



## Proposal to Repower Port Augusta with Solar and Wind Infrastructure

- 6 solar thermal towers (760 MW)
- 95 wind turbines (700 MW)

### Solar

#### Cost

Stage 1: Replacing Playford B power station: 0.7 cents electricity price rise across South Australian electricity consumers funded through a state based feed-in tariff. This could be reduced to 0.3 cents with the assistance of the Clean Energy Finance Corporation.

Stage 2: Replacing Northern Power Station: 0.15 cents electricity price rise across the National Electricity Market through a national feed-in tariff.

#### Energy Security and Independence

South Australia has one of the world's best solar and wind resources.

#### Jobs

1800 Direct Jobs including:

- 360 permanent power station jobs
- 1300 construction jobs over a six year period
- 225 manufacturing jobs (solar mirror manufacturing)

#### Emissions

2-3 million tonnes

#### Electricity Prices

Solar and wind have higher initial capital cost, but no ongoing fuel costs

### Gas

Any alternative solutions (including gas) will increase electricity prices.

South Australia is a net gas importer, and the current reserves in the Cooper and Eromanga basins will last only 13 years at current rates of production (ie. without supplying a further 30% of the state's electricity from gas power plants). [Australian Electricity Market Operator 2011<sup>1</sup>].

Reliance on gas locks in a significant risk of major disruption to supply and resultant damage to the South Australian economy. The Varanus Island gas processing plant explosion in Western Australia in 2008 wiped out 30% of the state's electricity supply for 3 months and caused \$6.7b damage to the state's economy [WA Chamber of commerce<sup>2</sup>].

Gas power plants have very few jobs relative to coal or solar. The 550 MW gas power plant being constructed at Mortlake in Victoria will employ "up to ten full time staff"<sup>3</sup> There would also be around 350 construction jobs (over a two year period)<sup>4</sup>.

93 million tonnes over the lifetime of a replacement Combined Cycle Gas Turbine (CCGT) power plant (not including fugitive or life cycle emissions).

Gas plants are inexpensive to build, but need to pay for the gas supply for the several decades of their operation. This will lock South Australian electricity generation into volatile international prices that are expected to rise dramatically in the next few years. Current gas prices in Australia are around \$3-4 per gigajoule (GJ), however when large quantities of Liquefied Natural Gas (LNG) exports begin from eastern Australia this will increase. Gas suppliers will not be willing to sell gas to domestic consumers at current low Australian prices when they can get many times the return by selling into Asian markets. Domestic gas prices will become linked to the international oil price of the high Asian market (currently around \$17 GW)<sup>5</sup>.

<sup>1</sup> Australian Electricity Market Operator, South Australian Supply and Demand Outlook 2011 p.X

<sup>2</sup> <http://news.smh.com.au/business/wa-gas-crisis-cut-production-by-67b-20080710-3d2b.html>

<sup>3</sup> <http://www.originenergy.com.au/1376/Mortlake-Power-Station-Project>

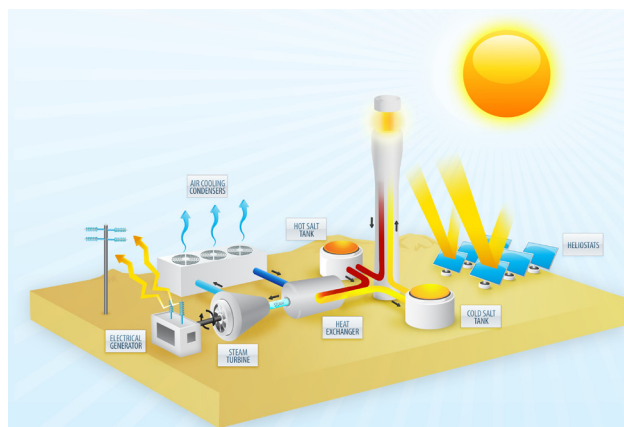
<sup>4</sup> Max Wei, Shana Patadia, Daniel M. Kammen, Putting renewables and energy efficiency to work: How many jobs can the clean energy industry generate in the US? Energy Policy, Volume 38, Issue 2, February 2010, Pages 919-931

<sup>5</sup> Santos 2011, Investor Presentation 2011, Available at: [http://www.santos.com/library/220911\\_Investor\\_Presentation\\_CLSA\\_Conference.pdf](http://www.santos.com/library/220911_Investor_Presentation_CLSA_Conference.pdf)



## Solar Thermal Technology

Solar thermal power is a COTS (commercial off the shelf) technology that can provide dispatchable or baseload renewable electricity. These plants use the mirrors to concentrate the sun's energy to heat a fluid. This heat can be stored and dispatched to provide power at any time without sun. The turbines, generator and associated infrastructure are exactly the same as thermal coal plant technology. So as you can see here the sun is picked up by the field of mirrors and reflected onto the central power tower. The tower uses molten salt to store the heat, which can be kept in the tanks and dispatched on demand.



There are 38 of the plants (over 10MW in size) operating currently globally, with total capacity over 1800MW. A further 20 are under construction. Around half of these use molten salt energy storage technology.

### Spain

1300 MW in operation  
1302 MW under construction  
5000 MW planned for completion by 2020

### US

500 MW in operation  
1000 MW under construction

### Egypt

150 MW in operation

### India

500 MW under development

### South Africa

600 MW under development and 1200 planned their Integrated Resource Plan out to 2020.

Global energy consultants AT Kearney are projecting a range of 6,500-12,000 by 2014

## Getting the job done...

- Implement a state based feed-in tariff
- Support a national feed-in tariff
- Work with all political parties to ensure that federal renewable energy mechanisms support regional development in SA

Thanks everyone for coming. To help this exciting opportunity gain support we would like to encourage you to support the Solar Initiative. This policy document summarises what is necessary to get renewables built in South Australia.