



Beyond Zero Emissions – CEFC Bill Senate Committee Submission

21 June 2012

This paper makes a number of points from the perspective of Beyond Zero Emissions (BZE) on the Clean Energy Finance Corporation as being proposed in June 2012.

Any new renewable energy policy must be measured against these two questions:

1. Will it create more renewable energy generation than existing policies?
2. Will it enable the deployment of important, but currently more expensive, types of renewable technologies installed than existing policies, pushing them down the cost curve?

The CEFC Review has absolved itself of any recommendations to expand the Renewable Energy Target, negating the first point. The only other possible benefit of the CEFC is if it achieved the second point, by investing in concentrating solar thermal power with storage (CST).

BZE notes that with the CEFC as recommended it may be possible for investment in CST to occur, but is not confident that the CEFC will see much, if any, CST constructed, due to the ambiguity of the types of technology allowed and the investment structure.

This submissions wishes to make a number of points

- One of the few benefits the CEFC may be able to deliver will be facilitating investment in concentrating solar thermal power, as opposed to other forms of renewable and fossil technologies
- Those interested in the CEFC's outcomes must be aware of the fact that to achieve this goal, the CEFC must be allowed to provide at least 75%, and up to 100%, of the capital investment for CST power plants, representing as much as \$500-1,000 million dollars.
- The CEFC should not invest in any power generation utilising fossil gas as a significant energy source .
- The CEFC should be explicit in its definitions of renewable energy and low emissions energy. These terms are poorly defined in both the CEFC Bill and CEFC Expert Review recommendations, leaving it open to misguided investments in projects which are still significant sources of greenhouse gas emissions.
- The CEFC Investment Mandate should contain explicit instructions to prevent it from distorting Certificate prices under the existing Renewable Energy Target, to prevent CEFC investments having a negative impact on other RET-eligible projects.

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Why Concentrating Solar Thermal?

The CEFC is limiting itself to investment in commercial technologies. The main commercial renewable energy generating technologies are wind power, solar photovoltaics, biomass energy, and concentrating solar thermal. Other technologies such as wave power, geothermal etc are still in development phase, and as such would not be suitable for CEFC financing. Of the commercial technologies,

Wind power is currently the cheapest form of renewable energy, and as such is expected to continue to be a viable industry due to the existing Large-scale Renewable Energy Target. In fact, low-interest CEFC financing to wind projects could actually distort the LRET by depressing the price of Renewable Energy Certificates, to the detriment of other wind projects which are not CEFC funding recipients.

Solar photovoltaic panels distributed at the rooftop scale are able to compete with retail power prices, meaning it is economically more desirable to deploy solar PV at this small scale over many individual systems. There is little benefit to larger scale installations of the type more likely to need CEFC financing, so while BZE recognises that solar PV projects may be a potential recipient of CEFC funding, it does not consider this to be the most effective use of the funds.

Biomass energy is limited in its scalability and sustainability without impacting on biodiversity and agriculture. There are some forms of biomass energy, such as biomass sourced from native forests, which should not even be considered to be renewable energy.

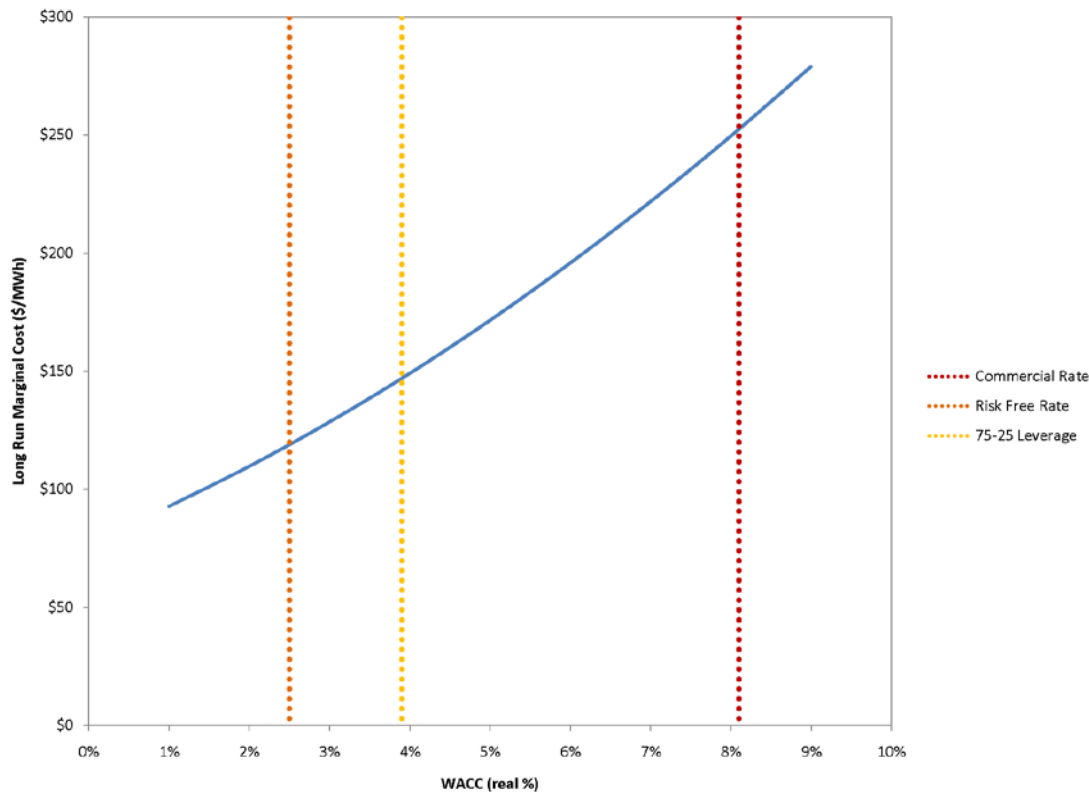
Concentrating solar thermal is a commercial technology able to provide reliable power 24 hours a day, however being less mature is currently not cost-competitive with other fossil and renewable technologies. Given the large capital cost component of the cost of solar thermal electricity, the CEFC, if used correctly, could potentially help this technology be deployed in Australia, also contributing to learnings and experience that will be able to reduce costs of future deployment.

How would the CEFC have to operate to allow deployment of CST?

As with most renewable energy technologies, the upfront capital cost of CST represents the largest proportion of the levelised cost of energy — in this case over 90%. Consequently the 'cost of capital', or the effective interest rate on capital investment, has a substantial influence on the economic viability of a project. The figure below (next page) illustrates the impact of the cost of capital on the levelised cost of a CST plant.

To have a chance of being a viable investment with the assistance of the CEFC, a CST project would have to receive greater than 75% of project capital finance at the government bond rate. For this to work it would also have to negotiate a PPA which reflected the higher market value of peak power dispatch (the CST plant would need energy storage).

Currently, there is nothing in the CEFC as proposed to guarantee it will be able to provide such a high proportion of finance to a project. While there appears to be nothing that will explicitly prevent this scenario from occurring, BZE is providing the details of this scenario to make sure it is fully comprehended by those involved with the setup and administration of the CEFC.



The figure above shows the Levelised Cost of Electricity (LCOE) of a CST project, built at today's costs, as a function of the Weighted Average Cost of Capital (WACC) — the effective overall interest rate for a capital financed project. At current commercial rates, shown in red, the LCOE is over \$250/MWh. If the CEFC allowed 75% of the capital cost to be financed at the Government Risk Free Rate, shown in orange — with the remaining 25% financed at the commercial rate — the LCOE could approach \$150/MWh.

75/25 debt/equity is typical finance leverage for power infrastructure projects. An individual CST plant could cost as much as \$500 - 1,000 million.

Absent any other relevant policy or incentives, a project financed in this way would need to attract a Power Purchase Agreement (PPA) for \$150/MWh. Current wind farm PPAs are in the order of \$90-110/MWh, which includes the underlying price of wholesale electricity, plus the value of Renewable Energy Certificates under the LRET. While it is conceivable that a slightly higher PPA would attach to a CST project compared to wind — due to CST's ability to dispatch power during peak price events — it is unlikely to be able to attract one as high as \$150/MWh. A recent study for the Australian Solar Institute suggested that values of \$125-138/MWh are a likely range for the value of electricity from a CST plant deployed in the National Electricity Market¹.

While the individual costs and rates of individual projects may vary, it is clear that to achieve investment in CST in Australia will not be easy even with the CEFC in operation.

¹ Lovegrove, K. et al, 2012, "Realising the potential of concentrating solar power in Australia: Summary for stakeholders", Australian Solar Institute, p24, <http://www.australiansolarinstitute.com.au/SiteFiles/australiansolarinstitute.com.au/RPSCPA_Report_180512_Web.pdf>

Other issues with the CEFC

No limits on fossil gas, weak definitions

Fossil gas (otherwise known as natural gas) is seen by some to be an improvement on coal as an energy source, and has somehow come to be included in definitions of 'clean energy'. This is wrong for several reasons:

1. Future growth in fossil gas in Australia is likely to be sourced from coal seam gas, which has dubious implications for fugitive emissions. Methane leaks from CSG fields may partially or wholly undermine the emissions reductions relative to coal.
2. A prudent approach to the dangers of climate change means that all fossil fuel use, not just coal, needs to be phased out as fast as possible if we are to avoid the worst impacts of climate change. See Hansen, et al 2011².
3. Renewable alternatives exist to gas as an energy source. Renewable power sources should be favoured over combined cycle gas generation, and heat pumps powered by renewable electricity can provide the same and better benefits than co-generation or tri-generation.

The definition of low emissions energy under Sections 60, subsections (4) and (5) of the CEFC bill appear to give the power to the Board to classify anything they like as low emissions. This leaves a pathway open to misguided use of CEFC funds if the definition is too broad, potentially even coal-fired power projects.

Recommendations:

- The CEFC does not invest in projects utilising fossil gas as an energy source
- At the very least, the CEFC explicitly defines what it means by renewable energy and low emissions energy. The Board's discretion (within its own "guidelines") to determine what is a low emissions technology should be fettered within the Bill so that the Board cannot invest in fossil energy technologies

Distorting the RET

If the CEFC was to offer generous financing terms to wind projects, it could depress the price of Large-scale Generation Certificates under the RET, and undermine the viability of other wind projects utilising only private finance. While this issue was noted, the best the Review can offer as a solution is that it *"will be cognisant of the potential impact on other market participants when considering investment proposals."*³.

Recommendation: The CEFC should incorporate hard rules to prevent it from distorting the RET.

² Hansen, J. Et al, 2011, "The Case for Young People and Nature", Columbia University, <http://www.columbia.edu/~jeh1/mailings/2011/20110505_CaseForYoungPeople.pdf>

³ Broadbent, J., Moore, I., Paradise, D. 2012, "Clean Energy Finance Corporation Expert Review", p22, http://www.cefcexpertreview.gov.au/content/report/downloads/CEFC_report.pdf,