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30 July 2010

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Electricity Commission
Level 7, ASB Bank Tower
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WELLINGTON

By email: submissions@electricitycommission.govt.nz

Dear Kate

Frequency Keeping Cost Allocation and Asset Owner Performance Obligations

Genesis Power Limited, trading as Genesis Energy, welcomes the opportunity to provide a submission to the Electricity Commission ("the Commission") on the consultation papers "Frequency Keeping Cost Allocation" and "Normal Frequency – Generator Asset Owner Performance Obligations", both dated June 2010.

Genesis Energy considers that improvements to the overall frequency keeping regime are important, but that they should be a lower priority for the regulator than work on implementing the "new matters" set out in clause 45(2) of the Electricity Industry Bill. The new matters alone appear to provide the Commission and the Electricity Authority with sufficient work to occupy the remaining 14-months leading up to the 1 October 2011 backstop date, so it is concerning to see the Commission diverting resources to lower priority work.

Genesis Energy has combined its submissions on cost allocation and asset owner performance obligations because we strongly recommend that performance obligations for normal frequency performance should be set with regard to both the overall frequency keeping regime and the capabilities of New Zealand generation assets.

Genesis Energy considers that the frequency keeping regime should include the following components:

- flexible and efficient frequency keeping procurement arrangements as envisaged by the Commission;
- allocation of frequency keeping costs to causers as envisaged by the Commission, but only where this will provide a useful incentive to those parties identified as causers;
- a dispensation regime that is integrated with the cost allocation methodology as envisaged by the Commission;
- more sophisticated and flexible application of the equivalence regime currently available to the system operator; and
- asset owner performance obligations that are set with regard to the operation of the other components of the regime and to the characteristics and capabilities of New Zealand generation assets.

The Commission's proposals are generally consistent with the framework described above, but Genesis Energy has the following concerns:

- the Commission's chosen criteria for setting performance obligations are not suitable in a New Zealand setting and are likely to result in cost allocation that does not adequately target causers and has limited benefits in terms of improving incentives; and
- the potential role of the equivalence mechanism has not been adequately emphasised.

On balance, Genesis Energy supports the idea of a transition methodology for allocating frequency keeping costs to intermittent generators, generators with dispensations and "noisy" demand. However, Genesis Energy recommends that the proposed changes to performance obligations should be revisited prior to introducing the transition methodology.

Equivalence Arrangements

Equivalence arrangements should allow under-performance in some assets to be offset by over-performance in other assets. The mechanism should be able to apply across multiple assets under common ownership, or across assets under separate ownership provided suitable contractual arrangements are in place.

In Genesis Energy's case, the equivalence arrangement could be used to allow the company to provide capability across the company's hydro and thermal assets that is better than can be achieved if each asset is assessed independently.

Prior to introduction of the Electricity Governance Rules (EGRs), Genesis Energy's hydro plant was tuned to provide increased responsiveness and optimal reserve response while being stable in a large system setting. The hydro plant maintained acceptable islanded performance by monitoring frequency stability and switching to a small system gain setting if necessary. The arrangements also preserved the ability for Tokaanu to provide black start.

The equivalence mechanism, together with a review of how performance obligations are defined, could be used to reinstate similar arrangements and allow increased response in Genesis Energy's hydro plant not only to compensate for dead bands and sliding scale droop in some of its thermal plant but to also allow Genesis Energy to offer considerably more slow and fast reserve response into the market.

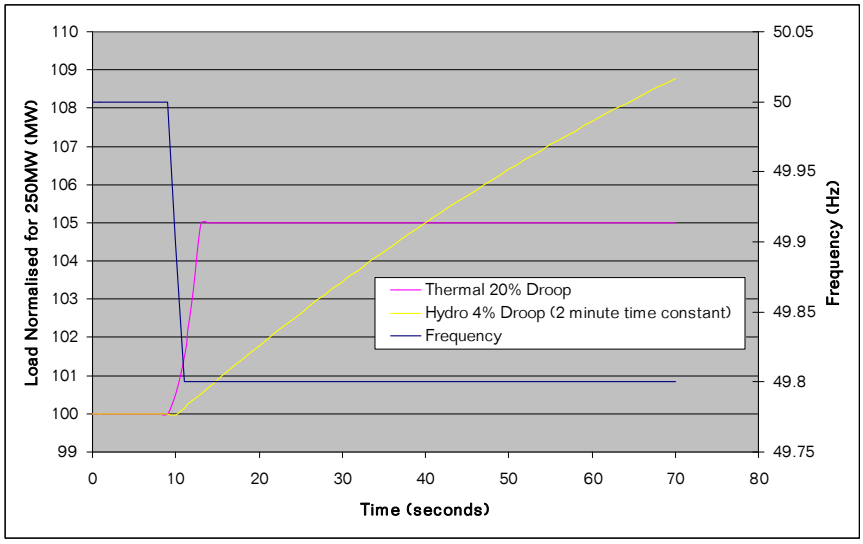
Genesis Energy expects that other similarly innovative arrangements could be implemented if the system operator made better use of the equivalence mechanism.

Performance Obligations

Genesis Energy considers that using droop as the criteria for describing performance obligations is a flawed approach that will:

- not stimulate as much change in operational settings as the Commission anticipates; and
- perform poorly in terms of allocating costs to causers.

Droop settings alone should not be used as a determining factor for frequency response because the low gain settings applied to almost all hydro machines (for stable islanded response) has resulted in extremely sluggish responses, as illustrated by the graph below.



Under the proposed performance obligations, Genesis Energy would expect to require dispensations (and hence attract frequency keeping cost allocations) for Units 1 to 4 at Huntly and Unit 5 at Huntly. This is despite Units 1 to 4 providing better normal frequency support than many hydro plant in New Zealand.

Units 1 to 4 have a droop setting that ranges between 20% and 4% depending on the amplitude of the frequency deviation. This ensures that the units are not unnecessarily pushed around during operation in the normal frequency range, while still providing significant support for medium to large frequency deviations. We would be unlikely to alter the operation of Units 1 to 4 to avoid a frequency keeping cost allocation given the damage (from thermal stress on the boilers) that increased responsiveness would cause.

Unit 5 is configured with a dead band in the droop setting that significantly improves average energy output from the plant and protects it from thermal fatigue. We expect that any cost allocation for frequency keeping will not outweigh the energy market revenue and dispatch instruction compliance gains from retaining the dead band setting.

Genesis Energy suggests that there is little point in setting a performance obligation that few generation units will economically be willing or able to comply with. This undermines the intended incentive effect of the cost allocation methodology.

Genesis Energy also notes that if the performance obligation is based on droop only, then it will not target causers. In particular, most hydro plant in New Zealand have gain set so low to meet the system operator's islanded stability test that the units will not respond effectively in the normal frequency band regardless of their droop setting.

Genesis Energy recommends that, as part of revisiting the performance obligations, the regulator should convene a technical workshop involving the system operator and technical representatives of generation asset owners to ensure that the review is informed by a sound understanding of asset capabilities and operating practice. The group could consider more sophisticated methods of setting performance obligations such as via in service testing and modelling.

Genesis Energy's responses to the consultation questions are in Appendix A for the cost allocation paper and Appendix B for the performance obligations paper.

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

Yours sincerely

Ross Parry
Regulatory Affairs Manager

Appendix A: Cost Allocation Questions

QUESTION	COMMENT
Q1: Do you agree with the Commission that a full review of the cost allocation should be deferred until a more competitive frequency keeping market is put in place?	Yes.
Q2: Do you agree that only relatively simple extensions of the existing arrangements be considered in the transition period?	Yes.
Q3: Do you agree that a basis for allocating costs to generators holding dispensations from normal frequency obligations should be set out in the Rules?	Yes. This will provide cost certainty for generation investors and ensure more consistent treatment of dispensations.
Q4: Do you agree that allocating costs to dispensations as discussed above is an appropriate transitional approach?	Yes. Genesis Energy considers that this will continue to be the best long-term approach after frequency keeping procurement improvements have been implemented.
Q5: Do you agree with the proposed approach to classifying noisy demand?	Yes.
Q6: Do you agree that these are the main categories of costs for the proposal?	Yes.

QUESTION	COMMENT
Q7: Do you agree that the main potential benefit of the proposal is that some generators may remove dead-bands on governors in order to avoid a cost allocation?	No. If the performance obligations are reviewed as proposed, then the cost allocation proposal is unlikely to induce much change in generator settings. Also, the focus on droop settings and dead bands is too one-dimensional and neglects the effect of gain settings. Assuming these issues are resolved, the most important benefit of the cost allocation proposal should be the dynamic efficiency benefits of internalising frequency keeping costs into investment decisions.
Q8: Do you agree with the Commission's assessment of the potential benefits of the proposal?	No. Genesis Energy does not believe there will be significant operational changes by generators in response to the Commission's proposals as they stand. Genesis Energy would not anticipate changing the current settings for Unit 5 and Units 1 to 4.
Q9: Do you agree with the Commission's overall assessment that the proposal has the highest net benefits?	Yes.
Q10: Do you agree with the Commission's overall conclusions? If not, why not?	Yes.

Appendix B: Performance Obligation Questions

QUESTION	COMMENT
Q1: With respect to normal frequency management, are there features of other grid codes you think the Commission should consider?	Genesis Energy recommends that the performance obligations need to be defined with regard to the actual performance of generation assets in New Zealand, current operational practice, the objectives and design of the overall frequency keeping regime and the performance tradeoffs inherent in setting the performance obligations. Genesis Energy recommends that the regulator should engage with technical experts from each generation asset owner to develop a better set of performance obligations. A technical workshop may be an effective way of doing this.
Q2: Do you agree with the proposal to clarify rule 2.1 so that generators must ensure their generating units operate under unrestricted governor control?	No. This places an excessive burden on thermal units which will be forced up and down constantly due to normal frequency variations. This will result in damage and ultimately reduce asset life. These costs were not transparent upon commissioning and will present significant challenges to commercial planning. Genesis Energy does not believe that droop alone is an accurate measure of frequency support. A hydro unit with a responsive droop setting but a very low gain setting is likely to provide less support (particularly in the normal frequency band) than a thermal unit with a moderate droop and gain setting.

QUESTION	COMMENT
Q3: Do you agree with the proposals for speed governor requirements?	No. Changing the droop setting on hydro generation units will have little effect as these plants have very low gain set points and are therefore very slow to respond. See response to Q2 above for the effect on thermal assets. Operators of wind assets should have the choice of whether to install governors or seek a dispensation and face an allocation of frequency keeping costs.
Q4: Do you agree with the proposal that initial and all subsequent changes to the speed governor settings be agreed by the System Operator?	Yes.
Q5: Do you agree with the Commission's analysis regarding the "catch-all" rules?	Yes.
Q6: Do you have any comments on the proposed rules?	Refer cover letter. Genesis Energy believes that the proposed changes to the performance obligations will lead to the cost allocation proposal not correctly targeting causers and will have limited effect on current operating settings. As such, Genesis Energy believes that the proposed rules will not achieve the Commission's objectives.
Q7: Do you think there are other reasonably practicable options the Commission should consider?	Refer cover letter.

QUESTION	COMMENT
Q8: Do you have any comments on the Commission's assessment of the options?	Refer cover letter. The Commission's comparison with other countries does not adequately account for the high proportion of hydro generation in New Zealand that provides sluggish frequency support.