16 December 2011

Expert Review
Clean Energy Finance Corporation
Australian Government, the Treasury
Langton Crescent Parkes
ACT 2600

cefc@treasury.gov.au

Dear Sir/Madam,

Submission Response – Clean Energy Finance Corporation Expert Review

Origin Energy Ltd (Origin) welcomes the opportunity to comment on the Clean Energy Finance Corporation (CEFC) Expert Review.

Origin is a major Australasian integrated energy company focused on gas exploration, production and export, power generation and energy retailing. Listed in the ASX top 20 Origin has over 5,000 employees. Origin is now Australia's largest energy retailer servicing 4.6 million electricity, natural gas and LPG customer accounts and has one of the country's largest and most flexible generation portfolios with more than 5,930 MW of capacity, through either owned generation or contracted rights. As part of our commitment to innovate tomorrow's energy solutions, we are a significant investor in low emissions and renewable energy technologies, including gas, geothermal, wind, hydro and solar. We have dedicated new venture businesses delivering smart energy solutions to our customers including distributed generation and e-mobility solutions and are by far the largest retailer of green energy products such as GreenPower.

Overview

Well functioning markets are the most efficient and effective means to deliver against Australia's competing policy goals of energy security, lower carbon emissions and least cost. The role of government should be, in our view, to make those policy goals clear and to identify and address impediments to the efficient operation of the markets set up to deliver against them.

With the passage of legislation to introduce a carbon price, there will be a clear signal for market players to prefer lower-emission technologies, up to a certain price point, across the Australian economy. In addition, the Large-Scale Renewable Electricity Target provides a multi-billion dollar, multi-year incentive for the deployment of renewable energy technologies in the power sector, its cost borne directly by Australia's electricity consumers.

In light of these substantial market signals, we agree with the sentiment expressed in the draft Energy White paper released earlier this month, that the competing or conflicting signals provided by the plethora of small-scale state and federal schemes reduce the clarity of the carbon price and RET signals and should in general be phased out.

The CEFC has the potential to complement the carbon price and the operation of effective markets if it is able to identify and address financial market failures to investment, but risks operating as another source of unsustainable subsidy of high cost technologies if it does not.

Our understanding of the intended focus for investments by the CEFC is lower-emission technologies that make a financial return but which private sector investors won't invest in. In our view, this is a small target, though as this submission suggests the fields of endeavour in which examples potentially could be found is wide.

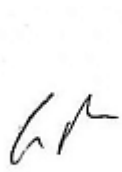
We believe that instances of genuine market failure, especially in or around the technology deployment phase, are likely to be limited. Without strong and patient governance, the CEFC risks turning over time into another source of funding for ideas or technologies that raise the cost of energy without contributing to a sustainable lower-emission energy sector in the long run.

While the number of specific investments that meet the focus criteria is likely to be low, the areas of the energy market from which they might be drawn is relatively wide, as this submission suggests. By adopting a non-prescriptive approach to the technologies and innovations that might be eligible, the CEFC is more likely to uncover a broader range of 'near-commercial' investment opportunities. The government should therefore minimise exclusions of particular technologies and establish a technology neutral investment mandate.

In our view, market failure is most likely to occur in the area of shared infrastructure and Origin therefore recommends infrastructure, alongside technology, be considered for finance. An example of shared infrastructure is transmission to connect new lower-emission technologies to the existing grid, where upfront investment could benefit multiple users in the long run but is too high for any first investor to bear. There are also, in our view, a series of market failures in the area of customer engagement in the energy system which the CEFC could help address, to the long term environmental and economic benefit of Australian energy consumers. A number of other potential areas of CEFC activity are explored in the submission.

Origin would be pleased to engage further in the design of the CEFC. If you have any questions about this submission please contact myself or Madeleine Lyons, Manager Carbon & Emerging Markets Policy, on 02 8345 5207.

Yours sincerely,



Carl McCamish
Executive General Manager, Public Policy & Sustainability

Origin recommendations

To properly scope the CEFC, Origin recommends the government clearly define:

1. What is the objective of the CEFC?
2. What should it invest in?
3. How will it finance it?
4. How will it be governed?
5. How long will it last?

These are covered in turn below.

1.0 What is the objective of the CEFC?

On review of the CEFC Expert Review Request for Submissions documents, we believe the CEFC would benefit from a clear statement of objectives and clarification of how the CEFC fits with existing government targets and market mechanisms. For example, is the core objective to reduce greenhouse gas emissions, to increase renewable energy deployment (and if so, over and above the Renewable Energy Target?) or to increase investment in lower-emission technologies more generally?

Origin recommends the government be very clear about the objective of the CEFC. This includes clarifying its role in meeting Australia's greenhouse and renewable energy targets and the investment gap it is seeking to fill.

The government will need to define a precise niche for itself that does not disturb or distort the efficient operations of the energy market. This will require stringent governance and commensurate in-house energy expertise.

2.0 Guiding principles for CEFC investment

The government must be clear about what CEFC finance is for, the outcomes it requires and how this will be audited. Origin urges the government to ensure clarity on this is provided upfront to market participants and investment partners. In Origin's experience it can be frustrating and costly to participate in an application process, only to learn late in the process that the project in question is not eligible.

A wide range of clean energy technologies could in theory benefit from finance in the period of transition to a clean energy economy, and these will change over time. The CEFC will need to focus and underpin its investment mandate with a transparent set of eligibility principles.

Origin recommends the following guiding principles for CEFC investment:

- Consider the energy system a whole and invest in supporting infrastructure, not just clean energy technology; and,
- Recognise Australia's interdependence with the global clean energy economy and hedge international technology risk.

These two points are addressed in the text that follows.

2.1 Consider the energy system as a whole and invest in supporting infrastructure, not just clean energy technology.

To minimise unintended consequences, the CEFC must consider the needs of clean energy system as a whole. This involves facilitating investment not just in clean energy technologies, but also the critical supporting infrastructure required to connect with markets.

Examples of supporting infrastructure include: transmission to connect remote renewable energy; smart energy to connect all energy users, generators and networks; and, public charging infrastructure for electric vehicles.

2.1.1 Transmission infrastructure to connect remote renewable energy to markets

A fundamental requirement of Australia's clean energy economy is the connection of quality renewable energy resources to markets. For historic reasons, Australia's grid is designed to connect locations of conventional coal and gas resources, plus some hydro. Whilst some renewables are located relatively close to the existing transmission network, many of the best resources (in terms of quality and scale) are situated in clusters remote to the electricity grid. Examples include quality resources in the Cooper Basin and North and Far North Queensland.

Building new transmission involves significant market barriers pertaining to counter party aggregation risk. In simple terms, a new transmission line typically requires the upfront aggregation and commitment of a multiple generation projects before it can be built; the more generators commit to a transmission line the more cost effective it is to build. However, it can be difficult to get a quorum of developers to agree to build at the same time, making it difficult to close the funding required.

As the trend of incorporating increasing amounts of renewable energy into the market continues, the unlocking of remote renewables will take on greater importance. Going forward it is imperative that the energy market frameworks and infrastructure are sufficiently adaptable to accommodate the changing composition of generation sources and

to incorporate an increasing volume of renewable energy. If we are to meet climate change policy objectives at least cost it makes sense that these resources be brought to market where efficient.

Unfortunately, the current rules governing network connections (which were initially put in place to connect generators closer to the grid), do not effectively allow for this to occur. A regulatory solution to this challenge, known as the Scaled Efficient Network Extension (SENE) mechanism, has been proposed by industry participants to the Australian Energy Market Commission (AEMC) and was recently rejected.
The CEFC could potentially offer an alternative or complementary solution and take on some of the risk associated with constructing remote transmission assets. Importantly, this would allow for the realisation of economies of scale and a lowering of the cost of connection, savings that are ultimately passed through to households and other consumers of electricity.

In addition to financing transmission infrastructure, the CEFC could also invest in the early work like purchasing corridors for transmission lines to take out the early stage risk of not being able to connect.

2.1.2 Smart energy infrastructure to connect all users and producers of energy

To date, investment in Australia's smart energy system has been largely focused on the network infrastructure on the grid side of the meter – in other words the 'smart grid' - where risk is managed through a regulated return on investment via jurisdictional network determination processes.

However, the smart grid represents only half of the full smart energy system. A smart energy system in our view:

- Integrates the behaviour and actions of all energy players – producers, generators, consumers, and networks – into an intelligent energy system, for the optimal supply and consumption of sustainable, economic and secure energy;
- Involves a step change increase in the application of information and communication technology (ICT) across the end-to-end energy chain. The energy becomes 'smart' because in addition to the electricity, information will also become an active part of the energy chain;
- Causes a permanent change from simple one way directional flow of electricity from a centralised generator to a consumer to flexible two way flow of electricity and data and that simultaneously connects all users and producers at all levels;
- Creates a new market that will transform how we produce, deliver and consume energy; and,
- Will, over time, reach every participant and device and evolve into the 'smart world'.

There has to date been limited investment in the customer side of the smart energy system due to significant market barriers involved with 'taking smart into people's homes'

including high technology risk and an inconsistent technology base, long project lead times without a short term return on investment and no established market for the products.

The CEFC could facilitate investment in the customer side of the smart energy system by partnering with consumer facing businesses such as energy retailers who have multi-jurisdictional mandates and who don't get a regulated return (and therefore need to prove the business case). For example, the CEFC could provide equity for proof and establishment of smart energy trials for new technologies such as smart in home displays, direct load control and appliances.

Carbon and Renewable Energy Certificate (REC) price volatility also limits smart energy investment and compromises revenue certainty. Therefore another option for the CEFC to consider could be to cover the risk of volatile carbon / REC prices and ensure a certain price trajectory by underwriting a carbon price for the period while the carbon market matures.

2.1.3 Public charging infrastructure for electric vehicles

Electric vehicles (EVs) are a long term low carbon transport solution with significant air pollution benefits for Australia's cities.

Public charging infrastructure for EVs is an open access system that is crucial to supporting the uptake of EVs. This infrastructure is an example of an investment that would not make returns in the early years, however in the long term could make substantial financial as well as environmental returns.

2.2 Recognise Australia's interdependence with the global clean energy economy and hedge international technology risk

The CEFC should invest in a way that recognises Australia's interdependence with the global clean energy economy.

As the global clean energy economy develops, Australia will need to prepare for a range of possible technologies, whose innovation and development trajectory is often influenced more by international than domestic developments. This for example has been the case with the recent rapid development of solar PV technologies in China. The CEFC can therefore play a key role in the development of an Australian portfolio of clean energy technology options to hedge this international technology risk.

Optimising Australia's role in the global clean energy economy will also require identifying where Australia's strengths and core competencies lie in the development of clean energy and building a requisite portfolio of local expertise and capability. While many technologies are developed overseas, Australia requires local skills to deploy, operate and integrate them with existing Australian energy infrastructures and markets. For example, overseas solar thermal and wind turbine technologies require local skills for their deployment, while system stability requirements call for their integration with local baseload resources such as gas, geothermal and hydro. Another example is the development of Australia's smart energy system. While Australia will import much of the required information technology,

the roll-out of smart meters in Victoria positions Australia as one of the first smart meter markets in the world. Australia will therefore be involved in licensing these technologies and commercialising them.

3.0 How should the CEFC finance its investments?

In determining the structure of CEFC finance it is important to understand and define the:

1. Type of finance appropriate for the clean energy sector (debt or equity)
2. Risk profile of the clean energy technologies/infrastructure the CEFC seeks to foster and the risk it is willing to take;
3. Required rates of return; and,
4. Timeframe to yield a return.

3.1 Debt or equity?

The energy sector is defined by long project development cycles, long project lives and long term investment returns. In this context, equity finance is a better fit for the clean energy sector than debt finance. Equity can help mitigate the risk from revenue uncertainty (one of the largest barriers to capital investment) by remaining invested for a longer period of time before receiving a return.

While Origin would expect equity to play a larger role, debt - in conjunction with equity – should also be considered. To address market gaps in debt, CEFC debt could include:

- Debt guarantees or insurance-like products where the CEFC supports a technology or project against a particular risk;
- Long term debt, for example where lower repayments are required or repayments may be deferred for the first 10 years. (Origin notes that current available debt is usually limited to a 5-7 year repayment term; a time frame that is not aligned with the long term plays in the energy industry
- Tranches of subordinated debt

As a general rule, given the long term nature of clean energy investments, equity is a more appropriate fit for the sector than debt. However, long term debt - in conjunction with equity – could also be useful.

3.2 Risk profiles of clean energy technologies and supporting infrastructure

Private investment in the clean energy sector is currently limited by the risk profiles pertaining to specific clean energy technologies and their supporting infrastructure.

To facilitate clean energy investment, CEFC finance must directly address the risk profiles of the technologies it intends to foster; these will vary by technology and in accordance with their stage in the technology life cycle. The CEFC should provide a broad range of finance options to reflect and address the range of risks involved.

Below is an overview, based on Origin's experience, of some of the risks encountered in two of the key stages:

- Technology development stage (including commercialisation); or,
- Project development stage (including deployment)

CEFC finance could be structured to take on some or all of these risks in some way.

3.2.1 Technology development risks[1]

- **Counter party risk**

  Due to the often trial and error nature of innovation, the longevity of technology companies involved in technology development can be unpredictable and sporadic. This can undermine the confidence of established energy market participants in partnering with emerging technology companies. It is also pertinent to the design of CEFC finance. For example, it may be useful to note that PV warranties are typically 25years so business longevity is an important factor. If CEFC is only to run for say 5-7 years, how long would new technology businesses last once the funding is over? An unintended consequence of government funding in the past has been speculation in the market whereby new companies are established with the sole purpose of accessing government monies. This has caused bubbles in certain sectors like the solar PV industry. Where possible, merit criteria for CEFC finance should therefore be designed to limit unconstructive market speculation and free-riding.

- **Revenue uncertainty**

  Revenue uncertainty is one of the biggest financial barriers to capital investment and is related to the uncertainty of timing of technology uptake and price. Market mechanisms such as the carbon price and the RET market should go a long way to address this. However, volatility in these markets – particular in the period while they mature – may create continued uncertainty.

  This particularly applies for example to longer term technologies such as EVs; while it is possible to estimate the net present value (NPV) of an EV investment over a period of say 10 – 15 years, it is very difficult to know when the tipping point for uptake will be.

[1] Technology development risks apply for example to: some smart energy & information communication technology; some geothermal; industrial scale solar; wave & tidal; electric vehicles and supporting infrastructure.

3.2.2 Project development risks[2]

- **Resource risk**

  Resource risk for clean energy projects directly impacts revenue certainty. The CEFC could help address ongoing resource risk for various clean energy technologies, and the nature of the risk – and so the CEFC solution – will vary by technology.

  For example, for geothermal there is potential for the provision of 'non-discovery' risk insurance, in the event of drilling a non-productive well.

- **Connection risk**

  The process of connecting a power generator to the transmission network is costly and time consuming, in large measure owing to the nature of the regulated, monopoly businesses involved as well as the associated rules and regulations. This applies to all clean energy generation sources in general, and remote renewable energy sources in particular. As discussed previously, some of Australia's best clean energy resources are located in remote areas away from the grid. Extension of new transmission infrastructure requires the aggregation and commitment of a lot of projects. The CEFC could potentially take out some of the early stage risk of not being able to connect by investing remote transmission infrastructure as well as the early work like purchasing corridors for transmission lines.

3.3 Required rates of return

The CEFC should provide finance at genuinely competitive rates compared with that already available in the market; this includes providing competitive rates for pure CEFC finance as well as blended finance resulting from third party partnerships.

Origin has learned through experience in its partnership with Low Carbon Australia (LCA) that when leveraging finance from third parties it is important that the blended rate also be competitive. This is explained further in the case example below.

[2] Project development risks apply to, for example: proven wind technologies, co/tri-generation, some solar PV, some geothermal, established energy efficiency; transmission infrastructure.

3.3.1 Case example: Lessons for the CEFC from Origin's partnership with LCA

About the partnership: Origin has been involved in a $12 Million partnership with LCA to provide low cost finance for energy efficiency upgrades to businesses. LCA provides the financing and Origin provides the energy efficiency services. As an energy provider Origin is well positioned to work with customers on energy efficiency upgrades as we have customer usage data and benchmarking data on how a business's energy usage compares to like businesses. This has allowed Origin to approach customers that are underperforming in their industry and offer to assess their businesses potential for energy efficiency upgrades. Once a site has been assessed a proposal can be provided that meets the customer's criteria. However, before this proposal is provided to the customer the LCA will approve the level of financing that they are willing to provide for the project. This preapproved package is then offered to the customer.

Implications for the CEFC: While the objective of the partnership is to leverage funds by drawing in third party finance, the LCA partnership results in a blended product with corresponding diluted interest rates that are no better than commercial rates. This undermines the interest rate benefits of lower cost finance from government and limits the competitiveness of the product for Origin's energy efficiency customers. This has been an unintended consequence, and Origin strongly recommends that the CEFC provide products that on the whole offer genuinely competitive rates.

Origin notes that Low Carbon Australia and the UK Carbon Trust both have substantial experience in using government finance to leverage private finance and recommends the CEFC learn from their experiences.

3.4 Required timeframes to yield a return

The energy industry works to long time frames with projects earning a return over the life of a project, which can be as long as 30 years in the case of centralised generation plant. This raises the question of the time it will take for CEFC investments to yield a return; with implications for the lifespan and exit strategy of the CEFC.

Origin urges the CEFC to set expectations on the time required for its investments to yield a return that are consistent with the long term nature of the energy market.

3.5 Summary and illustrated example of a CEFC finance solution

In summary, when designing CEFC finance Origin recommends that the government:

- Understand the risk profiles of the clean energy sectors it seeks to foster and design finance to directly address these profiles;
- Be clear about what risks it is willing to take on;
- Provide a broad range of finance options to address the range of risks pertaining to different technologies, projects and sectors;
- Offer finance that is at a genuinely competitive rates compared with that available in the market (and when this involves leveraging private finance, ensure the blended rates are also competitive); and,
- Set realistic expectations on the time required for CEFC investments to yield a return recognising the long lead times involved in the energy market.

In Origin's experience, one of the most effective ways the CEFC can facilitate investment in the clean energy sector is by playing a partnership developer role, or that of a financial owner. This would involve the CEFC operating as a majority equity provider that is passive, but willing to assume a prudent level of equity risk to assist the risk profile of debt.

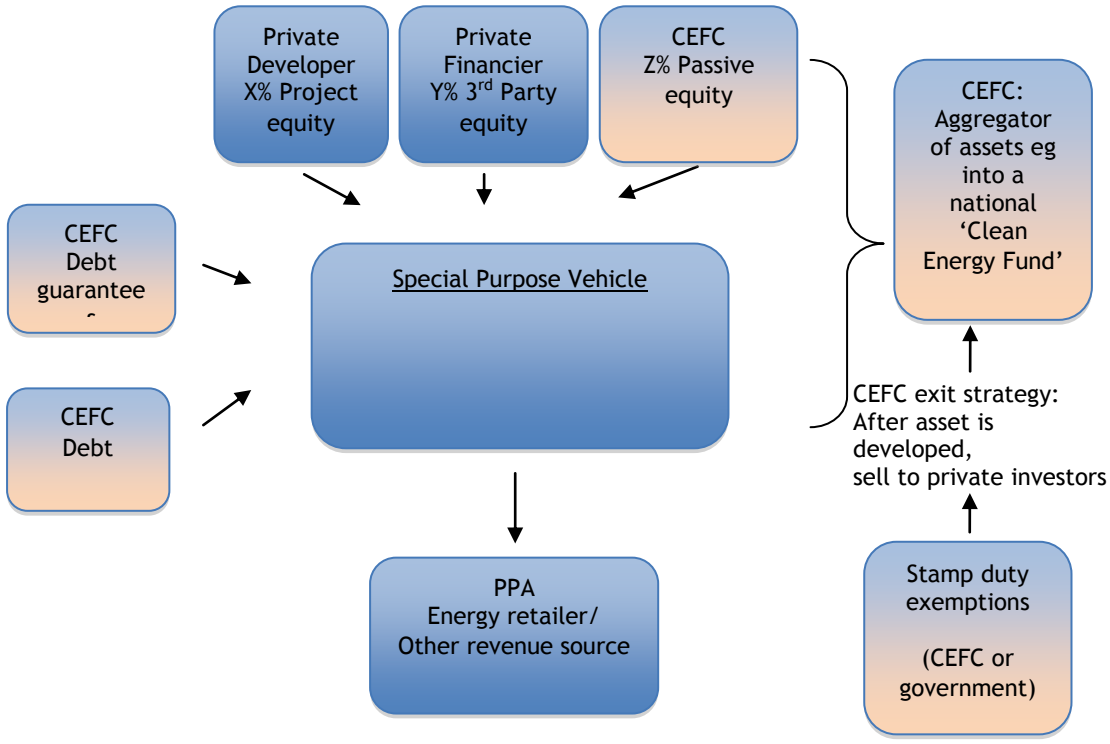
This is illustrated in the case example in Figure 1 below for a hypothetical technology or project development.

For development projects, equity could be supported in conjunction with long term debt and leveraged instruments such as debt guarantees. For technology plays, where there is significant uncertainty surrounding technology viability, equity could instead be supported with other government funding such as grants.

Origin recommends the CEFC facilitate investment in the clean energy sector by playing a (passive) partnership developer role, or that of a financial owner. In the case of project developments this could be offered in conjunction with debt or, in the case of technology developments, with government grants.

The CEFC could potentially invest passive equity in partnership with a project developer and/or third party private financier as a majority owner, for example as per the finance structure of the ConnectEast tollway.

Figure 1: Illustrated example of a hypothetical CEFC finance solution



This hypothetical solution addresses the risk profile of many clean energy technology and infrastructure projects that are capital intensive with long term returns.

It also leverages the particular characteristics of energy industry players including:

- private developers who have the expertise to develop technologies and build projects; and,
- energy retailers who have the customer base and finance to provide the off take.

Over time, the CEFC could perform the role of an 'aggregator of assets' and, by acting as seed capital, build an Australian 'Clean Energy Fund'. A potential exit strategy for the CEFC is that once the projects are developed, say after 5 – 10 years, it could sell down on its equity share by listing the fund on the stock exchange and selling off units to institutional and small investors. This could be assisted with the provision of tax benefits such as five year stamp duty receipts for when the assets are sold.

Table 1 below provides some hypothetical suggestions on how this CEFC solution could be refined to facilitate investment in specific technologies and supporting infrastructures. In each case the CEFC will need to decide the kind of assistance it will provide and the risk it is willing to taking on.

Table 1: Hypothetical examples of CEFC clean energy investment and finance solutions

Investment focus	Risks	Example CEFC solution	Other potential applications
Transmission infrastructure and corridors for remote renewables (Eg Cooper Basin, Eyre Peninsular)	Connection risk associated with first mover disadvantage	Long term owner passive partnership, in conjunction with debt. Once the infrastructure is built, the government can choose to offload it or retain it and encourage new investors to partake and generators to connect.	Inter-regional transmission eg PNG connection with Australia
Demonstration plants for baseload renewables to develop required learnings **Eg geothermal and gas-boosted solar thermal, industrial scale solar***	Resource risk. (For geothermal this can include drilling a non-productive well. For Industrial scale solar, the technology is established in Europe and the US, so the key challenge is addressing the virgin Australian barrier) Approval risk Connection risk for remote locations.	Long term owner passive partnership, in conjunction with debt. Once the infrastructure is built, the government can choose to offload it or retain it and encourage new investors to partake and generators to connect. For geothermal, non-discovery risk insurance could be provided in the event of drilling a non-productive well.	Large scale renewable energy projects for proven technologies such as hydro and wind.
Clean technology plays **Eg geothermal**	Technology risk (Geothermal deeps must address challenges in operating at simultaneous high temperature & pressure, Eg Geothermal shallows must address challenges associated with flow)	Equity partnership, in conjunction with grants. This could involve a staged distribution of funds where modest grants are provided for early stages of project evaluation, followed by seed equity finance for early phase work, which is then rolled into subsequent debt.	Solar PV Smart World Wave & tidal

*Hybrid renewable – gas plants have baseload characteristics and when built as an extension to existing gas plants can have the added benefit of improving plant efficiencies.

Table 1 continued: Hypothetical examples of CEFC clean energy investment and finance solutions

Investment focus	Risks	Example CEFC solution	Other potential applications
Smart World customer innovation: Proof and establishment of smart energy pilots	Technology risk and no established market for the products. Carbon & REC price uncertainty	Equity partnership with consumer facing businesses. CEFC could also underwrite a carbon price ie cover the risk of volatile carbon / REC prices to ensure a certain price trajectory while these markets mature.	Energy consumption awareness & peak shaving programs combining smart in home displays, low efficiency appliance change outs, distributed generation & storage
Co/tri-generation for clean energy urban precincts	Resource risk due to sub-optimal engine sizing and heat recovery Split incentives & Information asymmetries Carbon & REC price uncertainty Counterparty risk	Co-generation investment vehicle: • CEFC Equity in partnership with 3rd parties, • Co-generation providers/retailers remain the operating body and provide the off take	Distributed renewables such as solar, commercial & industrial energy efficiency
Public charging infrastructure for Electric Vehicles is an open access system.	Resource risk associated with uncertainty in EV uptake rates	Hybrid – Equity & debt*: • CEFC fund the investment of public charging infrastructure • Energy retailers operate and maintain this infrastructure for a certain fee.	

**After the private investor is making the right returns from the investment, the government could recover its investment by receiving a revenue/usage based fee (for example $X every time a driver uses the infrastructure or Y% of total amount used to charge the EV). This structure would reduce the risk for energy retailers and provide the government with a highly visible investment to collect rent from over a long period of time.

4.0 Governance of the CEFC and fit with existing government policy

The government will need to define a precise niche for itself that does not disturb or distort the efficient operations of the energy market. This will require stringent governance and commensurate in-house energy expertise.

Stringent governance will be required to ensure that the CEFC complements Australia's carbon price and renewable energy targets, minimises market distortion and directly target market failures to investment in clean energy which remain after a carbon price is implemented. In this regard, Origin recommends the CEFC employ the Council of Australian Governments (COAG) Complementary Principles.

It can be expected that the success of CEFC investments will be closely tied to policy design and certainty. Therefore it will be in the CEFC's interests to leverage its position to work across departments to help provide clarity and certainty in policy and other government initiatives. Furthermore, Origin would hope that if the CEFC proceeds there are a number of the over 200 government programs and policies identified by the Productivity Commission that could be streamlined. If this is not the case, then importantly the CEFC should not add further to the replication that already exists.

The CEFC can potentially play an important role in connecting existing clean energy policy and government initiatives across multiple levels of government. Many of the market failures that have been identified for policy intervention over and above a carbon price relate to information gaps. It is possible therefore that the CEFC may be able to play a role in 'matchmaking' clean energy project proponents with a range of sources of finance.

To successfully facilitate private finance in the clean energy sector, the CEFC will require first rate expertise and capability in:

- The energy industry (clean & conventional) - spanning the supply chain and including technology and project investment expertise across multiple segments and stages in the energy technology life cycle;
- Finance - from building and running institutions to project finance and making transactions; and,
- Environmental economics - including sustainable and responsible financial services.

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5.0 Lifespan of the CEFC

The lifespan of the CEFC must be compatible with the long lead times involved in the energy sector. A short CEFC lifespan potentially prevents investment in systemic and long term solutions that may in the early years deliver a financial loss, however deliver a substantial financial and environmental return over the longer term.

In order to avoid the risk that the CEFC becomes a long term deadweight, however, consistent review should be undertaken by an independent third party of the CEFC's success in delivering against tightly defined investment criteria.

Given the long lead times involved in the energy industry, Origin expects that the CEFC would need to be a long term corporation and its exit strategy should take this into account.

Origin notes that the UK's proposed Green Investment Bank, which has similarities with the CEFC, is expected to be an enduring institution. Some of the perceived benefits of an enduring corporation are that it has the potential to:

- Build deep expertise in financial and clean energy markets to facilitate private investment; and,
- Provide market certainty – avoid the pitfalls of short term finance including economic bubbles in certain sectors and technologies.

Ultimately, clarity on the CEFC's objective, the government targets it aims to service and the market gap it seeks to fill, will all assist in determining its appropriate life span.

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Appendix: Answers to specific questions

1.0 How do you expect the CEFC to facilitate investment?

See sections 1.0 – 5.0 in body of submission above.

2.0 Are there principles beyond financial viability that could be used to prioritise investments, such as emissions impact or demonstration affect?

The government may want to consider **engaging independent sustainability expertise** to help define its principles beyond financial viability, ie double or triple bottom line considerations. The **Clean Development Mechanism sustainability project principles** may also be a useful reference.

A starting point, a **clear definition of the term 'clean' energy** would be helpful. For example, does 'clean' refer to greenhouse gas emissions, or a broader environmental definition including air and water quality?

See also section 2.0 in the body of the submission above.

3. What are the opportunities for the CEFC to partner with other organisations to deliver its objectives?

The CEFC could potentially partner with many parties including:

- Private sector financiers: Including bank project finance teams, infrastructure funds, private equity houses, commercial lending banks and institutional investors.
- Project sponsors/ developers: Including energy companies, large industrial companies and clean energy project developers.
- Specialist advisors: Including specialist legal advisors for project finance, commercial and technical advisors and asset service providers.
- Sustainability thought leadership and independent advisors on clean energy priorities – e.g. NGOs, universities

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- Government departments: to engage on the impact of policy developments and to partner finance with government grants (particularly for technology, rather than project, developments)

However, certain partnerships should be avoided:

- Partnerships for partnership's sake - over complicated partnerships that can unnecessarily frustrate and hinder projects; all partners must be aligned to a common goal and have clear capacity to deliver outcomes.
- Partnerships with '$2 companies' - that is companies that are set up purely to obtain finance from the CEFC and who therefore carry significant counterparty risk.

Match maker or one stop shop

Many of the market failures that have been identified for policy intervention over and above an emission price are related to information gaps. It is possible therefore that the CEFC may be able to play a role in 'matchmaking' clean energy project proponents with a range of sources of finance. This concept could be further extended into a 'one stop shop' for project proponents and investors seeking to understand the array of policy, grant and finance support at federal, state and local government levels.

4. How could the CEFC catalyse the flow of funds from financial institutions?

In order to catalyse the flow of funds from financial institutions, the CEFC may consider the following:

- The form and structure of all of CEFC's investments should be clearly-defined and as consistent as possible, however recognising that there may be differences across various technologies;
- CEFC's legal documentation should be standardised for each financial instrument and be consistent with international banking standards and regulations, particularly with respect to security and transferability rights of lenders;
- As far as possible, CEFC's involvement should be structurally-subordinate to senior debt investors in terms of repayment and security;
- CEFC should avoid complex and/or highly bespoke financial structures that are not consistent with established and credit-approved lending criteria;
- The timing of any CEFC investment should occur prior to, or at the same time, as any funds are drawn from financial institutions.

See also section 3.0 in the body of the submission above.

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5. What experiences have firms in the clean energy sector had with trying to obtain finance; have term, cost or availability of funds been the inhibitor?

Experience with obtaining finance

General comments:

- The availability of equity and debt finance for clean energy projects in recent years has been restricted by carbon policy uncertainty, which we would expect gradually to decline once the carbon price is introduced.
- While clean energy technologies can be long term plays and can take many years to develop, in Origin's experience it can be difficult to get debt finance with longer than 5-7 year terms.

Experience with government funding

Origin has extensive experience with government grant programs, the learnings of which Origin strongly recommends be integrated into the design of the CEFC, as appropriate. Below is a summary in our experience of what has and hasn't worked with government grants and some unintended outcomes.

What's worked:

- Government grant programs have attracted significant interest from international renewable technology developers, in particular via the solar flagships program, leading to a lot of activity from developers on the ground (including setting up offices in Australia).

- Because the programs require state government 'endorsement' for projects as one of the success criteria, this has lead to, arguably, a significant increase in understanding of renewable and other resources (including CO2 storage potential) for state government regulators.

- Where regulation does not exist, these programs have driven regulators and ministers to develop policy positions at a state level.

What hasn't worked:

There are fundamental challenges with the structure of the some capital grant programs that can prevent the money from being invested, even after it is allocated. Take the Low Emission Technologies Demonstration Fund (LETDF) for example. In 2006 the government awarded approximately $500M to LETDF companies. Solar Systems was a recipient and received additional funding from the state government. When the company went

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bankrupt in later years it was publicised that it only ever received less than $5M of grant funding from a total pool of 'allocated' funds of over $100M.

Potential reasons for companies to often fail to even access the funding they are 'successful' in having 'allocated' to them include:

- The grants are capital in nature – while access to capital is essential in deploying at a demo level (ie one off) a new technology, certainty around revenue streams is of central importance when building a platform for ongoing deployment.

- The capital grants are retrospective – participants still have to have access to 100% of the capital cost of deployment (note, capital cost not operating costs, which are another 'unknown' that new renewable technologies have to manage), and, upon reaching agreed milestones with the government, apply for reimbursement of that funding once the milestone is achieved (on both a time and cost based success criteria). Therefore, the capital grant doesn't actually reduce the need for one's own equity (unlikely to be debt for reasons discussed in the body of the submission above) to fund deployment.

- Project milestones are agreed as part of a 'deed' which is signed by the minister, meaning flexibility around those milestones at a later stage is difficult to achieve (the entire deed needs to be 're-opened' and resigned by the minister, and at his or her discretion). This leads to the perverse outcome where, as companies miss the schedule associated with milestones, even if they reach budget targets, the government has every right to not make reimbursement (ie it can at its absolute discretion reallocate the money where it likes). This also leads to a relationship between the companies and government department that is less than 'collaborative' with the government department itself at a distance to project progress.

- The funding is matched to private sector investment, which cannot be given over the life of the project (eg companies typically employ a yearly budget/commitment cycle and in some instances, as a passive investor in providing the matched funding, cannot provide government with anything other than a year on year commitment).

- Compliance costs, including legal and corporate costs, can be significant.

Some unintended consequences / perverse outcomes

- Government grant programs are a boon for professional/legal/technical services providers and in many instances, these companies are the beneficiaries of early stage incentives and funding that government's offer. Given the sheer number of

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proponents in the early stages of these processes, firms may have multiple teams working on competing bids. Given the limits of technical expertise in a number of these new areas (eg solar thermal) it is often the case that a technical services firm has a technical expert/representative on the selection panel for a program, and also be involved as a technical advisor to (or indeed, an equity proponent in) applicants for funding. There is scope for conflicts of interest to arise in this regard.

- As an example around pre-submission expenditure: the successful shortlisted solar flagship companies (that is, the applicants were shortlisted with successful applicants invited to submit a final submission) were granted funding to undertake the preparation of their 'final submission'. Most of these funds, other than the proponent company wages, would have gone straight to the bottom line of technical and legal consultant companies, rather than into the technology development space. The sheer volume of information that is typically required at the submission stage is such that these firms can charge upwards of $1M to undertake the necessary resource assessments (in the case of solar, geothermal etc), initial site work, early Front End Engineering Design (FEED) work, including the necessary legal advice in 'negotiating' the deeds. So a perverse outcome is that, in order to comply with the submission criteria, companies spend a significant amount of funding, and often divert funding from what they do best, that is technology development.

- A consistent merit criterion in the submission documents is always the capital grant amount being sought, that is, a company is scored a higher 'merit' when it asks for less money than a competing company. This leads to perverse outcomes where an increased capital cost of a project, to achieve scale of manufacturing or scale of construction, would actually lead to a higher unit cost of say, electricity produced or product manufactured.

6. What non-financial factors inhibit clean energy projects?

Key non-financial factors inhibiting clean energy projects include:

- The impact of emissions policy and regulatory uncertainty on revenue certainty
- Multiple and varied state processes eg for wind farm development approvals
- Regulatory barriers eg current regulatory settings don't provide the suppliers of PPAs with an incentive to prove up hybrid generation
- Access to required skills and resources
- Technology and project development risks (see section 3.2 in submission body)
- Institutional inertia of incumbents (eg Network's capacity for demand response; retailers' perception of solar PV as a REC generator only)
- Cultural inertia – including the tyranny of distance, which can limit Australia's tendency/capacity to respond to global clean energy developments

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7. Are there special factors that inhibit energy efficiency projects?

In addition to the above, energy efficiency projects can be inhibited by:

- Cultural barriers and norms pertaining to energy use and the behaviour characteristics of energy efficiency
- Information asymmetries between market participants (for example network operators, retailers and co-generation operators)
- Split incentives between owners and tenants for commercial and residential buildings
- Upfront capital expenditure requirements and company budgeting and reporting processes
- Challenges in the establishment of baselines, in part due to the behavioural characteristics of energy efficiency
- Challenges in the quantification upfront the expected energy efficiency gains, particularly if the energy efficiency project requires significant changes for example to manufacturing processes.

For more information on barriers to energy efficiency, Origin recommends the CEFC Expert Review panel refer to the PM's Task Group Report on Energy Efficiency (published October 2010).

8. How do you see the CEFC fitting with other government initiatives on clean energy?

The CEFC can potentially play an important role in connecting existing clean energy policy and government initiatives across multiple levels of government. As discussed previously, many of the market failures that have been identified for policy intervention over and above a carbon price relate to information gaps. It is possible therefore that the CEFC may be able to play a role in 'matchmaking' clean energy project proponents with a range of sources of finance. This could be extended into a 'one stop shop' concept for clean energy project proponents and investors seeking to understand the array of policy, grant and finance support available at federal, state and local government levels.ee also section 4.0 in body of submission above.

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