13 December 2011

# Clean Energy Finance Corporation

## Granite Power Submission: December 2011 Review

## - Proposed Implementation Plan, Mandate, Risk Management and Governance

**Background regarding Granite Power**

Granite Power Limited (GPL) is an Australian company in the business of developing and marketing a unique, patented, high efficiency Organic Rankine Cycle (ORC) power plant technology (called GRANEX®). This technology has been developed by Granite Power in collaboration with our technology partner the University of Newcastle and with the assistance of an AusIndustry REDI grant. Ongoing R&D work to further develop and support the commercialisation of GRANEX® is being undertaken and will continue for the foreseeable future.

GRANEX® was conceived of for geothermal applications. However it is applicable to any low-to-medium temperature resource. Partially for financial reasons, our main focus for commercialising GRANEX® is currently in the area of industrial recovered waste heat (RWH) – using waste heat as a zero carbon source of energy for use in generating electricity, generally for use at the industrial site concerned. There are numerous waste heat sources in Australia and overseas (e.g. mine site gensets, small gas turbines, smelters, and industrial sites generally) where GRANEX® can convert this waste heat into electricity at a higher conversion efficiency that alternative technologies and on a commercially attractive basis. GRANEX® plant sizes for these applications will typically be in the range of 300kW to 10MW net output. By enabling commercially attractive on-site power generation, the roll-out of GRANEX® has significant positive implications for electricity cost, energy efficiency and power grid issues, and is also applicable to solar thermal power opportunities.

GRANEX® is attractive for geothermal applications since it offers the prospect of indicative costs for geothermal power which are less than for black coal fired power. However, the financial hurdles to develop a successful reference site are so high as to require that any attempt at development be deferred until substantial direct government support is available.

We use GRANEX® and some geothermal examples in the material below, but the logic of our recommendations apply to a range of technologies which the CEFC should be considering.

**GRANEX® and the Clean Energy Space**

Granite Power and its interests encompass

- GRANEX heat conversion technology
- Unitisation of industrial Recovered Waste Heat (RWH) for power generation – zero carbon, on-site (independent of the grid), sometimes based on renewable sources
- Geothermal power generation – base load, zero carbon, renewable
- Solar thermal power generation – zero carbon, renewable
- Energy efficiency – use of ‘free’ waste heat to enhance overall process and commercial efficiencies and of low cost geothermal power to average down grid power prices

Each of these areas of interest falls within the ambit of CEFC’s mandate.

**Project Terminology**
Since the ambit of CEFC's interest is new technology it is appropriate to be clear regarding stages of technology development and how they relate to commercialisation. We have the following:

*Proof-of-Concept Project*: This is the earliest stage of concrete demonstration of the relevant scientific and engineering principles for a new technology, and may not encompass secondary or peripheral issues. It will almost certainly involve a small and simple project. This is essentially pure R&D, with no revenue stream and well before CEFC funding consideration concerns.

*Pilot Project*: This is a secondary and advanced stage R&D exercise, with consideration given to scale issues, fabrication issues and likely focussed on a range of relevant commercial parameters. It will lack a revenue stream and is pre-commercial and not within CEFC's ambit.

*Demonstration Project (or Alpha Project)*: This is a project which aims to demonstrate the achievement of key technical and commercial performance parameters, without itself necessarily aiming to achieve or deliver a commercially attractive return. The project may be developed and demonstrated in a commercial setting, but most demonstration projects will not involve a revenue stream. The project is unlikely to reflect a full suite of engineering and commercial features, but serves partially as a platform for identifying and teasing out refinements that will be required for a properly commercial product.

*Reference Project (or Beta Project or Early Stage Commercialisation Project)*: This is a project which is delivered on substantially commercial terms and which reflects the initial or early stage adaptation of the relevant technology to the particular features of the application opportunity concerned. It provides a "real life, commercial test" for the technology, without the supplier envelopment and careful stewardship associated with earlier stage projects. It provides potential buyers with a touchstone (ie the Beta Project customer, rather than the supplier) regarding the performance of the technology in the hands of "normal personnel" and subject to a normal operating environment. Normal commercialisation of a technology would be expected to follow the successful installation and operation of one or more Reference Projects or Reference Sites, which would normally be associated with commercial earnings.

*Commercial Roll-out Projects*: This covers situations where Reference Projects or Sites exist and are successful (with worthwhile earnings and/or cost savings) and there is merit in expediting commercial roll-out of the technology because of its inherent features or in order to facilitate achieving scale economies or to promote energy efficiency in the economy, for example.

Proof-of-Concept, Pilot and Demonstration Projects are not yet commercial and so are reliant on government grants and equity funding from very early stage investors. Reference and Commercial Roll-out Projects are to some degree commercial, with earnings, and can therefore expect to be able to service loan funding as well as receive attention from early stage investors (also, see Item 8).

**We believe that CEFC's key area of interest should substantially be that of Reference Projects/Sites: proven technology which has yet to be delivered and operated in a fully commercial environment associated with the particular application concerned, and for which the next step in the commercial development pipeline involves generation of earnings in a normal commercial environment.**

It is important to note that one technology may involve multiple Reference Sites, where each of which would be associated with different operating characteristics (eg length of day, altitude, ambient temperature, dirt or fouling issues, automated or semi-automated or manual control and attended versus unattended operation, constant versus fluctuating work regime, integration or not with other renewable energy technologies, availability of water, etc). In addition, it may make sense for the CEFC to involve itself with funding for the initial post-Reference Site sales of a clean energy technology, in order to address its objective of

expediting commercial roll-out of a technology which offers particularly significant advantages in terms of (say) energy efficiency and which would benefit from (say) efficiencies associated with scale economies regarding production.

## Scope of the CEFC Operations

### 1. Facilitation of Investment

Our general comments regarding facilitation are:

The types of funding support which the CEFC should prepare itself to provide include:

- Equity
- Mezzanine funding (including convertible notes, loan funds with equity kickers, second ranking loan facilities, redeemable preference shares, etc)
- Loans (loans, lease funding (operating and finance), hire purchase, etc)
- Guarantees
- Insurance

In particular, since the CEFC will be addressing early stage commercialisation situations, it needs to take clear (probably structural) steps to:

- Ensure that is does not back-slide into focussing on easier, more straightforward later stage commercial opportunities;
- Assemble and maintain the pool of expertise it will need to competently assess and price the funding opportunities which it has been tasked to address; and
- Provide appropriate guidance to would be applicants for funding, so they don't waste their or the CEFC's time and resources (and noting that applicants are technology developers and are unlikely to be financially sophisticated).

Difficulties experienced with project finance for renewable energy projects are typically:

- Early stage funding is traditionally difficult, however in the current market it is near impossible – the CEFC can address this bottleneck.
- Reference Projects are particularly difficult to finance. Importantly, a successful Reference Project may trigger numerous subsequent analogous projects (i.e. is generally reproducible).
- Where the plant supplier is a new and/or small company it may be unable to provide financially meaningful delivery guarantees (such as are normal features of EPC turnkey contracts) and it will require 100% cash funding of the working capital required (whether in the form of equity, mezzanine or loan funds)
- If the project is pre-qualified for CEFC funding then it becomes a far more credible proposition for obtaining critical project commitments, such as both
    - the formal closing a sale of the technology concerned and
    - the balance of the funding required (where CEFC funds are <100%).
- CEFC funding will extend a company's working capital.

How should the government prioritise loan allocations? The criteria might include:

- The project must meet acceptable financial and other (e.g. environmental) criteria.
- Government needs a portfolio of projects throughout Australia and its industry sectors, covering a range of project types, technologies and loan size.
- Preference should be given to Reference and Commercial Roll-out projects (we have found that the actual commercialisation of a good technology is a long drawn and difficult process, particularly in the current market). The CEFC should not be funding Proof-of-Concept or Pilot or Demonstration Projects (unless exceptional circumstances apply)
- Preference should be given to projects that can trigger additional, analogous projects ie which are reproducible
- Preference needs to be given to projects having the potential to meet specific government strategic objectives (eg. large scale renewable base load electric power generation or reducing the requirements for investment in expanding the national grid or promotion of energy efficiency)
- That the CEFC loan is necessary ie the availability of funds from other sources is impossible or unlikely

Other general suggestions:

- The CEFC loan process should be on an open application basis.
- Energy efficiency should be defined broadly. For example, while it might take just as much energy to operate an industrial furnace, with or without an associated GRANEX plant, the fact that the GRANEX plant captures the waste heat from the furnace and uses that heat to generate low cost (zero fuel), clean energy that would otherwise not be obtainable should define the GRANEX enhanced furnace process as more efficient, cleaner and more desirable – and as a technology or project which qualifies for potential CEFC funding support.
- Recognition should somehow be given by the CEFC decision taking processes to external benefits. For example (and continuing with the industrial furnace example), by generating power on-site the business which utilises the furnace places less reliance on the power grid, thereby contributing to a saving regarding investment for grid up-grades, expansion and replacement. None of these savings accrue to the furnace company however, nor to CEFC as its potential financier (with some sort of charge over the furnace company's cash flows and/or assets).
- CEFC should look through ownership arrangements and not be concerned, in principle, whether the proposed funding facility is for the customer or the supplier or a bit for both. They key issues are to facilitate the development of clean energy reference sites and the first normal commercial follow-on sales, not ownership arrangements. As such, the CEFC should be prepared to provide funding for EPC turnkey supply of clean energy projects, build own operate (potentially with a call or transfer option) supply of clean energy projects, leased plant or whatever.
- The CEFC should take care (possibly via structural arrangements) that it does not back-slide towards funding lower risk, more commercial projects which normal lenders might ordinarily be expected to address. The CEFC needs to take care to keep its focus on initial and early stage commercialisation funding.
- The CEFC should take care to ensure that its pool of technical advice does not reflect undue bias' for or against particular technologies or approaches to commercial roll-out.

**For projects <$10M** (including profit) e.g. a GRANEX waste heat power plant

*These loans should be analogous to a simple corporate finance loan, with the following key features*

| | | |
|---|---|---|
| • Structure | • A straightforward application and project proposal is needed – and quick CEFC loan pre-approval needs to be given. | • The CEFC loan can then underpin the arranging of subsequent finance and project commitments |
| • Amount | • Up to 67% of project cost | • Subject to adequacy of debt service cover<br>• Offers a degree of scale economy |
| • Term | • Up to at least 5 years | • Term of loan does not need to be long<br>• Desirable to have right to modest extension, in event of unforeseen hiccups to project, which can be expected with roll-out of new technology |
| • Interest rate | • Normal market plus explicit risk premium re early stage technology | • The CEFE loan is of primary importance, the interest rate is secondary |
| • Other important features which | • working capital loan, | • These will depend on Company and project needs |

| | | |
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| may need to be packaged with the CEFC loan: | • loan insurance,<br>• EPC contract guarantee insurances | |
| • Scope for refinancing | • CEFC to have clear scope to sell down etc, so as to recycle capital | |

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| **For large projects (say, >$10M)**<br>e.g. a GRANEX enhanced geothermal power plant project, or other large scale renewable projects<br><br>*These loans should be analogous to a classic project finance loan.* | | |
| • | | |
| • Structure | • Bespoke<br>• Detailed application, probably including a Bankable Feasibility Study (albeit the Study will probably not be able to be as definitive as one involving conventional technologies)<br>• Funding to be (pre-)approved by CEFC, subject to Conditions Precedent | • With a conditional approval in place, the CEFC loan can then underpin the subsequent arranging of whatever additional finance and project commitments are required |
| • Amount | • Potentially >67% | • Depends on debt service capacity, completion and commissioning issues, etc |
| • Term | • Up to 10 years; potentially with a bullet | • Term of loan needs to accommodate long life, modest yield infrastructure assets |
| • Interest rate | • Normal market plus explicit risk premium re early stage technology | • The CEFE loan is of primary importance, the interest rate is secondary |
| • Other important features which may need to be packaged with the CEFC loan: | • working capital loan,<br>• loan insurance,<br>• EPC contract guarantee insurances | • These will depend on Company and project needs |
| • Scope for refinancing | • CEFC to have clear scope to sell down etc, so as to | • This should be seen as one potential route for introducing institutional funding to clean technology |

| | | |
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| | recycle capital | |

**For small renewable projects, < $2M**

*These loans should be setup and managed on a basis which is analogous to that for an equipment finance loan – simple, minimal documentation, designed to facilitate the utility of the facility and the utilisation of the facility (to thereby encourage roll-out of clean technology*

## 2. Principles Beyond Financial Viability

The criteria that may be considered include:

- The Government needs a portfolio of clean technologies and projects throughout Australia and over a range of industry sectors - covering a range of project types, technologies and loan sizes. The CEFC's activities should facilitate this.

- The CEFC should similarly adopt a portfolio approach, for risk management and maximisation of learning. It is not easy to predict which technology(ies) will tend to be dominantly successful in the longer term, however much many of them will be sound in an engineering and commercial sense. By trying to ensure it obtains exposure to a range of technologies then the outstanding successes should more than cover the ordinary returns and costs of the projects which are less successful or commercial failures.

- Preference should be given to Reference and Commercial Roll-out projects – and to Reference Projects or Sites in particular. This is important, as we have found that the actual commercialisation of a good technology is a long drawn and difficult process, particularly in the current market. **Not having a representative Reference Plant is probably <u>THE</u> major impediment to successfully commercialising new technology**.

- Preference should be given to projects that can trigger more subsequent sales or plants (i.e. which are more reproducible). For example, a possible Reference Project is the enhancement in power output from large reciprocating gensets by utilising the genset waste heat (giving additional power output for with no additional fuel usage). This type of project can be replicated on the numerous genset power plants throughout Australia that provide power to remote mines and communities, and should be given preference over projects with more limited application.

- Preference needs to be given to projects having the potential to meet specific government strategic objectives, e.g.:
    - large scale renewable base load electric power generation
    - projects with a low CO2 avoidance cost
    - social objectives (e.g. employment and export sales of technology)

- The fact that a technology has previously qualified for and been provided grant or other government support funds should be considered as positive by the CEFC.

- The fact that funding form normal commercial sources (whether debt or equity or insurance) is not available should also be regarded as providing some evidence that CEFC funding may be appropriate.

## 3. Opportunities for CEFC to Partner

Partnering may be conceived of as having three dimensions:

- CEFC and other parties sharing equally the funding task and risks for a particular project from the commencement of that project, with the CEFC acting as the catalyst Arranger

- CEFC and other parties sharing the funding task and risks for a particular project from the commencement of that project and with the CEFC taking a higher risk position (eg by providing mezzanine funds or equity funds or first loss support or insurance or cost over-run facilities, etc)

- CEFC taking the front end, initiator role and then selling down or otherwise assigning the funding role to other parties once relevant milestones (eg regarding risk or performance) have been achieved

In each case, partnering will be facilitated by the CEFC adopting and using conventional financing structures, arrangements, documentation, etc.

So, for example, the CEFC might provide funding for an industrial RWH Reference Project regarding an aluminium smelter, and because it is the first of its type a premium interest rate might be charged (call it 10%), and once the first part of the project is installed, commissioned and has been operating for (say) 12 months – and risks associated with it being the first of its kind have been substantially laid to rest - then the CEFC might sell down/syndicate (say) 90% of its exposure to traditional banks and/or institutions, offering a non-premium interest rate (call it 5%) – thereby recycling 90% of its funding capacity and retaining the interest differential as part of its legitimate earnings and premium for taking so called early stage risk (which traditional banks and institutions will not accept – the Market Gap which is CEFC's rationale for existence).

Assembling a pool of appropriate expertise can also be a route to partnering. It will be necessary for the CEFC to assemble a team with relevant expertise regarding clean energy technologies, which traditional lenders and institutions do not possess. By utilising this expertise to satisfy itself regarding the acceptability of a particular clean energy project for investment or loan purposes it will facilitate other investors or lenders participating along side the CEFC (on the basis that "if the CEFC has signed off then is must be OK").

This expertise can also be utilised to establish or underpin an insurance function within the CEFC. This would involve the CEFC taking advantage of its superior understanding of clean energy technologies and its portfolio exposure to that sector to offer insurances to projects (owners and/or financiers) regarding completion, operating performance, off-take, contractors, business interruption, whatever.

By undertaking direct equity investments in clean energy companies and/or their clean energy projects the CEFC can facilitate investment in the companies/projects by foreign institutions. These foreign institutions typically want to see a number of domestic institutions committing to invest, as an indicator of local comfort with the relevant investment opportunity and so that, if problems emerge, there will be a sympathetic party conveniently at the table to represent the views of the institutional investor community. The CEFC can potentially be that comforting, domestic investor. Furthermore, in Granite Power's experience, foreign institutions are less constrained by overly prescriptive trust deeds and/or have invested in assembling and using relevant clean energy expertise, so are more likely investors in Australian projects if their requirement for a credible domestic investor counterparty can be met by the CEFC.

## The Market Gap & Overcoming It

### 4. How to Catalyse the Flow of Funds from Normal Sources?

The answer to this lies in the question: make the clean energy opportunities normal! Quite simple really.

A few steps are involved however, to normalise the opportunities:

- Reference Projects or Sites are an essential requirement, following a Demonstration Project or Pilot Project. These will be projects developed, on a properly and comprehensive commercial basis, as part of or adjuncts to normal business activities of some sort. By seeing these sites developed, commissioned and operated, with normal workers (not a highly skilled R&D team) and normal problems (ill fitting valves, dirt, bugs in the telemetry, unplanned outages, etc) two distinct groups are able to derive comfort regarding the clean energy technology concerned
    - Other potential customers, which are to a greater or lesser degree analogous in their situation to the features of the Reference Site
        - Where those potential customers can have a quiet conversation, on the side, with the first Reference Site customer regarding their actual experience (free from the sales pitch of the supplier of the clean technology)
    - Potential investors and potential lenders, which can observe and understand the relevant delivery and operational risk issues

- The first Reference Site needs to be followed by a second and possibly a third, reflecting the same or similar development and operating environments, to confirm beyond doubt that the performance of the clean technology can definitely be expected to be within acceptable boundaries – thereby delivering the cachet of "normal" and catalysing the availability of normal investment and loan funding

- The first Reference Site needs to be followed up by a second and a third site (and possibly more), reflecting step-outs to somewhat different development and operating environments, to demonstrate the generalisability of the technology
    - For example, an initial aluminium smelter site for RWH technology might be concerned with the pot line, with a key issue being the risk of precipitation of fluric acid. The second, step-out application Reference Site might be the anode shop for the smelter, with the key issue being fouling of the heat exchanger by carbon/tar residues. Granite Power regards both of these so called key issues as being eminently managable, but potential customers (not unreasonably) want to see it done, and the CEFC should assist by providing funding for these Reference Site projects

- Further, the Reference Sites need to be essentially comprehensive in their "representativeness" of a normal project. It other words, they need to be at typical not atypical locations, involve normal development approval hurdles, involve normal community liaison exercises, use standard components and fabrication techniques and installation and commissioning contractors, have employed and inducted and trained up the relevant workforce, have standard connectors to the grid or customer sites, have undertaken the normal negotiation and approval process with AEMO regarding access to the grid, be subject to standard dispatch rules and management, receive normal payments for their sales of power and successfully meet their operating expenses and manage their working capital requirements. In other words, a successful Reference Site needs to be as ordinary as possible.

- Having Reference Projects covered in relevant trade media also facilitates the process of normalisation, and education of investors and lenders.

- Hedging is a tool which is commonly used to facilitate the availability of funding, and this is true of funding for the clean energy technology sector. The CEFC can invite co-investors and co-lenders an co-insurers to join with it in participating in supporting
    - a number of (say) industrial RWH projects, thereby hedging exposures across a number of RWH application opportunities
    - a number of RWH and geothermal projects, thereby hedging exposures across two clean technology sectors and two technological application of GRANEX®
    - a number of RWH, geothermal, solar thermal and photo-voltaic projects, thereby hedging exposures across a range to clean energy technologies and types of power sector generation opportunities

In each of these cases, the CEFC would act as the Arranger (to use a lending term) to catalyse the opportunity and invite participations by partners who would likely otherwise not have the internal expertise or arranging wherewithal to establish this type of hedging opportunity

- The CEFC could also facilitate the setting up and operation of more conventional hedge markets which would enable various relevant risk issues to be addressed and mitigated, whether by the clean energy project/project proponent itself or by the investor/lender. These hedge markets might include market for forward pricing of power, of RECs or of CO2.

- Targetting clean technology projects which are more rather than less reproducible will facilitate the availability of funds from financial institutions. For example:
    - There are many hundreds of gensets in Australia, with essentially similar operating characteristics regarding industrial RWH opportunities, so funding for a few Reference Sites opens up the possibility of many sales in Australia and overseas
    - There are only a couple of copper smelters in Australia, so funding for a copper smelter Reference Site, while it enhances the general credibility of GRANEX® technology regarding RWH, and the credibility of the technology regarding metal smelting sites, only directly leads to a limited number of near identical project opportunities

- Targetting clean technology financing arrangements or structures which are readily reproducible will facilitate the availability of funds. For example, use of a standard analogy for a home loan or an equipment lease agreement (whether operating, finance or hire-purchase) facilitates both familiarity with arrangements and the packaging of a portfolio of such agreements for syndication or sell down purposes. It should also help to keep costs down.

## 5. Experiences re Obtaining Funding

Granite Power's experiences regarding obtaining funding are very simple:

- loan funds have not been available under any circumstances, and nor should they have been, since the company has (until recently) had no sales or earnings and has mainly off-balance sheet assets

- equity funds have only been available with extreme difficulty and mainly from professional and sophisticated investors, since
    - Australian institutional and VC investors are generally precluded from investing by virtue of their lack of relevant expertise and/or trust deeds
    - foreign institutions, not unreasonably, look to see significant involvement by domestic institutions, as a comfort factor regarding investment opportunities, and because the domestic institutions generally don't invest then the overseas institutions cannot
    - the GFC, the continuing effects of the GFC and the current problems in Europe have contributed to a current very strong investor preference for established businesses with strong sales and cash flow

A number of potential investors have noted that the existence of Reference Projects is a critical ("the critical") condition precedent to permitting them to consider making investments in Granite Power. Importantly, the development of initial Reference Projects means initial sales revenue and earnings for a company.

## 6. Non-financial Inhibitors

These include:

- Uncertainty regarding the longer term carbon price (notwithstanding its current relatively low level)

- Confusion (sometimes deliberate) regarding the relative significance of factors contributing to increases in energy costs, particularly regarding electricity

- Blind acceptance of and assumptions regarding and actual market structures and related price drivers and distribution of costs can act as inhibitors. For example, the implications of two power generation structure alternatives - 'centralised-with-expanding-grid' versus 'on-site-with-existing-grid' power generation – are rarely acknowledged or addressed. However, with low cost, on-site generation using RWH we have the case where some of the significant benefits of efficient, clean technology emerge and accrue external to the customer for that technology: The savings in grid maintenance and expansion do not accrue to the RWH site customer, but the CEFC should factor these issues into its considerations.

- Uncertainty regarding the continuation of government policy and programs

- Absence of relevant data, such as independent assessments regarding the availability of waste heat.
    - For example, neither the ABS nor AEMO collect or publish data regarding the types and quantum of waste heat produced by the Australian economy, let alone data regarding the various major sources of waste heat, typical temperature ranges, associated relevant featured (eg fouling), etc.

      Granite Power can honestly assert that total power generation potentially available from RWH sources is of the same order of magnitude as the potential from wind power, and can be supplied at a fraction of the cost of wind power, without the need for grid extensions or upgrades, but we cannot "prove" the assertion by reference to objective third party data (and we have no means of measuring it ourselves).

- Unfamiliarity with energy efficiency and CO2 mitigation as normal operating issues which are attended to in the course of routine activities, planning and evaluation.

- Limited production runs for many clean energy technologies

- Uncertainty in the current economic environment (eg current threatened collapse of the Euro, the stresses on the EU and the weak US economy), leading to, in particular:
    - Widespread avoidance of decision taking
    - Widespread reluctance to commit capital, for any reason

  In effect, many companies are currently taking the view that the option value of doing nothing is regarded as higher than that of taking a decision, whether to commit funds or even to undertake risks of upsetting established arrangements in some unforeseeable way.

- General tightening of credit standards, as evidenced by the severe reduction in angel funding, the shift in venture capital focus to businesses with established products, sales and cash flow and the increased reluctance of commercial banks to lend money for business development

- Increased emphasis by the superannuation industry on minimising fees, which implies both less use of analysts and investing on the basis of index tracking rather than investing for value. Compounding this is the fact that most clean energy companies are not caught by the major indexes

- Unwillingness of most institutional investors to invest in pre-listing or micro or small cap companies, such as most clean energy companies. This unwillingness generally relates

to governance issues, embedded in trust deeds, where the decision makers are precluded from (say) investing in non-rated stocks or non-listed companies or companies with a market cap of less than $X million or businesses for which there is inadequate analytical expertise available to guide the decision takers or whatever. This is another market gap which the CEFC should explicitly address (potentially by both providing funding and by lobbying for statutory changes to require (say) that tiny fractions of total funds under management by institutions shall be invested in pre-listing, micro-cap, small-cap and pre-cash flow entities. (The external, community benefits of this, in terms of facilitating commercialisation of successful R&D activities, improvements to productivity, promotion of innovation, employment and exports are relevant.)

### 7. Special Factors Which Inhibit Clean Energy Projects

These include:

- Relative absence of performance and trading history, such as via reference to other similar projects and hence lack of 'corporate or analytical knowledge' regarding clean energy projects and issues
    - By funding both a number of similar clean energy project and a range of clean energy projects, the CEFC can mitigate this relative lack of industry data.

- Venture Capitalist (and Angel) funders are generally unwilling to take exposure to geological issues – such as those which are inexorably associated with geothermal power developments and technologies. This position is founded on the fact that VC's lack the relevant expertise so, not unreasonably, are unwilling to take the relevant risks (however small and/or misunderstood). This both mitigates against the availability of early stage funding for geothermal power developments (Proof-of-Concept, Pilot and Demonstration Projects) and, thereby, against the availability of follow-on funding.
    - If the CEFC were to establish a relevant pool of geological analytical expertise, which would be required for assessing geothermal Reference Projects and follow-on projects, then it could potentially make this expertise available to VC's (for a fee) with a view to facilitating VC funding for early stage geothermal projects.

## Other Issues

### 8. CEFC & Other Initiatives

The federal and state governments has a number of programs intended to facilitate R&D activities regarding new energy technology (eg ARC Linkage grants and the Emerging Renewables Program). These programs generally do not address commercialisation issues, and as such are essentially complementary to the CEFC's activities. The CEFC should regard companies and technologies which have benefited from these programs and which have achieved the objectives set via these programs positively.

More subtly, the CEFC may care to provide a degree of informal support for proposed relevant R&D. This might be done by providing non-binding pre-commitments to provide future funding for commercialisation of technologies in particular areas where the CEFC sees merit in developments being actively pursued and brought to the market.

Relatedly, the CEFC might publish an annual advice regarding the areas of technology which it then sees as having the strongest prospects for ultimate commercial success. Care need to be taken however to ensure the focus is not solely on the mass market but that attention is also given to niche, possibly high value markets as well. This information should be a useful guide to prioritising the focus of early stage R&D (though hopefully it would not become the ultimate, sole determinant).

## Concluding Remarks

The key issues which Granite Power wishes to highlight to the CEFC are:

- Reference Sites:  Funding for these developments is the all important first step to enabling customers and financiers (investors, lenders and insurers) to become familiar with and comfortable with clean technologies which are at the cusp of commercial roll-out
    - Australia is relatively good at and has a variety of successful programs for facilitating R&D and demonstration of new technologies which have been developed, but it has a woeful track record and distinct absence of programs which successfully facilitate commercialisation of new technology

- Multiple Reference Sites: Funding will be required for a number of similar but slightly different Reference Sites, to both facilitate accelerated take-up of the technology and to demonstrate the generality of potential application of the relevant technology, and thereby the “normalcy” of the technology and its acceptability to typical investing institutions and lenders

- The CEFC needs to develop, implement and maintain procedures which are streamlined and relatively standard,

    - being mindful that its customer base is technology development companies and personnel, which are not necessarily financially sophisticated, and
    - where standard structures, documentation, etc will facilitate sell-down, refinancing and recycling of the CEFC’s funds.

- The CEFC needs to take care to remember that it has been established to take risks that the normal financial market will not address, and that the objective is to achieve long term government and social goals regarding commercialisation and deployment of renewable, efficient, clean energy technology which are not otherwise addressed nor likely addressable by normal funding markets.

**Granite Power Limited**