

**8 November 2013**

Ms Julia Knight, Secretary  
Committee on the Northern Territory's Energy Future  
GPO Box 3721  
DARWIN NT 0801

By email [contef@nt.gov.au](mailto:contef@nt.gov.au)

Dear Secretary,

## **Northern Territory's Energy Future**

I write in response to the call for submissions to the inquiry into key challenges and opportunities associated with meeting the Northern Territory's future energy needs.

The inquiry considers three key challenges and opportunities:

1. Impact of various factors on the exploration, development and production of energy producing resources; and availability of developed resources for the domestic energy market
2. Demand and supply-side management strategies and incentive initiatives to improve productivity, cost effectiveness, energy efficiency, consumer and supplier participation in the energy market.
3. Off-grid power generation alternatives for commercial and remote applications, including funding and investment options for the development of emergent and enabling technologies, infrastructure, and commercial scale demonstration projects.

Epuron thanks you for the opportunity to make a submission and in line with the focus of our business will respond solely to the third of the key challenges and opportunities the committee is considering relating to off-grid power generation alternatives.

Epuron is the owner and operator of the 1MW Uterne solar power plant at Alice Springs and also the three integrated high penetration solar power stations at Ti Tree, Kalkarindji and Alpuururulam (Lake Nash), known as TKLN Solar.

It is widely recognized, and we have learned from our own experience, that many off-grid power stations in the Territory are very remote and operate in a climate that is often harsh. This is not the ideal environment for new or emerging technology solutions. The cost of installing, servicing, resourcing and modifying plant in such locations can be very high and often weather dependent which can reduce the reliability of the plant.

An apparently low-risk approach – to install commercially proven low penetration solar PV (providing up to 10 per cent of the daily load) at all or most remote sites across the Territory is not as cost effective as it might at first appear. However minimal the amount of PV installed there remains the fixed costs of designing, installing and maintaining it in a remote location. It is well understood that fixed PV on rooftops works but in the diesel powered environment installing low penetration PV provides few opportunities for learning, scant diesel savings and relatively high cost PV and is generally unattractive to private investors since such plant is usually of a small scale with disproportionately high transaction costs.

We believe that the Northern Territory is ripe with opportunities to use commercially-ready renewable technologies for integrating into existing diesel grids at high penetration (providing over 30 per cent of the daily load). The more sites have this high penetration hybridisation the more insight will be gained in finding the factors that contribute to

a 'sweet spot' in terms of percentage integration with diesel over summer and winter loads. This will move the design of hybrid solar generation forward significantly.

### **Factors favouring the installation of high penetration renewable projects**

If commercial and remote off-grid power generation moves to hybridisation with solar at high penetration then a number of factors will also serve to assist:

1. High penetration renewables maximise the diesel savings which is a key driver for progressing such solutions.
2. By maximising the solar and consequently the diesel saved this also addresses other government drivers such as emissions reductions targets and action to address sustainability policies.
3. Larger scale renewable power stations at remote communities have the potential to provide opportunities for training for indigenous community members.
4. High penetration solar hybrid systems are attractive to own for specialist companies such as Epuron. This removes the design and operation risk from Power and Water Corporation. All risks are pre-allocated through a Power Purchase Agreement.
5. Lessons learnt from a range of existing high penetration renewable hybrid plants can be used to build the knowledge base both for the power provider and the remote grid operator. At this stage most serious parties who might express an interest have knowledge upon which to build in designing such plant. This avoids the prototype solution which has seen a number of malfunctions and long-term non-operational installations.
6. By tendering out the supply of hybrid solution power there is contestability which keeps the price as low as possible. The price for solar PV panels has been falling over recent years but it is important to note that the Balance of System costs will drive the capital cost and these can be higher in remote locations.

### **Funding and investment options**

Private sector ownership under long-term off-take or power purchase agreements enables utilities to proceed with renewables with minimal capital investment and clear risk allocation of weather-reliant renewable technologies. An appropriately structured project or aggregation of projects, including associated Power Purchase Agreements (PPA), will attract lower cost equity and longer term debt. Greater scale is likely to be more successful in attracting financing and achieving overall economies of scale. An aggregation of high penetration sites bundled into one commercial package, similar to the TKLN Solar concept, addresses the scale issue. Many more low penetration sites would be required to achieve the same outcome. Incorporating a number of sites in one tender also reduces transaction costs and mitigates weather risk through geographic diversity – with plants in various regimes across the Territory. Such an approach would attract outside investment at a lower cost of capital which, along with other factors such as better equipment prices, will keep the PPA price as low as possible.

Renewable energy is a significant resource in the Northern Territory. Unlike traditional resources it does not need to be mined or extracted, transported or processed prior to use. It provides a useful hedge against fuel prices along with local community development opportunities. It is ubiquitously available where it already has value – in commercial and off-grid applications across the Territory.

We look forward to engaging further with the exciting renewable technology opportunities in the Northern Territory. Please do not hesitate to contact us if we can usefully provide any further information to the Committee.

Yours sincerely,



**MARTIN POOLE**  
**EXECUTIVE DIRECTOR**  
**EPURON**