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Maree McGregor
Electricity Commission
Level 7, ASB Bank Tower
2 Hunter Street
WELLINGTON

info@electricitycommission.govt.nz

Dear Maree,

Frequency Regulation Market Development

Genesis Power Limited, trading as Genesis Energy, welcomes the opportunity to provide a submission to the Electricity Commission on the consultation paper "Frequency Regulation Market Development" dated September 2008.

Genesis Energy supports the high-level design features of the Electricity Commission's straw man design, namely that:

- energy, reserves and frequency regulation are co-optimised;
- participation is voluntary;
- clearing information is published in the pre-dispatch schedule (PDS);
- North and South Island frequency markets are linked via the HVDC;
- multiple providers can be dispatched within each island;

- block and station dispatch are allowed for;
- the clearing price is set ex post; and
- the settlement process does not require constrained-on or constrained-off payments.

As summarised in Appendix A of the consultation paper,[1] there remain many significant and complex technical details for the Electricity Commission and participants to work through in the next phase of the project. Genesis Energy looks forward to being involved in that work.

Transition

The Electricity Commission should prioritise work on planning how the market can transition to new frequency regulation arrangements, focussing on:

- delivering benefits early; and
- allowing participants to plan their implementation processes.

In terms of delivering benefits early, Genesis Energy considers it is not necessary to implement a full automatic generation control (AGC) system prior to introducing multi-provider dispatch. Genesis Energy has demonstrated this already by providing frequency keeping across multiple units and stations without AGC. The relatively simple first step of moving to multi-provider dispatch would add depth to the frequency market and reduce fuel risk for participants.

In terms of implementation, it will be important for the Electricity Commission and the system operator to work closely with providers on design of signalling protocols for the AGC system. As providers will need to invest in their plant control systems, they will need appropriate lead times and input into selection and design processes.

Symmetric vs. Asymmetric

Genesis Energy expects that the benefits of an asymmetric market, with separate 'raise' and 'lower' services, would outweigh the costs. An asymmetric market would make better use of the diversity of New Zealand's generation fleet. For example:

[1] Table 2: Details to be progressed in the next phase of the project.

- thermal plant operates best at full load and so could more often offer a lower service than a raise service; and

- river chains such as Waikaremoana often operate at minimum loads that would allow a raise service but not a lower service.

Dispatch Constraints

This complex aspect of the market design will need further development to arrive at a solution that is workable for all market participants. Genesis Energy's preliminary views include:

- there needs to be a joint ramp rate between energy and frequency to ensure that dispatch instructions match plant and control system capability limits;

- the scheduling pricing and dispatch (SPD) model should move from average energy targets to end-of-period (EOP) targets; and

- it would be worth moving straight to a robust mixed integer linear programming (MILP) approach to dealing with AGC entrapment issues.

Information

To assist market participants, clearing data from the PDS should also be included in the schedule of dispatch prices and quantities (SDPQ) and in the special winter schedule (SWS) or its successor.

Progressing this Work

Genesis Energy suggests it could be useful to form a working party to progress some of these technical details. Provided it has an appropriate scope and composition, a working party could add momentum to the project and be an efficient way to work through complex practical issues.

As a starter, Genesis Energy suggests the working party could:

- report directly to the Senior Adviser;

- include an independent expert such as Dr Read and technical representatives from the system operator, the grid owner, two generators (covering hydro and thermal) and a major user; and

- focus on technical issues such as those covered in Dr Read's paper (e.g. regulation range limits, ramp limits, EOP issues, controls and signalling, offer forms, group dispatch, etc).

If you would like to discuss any of these matters further, please contact Ross Parry on 04 495 3348.

Yours sincerely

John A Carnegie

Regulatory Affairs Manager

Genesis Energy