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5. Connection Codes Update



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JESG | 4 February 2014

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From the ENTSO-E website:

- ‘The Network Code on Requirements for Generators is seen as one of the main drivers for creating harmonized solutions and products necessary for an efficient pan-European (and global) market in generator technology. The purpose of this network code is to bring forward a set of coherent requirements in order to meet these challenges of the future.’

https://www.entsoe.eu/major-projects/network-code-development/requirements-for-generators/

European Network Code (ENC) Development Process

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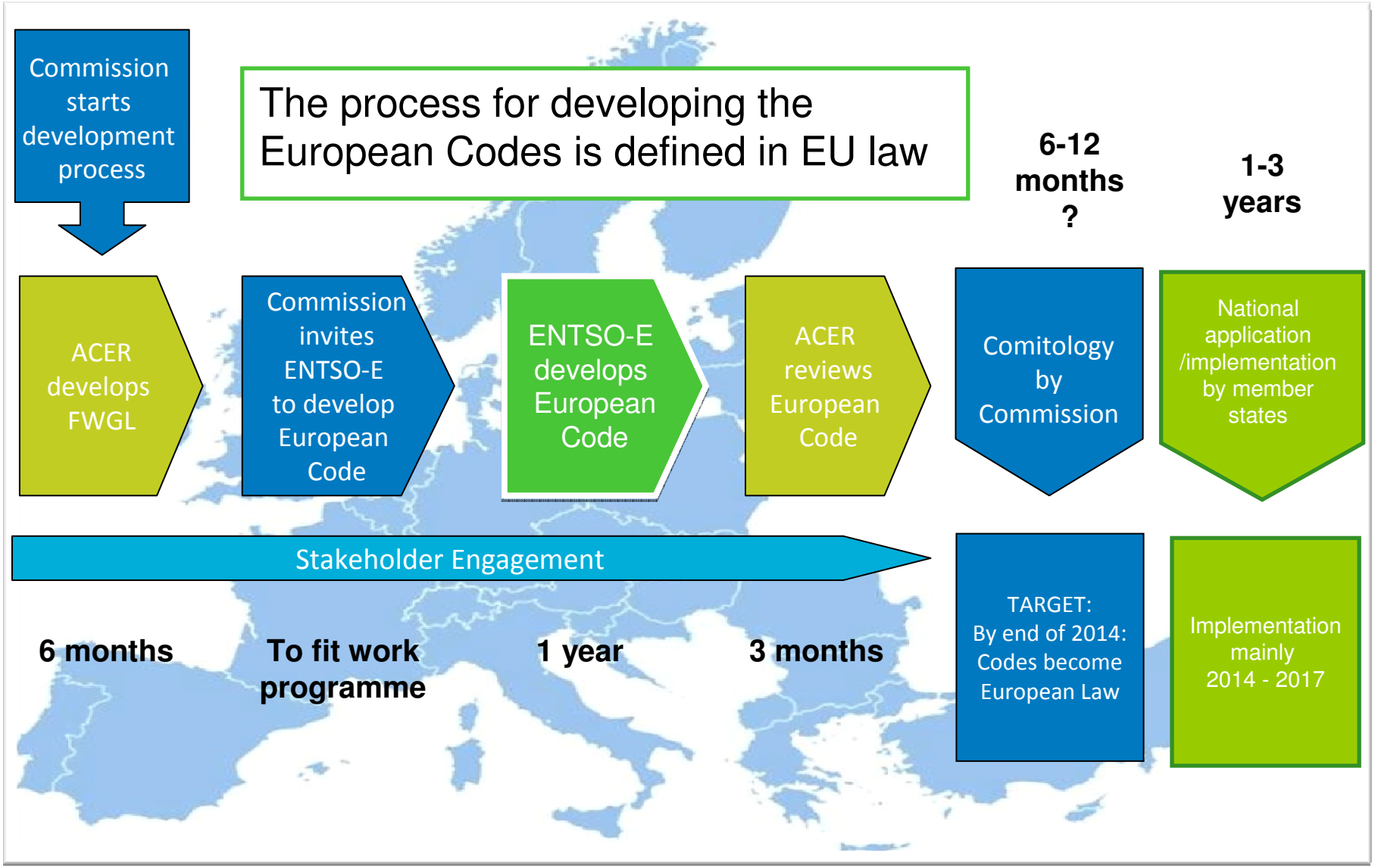

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RfG Key Progress Milestones

- RfG was the first of the European codes to be developed (started in 2009) and has provided a pilot for the process
- ENTSO-E drafting finished in June 2012; some additional changes made up to March 2013
- On 27 March 2013, ACER issued a recommendation to the European Commission to adopt the Network Code on “Requirements for Generators” (NC RfG)
- Consultants (DNV KEMA) appointed by Commission to carry out technical impact assessment – broadly supportive report released Sept 2013
- Guidance note on national application published by ENTSO-E Oct 2013
- ‘Informal draft’ of code published by the European Commission on 14 January 2014
- Informally discussed at Electricity Cross Border Committee meeting on 28 January (DECC is GB representative)
- Presumably formal voting will follow at one or more subsequent meetings

Overview of 14 Jan 2014 Commission Informal Draft

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- Changes are not that material in the main
- There are many areas where drafting needs to be improved to clarify meaning, resolve minor inconsistencies etc
- ‘Whereas’ section – expanded from 8 to 38 clauses.
  - No strong legal basis
  - Generally helpful expansion on roles, responsibilities and application
  - Provided for information and to aid understanding

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Application of RfG to GB

- Overriding principles for GB application:
  - Fit for purpose to cover future developments (move to increased non-synchronous generation)
  - Assumes GB remains as a synchronous area
  - Extensively replicates GB Grid Code requirements – little change for larger generators
- Main points for GB (March 2013 ENTSO-E draft):
  - ‘Banding’ of generators changes
  - Applies requirements to smaller, embedded generation (now from 800W rather than 50MW in England & Wales)
  - Operational notification process for all Embedded Plant allocated to Relevant Network Operators
  - Retrospective application?

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Generator Banding – remains unchanged

- Replaces current GB Small/Medium/Large classifications with type A-D bandings
- Helpful clarification of intent for each type of generator in 'Whereas (15) – (19)
- TSOs still to define thresholds – but may not be above levels set out in code

Current Grid Code banding:

Generator Size	Direct Connection to:		
	SHET	SPT	NGET
Small	<10MW	<30MW	<50MW
Medium			50-100MW
Large	10MW+	30MW+	100MW+

RfG banding:

RfG Type	Generator Capacity	Connection Voltage
A	800W-1MW	<110kV
B	1-10MW	<110kV
C	10-30MW	<110kV
D	≥30MW	>110kV

Retrospectivity – mainly unchanged but clarification provided

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- Key GB stakeholder concern
- Helpful clarification provided in 'Whereas':

  (14) This Network Code should apply to new Generating facilities. Existing generating facilities and generating facilities already at an advanced stage of planning but not yet completed should continue to be subject to the requirements in force in their Member State at the entry into force of this Network Code. Only in exceptional circumstances and where there is a clear justification for extending the provisions of this network code to existing generating facilities or to generating facilities at an advanced stage of planning should national regulatory authorities approve such a change. This should be based on a detailed cost benefit analysis, taking into account the overall socio-economic impact and the impact on generators.

- Expansion on this and CBA process detailed in Article 3a - Application to New and Existing generators
  - Specific case for retrospective application needs to be made based on system change
  - Public consultation must be undertaken
  - Positive societal CBA required
  - Can be undertaken on a specific proposal only every 3 years
- Art 3.3 – this refers to 'Power Generating Facilities' with no distinction between new or existing; doubt this is intent of drafting but could be interpreted to mean code applies unilaterally.

Timescales / application once RfG becomes European Law now less clear

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- Compliance period defined in code; was 3 years and is now X years (art 63)
- Code applies to ‘new generators’; still defined as those that have not let contracts for major plant items by 2 years after the code’s entry into force

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Clerical Issues

- Can the section/clause numbers be put against each paragraph in full please? This would make following the document much easier.
- Consistency checking required – particularly between the connection conditions and the compliance sections in the rear of the document
- Definitions need checking against GB – some are the same terms and GB versions are generally better. Code acknowledges consistency work in progress on definitions by ENTSO-E & ACER
- Quality of drafting needs to be improved – there are various minor errors and inconsistencies
- The code would benefit from an index

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Next Steps / Other Progress

- 1st meeting of joint GCRP/DCRP workgroup on RfG national application 28 Jan
- ECCAF 30 Jan discussed structural alternatives

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Other points in Commission Informal Draft

‘Boilerplate’ TSO Roles text not included – important for GB in particular

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- Meant to be included in each network code
- As agreed by ENTSO-E/ACER:

  “*In Member States where more than one transmission system operator exists, this Regulation shall apply to all transmission system operators within that Member State. Where a transmission system operator does not have a function relevant to one or some obligations under this Network Code, Member States may under the national regulatory regime provide that the responsibility to comply with one or some obligations under this Network Code is assigned to one or more different transmission system operators. In case of such assignment, the Network Code shall apply accordingly to the transmission system operator(s) to which responsibilities have been assigned.*”

- Words closest to this added in ‘Whereas’ section:

  (5) The allocation of tasks between Network Operators, as well as the legal framework under which they determine the grid connections requirements, are established in each Member State in accordance with its national legislation. TSOs granted public authority or competence according to national law may adopt decisions when defining requirements under this Network Code while respecting Directive 2009/72/EC.

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Article 7 removed

- Covered ability of member states to introduce or maintain legislation exceeding code requirements
- Removed – no obvious equivalents in code
- Still applicable by absence of any statement to the contrary…and in fact is stated directly in regulation 714/2009 (3rd package)

Type B fault ride through (art 9.3.3.a) requires tightening of 'secured event' definition

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Article 9

3 Type B Power Generating Modules shall fulfil the following requirements referring to robustness of Power Generating Modules :

3(a) With regard to fault-ride-through capability of Power Generating Modules:

*3(a)1 Power Generating Modules shall be capable of staying connected to the Network and continuing stable operation after the power system has been disturbed by **Secured Faults** in accordance with a voltage-against-time-profile at the Connection Point for fault conditions on the defined by the Relevant TSO respecting the provisions of Article 4(3).*

Suggested amendment to art 2 definition:

Was:

Secured Fault - is defined as a fault, which is successfully cleared by Network protection according to the Network Operator's planning criteria.

To read:

Secured Fault - is defined as a fault on the TSO's Network, which is successfully cleared by the TSO's Network protection according to the TSO's planning criteria.

Fault Ride Through – important drafting errors

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- Current GB requirement is 140ms (based on 3-ended protection clearance time). Little point exceeding this for new equipment
- 'Whereas' (5) however states a common range of 150-250ms
- Art 11 3(a) FRT for type D generators doesn't make sense. Suggest define directly rather than by exception.

3. *Type D Power Generating Modules shall fulfil the following requirements referring to robustness of Power Generating Modules:*

   (a) With regard to fault-ride-through capability of Power Generating Modules:

   (1) The Power generating Module shall be capable of operating in accordance with a voltage-against-time-profile shall be defined by the TSO, while respecting the provisions of Article 4(3)).

   The voltage-against-time-profile defined by the TSO shall be set using parameters in figure 3 according to tables 7.1 and 7.2. except for Power Generating Modules connected to the Transmission Network

   The voltage-against-time-profile defined by the TSO shall be set using parameters in figure 3 according to tables 3.1 and 3.2 except for Power Generating Modules connected to the Distribution Network

Offshore DC Connected Power Park Modules – need to be referenced

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- RfG applies to AC-connected offshore generation but not to DC-connected (non-synchronous).
- RfG should reference the HVDC code since this provides conditions applicable to DC connected offshore generation.

Article 51 Non Binding Guidance, Monitoring, On Implementation And Stakeholder Involvement

- New article
- ENTSO-E is supportive of the formation of a pan-European stakeholder committee as proposed
- ENTSO-E wishes 51(b) to be clarified to indicate that any monitoring role taken on by ENTSO-E is additional to and only complements that undertaken by ACER and NRAs.