
Connection Network Codes – Introduction to the public consultation of Implementation Guidance Documents

- Introduction -

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1. Introduction

Overview of connection codes

The European Connection Network Codes - [Requirements for Generators \(RfG\)](#), [Demand Connection Codes \(DCC\)](#) and [High Voltage Direct Current Connections \(HVDC\)](#) – have been developed in accordance with Regulation (EU) 714/2009 and are cornerstones to fulfil the third energy package.

The first connection network code, which entered into force on 17 May 2016, is the Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators (RfG). The Commission Regulations on DCC and HVDC followed after that - (EU) 2016/1388 of 17 August 2016 establishing a network code on demand connection (DCC), entering into force on 18 August 2016, and the Commission Regulation (EU) 2016/1447 of 26 August 2016 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (HVDC), entering into force on 8 September 2016 respectively.

In order to support the implementation of network codes at national level, and as required by the codes, ENTSO-E has produced non-binding guidance on implementation, which are also consulted by the stakeholders. This guidance is provided through so-called Implementation Guidance Documents (IGDs).

Legal background for IGDs

Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators (RfG), (Article 58), Commission Regulation (EU) 2016/1388 of 17 August 2016 establishing a network code on demand connection (DCC) (Article 56) and the Commission Regulation (EU) 2016/1447 of 26 August 2016 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (HVDC) (Article 75) – Non-binding guidance on implementation - stipulate:

- 1. No later than six months after the entry into force of this Regulation, the ENTSO for Electricity shall prepare and thereafter every two years provide non-binding written guidance to its members and other system operators concerning the elements of this Regulation requiring national decisions. The ENTSO for Electricity shall publish this guidance on its website.*
- 2. ENTSO for Electricity shall consult stakeholders when providing non-binding guidance.*
- 3. The non-binding guidance shall explain the technical issues, conditions and interdependencies which need to be considered when complying with the requirements of this Regulation at national level.*

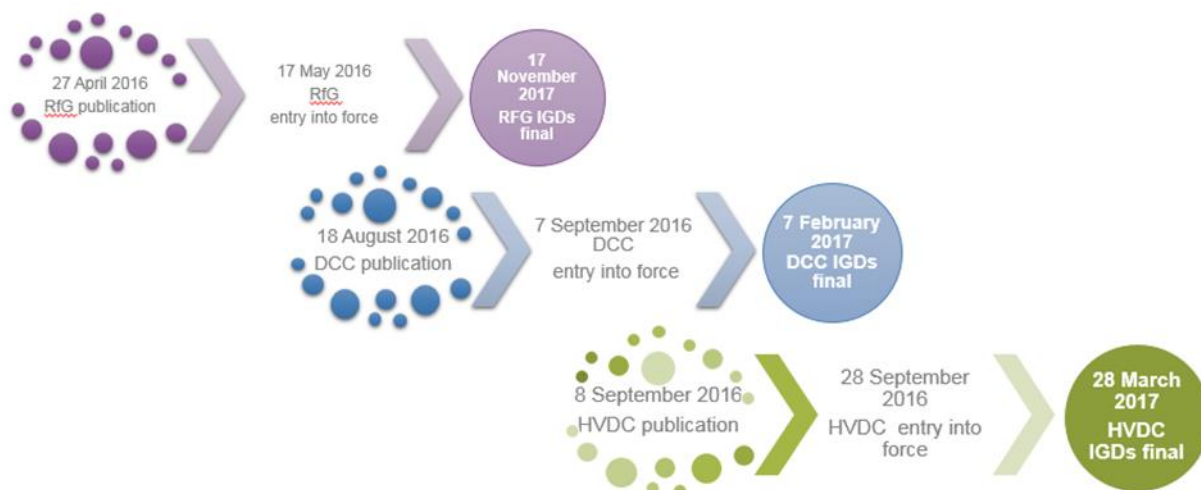


Figure 1: Timeline of adoption of connection network codes and deadlines for publishing different sets of IGDs.

Objectives of IGDs

The main objective of the implementation guidance is to support system operators in the process of determination on national level of non – exhaustive requirements during the national implementation. The objectives of the implementation guidance documents are:

- to facilitate a common understanding of technical issues specified in the connection network codes, in context of new technologies and new requirements (e.g. synthetic inertia)
- to deliver broader explanations and background information and to illustrate interactions between requirements,
- to recommend coordination/collaboration between network operators (TSO) where either explicitly required by the connection codes or reasonably exercised from a system engineering perspective,
- to give guidance to national specifications for non-exhaustive requirements, and
- to express the need of further harmonisation beyond what is requested by the CNCs when reasonable from a system engineering perspective.

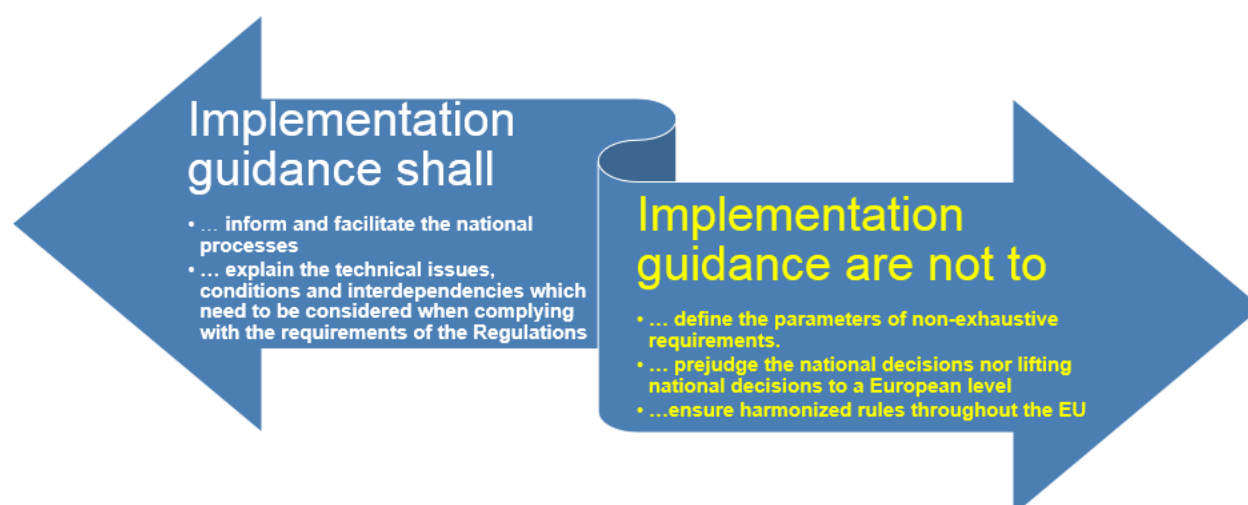


Figure 2: Scope of IGDs

Target audiences

IGDs are written for TSO staff who works and applies different connection codes.

How have IGDs been drafted?

The IGDs were drafted by ENTSO-E experts taking account of the input received from stakeholders during the process as follows:

- [23 September 2015 workshop](#) - stakeholders were informed of the intent to draft IGDs and gave their initial views on how they saw this being accomplished. They wished to be strongly involved in the process. Consequently ENTSO-E organised ahead of the entry into force of the codes:
- A [survey on Stakeholders' priority](#) issues for IGDs. This survey took place between 25 December 2015 and 22 January 2016. As a result ENTSO-E has taken on board further topics for IGDs. The outcomes of the survey were presented in the workshop on 29 February 2016.
- A [public stakeholder workshop on 29 February 2016](#) with the objective of defining the content of IGDs to address each of the priority issues previously identified. The outcomes can be accessed on the event site.
- [1 July – 15 August 2016](#) – ENTSO-E publishes draft IGDs for consultation from the RfG perspective. The [comments received](#) supported the update of the IGDs which ENTSO-E published on 17 November 2016 according to the RfG regulation.
- A [public stakeholder workshop on 13 September 2016](#) aimed at checking the ENTSO-Es understanding of the stakeholders' consultation comments and to gather additional feasible suggestions.
- [8 December 2016 – 16 January 2017](#) - consultation of the updated IGDs from the DCC and HVDC perspective. The [outcomes](#) of this second consultation further enhanced the IGDs and ENTSO-E published these new/updated IGDs on March 8.

- Regular input and updates from stakeholders on their expectations for the IGDs and regular updates on the next steps within the European [Connection codes Stakeholder committee](#).

The IGDs were drafted from a topic perspective and therefore most of them cover more than one connection code simultaneously.

ENTSO-E experts have committed to proceed to the drafting of new IGDs or to improve the current ones in order to support the process of implementation of all the NCs.

Similar process regarding stakeholder involvement and consultations is followed for any new or updated IGDs that is produced beyond the legally required period of 6 months.

ENTSO-E has already conducted a public consultation for a set of four IGDs (one new and three updates) in [April](#) and recently a consultation on 5 new and 3 updated IGDs on frequency related parameters (November to December 2017) – where final outcomes will be available in January 2018.

2. Implementation Guidance Documents on Cost Benefit Analysis

The current IGD has been prepared by an Expert Group which was formed and kicked off its work in April 2017 as a result of a relevant [public workshop](#) that took place in March 2017. The Terms of Reference of this Expert Group as well as the type of stakeholders that have worked on this draft can be found [here](#). The IGD is an updated version of an IGD that was published in November 2016.

How to respond to this consultation?

ENTSO-E has prepared the consultation in a transparent and open manner. When drafting the IGD, the expectations of the relevant stakeholders being involved in the respective Expert Group have been taken into consideration.

The current IGD consultation is scheduled as follows:

29 January 2018 – 2 March 2018 – ENTSO-E publishes one (1) draft IGD for consultation. The comments received will support the finalization of the IGD.

3. List of Implementation Guidance Documents on Frequency Stability Parameters

Style of IGD

The IGD was developed in an easy to read and short format and focus on the most relevant information. The IGD includes information on the legal framework (Codes & Articles), objectives of the IGD, interdependencies between/in the codes, system and technology characteristics, further information, and recommendations on collaboration between the system operators at different levels and between them and grid users.

List of IGDs

No	Titles of IGD	Status	Short descriptions
1	Cost Benefit Analysis	Update	This Guidance Document provides general methodological principles and examples in order to guide Member States in the application of

		<p>the Connection Network Code (CNC) provisions related to the CBA process.</p> <p>This IGD aims to facilitate and to harmonize the elaboration of a detailed CBA methodology to be applied when necessary within the remit of the NC RfG, NC DCC and NC HVDC national implementation processes.</p> <p>It addresses fundamental methodological principles and the main steps of a cost-benefit analysis to be applied to assess potential monetary impacts of retrospective applications of or derogations from DCC, HVDC and RfG CNC requirements for grid connection.</p> <p>As this process applies to a variety of cases explained below each Member State remains free to provide more detailed and appropriate methodological provisions at national level, in order to take into account all the typology of cases to be encountered, and to account for the wide variation in users' equipment, configurations or scenarios that could be subject to any assessment.</p> <p>Note that not all impacts are easily monetized. In this case a different type of analysis (multi-criteria assessment - MCA) can be performed. It allows multiple indicators (including non-monetary ones) to be taken into account also considering relative priorities. If applying a MCA, special care should be taken to avoid double counting of costs or benefits.</p> <p>Some illustrative examples of particular CBA settings are also addressed noting the need for pragmatism and that any example will probably be specific to the application and should not be treated as a gold standard.</p> <p>Where text is quoted from RfG, please note that to keep the document to a reasonable length, where similar provisions exist in DCC and HVDC these are referenced but not quoted.</p>
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