

Fact sheet – Alice Springs Solar and Storage Options

Territory Generation is investing \$75 Million in new gas fired engines at Owen Springs Power Station (OSPS) to replace the aged Ron Goodin Power Station (RGPS). This fact sheet provides an overview of the options considered for the replacement of generation in Alice Springs with solar and storage technologies.

Options

The options below all provide for the utilisation of the existing 36 MW gas and diesel generation at OSPS, augmented by:

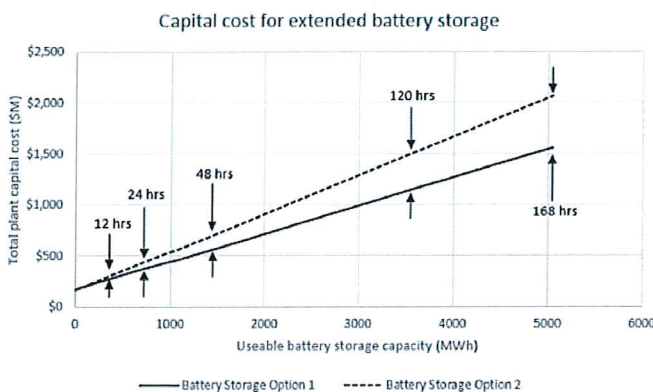
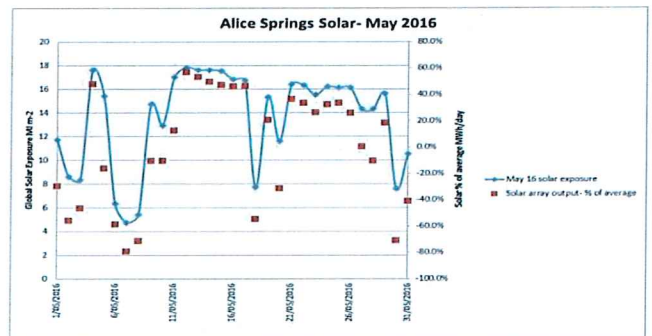
1. Gas spark reciprocating engines	\$75 Million approved budget	
2. Gas spark engines + 10 MW solar with limited storage (4 hours)	\$75 Million + \$25-30 Million	8% total demand met by new solar Land requirement: 14 ha
3. Large scale solar photovoltaic (PV) (48 hr storage)	\$560- \$700 Million \$1.5 - \$2 Billion (7 days storage)	70% total demand met by new solar Land requirement: 148 ha
4. Large scale concentrating solar power (CSP) (48 hr storage)	\$600 Million	85% total demand met by new solar Land requirement: 350 ha

Current Issues

Territory Generation’s modelling shows that large scale solar and storage is not yet cost competitive with the more conventional gas fired generation. The storage required for up to 7 days of low solar output during cloudy weather is currently a very high cost method of providing the backup reliability.

Alice Springs global solar exposure from 2-8 May 2016¹ was significantly below average due to high cloud cover.

Solar PV production on average was reduced by 46% during this period. This example shows that up to 7 days of storage would be required.



The cost of storage is currently prohibitive, with 7 days battery storage estimated to cost in the order of \$1.5- \$2 Billion for a system the size of Alice Springs². This would result in a 345% increase in current wholesale electricity rates.

LEGISLATIVE ASSEMBLY OF THE NT TABLED DOCUMENTS

Committee: *CoCSC*

Paper No: *11-1* Date: *26/6/16*

Tabled By: *Bond*

Signed: *[Signature]*



¹ Bureau of Meteorology, Daily Global Solar Exposure
² Aurecon, 2016

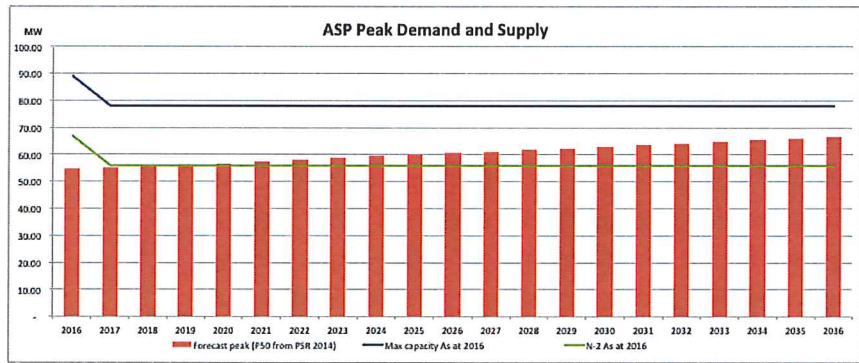
Key conclusions

The options assessment for replacing generation in Alice Springs with solar and storage technologies found the following:

1. Installing utility scale energy storage to provide coverage for extended overcast weather is a high cost approach to providing reliability of supply and does not guarantee the required reliability. It is currently more cost effective to provide the back up from gas generators.
2. The impact on grid stability would need to be carefully considered in the design and selection of equipment for a high penetration solar and energy storage solution. The system would need to be capable of grid support services such as frequency regulation, smoothing, and a spinning reserve function. These functions are currently provided by gas and dual fuel (gas and diesel) generating units.
3. The transition to a high penetration of solar energy in Alice Springs would be economically rational when the variable cost (fuel and maintenance) of running gas generation at OSPS reaches parity with the long run capital and maintenance costs of a high penetration solar solution. In such a case OSPS could provide back-up generation for extended periods of overcast weather.

Project overview

The Northern Territory Government has granted approval for Territory Generation to invest \$75 million to replace power supply facilities in Alice Springs. The project will replace aging generators, give Alice Springs residents increased confidence in their power supply, and drive down the cost of producing electricity by using high-efficiency power generators with reduced noise and carbon emissions.



The new OSPS is being built to meet current peak demand only. As renewable and alternative technologies develop, a large scale solar installation may be used to augment future growth identified in the Power System Review³.

Next steps for Territory Generation

Territory Generation is integrating alternative energy technologies, which will help to optimise our fuel efficiency, manage network stability and enable greater uptake of renewables in the future. Territory Generation looks forward to integrating renewable and alternative energy solutions as technology improves and becomes more cost competitive.

³ Power System Review, Utilities Commission