



9 May 2017

Submissions  
Electricity Authority  
By email: [submissions@ea.co.nz](mailto:submissions@ea.co.nz)

**Normal Frequency Management Strategic Review Information Paper – Meridian Submission**

Meridian appreciates the opportunity to submit on the above paper.

As detailed in our Appendix A responses to specific consultation questions, Meridian is generally comfortable with the direction of the EA's current thinking – i.e. to have output-based standards and tender-based procurement as the focus of the Authority's further investigations into governor response arrangements. Various aspects of how these options will operate are, however, unclear to us at this stage and we are yet to form a final position on the options currently under consideration. Described in more detail in our responses attached, these aspects – which range from specific operational features to more general considerations (interactions with system security, for instance) – will require comprehensive further work to consider and we request the Authority convenes a workshop to obtain further industry input into subsequent phases of its investigations.

Please contact me if you have any questions relating to this submission.

Yours sincerely,

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**Appendix A – Meridian responses to specific consultation questions**

Question	Meridian comments
<p>a) Do you have any comments on how governor availability costs, wear and tear costs, and capacity carrying costs compare between MFK and governor response?</p>	<p>The Authority’s claim there does not appear “much difference” in costs between multiple frequency keeping (MFK) and governor response<sup>1</sup> is not something we are well positioned to easily determine and give firm feedback on at this stage.</p> <p>As the Authority has acknowledged, its overall view (as outlined above) is predicated on least cost types of plant being consistently selected – something which is not necessarily assured by current procurement arrangements. We therefore support further investigation work by the Authority to consider this.</p>
<p>b) Do you have any comments on the extent to which MFK can be substituted by governor response?</p>	<p>Meridian agrees with the paper’s premise that scope exists for increased governor response that is able to contribute to frequency keeping.</p> <p>It seems realistic that governor response is technically able to wholly replace MFK for keeping the frequency within the normal band, however, without a specific control feedback for time error then there would still be a reliance on manual dispatch to correct this to within the Code’s +/- 5 second Principal Performance Obligation (PPO) tolerance.</p> <p>Meridian would like to question the +/-5 second time error PPO requirement. If this is dictated by antiquated mains frequency driven clocks, then it does not seem reasonable to incur any substantial cost for maintaining this service. Time error appears, however, to provide a useful metric for determining the quantity of deviation in one direction from nominal frequency, which due to governor droop, has important implications for the actual MW output from generators. For example, a time error of 5 seconds over one day corresponds to an average frequency deviation of 0.006%, which would produce a 0.14% deviation from power set point for generators providing governor response. Such deviations may be considered to be within the revenue measurement accuracy.</p> <p>On a more general note, Meridian accepts that a changing generation mix (e.g. solar, batteries) will have an impact on the ability of governor response to meet frequency PPOs and is therefore a relevant factor for consideration.</p>
<p>c) Do you think that there are likely to be net benefits in progressing to a procured governor response service through tendering, given the technical challenges identified in this paper?</p>	<p>Yes, depending on the method of implementation (see response (d) for further details).</p> <p>Meridian believes that the administration costs of the governor response service could become significant compared to relevant technical costs. Care needs to be exercised to implement arrangements that are simple, so that regulatory, financial, and engineering administration overheads do not cause the service to become inefficient.</p>

<sup>1</sup> Refer paragraph 4.28 of the Authority’s paper for further details.

Question	Meridian comments
<p>d) Which option or options in section 5 do you agree with and which do you not, and why?</p>	<p>Meridian is unclear on several aspects of how the options will operate and is yet to reach a final position on the options presented. We do, however, have several comments and concerns to highlight at this stage.</p> <p>Meridian believes that asset owners should be benchmarked against standards that are appropriate for the technical capabilities of the type of plant rather than unfairly against standards that the plant is inherently incapable of achieving. This risks needlessly disincentivising some types of technologies and disrupting the broad mix of technologies that preserves system security currently. Incorporating more detailed, prescriptive AOPO Code requirements (option A from the Authority’s paper) is therefore not supported by Meridian, nor are options with punitive elements to them (options B and C). Further comments in respect of option A are as follows:</p> <ul style="list-style-type: none"> <li>• With the option seemingly predicated on deficiencies of agreeing specific plant settings with the System Operator (SO), it would be helpful if clearer supporting details on this could be provided.</li> <li>• Testing to prove stability and performance against the new requirements would also involve additional one-off costs for generators and the SO – costs that would need to be accounted for in any further analysis of this option.</li> </ul> <p>Meridian supports further work to investigate the development of an output-based benchmark e.g. based on modelled signal injections. Again it is important the benchmark is appropriate for the technical capabilities of different types of plant. Something we would also like to know is whether any new benchmarks are intended to be applied per unit or per station.</p> <p>In respect of potential market pricing approaches, Meridian agrees with the Authority’s assessment that bid-based procurement (option E) is likely to involve significant administrative costs and complexity and therefore that tender-based procurement (option F) should instead be the focus of further work. It is our understanding that the tender would be voluntary, but we require further clarification on this point. Relative to the option F approach, option D could be less complex and lower cost to administer and should be retained as an option at this stage.</p> <p>Meridian requests clarification on the following aspects of market pricing approaches:</p> <ul style="list-style-type: none"> <li>• Will a minimum governor response requirement still exist, or will a generator be allowed to have a dead band equal to the normal band? We’ve noted from the Authority’s paper that minimum levels of governor response are typically required in overseas jurisdictions<sup>2</sup>, meaning that doing otherwise would make for what is a largely untested approach.</li> <li>• What are the permissible responses following refusal of a tender or if certain units are not offered? Is it expected that adjustments to dead band or governor parameters would be made to prevent governor response? Would disabling frequency influence be allowed?</li> </ul>

<sup>2</sup> Refer for further details paragraph 3.5 of the Authority’s paper.

Question	Meridian comments
d) Which option or options in section 5 do you agree with and which do you not, and why? (cont.)	<p>In Meridian’s view, answers to these questions ultimately need to be dictated by what will ensure impacts on system security are avoided.</p> <ul style="list-style-type: none"> <li>• If procurement is packaged on a per-generator or per-station basis, how would the SO ensure that enough contracted generators were online to ensure adequate response at any given time?</li> <li>• What is the expected size of the market and how would adequate competition be ensured?</li> </ul>
e) Are there any other features or options you would like to suggest?	Not at this stage, no.
f) Do you have any comments on the indicative analysis of governor response costs in Appendix E	<p>As the Authority acknowledges in its paper, accurately estimating costs is difficult. Wear and tear costs are heavily influenced by a range of other factors and wear and tear is usually unobservable until major overhauls are undertaken. Availability costs will depend on dynamic pricing within the energy market, so may be more variable than the Authority’s estimation suggests.</p> <p>With these caveats in mind, we nevertheless generally consider that the Authority’s estimates of governor response costs appear reasonable overall.</p>
g) Are there any other issues you wish to bring to the Authority’s attention?	As per our cover letter comments, we request the Authority obtains further input from industry as it continues to develop its proposals.