



GEODYNAMICS
LIMITED

ABN 55 095 006 090

29 March 2006

Renewable & Distributed Generation
Working Group Secretariat
Ministerial Council on Energy
GPO Box 9639
CANBERRA ACT 2601

Dear Sir/Madam:

Geodynamics Limited welcomes an opportunity to comment on the Ministerial Council on Energy's discussion paper on *Impediments to the Uptake of Renewable and Distributed Generation* and notes that MCE's activity in this regard will be fed in to the deliberations of the Council of Australian Governments' Climate Change Group to develop a national framework for the uptake of renewable and low-emission energy technologies.

The proposed framework is of critical interest to Geodynamics, which is in the process in South Australia's Cooper Basin of developing one of the world's best sites for geothermal electricity production. This project, has the potential to contribute 1,000s of megawatts of zero-emission generation capacity to the National Electricity Market.

The potential capacity of the project is equivalent to about the same overall level of capacity that the Australian wind farm sector's advocates are strongly advocating for support via the Mandatory Renewable Energy Target. However, our Cooper Basin hot fractured rock development is unique within the renewable energy sector in Australia because it will produce low-cost baseload power on a large scale without greenhouse gas emissions and without generating other wastes or impacting on communities. It represents for Australia a major step in pursuing the goal of increasing *on a large scale* the amount of electricity which is produced by using renewable, non-polluting forms of energy.

The project is intended to be developed incrementally, pursuing stepwise commercialisation from an initial 2-3 MW to 280 MW this decade and building substantially thereafter from 2010 to 2030.

The Cooper Basin resource is of considerable size and the recoverable thermal energy through a heat extraction process is thought to be 12 times larger than the energy content of the North-West Shelf natural gas reserves.

An area of only 5 x 5 kilometres of the known 1,000 square kilometres of hot rocks can feed 275 MW of generation capacity for some 30 years -- this alone is equivalent to nearly half the baseload power supply capacity of the Snowy Mountains hydro-electric scheme.

Looking to the longer term, we point out that Australia is known to have several thousand cubic kilometres of high heat-producing granites and these have the potential to meet the current national level of electricity demand for several centuries.

A major factor in pursuing this potential is that it can be made available at reasonable generation cost. With respect to Table 1 on page 21 of the discussion paper, Geodynamics notes that the Cooper Basin HFR operation will have generating costs (capital and operating) of \$40 - \$50 per megawatt hour, well below the \$130 per MWh you suggest in the range cited.

The availability of geothermal capacity from Geodynamics Cooper Basin project at such prices is of particular importance in the next 5-10 years to South Australia, which is urgently in need of more reliable, cost-efficient power supply and where the State government aims to achieve this without adding to the State's greenhouse gas emissions intensity.

Unlike virtually all other renewable generation concepts falling within the ambit of the R&DG discussion paper, however, the impact of the Cooper Basin HFR project on its own will not be restricted to one region or State.

While accepting that many other intermittent and continuous generators -- with much higher generating costs -- will have worthwhile contributions to make to the development of the renewable energy sector in Australia, Geodynamics submits that the Cooper Basin HFR project is worthy of special attention and that its characteristics put it in a unique position to promote *"the long-term interests of consumers of electricity with respect to price, quality, reliability and security of supply"* (the NEM objective) while reducing the greenhouse gas intensity of national energy supply, contributing to the key national economic objective of trade competitiveness, providing regional and rural development and employment, and also providing cost-effective power to isolated communities.

A critical factor in the project's development is its location some 500 kilometres from the interconnected national electricity market grid and it is with this in mind that Geodynamics wishes to address comments to R&DG Working Group with respect to the issues raised in section 4.2 of the discussion paper. Finding a path to least-cost interconnection between the Cooper Basin HFR project and the NEM grid is fundamental to the long-term success of development.

Development of the Cooper Basin transmission link issue, however, goes beyond the interests of Geodynamics with respect to the HFR project and opportunities exist, as larger-scale geothermal capacity is brought in to operation, to significantly enhance the capabilities of the NEM grid to the benefit of other suppliers and of consumers.

It is well recognised in the electricity industry that the NEM is essentially a linear interconnection arrangement, stretching from North Queensland to the western edges of South Australia, a distance of several thousand kilometres. As a result of this, the outlying regions of South Australia and Queensland are susceptible to lower grid reliability than the heavier load areas in Victoria, New South Wales and south-eastern Queensland (Brisbane and the Gold Coast).

A connection to Brisbane from the Cooper Basin HFR project in effect will link the South Australian and Queensland systems and hence improve the overall flexibility of the market. Under this scenario, Moomba in the Cooper Basin will be able to act as a power supply hub, delivering improved reliability and reduced pool price volatility between the extremities of the NEM.

Against this background, the R&DG Working Group will appreciate Geodynamics' concern that its deliberations, and subsequently those on the COAG Climate Change Group, should be fully informed of the no-emission capabilities of the HFR development and should fully weigh the potential of the project to meet national energy security and environmental goals against those offered by other smaller, higher-cost and often intermittent renewable energy generators as well as proponents of nuclear power or "clean coal".

A number of the issues addressed in the discussion paper, and also being given attention by the Ministerial Council on Energy in considering other aspects of NEM policy, do not in our opinion fully recognise the potential of the Cooper Basin HFR project to open a new paradigm for the market -- and they should also address the unusual development profile of the project in that achievement of its full capability will take place incrementally over an extended period of time, probably 25 years.

Decisions taken on market issues, including impediments to renewable generation development, that do not take in to account the nature of the Cooper Basin HFR development could result in its full potential being delayed and perhaps even not wholly attained.

One example of the problems encountered -- as the discussion paper itself points out (although not in respect of geothermal development) at page 29 -- is that current regulatory arrangements within the NEM contain no clear rules for sharing network access where capacity is constrained, particularly at the end of long network lines. The lack of clear rules for dealing with this issue needs to be resolved by governments not merely with respect for generation such as wind farms but also to ensure that it does not constrain projects of an entirely different calibre with important national economic benefits as well as environmental gains.

Geodynamics joins other members of the renewable generation industry in also pointing out that the NEM rules, as currently set down, force new generators to bear the cost of connecting transmission infrastructure, regardless of the economic and environmental benefits their projects bring to the market and to the country, while generators who began operation before the establishment of the market have not had to face the same costs.

An important part of the overall problem with energy market rules is that economic regulators, whether State-based or national, are called on to pay minimal attention to issues such as greenhouse gas abatement because it is seen as outside their terms of reference. Geodynamics shares the view of other renewable energy industry members that MCE (and COAG) should be adjusted to ensure NEM rules and regulations catch up with the strong and growing climate change focus of these governments in other areas.

Another issue that throws up impediments to conventional renewable and distributed generation development via cogeneration -- and which is of particular interest to

Geodynamics because it is especially relevant to the Kalina Cycle technology to be used in the HFR project -- is the failure of current energy policy to provide incentives for use of waste heat. This does not appear to be addressed in the discussion paper and notably falls outside the ambit of the Mandatory Renewable Energy Target legislation.

(The Kalina Cycle technology is a proven, established and patented process owned by Geodynamics which substantially improved the conversion of heat to power for generation of electricity.)

Geodynamics urges the R&DG Working Group to include consideration of this issue in its ongoing deliberations and to seek input from others than ourselves -- for example, the cement industry -- on this point. A better approach to use of waste heat certainly would benefit the commerciality of the Cooper Basin geothermal development, but it will also be of broader value to others in power supply and the manufacturing sector across Australia.

The core consideration that Geodynamics wishes to see taken in to account as the R&DG Working Group's task is progressed is the factoring in to your deliberations of the fact that the Cooper Basin HFR project can markedly impact on the NEM's current heavy reliance on electricity sources with the highest emissions intensity and without any realistic prospect of cost-effectively reducing emissions in the next 10-25 years. Our geothermal resource has genuine ability to mitigate substantial economic shocks the Australian economy may have to manage when carbon constraints have to be introduced.

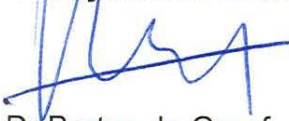
As is explained above, the Cooper Basin HFR project potentially offers a considerable contribution to decarbonising NEM generation through large-scale use of renewable energy at competitive prices and with no emissions.

All this adds up, we submit, to a need to consider impediments to substantial development of renewable energy in Australia in the next two decades from a somewhat different perspective than the one adopted by the Working Group in preparing the discussion paper.

In this respect, Geodynamics will be pleased to provide further information about the HFR project and its particular development challenges to you.

Yours sincerely

Geodynamics Limited



Dr Bertus de Graaf
Managing Director