

Load-Frequency Control and Reserves Network Code



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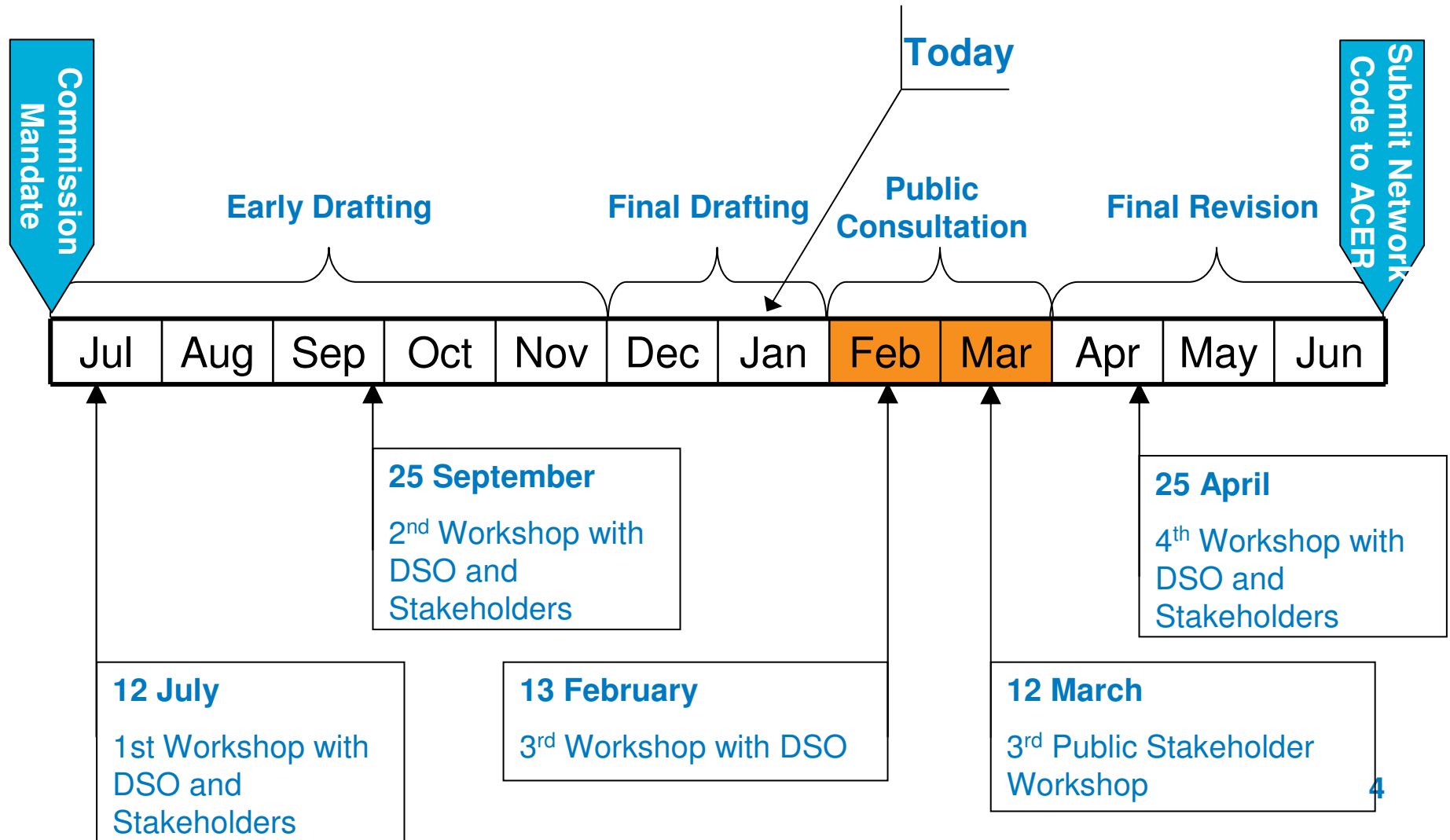
Agenda

- Overview and Timescales
- Key Requirements of the Network Code
- Key Issues
- Stakeholder Engagement

Overview

- One of the **Network Codes** being developed under the **System Operation Framework Guidelines**
- Overview:
 - The LFC&R Network Code considers the containment and restoration system frequency and appropriate dimensioning of reserves to achieve and maintain satisfactory frequency quality in terms of the frequency deviations from the nominal value and how often these deviations occur within a defined time period.
 - The code seeks harmonisation where practical and achievable and standardisation of terminology.
- Where necessary parameters are defined on a per synchronous area basis

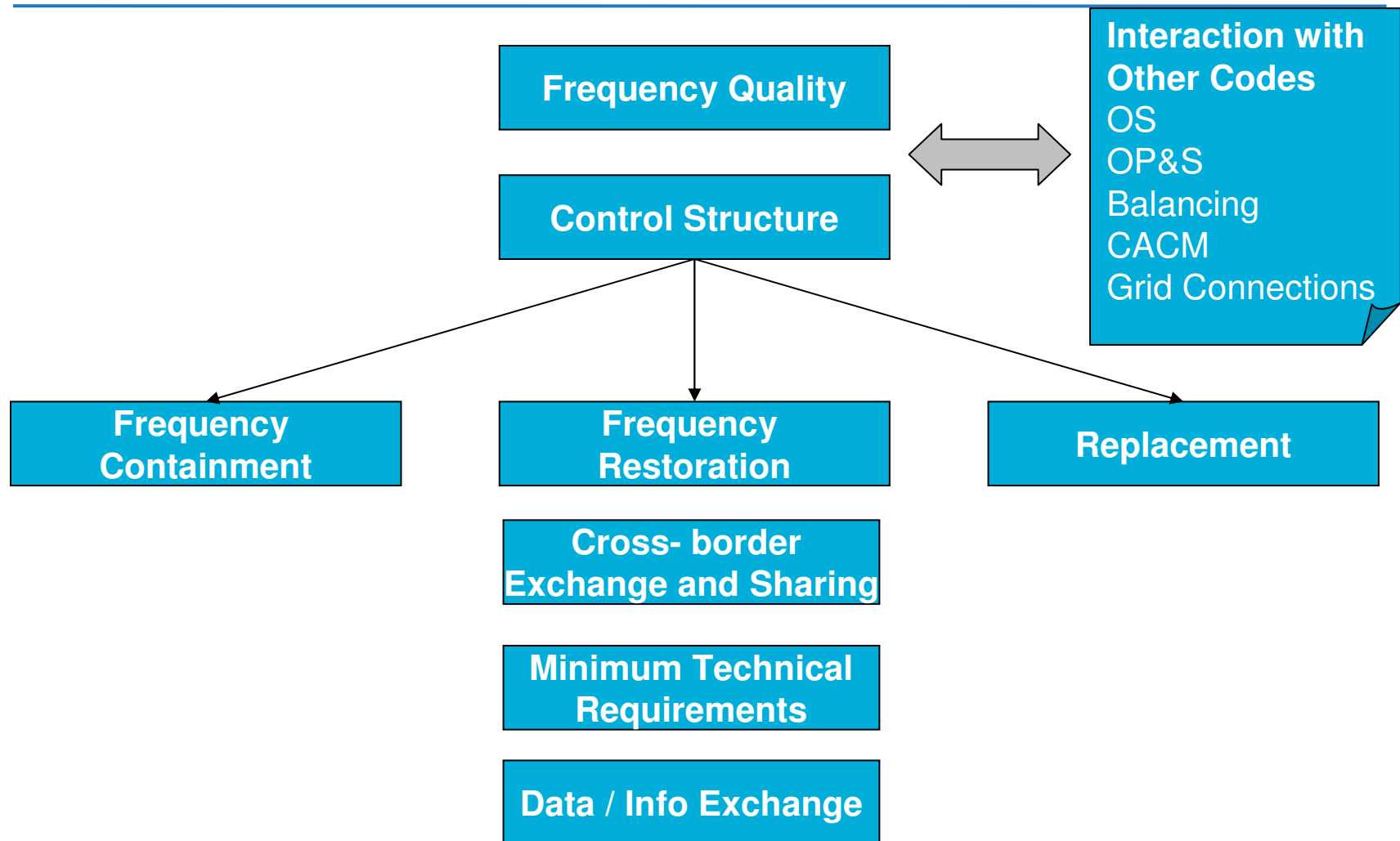
ENTSO-E LFC&R Timescale



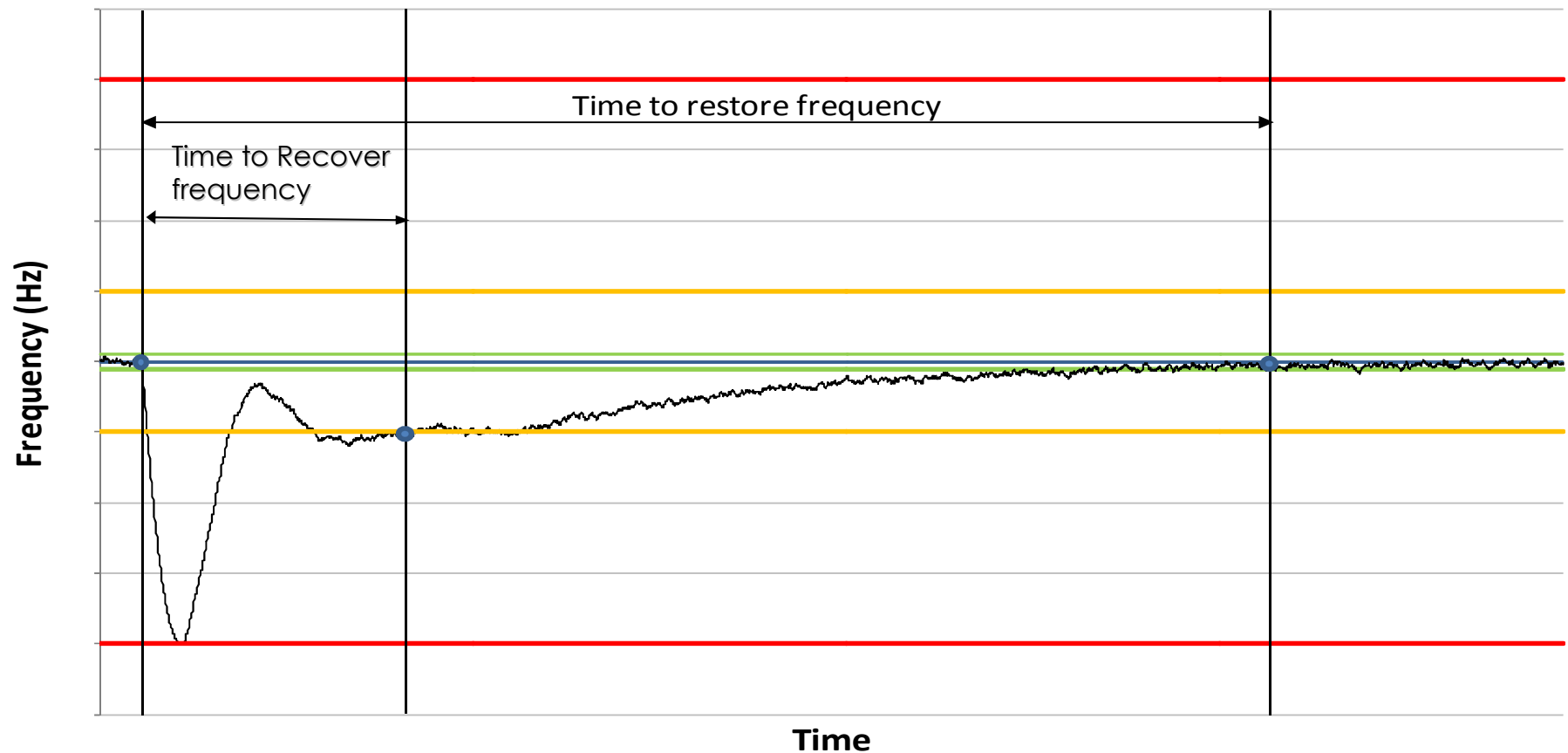
Provisions of the Network Code



LFC&R Framework



Frequency Quality – General Terms



— Nominal frequency

— Frequency

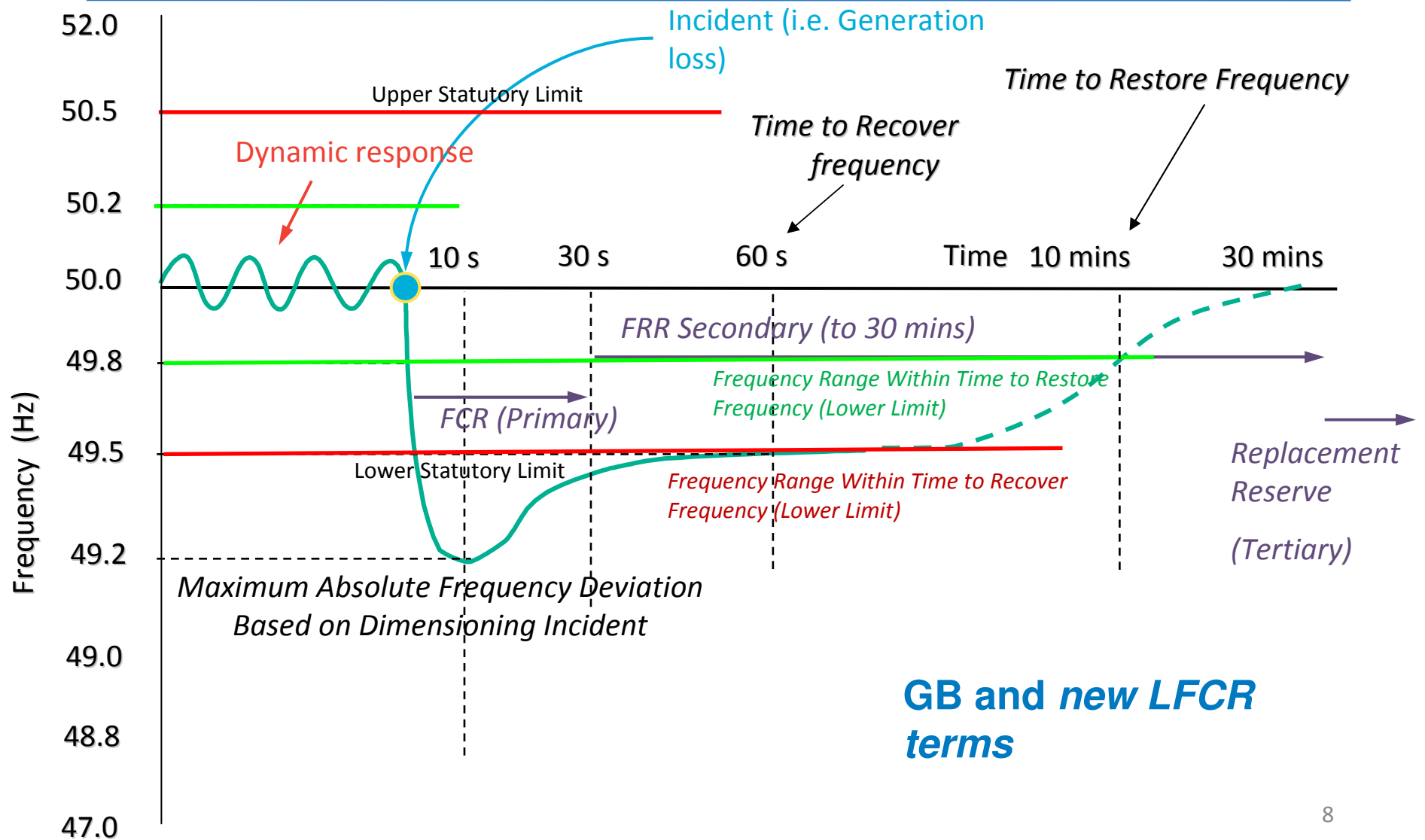
— Maximum absolute frequency deviation

Time

— Standard frequency deviation range

— Maximum quasi-steady-state frequency deviation

Response and reserve – current and new terms



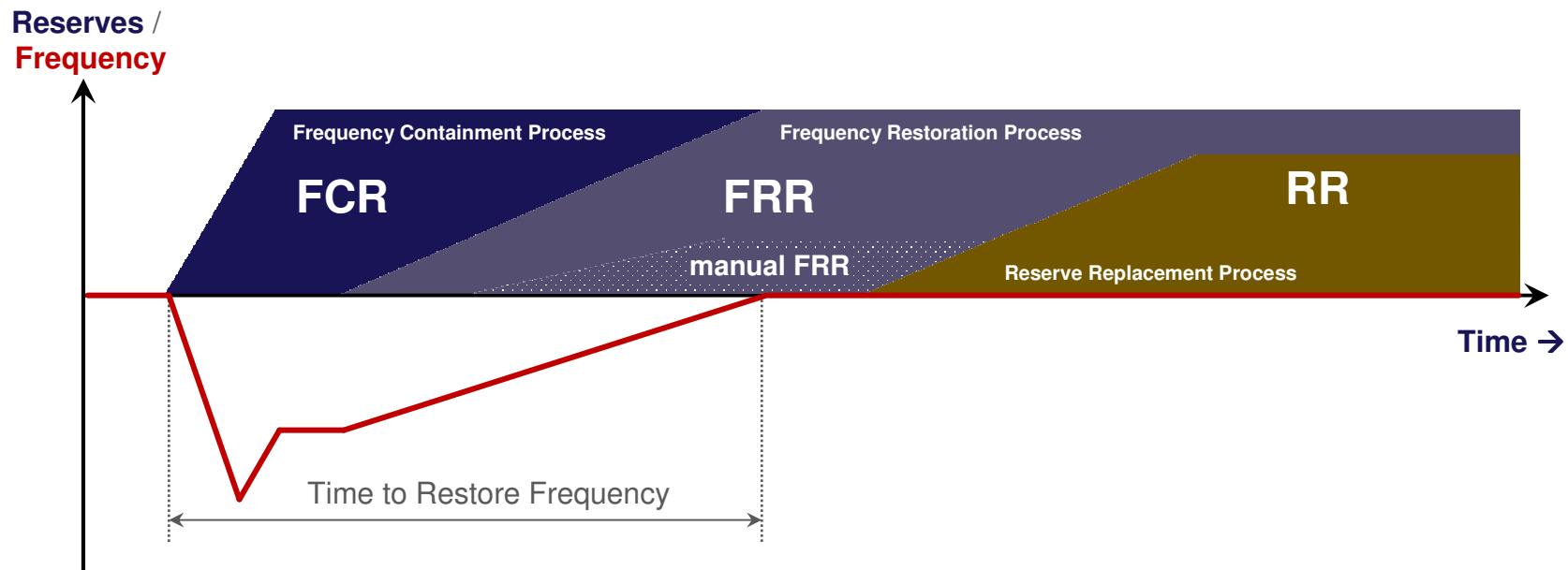
Control Structure

The classification of reserve category is determined according to activation time and the delivery time of the reserve.

- General principle of Reserve Activation
 1. Frequency Containment Reserves (FCR),
 2. Frequency Restoration Reserves (FRR),
 3. Replacement Reserves (RR)

- The terminology is different to that presently in GB

Process Activation Structure

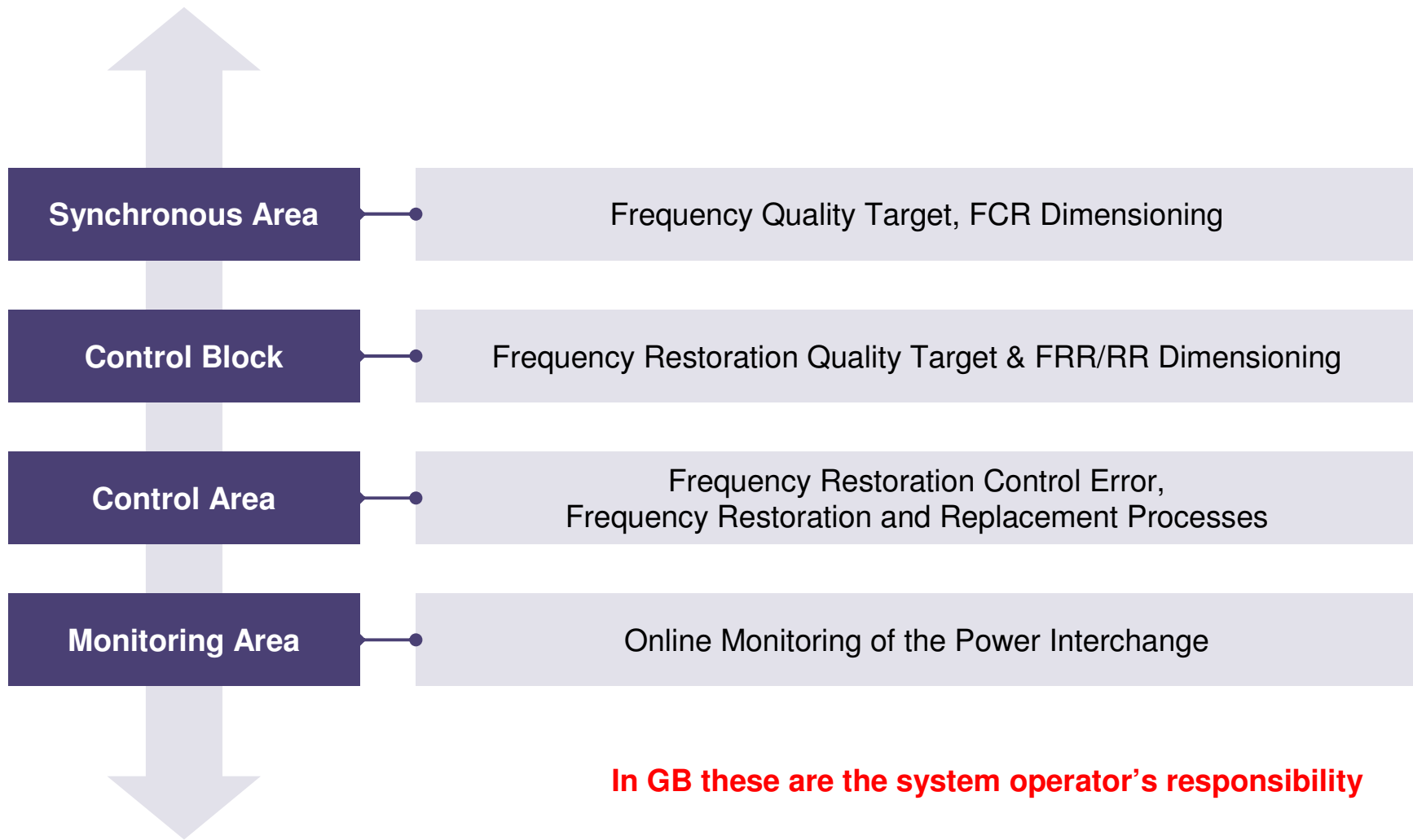


- Frequency Containment Process → Stabilization
- Frequency Restoration Process → Regulate to Set-Point Value
- Reserve Replacement Process → Restore FRR

Process Responsibility Structure - 1

- Requirements are specified on a Synchronous Area basis e.g. GB, Continental Europe, Nordic
- Control hierarchy is present:
 - Synchronous Area
 - → 1 or more Load Frequency Control Blocks
 - → 1 or more Load Frequency Control Areas
 - → 1 or more Monitoring Areas...
- *For GB there will be only be one responsible entity for all elements within the Control Hierarchy – i.e. the NETSO = NGET*

Process Responsibility Structure - 2



Reserves Categories - FCR

- FCR
 - Dimensioning (reserve holding) obligations on TSO remain largely unchanged;
 - NG has sought to retain Minimum technical requirements unchanged – e.g. full activation in 10s and sustainable for a further 20s;
 - Geographic limitations to avoid concentrations of reserve providers in one part of the network. Within GB this is part of the normal TSO competency and hence no change.
 - Pooling of providers permitted where the TSO considers it to have no security of supply implications
 - Provision is subject to a prequalification process.
 - GB may exchange or share this service across HVDC links – see later slide

Reserve Category - FRR

- Little change from current GB structure and approach
 - TSO obligations are to ensure enough FCR is held to restore frequency for credible risk events (ie dimensioning incident)
 - Those current GB reserve products whose full activation time is outside normal FCR full activation time may be considered to be in this category of reserve (specific product structure is for Balancing Code)
 - The code sets out minimal technical requirements but permits TSOs to set requirements specific to their system.
- The code seeks to cover all synchronous areas with definitions for Automatic Generation Control as well as Manual activation.
- Prequalification Process is required
- Provisions exist for Sharing and Exchange of this service – see later slide

Reserve Category - RR

- Termed “Replacement Reserves” these relate to all despatched instructions which may be used to maintain margins or replace depleted FCR/FRR.
- Little change is anticipated for GB from current arrangements.
- There is a prequalification process
- Provisions for GB to Exchange and/or Share this product exist – see later slide

Reserve Exchange, Sharing and Netting

- Mechanisms exist within the code that will allow GB to share or exchange products with neighbouring systems
 - Imbalance Netting – permits TSOs to reduce unnecessary simultaneous activation of reserves in opposite directions
 - Sharing – common dimensioning and holding of reserves for use in more than one area – already in place for GB-Ireland
 - Exchange – SO-SO / SO-BRP models of exchange are permitted – these services exist e.g. GB – FR

Key points



Key points to note - Summary

1. Significant overlap between LFR&C and other Network Codes, in particular Balancing which will define the products to be used.
2. Do not believe the obligations in the Network Code represent a big change for GB. Obligations are written per synchronous area and for GB are largely in line with current practices.

Stakeholder Engagement



ENTSO-E Stakeholder Engagement

- **ENTSO-E Public Stakeholder Workshop**

- **12/03/2013 in Brussels**

- The code is due to be published for Public Consultation at the end of January.

- Responses to ENTSO-E by electronic comment via the consultation website.

- <https://www.entsoe.eu/news-events/entso-e-consultations/>

- <https://www.entsoe.eu/major-projects/network-code-development/load-frequency-control-reserves/>

GB Stakeholder Engagement

- Today (15-01-2013) Update on LFCR code drafting
- 7th & 8th March – 2 day event (ELEXON Building)
 - Presentation and discussion on the LFCR code and its impact on GB operations and industry.
 - Please this does not replace the ENTSO-E consultation. Formal stakeholder comments are to be submitted directly to ENTSO-E.

Thank You

Any further questions?