GEODYNAMICS
LIMITED

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The Secretary
Senate Economics Legislation Committee
PO Box 6100
Parliament House
CANBERRA ACT 2600
By email: economics.sen@aph.gov.au

24 July 2009

Dear Secretary

Re: Senate Economics Legislation Committee Inquiry into Renewable Energy Bills

Geodynamics welcomes the opportunity to make a submission to the Senate Economics Legislation Committee's Inquiry Into Renewable Energy Bills.

Geodynamics is the largest ASX-listed company in Australia whose sole focus is on developing hot fractured rock geothermal energy. The company has been developing its geothermal resource position in the Cooper Basin in South Australia for the past 7 years. The company is focusing on a technique known as Enhanced Geothermal Systems ('EGS') to tap into and extract the heat contained within granites buried 4 to 5 km below the surface of the earth.

Geodynamics believes there is in the order of 10,000 MW of long term, emission free, base load generation capacity that can be economically extracted from the company's tenements in the Cooper Basin. Further explanation of the technology and its potential can be provided if required.

The attached submission is based on our view that through the Carbon Pollution Reduction Scheme and the Renewable Energy Target the Australian Government is seeking to both lower emissions and enhance renewable energy generation capacity. These complementary actions are best achieved by encouraging a wide range of electricity supply options without specifically picking or locking out any technologies. However, it is the company's view that, the present design and timing of the RET combine to inadvertently: pick some technologies over others, particularly wind; and exclude emerging technologies such as geothermal, large-scale solar and ocean energy.

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Geodynamics recommends that the Government strongly consider amending the Renewable Energy Bills to provide for a carve-out to ensure that emerging renewable energy technologies have an opportunity to participate in the RET scheme. In effect, Geodynamics recommends that a proportion of the target be quarantined to be met by emerging technologies with this quarantined amount being phased in, in line with the expectations of the introduction and commercialisation of the emerging technologies.

Regards

Gerry Grove White
Managing Director

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Submission to the Senate Economics Legislation Committee Inquiry into Renewable Energy Bills

Introduction

Geodynamics supports the Australian Government's policy behind instituting a renewable energy target, aimed as it is at ensuring the development of a significantly increased supply of renewable energy as part of Australia's energy mix. It is essential that Australia ultimately moves to reduce its greenhouse gas emissions through an emissions trading system. However, it is also necessary that Australia also takes action to increase the amount of energy being generated from renewable sources in order to fill Australia's energy needs.

Through the Carbon Pollution Reduction Scheme (CPRS) and the Renewable Energy Target (RET) the Australian Government is seeking to both lower emissions and to enhance renewable energy generation capacity. In Geodynamics' view these complementary actions are best achieved by encouraging a wide range of electricity supply options without specifically picking or locking out any technologies. However, it is the company's view that, the present design and timing of the RET combine to inadvertently: pick some technologies over others, particularly wind; and exclude emerging technologies such as geothermal, large-scale solar and ocean energy. These emerging renewable technologies will not be in a position to effectively compete in the renewable energy market or access finance such that they can effectively participate in the RET scheme.

Geodynamics believes that an amendment to the design of the RET to provide a carve-out to ensure the participation of emerging renewable technologies would be the most effective means to ensure a balanced and broad range of options for the generation of renewable energy for the Australian energy market.

A balanced portfolio or a "Rush of Wind"?

Geodynamics is principally concerned that the design of the RET scheme will result in Government inadvertently picking winners and locking out new, emerging and developing technologies. This is principally due to the timeframes around the introduction of the RET legislation, the schemes phasing mechanisms, the objective of achieving the target at "lowest cost" and the relative immaturity of the emerging technologies.

On present day circumstances wind energy is best placed to take advantage of the RET. Its risks are sufficiently well known for investors to make an informed and relatively low risk investment. The technology is available and in place in many locations and the incentive to complete projects as soon as possible is driven by the fact that projects will receive RECs from day one of operation through to the completion of the scheme with unlimited banking.

It is also the lowest cost of the presently available renewable energy options. On present day figures, a policy formulation based on "lowest cost" equates to a massive and virtually unassailable advantage for wind generated electricity during the life of the RET. However "lowest cost" in present day terms does not amount to an optimal or lowest cost solution in the long run. Cost should be considered both in relation to the Australian Government's 20% by 2020 target under the RET, but also in the context of the Government's commitment to reduce emissions 60% below 2000 levels by 2050. This ambitious goal requires a range of measures to which the Government presently has in place, including in relation to improving energy efficiency, and capturing and sequestering emissions. Undoubtedly however, an important measure is ensuring available supply of large-scale, base-load, renewable energy generation to supplement Australia's growing energy needs.

On the current policy settings, it is highly plausible that the RET will create a renewable energy infrastructure based heavily on wind power generation, with some biomass, with limited input from new, emerging and developing renewable power sources.

A lack of balance in the electricity generation technologies taking advantage of the RET may result in:

- A reliance on wind power generation to achieve the RET, while geothermal, solar and ocean power will have a limited profile.
- Increased cost burden on the entire electricity market framework from the need to have fossil fuelled generation back-up to cope with intermittency issues and the requirement to undertake deep augmentation of the transmission system to cope with the increased capacity that is only utilised for a proportion of the time.
- An over-reliance on wind hampering the Australian Government's efforts to ensure generation of Australian base-load energy to supplement and in some cases replace fossil fuels sources. This could mean the ongoing need to "fire-up" fossil fuel based generation to support peak demand times. eg during Summer on the Easter seaboard.
- Over the long term an uneven playing field will develop, with wind having taken the vast bulk of the benefit of the RET, with other technologies effectively locked out. In order to catch-up, emerging technologies will either need to operate commercially without relying on the support of the RET or seek assistance through non-market mechanisms, such as government grants.
- Australia will miss its real and present opportunity to be a leader in emerging renewable technologies such as geothermal from hot rocks, large scale solar and ocean power.
- In the case of geothermal, this new sector will not have the opportunity to be involved in the RET in any meaningful way until around 2013 and will not be in a position to participate on a large scale until sometime after then.. This means that for a significant proportion of the RET, geothermal's front runner will be unable to benefit from one of Australia's single largest policy/market mechanism to encourage the generation of renewable energy.

Proposed carve-out for emerging renewable technologies

While undoubtedly the time for action is now, it would be unfortunate for these foreseeable outcomes to eventuate due to the speed required for implementation of the RET legislation, especially when a minor policy amendment to provide for a carve-out for emerging renewables could overcome the concerns set out above and ensure that emerging technologies are not effectively "locked out" of the RET.

Geodynamics is of the view that it is possible to avoid some of these outcomes by amending the legislation to create specific carve-outs for emerging technology. While the arrangement of carve-outs would be a matter on which Government is best placed to consult with industry sectors, it is in Geodynamics' view, important to provide an opportunity for emerging technologies to be able to be part of the RET - as on current policy settings this will not be the case. A carve-out would essentially ensure that a sufficient proportion of the RET would be reserved for emerging renewable technologies when they are expected to be developed.

Indeed, it is now a matter of historical record that the first RET did not deliver a balanced response from industry and rather brought about energy production predominantly from wind. The rules underpinning that RET process were principally the same as those presently being proposed.[1] The present Government's RET however is on a much larger scale, providing an opportunity for a significant increase in the amount of Australian power supplied from renewable sources. A repeat of the narrow outcomes from the first RET on this larger scale would truly be an opportunity lost.

Lowest present cost versus long term emission reduction goals and long term costs

The Australian Government presently has a long term goal of reducing Australia's carbon emission levels 60% below 2000 levels by 2050. While it is understood that modelling of the RET undertaken for the Department of Climate Change assumes that the cheapest available renewable energy in the market will come to the market when it is required up to 2020,[2] the early stages of the RET will see only currently available technologies being in a position to contribute to the increased target and indeed there will be a 'scramble' to develop project using these established technologies. This means that emerging technologies such as geothermal, large-scale solar and ocean will be unable to participate in the RET in a meaningful way.

As part of the process of tooling up the Australian economy so that it will be able to produce sufficient electricity to satisfy the country's present and growing energy demands, despite constraints on carbon emissions, the RET ought to be designed to encourage a balance of different technologies which will provide the optimal response to Australia's energy demand

[1] Renewable Energy Target Scheme Design, http://www.climatechange.gov.au/renewabletarget/pubs/RET-scheme-design.pdf

[2] Submission on the design features in the exposure draft of the Expanded National Renewable Energy Target scheme (RET), www.agea.org.au

profile. Under the present design of the RET there is a strong likelihood that industry will respond with what is at present the most reliable and the lowest cost response (wind power and some biomass), to the exclusion of other emerging technologies.

According to the Australian Government's report, Australia's Low Pollution Future: The Economics of Climate Change, through to 2050, electricity generation will continue to contribute to 34% of Australia's carbon emissions.[3] A significant increase in the use of renewable energy is therefore essential if Australia is to achieve its long-term 2050 target of reducing carbon emissions by 60 per cent below 2000 levels.[4]

However, those renewable energy sources that are available in the early stages of the RET are not inherently base-load energy sources, such that increasing penetration of these technologies due to a favourably designed RET will lead to a mismatch between Australia's energy market demand and its physical supply capability.[5] Indeed, given the lack of capacity for wind-generated power to match demand peaks, Australia's energy needs will continue to require support from non-renewable sources at these times.

Beyond 2020 and 2030, this situation is likely to be exacerbated as Australia reaches for higher and more extensive emission reduction targets, with the concomitant requirement to supplement and in some cases, substitute present energy supplies based on fossil fuels with renewable energy sources which are able to match Australia's electricity demand profile.

In contrast, geothermal can provide reliable, base-load, zero-emission energy on a large scale, and is therefore able to match Australia energy demand characteristics.

An uneven playing-field

While it is recognised by Geodynamics that the RET is intended to be a technology neutral mechanism for encouraging increased generation of renewable energy as a proportion of Australia's energy supply, a number of factors in the scheme's design and timing mean that it presently disadvantages the participation of emerging technologies.

In relation to access to funding, debt and equity are highly competitive and restricted at present across the globe. This is especially the case due to a risk averse banking and finance sector as well as a worldwide draw down of debt by many of the world's governments in response to the need for economic stimulus. Equity markets remain flat and limited, with many investors having taken significant losses over the last year with most likely to remain risk-averse for some time.

[3] http://www.treasury.gov.au/lowpollutionfuture/report/html/03_Chapter3.asp

[4] Australian Government's National Emissions Trajectory, http://www.climatechange.gov.au/whitepaper/factsheets/pubs/006-australias-national-emissions-targets.pdf

[5] Submission on the design features in the exposure draft of the Expanded National Renewable Energy Target scheme (RET), www.agea.org.au

In such a competitive capital market it is sensible and rational that lenders and investors will invest in the lowest risk projects. Any emerging technology, including geothermal, finds it difficult to attract funding to move through the pilot and demonstration stages. It is only after these stages are complete that a proponent will be in a position to demonstrate their capacity to build a commercially viable plant. With Geodynamics presently looking to develop its commercial demonstration plant in 2012/13 and move to commercial generation in 2016 under its present arrangements, the RET will be significantly met by the rush of wind projects in the period preceding the commercial deployment. These circumstances create significant advantage for wind projects in terms of attracting project finance.

Further, given the timing of the introduction of the scheme, wind projects will be best placed to go into production in the early years of the RET, given technology is available and resources are relatively well known. In contrast, during the ramp up phase of the RET, emerging technologies will be at a stage of development where they will have a limited capacity to be able to establish viable, commercial projects. This will however change as we move closer to 2020. Geodynamics believes a carve-out for emerging technologies would overcome many of the issues around limited participation from emerging technologies in the early years of the RET.

Benefits of accelerating development of emerging technologies

A RET carve-out for the benefit of emerging renewable energy will encourage both the creation of infrastructure and development of emerging renewable energy industries, but will also encourage development of new technology locally by the private sector. With many advanced countries moving to cut carbon emissions and limit their reliance of fossil fuels, the economic pay-off of a strong local renewable energy sector which generates valuable Australian intellectual property, is likely to be a key competitive advantage in the global economy.

Given the importance of renewable energy to the future of the world economy, it is of utmost importance that Australia develops local skills and a local industry to ensure renewable energy exports are part of Australia's export profile. Renewable energy industries may be as important to the future of Australian exporting as wheat or wool were in times past. By ensuring that emerging renewable energy technologies are able to participate in the RET, the Australian Government will make an important decision in encouraging the future of a broadly based and economically significant Australian renewable energy industry.

Direct employment from emerging technologies is likely to be substantial. The Power to Change: Australia's Geothermal Future,[6] report, sponsored by the World Wildlife Fund and the Australian Geothermal Energy Association (AGEA), has found that based on the installation of 2,200 MW of geothermal power, employment in the industry is projected to reach 3,800 full-time equivalent jobs in 2020, rising to 9,500 by 2030 and almost doubling again to 17,300 by 2050 (not including the complete supply chain). A similar report sponsored by the WWF and Carnegie Corporation found that an Australian wave energy industry will create 3,210 jobs by 2020, including jobs in local manufacturing and maintenance. By 2050 this figure is expected to grow to 14,380 jobs.[7]

[6] http://wwf.org.au/ourwork/climatechange/powertochange/

[7] http://wwf.org.au/ourwork/climatechange/powertochange/

A broadly based renewable energy sector will also maximise the opportunities for innovation. As a source of base-load, emission-free energy, geothermal has the capacity to change energy dynamics. For example, Geodynamics is currently investigating incorporation of a data centre near its Cooper Basin plant, as part of the off-take of its first 25MW plant. This is a visionary development in the changing economics of climate change, and will match the needs of modern cloud computing (with its marked, annually increasing appetite for energy) with the capacity of Geodynamics to provide reliable emission free energy in a secure environment. Given the need for cloud computing to demonstrate reductions in its own carbon emissions, despite massive growth, this innovation has the capacity to bring a new and growing industry to Australia, promising many new zero emission, hi-tech jobs.

How Geothermal can contribute to the RET, given the right scheme design

According to work by MMA, commissioned by AGEA, "Successful progression through the pre-commercial stages may result in over 2,000 MW of commercial geothermal capacity operating in base load mode by 2020." [8] This equates to 40% of the RET.

Lowest cost and comparative long run marginal cost

A comparison of long run marginal costs of various generation technologies undertaken by McLennan Magasanik Associates (MMA), on behalf of AGEA provides a cost comparison for various renewable and non-renewable energy types, under the Treasury CPRS -5 scenario. The analysis shows a fairly wide range in the costs of renewable energy, with some reductions in costs between 2020 and 2030. For example Wind is projected to cost $102/MWh in 2020 and $96/MWh in 2030; with solar thermal $250/MWh in 2020 and $229/MWh in 2030, while geothermal from hot dry rocks (EGS) is $99/MWh in 2020 and $95/MWh in 2030.

Undoubtedly there will be significant additional cost reductions due to technological advances in each generation technology type. These reductions are beyond what can presently be reliably predicted or projected. However by ensuring a diverse portfolio of renewable energy generation types, the Australian Government can make certain that our economy will have the opportunity to take advantage of each of these advances and cost reductions. Under the present arrangements however, it is likely that post 2020 and 2030 Australia will have a renewable energy profile heavily reliant on wind generation

What these figures show is that costs of renewables vary significantly and that this is likely to remain the case. However given the opportunity to properly participate in the RET, geothermal power will be in a position to supply a substantial proportion of the RET, at a highly competitive cost. However without a specific carve-out for emerging renewable technologies, it is possible that due to early investment in currently available renewable technologies will exclude emerging technologies from the opportunity to meaningfully participate in the RET, potentially delaying further the large scale deployment of these technologies.

The method of carve-out

[8] http://www.agea.org.au/media/docs/agea_finalreport.pdf

Geodynamics recommends that the Government strongly consider amending the Renewable Energy Bills to provide for a carve-out to ensure that emerging renewable energy technologies have an opportunity to participate in the RET scheme. In effect, Geodynamics recommends that a proportion of the target be quarantined to be met by emerging technologies with this quarantined amount being phased in, in line with the expectations of the introduction and commercialisation of the emerging technologies.

In order to limit any uncertainty to the scheme which might be generated by the proposed amendment, it is possible to set a deadline by which emerging technology generators would need to be in a position to be accredited and to begin generating Renewable Energy Certificates. The scheme is presently scheduled to be reviewed in 2014, signalling the Government's willingness to reconsider aspects of the scheme after it has commenced operation. It would therefore also be possible to reconsider any carved-out portion of the RET at a later time, to ensure that the RET target is delivered in 2020.

Alternatively the Government may wish to consider an additional target trajectory in addition to the current proposed target that is to be met by emerging renewable technologies.

Geodynamics is happy to engage in further discussions regarding the structure of any of these proposed amendments.