

Rebuttal of the Evidence by the Energy Efficiency and Conservation Authority presented by Tania Hood

HDL believes that the submission by EECA is strongly in support of the construction of the Stockton Plateau hydro project and in itself establishes the basis for the Commissioners awarding conditions of consent.

The only matter that HDL wishes to raise with regard to the evidence presented is the reference to the benefits of hydro development in terms of supporting wind energy referred to in the closing stages of the evidence and also in the body of the evidence itself. Specifically the matter of both frequency and voltage support referred to in clause 47 of the evidence.

Without going into detail, HDC would like to reaffirm the value of frequency and voltage control. One of the major issues of a small wind farm is that it needs a power supply that is in support of the wind farm, not only to supplement the periods when wind is not blowing, but also to supplement what in laymen's terms can be described as the lack of inertia that exists within a wind turbine. In laymen's terms this can be described as the ability of load to stop the rotation of a wind turbine so when the load is put on, the wind turbine itself and the generating infrastructure that sits behind it, and the mass of wind driving the turbine, in themselves do not contain the inertia required to respond quickly, or to respond at all, to a sudden load. Hence a power system that is driven entirely by wind generation, or indeed, load provided by an alternative form of supply such as nuclear or hydro, is unable to respond to those peak demands without showing significant effects on both frequency and voltage. I refer the Commissioners to the brownouts or the blackouts that are the nightmare of any grid operator when there is significant loss of connection to those elements of the network that provide the inertia resilience of the system.

The advantage of locating hydro schemes in a distributed fashion throughout New Zealand is that it improves the opportunity to include, and the management of, wind powered generators.