

Balancing Services Sub-group

Grid Code Frequency Response Service Development 1st May 2014

Grid Code Frequency Response

Outline

- Rapid Frequency Response
 - Updated Manufacturer Feedback
- Package of Proposals
- Next Steps

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Rapid Frequency Response: Updated Manufacturer Feedback

- Frequency Response “Technical Sub-Group” included an number of Wind Turbine and HVDC Converter manufacturer representatives
- Representatives were asked for their views on their ability to delivery Rapid Frequency Response
 - General consensus that the technical requirements could be met subject to “reasonable” development timescales
- Report Published in 2011
- Updated view required to inform next steps
- Informal e-mail survey used

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Rapid Frequency Response: Updated Manufacturer Feedback

- Questions asked
 - Could Rapid Frequency Response functionality be achieved using current / deployed technology?
 - In summary this would require a Power Park Module or HVDC Converter to be capable of providing 10% of its Registered Capacity within 5 seconds instead of the current 10 seconds
 - As an illustration of the new proposed Grid Code requirements, assume a 100MW Power Park Module comprising of wind turbines and wind capable of delivering maximum output
 - In the scenario the plant is de-loaded to say 70MW for Frequency Control purposes. Then, if the system frequency falls by -0.5Hz the wind farm should be capable of increasing its power output by 10% of registered capacity ie $100\text{MW} \times 10\% = 10\text{MW}$, giving a total output of to 80MW or greater within 5 seconds of the frequency fall
 - If not, when could such functionality be commercially available and how much would it cost as a proportion of the turbine cost ?

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Rapid Frequency Response: Updated Manufacturer Feedback

- From the 9 responses:
 - 5 respondents stated that current equipment could meet the requirement
 - 3 respondents stated that the capability was achievable, but development was required
 - 1 respondent stated it was not possible
 - Where development timescales were quoted, this was at least two years
 - Two respondents caveat-ed their replies in relation to Active Power Range
 - One respondent highlighted increased operating costs

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Rapid Frequency Response: Updated Manufacturer Feedback

- What do we take from this?
 - A Rapid Response capability is moving towards being the standard offering
 - This is not universal, and caveats apply (eg optimal wind conditions might be required)
 - Lead times need to be 2 years in order not to restrict the number of manufacturers available to the Grid Code captured market
 - Active power range needs consideration
 - Any proposals progressed as a result are subject to consultation
 - Developers' perspective likely to be different

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Package of Proposals

- Outstanding items from the Frequency Response Technical Sub-group
 - Rapid Frequency Response for non-synchronous generators
 - Delay and Ramping parameters
 - For Synchronous and non-synchronous generators
 - 2 second delay and 1 second delay respectively
 - Including governor effects on inertia
 - Active Power range
 - To facilitate low load operation (focus on synchronous generators)
 - To clarify non-synchronous generator capability
- Intention is to progress this package as far as possible using BSSG

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Next Steps

- Rapid Frequency Response
 - Informal manufacturer feedback confirms there is value in further work
 - Evaluation of the benefit case required (ie quantification of postulated reduction in response costs)
- Package of proposals needs to be resolved
- Intention is to progress this package as far as possible using BSSG