



April 20, 2006

To Stakeholders:

**Re: Wind Integration Study and Reliability Threshold**

In recent years, considerable wind generation has been added to the Alberta Interconnected Electric System (AIES), providing needed electricity as well as environmental benefits to Albertans. Currently there is about 300 MW of wind generation on the AIES, with much more under development. Given the success of the wind generation industry in advancing both the technology and wind projects, the Alberta Electric System Operator (AESO) has been working with wind generation developers and stakeholders to address integration issues related to wind power. System operators in a number of jurisdictions are also addressing these issues and the AESO is actively participating in these discussions.

One of the unique features of wind generation is that it is variable in nature, and wind patterns cannot as yet be predicted with significant precision. This, combined with the fact that electricity cannot be effectively stored and must be produced when needed, means that other generating resources or interties with neighboring jurisdictions must accommodate the variations in wind generation as they occur.

With the current size and capability of the AIES, accommodation of the existing 300 MW of wind generation is not a concern. However, given the potential for wind power development in Alberta, the AESO initiated a study to determine at what MW level wind power might pose technical and reliability concerns for the AIES.

With stakeholder support and participation, the AESO completed phase one of this study in November 2005, and the results were released to stakeholders. The analysis indicates that above about 900 MW, the variable nature of wind power begins to pose control problems which could impact the reliability of the AIES and lead to violations of reliability and operating standards. It is currently estimated that the total amount of wind power on the AIES will approach the 900 MW threshold by late next year.

The AESO has recently completed [phase two of the variability study](#). This part of the study explores how the reliability impacts of wind power above the 900 MW level might be mitigated. The mitigation strategies explored include increasing regulating reserves, improving forecasting techniques and curtailment of wind power resources.

These are not the only possible mitigation strategies, and more work needs to be done in this area. However, the important conclusion resulting from this study is that the scope, scale and potential cost of necessary mitigating measures appear to escalate rapidly when more than 900 MW of wind generation operates on the AIES.

Therefore, the AESO will not be able to connect more than 900 MW of wind powered generation to the AIES until appropriate mitigation measures are established that ensure that addition of more than this amount of wind power does not jeopardize system reliability.

The increased mitigation measures will come at some cost, and therefore the allocation of these increased costs must also be determined.

The AESO recognizes this issue is very important, both to developers, and to the successful development of renewable resources in Alberta. The timely completion of this work and the determination of an appropriate outcome are necessary to provide certainty to all stakeholders, to ensure a level playing field in the competitive electricity market, and continued reliable operation of the AIES.

To this end, the AESO is committed to working with stakeholders and wind power developers to assess the feasibility of measures which may allow the interconnection of wind power beyond the current 900 MW threshold. As noted above, this assessment must consider operational feasibility, and the specification and allocation of any associated costs and related cost recovery mechanisms.

We invite all interested stakeholders to attend a stakeholder meeting on Monday May 1 to discuss the phase two wind study and to commence consultations to develop and evaluate appropriate measures to reliably accommodate wind power on the AIES. To RSVP for the workshop please email Stakeholder Relations at [stakeholder.relations@aeso.ca](mailto:stakeholder.relations@aeso.ca).

If you are a wind power developer with a project currently in development, an AESO project manager will contact you. If you have questions about the phase two study, please contact John Kehler at (403) 539-2622 ([john.kehler@aeso.ca](mailto:john.kehler@aeso.ca)) or Darren McCrank at (403) 539-2623 ([darren.mccrank@aeso.ca](mailto:darren.mccrank@aeso.ca)).

Yours truly,

*Original signed by*

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