

Demand Connection Code Public workshop Call for Stakeholder Input

Preliminary Scope

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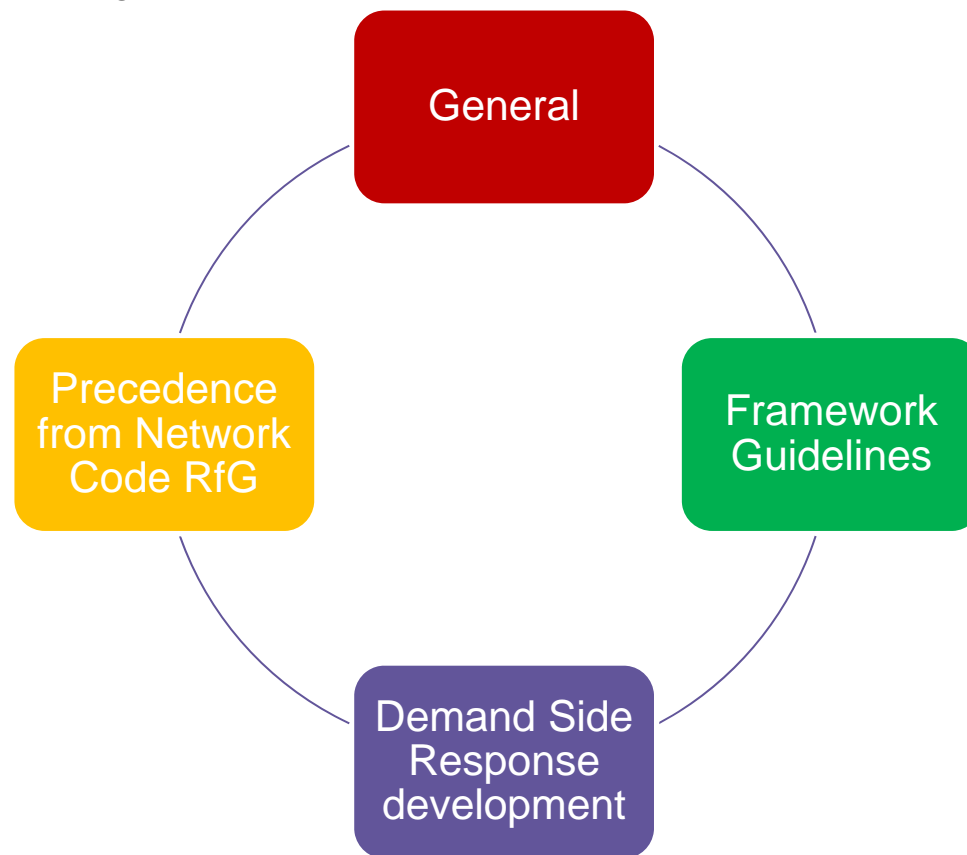


Topics

1. Principles used and impact on scope
2. Options for high RES and drivers for new requirements
3. New European requirements

DCC Preliminary Scope

High level principles categorised in four areas:





General

European harmonisation in three EC objectives to avoid EC derived code

System Operation (TSOs/DSOs) responsibility of each system operator


Demand elements of a Power Generating Facility, is not classed as a demand user

Costs allocation/tariffs/etc (with exception of FWGL CBA process requirements) are not part of this code

Equitable treatment of all demand customers

Technology neutral approach

Rational for requirements will be in a separate high level document and FAQs



Framework Guideline

Meet requirements in Framework Guideline on Grid Connection July 2011

Functional requirements/capabilities only in Network Code not their use

Compliance is only for requirements in the NC and these requirements specifically

Retrospective application in line with FWGL and RfG will only be implemented at a National level following TSO demonstration in a CBA and agreement with National Regulatory Authority of need and appropriateness

Quality of connection (i.e. Number of circuits, etc) is not part of this code

Demand connected that singularly or grouped that causes a cross border issue is covered by code regardless if they are connected to TSO and DSO networks

DSOs are treated as significant demand users

Closed Distribution Networks are covered in NC as per 3rd legislative package



Framework Guidelines

| | |
|--|-------------------------------|
| Frequency and voltage parameters | Section 2.1 |
| Requirements for reactive power | Section 2.1 |
| Load-frequency control related issues | Section 2.1 |
| Short-circuit current | Section 2.1 |
| Requirements for protection devices | Section 2.1 |
| Balancing capabilities and provision of ancillary services | Section 2.1, 2.1.1, and 2.1.2 |
| Equipment requirements at connection point | Section 2.1.1 and 2.1.2 |
| Disconnection/Islanding/Reconnection | Section 2.1.3 |
| Instructions provide by TSO/DSO to user | Section 2.1.2 and 3.2 |
| Information/Data exchange | Section 3 |
| Compliance | Section 2.4 |
| Derogation | Section 2.2 |
| Enforcement period | Section 2.3 |

Principles – Frequency and voltage parameters

- The Demand Connection Code will take direction from the frequency and voltage ranges for the European synchronous areas as prescribed in the 'Network Code on Requirements for Grid Connection applicable to all Generators'.
- The capability of significant demand users to remain connected is relevant from the perspective of system stability.
- The voltage range capability of users equipment can become significant at and above 110kV and the need for requirements will therefore be considered in drafting the Network Code.


Principles – Low Frequency/Voltage Disconnection and On Load Tap Blocking

- Low Frequency Demand Disconnection (LFDD) requirements necessary for European Co-ordination are part of the Network Code, harmonizing existing requirements in Europe.
- Low Voltage Demand Disconnection (LVDD) requirements are part of the Network Code responding to the recent ENTSO-E report recommendations harmonizing existing requirements in Europe.
- LVDD and On Load Tap Changer (OLTC) Transformer Blocking are to be used in tandem.
- LFDD/LVDD/OLTC shall be co-ordinated and necessary information will be exchanged.

https://www.entsoe.eu/fileadmin/user_upload/_library/publications/entsoe/RG_SOC_CE/RG_CE_ENTSO-E_Defence_Plan_final_2011_public_110131.pdf

Principles on requirements for reactive power

- Reactive compensation most cost effectively provided at point of use
- For equitability a maximum European reactive power range should be set
- Specific local driven reactive requirements should be permissible (within the maximum range)
- Reactive power ranges should allow for the effective use of capability requirements of embedded generation



Precedence from Network Code Requirements for Generators

Format and approach to be aligned with Draft
Requirements for Generators Network Code

Requirements will be of a number of different
format

European single threshold

European range
Synchronous Value

European range TSO/Relevant
network operator value

European capability
TSO/Relevant network operator
specified application

No mention in code, National
Code applies



Demand Side Response Development

Political agenda for the development of a Smart Grid network will be realised over the next few years

DCC should provide requirements for DSR based on this concept assuming high take up from domestic level upwards

The DCC should be cognisance of EC Mandate 490 on 'Smartgrid' standards development

Demand Side Response ('Smartgrid') is in the code in the context of cross border issues:

Included: Wide spread phenomena frequency management/voltage collapse/etc

Not Included: Localised phenomena Self healing networks/ Localised automatic local voltage/Post fault sectionalising management

Level of Detail

Cross border impacts can arise from:

1. Localised events cascading into wide spread events
2. Aggregated impacts of large numbers of smaller sized system users

Therefore ENTSO-E's view is:

- Detail is adjusted to the purpose of each requirement - Determined by the extent of the system-wide impact of each requirement.
- The NC DCC focuses on significant users which are either Demand Facility or Distribution Networks (DSO or Closed Distribution Network Operator) connected to the transmission system.
- Facilitate all players to participate in the market place, all users significant grid users in the context of DSR.

Question:

What is your view on ENTSO-E's interpretation of the level of detail required in the NC DCC?

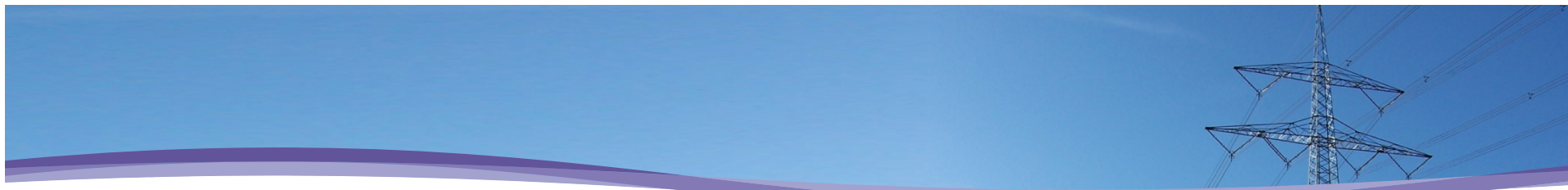
New European Requirements



The new requirements identified by ENTSO-E cover the following:

1. Demand Side Response delivering Reserve Services
2. Demand Side Response delivering System Frequency Control
3. Reactive power exchange capabilities
4. Voltage withstand capabilities
5. Frequency withstand capabilities

Each will be covered individually this afternoon in a series of discussions on the approach being taken



Thanks for your attention!