

Your ref:
Our ref:

9 June 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

Dear Mr Carellas

re: Inquiry into licensing arrangements for generators in South Australia

ElectraNet welcomes the opportunity to provide this submission to the Essential Services Commission of South Australia (ESCOSA) on the Draft Report of the inquiry into licensing arrangements for generators in South Australia and commends ESCOSA for its consultative approach to the review. The workshop held on 16 May 2017 was of particular value for ElectraNet and other stakeholders involved in interpreting and implementing the technical standards applicable to generators in South Australia.

The ESCOSA review is being conducted at a time of transition in the National Electricity Market (NEM). This is evident in the changes in technology being embraced by market participants and consumers together with the significant number of reviews and rule changes being conducted by AEMO, AEMC and jurisdictions. In addition to the ESCOSA inquiry into licensing arrangements for generators in South Australia these include:

- Emergency Frequency Control Schemes Rule change (effective 7 April 2017)
- System Security Market Frameworks Review (final report due 27 June 2017)
- Inertia Ancillary Services Market Rule change (draft rule due 27 June 2017)
- Rate of Change of Frequency Rule change (draft rule due 27 June 2017)
- Power System Fault Levels Rule change (draft rule due 27 June 2017)
- Office of the Technical Regulator's (OTR) generator technical requirements for Development Approval (draft May 2017)

All seek to address the challenges associated with the changing generation mix in the NEM and place, or are expected to place, new or more onerous obligations on Transmission Network Service Providers (TNSPs) and market participants. In progressing and implementing these

changes it is important that authorities maintain focus on the relationships between the different work packages to avoid the potential for conflicting or unclear obligations.

ElectraNet is supportive of ESCOSA's view that special licensing conditions should be maintained until such time as amendments are made to the National Electricity Rules (Rules) such that the conditions are no longer necessary. Consistent with this, ElectraNet supports ESCOSA's position that unnecessary regulations should be repealed once they are no longer required.

To this end ElectraNet supports AEMO's intent to propose a technical standards rule change to elevate the generator technical requirements applicable in South Australia to the Rules in order to achieve a nationally consistent framework for generator connection.

With respect to ESCOSA's position regarding the application of proposed conditions to existing generators it is essential that the impact of the associated costs is carefully considered, as even seemingly modest imposts may hasten the departure of these generators to the detriment of the power system.

ElectraNet supports the proposal that the new requirements should be generally technology neutral. Notwithstanding this it is important to note that differing requirements may be necessary given the different inherent capabilities of various generation technologies.

ElectraNet notes that the draft report refers in a number of places to 'inverter based generation' and observes that some wind farm technologies do not make use of inverters. Careful consideration of the words selected in describing the new requirements is necessary so that unintended consequences do not occur. This again reinforces the importance of technology neutrality being maintained as a key principle.

ElectraNet is generally supportive of AEMO's recommendations to ESCOSA but notes that some detailed requirements recommended may benefit from further refinement. Specifically:

- Recent experience with an application for connection by an inverter based generator indicated that the full reactive current injection capability recommended by AEMO would not be achievable with the currently proposed design. While we understand that this particular limitation is likely to be resolved through more detailed design, consideration should be given to the capabilities of current and future technology. Further, while high standards are desirable to ensure power system security, it is also important to ensure such standards are practical and achievable so as not to present an unreasonable barrier to future generation connections.
- The settling times of no greater than 60ms may not be possible for new synchronous generating plant, and would certainly not be achievable for many existing generators. This recommendation and a number of others appear to have been intended for inverter based generation connections and so it is important to distinguish between this type of technology and other generation technologies. ElectraNet further notes that there are intrinsic technical advantages and disadvantages in all currently available generation technologies and that this may require specific consideration notwithstanding the stated intent that the licensing requirements should be technology neutral.
- AEMO's recommendation that more detailed models (electromagnetic transient models) may be required where standard generating system models are deemed insufficient to effectively plan and operate the power system is supported by ElectraNet. We further note that these more detailed models are also necessary for NSPs to adequately carry out their system planning obligations and with regard to generator connections. ElectraNet considers that the provision of such models would not materially increase cost to potential connection proponents using commercially mature technologies and would provide benefits to all parties involved in the connection process through increased efficiency and improved technical risk management.

- AEMO's recommendation that non-synchronous (inverter connected) generation systems be capable of withstanding +/- 4Hz/second for 250 milliseconds and +/-3Hz/second for 1 second is supported by ElectraNet. ElectraNet understands that these recommendations are made in the context of refining the existing NER clause S5.2.5.3 and that it is assumed that new inverter connected generators would therefore also be required to withstand slower rates of change of frequency than those listed by AEMO and also maintain continuous operation consistent with the frequency excursions bands specified in that Rules clause.
- AEMO's recommendation that connecting parties ensure that susceptible items of plant be capable of correct operation down to a mandated minimum system strength is supported by ElectraNet, particularly given the current state of generation dispatch and number of proposals for non-synchronous generation in the state. We also note of AEMO's view that NSPs will have a role in the maintenance of system strength and that this requirement is the subject of an ongoing AEMC review.

In addition to these matters ElectraNet believes that it would be helpful to clarify that, where reactive power capability is a licence condition, the network operator can direct the utilisation of available reactive power capability to support the secure operation of the power system as and when it is required. It should also be borne in mind when specifying reactive power capability standards for battery storage systems that the Rules mandate different requirements for loads and generators which has the potential to lead to inconsistent treatment of this class of plant.

Relatedly, ElectraNet has recently become aware that the Office of the Technical Regulator has commenced the use of a draft guideline for the assessment of the development approval for generating plant with a generation capacity of over 5 MW under regulation 70 of the Development Regulations 2008. This regulation requires the provision of: "*a certificate from the Technical Regulator certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system.*"

The purpose of the ESCOSA guideline is principally to ensure that the connection of generators to the South Australian power system does not impact the security and stability of the power system. Given the potential for unnecessary duplication and conflict between differing requirements ElectraNet asks that AEMO, ESCOSA and the Technical Regulator work together to ensure that the Technical Regulator's guideline is limited to those requirements which are in addition to those in the ESCOSA guideline and the Rules.

ElectraNet would welcome the opportunity to engage further with ESCOSA on any aspects as it works to finalise the proposed generator licensing arrangements for implementation.

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

Yours sincerely



Simon Appleby
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