AESO Discussion Paper – Short-Term Wind Integration
Stakeholder Comment Matrix – **TransCanada Energy Ltd.**

Section	Subsection	Stakeholder Response
4.0 Policy Coherence	**Wind Integration Principles** 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.	The energy market merit order should be used for energy balancing only, not ramping. Ramping is an ancillary service which should be contracted for separately and not conscripted for free by "over-dispatching" generators.

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?	TransCanada does not believe there is any legislative or regulatory justification for over-dispatching generators to conscript ramping capability and that in principle it is contrary to FEOC. Incremental ancillary services should be developed and utilized rather than over-dispatching EMMO. New ancillary services to provide the fast ramping capability that the system requires (for wind events or other system and market conditions) should be developed and implemented in the short-term and not be held off for the long-term.
	6.2 Operating Reserve **Regulating Reserve** • 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 AESO should procure the appropriate level of all ancillary services (regulating reserves and otherwise) that it forecasts it will need, regardless of the driver (wind volatility, load variability, generator contingencies, transmission constraints, etc.) The AESO should not make cost tradeoffs on ancillary services. If the price of ancillary services rises, more providers will enter the market and the increased supply will, through competitive market forces, reduce the price. Conversely, if the price falls, suppliers will reduce their offerings and the price will rise. The price will settle at the appropriate level. The AESO should not be planning to rely on over-dispatching EMMO. Without further explanation of the details and how it would be

	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?	accomplished TransCanada cannot take a position on splitting regulating reserves into separate products for load following and AGC.
	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 AESO should view changes in wind generation due to changes in wind level the same as other generators operational changes which unintentionally impact their output. This includes supporting them with reserves in the same way as other generators. The AESO should carry sufficient reserves to reliably operate the system given all forecast conditions, including decreases in wind speed and thus decreased wind generation, loss of other

	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?
		generation or variances in load.
		
		Unexpected decreases in wind generation should be treated equivalent to other generation contingencies with sufficient contingency reserve to manage the system reliably.

	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?	Wind Power Management ("WPM") should be used to facilitate the inclusion of wind generation into the must offer must comply market that all generators should equally be held to. It could also be used to provide the fast ramping ancillary services the system requires. If it is necessary to utilize WPM then a market solution, with participants competing and driving efficiencies is preferable to a pro-rata allocation. In the short-term the AESO should develop and implement an ancillary service that provides the fast ramping that the system requires. This service could be provided by wind generators, other generators, interties or non-generators (storage solutions). The cost of this service would be treated the same as all rest of the ancillary services used to support the reliable operation of the system.

	○ 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 system should be able to reliably accommodate all anticipated in-merit generation, wind or otherwise. While wind generation may deviate slightly from its forecast level other forms of generation also deviate from their offered amount, due to fuel supply issues, system constraints, on-site process changes, etc. This results in dispatch variances and restatements which are established and accepted realities in the system. Wind power deviation from the forecast level should be treated in the same manner. Wind generation should be integrated into the system as similarly as possible to other forms of generation, including must offer must comply. The obligation will be similar to the obligation all generators face.

	6.5 Summary of Integration Options **<u>Short-Term Requirements</u>** • 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	TransCanada proposes that the AESO maintain status quo in the short term and instead deploy its resources on the long term solutions so that they can be brought to the market more expediently.
	6.5 Summary of Integration Options **<u>Potential Long-Term Direction</u>** 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	TransCanada would support the direction of Option 3. All generators facing similar obligations, sufficient reserves to manage system reliability including a newly developed fast ramping product, minimal use of WPM and market driven solutions for generators to provide firm power.

	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	