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Further Submission on the Emissions Trading Scheme Matters Related to Geothermal Energy

To Ministry for the Environment

On behalf of the New Zealand Geothermal Association

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Thank you for continuing to engage with the New Zealand Geothermal Association following earlier consultation on the Climate Change (Stationary Energy and Industrial Processes) Regulations 2009.

In recent weeks:

- I have been able to provide Katherine Wilson with contacts into the major direct users (at the supply, operations and use levels),
- I have received a letter from Stuart Calman dated 1 September 2009 inviting submission on acceptability of a threshold of 4,000 tonnes of CO₂ equivalent for geothermal electricity generation or industrial processes, below which participants are exempt from participation in the Emissions Trading Scheme (ETS),
- I have separately received an email from Scott Gulliver dated 2 September 2009 (MfE) seeking views on a Default Emissions Factor for geothermal developments of 0.030tCO₂e/t steam,
- I have met with Katherine Wilson to discuss the intent of the regulations and these two aspects that will finally affect major users of geothermal energy with respect to the ETS.

In this further submission, I intend to respond to the outstanding queries, as we all seek a workable solution.

Introduction

MfE has been consulting on the Climate Change Regulations, and is now sorting out revised default emissions factors and thresholds. Any investor in geothermal projects will normally be committing to a capital-intensive project with a view to these renewable energy projects offsetting the high fossil-fuel bills they may have had otherwise. For confidence in making this investment decision, liabilities need to be nailed down as best as possible. With this in mind, it is the complete package around Regulations and the ETS that needs to be tightly defined. I am comfortable with stated intents, but investment confidence will come when intent is finally written into regulations and tested in real life.

Major electricity generators are willing to bear appropriate costs of carbon in their operations. Application of Regulations to electricity generation projects seems relatively straight-forward. A concern from NZGA's perspective is that a wide range of direct uses may accidentally be caught up by the Regulations so this remains a focus in our submission.

A Threshold for Exemption from the ETS

Thank you for following through on the idea of thresholds for exemptions.

Firstly, I think the primary criterion for determining exemption should be that ETS obligations and associated Regulations should only apply to electricity generation and industrial processes, and I know this is Ministry for the Environment's intention.

From my discussions with Katherine, I understand that there will be no formal attempt to define the term "industrial processes" as used in the Climate Change Regulations. However, the intent is that the regulations will only be applied to electricity generation and "industrial processes". Electricity generation can be clearly identified.

Katherine outlined that the intent for any new project is that the developer should undertake a self-assessment at the concept stage to determine if a project should reasonably be considered an "industrial process". If the developer considers the process to be other than an "industrial process" e.g. a commercial process for space or water heating or bathing, then he should simply file this assessment in his records and ignore the regulations and associated liabilities and responsibilities. Some developers may still feel a measure of exposure with this approach, while others may be grateful for the flexibility shown.

In the NZGA's previous submission on the Regulations we reviewed large scale users of energy (a small number of projects accounting for 80% of the national direct use) as a partial filter on what may be termed "industrial processes", then considered character of use beyond the scale criteria to settle on a list of current "industrial processes". The large scale list we derived is as follows:

Plant	Energy Use (TJ/Year)	Cumulative Energy Use (TJ/year)	Comments
Kawerau Industrial supplies	5,224	5,224	Industrial
NETCOR tourism facility	820	6,044	Commercial tourism (not industrial), receives flashed brine only so should be exempt
Ohaaki kilns	438	6,482	Industrial but receives flashed brine only so should be exempt
Tenon kilns	431	6,913	Industrial
Mokai glasshouse	300	7,213	Commercial (not industrial), and assessed in Ian Thain's report as having zero emissions due to total reinjection of gas
Waikite pool	275	7,488	Commercial (not industrial), and receiving fluid from a spring that has already flashed off its gas so not associated with anything other than natural emissions
Wairakei Prawn farm	270	7,758	Commercial (not industrial), receives flashed brine only so should be exempt, at the 80% of cumulative direct use transition point
Geotherm glasshouses	27	7,785	Commercial (not industrial), and below the 80% threshold that might define large scale
Hanmer Springs	15	7,800	Non-industrial, and below the 80% threshold that might define large-scale
Many others	<15 each	9,552	

Clearly should be included

← Possible industrial/commercial transition point

From this, it appears that the “industrial processes” filter if applied in the way indicated should exempt by far the greatest number of projects while still capturing major emissions projects.

Secondly, we considered the proposed 4,000tCO₂e threshold, which might also be associated with small electricity generation projects.

Expressing the threshold directly in terms of CO₂e seems appropriate, say compared to a TJ threshold (as indicated above), since that is what the regulations and ETS focus on.

This avoids the unnecessary capture of large energy receivers e.g. NETCOR in the list above if not otherwise filtered out by the “industrial process” criteria. In NETCOR’s case it receives much fluid that has previously been flashed so will have almost no gas associated with its supply. The Ohaaki kilns would also be exempt as these receive flashed water also with minimal gas.

There would be some interesting anomalies with this approach. Consider the supply of steam to the CHH Woodproducts timber kilns at Kawerau. These kilns take about 15 – 20 t/h of steam. Steam is assessed to have a gas content of 2.75% in the steam. At a 95% load factor this implies associated emissions of 4,005 tCO₂e per year. A minor reduction in use could see this plant come under the threshold. However, because this supply comes off a larger supply to the Kawerau mill with combined supply exceeding the exemption limit, all steam supplied would face a cost of carbon. Thus even if CHH Woodproducts had emissions under the threshold, they would still face the cost of carbon.

It would be interesting to consider the size of electricity development that might be exempt. In the CHH Woodproducts example above, a steam supply averaging 17.5 t/h was around the threshold supply limit at Kawerau. Typical steam consumption of a steam turbine is around 8t/h/MW, so a 4,000tCO₂e threshold might allow a 2MW geothermal distributed generation project to be exempt depending on location. We have no difficulty with that.

Also considering the binary cycle plants receiving flashed brine only (so minimal gas) the threshold should see exemption for Wairakei Binary plant and the two old Kawerau plants. The NZGA regards this as quite appropriate.

Default Emissions Factor

Thank you for reviewing the default emissions factor. In our previous submission we pointed out that the previous suggested general default value of 21% gas in the steam was inappropriate and you have now suggested 3% vs our suggestion of the current average of 1.75%.

We have noted your methodology, based on mixtures of simple averaging, MW-weighted averaging and averaging excluding extreme maximum and minimum values. At the end of the process you have rounded your calculated value from around 2.4% gas to 3% gas in steam. There could be some debate around what are the most appropriate MWs to be shown for various stations, around the omission of the Kawerau direct use supply (equivalent to around 30MW) from the calculation, or whether Nga Awa Purua should have been included in the calculation also. The effect of any of these changes would not be material. You would still calculate an average value in the range 2 -3 %, though closer to 2%. There are fields such as Kawerau and Rotokawa that are likely to be subject to significant further development so it is appropriate that the threshold be set above values likely to be encountered for a development on either of these fields. Kawerau seems to have the higher gas content at 2.75% for current developments so a figure just over 2.75% seems an appropriate default emission factor to encourage timely application of unique emissions factors, and your suggested 3% would seem acceptable.

There still appears to be a flaw in the logic though. If the intention of the general default emissions factor is to get all new geothermal stations to apply for a unique emissions factor, then perhaps this should be stated explicitly in the regulations and no default emissions factors allowed at all. This sort of approach would still require industry assurance that the

Climate Change (Unique Emissions Factors) Regulations would not be onerous e.g. that a Unique Emissions Factor can be allowed to stand in perpetuity once defined for a plant if the developer so wants.

Conclusion

Overall, the New Zealand Geothermal Association is comfortable with suggested exemptions for plants receiving less than 4,000tCO₂e per year.

The Association is comfortable with a general default emissions factor of 3% gas in the steam, though note it may have been administratively more efficient to have no default emissions factors and to specify that plants apply for unique emissions factors, as that is your intent.

We would be happy to be involved in any further consultation.

Yours faithfully



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