Submissions of Territory Generation - Review of the Northern Territory's Electricity Licensing Regime – Issues Paper

On 11 April 2022, the Utilities Commission (Commission) invited stakeholders to provide submissions on its Issues Paper on the subject of "Northern Territory's Electricity Licensing Regime". I thank you for the opportunity for Territory Generation (TGen) to provide submissions regarding the above matter.

TGen proposes to respond to Question 1 - Omission of certain conditions from licences for independent power producers; Question 4 - How effective is the licensing regime at controlling market power; Questions 8 to 12 – Emerging technologies and business models; Question 20 - Principles appropriate for determining whether an exemption is an appropriate outcome; and paragraph 2.22 - Creating and maintaining a 'level playing field' for industry participants.

Question 1:
Are there risks or other issues that arise as a result of the omission of certain conditions from licences for independent power producers? If so, what are they?

TGen response:
Yes.

This approach will be contrary to the Commission's intention to create a level playing field. The power systems in the Territory are quite small, hence the impact of small producers on those systems are high.

The power of the Commission to impose conditions should still be used, especially in areas such as seeking the provision of ancillary services on request by the power system controller. At present, TGen is called upon to provide this service almost exclusively without suitable compensation which distorts energy pricing to customers.

Question 4:
How effective is the licensing regime at controlling market power, facilitating competition and promoting investment?

TGen response:
Given the relatively small scale of the NT power systems and the real possibility of a single proponent disrupting all market requirements, there is the risk of the misuse of market power and the management of this risk needs to be carefully considered. Hence, the licensing regime needs to be suitably prepared for such an outcome and to create certainty for current and future investors, with sufficient notice to market of any new entrants and the commitment of the entrant to deliver their project. This is due to the small scale of the NT's power systems as a failure of a proponent to enter the market as forecast may lead to insufficient generation being available.

Question 8:
Are there barriers to entry or other issues with classifying energy storage systems as generation for potential participants? If so, what are they?

TGen response:
Yes.

Below is an overview of the challenges currently being faced by TGen in the process of installing a Battery Energy Storage System (BESS) at Channel Island Power Station. The connection process with Power and Water Corporation (PWC) is following the generator connection process. PWC requires the BESS to comply with the Generator Performance Standards (GPS) set out in the Network Technical Code (NTC) clause 3.3.5.

The BESS is intended primarily to provide frequency control services. It is expected to primarily 'do nothing' most of the time and respond very quickly only when a frequency event happens, such as trip of a generator or of load.

Whilst some of the GPS provisions are appropriate for a BESS to comply with, TGen is of the view that some are not. Detailed comments in this respect are included in the response to question 11 below.

During the connection process, PWC System Control requires an Operating Protocol to be developed to outline how the BESS will operate once in service. Although the BESS' primary function is to provide Contingency Frequency Control Ancillary Services (C-FCAS) and Inertia Frequency Control Ancillary Services (I-FCAS), there is clearly potential to utilise the BESS to optimise generation across TGen's fleet, by discharging and charging the battery immediately prior to and immediately after starting a machine respectively.

On a rising system load this would facilitate a delay in starting the machine, whilst maintaining all spinning reserve requirements, and achieve fuel and cost efficiencies. Fuel efficiencies directly reduces carbon emissions. The charge / recharge cycle will result in a net loss of metered power from TGen onto the network however the scales of efficiency gained would far outweigh the operational cost. This would also be applicable in the reciprocal.

There are potentially additional efficiencies, in addition to those identified above which, although not fully modelled, are anticipated to be substantial in terms of fuel and cost savings, as well extending machine life for grid capacity purposes.

The inflexibility of the current Interim Northern Territory Market (I NTEM) rules in not allowing for the BESS to operate in this fashion would seem to be contrary to criteria for Dispatch stated in the System Control Technical Code (SCTC) clause 4.3(c)(6).

Question 9:
Are there any benefits to prescribing energy storage systems as a separate operation in the electricity supply industry requiring a licence (or exemption)? If so, what are they?

TGen response:
Yes.

The primary benefit of licensing a BESS as a separate category is that it recognises that a BESS is not synonymous with a generator, and the two should not be subject to the same technical requirements for connection and operation.

It also seems likely that the issues being experienced with the BESS may also apply to installing other technologies for provision of essential system services, such as synchronous condensers to provide system strength, inertia and voltage control services. Consideration could also be given to all inverter-based generation in this context given the different performance characteristics across different technologies.

The Commission might consider a new licence class of 'essential system service provider'. This could cater for multiple technologies and be modified where necessary as new technologies emerge. This would allow for the tailoring of technical and regulatory requirements to suit the technology connecting and the purpose for which it is connecting.

Question 10:
What are the key risks to electricity supply (if any) that need to be addressed through licensing (or exemptions) of energy storage systems?

TGen response:
TGen is of the view that the key risk to electricity supply is that, should the matters it has raised in response to Questions 8 and 11 in relation to the current connection process are not addressed, it will become a disincentive to participants to invest in plant providing essential system services.

In the absence of an operating Reliability Standard and Capacity management (which does not encompass the provision of essential system services in any event) the role of the Commission in licensing is the primary control to ensure sufficient capacity is available.

A lack of investment in essential system services will lead to more constraints in the operation of the power system and reduce the efficiency of dispatch. This has the potential to result in an unstable and unsustainable power system.

Question 11:
Would any of the general or specific conditions for generation be not relevant or difficult to comply with by an operator of a standalone energy storage system? Why?

TGen response:
Yes.

As identified in TGen's response to Q8, the specific GPS that TGen is concerned about in relation to the connection and operation of the BESS are:

1. NTC 3.3.5.1 Reactive Power Capability

a. This requires the connecting device to be able to provide continuous leading or lagging reactive power for the purposes of steady state voltage management.

b. For a generator, this is a reasonable requirement because a generator that continuously generates active power impacts the voltage. As part of connection obligations, it needs to provide controlled reactive power to play a part in continuously controlling voltage.

c. A generator can only provide the reactive power capability whilst it is online, and generators are only online when contributing active power to the grid.

d. For a BESS that is providing contingency FCAS, in normal circumstances, it is neither importing nor exporting active power.

e. To provide these services whilst providing inertia and contingency FCAS services, at zero MW output, will put wear and tear on the BESS and require an additional amount of active power for the losses.

f. This comes at an additional cost to the BESS owner.

g. NTC 4.5.1(f) requires the Network Operator to arrange provision of sufficient reactive power facilities to manage voltage. This can be achieved by:

i. contractual arrangements for the services;

ii. placing obligations on users under their connection agreements; or

iii. installing the facilities by the generators themselves.

h. By connecting a BESS as a generator, the Network Operator is requiring the BESS to provide these services, rather than contracting for the services.

2. NTC 3.3.5.15 Inertia and Contingency FCAS

a. This GPS requires that the BESS is capable of providing a certain amount of Inertia and Contingency FCAS capability.

b. The primary intent of the BESS is to provide these services.

c. The BESS significantly exceeds the required capability

d. What is not clear, is that when essential system services are eventually contracted, will the level of service required under this clause be required to be provided free of charge?

3. NTC 3.3.5.16 System Strength

a. As a generator connecting, the BESS is required to undertake System Strength Impact Assessment.

b. This is understandable where the connection device effectively absorbs system strength, such as grid following inverters that 'absorb' system strength. However, in the case of the DK BESS, it is a grid forming inverter technology that contributes to system strength.

c. The Network Operator is of the view that the connection of the BESS will result in a change in generation dispatch which will see circumstances where one less generator is online, thus reducing system strength. Although the BESS contributes to system strength, it has been deemed as an 'adverse impact' on system strength.

d. Although TGen understands the needs of the Network Operator to consider system strength implications as new connections are processed, it does not seem equitable, nor does it encourage similar future investment, that a device which *contributes* to system strength can be considered to have an 'adverse impact' on system strength.

4. NTC 3.3.5.17 Capacity Forecasting

a. This GPS was brought in to manage the intermittent generation capacity of renewable generators.

b. For the majority of the time, the BESS is expected to be online at zero output and available to respond to frequency events.

c. Applying this GPS to a contingency service BESS appears to be contrary to the need to introduce this GPS.

Question 12:

Beyond those already specified in legislation, are there any other conditions the Commission should consider including in a licence (or exemption) for an energy storage system? What risks do these address?

TGen response:
Yes.

TGen is of the view that grid connected MW+ scale BESS should be licenced. In response to Question 9, TGen has suggested the Commission considers an alternative licence classification. An alternative to that would be to include in the licence conditions exemptions to NTC and SCTC obligations on generators which are not appropriate to apply to a BESS.

TGen's primary concern is that the regulatory framework has a lack of flexibility in dealing with new alternative technologies compared to historical technologies, such as thermal synchronous generation. Licencing the BESS as a generator has demonstrated a current inability of the NT industry to adapt to new alternative technologies.

An exemption regime that covers arrangements where a BESS provides power or essential system services directly to one or a group of customers via a private transmission line, should be made clear. Clarity on whether a generator licence or a network licence or both are required, would assist the market.

Question 20:
Are the principles listed above appropriate for determining whether an exemption is an appropriate outcome (rather than a licence)?

TGen response:
Exemptions need to lead towards lower cost electricity to the consumer. Reduced compliance obligations should reflect to reduced production costs and should result reduced cost of electricity. The principles should capture this element.

Objectives that licensing aims to address
Paragraph 2.22:
Creating and maintaining a 'level playing field' for industry participants is necessary due to the continued dominance of government-owned corporations across the electricity supply chain. Licensing promotes appropriate market conduct and moderates monopoly power by enabling the Commission (through powers under the ER Act to include certain licence conditions and make licences subject to other conditions at the Commission's discretion14) to impose standard obligations and requirements on licensees performing the same type of operation (for example, selling or generating electricity).

TGen response:
Although TGen recognises it is the dominant supplier of electricity in the regulated power systems in the NT, TGen would like to note its role as the 'generator of last resort' in practical terms by having to provide ancillary services, without suitable compensation, such as:

(a) system security;

(b) voltage control;

(c) inertia; and

(d) spinning reserve.

Due to TGen's provision of the above services, other small generators benefit by not having to provide such services or only having to provide some services in a very limited way. Hence, TGen queries the implication that the playing field is tipped to the benefit of TGen when the reality is otherwise. TGen is supportive of a 'level playing field' for all system participants and seeks recognition of the additional services provided by TGen in support of the NT electricity system.

Conclusion
TGen thanks the Commission for the opportunity to provide this submission.