

Precision of FCR response under FSM

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Network Codes /Guidelines requirements

- **NC RfG, Article 15(2)(d)(i)**
 - frequency response insensitivity $|\Delta f_i| = 10 - 30$ mHz
 - Frequency response deadband: 0 – 500 mHz
- **GL SO, Article 154(1)**
 - Maximum combined effect of inherent frequency response insensitivity and possible intentional frequency response dead band of the governor of the FCR providing units or FCR providing groups:
 - CE: 10 mHz
 - GB: 15 mHz
 - IE/NI: 15 mHz
 - Nordic: 10 mHz

➔ ***Are the NC RfG and GL SO requirements consistent to each other?***

Objectives of NC RfG and GL SO requirements

- **NC RfG**
 - to define technical capabilities of power generating modules
 - technical capabilities are relevant for plant design
- **GL SO**
 - to define operational settings
 - operational settings shall make use of and stay within the limits of technical capabilities
 - operational settings may change over time as the case may be, e.g. if system characteristics / needs change
- **Conclusions**
 - plant design needs to be robust against changes in system characteristics over time
 - plant design shall allow for altering operational settings
 - typically a margin between operational settings and technical capabilities is needed

Conclusions for the FCR case

- The most onerous operational settings as defined by GL SO for the combined effect of frequency response insensitivity and deadband for CE and Nordic (10mHz) actually require to set the following:
 - Frequency response insensitivity: 10 mHz
 - Deadband: 0 mHz
- Both settings are in consistent to the technical capabilities as defined by NC RfG
- Moreover, the deadband may be used to effectively deactivate FCR by setting it to a value \geq the FCR full deployment target (CE: ± 200 mHz, Nordic: ± 500 mHz)

Thank you for your attention!
