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Margaret Cross
Executive Director Regulatory Development and Implementation
Essential Services Commission of SA
GPO Box 2605
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By email: escosa@escosa.sa.gov.au

Dear Ms Cross,

Re: Wind Generation Licensing – Draft Proposals

Pacific Hydro is pleased to have the opportunity to provide its comments to the Commission on the draft proposed changes to the Wind Generation Licensing. As the Commission has not yet received further advice from ESIPC on the content of their review of the technical standards, we urge the Commission to consider providing the industry with the opportunity to comment on any proposed technical changes recommended by the Planning Council.

Should you have any questions or seek further information on our submission please contact Kate Summers on (03) 8621 6442 or mobile 0418 514 473.

Yours sincerely



Lane Crockett
General Manager, Australia Pacific

PHL Submission on Wind Generation Licensing - Draft Proposals

20 February 2009

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Introduction

Pacific Hydro would like to thank the Commission for the opportunity to comment on the draft proposals for changes to the Wind Generation Licensing requirements in South Australia. As Australia moves towards a carbon constrained future, it is important that policies and regulations move together to achieve the overall objectives of the future needs of the country. In establishing the license principles for Wind Generation in 2005, ESCOSA anticipated some of the changes that would be necessary in the NEM and the NER for the integration of wind generation into the power system. Progress so far has been good. The primary changes called in the issues paper in the Wind Energy Technology Advisory Group have been made; the forecasting package is under way; and the technical standards and semi-scheduling rules are gazetted and there is continuing growth in support for wind generation from both within and outside of the electricity industry.¹

The best method of achieving the objectives of a low emissions power system is to support available clean technologies and transform the power system to integrate them in an efficient and effective manner. To date the power system has been characterised by a central control philosophy, based on the control of large synchronous generators. Such a control philosophy will not suit the control of clusters of smaller generators which will be needed to meet the emission reductions targets. It will be most efficient for the system with multiple generation technologies to install voltage control and reactive power close to load centres, where they are required. As South Australia prepares itself to become the renewable energy hub of Australia, consideration must be given to the most efficient methods of system control and system planning.

We note that the Commission is awaiting further technical advice from the Electricity Supply Industry Planning Council (ESIPC), and as the details of that advice is not yet available, a full and complete response to these proposals cannot be made.

¹ Appendix 1 Draft Proposal – Letter from ESIPC.

1. Central dispatch

Pacific Hydro agrees that the semi-scheduled category required under the NER for intermittent generators of a nameplate rating of 30 MW or more is operationally adequate for safety and system security. However, we have identified two areas of concern in relation to the proposed changes to the Wind Generation Licensing Requirements.

Our first concern relates to the Commission's request that ESIPC review pre-2005 Licences for the semi-scheduling requirement. Whilst this matter does not directly affect Pacific Hydro, it signals that the Commission is considering altering Licence conditions for incumbent generators. Pacific Hydro considers that this constitutes a sovereign risk for generators in South Australia and we would urge the Commission to consider the broader implications of such action before proceeding further.

Secondly, applying semi-scheduling obligations to a 5MW wind farm adds a significant cost burden to the operational control and communication infrastructure required, and effectively represents a barrier to entry for small embedded generators, this is contrary to the NEO and the MCE's initiative on distributed generation. We urge the Commission to reconsider its proposal to apply this requirement to very small generation facilities.

2. Wind forecasting

Pacific Hydro agrees with and supports the Commission's proposal to remove the wind forecasting licence condition for provision of models to NEMMCO as this is now covered by the implementation of the Australian Wind Energy Forecasting System (AWEFS). We are however concerned that the requirement to also provide models to both the Commission and ESIPC remains. This would appear to be an unnecessary additional obligation given that the participating jurisdiction would have the right to obtain the information directly from NEMMCO out of the AWEFS system.

The forecasting models that have been developed for the AWEFS are licensed to NEMMCO; they do not belong to the participant, they are 'state of the art' and therefore contain the best forecast data available. It is therefore most appropriate and efficient for the Commission and ESIPC to obtain the forecast data produced from these models directly from NEMMCO.

As stated above, the removal of wind-forecasting information obligations for semi-scheduled generators is consistent with the NEM. NEM Participants with existing wind farms of 30 MW or more have participated in the successful development of the forecasting models and we expect that all future wind farms are likely to be asked to provide an energy conversion model (ECM). The AWEFS currently includes both non-scheduled and scheduled wind farms and as such is not limited to only semi-scheduled generators. While the NER requires semi-scheduled wind farms to provide an ECM, NEMMCO may require this of all future connecting wind farms. NEMMCO is therefore the appropriate body to regulate this as a requirement of registration to any wind farm.

3. *Ancillary Services*

Pacific Hydro supports the removal of the license provisions in relation to ancillary services and metering. The current NER arrangements for cost recovery of regulation FCAS capture this as a requirement for all market generators, with all the relevant ancillary services costs being charged to market generators. We note that the Commission's requirement for all wind farms to be market and semi-scheduled, means this causer pays obligation and the additional metering requirements are imposed on all wind farms of 5 MW or more, and as such this is inconsistent with the NER.

4. *Technical Standards*

The Commission indicates in its Draft Proposal that further technical work is being undertaken by ESIPC during the review period and that ESCOSA will consider the results of such work in compiling the final Wind Generation Licensing paper. ESIPC has clearly indicated that it expects the technical requirements in South Australia to be higher because the NER has been written for all states when the penetration of wind generation in SA is reaching world leading levels. This process poses an unacceptable risk that ESIPC will unilaterally determine technical requirements and ESCOSA will approve these requirements without adequate consultation. In particular, Pacific Hydro would like to see the recommendations concerning technical requirements relating to NER sections S5.2.5.1, S5.2.5.5 and S5.2.5.13.

Accordingly, Pacific Hydro seeks reassurance from the Commission that no technical changes will be made to the current license conditions without first providing industry participants with the opportunity to comment on these proposed changes.

Pacific Hydro notes and agrees with ESIPC's recommendation that the licence conditions relevant to the technical standards be reviewed for consistency with the NER. Pacific Hydro is concerned the review may not address the excesses of requiring the automatic standard for S5.2.5.1 on all connections and may stipulate a requirement for a wind farm to meet the automatic standard in S5.2.5.13. The amount of reactive power required to meet the voltage control obligation in the automatic standard is well beyond that required in the automatic standard for S5.2.5.1, and when calculated for a 275 kV connection against the typical fault levels in SA, the MVAR required to meet 5% voltage control is approximately 250 MVAR.

The automatic standard in S5.2.5.13 requires connection point performance equivalent to that of a very large synchronous generator. Even some of the largest facilities in the network could not meet the automatic standard. It is appropriate that very large synchronous generators, which inherently have large amounts of reactive capability, provide the least cost reactive power to the network. It is neither appropriate nor efficient for this early market assumption, based on synchronous generator technologies remain as a requirement on all generator technologies. This assumption is inefficient, costly and unnecessary.

Traditionally, large synchronous generators have provided much of the centralised system's voltage control capability and reactive support. Moving towards a low emissions future will require new technologies in a smart future grid and the traditional centralised control method will need to change and adapt. Reactive capability will need to be provided through a number of decentralised methods that are efficiently and appropriately sized for local control requirements. South Australia is fast becoming the renewable energy hub for the power system, and hence the grid in South Australia needs flexibility to respond to new technologies and advance the nation's low emissions future. More efficient reactive power planning and placement of plant to meet the network load requirements is required along with innovative network planning and a willingness to align and adopt the grid control methods.

Depending on the inverter control of a turbine, some asynchronous machines are capable of producing their own reactive power (DFIG technology), however this is in no manner equivalent to that described in the automatic standard NER S5.2.5.13 (b)(4). Other types of wind generators do not have inherent reactive power capability, and therefore they must support their voltages with the addition of auxiliary plant. The provision of this plant is just as expensive as it is for other network users or NSPs to install. Requiring a generator to provide more reactive power than is required to support itself through system faults and fault recovery is asking for network services that are not cost effective and unlikely to be efficiently positioned.

ESIPC suggests one reason for increasing the reactive power compensation required from generator, is to minimise "the impact of further wind generators on the power system" and therefore "deferring the time at which voltage control might become an issue". While Pacific Hydro fully supports the concept of network planning with consideration of loads, it is vital that such consideration should be based on existing loads, not based on the possible connection of future generators. The inevitable outcome of ESIPC's network planning philosophy, which requires connecting generators to over-compensate for possible future connections, is that sites are over-designed with equipment that is not required, thereby creating a costly and inefficient network system.

The license conditions will inevitably result in inefficiencies, with systems being either under or over designed, rather than being designed according to the actual requirements of the SA network. These inefficiencies can be overcome when reactive power is delivered at the load centres, where the load occurs, and importantly, where the reactive power is required. Having supplies of reactive power located remotely at wind farms does not assist with this need, places unnecessary burdens on wind generation and has the added detriment of reducing the overall maximum amount of energy that can be produced.

Future generators wishing to connect can and will be required to ensure that the correct reactive power capabilities are installed for their own site, particularly if the assessment is made, as Pacific Hydro is recommending it be made, on an individual, site-specific basis. If the possible connections do not eventuate, then the connecting generator has not been penalised, and the reactive power capabilities installed are appropriate for the generator.

Pacific Hydro acknowledges that a generator needs to ensure that it has sufficient reactive power available to enable the voltages at a wind farm to recover appropriately in the post fault transient period. Pacific Hydro also acknowledges that asynchronous generators can contribute to the maintenance of system voltages in periods of light load by absorbing reactive power when requested to by the system operator.

The NER has made significant progress in the area of negotiated standards. The result is to ensure adequate post-fault reactive power is available at the appropriate locations. Pacific Hydro urges the Commission to alter the licence conditions to allow the negotiation of the access standards in accordance with the NER and await the outcome of the reactive power review recommended by the Reliability Panel. An appropriate method must be developed in the NEM for the co-ordinated delivery of reactive power planning and delivery needs to be developed with a particular focus on efficiency.

There have been significant improvements in the connection process, the delineation of responsibility, and understanding by all parties of the studies and checks required for the development of performance standards against network requirements.

Pacific Hydro notes that the Reliability Panel has called for a review of reactive power in the NEM, this will be a timely review and hopefully deliver guidance for the future.

Conclusion

In summary the draft report does not propose any significant change to the current license obligations. However Pacific Hydro has identified several significant concerns and recommends the following action to address these:

- The Commission and ESIPC obtain forecast data and model information from NEMMCO, as this is the most appropriate source and has up to date data;
- The Commission reconsider its intention to review pre-2005 Generation Licence requirements;
- The Commission review its position on small wind generation projects as it is evident that no small projects have connected in South Australia due to the difficulties in affording the wind generation license conditions. Small distributed generators in the low voltages networks are efficient and should be encouraged; and
- The Commission provide the industry with an opportunity to comment on the review of the technical standards that ESIPC is preparing.