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Introduction to European Framework Guidelines and Network Codes

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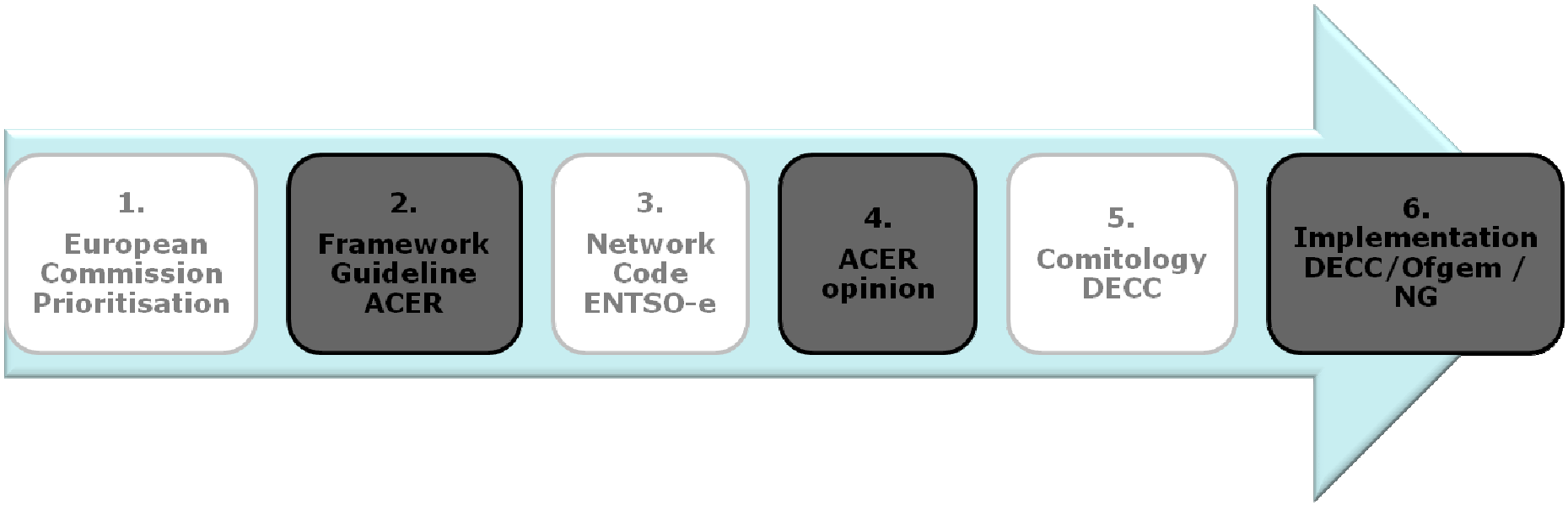
Framework

- **Source:**
  - Born from the European Legislative Third Package
    in particular, Reg (EC) 714/2009: Conditions for access to the network for cross-border exchanges in electricity.

- **Purpose**:
  - Rules for the **secure operation** of European power systems and implementation of a **liberalized Europe-wide electricity market**.

- **Scope**:
  - Broad-reaching with 12 topic areas covering:
    - **Effective system operation;**
    - Market integration;
    - **System development.**

Generic process for network codes



Technical Codes: Framework Guidelines (FG) and Network Codes (NC)

1. **FG on Electricity Grid Connection (EGC)**
   - **Network Code for Requirements for Grid Connection applicable to all Generators (RfG)**
   - **Demand Connection Code (DCC)**
   - **High Voltage Direct Current (HVDC) Code**

2. **FG on System Operation (SO)**
   - **Operational Security (OS)**
   - **Operational Planning and Scheduling (OP&S)**
   - **Load-Frequency Control and Reserves (LFC&R)**

Codes for Grid Connection

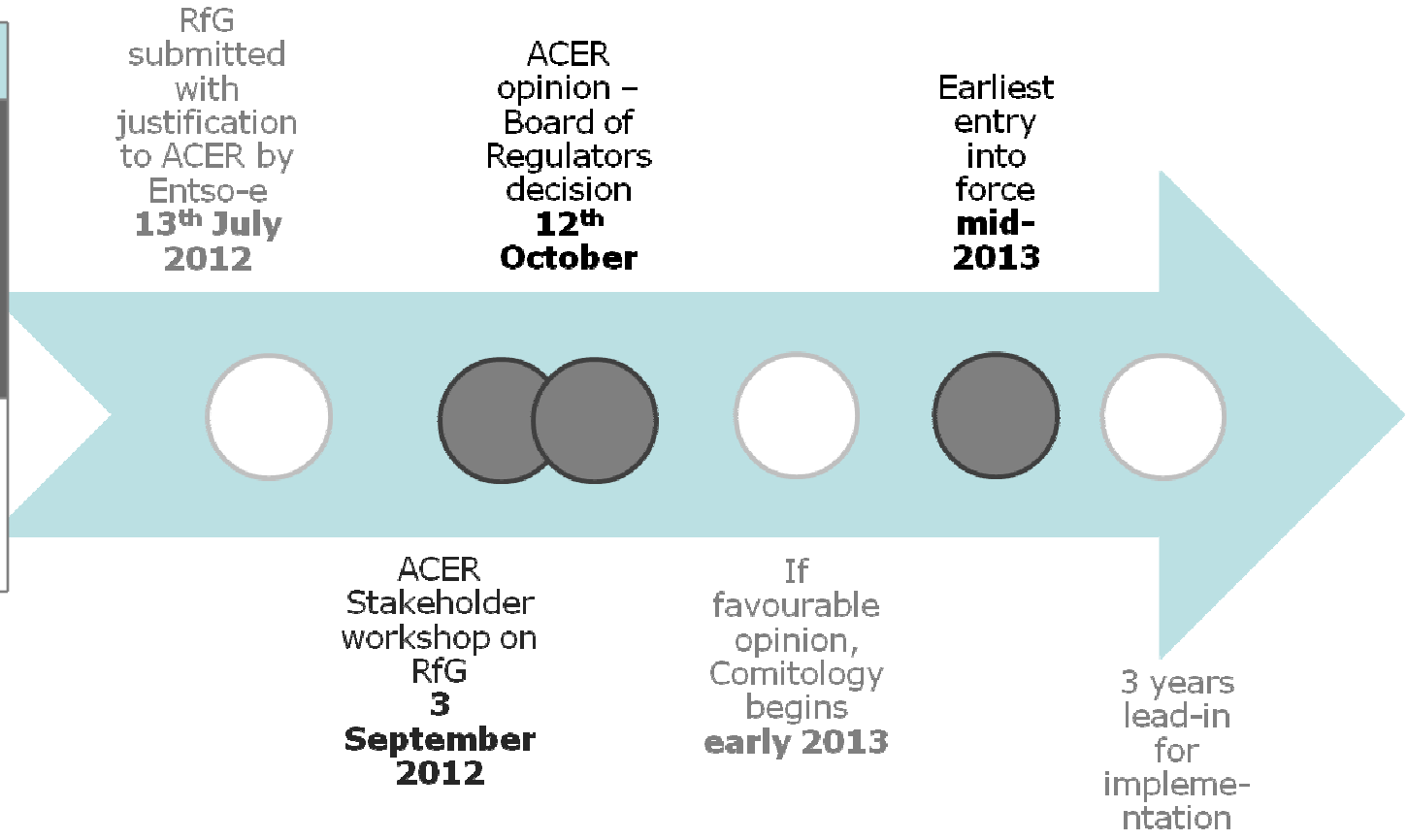
- **Requirements for Generators: RfG**
  - First 'pilot' code aims to address urgent issue of:

    Non-harmonized and outdated technical connection conditions for renewables generation equipment was threatening secure system operations.
- **Scope**
  - NC applies to all new Significant Grid Users (SGUs)

    (retrospective application will be subject to CBAs);
  - Where requirements deviate significantly from current standards ENTSO-E must justify using CBA.
  - Categorises generators by size (A-D) with increasing technical requirements for larger generators, covering a/o:
    - Frequency & Voltage Ranges
    - Reactive Power, Fault Ride Through, System restoration
  - Smaller generators now responsible for providing system services (Type A = 800W)

Requirements for Grid Connection Applicable to all Generators Timeline

Previous key dates	
20/7/2011	Framework Guidelines on Electricity Grid Connection published by ACER
24/01/2012 – 20/03/2012	ENTSO-e public consultation on the NC



Codes for Grid Connection

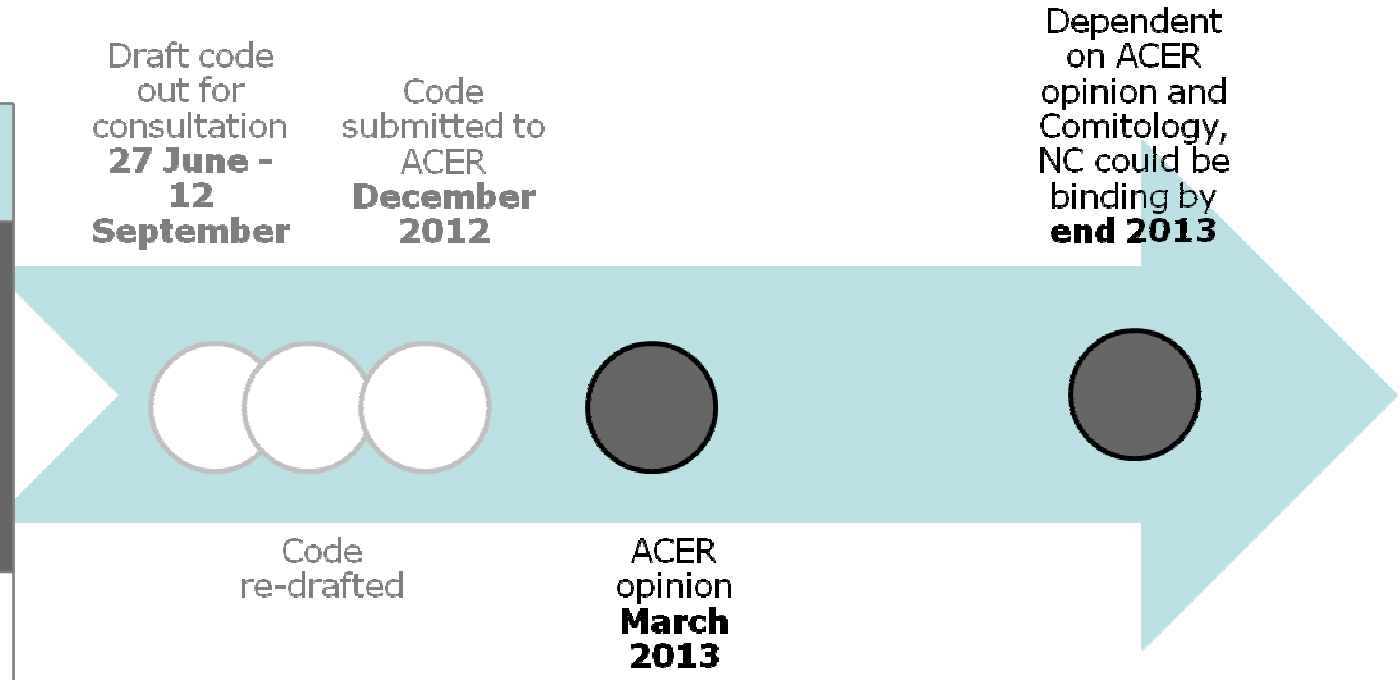
Demand Connection Code (DCC)

- **Scope:**
  - Sets out **requirements to be met by demand users before connecting;**
  - Covers demand connected to both transmission and distribution;
  - Covers Significant Demand Users (SDUs) in terms of cross-border impact and market integration;
  - DSOs are considered significant demand users.

- As with RfG, its application is on 3 scales:
  - Prescriptive requirements for single EU-wide parameters (exhaustive requirements)
  - Range of parameters within which decision is to be set nationally (non exhaustive requirements)
  - Requirement for specific requirement to be set nationally

Network Code
Demand Connection Code
Timeline

Previous key dates	
20/7/2011	Framework Guidelines on Electricity Grid Connection published by ACER
01/12 – 4/12	Scoping by Entso-e



Future codes…

System Operation

- **System Operation Framework Guidelines** issued Dec 2011

4 codes:

- **Operational Security (OS)**
  - **Entso-e consultation Sep-Oct ’12,**
  - **Submit to ACER Mar 2013**
- **Operational Planning and Scheduling (OP&S)**
  - **Entso-e consultation Nov-Dec ’12**
  - **Submit to ACER April 2013**
- **Load-Frequency Control and Reserves (LCF&R)**
  - **Entso-e consultation Feb-Mar ’13**
  - **Submit to ACER June 2013**
- **Emergency operation**

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