

# ENERGIA POTIOR

15 November 2019

## Interim Climate Change Commission - Call for Evidence

### Energy Modulation of Tiwai Aluminium Smelter

The fastest, most cost effective and painless way to aid the decarbonisation of New Zealand's electricity sector is for EnPot Modulation technology to be fitted to the Tiwai Aluminium Smelter so the smelter can act as a Virtual Power Plant (VPP) by load shedding when required, and without disruption to the critical heat balance of the reduction cells (pots).

The New Zealand developed and patented EnPot technology if fitted to three of the four potlines at Tiwai would allow the smelter to shed (circa) 100MW instantaneously, and up to 150MW if stepped down over period of a few days, thus providing demand side response (DSR) for both short duration periods, as well as longer seasonal duration periods, without disrupting production on Tiwai's high purity production potline.

The cost of retro fitting EnPot to the Tiwai smelter is estimated to be between NZ\$50-60m.

Meridian Energy has shown interest in how the EnPot technology works as, if Rio Tinto was prepared to install the technology at Tiwai, it might allow Meridian to contract directly with the smelter for dry year support thus removing or reducing any need for Meridian's current Swaption contract with the thermal generator Genesis.

Energia Potior's view is that the effect of fitting the EnPot technology to Tiwai and using the smelter as a VPP would be that hydro generators like Meridian would no longer have to rely on financial contracts with thermal generators for seasonal backup in the case of a dry-year scenario.

The concept of modulating aluminium smelters is gaining traction globally as power systems seek to decarbonise and increase the percentage of electricity generated from variable renewable sources.

Energia Potior has visited and held discussions with smelters in; Canada, Australia, France, Scotland, Iceland, Germany, The Netherlands, Sardinia, South Africa, the middle east, Romania, Greece, Bosnia and Herzegovina and China.

The International Energy Agency (IEA) in its February 2019 report '*China Energy System Transformation*', recommends that China's primary aluminium smelters modulate energy consumption to provide the grid with demand side response (DSR) energy flexibility.

The IEA report includes an entire chapter on understanding the value of DSR deployment in a sustainable development scenario (SDS), and the role the EnPot modulation technology for Aluminium smelters can play in it (*pages 156-159*).

The report goes on to recommend;

*"specific government interventions may be necessary to enrol particular larger-scale load resources (e.g. aluminium smelters), including the design of financial incentives for retrofits and/or participation requirements."*

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The New Zealand developed technology was first trialled and implemented at the TRIMET Essen smelter in Germany with financial assistance from the Germany Government.

Energia Potior Ltd is happy to appear in person before the ICCC.

**Ends.**

Supporting Evidence:

- 1 The International Energy Agency (IEA) in its February 2019 report '*China Energy System Transformation*'.
- 2 *Aluminium International Today* editorial response to the IEA report.
- 3 '*The Role Aluminium smelters in Decarbonising our Future*', by Geoff Matthews published by *Aluminium International Today* October 2018.

For further information please contact in the first instance;

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