Implementation of MOF Recommendation Paper
Stakeholder Comment Form

Comments From: Greengate Power Corporation **(Without Prejudice)**
Date: April 16th, 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:

As a reliability tool for the safe and reliable operation of the power system, it is appropriate for AESO to implement a centralized forecast. It is necessary however that AESO ensure that costs are reasonable for the parties that must bear them. Should wind facility owners bear the cost of forecasting, it must not be punitive in the event that significant incremental wind capacity is delayed in coming online, i.e., a front-end load cost. An approach would be to base any per MW costs borne by developers on the anticipated full wind power build-out capacity that triggers the need for a forecast, with the differential cost between generation that does not require forecast and that amount that triggers the need for a forecast carried by AESO. This would prevent wind facility owners from being penalized for delays in the completion of wind projects resulting from market conditions, physical interconnection limitations, or other impediments.

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:

It is important that AESO be diligent in selecting forecasting tools aimed at assisting operator in managing variability, as well as, MW ramps while not unduly penalizing wind owners with unnecessary curtailment. For example, accuracy in predicting ramps is an important attribute for all parties. Some transparency, but not necessarily direct industry participation, is needed for facility owners and developers to determine if the AESO is making the proper selection on their behalf. After all, the forecast is an AESO tool to manage the safe and reliable system operation. Arriving at the selection criteria for the RFP that closely aligns with the needs of the AESO as well as owners and developers is imperative. Forecasting must reduce facility (preferably eliminate) curtailment (aside from that resulting from oversupply) and the selection criteria must maintain this focus. While it is somewhat unlikely that significant wind capacity will come online over the near-term, it is important that the AESO become familiar with the

forecasting tools to be procured and therefore commencing immediately to procure forecasting software is likely prudent.

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.

☐ Support
☐ Oppose
✔ Cautious

Reasons for Stakeholder Position:

It is of paramount importance for the AESO to regard the rules, procedures and standards somewhat flexible throughout their implementation as the affect that some rules may have on project viability. Consideration needs to be given for rules that are detailed and prescriptive enough to ensure proper compatibility of the systems implemented, but not so stringent that particular manufacturers may gain an advantage over others.

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.

☐ Support
☐ Oppose
√ Indifferent

Reasons for Stakeholder Position:

This appears to segregate the forecasting tool into (a) telemetry, (b) forecasting tool and (c) data warehouse. If this is so, then an inherent fourth step is added (d) coordination and integration of the various components. It appears reasonable that AESO consider a one stop shop and draws benefit of simply “using” a tool, and not get involved in the minutia of data management—in short AESO should stick to managing the safe and reliable operation of the power system.

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.

√ Support
☐ Oppose
☐ Indifferent

Reasons for Stakeholder Position:

It is important that the AESO adjust its approach to forecasting in order to improve accuracy with the overarching aim of minimizing wind facility curtailment.

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
√ Strongly Oppose
☐ Indifferent

Reasons for Stakeholder Position:

The AESO must not forget that the purpose of an accurate wind forecast is to develop a tool or a means for system operators to gain an upper hand on the perceive uncertainty of wind generated power. It is not appropriate for wind proponents to fund forecasting for the benefit of other generation stakeholders even if it is shared in aggregate. The forecasting should be strictly for the AESO's use for the management of wind power variability and ramping within the system.

Sharing wind forecasting details with industry participants could too easily be manipulated to "game the system", resulting in an overall higher SMP.

Providing information on forecast accuracy is appropriate as it enables stakeholders to assess the benefits of forecasting. It appears prudent that only real time information is made available on the Current Supply and Demand, i.e. provide (a) accepted forecast for the current interval, (b) actual MW for the current interval, (c) the interval error.

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.

√ Support
☐ Oppose
☐ Indifferent

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:

There appears to be one category missing, i.e., geographical (area specific) curtailment for localized extreme and violent weather events. In short, it is unreasonable to penalize wind farms that have no participation in a weather pattern causing an adverse effect on the power system.

For system wide weather events, a pro rata approach to curtailment helps to ensure that all assets are held equal from the standpoint of investment. No one project may gain a specific advantage through curtailment if it is applied pro rata. It should be intended that curtailment not affect investment decisions beyond the aggregate effect it has on the potential revenue achieved by an asset class.

With regard to protocols intended to minimize curtailment or distribute the burden most fairly, we support these measures.

A significant concern exists with regard to environmental attributes derived by renewable projects. If wind projects are curtailed when they could otherwise be producing green tags or environmental offsets are foregone. This is an issue only with renewable and could present significant contractual issues or detract significantly from the value of wind assets. Even though the SMP may be approaching $0, wind may still achieve significant revenue from the proceeds of environmental attributes. The value of foregone environmental attributes needs to be taken into consideration when developing curtailment protocols. This issue is obviously more severe as the frequency of curtailment increases.

With reference to the refresh rate and the threshold of the curtailment order that AESO proposes, it could be considered a starting point. It should be understood that this is only a starting point and that is subject to joint wind industry and AESO review to ensure that punitive consequences on the wind farms economics are eliminated.

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.

√ Support
☐ Oppose
☐ Indifferent

(1) Include wind power facilities and co-generation facilities in OPP 103 procedures with co-generation to be subject to Minimum Operating 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.

[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.

(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, except for a $0 offer block it may be dispatched to the asset's MOL.

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.

Reasons for Stakeholder Position:

The procedure set out seems appropriate since it aims to curtail on a fair basis while giving consideration to specific physical limitations. As discussed previously, it is important that the AESO share either definitive information on when this situation is likely, similar to the aggregate wind forecast, or more generic information on the conditions that are likely to lead to oversupply, such as spring run-off/freshette. In providing information to participants, it is possible that some oversupply situations may be avoided. The information on when oversupply is more likely to occur can assist developers in educating prospective investors on the range of possible and probable revenue outcomes.

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:

The order of operations set out seems appropriate. However, AESO needs to keep in mind that while wind power facility could be a $0 block, it still attracts revenue through its green attributes.

10. Technical Requirements and Standards

☐ 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:

It may be necessary to grandfather certain existing assets due to retrofit costs. Those facilities must however still comply (although likely manually) with protocols discussed. In other words, granting an exemption from complying with the specifics of the WPFTR itself is not offensive, whereas exempting any existing facilities from curtailment requirements is not acceptable.

11. ADDITIONAL COMMENTS

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

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