Appendix C Format for submissions

Submitter	Keith Scoles Principal PowerIt Fwd Ltd

Question	Comment
Q1. Do you agree the issue identified by the Authority is worthy of attention?	

Yes absolutley agree this is the way forward and commend the EA approach to addressing this and allowing new technologies to participate in the market. I have limited my thought to some of the technicalities which may or may not impact on how the rule change is described.

There is information in the long form report that doesn't correctly reflect the technical merits that may or may not be of consequence to the outcome being pursued by the EA which I will cover off.

There may need to be more thought or clarity on whether batteries systems will participate in the IL or reserves market or both being bidirectional devices that can be used up to their rated capacity.

Paragraph 2.20 When charging, BESSs act like load and are able to provide IL by interrupting or reducing the power being used to charge the battery *or can quickly revert to full generation, in the reverse direction if required (Limited by the State of charge of the battery)*

Paragraph 2.22 2.22 The issue this paper seeks to address is that a BESS cannot offer instantaneous reserve when discharging (ie, injecting power into the power system), or when connected and charged but neither charging nor discharging, because the Code as currently drafted does not allow for forms of 'injectable' instantaneous reserve other than PLSR and TWDR.

This statement could be misinterpreted. Its not clear this is a statement supporting the technical limitation or the code limitation when the BESS is discharging. Discharging is the same as generation therefore the statement regarding not being able to provide reserve is incorrect unless the battery is already at full generation or fully discharged? Note a BESS technically can provide reserve or effective IL when participating in the power system at less than full rated output in either charge or discharge direction and neither full charged or discharged. Whether it's allowed to under the rules is a different emphasis and therefore this statement could interpreted differently depending on the readers viewpoint.

Q2. Do you agree with the objectives of the proposed Code amendment? If not, why not?	It is a positive way forward the use of this technology however technically another area of proven performance of batteries is surrounding aiding frequency keeping service which could also be considered. It is a matter not discussed in the document. However Im happy to defer to EA regarding the simplicity of this change or otherwise. It is noted however that the proposed amendments to the rules may already accommodate batteries performing this service.
Q3. Do you agree the benefits of the proposed amendment outweigh its costs?	No opinion on cost however it is my view the change could extend to frequency keeping services as well as instantaneous reserve without much consequential impact. In addition As stated earlier, there may need to be more thought or clarity on whether batteries systems will

	participate in the IL or reserves market or both being bidirectional devices that can be used up to their rated capacity.
Q4. Do you agree the proposed amendment is preferable to the other options? If you disagree, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.	No opinion
Q5. Do you agree the Authority's proposed amendment complies with section 32(1) of the Act?	No opinion
Q6. Do you have any comments on the drafting of the proposed Code amendment? Clause X.X	No comment
Q7. Do you have any comments on the drafting of the proposed procurement plan amendment? Clause X.X	Clause B32.1.2.1 Should this include a provision for not just interuptible load but a return to generation (discharging) rather than just an assumed 0 output? In that case what is it operating in. The reserve market or the IL? Need to decide one or other? Isnt it really just a bidirectional generator? Clause B32.1.5 It may not matter in terms of the impact of this statement however a few points. A BESS system over a normal mechanical inertia generator can technically be set up in a wide variety of ways, which this statement context may need to consider. For example it could be set to respond to a change in Psetpoint to a frequency excursion without a known droop as long as it has provision to return to a prior setpoint folowing the excursion. If we consider droop in terms of normal generation is a function that is always set aiding the grid being maintained at frequency. Therefore if this is a requirement with a tight droop or V/F response the battery will take up a larger share of the response on the grid depending on damping and therefore may operate as a more responsive frequency keeper over the systems requiring build up of mechnical gain even if the BESS is not participating as a frequency keeper. So therefore consider whether

	droop requirements to be set only when called on to respond or fulltime as there is quite a difference in how the battery will respond when continuously connected to the grid? Options could be selectable depending on whether the battery is able to participate in frequency keeping or both markets? General- Some thought would need to be given toward the requirements for stability connected to the grid where the battery is arguably likely to be the most responsive generator/load on the grid at anyone time.