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To Ministry of Business, Innovation and Employment

On behalf of the New Zealand Geothermal Association

7 June 2016

## Submission on 'Options for expanding the purpose of existing energy levies'

### Background

The New Zealand Geothermal Association (NZGA) would like to thank the Ministry of Business, Innovation and Employment (MBIE) for the opportunity for discussion around "Options for expanding the purpose of existing energy levies".

The New Zealand Geothermal Association (NZGA) is an independent, non-profit association that provides information on geothermal phenomena and utilisation for industry, government and educational organisations. In addition, the NZGA, as a member of the International Geothermal Association, contributes to the international exchange of information within the geothermal development industry. NZGA membership comprises participants, regulators, and interested parties within the geothermal community. It totals 325 members currently.

This submission answers the following questions from the document 'Options for expanding the purpose of existing energy levies'<sup>1</sup>. The questions answered are listed below, in the order given:

1. **What are your views on the objective of this proposal? Do you agree or disagree with it? Why?**
2. **Which option do you think provides the best balance?**
3. **What is the preferred option?**
4. **Why is this the best option?**

This submission will be published on the NZGA website, and we have no objection to it being published in any other setting.

1. **What are your views on the objective of this proposal? Do you agree or disagree with it? Why?**

The New Zealand Geothermal Association supports the objective of this proposal i.e. expanding the purpose of one or more of the existing levies on electricity, transport fuels and gas.

The Association supports the intention to enable levy funding of a wider range of activities that encourage, promote and support energy efficiency, energy conservation and the use of renewable sources of energy.

The recent "Yes we can" Symposium clearly drew out the linkages between the various sectors. One of the strong linkages was between electricity generation (dominantly renewable energy) and the new opportunities in electric vehicles. Thus our geothermal electricity can play a key role in future transport. There are still many opportunities for new investment in renewable generation, whether it is geothermal or wind, and this will be helped by new and expanded markets for electricity.

This expanded remit can potentially include the direct use of geothermal heat and geothermal technology as a fossil fuel substitute. In addition, the remit could cover the acquisition of geothermal energy use data, in collaboration with the International Energy Agency (IEA). This would inform programmes promoting energy efficiency and renewable energy in New Zealand (including giving

measures of progress for our own New Zealand Energy Efficiency and Conservation Strategy), and be in keeping with New Zealand's position as a world leader in geothermal energy.

Geothermal energy is an indigenous source of energy for New Zealand. The use of geothermal energy is compatible with all six of the objectives below for energy efficiency and renewables as set out in the New Zealand Energy Efficiency and Conservation Strategy 2011-2016<sup>2</sup>

- Transport – A more energy-efficient transport system, with greater diversity of fuels and alternative technologies.
- Business – Enhanced business growth and competitiveness from energy-intensity improvements.
- Homes – Warm, dry and energy-efficient homes with improved air-quality to avoid ill-health and lost productivity.
- Products – Greater business and consumer uptake of energy-efficient products (this includes uptake of developing geothermal products such as geothermal kilns, heat exchangers and pressure vessels, and most recently remanufactured turbines).
- Electricity system – An efficient, renewable electricity system supporting New Zealand's global competitiveness.
- Public sector – Greater value for money from the public sector through increased energy efficiency.

## 2. Which option do you think provides the best balance, and the best option?

Option 3: Existing electricity levy + PEFML with expanded purpose + gas levy with expanded purpose.

This Option covers the major energy fuels, which is the most important criteria. If it includes the existing consultation, reporting and refund mechanisms built into the electricity-efficiency levy requirements, it will be a 'rational' and transparent allocation of funds.

## 3. What is your preferred option?

The broad rationale for Option 3 by the geothermal industry is that it allows for the consideration of direct geothermal energy use. The option could potentially consider geothermal heat use as a substitute for gas, diesel, or electrical heat sources. It could potentially cover the support of a geothermal data collection program in collaboration with the International Energy Association and the International Geothermal Association.

## 4. Why is this the best option?

In 2014 New Zealand electricity was already generated from 80% renewable resources<sup>3</sup>, including 16% geothermal generation. New Zealand geothermal efforts to date have been focused on electricity generation, but demand for electricity is now in a period of slow growth.

However, there are further opportunities for geothermal energy to contribute to the efficiency of New Zealand energy use. We have extensive geothermal expertise and the geothermal resources to focus on:

- Opportunities for more direct use and efficiency in utilisation of geothermal heat.
- Improved data collection to inform better decisions supporting New Zealand energy strategies, and contributions, as a world leader in geothermal, to international renewable energy programmes.

### *Heat*

Heat accounts for about 30% of New Zealand's energy use. However, 70% of heat (21% of total New Zealand energy use) used by our businesses comes from fossil fuels. Industrial heat and heating commercial buildings is responsible for about a 10% of total New Zealand GHG emissions.

Many of the suggestions here are derived from the New Zealand Geothermal Association's "Geoheat Strategy Proposal"<sup>4</sup>.

### *Current Status of Geothermal Heat Use*

Currently New Zealand uses some 8.6 PJ/y of energy in direct geothermal heat use. This use of geothermal heat includes applications in industrial timber and food processing, agriculture, aquaculture, geothermal (ground-source) heat pumps, tourism, balneology (medicinal bathing), and commercial and domestic heating.

With GHG and climate change concerns becoming more pressing, there is now considerable and growing interest from business and industry, economic development agencies, regulatory authorities, central government, and iwi landowners, trusts and economic authorities to tap into direct geothermal energy use. However, to date this enthusiasm has not yet materialised into growth.

### *Opportunities and Challenges for Geothermal Heat*

Opportunities<sup>4</sup> for increased direct-use include:

- supplying new and existing businesses (and homes) with geothermal heat;
- substitution for fossil fuel based energy;
- development of industrial / commercial geothermal heat parks; and
- attracting industries to take advantage of New Zealand's geothermal assets.

Specific actions which could involve geothermal heat, as noted in an EECA presentation<sup>5</sup> include:

- To help operators of meat and dairy plant (the biggest users of industrial heat) to identify and act on opportunities to save energy;
- To bring together potential users and suppliers of renewable heat resources (such as woody biomass or geothermal heat), within a specific region, to collaborate in securing viable demand and supply arrangements for the long term.

Challenges which need to be addressed include:

- Holistic planning and consideration of the “integrated” use of the resource. Many of the renewable resources that could be used to generate heat (and economic productivity) are going to waste. Cascaded or parallel use of geothermal heating in particular requires an integrated planning effort to bring together many users of a single heat resource.
- Promotion of the economic case and maturity of the technology are needed to address the lack of demand. The long life of heat plant assets means that fossil-fuelled technology becomes 'locked-in', and heat users in most industries perceive risks to security of supply of renewable fuels. Note that the recent conversion of what is now the Asaleo Care heat plant at Kawerau from gas to geothermal supply was based on a high quality, high reliability supply so risks can be managed.
- Generating heat from renewable resources also generally has a higher initial capital cost than for other fuels, despite lower operating costs in most cases.

### *Outcome*

The Geoheat Strategy Proposal aims for 5PJ increase in heat use by 2025.

Implementing this strategy will assist in meeting New Zealand's energy needs, reduce our reliance on fossil fuels, capitalise on our natural resources and geothermal expertise, contribute to regional economic and social development, reach strategic energy targets, and further promote New Zealand's commitment to efficient and clean energy use.

### *Energy Data: Current Status*

Good data are necessary to enable informed decisions. The International Energy Association Geothermal Implementing Agreement (of which New Zealand is a member) and the International Geothermal Association are currently looking to rationalise and improve geothermal data collection as part of an international energy data collection effort. Currently the New Zealand data collection effort has relied on occasional funding, or has been based on erroneous extrapolation by officials. The possibility of continued excellence in data collection (and understanding resource use) is remote if this is our future model.

### *Opportunity and outcome*

This concept has precedence as the current Petroleum and Engine Fuels Monitoring levy is used for IEA related costs (including acquiring energy data and liaising with the IEA). An expanded levy could contribute to the much-needed geothermal data collection effort. Collection of better and more

reliable geothermal heat use information can contribute to shaping programmes for meeting New Zealand's renewable energy targets.

"You have to collect data if you are to know how to act on data" (Melinda Gates, 2016<sup>6</sup>).

## Conclusion

We would be happy to answer any further queries.

Yours faithfully



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## References

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5. Underhill, M. *Opportunities and Challenges for Energy in New Zealand Now.* Presentation to the *National Energy Research Institute (NERI) Conference*, Wellington, March 2014
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