Repowering Port Augusta - Solar Initiative Policy Proposal

The Vision

Repowering Port Augusta is a proposal to create jobs and economic opportunities for South Australia, reduce emissions and pollution, and protect the health of the people of Port Augusta. It will also increase energy security and reduce the state's exposure to volatile gas prices that will soon be linked to high priced Asian markets and the international oil price.

Policy Proposal

The proposed solar thermal power plants in Port Augusta will be "first of a kind" builds for Australia. As with all technologies, the first plants are more expensive. Deployment drives rapid and well understood cost reductions[1], through economies of scale and industrial learnings.

For this reason, these initial plants will require policy support to bridge the gap between the market price for electricity, and cost from these initial plants.

A national Large Scale Feed in Tariff would be the most effective policy to build these plants, however current electricity market arrangements mean that a national system will be difficult to achieve in the short term. For that reason a two-step strategy is proposed.

[1] Hearps and McConell, Renewable Energy Technology Cost Review Melbourne Energy Institute Technical Paper Series March 2011 http://www.garnautreview.org.au/update-2011/commissioned-work/renewable-energy-technology-cost-review.pdf

Phase 1: Replacing Playford B

Option 1: State based Feed-in Tariff Only

A state based feed in tariff scheme to replace Playford B with solar thermal power would raise electricity prices in South Australia by just 0.7 cents per kWh, from current electricity prices. However, any replacement option for Playford (including gas) will raise electricity prices, potentially as much as the feed-in tariff option.

The two CST plants required to replace the Playford power station would need approximately a $110/MWh premium feed-in tariff to be financed. This does not include the impacts of CEFC financing, but does include revenue from the LRET scheme and a small premium based on the value of dispatchable CST electricity into the market. Table 1 illustrates the volume weighted prices for the different dispatch periods a CST plant could operate over, and Figure 1 illustrates how the CST plants could be financed by through a combination of wholesale price, LGC revenue and premium feed-in tariff.

If this tariff was enabled through a state based feed-in tariff scheme, and the costs were levied over South Australian end users only, the price rise would be around 0.7 cents per kWh (~ 3.5% price rise).

Dispatch Period	Volume Weighted Price ($/MWhr)
Overall	69.6
10am-10pm	99.6
10am-8pm	111.5
10am-6pm	128.0
12noon-6pm	151.7
12noon to 8pm	126.3

Table 1: Volume Weighted Prices for different dispatch periods in SA

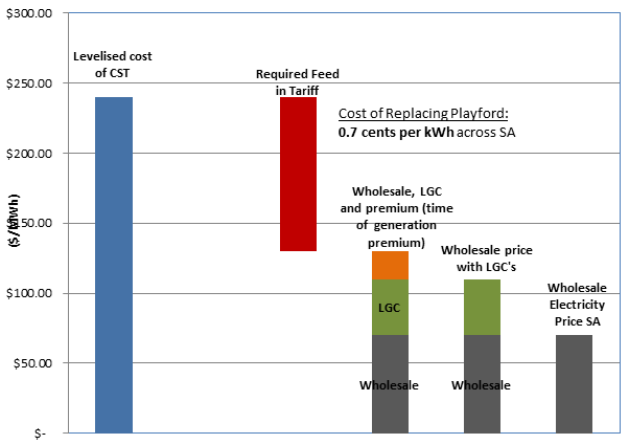

Figure 1: Financing the Playford Replacement with Feed-in Tariffs.

Option 2: Feed-in Tariff in combination with the Clean Energy Finance Corporation

The Clean Energy Finance Corporation (CEFC) should be able to provide low interest loans for such projects. If the CEFC was able to invest in the project at the government bond rate, and a substantial proportion of the project could be financed through the CEFC, then the cost of the Feed-in Tariffs can be reduced. Figure 2 shows the impact of 25% CEFC financing (at government bond rate) and Figure 3 shows the impact of 50% CEFC financing (at government bond rate).

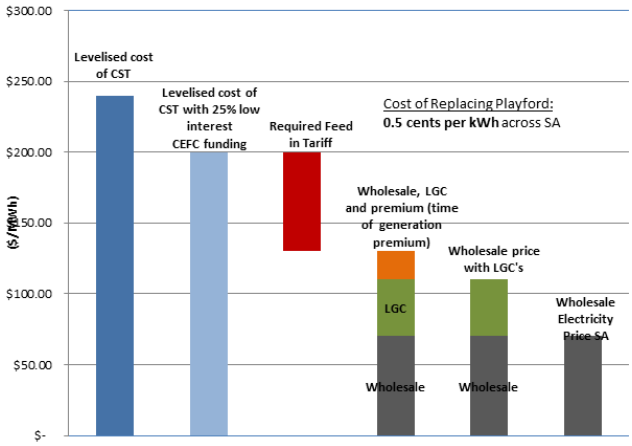

Figure 2: Financing the Playford Replacement with Feed-in Tariffs and 25% CEFC funding.

With 25% CEFC funding, the required premium feed-in tariff rate could be reduced to approximately $70/MWh. This would reduce the levy on South Australian energy users to 0.5 cents per kWh (if enable through a state based feed in tariff). This would require a $400 million dollar low interest loan from the CEFC.

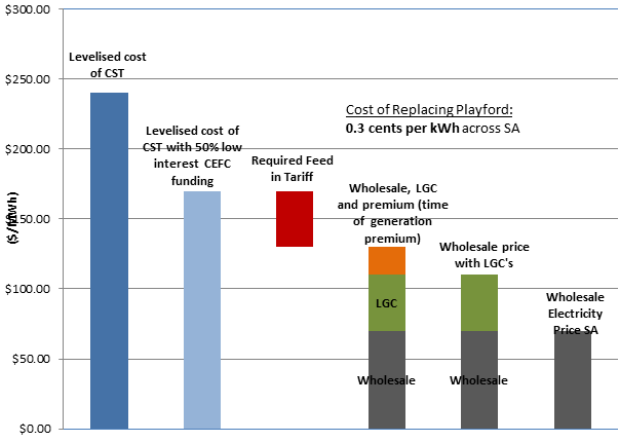

Figure 3: Financing the Playford Replacement with Feed-in Tariffs and 50% CEFC funding.

With 50% CEFC funding, the required premium feed-in tariff rate could be reduced to almost $40/MWh. This would reduce the levy on South Australian energy users to just 0.3 cents per kWh (if enable through a state based feed in tariff). This would require an $800 million low interest loan from the CEFC.

Phase 2: National Large-scale Feed in Tariff to replace Northern power station

The most effective policy would be a national feed in tariff. As mentioned, the current market arrangements would need to be modified to enable a national feed-in tariff, however this has been achieved international (and national feed in tariffs has been under consideration for many years in COAG).

The replacement of Northern power station could be completed through a National Feed in Tariff. With a national Feed-In Tariff scheme, this cost, spread across the entire electricity user base would result in a price increase of around 0.15 cents per kWh (less than 0.7% of an average electricity retail rate in Australia).

For context, the Australian Electricity Market Commission is projecting a 38% electricity price rise across the National Electricity Market by the end of 2013.[2]

Feed-in Tariffs: Overview

1. International context

Feed in tariffs have proven to be extremely effective and efficient in supporting renewable energy generation across the world. Over 80 countries worldwide now have a Feed-in Tariff mechanism, and in Europe 24 countries use feed-in tariffs (including 20 of the 27 EU member states).

The majority of newly installed wind and solar capacity in Europe has been driven by such Feed-in Tariff support: nearly 100% of all photovoltaic capacity installed in Europe and 93% of onshore wind capacity were initiated by feed-in tariff systems.

In Australia, the state-wide solar photovoltaic (PV) feed-in tariff policies have also been effective in deploying small scale solar PV across the rooftops of Australia. In the 2010/11 financial year alone, 800 MW of PV was installed of the back of Feed-in Tariff policies, and $4 Billion was invested in the solar sector.

2. Advantages of Feed in Tariffs

Feed-in schemes have proven to not only be effective, but a cost efficient support mechanism for renewable technologies when well designed. This mechanism could be utilised in Australia for large scale systems, including Concentrating Solar Thermal power stations. A national feed in tariff could provide the financial support that solar thermal (and other renewable power plants) require.

Feed-in Tariff Schemes offer superior characteristics compared with other government support mechanisms:

- Off Budget: Feed-in Tariff systems are (usually) funded completely off budget. No consolidated revenue or direct government funding is required: the private sector (debt and equity markets) provide all capital necessary to a project.
- Risk free: Government bodies do not carry any risks associated with the development of a project: private project developers alone carry the risk.
- Private Enterprise: Depending on design, any prospective developer can access a Feed in Tariff (on completion of a project). The private sector can (and is best placed) to determine the best project design to maximise its returns: the government does not have to go through a selection process or 'pick winners'.
- Competition: Again, depending on design, feed-in Tariffs can provide a competitive platform on which private enterprise can compete. Setting an annual installed capacity target (or similar) ensures healthy competition between multiple prospective project developers, leading to optimum cost outcomes.

3. How they work

Feed-in Tariffs are typically designed to offer a set electricity price (tariff) to renewable energy projects of a particular type. There is an obligation for retail electricity companies to buy the renewable energy electricity at the tariff rate for a set period of time (a 'purchase obligation'). The cost is typically passed through to all electricity uses (as a small charge, spread across a large user base). There are many different design options.

A key consideration is the determination of a tariff rate itself. The tariff rate should be flexible (reduce over time), to reflect the cost reductions that occur within a given industry. (This was a problem with the static state based Feed-in tariffs in Australia, which did not change to reflect the substantial cost reductions in the PV sector).

Well designed schemes (such as the German scheme), have a set 'regression' rate - rate at which the tariff decreases - but then also modify that rate based on industry development. Should installation rates increase beyond a target range, the tariffs are reduced at a faster rate. This optimisation ensures tariff prices reflect technology costs, prevent cost blowouts to consumers (and windfall profits to selected project developers), and ensure a low impact on the electricity users.

[2] Australian Energy Market Commission, Future Possible Retail Electricity Price Movements, Available at: http://www.aemc.gov.au/Market Reviews/ Completed/ Future-Possible-Retail-Electricity-Price-Movements-1-July-2010-to-30-June-201