

Your ref:  
Our ref:

30 January 2017

Mr Con Carellas  
Principal Advisor  
Essential Services Commission of South Australia  
GPO Box 2605  
ADELAIDE SA 5001

Via email to: [escosa@escosa.sa.gov.au](mailto:escosa@escosa.sa.gov.au)

Dear Mr Carellas

**re: Inquiry into licensing arrangements for inverter-connected generators**

ElectraNet welcomes the opportunity to provide this submission to the Essential Services Commission of South Australia (ESCOSA) on the Inquiry into licensing arrangements for inverter-connected generators.

As ESCOSA's issues paper notes, South Australia has experienced significant increases in the penetration of renewable generation over a period of more than 10 years. This principally takes the form of roof top solar PV and transmission connected wind generation. No other State in Australia has renewable penetration levels as high as South Australia nor had to face the challenges associated with the integration of renewables on this scale.

Under the National Electricity Rules (the Rules), ElectraNet as the local Transmission Network Service Provider is required to provide access to the transmission network on a technology neutral basis to all connecting parties subject to them satisfying the technical, licencing and registration requirements of the Rules and other applicable laws.

ElectraNet also recognises the increasing importance of maintaining an acceptable level of network security and reliability in South Australia given the challenges of South Australia's evolving generation mix, while maintaining affordable price outcomes for electricity customers, and supports a least cost mix of solutions to deliver on these objectives.

Against this background, this submission addresses the specific questions contained in the issues paper in turn.

**Q1** *Should the Commission continue to require the existing special conditions?*

*Should licence conditions for fault ride through and reactive power capabilities continue to be applied?*

The existing licence conditions remain relevant and should therefore continue to be applied. With current dispatch patterns observed in South Australia, the power system has become increasingly reliant on the technical performance of wind generation facilities as less synchronous generation is online.

*If so, to which classes of entities? For example, all inverter-connected generation plant? If not, please provide justification.*

The licence conditions should be applied to all asynchronous generating plant. This is an important distinction since some older technology Wind Turbine Generators (Type 1 and Type 2) are not inverter connected, but have technical limitations not observed with synchronous generators. These conditions should include wind generating systems of all technology types and other asynchronous plant such as Photo Voltaic (PV) based solar farms.

**Q2** *Should those licence conditions be varied?*

*Should those licence conditions for fault ride through and reactive power capabilities be varied or should other, new, conditions be required?*

The conditions for fault ride through and reactive power capabilities should be maintained for wind farms and adopted for other asynchronous generation technologies.

ElectraNet notes that the inquiry's aim is to assess licensing requirements for wind and other generation types in South Australia ahead of any amendments to technical standards that may be implemented by the AEMC at a later time. As the AEMC is currently progressing a number of Rule changes from various proponents, including the South Australian Minister for Mineral Resources and Energy, and is also progressing an overarching review of system security market frameworks it may not be appropriate to materially vary the licence conditions at this time.

Subject to the outcomes of the AEMC reviews, the following additional requirements could be considered for South Australia:

- a) fast frequency control capabilities (frequency raise and frequency lower capabilities) and the ability to participate in Frequency Control Ancillary Service markets (requirements for an obligation to meet NER S5.2.5.11 automatic access standards) and requirements for Automatic Access standard level of performance under NER S5.2.5.3 to ensure resilience to frequency disturbances;
- b) contribution to system inertia;
- c) contribution to system strength (fault level contribution); and
- d) resilience to weak (low fault level) system conditions.

Some of these characteristics may be assessed on a location specific basis (e.g. contribution to system strength) and therefore any new requirements should provide scope for the system conditions at the facility's connection point to be considered. It is also noted that (c) and (d) above are related in that a facility contributing to system strength will assist in ensuring adequate system strength for the correct operation of control systems required for its own operation.

To allow for the most efficient provision of these additionally required services described above in (b) and (c), if these were to be contemplated as future licence obligations, licensees could be permitted to contract the required capabilities from other service providers if they are not inherently provided by the generation technology relevant to a facility.

*If so, how and why? If not, please provide justification.*

As increasing levels of asynchronous generating systems connect in South Australia, traditional synchronous generation will continue to be displaced thereby reducing system inertia and strength. By providing the above described capabilities, either directly or via a procured service or other delivery options, the security of the system will be maintained.

**Q3** *Should licence conditions be made to apply both to prospective and existing licensees?*

*Should any changes to licence conditions arising from this Inquiry apply only to those seeking a new electricity generation licence or should existing generation licensees also be compelled to meet new or changed standards?*

As a general principle, new licence conditions should apply only to prospective licensees and existing licence conditions remain unchanged for incumbents.

Notwithstanding this, in some cases the equipment of existing licensees may be capable of meeting increased requirements via setting or software changes with minimal expense, or other low cost measures. Should the Commission seek to impose new licence conditions on existing generators careful consideration should be given to limiting the application of these new conditions to those readily and efficiently able to comply in a cost effective manner.

*In either case, why?*

As noted above, ElectraNet believes that the system security reviews currently on foot with the AEMC are the appropriate forum for changes to the technical standards of existing generators to be considered. In the event that the AEMC reviews do not provide sufficient certainty in the South Australian context, then any required local changes should apply to new participants in the first instance and existing participants to the extent that they can readily and efficiently comply.

**Q4** *Should generation licence holders be required to upgrade or refurbish plant and equipment to meet the licence conditions of the day?*

Please refer to the response above to Question 3.

**Q5** *Do you have any comments or views on AEMO's preliminary report?*

*AEMO's preliminary advice notes that in addition to possibly making amendments to the existing licence conditions for fault ride through and reactive power capability there may be value in including additional requirements in relation to: frequency control, the rate of change of frequency, and system strength. It also notes that there may be a case for extending licence conditions to other technologies.*

While ElectraNet's views are broadly consistent with those expressed in AEMO's preliminary report, as addressed above, ElectraNet considers that the AEMC reviews should reach their conclusion before making any material changes to the South Australian licencing framework. Consideration should also be given to the scope for the required services to be provided more efficiently via market and network based solutions.

Q6 *Are there any other matters relevant to the Inquiry that the Commission should consider?*

*Notwithstanding the technical focus of this Inquiry and the matters noted above, are there related, or associated, matters that the Commission ought to consider in this Inquiry?*

As outlined above, it is appropriate for this review to be undertaken in the context of current reviews, inquiries and Rule change proposals impacting on the market framework for grid scale generation, and for an appropriately measured approach to be taken at this time pending the outcomes of these processes.

Should you have any questions regarding this submission please contact Bill Jackson in the first instance on (08) 8404 7969.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'D. L. Appleby'.

Simon Appleby  
**Senior Manager, Regulation & Land Management**