AESO Discussion Paper – Short-Term Wind Integration
Stakeholder Comment Matrix - Response of the Office of the Utilities Consumer Advocate

Section	Subsection	Stakeholder Response
4.0 Policy Coherence	**<u>Wind Integration Principles</u>** 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. The draft principles are intended to outline a preliminary view on the interpretation of FEOC as it relates to the interaction between wind generation, the energy market and ancillary services. This relationship must be explored in order to develop a long-term wind integration plan that is grounded in policy and consistent with the current market design.	All of the principles as general statements are reasonable, but aside from (1), judgment must be applied in their application and should not be considered absolutes regardless of cost or consequence. The UCA considers that the discussion paper provides an excellent description of the challenges of successfully integrating larger amounts of wind generation, and potential operating solutions to address those challenges. The analysis of costs and consequences is not necessarily complete, however, in particular with regard to the issue of "over-dispatching" the EMMO. (Also, it is assumed that the reference to ancillary services in (5) refers specifically to operating reserves, not the "other ancillary services" that the AESO acquires.)

6.0 Short-Term Integration Tools	**6.1 Energy Market Merit Order** Stakeholder feedback on using the EMMO to integrate wind generation is requested with the following key points: • At what point is over-dispatching the merit order for ramp rate unacceptable from a FEOC perspective? • If the need to over-dispatch EMMO can be anticipated prior to real-time, should tools such as incremental ancillary services and/or WPM be used in place of over dispatching EMMO? • In the long-term, should new ancillary services be developed that will reduce the instances of over dispatching EMMO for ramp rate both for wind and for other reasons?	1. There does not appear to be sufficient data presented to make a determination of how much over-dispatching is "too much". This analysis appears necessary for trade-offs against additional ancillary services. 2. Regarding additional ancillary services please refer to (1). Regarding WPM, the UCA understands that WPM would only be effective under certain circumstances, but in those circumstances, should be considered. 3. New services should be explored. However, their cost effectiveness should be considered before proceeding with implementation.
	6.2 Operating Reserve **<u>Regulating Reserve</u>** • Is it appropriate and FEOC to procure RR day-ahead when the wind forecast suggests they will be required to mitigate wind volatility? • How should the volume, if any, of incremental active regulating reserve be determined? o Based on the volume required to accommodate forecast wind energy? o Based on a tradeoff between the cost of incremental reserve and the value of lost wind production? o Based on the volume required to	The UCA understands from previous discussions and references to the June 2009 MOF paper that as a matter of Alberta policy and regulation the reliance on WPM is restricted to un-forecast events. This implies that the system is then expected to absorb forecast events. Please refer to comments on Section 6.3.

	reliably integrate wind without planning to rely on tools such as over dispatching the EMMO? • Should standby RR be activated in near-real time to manage the system over and above current RR levels? o Activating standby reserve would need to be done prior to an actual problem because moving reserve from standby to active make a situation worse as the unit activated alters its generation to provide the service. o Is it appropriate and FEOC to activate standby RR near real-time (T-2 or even T-30min) when the near real time wind forecast and system conditions suggest they will be required to mitigate wind volatility? • In the long-term, should regulating reserve be split into a load following product and an AGC product?	
	6.2 Operating Reserve **<u>Contingency Reserve</u>** • Should the AESO use mandatory active contingency reserve to manage unexpected decreases in wind generation if allowed by NWPP? • Should the AESO carry incremental active	The system reliability aspect of this alternative needs to be considered recognizing the relative frequency of unexpected wind ramping events. Relying on those reserves for wind generation decreases may limit the availability of the contingency reserves when needed for the more traditional requirement regarding unplanned unit outages and compromise system reliability.

	contingency reserve to insure against decreases in wind generation?
	  o This reserve could be tailored for specific hours when wind is forecast to ramp down and load forecast to ramp up, for example.
	  o The alternative is likely to fully dispatch EMMO for ramp rate requirements when wind energy unexpectedly declines.
	  o This is consistent with the use of contingency reserve to replace lost generation from other resources.
	• Should standby contingency reserve be activated in near-real time to manage the system, i.e. the system would carry more than the minimum active contingency reserve in some hours to manage wind variability?
	  o Reserve would need to be activated prior to an actual problem.
	  o The accuracy of the wind forecast inside T - 2 or even T - 30 minutes will determine the likelihood of activating standby reserve only when required.
	• Should unexpected decreases in wind generation be treated equivalently to other generation contingencies, i.e. the system carries sufficient contingency reserve to manage unexpected loss of generation?	

	6.3 Wind Power Management • Under what conditions is it appropriate to use WPM? o In advance of conditions that might place the system at risk? For example, if wind is at a high level and expected to ramp down concurrently with the morning load ramp up, should WPM be used proactively or should a solution such as activating standby contingency reserve be used? o When the wind ramp is not forecast? This implies the AESO purchase sufficient ancillary services to accommodate forecast ramps. o When the wind ramps up more rapidly than the EMMO can accommodate without over dispatching? This allows wind production to increase only as fast as the EMMO can ramp down and implies that incremental ancillary services will not be purchased to accommodate potential wind ramp up events. o Under supply surplus conditions? • Should the AESO establish a WPM market solution or is pro-rata appropriate? o How would a WPM market interact with the solution for supply surplus and/or congestion management?	1. Recognizing that the wind forecasting requirement takes the place of the "must offer, must comply" obligations for wind generation, WPM should be used when possible to address any condition beyond forecast conditions. The paper appears to suggest that a relatively small amount of WPM (less than 1% lost energy) would be effective in significantly reducing requirements for incremental ancillary services and the corresponding costs. If the trade-off is in fact as lop-sided as this would suggest, perhaps the previously-expressed policy position should be revisited regarding use of WPM for only un-forecast events. 2. If a WPM market solution is considered, then it would appear to need to be limited to wind generation and funded from within the wind generation community, at least initially. To do otherwise would only be acceptable if the AESO is creating a ramping service/charge outside of the structure of the EMMO, and insufficient dialogue has taken place to support that broad change. 3. A longer term product should be considered and explored.

	○ Would participation be limited to wind facilities and how would costs be allocated? • In the long-term, should the AESO develop an ancillary service that accommodates wind ramps up by reducing production from in merit generators and/or wind facilities themselves? ○ Is this an appropriate cost for load to bear since wind can manage this operational challenge through a WPM protocol?	
	6.4 Wind Power Forecast • Should the system be able to accommodate forecast wind generation? ○ Purchase sufficient reserve to accommodate forecast wind generation. ○ The alternative is to rely on more WPM and /or over dispatching EMMO. • Should the wind power forecast for individual facilities (or the aggregate wind forecast) resemble a must offer must comply obligation in the long-term? ○ If the forecast creates obligations for wind facilities, does it also create obligations for the system to absorb the forecast without using WPM?	The UCA understands from previous discussions and references to the June 2009 MOF paper that the reliance on WPM is restricted to un-forecast events. This implies that the system is then expected to absorb forecast events. If this understanding is correct, then it would be inappropriate to factor in additional margins to further minimize reliance on WPM.

	6.5 Summary of Integration Options **Short-Term Requirements** • Determine the volume, mix and procurement strategy for incremental ancillary services as wind capacity increases • Develop a process to implement WPM • Develop guidelines on the use of WPM in real time or near real time	
	6.5 Summary of Integration Options **Potential Long-Term Direction** 1. Mitigate wind power primarily through the use of centrally procured ancillary services o Minimal use of WPM o No must offer must comply obligation for wind o A ramping service would be developed 2. Mixed solution o WPM used to mitigate wind ramp up events o Reserve to mitigate wind ramp down events o A ramping service may be developed o Could entail a form of must offer must comply obligation for wind generators particularly to control ramp ups	

	3. Create similar obligations for wind generators as exist for other generators o Wind power forecast could be part of a must offer must comply obligation o Could require wind to be firm at T – 2 o Wind firming service developed either by the market or by AESO	