



AGL Energy Limited

ABN: 74 115 061 375
Level 24, 200 George St
Sydney NSW 2000
Locked Bag 1837
St Leonards NSW 2065
t: 02 9921 2999
f: 02 9921 2552
agl.com.au

Abe Abdallah

Essential Services Commission of South Australia

GPO Box 2605

Adelaide SA 5001

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Dear Abe,

Licensing arrangements for generators in South Australia

AGL Energy (AGL) welcomes the opportunity to comment on the Essential Services Commission of South Australia (ESCOSA) consultation on licensing arrangements for generators in South Australia (SA).

AGL is one of Australia's leading integrated energy companies and the largest ASX listed owner, operator and developer of renewable generation. Our diverse power generation portfolio includes base, peaking and intermediate generation plants, spread across traditional thermal generation as well as renewable sources. AGL is also a significant retailer of energy and provides energy solutions to over 3.5 million customers in New South Wales, Victoria, Queensland, Western Australia and SA.

AGL supports a move towards harmonisation with national standards, to ensure there is no unnecessary duplication of regulatory, or inconsistency between obligations between the National Electricity Rules (NER) and jurisdictional instruments. The generator technical performance standards rule that commenced in October 2018 has placed stringent requirements on new and altered generating systems, and in our view, it is not necessary for generators to be subject to any additional jurisdictional technical requirements.

For connecting generators in South Australia, ESCOSA works with the Office of the Technical Regulator and the Australian Energy Market Operator (AEMO) to advise on the generator's technical compliance with regulatory requirements. AEMO also assesses the generator directly through the National Electricity Market (NEM) registration process, effectively reviewing the same technical requirements twice, but through a different lens each time. In AGL's experience of connecting generation in SA, this has proven to be an unnecessarily complicated, and at times, inefficient process.

The ESCOSA licensing regime is highly rigid, offering little scope for negotiation to account for the differing capabilities of generating plant. No two connections are the same, which is why the NER allow negotiation with AEMO and Network Service Provider (NSP) regarding connection requirements and performance standards. Overlaying SA-specific technical licence requirements removes the flexibility that the obligations under the NER were designed to provide.

Notwithstanding the above, AEMO has recommended that three SA-specific technical requirements be retained through the generation licence, on the basis that SA is subject to low system strength and has an increased risk of regional separation.

On system strength specifically, AEMO's advice refers to the synchronous condenser solution currently being developed by ElectraNet, and notes that the solution was designed to resolve existing system

strength issues and ensure stability into the future. AEMO's advice goes on to state that the synchronous condenser solution will not be enough to mitigate against all future developments, and therefore SA specific measures should be retained in generation licence condition 11. AGL does not support AEMO's position for the following key reasons.

1. The Australian Energy Market Commission (AEMC) made the managing power system fault levels rule in 2017, placing the obligation on transmission network service providers (TNSPs) to maintain minimum levels of system strength. The AEMC's decision to place the system strength obligation on TNSPs was made on the basis that TNSPs have a holistic perspective of their network and therefore can consider the best options for the entire network, as well as co-optimize these services with other services necessary for system security.¹ AGL supports this finding that TNSPs are better placed to manage system strength requirements.
2. Under the 2017 rule, TNSPs must undertake a system strength impact assessment for proposed new connections or alterations to a generating system, and their assessment is to be made in accordance with AEMO's system strength impact assessment guidelines (Guidelines).

Appendix B of the Guidelines details AEMO's examination of the impact of variations of short circuit ratio (SCR) and X/R ratio on the stability of grid connected wind and solar systems during fault conditions, through simulation models. Some key outcomes of AEMO's analysis were that all models exhibited stable performance where the SCR was >3 at the connection point, that reducing SCR below 2 increased the likelihood of power system instability, and some models exhibited stable response only for X/R ratios >2 , when operated under very low SCR conditions.

These findings arguably suggest that the minimum levels in licence condition 11 are not appropriate, where licence condition 11 provides:

- 11.1 Individual components of plant within a generating system, which includes but is not limited to generating units and dynamic reactive power plant, must be capable of operating down to the following levels at the high voltage terminals in relation to each component:
 - (a) minimum short circuit ratio of 1.5, and
 - (b) minimum positive sequence X/R ratio of 2.

We suggest it would be appropriate to remove SA-specific system strength requirements from the licence so that a system strength analysis can be undertaken applying NER requirements.

3. The AEMC is in the process of investigating whether the current NER framework is appropriately addressing system strength, with a view to limiting the need for AEMO intervention in the NEM. Given the AEMC's NEM-wide scope, we consider it would be appropriate to remove SA-specific requirements so that improvements facilitated through the AEMC review process can flow through to all NEM regions.

The two remaining licence conditions deal with protection system operation during disturbances, and system restoration, each of which are sufficiently dealt with in the NER. In particular, AEMO's Power System Model Guidelines specify that protection relays and control systems must be included in the

¹ AEMC 2017, Managing power system fault levels, Rule Determination, 19 September 2017, Sydney, p. 22.



models developed for connecting or altered generators. Accordingly, there is no facility in retaining the licence conditions.

Should ESCOSA decide to retain the three technical licence conditions, we strongly suggest that ESCOSA's assessment of a licence application run concurrently with the corresponding NER process, to better coordinate the connection process.

If you have any queries about this submission, please contact Liz Gharghori on (03) 8633 6723 or lgharghori@agl.com.au.

Yours sincerely,

Chris Streets

Senior Manager Wholesale Markets Regulation