

Rapid Frequency Response

CBSG/BSSG 5th June 2013

Background

The Frequency Response Workgroup has now concluded and submitted their Workgroup Report to the Grid Code and CUSC Panels. As part of the Workgroup Report a number of technical and commercial recommendations have been made.

One of the technical recommendations is for a mandatory 5 second 'Rapid' Frequency Response (RFR) requirement to be developed for asynchronous generators (including HVDC) that are required to provide frequency response.

The existing CUSC-based remuneration mechanism for mandatory frequency response and the existing commercial frequency response arrangements need to be developed to accommodate the RFR service; any commercial arrangement will need to accommodate both generation (asynchronous and synchronous) and demand providers ahead of the mandatory rapid frequency response requirement for asynchronous generators (including HVDC).

National Grid has begun internal discussion to better understand the likely impact of changes and how the arrangements could work. Following further development of these proposals they will then be brought to the Balancing Services Standing Group (BSSG) and Commercial Balancing Services Group (CBSG) for further discussion and development.

Defining the requirement

The technical sub group report described the RFR service as required to be fully delivered within 5 seconds, this will be fully defined in the Grid Code; this work is being progressed through the normal grid code review process.

Initial assessments have indicated that this requirement could be met by delivering a dynamic or static service and whilst the service was primarily intended as a low frequency service, a 'rapid' high frequency service could however also be beneficial.

Analysis is ongoing to determine the amount of RFR needed to securely manage system frequency within statutory limits across a range of system operating conditions. The requirement at any given time will be dependant on the generation mix, the amount of asynchronous generation plant connected and generating being the significant factor in the assessment. Currently if the demand is in excess of 30GW, then there is unlikely to be any requirement for RFR.

A number of factors will impact on the future levels of RFR required; with the ever increasing levels of asynchronous generation and a change in the SQSS to secure a single 1800MW generation loss, there will be a greater requirement.

When the demand is below 30GW the RFR requirement is calculated using an offline spreadsheet. As the amount of wind generation increases, it is likely that this 30GW demand threshold will become lower and the service will be required more frequently; this would necessitate the development of a dynamic model to calculate the requirement.

Procurement options

A number of options currently exist for the procurement of the service:

- FRPS, as per the existing mandatory market – This could then be despatched in the same way as Primary Response.
- FFR tender, although the current month ahead tender timescales (or even week ahead as proposed) would not work for wind due to the uncertainty of availability.
- Bilateral Contracts

Other considerations

There are a number of other issues than need to be resolved and work is progressing with these.

- Interaction between the RFR requirement and the current Primary Response requirement.
- How do the benefits of RFR impact on the need for additional Inertia; will inertia still be required to manage the ROCOF issue relating to embedded generation
- How do we economically despatch RFR using existing control room system, and what system changes will be needed in the future to accommodate RFR.

Next Steps

National Grid is continuing to develop the necessary tools to determine the day to day requirements, and how these will be used to economically despatch the service both in the short term and on an enduring basis.

The procurement and despatch mechanisms for mandatory RFR will be developed in conjunction with the BSSG and will need to be in place ahead of any obligatory requirement for RFR in the Grid Code.

The procurement options for RFR will be progressed by National Grid over the next few months, part of this work will be covered in the review of the Firm Frequency Response service; this will be presented to the CBSG at the next meeting.

Contact Information

Should you have any queries relating to the above information please email cusc.team@nationalgrid.com.