August 11, 2005

To Stakeholders:

Re: Alberta Wind Power Variability Study

The following is an update of the stakeholder consultation process and schedule for the Wind Variability Study and System Impact Report which was presented at the AESO's June 21, 2005 Stakeholder Conference.

By way of background, in November 2004, the AESO issued the Wind Power Facility Technical Requirements (WPFTR). The technical requirements were developed to address the differing characteristics between wind generation and that of traditional generation, and to establish the technical rules, requirements and performance that a wind power facility must comply with in relation to their connection to and operation on the Alberta Interconnected Electric System (AIES). During the development of those requirements, stakeholders and the AESO identified the need to better understand the variability of wind power in Alberta, and how and if we need to address its effects on the operation of the AIES as the potential total wind capacity increases throughout the province geographically.

Variability is the result of the uncontrolled behaviour of the power source, in this case, wind. As the wind changes speed and direction, so to does the output of a wind turbine. An increased understanding of the effect of this variability to the AIES, encouraged by the wind power developers of Alberta, will better facilitate the future interconnection of wind power facilities to the AIES.

The AESO engaged an independent consultant to conduct a study of the wind power variations over one-minute and 10-minute intervals. This was done for Alberta's existing installed wind generation capacity of 254 megawatts (MW), and for potential future development scenarios of about 850, 1,400, and 2,000 MW of installed wind generation capacity, at locations dispersed across southern Alberta. The purpose of the study was to provide an assessment of the potential short-term variability the AIES will be exposed to in the future.

The Wind Variability Study provides a detailed description of the modeling and validation techniques used to simulate a wind power output data series covering an entire year. These techniques were developed in consultation with wind power developers who provided the wind speed data from existing and potential future wind generating facilities. Using this data, the report provides a statistical analysis of the short-term variability under future development scenarios.

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One finding from the study is that variability does not increase in proportion to the growth in wind power, as had been estimated in earlier studies. Another finding is that as wind capacity increases, the relative variability (% of total capacity) decreases which demonstrates the effects of geographical dispersion of wind facilities. However, the absolute variability (MW) does increase as wind capacity increases. For us, this finding underlies the importance of the next study to help us understand the overall impact to the AIES.

That said, the Wind Variability Study is the first step in determining the impact of increased wind generation on the continuing reliable operation of the AIES. Our next step is to use the wind power data from the variability study in an AIES system impact study to determine the effects of consecutive periods of wind power variability on the operation of the AIES. The AESO anticipates the results of the system impact study will be complete in the fall of 2005.

We know this next step is important to the wind developers, and we will do our best to complete it quickly. The AESO will be posting the results of the study to our website and initiating consultation with impacted stakeholders where appropriate. Please contact Darren McCrank by e-mail at darren.mccrank@aeso.ca, (403) 539-2623, or John Kehler by e-mail at john.kehler@aeso.ca, (403) 539-2622, for details about the Wind Variability Study.

Yours truly,

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