

## Note

To Ralph Matthes, MEUG  
From David de Boer and Mike Hensen  
Date 20 May 2014  
Subject Extended Reserves proposal

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Dear Ralph

You have asked for our views on three aspects of the Electricity Authority's (Authority) proposal to make a number of Code amendments that capture the framework that it intends to use to reform the AUFLS [extended reserves] (ER) arrangements.

In particular you have asked:

1. Whether there is a principled argument to charge the costs of the extended reserves scheme to ER beneficiaries or to the parties whose assets failed and caused the under-frequency events (the exacerbator),
2. Whether an availability only charge will deliver the efficiency benefits under either beneficiary or exacerbator pays approach, or is an "event" charge required as is used in the instantaneous reserves (IR), arrangements
3. Whether we have views about alternative charging approaches for extended reserves.

## Our views

As a matter of principle, we agree with the Authority that, wherever possible, market mechanisms should be used to identify the price at which parties would be willing to load shed to rectify a compound under-frequency event.<sup>1</sup> We note that the Authority has investigated the market based options but they feel that these options are not do-able in New Zealand at this stage.

## Extended reserves review process

The Authority has been consulting on these matters for an extended period of time and has had considerable feedback from interested parties. They have now decided to finalise changes to the Code (that relate to the funding arrangements for extended reserves) ahead of finalising the technical changes to the mechanisms used to create extended reserves, and the arrangements for procuring these reserves. This has the potential to create a mis-alignment between the charging and the procurement arrangements and lead to sub-optimal outcomes and reduced efficiency. This is more likely than not given we think that the charging arrangements proposed by the Authority can be improved upon.

The Authority may have compelling reasons that we are not aware of for not completing these reviews together however we note that the proposed technical changes seem to make the activation of extended reserves more granular and sophisticated than the current system which will necessitate a reform of the methodology for selecting extended reserves loads. Because these changes appears to fundamentally alter the nature of the extended reserve "service", it

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<sup>1</sup> We use the term compound to distinguish an AUFLS event which requires extended reserves from an event that can be rectified using IR.

would be sensible to defer finalising the funding/charging review until the technical and procurement reviews are complete, so that a decision on who and how to charge for ER is informed by a clear understanding of the ER service that is actually being put in place.

We suggest that you remind the Authority that in their April 2014 Response Paper, they recognised the importance of the point we make here, that is getting the details of the ER arrangements “right” and incentives aligned, and that they appear to have now put that aside by staging the three key ER design components.<sup>2</sup>

## Who to charge

Our thinking is guided by consideration of what ER represents in economic terms. That is, what economic effects does an extended reserves scheme provide? We note the original arguments and explanations on who to charge that the Authority offered in their April 2014 Response paper, where they identified beneficiary pays as their preferred approach to charging for ER rather than the exacerbator pays approach that is currently used for IR. In paragraph 3.6.9 of the response paper (and in paragraph 5.9.4 of the current consultation paper) the Authority provides four reasons why beneficiary pays is preferred and concludes that this approach will deliver the greatest net benefits. We have some difficulty with the conclusions offered by the Authority. We would suggest that:

1. conclusions (a) and (b) could equally apply to beneficiary or exacerbator pays and hence are not persuasive;
2. section 8.6 of the current Code exists to do pretty much what the Authority argues would be difficult in conclusion (c)<sup>3</sup>;
3. conclusion (d) is not a strong argument because it references the early poor reliability of Pole 1 of the HVDC (which was eventually removed from service), rather than the high level of security in the current grid which includes both HVDC poles 2 and 3.

It appears that the Authority views that ER as providing high levels of system security across the grid and because of this they propose to allocate charges to users that are considered to “benefit” from that reliability based on their energy consumption. We are of the view that, in the same way as for IR, the parties who are best placed to manage the risks and costs of compound failures should face the charges of the ER arrangements – that is the generators and Transpower. The current IR charging arrangements appear well structured, have been in place and working for some time now and to our knowledge have not been contentious and costly to administer. This is despite the fact that the generators and Transpower face current IR charges that are orders of magnitude higher than proposed ER charging levels.

The draft Subpart 6 describes a “distributor only” charging regime for ER based on energy consumption. The draft excludes both availability charges to other perceived beneficiaries, as well as both availability and event charges on generators or Transpower as the “causers” of the compound failures. We are not convinced by the arguments and explanations the Authority put forward for beneficiary pays and especially with where they have come in to land with the distributors’ only charge, though the Authority may have good reasons for this approach that we are not aware of.

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<sup>2</sup> Refer paragraphs 3.6.5 and 3.6.6 of the Response Paper – Efficient procurement of extended reserves - second consultation paper.

<sup>3</sup> Note the inclusion of (iii) in the consultation paper that was missing from the response paper. The existing IR arrangements include an event charge for this very reason and, as far as we can ascertain, there have been no legal challenges to the IR regime.

We further understand that the beneficiary pays argument likens ER to a form of beneficiary “insurance” against the high economic costs of a transmission system collapse. Insurance is attractive for individuals (beneficiaries) if they can pool common risks to avoid the extreme harm of those risks at a lower cost than would be the case using other methods to reduce their individual exposure to the risk. This situation does not apply for extended reserves. The risk of compound failure lies with the generators, and Transpower, and is not a common risk shared directly by the other parties on the grid. The total cost of the management of this risk is not lowered by bringing other system participants in to the risk pool.

All the beneficiary pays principle achieves here is to directly allocate the cost of extended reserves to other participants in the system. It is difficult to see why the cost for this particular element of generator and Transpower risk management should be subject to direct re-allocation when the costs of their other normal business risk are not re-allocated in this way.

## How to charge

Market mechanisms are used in a number of countries to source and pay for both instantaneous and extended reserves. Mechanisms for funding these market sourced reserves vary from a centrally allocated “tax” system in some places through to event based charges on the causers of the system failure in others.

The nature of how to charge for ER will likely depend on how the different parties view the ER arrangements:

1. As an insurance service against a low probability/high cost event that has non-excludable system security benefits where everyone is a beneficiary and they should pay [we presume that this is the EA approach], or
2. As a mechanism that is responsive to specific network failure events [as in IR] and the party responsible for the event is charged.

The Authority seems to be viewing the proposed ER arrangements as a type of beneficiary insurance that are to be charged for on the volume of energy that is drawn from the grid.

In the cost benefit analysis contained in their consultation paper the Authority has identified in principle that there are non-excludable system security benefits (amounting to 50% of the total benefits) and economic efficiency benefits, compared to the current ER scheme. They note that the non-excludable benefits arise from better targeted and efficient ER procurement and technology and are not necessarily related to the potential for compound failure events. Accepting the Authority’s 50:50 split of non-excludable benefits this suggests to us that, depending on the view that one takes, there could be a good case on efficiency grounds for a two part charge for ER where an ex ante availability charge is applied to cover the costs of procurement and an ex post negligence charge is applied to whoever caused the compound failures. This type of approach is pretty much the same as is used in the current IR arrangements.

## Other matters

We believe that there could be other, more efficient, ways of handling the provision and charging of ER. We understand the Authority has argued that, even though they rank exacerbator pays as

more efficient than beneficiary pays, the approach used for IR is not applicable for ER because it is difficult to identify the 'exacerbator(s)' and allocate costs between them. We find this argument difficult to accept for the following reasons:

- For the system to be restored to normal operation the failed components have to be identified and repaired by their operators (the generators and Transpower). The process for determining the causer and administering the charging system for IR is already established in Part 8 of the existing Code and seems capable of being adopted for ER.
- There are various approaches for the allocation of the extended reserves across multiple exacerbators. An extreme starting point would be for the operator triggering the initial event to be defined as the exacerbator for the multiple events and face all event charges. This approach could be refined by analysing the multiple events to consider how generators and Transpower contributed to containing or passing on the multiple events.
- One of the advantages of the exacerbator pays principle in this situation is that it allocates the management and cost of the risk of multiple events in the first instance to those most capable of managing the risk, and incentives to manage the risk as efficiently as possible. Resorting to beneficiary pays (even if the definition of beneficiary is corrected to include other parties in the system) weakens this incentive.

Further, by bundling the charging mechanisms for delivering extended reserves and allocating the cost of using extended reserve, the Authority obscures the fact these processes operate on different time frames to different standards. The delivery of extended reserves needs to occur in a very short time frame, in response to very limited information and sufficient load needs to continue to be shed to avoid a system collapse. This requires an extended reserve system that responds rapidly, reliably and has redundancy to cover its own unexpected failure.

The process for cost allocation post event does not share these characteristics. Instead the time available to complete the allocation can be set by the parties involved and can be fully informed by records of what actually happened and root cause analysis, which is the key element of the cost allocation and efficiently deliver incentives to the generators and Transpower to prevent recurrence of those faults.

The argument that a complex event makes it difficult to agree how to allocate the cost across a small number of generators and Transpower would seem to suggest either a model based allocation or some simple *pro rata* rule should be developed. Such an approach fits with the exacerbator pays principle by allocating the cost to known group of exacerbators and it gives them an incentive to agree among themselves how to avoid future failures. The Authority argument that the difficulty in identifying a single exacerbator requires discarding of this principle in favour of beneficiary pays is not compelling.

## In summary

The Authority appears to have gone about the process of developing and consulting on the revised ER arrangements in a well-structured manner and is keen to press on with the remainder of the work of technical and procurement arrangements. They propose to make changes to the Code, including confirming who will pay for ER and how they will be charged, ahead of developing the whole "package". They plan to manage the implementation themselves if an extended reserves manager has not been appointed within their timetable. We applaud the Authority's

commitment but we urge caution with the staged approach as subsequent stages could possibly require changes to the detail in Subpart 6 – charging arrangements for IR and ER that have been drafted for inclusion in the Code.

It is not clear to us that there are compelling arguments that all ER charges should be allocated to beneficiaries, (defined as distributors in Subpart 6) rather than those parties causing the compound failures, nor is it clear that a single charge based on energy consumption is appropriate and more efficient than a (perhaps) two part charge which has focus on ER “availability” and the party that caused the ER “event”. It appears to us that the existing IR framework and implementation arrangements are pretty well set up to do just this.