Submission to the Clean Energy Finance Corporation Review Panel

Beyond Zero Emissions - December 8, 2011

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Introduction

Australia must rapidly decarbonise its economy if it is to play a constructive role in global efforts to address the climate change challenge. Present atmospheric levels of CO_2 are at 390ppm[i] and must be brought down to 350ppm to stay within the 2°C warming "guardrail."

Blessed with vast renewable energy resources, Australia can decarbonise its economy principally through the large-scale rollout of commercially available renewable energy technologies. The *Zero Carbon Australia Stationary Energy* plan, a research partnership between Beyond Zero Emissions and the University of Melbourne's Energy Research Institute, demonstrates the technical feasibility of shifting to a 100 percent renewable energy system in ten years. It identifies Concentrating Solar Thermal and wind power as the primary technologies for a zero-carbon stationary energy sector.

Transitioning the stationary energy sector to 100 percent renewable energy sources is achievable, and now needs investment. The scenario modelled in the *Zero Carbon Australia Stationary Energy* plan would require $370 billion investment over a decade.[ii] The Clean Energy Finance Corporation can play a key role in providing this investment.

The following submission presents recommendations for the Clean Energy Finance Corporation's functioning. Specifically in terms of:

- How the CEFC can best facilitate investment
- The non-financial principles needed to guide investment decisions
- How the CEFC can best catalyse the flow of funds from financial institutions
- Identify the non-financial inhibitors to clean energy investment that must be overcome
- How the CEFC interacts with other governmental programs and its role as a part of the Clean Energy Future Package as a whole
- Recommendations for the operating mandate of the CEFC
- Recommendations for the proposed board and management structure

Summary

- **The CEFC must not support technologies that are currently commercially competitive, specifically gas-fired generation and wind power**
- **The CEFC must not support unproven technologies or R&D initiatives**
- **The CEFC must not invest in technologies which are primarily powered by any form of fossil fuel**
- **The CEFC must support the deployment of technologies that are likely to be the most useful in the future, specifically concentrating solar thermal power with storage**
- **CEFC financed projects must be additional to the LRET**
- **The CEFC must remain independent from Government**
- **The CEFC must be allowed to invest in single large-scale projects in the order of $1-2 billion or greater**
- **The CEFC must be allowed to provide or secure as high as 75-100% of financing for individual projects**
- **Preparation of CEFC's investment mandate must take into account study of the specific policy and financial requirements that will be necessary to build large-scale concentrating solar thermal power plants in Australia, which will likely be greater than loan guarantees/low-interest debt in isolation**

Background and Context

Commercially available renewable energy technologies—wind power, solar photovoltaic, and Concentrating Solar Thermal—require different types of support. The technologies differ in cost, in phases of technological maturity, unique characteristics that influence the optimum form of deployment (i.e: centralised or decentralised installation), and deployment status. These factors have implications for the Clean Energy Finance Corporation's investment priorities and its role in facilitating investment in renewable energy projects.

Wind Power

Wind energy the most mature renewable energy technology and the most economical. The technology is already deployed in Australia, with around 2000 MW connected to the grid. The Federal Government's Large-scale Renewable Energy Target program has been the key driver of wind power projects and will continue to be though to 2020. Affordable energy storage for wind power is not yet commercially available so it remains a variable source of energy. Wind power in Australia would benefit from CEFC funding, however existing policy provides enough support for its deployment.

Solar Photovoltaic

Solar photovoltaic systems are also deployed though out Australia. Unlike wind power installations that are centralised, photovoltaic systems are installed in a decentralised manner—predominately on commercial and residential rooftops.

Economies of scale and strengthened supply chains are driving PV down the cost curve.[iii] PV is expected to reach grid parity across most of Australia this decade. This will have a disruptive effect on the Australian energy system, as many consumers will choose to install more economical

photovoltaic systems rather than depend on electricity from the grid. Like wind power, there is no affordable energy storage for solar PV. It remains a variable source of electricity.

The inability of PV to provide dispatchable electricity makes it a suboptimum option for large-scale installations. The CEFC model is ill suited for encouraging the decentralised rollout of PV.

Concentrating Solar Thermal (with Storage)

Concentrating Solar Thermal power with molten salt energy storage is a centralised generator that can provide dispatchable electricity supplies. The technology is not deployed in Australia. The current cost of CST is above that of wind to an extent that it will not benefit from existing renewable energy deployment policy—namely, the Large-scale Renewable Energy Target scheme.

Refer to case study in Appendix 1 for a case study analysis of CST deployment in the United States and the Department of Energy loan guarantee program.

How the CEFC could facilitate investment:

Renewable energy technology projects are typically capital intensive, with low ongoing operational and maintenance costs. As such, the cost of capital (cost of finance) plays the most significant part in the financial viability, and ultimately the successful development of a project. Figure 1 below illustrates the impact the weight average cost of capital (WACC) has on the Long Run Marginal Cost (LRMC) of a Concentrating Solar Thermal Power plant (with molten salt storage). It demonstrates a significant differential between the risk free rate and the commercial finance rates that has implications for the LRMC and therefore the financial viability of CST projects.

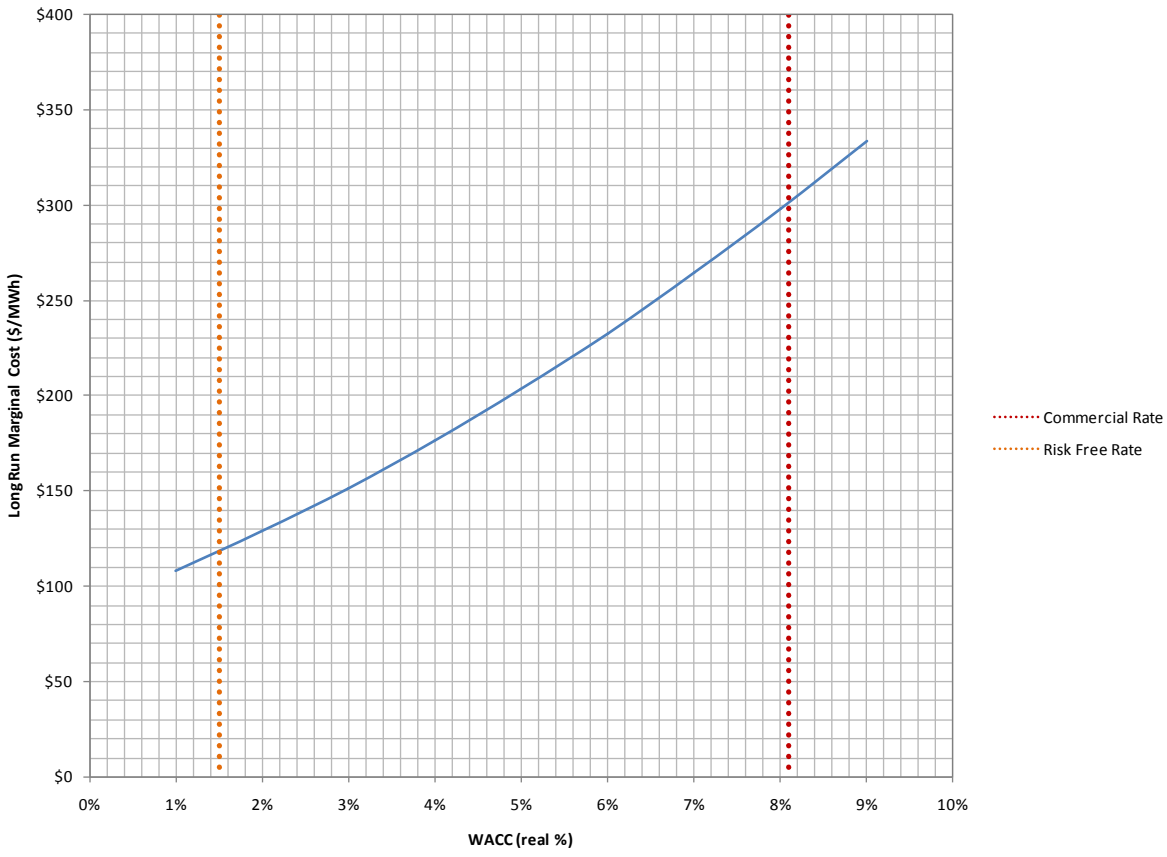

Figure 1: Impact of Weighted Average Cost of Capital on Long Run Marginal Cost

Beyond Zero Emissions recommend the CEFC facilitate and encourage significant investments by de-risking clean energy projects and lowering the cost of finance.

Principles, other than financial viability, that could govern investment strategies of the CEFC

The aims and objectives of the Clean Energy Finance Corporation are best achieved through an investment mandate directed to filling the deployment policy gap for specific commercially available renewable energy technologies, which in the view of Beyond Zero Emissions would be Concentrating Solar Thermal power with storage. The CEFC can maximise its effectiveness by focusing on the deployment of priority CST projects rather than R&D initiatives, commercially competitive renewable energy technologies (such as wind), or those which are expected to become commercially competitive in the near future (such as photovoltaics).

Commercially Competitive Technologies

The extent to which the CEFC can accelerate the deployment of priority renewable energy projects would be compromised if it invests in technologies that are already supported through existing market based schemes, in particular the Large Scale Renewable Energy Target (LRET). Modelling by AEMO and others suggests the Renewable Energy Target will predominantly be satisfied with wind generation, which is already being financed and supported through other initiatives. It is thus unnecessary for the Clean Energy Finance Corporation to invest in wind technology, as there are already schemes supporting its propagation and maturation. If the CEFC funds projects that are already being financed under the LRET (e.g. wind), the CEFC will be placed in a position where it is competing directly in regards to the provisioning of finance to the current clean energy sector. This would put the CEFC in contradiction with its stated intention to "***not compete directly with the private sector in the provision of financing to [clean energy] businesses***". The CEFC should be a mechanism for investment for technologies that are not already supported or incentivised through current policy mechanism.

Commercially Unavailable Technologies

The CEFC's ability to increase Australia's renewable energy generation capacity would be compromised by investing in technologies that have not been demonstrated successfully at scale, or commercially available at a large scale. Geothermal Energy in Australia is a prime example of such a technology. Unproven and pre-commercial technologies should not fall under the CEFC financing and investment mandate. Beyond Zero Emissions recommend CEFC strategically invest in technologies that are proven and commercially available, yet un-competitive with the current energy sector.

Critical technologies of the future

The Clean Energy Finance Corporation should support the commercialization and deployment of those technologies that are likely to be most useful in a renewable energy future. Dispatchable technologies and technologies with storage will be vital in the renewable energy grids of the future.

Dispatchability and storage provides a greater value to the electricity market as a whole, and can be used to great effect to leverage deployment of other variable renewable energy sources such as wind and photovoltaics. The support and financing of renewable technologies that are 'load following' (e.g. Concentrating Solar Thermal with molten storage) will also be able significantly increase the wider penetration of renewable into the national electricity market.

The CEFC can best fulfil its role of transforming the energy sector by targeted investment in renewable energy technologies that can provide dispatchable electricity supplies.

Concentrating Solar Thermal power with molten salt storage is the only commercially available technology that satisfies this criterion. Beyond Zero Emissions recommends the CEFC invests in CST plants with storage and expand its investments as additional technologies capable of providing dispatchable electricity become commercially available.

It should be noted that not all CST technologies are equal, for example where linear focusing technologies (parabolic trough and linear Fresnel) have a significantly lower winter power output than equivalently sized point focusing technologies (power tower/central receiver and dish focus systems). Further discussion of this is given in the ZCA Stationary Energy Plan, pages 26-27[ii].

Scale and Competitive Advantage – Optimum installation size

The CEFC should be directed at scale-appropriate deployments of particular technologies. In regards to solar technologies (as noted earlier), there is limited value in installing a large-scale, semi-centralised PV systems compared with highly distributed series of small-scale rooftop installations. Similarly, Concentrating Solar Thermal with molten salt storage, which cannot be distributed, is a more appropriate large scale solar technology.

In the case of PV systems:

- There is ostensibly no difference in production output from a utility-scale PV system when compared to a distributed rooftop system (in a specified location). While installing tracking can increase the PV capacity factor during daylight hours, in the absence of cost-effective electrical storage it remains limited to daylight production.
- The energy produced from PV Rooftop systems can compete with the retail price of electricity, whereas the energy produced from large-scale PV systems meanwhile will have to compete with the wholesale price of electricity. Due to the modular nature of PV systems, the cost advantage of a utility scale PV system over rooftop PV systems is minimal (and does not alter the competitive advantage rooftop PV has over utility), particularly when considering the costs of connection to the transmission network.
- Distributed rooftop systems are therefore a more economic option when compared with utility scale PV system. There is therefore no additional value created by the formation of a centralised utility-scale PV system.
- If a large deployment of PV is desired, distributed deployment is the preferred option that entails a qualitatively different set of policies that are beyond the scope of the CEFC.[1]

Considering these points, solar thermal technologies should receive the bulk of the investment and support of the CEFC: large-scale solar thermal is a proven technology, commercially available and yet is not yet competitive with other forms of energy (renewable or otherwise).

Solar thermal has the ability to reliably power Australia's energy needs with zero carbon electricity. Solar thermal technology requires a committed and purposeful investment of funds made to bridge the gap to market competitiveness.

[1] Small scale Solar PV is currently incentivised and aided through the SRES scheme as well as some state based Feed-in Tariff schemes. This, in conjunction with falling PV costs and rising electricity prices, means that 'grid parity', i.e. the point at which at it is cheaper to by PV electricity than grid electricity, is expected to occur sometime in the next decade. As PV are already incentivized by such schemes, and may not need further incentives in the near future, the CEFC should not prioritize further support for PV.

Definition of 'Clean Energy' - How the CEFC should approach the intention that its funding be divided into two streams

Summary: The CEFC should not invest in technologies where the majority of energy provided is sourced from any kind of fossil fuel.

It has been signaled that the CEFC intends to approach its funding mandate with a split focus. Half of the CEFC funding has been allocated to investment in "a renewable energy and enabling technology stream" while the second half is said to be allocated to "an energy efficiency and low emissions technologies stream".

Beyond Zero Emissions does not consider any fossil fuel to fit under the definition of 'clean energy'. Decarbonisation of the economy requires that all fossil fuel combustion is eliminated. In recent years, some proponents have included various forms of fossil gas combustion – e.g. cogeneration and combined cycle gas power plants – under the banner of 'clean energy', based on the argument that it has a lower emissions intensity than coal-fired energy.

The greenhouse intensity of fossil gas combustion depends heavily upon the extent of life-cycle emissions of gas extraction, processing, distribution and combustion results in methane leakage, which has a global warming potential of up to 105 times that of carbon dioxide[iv]. Most growth in gas supply in Australia will come from coal seam gas, of which the lifecycle emissions are highly contentious and lacking empirical evidence. Bank of America Merrill Lynch have recently issued a warning to investors which highlights that this uncertainty about the emissions profile of gas "*may directly impact future earnings in terms of carbon liability under a possibly more thorough future inventory of emissions.*"[v][vi].

Beyond Zero Emissions is pleased to see that half of the funding budget has been quarantined specifically investment in renewable technologies and enabling infrastructure. Beyond Zero Emissions recommends the proportion of funds available for renewable energy and enabling infrastructure is not limited to $5 billion.

Beyond Zero Emissions recommends investments in enabling infrastructure such as transmission lines built with surplus capacity with the expectation that additional renewable energy installations will be brought online.

Allocating half of the CEFC budget for investment in energy efficiency projects and 'low-emission technologies' may limit the ability of the CEFC to meet its aims and objectives.

The CEFC's ability to accelerate the decarbonisation of the Australian economy is limited by investments in 'low-carbon technologies'—which may include gas generation, hybrid renewable energy/fossil fuel generators, and bolt-on renewable generation capacity to existing fossil plants. CST plants with storage are capable of providing reliable zero-carbon electricity and undermine the need for the deployment of 'low-emissions technologies'.

While Beyond Zero Emissions does not recommend investing in renewable/fossil hybrid systems, it should be noted that if this nevertheless allowed as an option for the CEFC, it should only consider renewable hybrid systems which are capable of operating as a standalone power plant if the fossil part is removed in the future. A clear example where this has not happened is the linear Fresnel solar thermal boosters at Kogan Creek and Liddell coal power stations, which do not provide steam at high enough temperature to be useful in a standalone situation. The renewable hybrid should be capable of providing steam at temperatures of 500 degrees Celsius or greater.

How the CEFC could catalyse the flow of funds from financial institutions

Summary: for CST projects to be financially viable, the CEFC will need to be able to provide highly leveraged loans (75-100% of project value) at or near the government risk-free interest rate.

As previously mentioned, the CEFC has the capacity to lower the cost of capital for clean energy projects. Loan guarantees are one such method of achieving this aim. A loan guarantee will lower the risk profile of projects, and hence also the cost of the debt component of the loan. The same result could also be achieved through direct investment by the CEFC in clean energy projects. Direct investment, at a low rate (presumably government bond rates), would lower the overall cost of capital.

For CST projects to be viable, the value of revenue from electricity sales (and any other income, for example grants), negotiated through Power Purchase Agreements (PPAs) must be equal to the Long-Run Marginal Cost (LRMC) of the project, which is heavily dependent upon the cost of capital.

It may be that initial projects also require an element of grant funding to ensure project viability, which could be provided from ARENA's pool of unallocated money.

Power purchase agreements for CST

A power purchase agreement for a concentrating solar thermal plant with storage will be the subject of negotiation between the project developers and the participating power utility company or companies. However some insight can be gained into a likely appropriate value:

- Wind PPAs in Australia are generally negotiated for $90-110/MWh, which reflects the underlying average market value of electricity as well as an effective LGC price. The wind PPA should be considered a reference price, as it currently represents the cheapest way for a utility to fulfill its LRET requirements.
- CST with storage will be able to dispatch at peak times, therefore the underlying market value of the electricity will be greater than wind power. This will vary depending upon the specific location of the plant, but preliminary analysis by Beyond Zero Emissions indicates that this could justify an extra $20-40/MWh in favourable locations.

The value of a PPA for CST with storage could therefore be in the range of $110-150/MWh, under current existing policies. It must be stressed that this is an indicative value and would require further specific analysis for actual projects. It is worth noting that that from the analyses in Figure 2 and Figure 3, the LRMC of CST only approaches this range at the low interest rates (1-3% real) that are achievable with highly leveraged low interest investment.

Example CST project

The examples below are based on a recent CST project from the U.S.A. which has commenced construction. The Crescent Dunes project by SolarReserve is a 110MW (gross) molten salt power tower in Tonopah, Nevada. The total project capital cost is approximately $1 billion, and it is expected to produce 480GWh/yr of electricity. It directly collects concentrated solar energy in molten salt at over 565^{o}C, Further details are in Appendix 1.

Loan guarantees

Loan guarantees could help lower the overall cost of finance by lowering the cost of the debt component. The cost of debt finance should reduce (ultimately towards the risk free rate) as through the existence of the guarantee. It should be noted that the loan guarantee will not necessarily impact the cost equity (generally unsecured), and may only cover some of the debt. The loan guarantee could lower the overall weighted average (Figure 2 below indicates the potential impact of a loan guarantee on the cost of Solar Thermal Project with 75-25 debt-equity financing). Loan guarantees have the potential to leverage a significant amount of investment in projects. By guaranteeing a portfolio of projects (and thus diversifying), the CEFC does not need to secure the entire guaranteed loan amount of all the projects in aggregation.

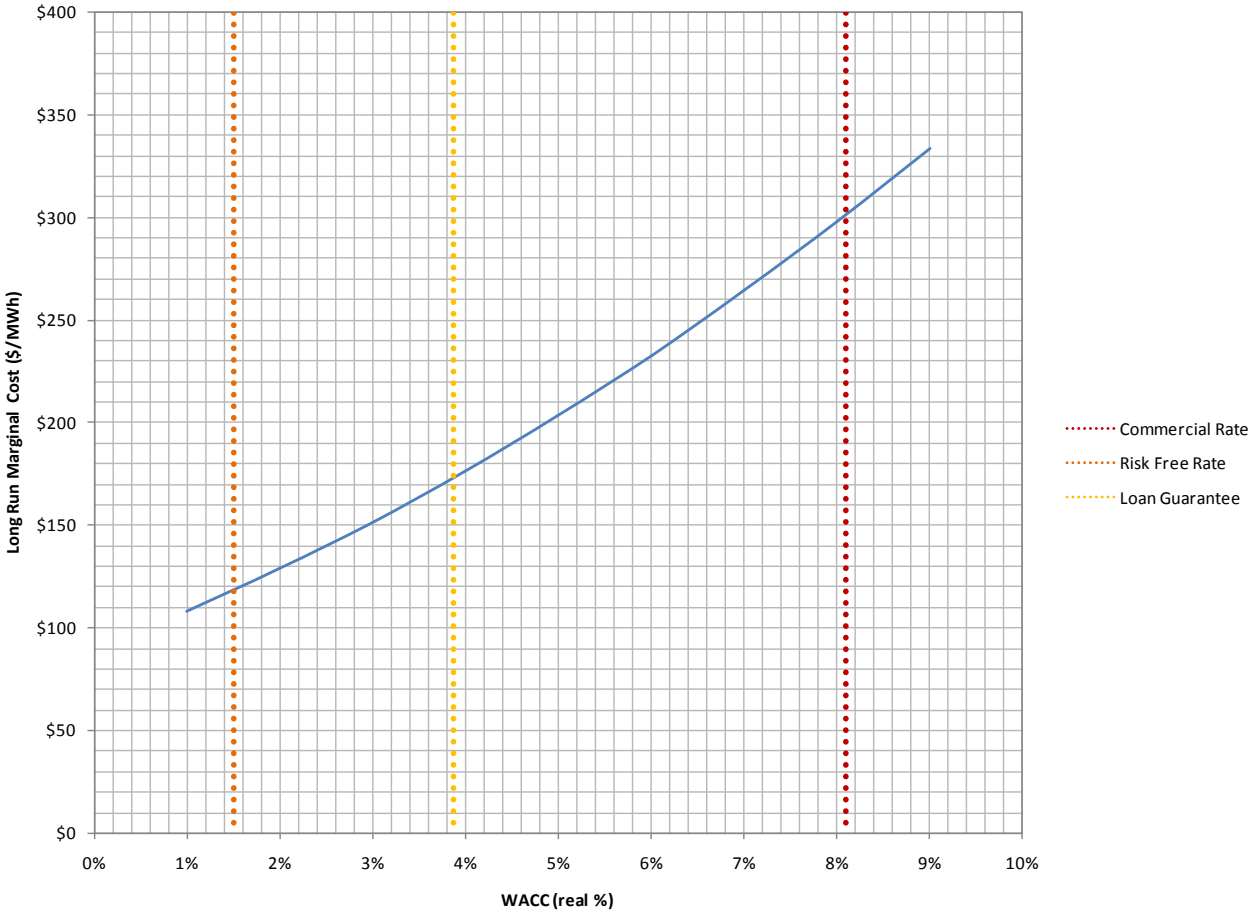

Figure 2: Impact of Loan Guarantee on WACC and LRMC

Direct Investment

Direct investment is another example of a method to facilitate and catalyse investment. The CEFC's direct investment could act as a low cost (perhaps at the government bond rate) provider of finance. This could further lower the cost of capital of a project, as the remainder finance required for the project could be funded though a mix of debt and equity (not just equity, as in the loan guarantee). Further, direct investment would also lower a debtor's exposure and associated risk linked to the project. This would help increase certainty and reduce the debt cost, and result on further reductions in cost of capital.

Figure 3 below illustrates the impact direct CEFC investment has on the overall cost of capital (for a solar thermal plant with 75-25 CEFC-commercial funding). Whilst direct CEFC investment (assuming low or government bond rate is achievable) results in lower cost of capital, less private money can be leveraged. One hundred percent of the CEFC money would be tied up in a particular project (unlike the loan guarantee which could leverage and support more projects with the same amount of money).

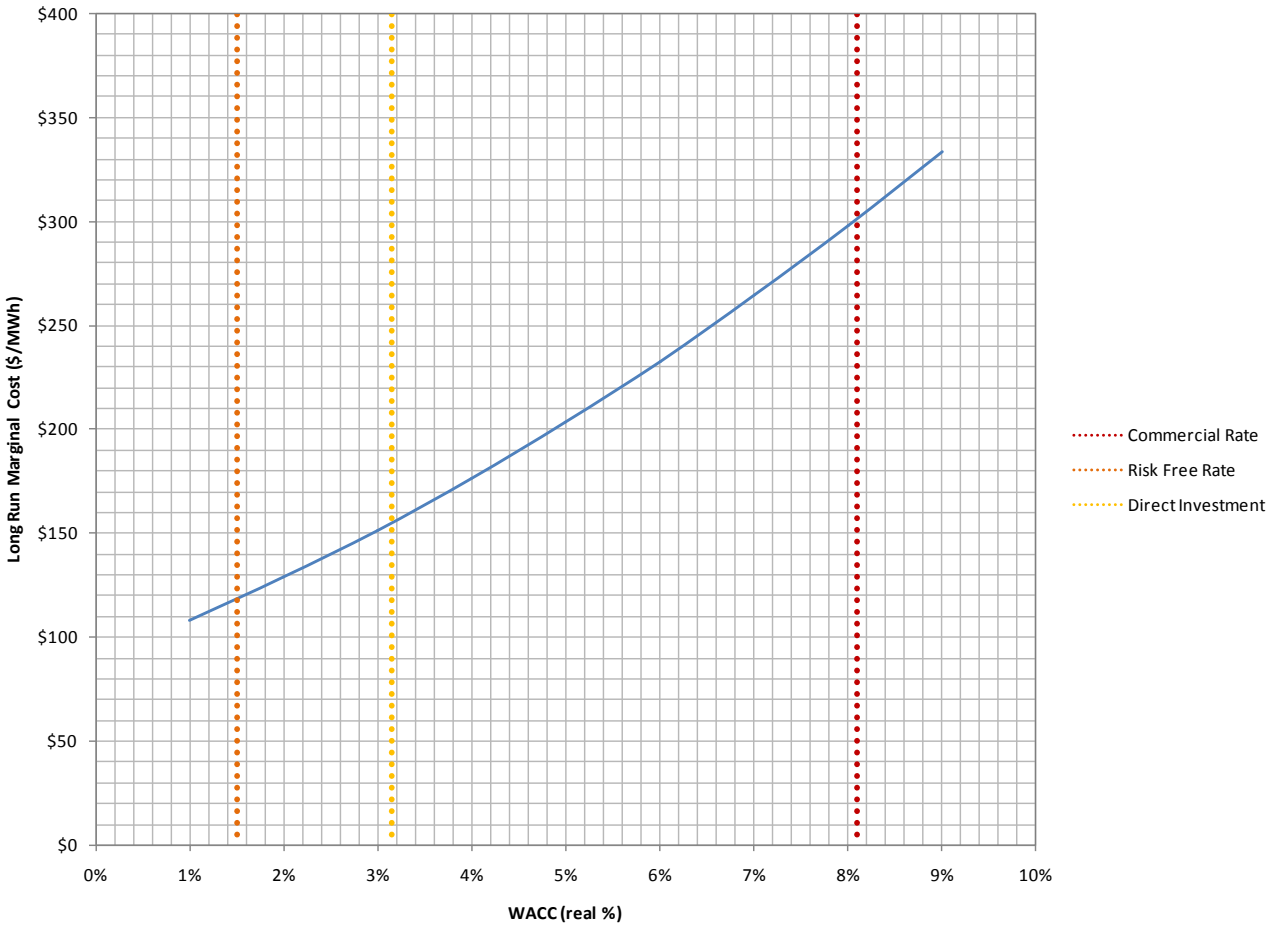

Figure 3: Impact of Direct Investment on WACC and LRMC

It should be noted that neither of the options above will be enough (alone) to get Concentrated Solar Thermal projects commissioned. A favourable PPA (for example incorporating the value of storage and dispatchability) ***and*** the value of the LGC (LRET scheme) would be still necessary (and perhaps not enough) to secure the financing of the project.

Experiences other firms in the clean energy sector have had in regards to trying to obtain finance:

As mentioned above, the cost of capital (or cost of finance), plays a significant part in the financial viability of a project. The cost of capital (and perceived technology risk associated with that cost) impedes the development of, and investment in clean energy projects. However experience in recent solar thermal projects in the United States of America recently have shown that a mix of policies was required to achieve financial close:

- U.S. Department of Energy loan guarantees coupled with direct investment from the US Federal Financing Bank for the entire debt proportion of the project (approximately 75% of total).
- 25-year Power Purchase agreements at a rate which reflected the Time-of-Day value of dispatched solar electricity (higher than the average market rate) and the contribution towards state-based Renewable Portfolio Standards.
- Cash Grant (in lieu of Investment Tax Credit) of 30% of the total capital value of the projects, which will be granted on successful commencement of operations of the completed plants.

See Appendix 1 for more information.

Non-financial inhibitors to clean energy investment that will need to be overcome:

There are a number of non-financial inhibitors and barriers to clean energy investment that will need to be overcome if the CEFC's endeavours and investments are to be successful and its mandate fulfilled. While not strictly being a financial concern, the CEFC may be able to assist with some of the following issues:

- **Power Purchase Agreements:** It is difficult for third parties to negotiate a PPA in an oligopoly. The NEM market is dominated by such a small number of players that it is in essence, a triopoly. Third parties coming in wanting to do business find it very difficult to negotiate PPA's in the current market environment.
- **Government Interference:** Government intervention (retrospective) has plagued the renewable energy sector, creating an uncertain investment environment and 'boom/bust' cycles. This has been particular evident with the state-based PV Feed-in Tariff schemes, but can also be seen with the interference and modifications made to the original RET scheme. Beyond Zero Emissions recommends the CEFC is kept separate from government to ensure it provides the certainty needed to facilitate private sector investment in large-scale renewable energy installations. Beyond Zero Emissions recommend the CEFC board is kept completely independent from government to create a clear future and certain investment environment for clean energy projects.
- **Transmission Infrastructure:** One major issue with renewable deployment is the limited transmission infrastructure to the best resource locations (e.g. the best solar resource is typically located very far away from the existing grid). Limited transmission capacity is a barrier to renewable energy deployment.

How the CEFC could fit in amongst other governmental programs and its role as a part of the Clean Energy Future Package as a whole:

For Australia to decarbonise its economy as quickly and efficiently as possible, it is essential that the multitude of renewable organisations and initiatives work in parallel, including the CEFC. For the CEFC to be a successful investment venture and to fulfil its stated aims it must work in tandem with a number of already established programs. Such examples include:

- Any utility-scale clean energy projects financed though the CEFC should have access to the LGC (Large-scale Generation Certificate) market. Access to this market is crucial and essential as low interest financing, or a lowered cost of capital, alone will not be enough to secure the clean energy projects required. A wide range of support from different organisations will be needed to get new large scale CEFC funded projects off the ground.
- Any projects built in conjunction with LGC's and financed through the CEFC, must be additional, or on top of, the existing legislated LRET scheme. As previously mentioned, if the CEFC funded projects are not additional to the LRET, they will be competing directly with the provisioning of finance to the current clean energy sector most notably the wind industry. That is, CEFC financing would be out competing finance that would have otherwise financed and helped deliver the LRET. Once again, as above, this is against the CEFC's clearly stated intention to "**not compete directly with the private sector in the provision of financing to [clean energy] businesses**".
- The 'contracts for closure' program through the Energy Security Fund (in which 2000 MW of emissions intensive generation capacity will be retired by 2020) could work well with the CEFC. This program requires that the retired capacity is replaced with sufficient capacity, which could be delivered renewable technologies such as solar thermal. Dispatchable solar thermal with storage has the ability to securely meet the market stability outcomes required in the contract for closure program.

CEFC Implementation timeline:

Expediting the commencement of CEFC investments to 2013 will give the Australian Government greater capacity to cope with the upward revision of carbon reduction targets that may result from international agreements, the recommendations of the Climate Change Authority, or the demands of the Australian citizenry.

It is critical that the CEFC be up and running, with its committed quota of funds available and investment portfolio at operating by 2013. The urgency arises the climate science which shows that the economy must be fully decarbonised within a decade.

Bringing forward the commencement date of the CEFC will improve Australia's chances of attracting investment and competing in the global renewable energy and cleantech markets. Analysis by Bloomberg New Energy Finance shows global investment in renewable energy is now greater than investment in fossil fuels—US$187 billion compared to US$157 billion.[vii] Fast-tracking implementation will allow the CEFC to aid Australia's competitiveness in this growing market—which is expected to be worth up to US$2.3 trillion by 2020.[viii]

Beyond Zero Emissions recommends:

- Early 2012: CEFC review board reports back to the government concerning the proposed mandate and recommendations. Recommendations are taken on board and legislation drafting begins.
- April 2012: The CEFC passed into law and commences operation.
- 2012-2013: The CEFC should have the majority of its infrastructure set up during this period. Knowledgeable experts assembled and appointed, funding guidelines established with the intent of investment to commence in 2013.

Proposed board and management structure:

In order to ensure the success of the CEFC in its operations, the corporation must be helmed and staffed by experienced, knowledgeable and highly capable individuals

Beyond Zero Emissions identifies the need for members of the board and directorial positions to arise from, or have experience or expertise in the following areas:

- Fund management and risk management
- Banking and finance
- Individuals with intimate knowledge of Australian energy markets
- Members well versed in the subtleties of economic and environmental policy.
- Members highly knowledgeable in the renewable energy sector.

In regards to selection of individuals to hold key positions within the company, Beyond Zero Emissions recommends that individuals be void of any current intimate connections to any corporations or ventures which would stand at a loss from the successful undertaking of the CEFC's mandate or the propagation of renewable energy installations. This recommendation is made on the grounds of both maintaining the idea of the CEFC as a credibly independent authority acting in the interests of advancing renewable energy, as well as to reduce any conflicts of interest that may arise.

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[i] Tans, P. (2010). *NOAA ESRL Data*. National Oceanic and Atmospheric Administration. Retrieved December 7, 2011, from ftp://cmdl.noaa.gov/ccg/co2/trends/co2_mm_mlo.txt

[ii] Beyond Zero Emissions. (2010). *Zero Carbon Australia Stationary Energy Plan*. Melbourne: University of Melbourne Energy Research Institute

[iii] Hearps, P & McConnell, D. (2011). *Renewable Energy Technology Cost Review*. Melbourne: University of Melbourne Energy Research Institute http://energy.unimelb.edu.au/index.php?page=renewable-energy-technology-cost-review---may-2011

[iv] Shindell et al, 2009, "Improved Attribution of Climate Forcing to Emissions", *Science*, 326, pp716-718, DOI: 10.1126/science.117476

[v] Wright, M., 24 Nov 2011, "CSG needs a long, hard look", *Australian Financial Review*, http://www.beyondzeroemissions.org/media/newswire/csg-needs-long-hard-look-111124

[vi] Manning, P., 19 Nov 2011, "The seam old story springs a leak", *Sydney Morning Herald, Business*, http://www.smh.com.au/business/the-seam-old-story-springs-a-leak-20111118-1nne6.html?skin=text-only

[vii] Bloomberg New Energy Finance. (2011). *Renewable Power Trumps Fossils as UN Talks Stall*. Retrieved November 26, 2011.

[viii] The Pew Charitable Trust. (2010). *Global Clean Power: A $2.3 Trillion Opportunity*. Washington DC: The Pew Charitable Trusts