Geothermal Energy's Transition from Resource to Power: Legal Challenges

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Growth and development in the geothermal energy sector will require the industry to understand and comply with several forms of regulation. The geothermal energy sector has much in common with mining of petroleum and minerals, and is regulated as such. However, because geothermal will ultimately serve as a source of electricity, it is equally important to understand the legal regime that governs the national electricity market and the sector's entry into the electricity market. Differences in State and Territory regulation of geothermal projects mean that the sector will have different obligations with which to comply in different jurisdictions. Different approaches to allocating priority among holders of overlapping tenements are taken under the various State and Territory regimes. The geothermal energy sector's engagement with the Scale Efficient Network Extension (***SENE***) framework and the National Electricity Market established by the National Electricity Law will be crucial if it is to have a significant role in electricity production.

Keywords: geothermal; regulation; overlapping tenements; National Electricity Market; Scale Efficient Network Extensions

Regulation of geothermal *resources*

State and Territory Regulatory Regimes

The geothermal sector must come to terms with the different systems regulating geothermal projects in each State and the Northern Territory. Each legislative scheme imposes different obligations, and the differing classifications of geothermal resources have implications that will affect project development. In South Australia and Western Australia, petroleum legislation was amended so that it now regulates both petroleum and geothermal energy. In Queensland, Victoria and the Northern Territory, geothermal energy is regulated by a dedicated Act. In New South Wales and Tasmania, a geothermal resource is defined as a mineral and is regulated under mining legislation.

In the Australian Geothermal Industry Development Framework, which was published by the Federal Department of Resources, Energy and Tourism in 2008, concern was expressed that that differences in legislative schemes have the potential to affect investment decision-making. Investment decisions may be influenced by the number of hurdles to exploration and exploitation a particular legislative scheme imposes and the degree of certainty it provides. Thus, decisions that should be based on the potential of the geothermal resource may be influenced by differences in regulation of the industry. One of the objectives outlined in the framework is to 'harmonise the framework governing the industry across Australia.' Given the existence of seven different schemes for the regulation of geothermal energy, this objective will be difficult to achieve.

The practical implications of the differing legislative regimes must be understood. Two examples serve to illustrate this. First, in South Australia activity may only be conducted if the region or land concerned is covered by a Statement of Environmental Objectives that has been approved by the Minister. Geothermal and petroleum activities are governed by the same Act in South Australia, so Statements of Environmental Objectives developed for petroleum activities can be adopted for geothermal operations.

Second, native title negotiations must be approached based on the different regulatory treatment of geothermal energy in each jurisdiction. In South Australia, the Government has made a determination that geothermal activities are not mining activities. This means that holders of South Australian geothermal licenses are not subject to the additional criteria under the right to negotiate process associated with holding mining leases. In Queensland and Western Australia, holders of geothermal tenements are subject to the more stringent right to negotiate procedure. In Victoria and the Northern Territory, native title is dealt with explicitly under geothermal legislation. In Victoria, native title holders must be compensated for any loss or damage sustained in relation to their interests as a result of geothermal activity. In the Northern Territory, the Minister must be satisfied the native title holder's consent has been obtained and the federal *Native Title Act* procedures followed before granting the geothermal authority applied for.

Overlapping tenements

Tenements granted for the purpose of development of geothermal resources may overlap with other mineral or petroleum

tenements. For example, the Cooper Basin is the site of a geothermal resource and significant gas and oil reserves. The legislative regimes resolve the question of prioritisation of interests in different ways. The approach to overlapping tenements taken in each jurisdiction is linked to classification of geothermal energy and the mode of regulation of geothermal energy adopted in each state.

In South Australia and Western Australia, geothermal tenements and petroleum tenements may subsist in the same area. Governed under the same legislation in these states, geothermal and petroleum resources are treated equally. However, prior to the grant of the second tenement (geothermal or petroleum), the Minister must consult the existing tenement holder. Thus, in both of these jurisdictions, the Minister has a responsibility to hear and take into account the concerns of the existing tenement holder.

In Queensland, a more prescriptive approach is taken. Geothermal exploration cannot be undertaken to the extent that it adversely affects activity under a mineral or petroleum tenement that has already started. Conversely, activity on tenements granted under the mineral and petroleum legislation cannot be undertaken to the extent that it adversely affects activity under a geothermal tenement that is already under development. This approach clearly gives priority to the holder of the tenement that was obtained first, whereas in Western Australia and South Australia the existing tenement holder need only be consulted before the Minister grants the second interest. Although one of the purposes of the Queensland Act is to facilitate consultation with and compensation for persons adversely affected by geothermal exploration, the Act provides no guidance as to how to determine whether a project is 'adversely affected' by a geothermal project. The Queensland legislation dictates that a project that is first in time and adversely affected by a second proposed activity on the same land has priority. However, discretion in relation to what constitutes an 'adverse effect' remains. The question of whether the first activity will be 'adversely affected' by the second is a matter that will require resolution in each case of overlapping tenements.

In New South Wales and Tasmania, geothermal resources have the same status as other minerals. In New South Wales, an overlapping tenement may not be granted without the consent of the existing tenement holder. As in South Australia and Western Australia, the Minister has a role to play: disputes between the overlapping tenement holders are referred to the Minister for determination. In Tasmania, an exploration license or mining lease cannot be granted over land that is already the subject of a tenement. Because geothermal resources are not distinguished from other minerals in these states, the approach taken to overlapping tenements is more rigid.

The Victorian Act is silent on the question of overlapping tenements. However, the Operation Plan that is submitted to the Minister prior to the carrying out of the geothermal operation must detail the risk of injury to land users in the vicinity of the operation.

As well as describing these differing regulatory regimes in the abstract, analysis of the practicalities associated with attempts to comply with them will also be provided.

In the Northern Territory, the holder of a geothermal tenement must consult the holder of an existing mining right or petroleum interest about the proposed geothermal activities. Unlike the Queensland legislation, the Northern Territory's *Geothermal Energy Act* does not provide that holders of mining rights and petroleum interests must consult with holders of existing geothermal tenements. Unlike the South Australian and Western Australian requirement that existing tenement holders be consulted prior to the grant of an overlapping tenement, geothermal tenement holders need only consult the holder of an existing right or petroleum interest before conducting geothermal activities.

The resolution of issues associated with overlapping tenements often rely on the exercise of Ministerial jurisdiction, either at the time when the tenement is granted, or in the event of a dispute. The exercise of Ministerial discretion may be influenced by political considerations. Holders of overlapping tenements may benefit from using contract to overcome uncertainty as to how their interests will be prioritised. Another situation in which contractual negotiation and agreement may also benefit the development of the project is where tenements over a single geothermal resource are granted to different parties. In some jurisdictions, cooperation can be mandated. In Western Australia, license holders can be required to enter into an agreement if the Minister is of the view that unit development of the geothermal resources area would secure more effective recovery of geothermal energy. Similarly in Victoria, the Minister may require holders of extraction licences that cover adjacent areas to enter into cooperative agreements for the extraction of geothermal energy. Further insights will be provided into how contracts are likely to operate as a practical tool. Our analysis will draw from contexts which share important characteristics with the geothermal energy sector, including experiences of the wind power sector.

Regulation of geothermal *energy*

While geothermal remains a young and underdeveloped industry in Australia, there will be

a tendency for industry participants to focus on regulatory systems governing preliminary issues such as exploration, prospecting and valuation. As geothermal resources are developed to become sources of power, parties with an interest in geothermal projects will need to become familiar with the requirements and peculiarities of the National Electricity Market (***NEM***) and the rules which apply to it.

The NEM: an overview

An outline of how the NEM operates and some of the key principles underpinning the National Electricity Law and the NEM will be provided. This will be distinguished from the system which operates in the Northern Territory and Western Australia. A brief description of the rules and standards likely to be particularly important for geothermal projects will also be provided.

Entry into the NEM and Contracting

Electricity prices in respect of base load power are determined according to bids placed by generators at five minute intervals. In this competitive environment, the capacity to sell electricity at a specified price cannot be taken for granted.

Contracting

The production of geothermal energy requires significant capital investment when compared with other electricity generation methods. The Massachusetts Institute of Technology cites Californian research indicating that capital reimbursement and interest charges account for 65% of the total cost of geothermal power. This can be compared to combined-cycle natural gas plants for example, for which equivalent costs account for approximately 22%. In each case the remaining costs cover items including fuel (eg water), labour and access charges.

There will therefore be an understandable desire among industry participants to obtain some security regarding electricity sales and prices.

Generators may seek to negotiate longer term underlying contracts to give themselves, their financiers and their investors certainty. Such contracts are commonly relied upon within the current market. The NEM structure means that derivatives are often used for this purpose, although a PPA may also be appropriate in certain circumstances.

As RECs will support the economic viability of geothermal projects under the Renewable Energy (Electricity) Act 2000 (Cth), it is likely that proponents will sell a bundled product comprising electricity ('black') and RECs ('green').

An outline of the operation of such contracts within the electricity market currently, including some practical tips on contract drafting, negotiation and key risks will be provided.

Scale Efficient Network Extensions (*SENE*)

In order to promote development of the infrastructure needed to transfer electricity from (often remote) energy generation sites to the electricity grid, the Australian Energy Market Commission has drafted proposed amendments to the National Electricity Rules which would facilitate the construction of SENEs between new electricity generators and existing infrastructure. While the extensions will be available to various types of energy producers, they are likely to be particularly important for the renewable energy sector.

According to the current proposal, SENEs would be developed by Network Service Providers with Generators paying for the right to transmit energy through an SENE and the cost of any shortfall being passed through to customers. Customers here are those registered with AEMO as customers and therefore would include retailers rather than end use customers. Customers are however expected to benefit from the prevention of costly duplication which could result if companies were left to each construct their own infrastructure in order to connect to the network.

Outlined below is a sample of some of the issues raised by the draft amendment which are likely to present challenges.

Capacity

The fact that geothermal sites in any particular region are likely to develop in a staggered manner makes the determination of suitable capacity for SENEs particularly difficult. Clearly, there should be enough to enable geothermal and other generators to transmit electricity to the market. At the same time, a potential over-sizing or 'asset stranding' would be paid for by electricity customers and would likely be passed through to their end-use consumers in the form of higher electricity costs.

As the Network Service Providers responsible for developing SENEs will be able to recover their costs entirely from generators and customers, the AEMC notes that the incentives may favour over-sizing (and excessive capacity) rather than under-sizing (and inadequate capacity).

Notwithstanding, geothermal industry participants considering investing in reliance on transmission services offered through an SENE should not consider this to constitute a capacity guarantee. The draft rules prescribe that the AER may disallow proposed SENE projects. Moreover, a Network Service Provider will only be required to commence the SENE planning procedure if there is a reasonable likelihood of other generators

connecting to the proposed SENE and its development is likely to offer material scale efficiencies. In the event that there is inadequate capacity, the draft rule provides that the generator whose requirements cannot be met is required to fund an augmentation to the SENE. If the generator does not agree to fund such an augmentation and its generation (in excess of its agreed power transfer capability) has 'constrained off' another generator connected to the SENE, the fist generator will be required to pay the other compensation. Importantly, compensation is calculated with reference to a formula which will not necessarily result in recovery of the 'true economic cost of connection'.

Relationship with shared network

Depending on the way in which the SENE infrastructure develops, its interaction with the shared network could present challenges. Where the SENE generates benefits and/or costs for users of the shared network, there is limited allowance in the rules for their allocation. There may also be practical difficulties associated with the fact that the shared network operates through an open access system whereas after the introduction of the SENE, generators will be allocated a specific agreed power transfer capability.

Infrastructure development efficiency

The Clean Energy Council has noted that the Network System Operators responsible for developing SENEs have few incentives to avoid cost blow outs.

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The authors have also relied on various internal research resources owned by Allens Arthur Robinson.