

# Load-Frequency Control and Reserves Network Code



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JESG – 18 September 2012

## Agenda

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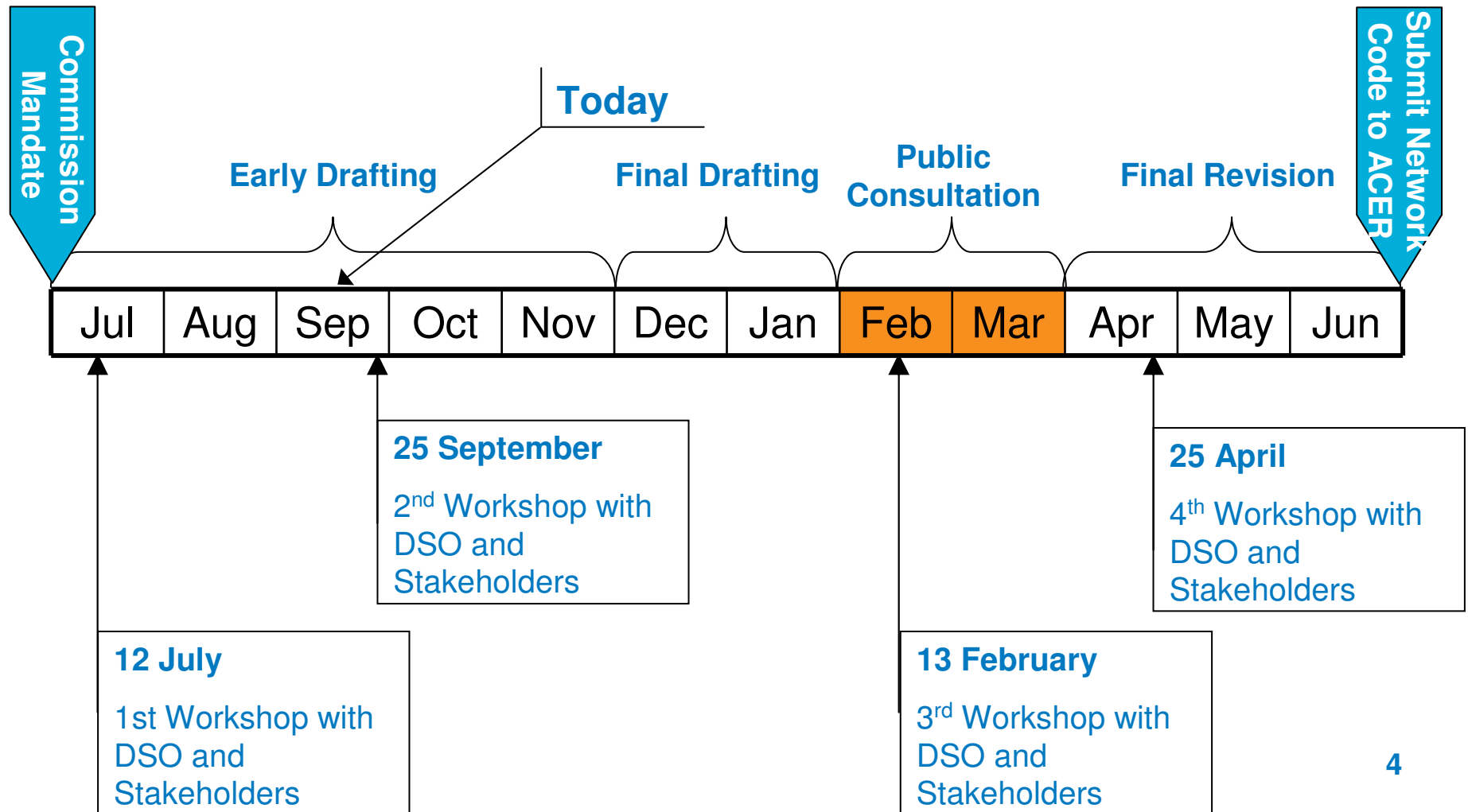
- Overview and Timescales
- Key Requirements of the Network Code
- Key Issues
- Stakeholder Engagement

## Overview

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- One of the **Network Codes** being developed under the **System Operation Framework Guidelines**
- Overview:
  - The Network Code considers the real-time balance between generation and demand to control system frequency; 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 (standard deviation of frequency).

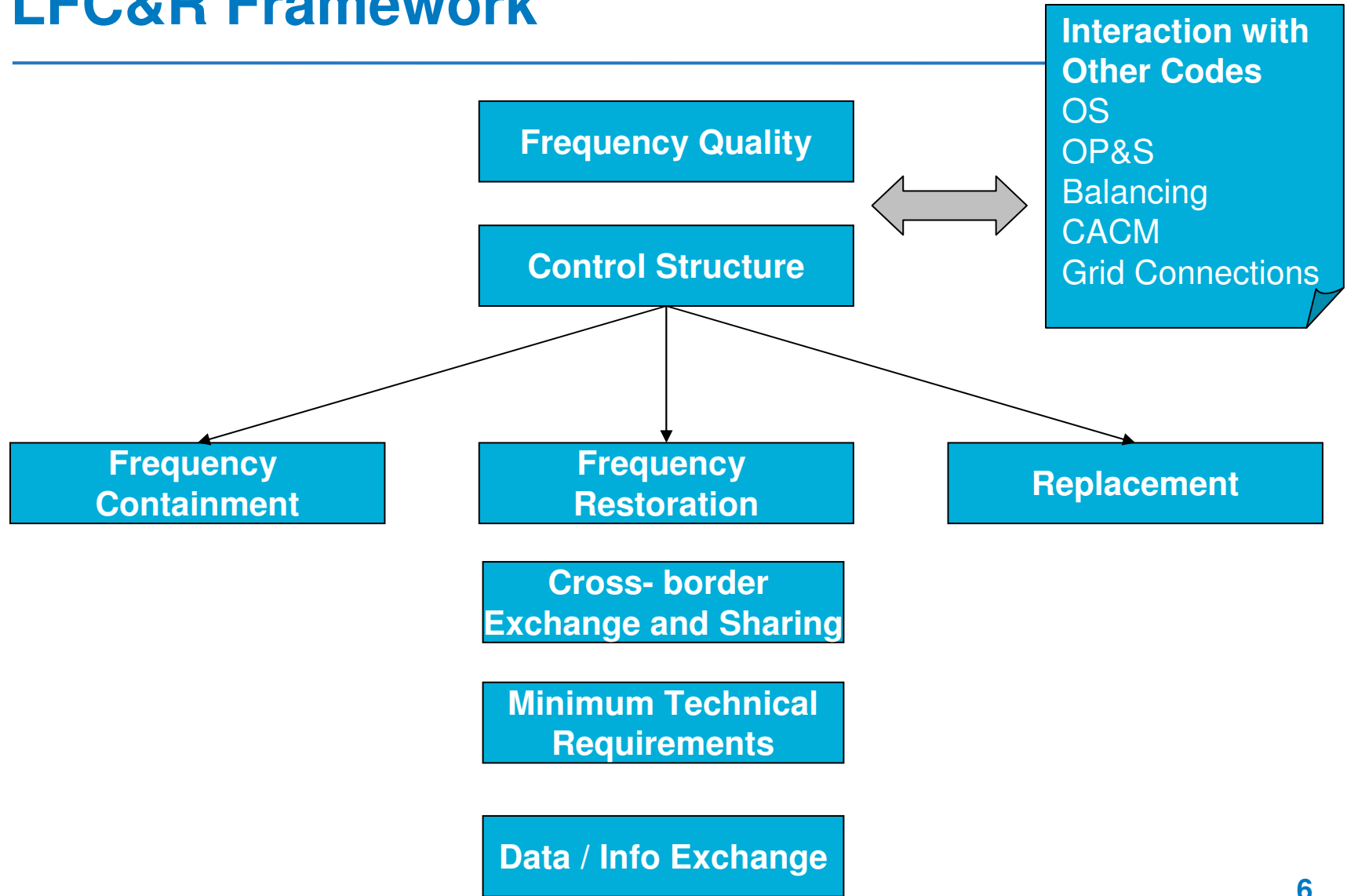
# ENTSO-E LFC&R Timescale



## Provisions of the Network Code



# LFC&R Framework



## Control Structure

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- General principle of Reserve Activation
  1. Frequency Containment Reserves (FCR),
  2. Frequency Response Reserves (FRR),
  3. Replacement Reserves (RR)
- The terminology is different to that presently in GB

## Structure

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- Requirements are specified on a Synchronous Area basis e.g. GB, Continental Europe, Nordic
- Synchronous Areas are divided in to “*Area Types*” and requirements are placed on Area Types
  - Type A – Schedules only, no metering
  - Type B – Schedules and metering
  - Type C – Equivalent to a single TSO
  - Type D – A Control Block responsible for dimensioning (e.g. all the German TSOs)
  - Type F – The entire Synchronous Area



# Load Frequency Control & Reserves

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- **Chapter 1 : Frequency Quality**
  - Defines Frequency Quality criteria and targets in normal operations.
  - All requirements related to Frequency quality
- **Chapter 2 : Load Frequency control structure**
  - Requirements to define, to implement and to operate a Load-Frequency-Control structure for a Synchronous Area.
  - Aiming at defining a Process Activation Structure and a Process Responsibility Structure.

# Load Frequency Control & Reserves

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- **Chapter 3** : Frequency Containment Reserves
  - Methods and requirements for calculation of required amount of FCR in a synchronous area, and distribution key among TSOs
  - Requirements on TSOs for FCR providing units
- **Chapter 4** : Frequency Restoration Reserves
  - Methods and requirements for calculation of required amount of FRR for each TSO of a synchronous area.
  - Requirements on TSOs for FRR providing units.

# Load Frequency Control & Reserves

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- **Chapter 5 : Replacement Reserves**
  - Methods and requirements for calculation of required amount of RR for TSOs needing it.
  - Requirements on TSOs for RR providing units
- **Chapter 6 : Exchange and sharing of Reserves**
  - Requirements and constraints for exchanging and/or sharing Reserves between TSOs of a synchronous area.
  - Requirement for TSOs in providing units in case of exchange or sharing of reserves

# Load Frequency Control & Reserves

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- **Chapter 7 : Time Control**
  - Requirement to define and implement the common rules of electrical time control
  - - Question to be asked of stakeholders whether time control is still required. Not a current requirement in GB.

## Key Issues



## Items still being developed in the next draft

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- Cross border reserve sharing
- Inter synchronous area reserve sharing
- Full FRR requirements on TSOs – Currently differs across Europe
- TSO System Reliability Indicators

## Key points to note - Summary

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1. Significant overlap between LFR&C and other Network Codes, in particular Balancing, which will require careful management
2. A need to ensure that the GB arrangements for TSOs do not place undue obligations on some parties
3. 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 based on current practices.

# Stakeholder Engagement





## ENTSO-E Stakeholder Engagement

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- **ENTSO-E Public Stakeholder Workshop**
  - **25 September 2012 – 13h00 – 1700**
  - ENTSO-G premises, Brussels
  - Registration open until 21 September 2012
- The draft of the Network Code has been published in advance of the Workshop

# Thank You

Any further questions?