragraph of page 10 of the Daymark Report, and the NERC resource adequacy outlook depicted in Figure 7 on page 16. Daymark did not prepare an independent analysis of additions and retirements, rather we describe assessments made by MISO and NERC. Daymark did not verify that the analysis from NERC in Figure 7 or the analysis from MISO in Table 5 of the specific accounting of retirements and additions included in those studies.
- b) See our response to part a.

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## MH/DAYMARK (EXPORTS) I – 5

### Reference:

Daymark Report on Export Pricing and Revenues Review, Figure 9: Assumed Retirements in MTEP17, page 17.

### Preamble:

At the bottom of Figure in page 17 of Daymark’s report there is a label that reads “Policy Regulations Future Assumed Retirements”

### Question:

- a) Please confirm that the Policy Regulations Future is defined as “carbon regulations targeting a 25 percent reduction across all aggregated unit outputs are enacted driving some coal retirements and an increase in natural gas reliance. Increased renewable additions are driven by renewable portfolio standards and goals, economics, and business practice to meet carbon regulations.”

<https://www.misoenergy.org/Library/Repository/Study/MTEP/MTEP17/MTEP17%20Book%203%20Policy%20Landscape.pdf>

- b) Please describe the other two policy futures described in MTEP17.
- c) Please advise how and provide analysis for why Daymark selected to use Policy Regulations Futures versus other options.
- d) Is the Policy Regulations Future a P50 case?

### Response:

- a) Confirmed.

- b) MISO's descriptions of the three scenarios are as follows:

**Existing Fleet:** *The existing generation fleet is largely unchanged. No carbon regulations are modeled, though some reductions are expected due to age-related coal retirements and renewable additions driven by renewable portfolio standards and goals as well as economics*

**Policy Regulations:** *Carbon regulations targeting a 25 percent reduction across all aggregated unit outputs are enacted driving some coal retirements and an increase in natural gas reliance. Increased renewable additions are driven by renewable portfolio standards and goals, economics, and business practices to meet carbon regulations*

**Accelerated Alternative Technologies:** *A robust economy drives technological advancement and economies of scale resulting in a greater potential for demand response, energy efficiency, and distributed generation as well as lower capital cost for renewables reflected in the maturity cost curves. Carbon reductions targeting 35 percent across all aggregated unit outputs are achieved.*

See Draft MTEP 2017, page 172 included in Daymark response to MH/DAYMARK (EXPORTS) I – 1 Att 1.

- c) The Policy Regulations future was used by Daymark for the limited purpose of providing an illustration of the geographic distribution of potential retirements. The Policy Regulations future has somewhat more retirements than the Existing Fleet and less than the Accelerated Alternative Technologies future. We opted to use the future that is in the middle of the range for this illustration.

- d) MISO, working with its Planning Advisory Committee assigned the following probabilities to the three futures:

MTEP17 Future	Future Weight (%)
Existing Fleet (EF)	40
Policy Regulation (PR)	40
Accelerated Alternative Technologies (AAT)	20

**Table 5.3-1: MTEP17 MCPS South Future Weights**

See Draft MTEP 2017, page 92 included in Daymark response to MH/DAYMARK (EXPORTS) I – 1 Att 1.



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**MH/DAYMARK (EXPORTS) I – 6****Reference:**

Daymark Report on Export Pricing and Revenues Review, Figure 11: Statewide RPS renewable Retail Sales, page 24.

**Question:**

- a) What is the current RPS requirement in Wisconsin?
- b) Please confirm to what extent Wisconsin has pledged to increase RPS targets in the future.
- c) Please confirm that figure 11 of the Daymark report shows that Actual RPS Energy has exceeded Statute Requirement in all years in the past and projected into the future, and hence no need for additional renewable resources needed to meet Wisconsin RPS requirements.

**Response:**

- a) Please refer to Figure 11, page 24 in the Daymark Report which shows the RPS energy requirements, reach 10 percent of load in 2015.
- b) Wisconsin law does not include any increase in the RPS requirement.
- c) Confirmed, subject to a qualification that the forecast is only to 2020.

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**MH/DAYMARK (EXPORTS) I – 7****Reference:**

Daymark Report on Export Pricing and Revenues Review, page 25.

**Preamble:**

Daymark states in its report at page 25:

“North Dakota’s policy environment differs from Minnesota and Wisconsin. By law, utilities cannot consider environmental externalities in their resource planning decisions. This difference is punctuated by a recent Northern States Power filing with the MPUC and the North Dakota Public Service Commission, seeking a process to separate the IRP processes in those states due to the differences in policy. From a policy perspective, utilities in North Dakota would not apply any premium on renewable or clean energy attributes.

With respect to the need for power in North Dakota, the discussion of system needs in the NSP system would apply in North Dakota, as well, because NSP’s system planning is currently completed for its multi-state service territory.”

**Question:**

Please advise how the above conclusion that the system needs in the NSP would apply in North Dakota as well, if, the MPUC and the NDPSC agree to separate Northern States Power into separate entities (as described in footnote 29 of the Daymark report) and utilities in North Dakota would not apply any premium on renewables.

**Response:**

The statement refers the 2015 resource plan that was prepared considering the needs for all of NSP’s system, including North Dakota. If there is an agreement to separate, future resource plans will likely be conducted separately.

## **MH/DAYMARK (EXPORTS) I – 8**

### **Reference:**

Daymark Report on Export Pricing and Revenues Review, page 26.

### **Preamble:**

Daymark states in its report at page 26: “Each LSE or utility can meet their requirement using a combination of self-supply, bilateral contracts, and procurements through MISO’s Planning Resource Auction (PRA).”

### **Question:**

- a) Please confirm the Planning Resource Auction is a 1 year auction and provides no price discovery beyond 1 year.
- b) If part a) is not confirmed, please provide MISO’s forward capacity auction prices.

### **Response:**

- a) Confirmed.
- b) See our response to part a.

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**MH/DAYMARK (EXPORTS) I – 9****Reference:**

Daymark Report on Export Pricing and Revenues Review, page 29.

**Preamble:**

Daymark states in its report at page 29:

“MISO needs assessments indicate that the current system surplus capacity is expected to erode within 5 years based on current assumptions and information on existing, committed, and planned changes in capacity resources, with the need for new resources of about 24 GW by 2031. This need is driven primarily by expected retirements of aging coal generation.”

**Question:**

- a) Please confirm that the need for 24 GW of new resources by 2031 is for the MISO footprint as a whole.
- b) Please provide what portion of the 24 GW of resources required by 2031 which is located in the MISO North study area, as defined by Daymark, together with the source of the information.

**Response:**

- a) Confirmed.
- b) MISO does not provide a breakdown of the need by zone. Please refer to Daymark’s response to PUB/DAYMARK 2, 3 and 6 and the NSP resource plan (MH/DAYMARK (EXPORTS) I – 1 Att 6) for examples of need for new capacity in the MISO North area.

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**MH/DAYMARK (EXPORTS) I - 10**

**Reference:**

Daymark Report on Export Pricing and Revenues Review, page 50.

**Preamble:**

Daymark states in its report at page 50:

[REDACTED]

3b

**Question:**

- [REDACTED]
- [REDACTED]

**Response:**

- a) Please refer to Daymark's response to PUB/DAYMARK CSI-1.
- b) Confirmed.

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**MH/DAYMARK (EXPORTS) I – 11****Reference:**

Daymark Report on Export Pricing and Revenues Review, page 51.

**Question:**

- a) Is Daymark's opinion that probability based forecasting is superior to scenario based forecasting for determining high and low forecasts. If so, please explain why and provide supporting evidence.

**Response:**

- a) Both approaches are used in the industry. The suitability of the choice of methods depends on the circumstances, the preferences of the decision makers involved, and availability of data. In this case, MH has chosen to use probability metrics. See Daymark response to MH/DAYMARK (EXPORTS) I – 12.

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**MH/DAYMARK (EXPORTS) I – 12****Reference:**

Daymark Report on Export Pricing and Revenues Review, page 51.

**Preamble:**

Daymark states in its report at page 51: “As we discuss further in Section VII, we understand that “reasonableness” in this context is whether the forecast is a balanced, with the values being used representing assumptions that fall in the middle of the range of plausible values (i.e., a P50 value).”

**Question:**

- a) In the above reference, please confirm if “forecast” refers to the net revenue forecast or the price forecast.
- b) Please provide references to authorities endorsing the definition of “reasonableness” referenced in the Preamble.
- c) Please identify utilities that adopt this definition of “reasonableness” in preparation of their forecast and identify the type of forecast (net revenue or price forecast) to which this is applied.

**Response:**

- a) The section of the Daymark Report referenced in the preamble pertains to the electric market price forecasts.
- b) Refer to Tab 4 of the MH GRA. For example, MH discusses its goal to have a 50 percent chance to reach the projected equity ratio within ten years.
- c) Daymark did not consider other utility standards, only the standard set forth by MH.

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**MH/DAYMARK (EXPORTS) I – 13****Reference:**

Daymark Report on Export Pricing and Revenues Review, page 60.

**Preamble:**

Daymark states in its report at page 51: “As we discuss further in Section VII, we understand that “reasonableness” in this context is whether the forecast is a balanced, with the values being used representing assumptions that fall in the middle of the range of plausible values (i.e., a P50 value).”

**Question:**

- a) Please identify other utilities that utilize the concept of “P50 value” in forecasting energy market prices
- b) For those utilities identified in part a), please describe the process used by the utilities for assigning probabilities.
- c) For those utilities identified in part a), please identify the third-party forecasters that assign a P-value to their forecast, together with supporting documentation.
- d) Please provide the definition of “P-value” used by the forecasters identified in part c).

**Response:**

- a) Daymark did not rely on the practice of other utilities in selecting the p50 standard. See Daymark response to MH/DAYMARK (EXPORT) I – 12.
- b) See response to part a.
- c) See response to part a.
- d) See response to part a.



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**MH/DAYMARK (EXPORTS) I – 14****Reference:**

Daymark Report on Export Pricing and Revenues Review, page 70.

**Preamble:**

Daymark states in its report at page 70: “We understand from this statement, and from our discussions with MH SMEs, that MH intends for the Reference Case forecast to be a “P50” case”.

2017/18 & 2018/19 General Rate Application - Tab 4

**Question:**

- a) Please identify the basis for the statement that “MH intends for the Reference Case forecast to be a “P50” case”.
- b) Please provide your understanding of Manitoba Hydro’s process for preparing the uncertainty analysis contained in Tab 4

**Response:**

- a) See Daymark response to MH/DAYMARK (EXPORT) I – 12.
- b) MH describes its methodology in Tab 4, pages 8 and 9, as follows:

*The uncertainty analysis presented below combines multiple risk factors which reveals a more extensive picture of the risks facing the Corporation.*

*It is assumed that the three risk factors are mutually independent, variation in one parameter is independent of variation in another. For each combination of risk factors (i.e. each scenario), a set of pro forma financial statements (projected income statement, projected balance sheet and projected statement of cash flows) is generated. The uncertainty analysis focuses on four financial metrics from the pro forma financial*

*statements: the equity ratio, net income/loss, net debt balance and retained earnings, and displays the range of possible financial outcomes.*

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**MH/DAYMARK (EXPORTS) I – 15****Reference:**

Daymark Report on Export Pricing and Revenues Review, page 72.

**Preamble:**

Daymark states in its report at page 72: “the 20-year forecast is not well supported and not consistent with the information available to MH from the independent market consultants (see Section III) or the information from MISO, NERC and utility IRPs (See Section II).”

**Question:**

- a) Please confirm that MISO does not produce an electricity price forecast. If not confirmed, please provide the information relied upon.
- b) Please confirm that NERC does not produce an electricity price forecast. If not confirmed, please provide the information relied upon.
- c) Please identify the utilities referenced in “utility IRPs” (as referenced in the Preamble).

**Response:**

- a) Confirmed.
- b) Confirmed.
- c) The utilities referenced in Section II of the Daymark Report are Northern States Power and Minnesota Power.

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**MH/DAYMARK (EXPORTS) I – 16****Reference:**

Daymark Report on Export Pricing and Revenues Review, Appendix A – Scope of Work

**Question:**

Please provide copies of all documents received from the PUB, PUB advisors, other independent expert consultants, interveners or any third party in connection with your retainer and/or in contemplation of preparing your report in this proceeding. Please provide notes of all meetings with these parties in connection with your participation in this proceeding (in confidence if necessary).

**Response:**

Daymark has attached 12 documents provided by the PUB, transmitted by Brady Ryall.

Daymark did not receive any other documents from the PUB and did not receive any documents from any other entity referenced in the question.

Daymark participated in the following meetings:

1. Meeting with PUB, PUB Counsel, and IEC Counsel on September 14 at the PUB offices in Winnipeg. This was kickoff meeting for our work.
2. A conference call meeting with experts representing MIPUG and the Consumers Coalition to discuss the Daymark scope of work on October 13, 2017.
3. A conference call meeting with PUB, PUB Counsel, and IEC Counsel on October 16.
4. A conference call meeting with IEC Dr. Yatchew on October 30 to discuss our respective scopes of work.

Daymark has attached notes taken in meetings 1, 2, and 4.

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**MH/DAYMARK (EXPORTS) I - 17****Reference:**

Daymark Report on Export Pricing and Revenues Review, Section 1

**Question:**

- a) Please identify the principle author(s) of the Export Pricing and Revenues Report and any other members of your firm who participated in the preparation of the Export Pricing and Revenues Report.
- b) Please file the curriculum vitae for each member of your firm. Please specify those individuals who intend to appear to give evidence during the oral portion of the proceeding.
- c) For each of the Topics in Sections II to VII of the Export Pricing and Revenues Review, please identify:
  - i. The name and experience of the each individual(s) who worked on each of the topics; and
  - ii. A list of the previous projects or judicial and administrative proceedings which the individual(s) have been qualified as an expert witness or testified in relation to the topic(s) and his/her role in the project or proceeding.

**Response:**

- a) The principle author of the report is Dan Peaco. Others who participated in the preparation of the Export Pricing and Revenues Report are:
  - Doug Smith
  - Jeff Bower
  - Dimitrios Kordonis

- 
- Dwarakesh Nallan
  - Aliea Afnan
  - JinJin Lu
  - Christine Maddalo
- b) Daymark understands the request to be for CVs of all people listed in question a above. For those CVs, see Attachments to this response. Dan Peaco and Doug Smith will be providing oral testimony in support of this report.
- c)
- i. The primary contributors to each section are as follows:
    - II – Dimitrios Kordonis, Doug Smith, Dan Peaco
    - III - Dimitrios Kordonis, Doug Smith, Dan Peaco
    - IV – Doug Smith, Dwarakesh Nallan, JinJin Lu, Dan Peaco
    - V – Dimitrios Kordonis, Doug Smith, Dan Peaco
    - VI – Jeff Bower, Doug Smith, Dan Peaco
    - VII – Doug Smith, Dan PeacoThe experience of each individual is include in response to part b.
  - ii. A list of appearances is included in the attachments to part b.