

17 July 2020

Attention: Design Development Team
By email electricityreform@nt.gov.au

Dear Design Development Team,

**Review of Essential System Services in the
Northern Territory's Regulated Electricity Systems
Issue Paper June 2020**

I write in response to the call for submissions to the *Issue Paper June 2020* regarding the *Review of Essential System Services in the Northern Territory's Regulated Electricity Systems*, released on the 12th of June 2020 by the Northern Territory Government.

Epuron is the owner and operator of the 4MW Uterne solar power plant at Alice Springs, the 1.8MW solar power plant at Yulara and also the three integrated high penetration solar power stations at Ti Tree, Kalkarindji and Alpurrurulam (Lake Nash), known as TKLN Solar which total 1MW. Epuron also developed the 25MW Katherine solar power plant, which has recently been sold to ENI Australia Ltd and is now under construction. Katherine Solar is likely to be the first large solar generator connected through the new NT GPS and the Generator Forecasting Compliance Procedure.

The Northern Territory Government has identified reforms to the arrangements for the provision of Essential System Services (ESS) in its Northern Territory Electricity Market Priority Reform Program. With the growing uptake of utility scale and behind-the-meter solar PV generation and emergence of new technologies capable of providing ESS, it is timely for the Territory's arrangements to be reviewed to ensure that ESS delivery is economically efficient and at least cost but with no compromise to system security.

Epuron's comments and questions on the issue paper are below. It is structured in the NTG Questions 1-7 as provided in the issue paper.

Question 1

- (a) Are there other context or developments relevant to the review that the Design Development Team should take into consideration?

No comment.

- (b) Is the approach to the review, which ties ESS market design principles back to the National Electricity Objective, appropriate?

No comment.

- (c) Are there other relevant matters which should be considered?

No comment.

Question 2

- (a) The Design Development Team is seeking initial stakeholder views on appropriate ESS categories and definitions for the Territory's regulated electricity systems, to inform a draft proposal to be presented in the review draft report.

Epuron suggests that the ESS categories be classified as:

- R-FCAS
- C-FCAS Raise
- C-FCAS Lower

This would broadly align the ESS categories with C-FCAS on the NEM. The NEM also includes different time periods for each C-FCAS Raise and Lower ESS which could also be adopted for the NT electricity systems as is appropriate. A simpler version of this without the time periods could be more effective due to the smaller market and the likelihood that the majority of ESS will be from a few providers. This would then require minimum C-FCAS response times which is appropriate.

'Spinning Reserve' has been procured historically but is a non-technical solution as different generators have different C-FCAS capabilities. Using this approach leads to requirements of a set number of machines or even more specifically a set number of Frame 6 machines. This is because Frame 6 machines have a 'better' C-FCAS capability. It would be much more efficient and secure to determine the C-FCAS capability of generators (either through manufacture specifications or testing) and ensure enough C-FCAS capability is available *regardless* of the number of machines or generator type. This would require an understanding of the whole network including an up to date network map, load flow modelling and reliability guidelines.

This would have the added benefit to remove the current rules in Alice Springs which are overly simplistic and ineffective. Currently in Alice Springs there is a requirement for an amount of spinning reserve from a specific number of machines. This is in an attempt to get enough C-FCAS capability but without knowing the specific requirement of what C-FCAS is required and how much the machines provide. This is ineffective and insecure. This results in a very large number of running machines running on minimum load. This is detrimental as the machines work less efficiently and provide less C-FCAS capability at minimum load and therefore cost the generator (and therefore the consumers) more money. This also results in the curtailment of the solar generators in Alice Springs (mainly Uterne) despite the solar generation being the cheapest form of energy. Running *less* generators at higher load would result in a more cost effective and more secure electricity network. As long as the required C-FCAS is known and is being provided for, then adding extra machines is not required.

- (b) Is there a need to apply different ESS categories for Alice Springs and Tennant Creek than for the Darwin-Katherine system?

Alice Springs and Tennant Creek are a significantly smaller networks than Darwin-Katherine but still require the same ESS categories. The ESS categories listed in Question 2.a. should apply to all systems in the NT. These may all be provided by the same generator in the case of smaller electricity systems.

- (c) Should the Territory's ESS framework require and empower the System Controller to develop and publish detailed specification/descriptions for each category of ESS? What, if any, regulatory prescription or oversight should apply?

Yes the requirements for the categories of ESS need to be based in the technical requirements of the system. The System Controller should develop and publish these ESS specifications and the Utilities Commission with external consultants would be appropriate to review.

- (d) Should the ESS framework provide for flexibility for the System Controller to procure other undefined categories of ESS? What, if any, regulatory prescription or oversight should apply?

The categories of ESS should encompass the required types of ESS based in technical requirements for a stable and secure network. There may be a requirement for a catch-all statement but the System

Controller should be limited in procuring ESS that is not required. This may happen if for example the System Controller applies historical rather than technical reasoning to decision making. Procuring 'Spinning Reserve' rather than C-FCAS would be an example of this. Again, the Utilities Commission can provide oversight with appropriate technical consultants.

- (e) What mechanisms are most appropriate for the Territory to preserve inertia and system strength? Should these be defined as ESS? Where would responsibility for their provision more appropriately reside – the Network Operator or the System Controller?

R-FCAS capability is the same as providing inertia. Enough R-FCAS ensures that enough inertia exists in the system and that RoCoF can be controlled to a manageable level. This can be provided by any type of generator.

The provision of more ESS should reside with the Network Operator as part of network planning.

Question 3

- (a) What issues or concerns do current arrangements for the determination of system service requirements raise? How do these influence investment decisions made by power system participants and is reform warranted?

The lack of transparency under the current arrangements for the determination of system service requirements is an issue for the market. The NT market needs to follow the NEM with transparency and oversight mechanisms regarding the volume, each type and cost of ESS. This best ensures the correct volume, type and cost of each ESS is implemented.

- (b) Should the ESS framework incorporate service standards, in addition to system standards? Should ESS standards be applied in a regulatory instrument, or in a System Controller instrument?

No comment.

- (c) Should the System Controller's determination of service requirements be subject to transparency and oversight mechanisms? If so, what arrangements are appropriate?

Yes, as per the NEM.

Question 4

- (a) What types of ESS are most suitable for market provision and in which systems? Are there certain categories of ESS which would benefit from continued Territory Generation delivery and why?

All types of ESS are required for all systems and should be able to be delivered by any registered generator. Specifying Territory Generation in the network code removes the opportunity for the market to deliver ESS at cheaper cost.

Private companies and Independent Power Producers (such as Epuron) would like to have the opportunity to provide ESS to the market. However this would require the ability to directly procure an income stream from providing the ESS. At the moment TGEN is specified as the sole provider of ESS so this is not possible.

- (b) What are the likely costs and benefits of spot market procurement of certain types of ESS in any of the Territory's electricity systems?

Spot market procurement would ensure the lowest cost provision of ESS however has a high overhead cost. For the DKIS, Alice Springs and Tennant Creek it would be prudent to consider a capacity market as per the WEM. The Network Operator could determine how much ESS each system requires (in each category in for example MVAs), then determine how much a new generator would cost to provide the ESS required, and use that as a basis for a capacity payment to whomever wants to build and operate new ESS generation. Oversupply issues can be managed with a capacity cap.

Regardless of procurement method chosen, each network requires:

- Determination of required ESS, and
- Method for generators to bid/be contracted to provide ESS

That is technology and provider agnostic.

- (c) What service provision framework would deliver the most appropriate balance between costs and benefits for each category of ESS in each regulated electricity system?

The Network Operator probably wants to use a combination of different provision frameworks for the different NT electricity systems. However as stated above, regardless of provision framework, the ESS must be able to be provided by any provider or technology.

Question 5

- (a) What changes should be made to the current administered pricing arrangements for the provision of ESS provided by Territory Generation?

- (1) What methodology should be used to determine prices for each of the ESS categories?

Once the ESS categories are developed and magnitude of required ESS per category per market is determined, a base price can be developed which represents the cost to install a new generator to provide more ESS. This base price can be administered to the ESS provided by Territory Generation.

- (2) What processes should be put in place to ensure the administered prices remain up to date?

At set time periods (for example annually) the current base price for ESS for all providers of ESS including Territory Generation should be updated by the Network Operator.

- (b) What market power mitigation measures would be appropriate for the provision of different ESS by Territory Generation under a market provision framework?

It is appropriate to have some market power mitigation measures of which could include:

- administered minimum and maximum prices for the provision of ESS,
- constraints on offer prices in any market mechanism,
- an obligation to supply required volumes of ESS, such as a default provider arrangement in the absence of other providers,
- a capacity limit to ensure extra ESS capacity is not built beyond a margin above sufficient capacity. For example no payment for new capacity if existing capacity already exceeds 130% of required capacity.

Question 6

- (a) What are the appropriate bases for the allocation of ESS costs?

A causer pays (as per NEM) approach is appropriate, as described within Section 6.

Note that it should incorporate the NT GPS forecasting requirements therefore removing the issues the NEM has had regarding causer pays and variable solar and wind generation.

- (b) Are there alternatives to a causer pays approach for the recovery of the ESS costs?

No comment.

- (c) Are there any technical barriers to the adoption of a causer pays or alternative approaches to ESS cost recovery in the Territory?

No comment.

- (d) What issues would the transition to a causer pays or alternative basis of ESS cost allocation present for system participants?

No comment.

- (e) What oversight or regulatory arrangements should accompany any causer pays cost allocation or alternative arrangements?

No comment.

Question 7

- (a) What are the issues which need to be considered in determining which legislative and regulatory framework would best accommodate changes to the Territory's ESS framework?

No comment.

- (b) What improvements can be made to the governance of the ESS framework?

No comment.

We look forward to engaging further with the NTG on the changes to the energy market and the exciting renewable technology opportunities in the Northern Territory.

Please do not hesitate to contact us if we can usefully provide any further information.

Yours sincerely,



DANIEL GILBERT
SOLAR ASSET MANAGER
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