

AESO Recommendation Paper – Short-Term Wind Integration
Stakeholder Comment Matrix
NaturEner Canada Inc. (“NaturEner”)

Section	Subsection	Stakeholder Response
4.0 Policy Coherence	<p><u>Wind Integration Principles</u></p> <ol style="list-style-type: none"> 1. Any potential suite of wind integration tools must ensure the safe and reliable operation of the system. 2. Market solutions are preferable to administrative solutions. 3. The energy market merit order is primarily a tool for balancing energy requirements on the system. 4. All generation should be treated fairly while recognizing their unique characteristics. 5. Ancillary services are a tool to protect the system from events that cannot be reasonably controlled. 	NaturEner agrees with the listed principles and has previously provided comments in this regard in response to the Discussion Paper on Short Term Wind Integration.

<p>5.0 Analysis</p>	<p>5.1 Source of ACE Events</p> <ul style="list-style-type: none"> The AESO provided further clarification relative to the discussion paper that wind generation was a contributing factor in about 90% of ACE events. 	<p>NaturEner agrees with the general statement of the contribution of wind schedule error to ACE events, but believes that 90% seems high. The AESO should provide more information as NaturEner knows out of experience that part of the issue is to identify the load error and to look at wind as a load reducer rather than an additional generator.</p>
	<p>5.2 WPM and Regulating Reserve Comparison</p> <ul style="list-style-type: none"> The tradeoff between WPM and regulating reserve illustrates that WPM is about 5 to 10 times more efficient in resolving over generation situations. 	<p>WPM can only be a short term solution. In the mid and long term the AESO should honour the stated principle: “market solutions are to be preferred ...” WPM should only be used as a last resort and market solutions comparable to the Dispatch Down Service (“DDS”) should be implemented in ramp up situations, in which the generation exceeds the load.</p>
<p>6.0 Recommendations</p>	<p>6.1 Energy Market Merit Order</p> <ul style="list-style-type: none"> The AESO recommends that the EMMO continue to be used as the primary tool to balance supply and demand in the market The AESO recommends that EMMO dispatches to accommodate wind power should not include dispatches solely intended to achieve a higher system ramp rate. The AESO recommends that a tool be developed that calculates the real-time ramping capability of the system under the assumption that dispatches are made for energy requirements. 	<p>NaturEner agrees that the EMMO should continued to be used as the primary balancing tool. Please refer to the comments NaturEner provided to the Wind Integration Discussion Paper in this regard.</p> <p>NaturEner supports the development of a tool to calculate the real-time ramping capability of the system.</p>
	<p>6.2.1 Regulating Reserve</p> <ul style="list-style-type: none"> The AESO recommends that regulating reserves should not be purchased or activated from standby to accommodate wind ramping up. 	<p>NaturEner believes that WPM should only be used as a last resort. A “Wind DDS” should be established, as a market based solution to deal with the technical limits of the system in ramp up events. NaturEner agrees that a ramp up event is a controllable event and therefore should</p>

	<ul style="list-style-type: none"> • Analysis indicated that regulating reserve was not as efficient at mitigating wind ramp up events relative to WPM.. • Wind ramping up is a controllable event, which suggests that it should not be managed with ancillary services paid for by load. 	<p>not be dealt with ancillary services, unless the NWPP proposes a different solution.</p>
	<p>6.2.2 Contingency Reserves</p> <ul style="list-style-type: none"> • The AESO recommends that the loss of wind energy due to a decrease in wind speed should be treated as a generation contingency. As such, contingency reserves should be used to replace this energy. • The AESO recommends that existing standby reserves (spinning and supplemental) be activated when there is a risk required ramp rate will exceed the available ramp due to a wind ramp down event. These standby activations will result in Alberta carrying more than the minimum level of contingency reserves in some hours. • The AESO recommends that if the North West Power Pool allows contingency reserve to replace the unexpected loss of wind generation due to a reduction in wind speed, this practice should be followed in Alberta. 	<p>NaturEner agrees that the loss of wind should be treated as the loss of fuel source, and Contingency Reserves are the appropriate means to handle ramp down events. It also seems very advisable to follow the practices and efforts of the NWPP to most efficiently integrate wind generation in the operation of the wider grid in WECC. The practices of the NWPP should be followed and implemented by the AESO.</p> <p>NaturEner would like to suggest that the AESO start supporting the use of reserves as currently the AESO is one of the two BA's voting against this use of reserves. Tariff issues are cited by the AESO as a reason for the concern. NaturEner would like to understand which specific tariff issues the AESO is referring to with the purpose to address these in this process.</p>
	<p>6.3 Wind Power Management</p> <ul style="list-style-type: none"> • The AESO recommends that wind generation ramping up be treated as a controllable event. WPM is the most efficient means currently available to manage wind ramp up events, and wind generators should bear the cost of managing the controllable elements of their 	<p>The AESO has not discussed in this paper other ways in which wind generators could “bear the cost” of managing ramping events. NaturEner recommends that the AESO pursue a market based solution should to handle ramping up events, in parallel with WPM. AESO should establish a day ahead, market based, “Dispatch down” service, similar to the existing DDS. Suggested mechanics:</p>

	<p>operations, just as all other generation types must.</p> <ul style="list-style-type: none"> • The AESO recommends that WPM be used to control the increase in wind energy only when the rate of wind energy increase exceeds the ability of the EMMO to accommodate it and the system is at risk of an over generation condition. • WPM will not be used when wind generation has not contributed to an over generation condition, nor will it be used when wind generation is ramping more rapidly than the calculated limit but there is no risk of an over generation condition. 	<ul style="list-style-type: none"> - Generators would offer into the pool to “dispatch down” their unit in a ramping event for the following day. - Wind generation would offer to pay a premium to stay online, which is a comparable to the cost incurred by WPM. - Neither party sees the prices. - Generators would receive hourly pool price + premium. - This market based solution provides the choice to the wind generator of paying a fee to stay online instead of being curtailed through WPM. <p>This framework needs to be developed in order to provide options to wind generators. Incentive mechanisms currently available in Alberta (such as carbon offset) and any future incentive programs may, create an economic situation where it is desirable for a wind generator to remain in operation and pay a fee, rather than being curtailed. The AESO should encourage this market solution.</p> <p>Accordingly, NaturEner believes that the AESO should only use WPM as a last resort if the wind event exceeds the “dispatch down” service that the AESO was able to sell.</p> <p>The recommendation paper proposes a pro rating approach across wind facilities in a ramping event without clarifying the basis for the pro rating calculation (scheduled energy, scheduling accuracy, nameplate capacity, etc.).</p> <p>NaturEner believes that the WPM should be prorated based upon the schedule error of each generator unit.</p>
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	<p>6.4 Wind Power Forecast</p> <ul style="list-style-type: none"> • The AESO recommends that the wind power forecast be integrated into the wind integration portfolio in order to increase the effectiveness of all tools. • Since wind generators currently do not offer firm energy offers due to the intermittent nature of their ‘fuel’, a wind power forecast requirement has been identified as a reasonable alternative that provides information to both the system controller and the market on the expected operation and participation of wind aggregated generating facilities. 	<p>It is not clear whether the AESO is expecting forecasting data from the individual wind farm sites in addition to the AESO forecasting and, if so, at which intervals.</p> <p>NaturEner supports the integration of the wind power forecast into the wind integration portfolio.</p>
<p>7.0 Next Steps</p>	<p>7.0 Next Steps</p> <p>The next steps in the wind integration program include:</p> <ul style="list-style-type: none"> • Receive stakeholder feedback on the phase one implementation plan. • Continue to integrate the wind power forecast into AESO systems. • Continue development of the tool to calculate and disseminate the system wind power limit. • Implement practices and any necessary new ISO rules or rules changes to use WPM and incremental ancillary services in a transparent 	<p>Please identify more firm timelines on the steps.</p> <p>NaturEner agrees with the order of the steps.</p>

	<p>manner.</p> <ul style="list-style-type: none"> • Release of Phase 2 discussion paper that examines incremental tools and market features for integrating wind on the system. • Monitor and analyze the frequency of use and effectiveness of phase 1 tools. 	
<p>8.0 Appendix</p>	<p>8.2.1 System Wind Power Limit The system wind power limit for the next interval is calculated as the greater of:</p> <p><u>A</u></p> <ul style="list-style-type: none"> • Current wind production; plus • 6.5 MW per minute increase <p><u>Or B</u></p> <ul style="list-style-type: none"> • Current wind production; plus • Expected increase (decrease) in load in the next interval; plus • EMMO ramp rate down capability; plus • Interchange Net Schedule Change (more exports or lower imports are positive, more imports or lower exports are negative) 	<p>No comment</p>
	<p>8.2.2 Pro Rata Distribution of the SWPL</p> <ul style="list-style-type: none"> • Each wind aggregated generating facility subject to the WPM protocol will receive a pro rata share of the overall system wind power limit. • The ‘potential MW’ data element required by the proposed ISO Rule 502.1 will be utilized in the pro rata calculation in lieu of actual production in situations where a facility has been limited 	<p>Again NaturEner strongly believes that the pro rata allocation should take the scheduling error history, and with that the quality of wind forecasting info, into consideration.</p>

	and the data is available.	
	<p>8.2.3 Impact of Transmission Constraints</p> <ul style="list-style-type: none"> • A wind aggregated generating facility that has had its production limited by a Remedial Action Scheme (RAS) or the Transmission Constraints Management (TCM) protocol is not exempt from WPM due to system ramp rate considerations. 	<p>The AESO should provide more detail on the specific mechanics of this suggestion, especially since the TCM rule as well as the RAS rule have not yet been implemented (nor do they seem to have general industry agreement). It is difficult to comment on statements, which are based on rules still in a consultation process.</p>
	<p>8.2.4 Supply Surplus Considerations</p> <ul style="list-style-type: none"> • Supply surplus rules will operate independently of WPM. A facility limited by the WPM protocol is not exempt from the supply surplus protocol. Similarly, a facility that has had its output limited via the supply surplus protocol is not exempt from WPM. 	<p>No comment.</p>