



East Harbour Energy Ltd
PO Box 11-595, Wellington 6142
New Zealand
Tel: 64-4-385-3581
Fax: 64-4-385-3397
E-mail: brian.white@eastharb.co.nz
www.nzgeothermal.org.nz

Submission on “Consultation Paper – Transmission Pricing Methodology Review – Issues and Proposal”

Electricity Authority

1 March 2013

Organisation Name	New Zealand Geothermal Association
Submitter Name (on behalf of organisation)	Brian White Executive Officer
Date of Submission	1 March 2013
Does this submission contain confidential information	No

The New Zealand Geothermal Association (NZGA) would like to thank the Electricity Authority for the opportunity to comment on the paper entitled “Consultation Paper – Transmission Pricing Methodology: Issues and Proposal.”

The 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 345 members currently.

Background and Restatement of the Proposed Methodology

In an ideal world electricity demand would sit immediately beside matched generation and there would be no need for transmission lines across the country except for generation backup (security of supply). However, New Zealand is a long thin country with the Cook Strait separating the North and South Islands, with attractive generation options located distant from major demand centres such as Auckland. The resources that our forms of generation use have differing characteristics that mean they are not perfectly matched to load, requiring active management and offer strategies to match overall generation and demand. The transmission system (and linked distribution networks) enables this connection between scattered generation and scattered demand. The transmission system (our ‘national grid’) is an essential component of our electricity supply.

The costs of operating, maintaining and developing the ‘national grid’ need to be recovered through a pricing methodology. Because transmission (and distribution) is a natural monopoly, pricing is regulated, with both the Electricity Authority and the Commerce

Commission playing a role in this regulation. Whatever transmission pricing methodology (TPM) is developed, it needs to recover the costs (including a return on assets), and can have the secondary function of sending price signals to encourage evolution of demand and supply towards a more ideal, less peaky balance. The consultation paper states “The [Electricity] Authority considers that the current TPM can be improved so as to better promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.”

Pricing methodology has been subject to numerous reviews over the years, with treatment of High Voltage Direct Current (HVDC) charges often being a high profile element for debate. The current TPM review was commenced by the Electricity Authority’s predecessor (the Electricity Commission) in April 2009. Reasons for the review were:

- Major new transmission investment (of around \$3billion in recent years with a forward plan of around \$450million per year – projects have included a North Island Grid Upgrade and Pole 3 of the HVDC link as examples),
- The potential for major changes in power flows (e.g. increasing southward flow on the HVDC link) as a result of new investment in transmission and generation
- Increasing emphasis on security of supply, and
- Lobbying for review by several parties (including South Island generators).

In fact, since the review commenced, a fifth major reason for review has developed but is not touched on in the consultation document:

- Electricity demand has “flattened” and new generation has reached an hiatus, with no major new generation investment expected for several years.

Consequently, the Electricity Authority will send complex price signals to a generator market that cannot respond in terms of location of new generation, and can only undertake a second order response in terms of offer strategies for existing generation.

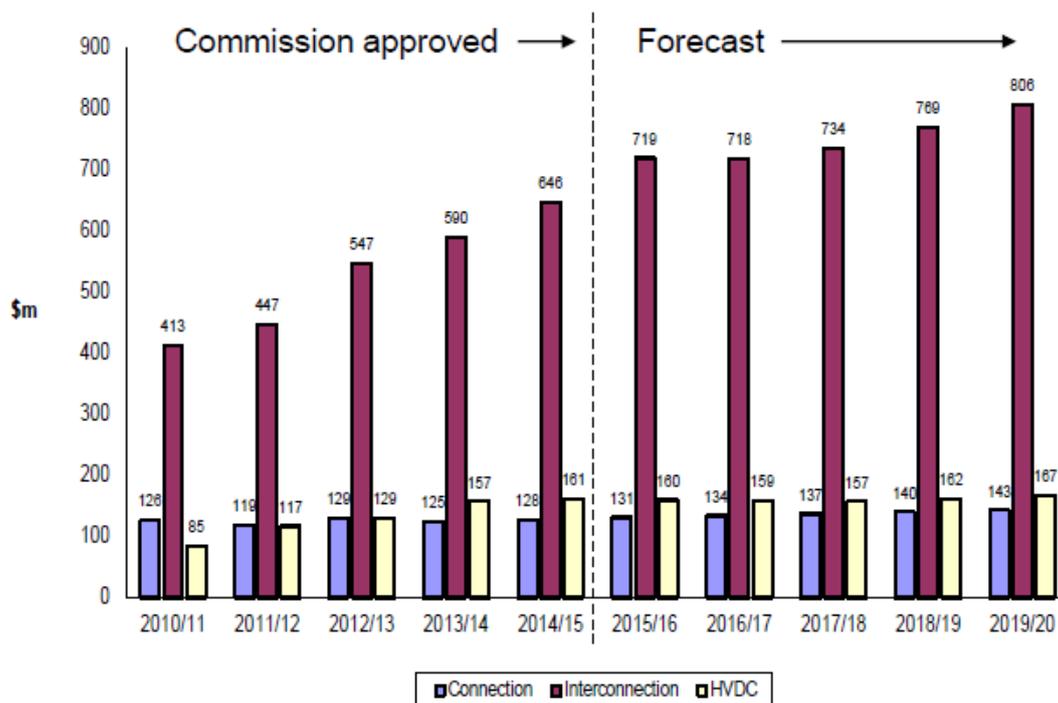
Key components of a transmission pricing methodology are:

- Connection charges – These are the direct costs of linking up a generator or load to the grid. They should appropriately be borne by the generator or load. There will be debate on what assets should be included in these charges versus in the next set of charges¹.
- Interconnection charges – These are the costs associated with everything else in between. Until now, New Zealand has a special HVDC charge to recover the high voltage direct current link between the North and South Islands, and this has been applied to South Island generators even though the HVDC link now operates in both directions.

The following figure is taken from the consultation document and gives an assessment of revenues to Transpower from the various charges.

¹ As an example, where a station is connected to the rest of the grid by a long transmission line with little offtake, should that length of transmission line also be included in the connection charge?

**Actual and forecast revenues recovered by transmission charges
2010/11 to 2019/20²⁷**



The Electricity Authority is also proposing new reactive support charges (either static or dynamic). This relates to the multiple components of generated and consumed electricity. We have no particular objection to a clear charge of this nature.

The interesting part of the proposed pricing methodology relates to the combined Interconnection and HVDC charges. Key proposed changes from NZGA's perspective are:

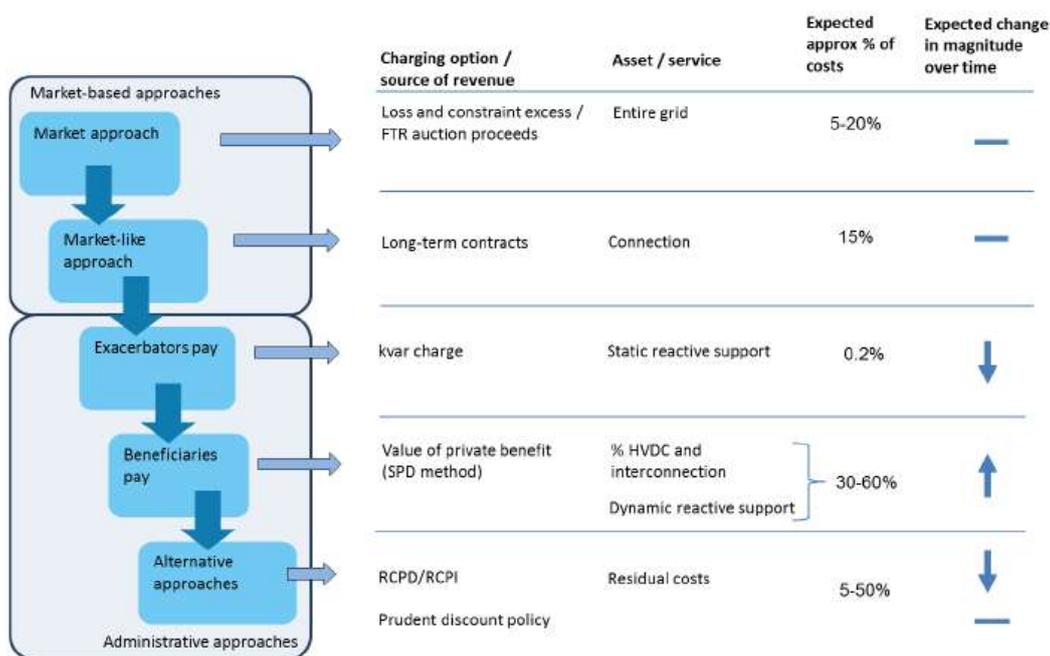
- To actually combine the interconnection and HVDC charges. This will lead to a redistribution of costs borne by North and South Island generators, and so to prices eventually paid for by the North and South Island electricity markets.
- To divert some of these costs away from distributors and grid-connected major users to the generators, and without reference to a threshold size².
- To have a portion of these costs determined by assessing actual benefits to generators and consumers in having certain transmission assets present, through scenario modelling using a scheduling, pricing and dispatch (SPD) model. In the consultation document it is noted that the benefits will change by the half-hour and will be affected by hydro-inflows and available wind generation such that benefits (and therefor charges) can vary widely. Costs that are to be recovered through this proposed method include those of all new assets since 28 May 2004 and forward, plus the cost of the HVDC link Pole 2. Cost allocation would be made proportional to the share of assessed benefits.
- To have residual costs then split evenly between the generators and loads on the basis of regional coincident peaks in injection or demand.

The following figure taken from the consultation paper gives an indication of the relative magnitude of some of the charges³.

² Without a threshold, some of these costs could eventually rest on the owners of a photovoltaic cell on a home or other forms of distributed generation.

³ For further definitions of some of these charges refer directly to the consultation document <http://www.ea.govt.nz/our-work/consultations/priority-projects/tpm-issues-oct12>

Overview of proposal and relationship of each option to economic framework



General comments

The following comments have a focus on development rather than price trimming by generators in the face of proposed new transmission charges. The thrust of the argument is to say that if transmission prices cannot influence new generation for several decades, then it is better to direct transmission charges to those who can respond i.e. the consumers who will eventually carry the cost anyway.

Geothermal electricity generation remains one of the most economically attractive generation options in New Zealand. It is a form of renewable energy associated with low emissions and ideally suited to base load generation. The major high temperature resources are located in the North Island of New Zealand, either side of Auckland with its major demand, but especially located through the Central North Island. Maori have retained a strong interest and kaitiaki role over these resources, and Government has used (and plans to continue to use) old Crown geothermal wells as part of full and final settlement of Treaty of Waitangi claims.

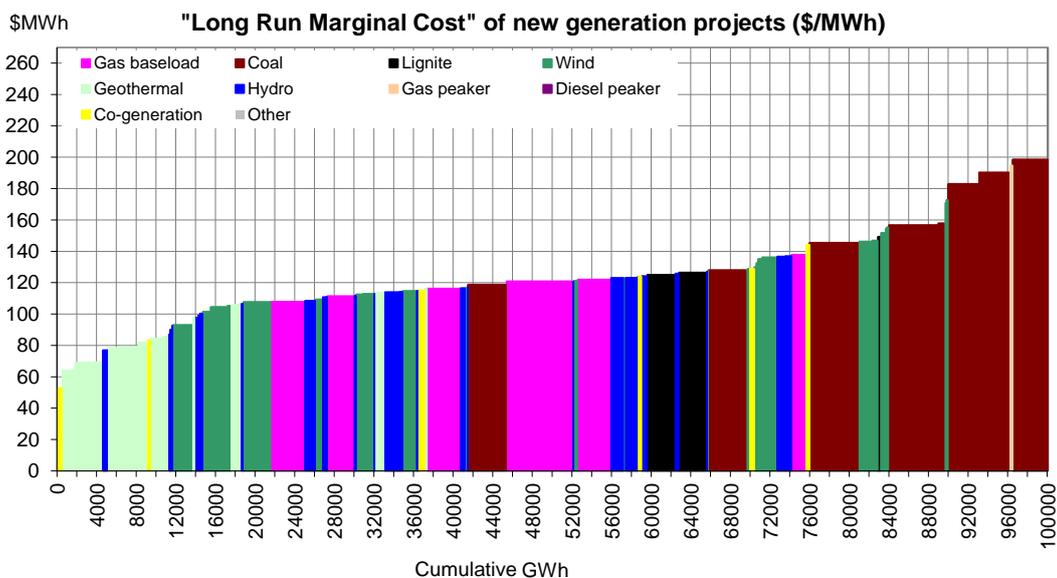
In recent years there has been significant investment in geothermal electricity projects by companies such as Top Energy, Eastland Group, Tuaropaki Power Company, Tauhara North No 2 Trust, Ngati Tuwharetoa Geothermal Assets, Norske Skog Tasman, Contact Energy and Mighty River Power. Contact alone has invested close to \$2billion⁴, while Mighty River Power has invested \$1.8billion⁵ in New Zealand assets. Geothermal capacity has essentially doubled since 2004 when capacity was around 400MW and, currently, another 273MW (for a net gain of 212MW after plant retirements) is at various stages of construction and commissioning, bringing total geothermal capacity close to 1000MW.

The Ministry of Business Innovation and Employment has assessed a range of project proposals in the public domain, and has presented a graph on their website (shown below)⁶.

⁴ This figure includes costs associated with gas

⁵ This figure includes Ngatamariki which commences commissioning in March 2013

⁶ For detailed assumptions on their generation cost model see <http://www.med.govt.nz/sectors-industries/energy/energy-modelling/modelling/new-zealands-energy-outlook/interactive-electricity-generation-cost-model-2010>.



This indicates the next 20,000GWh of capacity addition will be dominated by geothermal and wind developments, with minor additions of cogeneration or hydro⁷. In practice there may be conversion of some gas combined cycle stations to simple cycle for peaking duties, some of the wind projects may come sooner than indicated after costs are reassessed, and some South Island hydro projects will lose the HVDC penalty⁸. A feature with all of the projects is that they are site-specific and must be developed where the resource is located. Transmission pricing methodology will have very little influence on the selection of significant additions to generation using the MBIE data.

Even if gas price collapsed to \$6/GJ then there would still be around 10,000GWh of capacity addition before gas-fired generation could compete with geothermal energy and cheap wind. The location of gas-fired generation is one of the few generation options that could be affected by transmission pricing signals, as generators weigh up costs and benefits of generating close to the centre of gas production or close to the demand centre of Auckland (i.e. weigh the cost of transmitting energy through a gas pipeline or electricity through wires).

As there has been essentially no load growth in New Zealand since 2007 and, prior to that, generation growth to meet load growth was at about 700GWh per year, then a 20,000GWh horizon represents over 30 years of new generation projects (or 10,000GWh represents 15 over years). It is only after this period that TPM might have a significant effect on generation selection, and there will be opportunities for pricing methodology reviews before that.

Currently the major generators have been announcing cutbacks of staff to account for the hiatus in generation development. Clearly in a situation of low development, pricing signals directed at generators can have little effect.

What generators can do is adjust offer strategies to ensure similar or slightly more optimised dispatch, which could potentially change peak use of the grid near existing generation assets, but there will be little change beyond that.

NZGA has concerns about the application of new transmission charges to existing stations. A feature of many geothermal developments is that they involve partnerships (particularly with Maori trusts) and contracts with major developers. Earlier, we mentioned that the Government has used old Crown geothermal wells as part of full and final settlements of Treaty of Waitangi claims. Often these old Crown wells have been transferred to land Trusts

⁷ By comparison, New Zealand currently has just over 40,000GWh per annum of electricity generation meeting demand.

⁸ The current HVDC charge equates to \$130million spread over 17,600GWh of South Island generation effectively raising the cost of South Island generation by \$7/MWh

or iwi groups to help form the equity position of that group with a developer. Imposition of new costs applied specifically to generation assets undermines value propositions on which investment decisions were based in the first place. The consultation paper specifically argues that it is likely that generators will not be able to fully pass through costs to consumers such that the price of electricity to the consumer will come down marginally. In as much as benefits to generators reduce through this new pricing methodology, undermining past investments and undermining the value of future full and final settlements of Treaty of Waitangi claims, NZGA objects to these changes.

Where some charges are passed to generators that are integrated generator-retailers then opportunity for gaming is introduced. A generator-retailer can choose to pass its costs on at the retail end of the market while a merchant generator (of the type that many Maori Trust investors will be) will find its margins squeezed, and competition in the generation sector of the market may be suppressed.

NZGA also notes that some components of the new pricing regime will be difficult to assess, in particular the new costs associated with the SPD modelling. Even with a transparent methodology, if costs are not readily assessable⁹ then the price signal is weak and uncertainty in investment is increased. Uncertainty discourages investment and, when electricity demand growth returns, may ultimately threaten security of supply.

The consultation document acknowledges that the value of the SPD-related charge will be highly volatile, and some commentators believe that this will be unhedgable. This further undermines investor confidence.

NZGA is concerned that imposition of significant costs that cannot fully be passed through will lower returns such that investment thresholds will not be met.

The consultation paper and associated questions and answers noted that the proposed TPM would actually encourage the development of South Island generation. NZGA recognises that a case can be made that the HVDC link can be viewed as an essential part of the transmission backbone so should be included with other similar assets. However, we note that if distant generation is encouraged in preference to the relatively close geothermal generation to Auckland loads, then pricing signals are intuitively wrong. Pricing signals should specifically encourage generation close to load. Distant generation increases electrical losses across the system, and increases the reliance on a transmission network. In practice the assertion in the paper that South Island generation would be encouraged is not supported by the figure produced by MBIE shown earlier. If \$7/MWh is subtracted from several of the blue lines in that figure it will make little difference to the merit order of new generation expected over the next 30 years or more.

Split of charges between generators and consumers

In a situation where generation has little ability to respond to transmission price signals (in terms of new investment), but where demand-side options are being developed, then it would appear sensible to maximise the signal to the party that can respond so they can get undiluted benefit from their investment. Consequently we do not favour taking some of the current Regional Coincident Peak Demand (RCPD) charge applied to load and applying it to generation. We also believe that many other components of the Interconnection charge can reasonably be applied to the consumer loads (as they have in the past) in order that demand-side management is encouraged.

We note that the principle that beneficiaries should pay is generally right. It is on that basis, recognising that both generators and loads benefit from the presence of the transmission network, that the Electricity Authority has recommended an even split of residual charges between generators and loads. They have been influenced by international precedents. However the international precedents would have taken into account the fact that generators

⁹ Companies like Energy Link can provide equivalent SPD model capability at a cost just under \$10,000 for a developer, but it is conceivable that the cost of such an assessment would be similar whether the project was a 400MW or a 4MW power station. As such, this could be introducing another barrier to distributed generation.

could have installed new thermal generation (which in most places are the next merit order generation options) at almost any location so price signals would have an effect. To repeat, that is not the case in New Zealand. We have minimal new generation growth in the immediate future, and growth beyond that is principally renewable generation tied to the location of the resource such that generators cannot respond to price signals. In a case when beneficiaries of connection are not capable of response, then price signals should be directed to beneficiaries that can be positively affected. NZGA favours continuation of "postage stamp" pricing for Interconnection charges directed to load or distributors as it is currently.

We trust these comments will be helpful.

Yours faithfully

A handwritten signature in black ink, appearing to read 'B R' followed by a long horizontal line.

Brian White
Executive Officer
New Zealand Geothermal Association