Vestas

SIEMENS

REpower Australia

24 July 2009

By email: escosa@escosa.sa.gov.au

And by post.

Margaret Cross
Executive Director Regulatory Development and Implementation
Essential Services Commission of SA
GPO Box 2605
Adelaide SA 5001

Dear Margaret,

Subject: License Conditions for Wind Generators – Draft Decision

This is a joint submission by REpower, Siemens, Suzlon and Vestas. We are all wind turbine manufacturers who are generally required by our clients, the Generators, to conform to the local jurisdictional requirements for connection to the national grid. We appreciate the opportunity to comment on the proposed draft license conditions for wind generators in South Australia. Our submission raises a number of issues which affect the proposed license conditions. These issues are provided in Attachment 1 below.

We are concerned that the proposal put forward by the Commission ("ESCOSA") establishes a set of mandatory requirements which in some instances are more onerous than those under the National Electricity Rules. Some of these requirements do not appear to be supported by a strong technical basis and hence it is unclear if the mandating of some of these requirements supports the progression of the National Electricity Objective (NEO).

Our submission raises the following key concerns:

- The onerous fault ride through capability should be negotiable where it can be demonstrated that the power system does not require this owing to its inherent capability;
- The reactive power requirements should be considered on a broader system approach and be negotiable on a case by case basis.

Should you wish to discuss any aspect of our submission please contact Ragu Balanathan at Suzlon Energy Australia on 03 8660 6595 in the first instance, or any of the other undersigned person/s.

Yours faithfully

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ATTACHMENT 1

General Comment

It is noted that ESCOSA has sought technical advice from the Electricity Supply Industry Planning Council (ESIPC) with respect to the proposed license conditions for wind generators. As it appears that ESIPC has based some of its advice on input from the consulting firm SKM, it would be useful if SKM's detailed input was also published as this would provide valuable background into the recommendations made by SKM. This would be particularly relevant in relation to the fault ride through capability issue.

Fault ride through capability

With reference to the proposed license condition for fault ride through, it is noted that ESCOSA issued a Statement of Clarification on 7 July 2009 stating the technical requirements under National Electricity Rules (NER) clause S5.2.5.5(b)(2) would not be required to be met. However, the requirements may be negotiated to a performance level above that stipulated in NER clause S5.2.5.5(c)(2). We welcome this change and support its inclusion in ESCOSA's final decision.

With respect to the requirements under NER clause S5.2.5.5(b)(1), there is a requirement to ride through a fault in the distribution system cleared in the longest time expected to be taken for the breaker fail protection system to clear the fault. In some instances technical studies undertaken by a South Australian Network Service Provider demonstrate that a 3 phase fault applied to the distribution system may last up to 2 to 3 seconds. Such a fault ride through requirement is a serious impediment for commercially available wind generators seeking connection to the distribution system or the transmission system in close vicinity to the distribution system. It is therefore suggested that the technical requirements under NER clause S5.2.5.5(b)(1)(iii)(A) and S5.2.5.5(b)(1)(iv)(A) should also be excluded as mandatory requirements. It is suggested that the longest protection clearing time for the fault ride through capability should be consistent with the requirements under NER Table S5.1a.2 and under circumstances no longer than 430 milliseconds.

In relation to NER clause S5.2.5.4, we fully support ESCOSA's proposal allowing Generators the opportunity to negotiate requirement S5.2.5.4 (a) (1). However we believe this should also be extended to S5.2.5.4(a)(3). The automatic access standard requires voltage ride through capability in the range 80% to 90% of normal voltage for 10 seconds. This is an onerous requirement and it may require considerable reactive plant to satisfy, which could cost substantially more than what would be required simply to ensure power system stability (i.e the system requirements at a given point for connection may actually need to be maintained at 80% for less than 10 seconds). Emphasis of wind power plants performance should be to ride through credible contingencies and maintain continuous uninterrupted operation provided the voltage is within the required specified envelope. It should not be a requirement to demonstrate compliance at the boundary of the voltage envelope if the power system is not susceptible to such a voltage recovery profile, ie. 80% of normal voltage for 10 seconds. It is therefore strongly suggested that S5.2.5.4(a)(3) is not a mandatory requirement and allows Generators to negotiate this requirement with the Network Service Provider.

Reactive power capability

The proposed license condition clarifies the use of the overload capability to satisfy the 50% dynamically variable component. It specifies the use of a two second short term overload capability. We support the use of short term overload capability to be included in the 50% dynamic requirements. However the short term overload capability should not be restricted to 2-seconds as the dynamic plant can be coordinated with other reactive plant devices to ensure a continuous available level of dynamic reactive support that will also satisfy the other required technical performance standards. It is suggested that Generators be given the scope to optimise the size of the dynamic plant by co-ordinating the dynamic plant with the switching

of shunt capacitor banks and shunt reactors. Switches are now readily available whereby shunt capacitor banks could be switched in within the order of 5-6 cycles.

The proposed license condition explains the term "dynamic variable" as, "...continuous modulation of the reactive power output over its range, with an initial response time of less than 200 msecs and a speed of response such that 95% of the steady state reactive power response is achieved within 1 second". It is not clear what "steady state reactive power response" is referred to in this instance: Does it mean 95% of the continuous rating?

These requirements seem to be derived from the UK grid code and extrapolated to more onerous conditions (in particular: higher reactive power and shorter response time) whereas it is often not suitable to have such a fast response for "weak" grid networks. Furthermore such a fast response time is over and above that required under NER clause S5.2.5.13.

It is unclear in ESCOSA's draft decision paper, what the technical basis is for requiring such a fast response time of the dynamic component of reactive support and how this supports the requirements of the South Australian grid network. It is suggested that further studies be undertaken to establish the need of such fast acting dynamic support or whether the requirements as they currently stand under the NER may be equally applied without any further implication to power system security.

The NER provides an opportunity to negotiate the installation of reactive power plant at other locations within the power system to support a generator connection. This would be a far more effective way to support the National Electricity Objective than imposing a mandatory requirement at each wind power plant. Furthermore, when processing a generator connection application, the NER allows the connecting Network Service Provider (NSP) to assess the impact of considered projects in the NEM as well as other relevant projects in relation to generation projects. Note that "other relevant projects" is not an italicised term in the NER, hence it is open to interpretation and as a result does not limit the generation projects that the connecting NSP could include in their assessment of a generator connection application. Hence it is suggested that the requirement for reactive support should be in line with the requirements under the NER with scope for negotiating the required capability with the connecting network service provider.

5-30MW wind generators

The proposed license condition states that wind generators 5-30MW will not be required to be classified as semi-scheduled under the NER, but the commission will review the status every 3 years or earlier if network issues arise.

The proposed standard poses a degree of risk for the Generator as they may be required to set up additional communications infrastructure to comply with the semi-scheduled classification in the future. As a result of this wording it would be difficult to formulate a sound business case for these projects as the potential cost burden and constraints cannot be established in the early stages owing to the potential risks imposed by this license condition. Therefore the license condition should only be aligned with the NER where wind generators 5-30MW may not be required to be classified as semi-scheduled generators.