



Infigen Energy Limited · ABN 39 105 051 616
Level 22 · 56 Pitt Street · Sydney NSW 2000 · Australia
T +61 2 8031 9900 · F +61 2 9247 6086 · www.infigenenergy.com

20 July 2009

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

By e-mail escosa@escosa.sa.gov.au

Dear Ms Cross,

Re: Request for Submissions - Licence Conditions For Wind Generators – Draft Decision

Thank you for the opportunity to provide a submission on ESCOSA'S Licence Conditions For Wind Generators – Draft Decision ("Draft Licence Conditions").

Infigen is Australia's largest owner of wind energy generators with over 508MW either in operation or late stage construction. Infigen is also one of the world's leading wind farm owners with a total of 41 wind farms located in Australia, Germany, France and the USA ranking us in the top 10 globally. This uniquely positions Infigen to provide comments in regard to ESCOSA'S Draft Licence Conditions for wind generators.

As ESCOSA will be aware, in South Australia Infigen has constructed, owns, manages and operates the Lake Bonney Stage 1 and 2 wind farms near Millicent, which presently form the largest wind energy generating facility in Australia.

Infigen provides the following information and comments on the Draft Decision.

General

Infigen acknowledges that in September 2005 ESCOSA introduced the Statement of Principles for Wind Generation Licensing to overcome deficiencies that ESCOSA and ESIPC considered were in the then National Electricity Rules ("Rules") in relation to wind farms and introduced a set of localised licensing requirements to overcome those perceived deficiencies. Those licensing requirements were stated to be an interim arrangement pending changes to the Rules and applied only to wind farms with more than 30 MW of installed capacity and in summary included the requirement:

- for provision of a generation production model for the wind farm;
- for provision of wind forecasting information;

- to not register as a non-scheduled generator; and
- to adopt and comply with a set of minimum access/performance technical standards for wind farms connecting in SA which were in general the automatic access standards included in the Rules at the time.

Since September 2005 there have been a number of changes to the Rules regarding the technical aspects and market registration matters specifically associated with intermittent generation (including wind energy generators) connecting to the NEM.

As a consequence of the Rules changes ESCOSA now propose to amend their Wind Farm Licensing Guidelines by:

- removing the requirement to provide a wind forecasting system (as AEMO are doing this); and
- altering the wording of their registration requirements to specify that wind farms of more than 30 MW installed capacity must register as semi-dispatched and to permit existing wind farms to re-register as semi-dispatched.

The Draft Licence Conditions propose that ESCOSA retain their technical standards pending further review. However, Infigen considers that the present Rules are sufficiently detailed in the technical areas to adequately address the concerns and issues previously raised by ESCOSA in establishing its technical requirements, in order to allow ESCOSA wind farm licensing conditions technical requirements to be removed.

Infigen considers that;

- There is inadequate technical justification or rationalisation presented by ESCOSA to justify the proposed minimum technical standards applying to wind generation; and
- If such technical standards are justifiable on the grounds of system security, quality of supply, impact on consumers, or other reasons, these technical standards should apply equally to all generating units or systems installed in South Australia regardless of the primary source of energy, be that steam, coal, wind, gas or fuel oil. Infigen considers that the net impact on the power system of the loss of 250 MW of wind energy generation at a particular location is identical to the impact that would result from the loss of a “conventional” generator with the same technical standards at that location - noting that the modular nature of wind generation would typically preclude the simultaneous tripping of all generating units and thus result in a lower impact on the power system.

The Price of Electricity

Before making specific comments about the Draft Licence Conditions, we would like to make the following observation with regards to the price of electricity.

ESCOSA stated in their 2005 Wind Generation Licensing Statement of Principles “...that any off-setting benefits (eg those associated with enhanced competition in the generation sector) are minor”.



Additionally ESCOSA stated late last year Wind Licensing Guidelines – Draft Proposals that “...the Commission could not conclude there was clear evidence that the long-term interests of consumers would be adversely affected by price impacts associated with significant amounts of additional wind generation.”

Infigen is firmly of the view that considerable market benefit has arisen to SA as a result of wind generation which would be reflected in generally reduced pool prices and increased utilisation of the SA –Victoria Interconnector for export of power from SA (meaning the pool price in SA was less than that in Victoria on more occasions). As a result, Infigen would be interested in obtaining ESCOSA’s views on the above matters now that significant wind generation has been connected to the SA power system for several years since this statement was published.

Infigen provides the following specific comments to ESCOSA on the Draft Licence Conditions.

1. ESCOSA Proposal 1

The Commission proposes to:

Subject to clause XXX and clause XXX, the licensee must hold and comply with the conditions of any registration required under the National Electricity Rules granted by AEMO (or the person responsible for the granting of such registrations under the National Electricity Law or the National Electricity Rules) at all times that such registration is required for the operations authorised by this licence.

Infigen considers that the above proposal simply mirrors the registration requirements contained within the present version of the Rules (V24) and as a consequence does not add further value or obligations to the registration area. Infigen considers that this guideline can be omitted.

2. ESCOSA Proposal 2

The Commission proposes:

WIND FORECASTING

For generators classified as semi-scheduled - delete condition from licence

Insert the following condition:

The licensee must from time to time, provide to the Commission in a manner and form determined by the Commission, details of the licensee’s financial, technical and other capacity to continue the operations authorised by this licence and such other information as the Commission may require from time to time.

Infigen supports the removal of all ESCOSA licensing conditions that are adequately addressed by the Rules such as the first part of the above proposal. Infigen appreciates the



reasoning behind ESCOSA's requirement to retain the conditions relating to the provision of information to Commission and has no objection to this proposal.

3. ESCOSA Proposal 3

The Commission proposes:

For generators classified as semi-scheduled – remove specific provisions in relation to ancillary services and metering, for wind generators classified as “semi-scheduled” from March 2009.

Infigen agrees that the present Rules adequately address this area and supports ESCOSA's proposal to remove this requirement from their Draft Licence Conditions.

4. ESCOSA Proposal 4

The Commission proposes:

FAULT RIDE-THROUGH CAPABILITY

Each electricity generating unit of the electricity generating plant operated by the licensee must comply with: NER S5.2.5.5 Generating system response to disturbances following contingency events - automatic access standard; and

NER S5.2.5.4 Generating system response to voltage disturbances – Automatic access standard except that generators may seek to negotiate compliance with clause S5.2.5.4 (a) (1) (the ability to ride through voltages in excess of 110 %) provided the Network Service provider agrees that there would be no material adverse impact on the quality of supply to other Network Users or power system security.

REACTIVE POWER CAPABILITY

The generating plant operated by the licensee must at all times be capable of continuous operation at a power factor of between 0.93 leading and 0.93 lagging at the connection point at real power outputs exceeding 5MW.

At least 50% of the reactive power required to meet the above power factors must be dynamically variable, with the balance able to be provided by non dynamic plant. For the purposes of this requirement, dynamically variable means 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. The two second short term overload capability of dynamic plant may be used to fulfil the 50% dynamically variable requirement provided compliance to the other technical requirements can be achieved with the use of that short term capability.

The reactive power capability of the generation system operated by the licensee must be controlled by a fast-acting, continuously variable, voltage control system which is able to receive a local and remote voltage set point.

The licensee must be able to operate its generating system to a set power factor that is able to be set locally or remotely if that is the preferred mode of control at any time. The power factor control mode must be capable of automatically switching to voltage control mode during power system voltage disturbances, and automatically reverting to power factor mode when the disturbance has ceased.

Infigen considers that the revised Rules now contain suitable clauses to ensure that fault ride through and reactive power capability are adequately addressed to maintain system security within the NEM and on the South Australian Power System. Consequently Infigen considers that there is no longer a need to retain the above provisions within ESCOSA's Draft Licence Conditions.

Since September 2005 the Rules have been expanded to encompass in detail various aspects of fault ride through, including generating unit response to frequency disturbances (S5.2.5.3), generating system response to voltage disturbances (S5.2.5.4), generating system response to disturbances following contingency events (S5.2.5.5), and quality of electricity generated and continuous uninterrupted operation (S5.2.5.6). In the case of S5.2.5.3 and S5.2.5.4, the Rules require that any negotiated access standard must be as close as practical to the automatic access standard.

It should also be noted that the power system impacts of failing to ride through system disturbances or produce reactive power are not limited to wind based generation. The impact is identical for the loss of "conventional" generation. Infigen does not therefore understand why wind based generation has been singled out in this case, when any such standards, if appropriate, would apply equally to all generation connecting to the system.

Infigen considers that the revised Rules are sufficiently detailed and prescriptive in terms of the automatic access standard and any proposed negotiated access standard to usurp the need to include any requirement in the ESCOSA Draft Licence Conditions and that the existing requirements in this area can be omitted.

Infigen is concerned that wind generating plants are being required to meet the automatic access standards in terms of fault ride through that many existing and future "conventional" generators would not be able to meet.

Infigen believes that the impact on the power system of the loss of say 250 MW of wind generation at a particular locations is identical to the impact that would result from the loss of a "conventional" generator with the same technical standards at that location as a result of a network fault, and consequently Infigen does not understand the rationale behind this requirement. It should also be noted that the modular nature of wind generation comprising several small capacity units would typically preclude the simultaneous tripping of all generating units and thus result in a lower impact on the power system than the equivalent loss of a single large conventional generating unit.

Infigen believes the Rules now contain sufficient provisions to address reactive power requirements and ensure system voltages are maintained at adequate levels following



connection of new generation. Rules S5.2.5.1 - Reactive power capability and S5.2.5.13 - Voltage and reactive power control deal directly with this matter.

It should also be noted that reactive power and voltage control requirements are not limited solely to wind based generation. The impact is identical for “conventional’ generation. Infigen does not therefore understand why wind based generation has been singled out in this case, when any such standards if appropriate and justifiable would apply equally to all generation connecting to the system.

Infigen also notes that the provision of reactive power on the power system is highly site specific. In some locations it is required to ensure adequate network performance and voltage quality, while in other areas it is of little or no benefit and can be omitted.

It is also well known that the transmission of reactive power over large distances is impractical and that the most effective location for reactive power compensation is at the point that it is consumed, that is at the load centres. A practical example of this aspect was the need to install several hundreds of Mvar of capacitors in the Adelaide metropolitan area to compensate for the Northern Power Station developments in the mid 1980’s, even though the two Northern generating units had reasonable reactive power generation capability.

The carte-blanche requirement for wind farms to install reactive power compensation equipment in areas where this is not beneficial at an unnecessary cost impost must therefore be questioned. Infigen considers that the revised Rules are sufficiently detailed and prescriptive to ensure adequate reactive power and voltage control is installed by all forms of generation to enable the existing requirements in this area to be omitted.

Similarly, Infigen believes that the present Rules contain sufficient technical and operational requirements to negate the need for ESCOSA to include additional technical requirement within its Draft Licence Conditions where these cannot be demonstrably justified.

5. ESCOSA Proposal 5

That wind generators 5-30MW will be not be required to be classified as semi-scheduled under the NER, but the Commission will review the status of each generator licensed in this range every 3 years or earlier if network issues arise from the connection of such generators.

Infigen supports the Commissions proposed modified arrangements whereby any 5-30MW wind generator would not be required to be classified as semi-scheduled but the Commission would review the status of each such generator every 3 years.

Infigen also supports the Commissions proposed arrangements for sub 5 MW wind farms whereby the Commission will work with AEMO and ETSA Utilities to determine if any specific regulatory response is needed in this area in the future.

6. ESCOSA Proposal 6

The Commission will continue to monitor the operation of wind generation plant licensed pre-2005 with dispatch control by ElectraNet to ensure the on-going efficiency and reliability of the South Australian power system are not compromised.

Infigen has no specific comments to make in this area and sees this as the prerogative of the Commission in undertaking its role.

Infigen thanks ESCOSA for the opportunity to comment on its Draft Licence Conditions.

Sincerely,

A handwritten signature in black ink, appearing to read "Geoff Dutailis". The signature is stylized and cursive.

Geoff Dutailis
Chief Operating Officer
Infigen Energy