



**Implementation of MOF Recommendation Paper
Stakeholder Comment Form**

Comments From: ENMAX
 Date: April 2009
 Contact: Randy Stubbings
 Phone: 403 514 3054
 E-mail: rstubbings@enmax.com

1. WIND POWER FORECASTING – Centralized Forecasting Model	
The AESO recommends that a centralized forecasting model be implemented in Alberta.	<input type="checkbox"/> Support <input checked="" type="checkbox"/> Oppose <input type="checkbox"/> Indifferent
<u>Reasons for Stakeholder Position:</u>	
<p>ENMAX would have no objection to the use of centralized forecasting models if they facilitated the integration of wind generation in a market-based, economically responsible manner. However, based on the results of the AESO’s forecasting pilot project, it is not clear that centralized forecasts will be any more accurate than the collective wisdom of market participants, or that they will be of sufficient accuracy to materially benefit power system operations. It is therefore not clear why the AESO believes spending more money on forecasting will provide value.</p> <p>ENMAX is also concerned that, when the AESO takes full responsibility for something, market participants may perceive that they are absolved of that responsibility; the result may be more central planning and less market response. In this particular case, wind generators may collectively feel less responsibility to examine other methods of integrating their facilities through mechanisms such as energy storage or wind-following contracts.</p>	
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.	<input type="checkbox"/> Support <input checked="" type="checkbox"/> Oppose <input type="checkbox"/> Indifferent
<u>Reasons for Stakeholder Position:</u>	
<p>ENMAX opposes an immediate RFP for two reasons. First, as a large wind generator, ENMAX expects that it will be asked to fund a substantial portion of the RFP cost if the AESO’s proposed funding arrangements are approved. The cost of the forecasting system is not yet well-defined, and ENMAX is concerned about being required to make an open-ended funding commitment. Also, the funding request is being made outside a budget cycle. (This issue would be mitigated to some extent if the RFP funding were to come from a broader range of market participants, which seems appropriate since all will benefit if the project is successful.) Second, and more importantly, ENMAX believes there are more critical issues to address than forecasting how much wind generation there will be in the next two hours. Of particular importance is that the integration of large amounts of wind generation under the existing market structure could result in a significant number of zero (or negative) price hours and intense debates about which generators—based-load coal units that are expensive to stop and start, cogen facilities that are must-run for industrial heat, wind units that only generate revenue when</p>	



**Implementation of MOF Recommendation Paper
Stakeholder Comment Form**

the wind blows, etc.—will be forced off the system when the wind blows. The implications of zero (or negative) prices over the long term on wind investment, investment in other generation, and system reliability are potentially drastic, and there is little point spending a lot of time and effort to forecast wind if the market structure and/or rules suppress its development.

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
- Indifferent

Reasons for Stakeholder Position:

As stated above, ENMAX believes there are more critical issues to deal with right now than forecasting. Having said that, there is value in not losing data. ENMAX notes that further discussions are required around which data should become publicly available, and around the alignment of costs and benefits (i.e., one subset of industry stakeholders should not be required to fund data collection that benefits other subsets).

Providing facility-specific wind and turbine data to the AESO, beyond the data specified in the Wind Power Facility Technical Requirements, may require infrastructure modifications. Costs associated with modifications required to provide shared data should not solely fall on the wind power facility owners.

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:

While data management is clearly an important task if data is to be collected, it may be that the forecaster(s) should be responsible for it.

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



**Implementation of MOF Recommendation Paper
Stakeholder Comment Form**

Reasons for Stakeholder Position:

To the extent the AESO uses forecasts to manage operations, it should monitor forecast accuracy for its own purposes. However, monitoring accuracy for the purpose of improving forecasts is a task best undertaken by the forecasters, while monitoring accuracy for the purpose of managing one's commercial operations is a task best undertaken by participants. There is no need for the AESO to develop measures of forecasting accuracy on behalf of participants.

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
- Oppose
- Indifferent

Reasons for Stakeholder Position:

ENMAX supports aggregate wind megawatt forecasts being made available to market participants, and notes that those who benefit from such forecasts should pay for them.

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:

ENMAX strongly opposes non-market-based solutions unless there is no other option. Much more consultation is required on this point from both an operational perspective and an effect-on-the-market perspective.

8. WIND POWER MANAGEMENT - Supply Surplus	
<p>The AESO solicits input from all stakeholders on the proposed supply surplus protocol and proposed modifications to OPP 103 provided below.</p> <p>(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</p> <p>(2) Establish a Minimum Operating Level (MOL) for each asset and, where possible, assets should not be dispatched below their MOL.</p> <p>(3) Refine MOL definition to include new constraints not included in Minimum Stable Generation¹ (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).</p> <p>(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.</p> <p>(5) Revise the current "inflexible block" definition. The definition of "inflexible block" will need to be amended as follows:</p> <p>"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></p> <p>Definition of "flexible block" does not require any changes since it accommodates the proposed \$0 SMP management protocol.</p> <p>(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.</p> <p><u>Reasons for Stakeholder Position:</u></p> <p>ENMAX strongly opposes non-market-based solutions unless there is no other option. Much more consultation is required on this point from both an operational perspective and an effect-on-the-market perspective.</p>	<p><input type="checkbox"/> Support <input checked="" type="checkbox"/> Oppose <input type="checkbox"/> Indifferent</p>

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.

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:

ENMAX strongly opposes non-market-based solutions unless there is no other option. Much more consultation is required on this point from both an operational perspective and an effect-on-the-market perspective. ENMAX notes that the implications of OPP 103 extend to all market participants, not just wind generators, so a much broader discussion process is necessary.



**Implementation of MOF Recommendation Paper
Stakeholder Comment Form**

10. Technical Requirements and Standards

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.

- Support
- Oppose
- Indifferent

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 is appropriate that existing interconnection agreements be respected.

11. ADDITIONAL COMMENTS

The AESO's wind forecasting pilot project demonstrated that individual forecasts could differ from one another, and from actuals, by hundreds of megawatts (i.e., by a substantial fraction of the total installed wind capacity). The pilot project also demonstrated that the timing of significant ramps could be missed by many hours, and that persistence forecasts were essentially as good as model forecasts over short time horizons. To ENMAX's knowledge, there has been no assessment of what accuracy level would be needed to successfully incorporate wind forecasts into grid operations, whether that accuracy level is achievable (after all, even after a great many years, forecasting the weather in Alberta continues to be a significant challenge), or whether spending additional money will yield forecasts much better than persistence forecasts over operational time horizons. Therefore, while it may be appropriate to continue with pilot studies to attempt to improve the accuracy of the forecasting models, it is premature to attempt to incorporate those models into an operational framework. This is particularly so given that the existing energy-only market design is unlikely to support the AESO's frequently-mentioned 11,500 MW of wind generation in the interconnection queue.



Implementation of MOF Recommendation Paper Stakeholder Comment Form

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

Allison Mathews @
403-539-2730
allison.mathews@aeso.ca