Implementation of MOF Recommendation Paper
Stakeholder Comment Form

Comments From: EPCOR
Date: April 17, 2009
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1. WIND POWER FORECASTING – Centralized Forecasting Model

The AESO recommends that a centralized forecasting model be implemented in Alberta.

- ✔ Support
- ☐ Oppose
- ☐ Indifferent

Reasons for Stakeholder Position:

EPCOR **conditionally** supports the implementation of a centralized forecasting model in Alberta provided that:

- o there is sufficient evidence indicating forecasting accuracy can be significantly improved by the forecast to predict ramp direction, timing, magnitude and rate of change and,
- o the costs associated with the wind power forecasting services and the collection and provision of data to the forecasting service provider are collected directly from individual wind generators through market fees or tariff charges

EPCOR understands that there are significant challenges associated with forecasting wind in Alberta as indicated in the recommendation paper. Although the working group feels that these challenges are the primary drivers behind implementing centralized forecasting in Alberta as soon as possible, EPCOR has concerns with the prudency of attempting to forecast wind, given the difficulties experienced to-date with achieving accurate forecasts. EPCOR understands that wind power forecasts and forecast accuracy are essential to the reliable operation of the electric grid, however; it is difficult to support the recommendation given that there appears to be a lack of evidence that the investment will be fruitful. There needs to be a satisfactory resolution to this uncertainty prior to choosing a forecaster.

2. WIND POWER FORECASTING – RFP ASAP

The AESO recommends that solicitation (RFP), evaluation and selection of a centralized forecasting service provider should proceed as soon as practicable.

- ✔ Support
- ☐ Oppose
- ☐ Indifferent

Reasons for Stakeholder Position:

EPCOR agrees that the selection of a centralized forecasting service provider should proceed as soon as practicable (subject to the conditions outlined above) due to the vast number of wind projects that are in the queue and set to come online in the relatively near future. Given our concerns around forecast accuracy we believe that the RFP should include technical

requirements and performance standards that the forecaster is required to meet in order to ensure that the end product will meet the needs of the system.

3. WIND POWER FORECASTING

The AESO will commence consultation on rules, procedures, standards and technical requirements regarding submission of wind generator forecast data/information including; data requirement such as turbine availability and on-site meteorological data, communication protocols, and data quality required from wind generation facilities (or individual forecasters) to deliver forecasts to the AESO.

- [x] Support
- [ ] Oppose
- [ ] Indifferent

Reasons for Stakeholder Position:

EPCOR supports the AESO's recommendation to begin consulting with stakeholders as soon as possible in an effort to ensure that all existing and future wind facilities in Alberta are capable of meeting the minimum requirements necessary to ensure a useful and reliable centralized forecast. The success of a forecasting system will depend on the quality and accuracy of the data provided to the forecaster.

4. WIND POWER FORECASTING – Data Management

As part of its forecasting research and development work, the AESO will continue work to determine the capability, resources, systems and time required to perform the data management function. In parallel, the AESO will include data management as an optional requirement in the wind forecasting RFP.

- [x] Support
- [ ] Oppose
- [ ] Indifferent

Reasons for Stakeholder Position:

EPCOR agrees that a third party provider responsible for data management is the least desirable option. EPCOR sees value in having a centralized forecaster also manage the data provided that they possess the skills and expertise required to carry out this function. It is essential that whoever is responsible for data management is capable of verifying the quality and accuracy of the data used in the forecast in order to ensure its reliability.

Regardless of who provides data management services with respect to this initiative, the AESO must address the capability of their IT infrastructure. IT limitations are not acceptable reasons for not implementing preferred market solutions. Currently the performance of the AESO's IT system is below acceptable standards and the AESO needs to invest significant resources to address this issue in a timely fashion.

5. FORECASTING ACCURACY

The AESO will monitor forecasting, market and operational results and develop measures of forecasting accuracy. The AESO intends to leverage available data and forecasting resources toward this end.

- [x] Support
- [ ] Oppose
- [ ] Indifferent

Reasons for Stakeholder Position:

As indicated above it is essential that an accurate forecast is developed if any operational or market benefits are to be realized. EPCOR agrees that the establishment of accuracy standards is necessary to ensure the successful integration of intermittent resources into the electric system. Minimum accuracy requirements should be developed prior to selection of the forecaster as well as potential measures of accuracy. The AESO should make use of all data that is available to them in order to monitor the accuracy of the forecast and its impact on operations. All findings with respect to forecast accuracy and impacts of said forecast should be transparent to ensure that Albertans are benefiting from this initiative.

6. FORECASTING - TRANSPARENCY

The AESO considers that system or aggregate wind forecasts should be transparent and made available to all market participants, particularly near term to real time.

- [ ] Support
- [x] Oppose
- [ ] Indifferent

Reasons for Stakeholder Position:

EPCOR strongly disagrees with the recommendation that aggregate wind forecasts should be transparent and available to all participants. Aggregate wind forecasting is required for the reliable operation of the electric system; it is not required for the efficient operation of the market. There is absolutely no precedent for publishing offer data (or a forecast of offer data) prior to real time. Participants who have invested in wind farm technology or have developed in house forecasting or analytics should not see the value of their investment eroded away by the publishing of forecast wind generation by the AESO.

Transparency of offer behaviour prior to real time is not conducive to a competitive outcome. To the extent that the AESO wishes to publish after the fact aggregate data EPCOR recommends that it should be published 60 days after the settlement date.

7. WIND POWER MANAGEMENT – Curtailment Protocol	
The AESO seeks stakeholder feedback on the work group recommendations to use a Potential MW Protocol and specifically would like input from stakeholders regarding practicality and risks associated with this option. 1. Pro rata allocation of the system wide wind curtailment among Wind Power Facilities (WPF) 2. Use of Potential MW Capability to allocate for each WPF 3. Curtailments should be re-assess and re-allocate every 20 minutes if the limit for any one WPF has changed by greater than 5MW Reasons for Stakeholder Position: To the extent that the WPM curtailment protocol is intended for use by the system controller to effect system wide reductions to wind power on the AIES to maintain or restore reliability it is EPCOR's view that WPM curtailment and the use of Potential MW capability is reasonable. EPCOR supports the use of pro-rata allocation of system curtailments when curtailments are deemed necessary as the process is fair; however, EPCOR does recognize that pro-rata curtailment may not always be efficient and the cost benefits need to be considered. The use of Potential MW Capability to allocate for each WPF appears to be superior as it takes into consideration actual production at individual wind facilities. This approach is consistent with the allocation of curtailments currently applied to non-WPF. However, EPCOR has concerns regarding the complexity of implementation and the potential high error in the data (10-15%). EPCOR supports this approach to the extent that it can be efficiently implemented and the time frame and proposed costs are reasonable. EPCOR agrees that regardless of the curtailment and allocation protocol implemented the need for accurate operating conditions and curtailments must be balanced by implementation complexity and costs. Therefore twenty minute intervals for reassessment and re-allocation of curtailments seems reasonable provided the costs do not outweigh the potential benefits, as does the threshold of 5 MW. Anything less than 5 MW is considered non substantive by other AESO rules.	☐ Support ☐ Oppose ✔ Indifferent

8. WIND POWER MANAGEMENT - Supply Surplus	
The AESO solicits input from all stakeholders on the proposed supply surplus protocol and proposed modifications to OPP 103 provided below. (1) Include wind power facilities and co-generation facilities in OPP 103 procedures with co-generation to be subject to Minimum Operating	☐ Support ✔ Oppose ☐ Indifferent

[1] ISO Rule definition for MSG is "minimum stable generation" which means the minimum generation level that an asset can be continuously operated at without becoming unstable.

Level (MOL) requirements

(2) Establish a Minimum Operating Level (MOL) for each asset and, where possible, assets should not be dispatched below their MOL.

(3) Refine MOL definition to include new constraints not included in Minimum Stable Generation[1] (MSG) but that affect the asset's ability to operate at or below a threshold. MOL is a physical operating limit (not an economic limit) for an asset constrained by legal/regulatory, environmental, health and safety, equipment reliability, operating level required to serve dispatched ancillary services, or operating level required to prevent damages to third party equipment. Examples of physical operating constraints for types of generation and import/export are included in the WG paper (Appendix A).

(4) Develop a mechanism for pool participants to declare and submit the MOL. It is expected that the need for, approach and frequency of declaration may vary among generators and will need to be defined.

(5) Revise the current "inflexible block" definition. The definition of "inflexible block" will need to be amended as follows:

"inflexible block" means a block of energy that may be dispatched on or dispatched off, but not partially dispatched on, <u>except for a $0 offer block it may be dispatched to the asset's MOL.</u>

Definition of "flexible block" does not require any changes since it accommodates the proposed $0 SMP management protocol.

(6) Provide market indication of supply surplus conditions (similar to supply adequacy situations) to provide market participants an opportunity to take voluntary actions in the face of potential $0 SMP conditions and also become aware that an out-of-market dispatch to clear the energy imbalance could be forthcoming.

<u>Reasons for Stakeholder Position:</u>

In EPCOR"S view it is inappropriate to include supply surplus management proposals within this stakeholder consultation on wind integration. The proposal has the potential to constitute a significant change to the market design and will impact all participants extensively regardless of their source of generation. Supply surplus is not by any means an issue that is unique to wind power integration. There are other circumstances that could result in a supply surplus (independent of volatile wind generation levels) and we must ensure that supply surplus management protocols are considered in all contexts, not just in the context of excess supply due to high wind generation.

Before contemplating such significant and pervasive changes, the AESO should hold a separate stakeholder consultation process to deal with supply surplus management. The outcome has major and widespread consequences for market participants who may not be involved in or fully aware of the current consultation on wind integration. It is essential that all impacted parties are engaged in discussing potential supply surplus management protocols that are critical to the preservation of price fidelity and the operation of the market.

That being said, EPCOR has major concerns with the supply surplus management protocol that is put forward in this recommendation paper. The proposed introduction of a minimum operating level (MOL) is particularly troubling. The recommendation paper indicates that MOL is intended to be a physical operating limit; however, contractual considerations (PPA or non-PPA) are not physical limits, they are economic limits that have no bearing on the level a unit is dispatched to in a supply surplus event. Furthermore, the recommendation paper suggests that run of river hydro facilities are analogous to wind generating facilities, that is, the fuel passing through and the generator must be used or wasted. No harm would come to the asset in either case if the unit was curtailed. Although there would be a financial impact, this does not constitute a physical operating limit. Economic incentives are not acceptable reasons for a unit to be precluded from being dispatched to Minimum Stable Generation (MSG) in a supply surplus event. The existing MSG satisfactorily and separately addresses real physical limitations and there is no physical reason for the MOL of a wind turbine to be set to any value greater than zero. For these reasons EPCOR is not in favour of the proposal to establish an MOL or to change the definition of inflexible block.

EPCOR supports the AESO's recommendation to provide the market with an indication of supply surplus events prior to real time in order to encourage market responses to the fundamentals.

9. SUPPLY SURPLUS – protocol

The Supply Surplus work group also developed the following protocol respecting OPP 103:

☐ Support
✔ Oppose
☐ Indifferent

Step 1: Curtail opportunity services including import transactions.

Step 2: Take the following actions, taking into account the transmission system operating and reliability constraints and an objective of rotating the curtailments amongst market participants where possible:

a. Curtail flexible $0 blocks, by pro-rata assignment,

b. Where wind generation is required to be curtailed pursuant to (a), assign the curtailment amongst each individual wind power facility using the wind power management protocol,

c. Curtail inflexible $0 blocks to the asset's MOL.

Step 3: Curtail an asset to 0 MW (go off line), considering the asset's minimum off time.

Reasons for Stakeholder Position:

EPCOR opposes the inclusion of Supply Surplus management in the stakeholder consultation on wind integration. See comments above.

10. Technical Requirements and Standards

- [x] Support
- [ ] Oppose
- [ ] Indifferent

Given the expected difficulty and expense in modifying and/or retrofitting some existing wind power facilities, the WPFTR (s 1.2 g) provided an exemption from the 2004 requirements for any facilities that interconnected under the technical requirements that were in effect prior to November 15, 2004 but specified that these facilities would be required to comply with the WPFTR if the facilities underwent a refurbishment or major upgrade.

The AESO considers that this approach is reasonable and prudent but expects that the issue of applicability should be discussed in the rules and standards development and consultation phase. This will include a discussion of the potential grandfathering of certain wind facilities based on the terms and conditions of interconnection agreements and other relevant information.

Reasons for Stakeholder Position:

EPCOR is generally supportive of the recommendation that onerous interconnection requirements and costs should not be retroactively imposed on existing generators of any fuel source. However, EPCOR would like more information regarding the percentage of facilities that will not be compliant with the most recent technical requirements. It is important the costs associated with more stringent technical requirements are not outweighed by the costs to system reliability.

11. ADDITIONAL COMMENTS

Reasons for Stakeholder Position:

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Please return this form with your comments by April 3, 2009 to:

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