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European Union Agency for the Cooperation
of Energy Regulators

Implementation Monitoring Report of the Network Code on Demand Connection and of the Network Code on Requirements for Grid Connection of High Voltage Direct Current Systems and Direct Current-Connected Power Park Modules

Second edition

December 2020

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1. Purpose, scope and data

1.1 Purpose of the report

- (1) This is the second Implementation Monitoring Report ('the Report') presenting the progress towards:
 - a. the implementation of Commission Regulation (EU) 2016/1388 of 17 August 2016, establishing a Network Code on Demand Connection ('NC DC'), and
 - b. the implementation of 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 ('NC HVDC').
- (2) Article 32(1) of Regulation (EU) No. 2019/943¹ requires the Agency for the Cooperation of Energy Regulators ('ACER') to monitor and analyse the implementation of the Network Codes and the Guidelines adopted by the European Commission ('EC'). Furthermore, ACER shall monitor their effect on the harmonisation of applicable rules aimed at facilitating market integration, as well as on non-discrimination, effective competition and the effective functioning of the market, and report to the EC.
- (3) The primary purpose of the Report is to fulfil the above-mentioned legal obligation. The Report further aims at:
 - identifying potential challenges in implementing the NC DC and NC HVDC and
 - recommending concrete actions and best practices that can lead to a more efficient implementation.

1.2 Scope

- (4) The majority of the provisions contained in the NC DC and the NC HVDC entered into application on 18 August 2019 and 8 September 2019, respectively. Nevertheless, several provisions² applied before August 2019. Hence, at the date of publication of the Report, all the provisions set in both the NC DC and NC HVDC apply.
- (5) The scope of this Report covers the following areas:
 - The implementation of provisions of the NC DC to all the relevant users in the scope of application, based on their classification as *existing* or *new*, pursuant to Article 4 of the NC DC (Section 3 of the Report). For the sake of brevity in this Report,
 - the transmission-connected demand facilities,
 - the transmission-connected distribution facilities,

¹ Article 32(1), Regulation (EU) 2019/943 of the European Parliament and the Council of Europe, of 5 June 2019, on the internal market for electricity. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0943>

² Articles 4(2)(b), 6, 51, 56 and 57 of the NC DC and Articles 4(2)(b), 5, 75, 76 and of NC HVDC.

- the systems, including closed distribution systems, and,
- the demand units, used by a demand facility or a closed distribution system to provide demand response services to relevant system operators and relevant TSOs,

which are in the scope of application of the NC DC in accordance with Article 3(1) of the NC DC are all referred to as '**demand systems**';

- The implementation of the provisions of the NC HVDC to all the relevant users in the scope of application, based on their classification as *existing* or *new*, pursuant to Article 4 of the NC HVDC (Section 3 of the Report). For the sake of brevity in this Report, the system users listed in Article 3(1) of the NC HVDC,
 - The HVDC systems connecting synchronous areas or control areas, including back-to-back schemes,
 - The HVDC systems connecting power park modules to a transmission network or a distribution network,
 - the embedded HVDC systems within one control area and connected to the transmission network,
 - the embedded HVDC systems within one control area and connected to the distribution network when a cross-border impact is demonstrated by the relevant TSO,

and the system users in Article 3(2) of the NC HVDC,

- DC-connected power park modules with a single connection point to a transmission network or distribution network which is not part of a synchronous area for approval in accordance with Article 5, and
- all other power park modules which are AC-collected but are DC-connected to a synchronous area are considered DC-connected power park modules,

are all referred as to as '**HVDC-connected systems**';

- The establishment of requirements of general application, pursuant to Article 6, Article 9 and Title II of the NC DC, as well as pursuant to Article 5 and Title II of the NC HVDC (Section 4 of the Report);
 - The implementation of the interim notification procedure, pursuant to Article 24 of the NC DC and Articles 57 and 62 of the NC HVDC (Section 5 of the Report);
 - The amendments of contracts and general terms and conditions, pursuant to Article 58(1) of the NC DC and Article 84(1) of the NC HVDC (Section 6 of the Report).
- (6) The first edition of the Implementation Monitoring Report on the NC DC and NC HVDC³ was published on 2 August 2018. Its focus was the status of the implementation of the specific

³ European Union Agency for the Cooperation of Energy Regulators, 2018: "*Demand connection NC and requirements for grid connection NC*". Available at:

https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Demand%20connection%20NC%20and%20Requirements%20for%20grid%20connection%20NC.pdf

provisions of the NC DC and NC HVDC that were due to be implemented by mid-2018. Specifically,

- the non-binding guidance on implementation (as provided for by Article 56 of the NC DC and Article 75 of the NC HVDC),
- the list of the relevant information for implementation monitoring (as provided for by Article 57(2) of the NC DC and Article 76(2) of the NC HVDC), and
- the criteria for granting derogations (as provided for by Article 51(1) of the NC DC and Article 78(1) of the NC HVDC).

1.3 Data

- (7) In order to perform the task of monitoring the NC DC and NC HVDC implementations, ACER asked 28 National Regulatory Authorities ('NRAs') to fill in a questionnaire, which was circulated on 19 December 2019 through the ACER Electricity Working Group⁴ mailing list. The questionnaire included detailed questions on the implementation of specific and general provisions related to the areas described above in the Scope and concerning both the NC DC and NC HVDC.
- (8) Among the 28 NRAs, 25 NRAs are from the EU. These are⁵: E-Control (AT), CREG (BE), EWRC (BG), ERO (CZ), BNetzA (DE), DUR (DK), ECA (EE), CNMC (ES), EV (FI), CRE (FR), RAE (GR), HERA (HR), HEA (HU), CRU (IE), ARERA (IT), NERC (LT), IRL (LU), PUC (LV), ACM (NL), URE (PL), ERSE (PT), ANRE (RO), Ei (SE), AGEN-RS (SI) and RONI (SK).
- (9) The Report at this point does not cover Cyprus and Malta. In the case of Cyprus, it has to be noted that the NC DC and NC HVDC do not apply to demand systems and HVDC-connected systems connected to the transmission system and distribution systems, or to parts of the transmission system or distribution systems, of islands of Member States ('MSs') of which the systems are not operated synchronously with either the Continental Europe, Great Britain, Nordic, Ireland and Northern Ireland or Baltic synchronous area.
- (10) The questionnaire was sent also to non-EU countries (United Kingdom). In the case of the United Kingdom, the questionnaire was sent to both the Utility Regulator (UR), regulating the electricity, gas, water and sewerage industries in Northern Ireland (UK-NIR), and Ofgem, the independent NRA, regulating the electricity and gas sectors in Great Britain (GB).
- (11) The questionnaire was also sent to NVE-RME, the Norwegian NRA. Norway is an EEA member country, and the process of incorporating the NC DC and the NC HVDC into the EEA Agreement is not completed and the act has therefore not yet been implemented in Norwegian law.
- (12) NRAs were given a few opportunities to amend and update their input to the questionnaire with the cut-off date of 4 December 2020. All contacted NRAs provided replies to the questionnaire with the exception of NVE-RME (NO) and EWRC (BG).

⁴ https://www.acer.europa.eu/en/The_agency/Organisation/Working_groups/Pages/default.aspx

⁵ The complete list of abbreviation & country codes is in Annex III.

- (13) Finally, the results presented in the Report and the arising conclusions are based on the replies to the questionnaire as provided by the NRAs. With regard to the discussion in Section 4.7.1, ACER has integrated the answer provided by CRU (IE) with the consultation of the Grid Code⁶ in IE.

1.3.1 Additional information on the data relevant to the NC HVDC

- (14) HVDC-connected systems are not currently present in all the MSs of the EU. Depending on several factors, this situation may or may not change in future. This introductory section facilitates the interpretation of the answers provided by certain NRAs with regard to the NC HVDC. In fact, this section deals with the approaches towards the implementation of the provisions of the NC HVDC followed by different NRAs/MSs where no HVDC-connected systems are currently present or expected to be connected in future.
- (15) Hence, it is worth pointing out that the answers to the circulated questionnaire provided by E-Control (AT) and ILR (LU) refer only to the NC DC. In particular, E-Control (AT) reported that instead of submitting a proposal for the requirements of general application for HVDC-connected systems, system operators provided a letter stating that HVDC infrastructures are not existent and even not planned in AT. Similarly, ILR (LU) communicated to ACER that no answers were provided with regard to the NC HVDC. This is due to the fact that there are no HVDC links currently connected to the network in LU and no projects are envisaged in future.
- (16) Moreover, ERSE (PT) reported that the requirements of general application for the NC HVDC have been implemented as a guidance reference in PT. As supporting motivation, ERSE (PT) highlighted the uniqueness of this type of systems, their constant technological evolution and the current/future lack of HVDC-connected systems connected to the Portuguese network. The formal definition of relevant requirements will be carried out on a case-by-case basis and adjusted, if necessary, to the specificity of the future projects.
- (17) A different approach is undertaken in SK. RONI (SK) reported that the requirements of general application of the NC HVDC have been actually established, although the relevant Transmission System Operator ('TSO') does not currently operate such lines or plans to do so in future. A similar approach can be registered in CZ, GR,⁷ HR, LV and RO.

2. Conclusions and recommendations

- (18) In the light of the analysis performed for this Report, ACER has come to the following conclusions and recommendations:

⁶ Available at: <http://www.eirgridgroup.com/site-files/library/EirGrid/Grid-Code.pdf>

⁷ RAE (GR) reported that there is no existing HVDC system in Greece at the moment. The first HVDC system is expected to be commissioned by 2023 (internal subsea connection between Attica and island of Crete). Moreover, RAE (GR) does not consider the HVDC link between IT and GR as part of the Greek transmission system since it is owned by the Italian transmission system operator (TERNA).

(a) The implementation of the NC DC and NC HVDC is well on track...

- (19) ACER considers that the provisions established in Article 4(2) of the NC DC and Article 4(2) of the NC HVDC, concerning the definition of existing or new system users have been well implemented. The majority of the NRAs responding to the questionnaire confirmed that the deadlines⁸ and requirements in Article 4(2)(a)-(b) of the NC DC and in Article 4(2)(a)-(b) of the NC HVDC, have been implemented as indicated. ARERA (IT) and CREG (BE) communicated that decisions have been adopted in order to extend the deadlines envisaged in the abovementioned articles⁹.
- (20) ACER considers that the formal approval of the proposals for all the requirements of general application in accordance with Article 6(1) of the NC DC has been carried out by eighteen competent entities¹⁰. The implementation process consisted of two phases, i.e. the submission of the proposal for the requirements of general application from TSOs and relevant system operators and its approval by the competent entity. The implementation process has been performed timely in eight MSs¹¹ since the proposal and the corresponding decision were, respectively, submitted and taken by the specified deadlines¹² or with minor delays¹³. Further delays have been registered during the phase of approval of the requirements in eight¹⁴ MSs and in both phases in GR¹⁵ and CZ¹⁶.
- (21) Furthermore, it is worth pointing out that the competent entities in DE, LU, PL and SE have issued partial decisions since not all the requirements of general application were included in the proposals by TSOs/relevant system operators or were approved by the competent entities¹⁷.
- (22) ACER considers that the formal approval of the proposals for all the requirements of general application in accordance with Article 5(1) of the NC HVDC has been carried out by twenty competent entities¹⁸. The implementation process consisted of two phases, i.e. the submission of the proposal for the requirements of general application from TSOs and relevant system

⁸ With regard to the NC DC, a demand system already connected to the network before 7 September 2016 is existing (Article 4(2)(a)). Alternatively (Article 4(2)(b)), a demand system is still considered existing if a final and binding contract concerning the purchase of the main demand equipment or the demand unit has been concluded by 7 September 2018. With regard to the NC HVDC, a HVDC system already connected to the network before 28 September 2016 is existing (Article 4(2)(a)). Alternatively (Article 4(2)(b)), a HVDC system is still considered existing if the a final and binding contract concerning the purchase of the main generating plant or HVDC equipment has been concluded by 28 September 2018.

⁹ Details on the decisions are provided in Section 3.4. With regard to BE, the decision concerns connections at regional level (i.e. the voltage level at the point of connection is equal or lower than 70 kV).

¹⁰ In AT, BE, CZ, DK, EE, FI, FR, GR, GB, HR, HU, IE, IT, LT, LV, RO, SI and SK.

¹¹ In EE, FI, GB, HU, IT, LT, SK and SI.

¹² In accordance with Article 6 of the NC DC.

¹³ Within 30 days after the envisaged deadlines.

¹⁴ AT, BE, HR, IE, DK, LV, RO and FR.

¹⁵ Additional considerations concerning the timeline of the submission of the proposals for the requirements of general application of the NC DC in GR are in Section 4.2.1, paragraph 102.

¹⁶ Additional information concerning the implementation of the requirements of general application of NC DC in CZ are in Sections 4.2.1 and 4.3.1, paragraphs 102 and 133 respectively. It is worth noting that the delays only regarded the late submission and approval of the requirements of general application proposed by relevant system operators.

¹⁷ Further details on the missing requirements are in Section 4.2.1, Section 4.3.1 and Section 4.9.

¹⁸ In BE, CZ, DE, DK, EE, FI, FR, GB, GR, HR, HU, IE, IT, LT, LV, NL, PL, RO, SI and SK.

operators and its approval from competent entity. The implementation process has been performed timely in seven MSs¹⁹ since the proposal and the corresponding decision were, respectively, submitted and taken by the specified deadlines²⁰ or with minor delays²¹. Further delays have been registered during the phase of submission of the proposals in FI, during the phase of approval of the requirements in nine²² MSs and in both phases in IE, GR²³ and CZ²⁴.

- (23) It is worth pointing out that Ei (SE) has issued a partial decision since not all the requirements of general application were included in the proposals by TSOs/relevant system operators²⁵.
- (24) As reported by the vast majority of the NRAs responding to the questionnaire, the implementation of Article 6 of the NC DC and Article 5 of the NC HVDC was accompanied by public consultations and an active coordination between TSOs and Distribution System Operators ('DSOs')²⁶, which also acted as an effective measure to ensure the transparency during the implementation process²⁷.
- (25) The implementation of the requirements of general application has been performed in full alignment with the provisions in the NC DC and NC HVDC. In particular, at the end of the implementation process, none of the approved requirements of general application happens to be stricter/looser than the most/least onerous related threshold (as established in the NC DC and NC HVDC)²⁸. This was confirmed by the answers received from the majority of the responding NRAs²⁹.
- (26) ACER monitored the implementation of Article 24 of the NC DC and Articles 57 and 62 of the NC HVDC concerning the Interim Operational Notification ('ION') issued by the relevant TSO and allowing the prospective system users to make use of the grid connection for a limited

¹⁹ In EE, GB, HU, IT, PL, SI and SK.

²⁰ In accordance with Article 5 of the NC HVDC.

²¹ Within 30 days after the envisaged deadlines.

²² BE, DE, DK, FR, HR, LT, LV, NL, and RO.

²³ Additional considerations concerning the timeline of the submission of the proposals for the requirements of general application of the NC HVDC in GR are in Section 4.2.2, paragraph 110.

²⁴ Additional information concerning the implementation of the requirements of general application of NC HVDC in CZ are in Sections 4.2.2 and 4.3.2, paragraphs 109 and 139 respectively. It is worth noting that the delays only regarded the late submission and approval of the requirements of general application proposed by relevant system operators.

²⁵ Ei (SE) reported that around forty parameters have not been included in the submitted proposals.

²⁶ And in general between relevant stakeholders.

²⁷ These actions have been performed in accordance with Article 6(3)(b),(e) and Article 9(d) of the NC DC and with Article 5(3)(b),(e) of the NC HVDC.

²⁸ Moreover, there are no additional binding requirements that refer to a range of values beyond the maximum/minimum thresholds defined in the NC DC and NC HVDC. Finally, no additional requirements concerning voltage/frequency (thus different from those included in the NC DC and NC HVDC) have been implemented in the national regulations.

²⁹ CREG (BE), ERO (CZ) only with regard to the NC HVDC, BNetzA (DE), DUR (DK), ECA (EE) only with regard to the NC DC, CNMC (ES), EV (FI), CRE (FR), Ofgem (GB), RAE (GR), UR (UK-NIR) only with regard to the NC HVDC, HERA (HR), HEA (HU), ARERA (IT), NERC (LT), IRL (LU), PUC (LV), ACM (NL), URE (PL), ERSE (PT), ANRE (RO), Ei (SE), AGEN-RS (SI) and RONI (SK). Given the information received by RAE (GR), ACER cannot ascertain the level of alignment between the requirements of general applications approved in GR and those in the relevant NCs.

period of time. The analysis of the answers included in the questionnaire revealed that the implementation of these articles is well on track in most of the cases³⁰.

- (27) Moreover, ACER highlights the positive implementation³¹ of the requirements relating to the compliance testing³² of new system users in absence of equipment certificates.
- (28) Finally, the implementation of Article 58(1) of the NC DC and Article 84(1) of the NC HVDC concerning the amendments of contracts and general terms and conditions is well on track according to 21 of the 26 responding NRAs. All relevant clauses in contracts and general terms and conditions relating to the grid connection of new demand systems (for the NC DC) and new HVDC-connected systems (for the NC HVDC) are brought into compliance with the requirements of the relevant regulations.

(b) ...but full implementation is still pending

- (29) ACER highlights that the situation analysed through the collected answers does not portray a complete EU-wide implementation of the NC DC and NC HVDC.
- (30) Most of the TSOs and/or relevant system operators have now submitted to the relevant NRAs (or the entities designated by the MS³³) and made publicly available the implementation proposals of the NC DC and NC HVDC. However, as reported by several NRAs³⁴, the requirements of general application have not been approved yet or formal approvals do not include the full scope of the envisaged requirements. In addition, TSOs and/or relevant system operators in AT and LU have not submitted the requirements of general application concerning the NC HVDC. The formal approval is therefore still pending.
- (31) ACER has not received feedback from EWRC (BG), which leads ACER reasonably to assume that the status of the implementation of the NC DC and NC HVDC in this MS might be still pending.
- (32) The late or still pending establishment of the requirements of general application may not facilitate the implementation of a fully harmonised set of rules for grid connection of relevant system users. The lack of harmonisation of applicable rules and/or incomplete implementation in some MSs may in turn affect the EU-wide market integration, as well as the non-discrimination, the effective competition and functioning of the market, and prevent an efficient use of the network and resources.
- (33) The adoption of harmonised rules is thus crucial to maintaining security of energy supply, increasing competitiveness and ensuring that all consumers can purchase energy at

³⁰ Among the responding NRAs, only UR (UK-NIR) did not provide relevant information, while CRE (FR) did not answer the question.

³¹ As reported by E-Control (AT), CREG (BE), ERO (CZ), BNetzA (DE), ECA (EE), CNMC (ES), DUR (DK), EV (FI), RA E (GR), CRU (IE), Ofgem (GB), NERC (LT), PUC (LV), ARERA (IT), URE (PL), ANRE (RO) and RONI (SK).

³² The provisions concerning the compliance testing for demand systems are in Chapter 2 of Title IV of the NC DC. The corresponding provisions for the case of HVDC-connected systems are in Chapter 2 of Title VI of the NC HVDC.

³³ In accordance with Article 6(1) of the NC DC and Article 5(1) of the NC HVDC.

³⁴ BNetzA (DE), CNMC (ES), CRU (IE), ILR (LU), UR (UK-NIR), ACM (NL), URE (PL), ERSE (PT) and Ei (SE).

affordable prices (e.g. avoiding high manufacturing costs due to a larger variety of similar products).

- (34) In general, since the requirements of the NC DC are fully applicable since 7 September 2019 and the requirements of the NC HVDC are fully applicable since 28 September 2019, ACER urges a prompt implementation of the requirements of general application in those MSs where the process is still incomplete.
- (35) **Therefore, ACER recommends NRAs to perform³⁵ or promote³⁶ an expeditious implementation of the NC DC and NC HVDC.** For example, although NRAs might not always represent the entities designated by the MSs to approve and implement the provisions in Articles 6 of the NC DC and Article 5 of the NC HVDC, it is still the NRAs' duty to ensure that relevant system operators and TSOs comply with the NC DC and NC HVDC, respectively³⁷.
- (36) The criteria to define the extent of the modernisation of a demand/HVDC system or the replacement of equipment impacting the technical capabilities of the demand/HVDC system are important aspects in Article 4(1) of the NC DC and Article 4(1) of the NC HVDC, respectively. **ACER deems a publicly available definition of these criteria³⁸ to be beneficial for the implementation of the NC DC and HVDC**, although Article 4(1) of the NC DC and Article 4(1) of the NC HVDC do not mandate the issue of formal decisions from the competent authorities.
- (37) In this context, only four NRAs (BNetzA (DE), CRE (FR), HERA (HR) and AGEN-RS (SI)) reported the adoption of qualitative criteria determining the level of modernisation of a system user or the level of equipment replacement that leads to a revision/new connection agreement. In addition, only BNetzA (DE) and CRE (FR) could confirm the development of quantitative criteria. A case-by-case approach has been adopted by ARERA (IT), RAE (GR), NERC (LT), ILR (LU), PUC (LV), Ei (SE) and RONI (SK) when deciding on specific system users to be determined as new or existing system users. In addition, five other NRAs (CREG (BE), CNMC (ES), UR (UK-NIR), CRU (IE) and ERSE (PT)) highlighted the ongoing definition of qualitative criteria. Among these, CREG (BE), CNMC (ES), and ERSE (PT) reported the ongoing definition of quantitative criteria.
- (38) **ACER considers that the status of implementation of the requirements of general application in accordance with Article 6(1) of the NC DC is still pending, although up to different extents, in BG, ES, UK-NIR, IE, NL and PT.** A partial approval is reported in UK-NIR. The approval has not been reached yet in ES, NL, PT although the proposals for the requirements of general application have been submitted by the TSO/relevant system operators. The status of the implementation of Article 6 of the NC DC for BG is laid out in paragraph (31) above.

³⁵ In those MSs where the NRAs are the entities designated to approve the proposals and implement the requirements of the NC DC and NC HVDC.

³⁶ In those MSs where NRAs are not the designated entities to approve the proposals and implement the requirements of the NC DC and NC HVDC.

³⁷ Directive (EU) 2019/944 of the European Parliament and of The Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (<https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32019L0944>).

³⁸ Adopting qualitative and/or quantitative methods.

- (39) **ACER considers that the status of implementation of the requirements of general application in accordance with Article 5(1) of the NC HVDC is still outstanding, although up to different extents, in AT, BG, ES, UK-NIR, IE, LU and PT.** A partial approval is reported in UK-NIR. The approval has not been reached yet in ES and PT although the proposals for the requirements of general application have been submitted by the TSO/relevant system operators. Instead, E-Control (AT) and ILR (LU) have not issued a decision since the proposals have not been submitted yet (and are not planned to be in near future) from the TSO/relevant system operators. The status of the implementation of Article 5 of the NC HVDC for BG is laid out in paragraph (31) above.
- (40) The implementation of the set of rules in the NC HVDC is necessary to establish a clear regulatory regime, which could be employed by prospective third party promoters. The lack of applicable rules in one or more MSs prevents the formation of a harmonised EU-wide regulatory framework, which in turn causes negative effects on the integration, competition and functioning of the market. In this context, **ACER recommends E-Control (AT), ILR (LU) and ERSE (PT) to ensure the compliance³⁹ of the relevant system operators in their MSs concerning the connection rules prescribed in the NC HVDC regarding the relevant system users.**
- (41) Three NRAs confirmed that the implementation of some of the requirements of general application differs from what is foreseen in the NC DC and/or in the NC HVDC⁴⁰, while four NRAs confirmed the implementation of additional requirements to those included in the NC DC and/or in the NC HVDC⁴¹. The most recurrent issues concern frequency/voltage-related parameters and in particular the width of the interval of values for which certain capabilities apply.
- (42) ACER highlights that the connection to the network shall not be withheld to prospective system users which comply with the requirements and capabilities in the NC DC and in the NC HVDC, although the compliance with requirements included only in national regulations⁴² is not demonstrated. As interim solutions concerning the application of wider frequency ranges or longer minimum times for operation, TSOs can apply Article 12(2) of the NC DC and Articles 11(2) or 39(2)(b) of the NC HVDC, which allow case-by-case agreements between the TSO and the relevant system users on specific additional requirements. It is worth noting the site-specific nature of these provisions since they necessitate an agreement between the TSO and the owner of the demand/HVDC system. In other words, these provisions do not allow the TSO to extend the application of wider frequency ranges or longer minimum times for operation to all the relevant system users. As long-term solutions, NRAs, TSOs and relevant

³⁹ In accordance with Article 59(1)(b) of DIRECTIVE (EU) 2019/944 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast)

⁴⁰ UR (UK-NIR) with regard to the NC DC only, ECA (EE) and CRU (IE) with regard to the NC HVDC only. For completeness, the answer provided by CRU (IE) only elaborated on the NC DC. ACER has also ascertained deviations from prescribed parameters in the NC HVDC by consulting the EirGrid Grid Code available at <http://www.eirgridgroup.com/site-files/library/EirGrid/Grid-Code.pdf>.

⁴¹ E-Control (AT), ERO (CZ), CRU (IE) and UR (UK-NIR).

⁴² In accordance with the Precedence of European law

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3A114548>.

system operators could rise requests for amendments of the NC DC and HVDC⁴³. These should be coordinated with the European Network of Transmission System Operators for Electricity (ENTSO-E) and/or the European Commission.

- (43) Considering the answers received by the responding NRAs, **ACER points out that the implementation of Article 24 of the NC DC and Articles 57 and 62 of the NC HVDC concerning the Interim Operational Notification ('ION') issued by the relevant TSO is still pending in UK-NIR and FR.**
- (44) Similarly, **the status of the implementation of the provisions concerning the compliance testing⁴⁴ for demand and HVDC-connected systems is still pending in SE, SI, FR, PT, LU, HU, UK-NIR and HR.**
- (45) Finally, **the implementation of Article 58(1) of the NC DC and Article 84(1) of the NC HVDC, concerning the amendments of contracts and general terms and conditions, is still pending in BE, FR, ES, SE and PT.**

⁴³ E.g. in order to extend binding requirements on wider frequency ranges in IE.

⁴⁴ Chapter 2 of Title IV for the NC DC and Chapter 2 of Title VI for the NC HVDC.

3. Defining new or existing demand systems and HVDC-connected systems

3.1 Objectives

- (47) Pursuant to Article 4(1) of the NC DC, existing demand systems are not subject to the requirements of the NC DC. This also applies⁴⁵ to existing HVDC-connected systems concerning the NC HVDC. Nevertheless, some exemptions arise; under certain circumstances, existing demand systems or HDVC systems may be subject to some or all the provisions of the NC DC and NC HVDC, respectively.
- (48) For example, certain existing demand systems⁴⁶ or an existing HVDC system may have undergone modernisation procedures or replacement of the equipment impacting their technical capabilities. In these cases, following an initial assessment of the relevant system operator (Article 4(1)(a)(ii) of the NC DC and NC HVDC) and in turn a decision of the NRA⁴⁷ (Article 4(1)(a)(iii) of the NC DC and NC HVDC), these existing systems may be requested to revise the existing connection agreement or stipulate a new one and to respect certain requirements of the corresponding network codes.
- (49) Alternatively, following a public consultation in accordance with Article 9 of the NC DC and Article 8 of the NC HVDC and in order to address significant factual changes in circumstances, the relevant TSO may propose to the relevant NRA (or where applicable, to the MS) to extend the application of the network codes to existing demand systems and/or HVDC-connected systems. Comprehensive information on the modalities of such procedure are provided in paragraphs 3, 4 and 5 of Article 4 of the NC DC and in paragraphs 3, 4 and 5 of Article 4 of the NC HVDC.
- (50) Furthermore, in order to be considered as existing, a demand system had to be connected to the network by 7 September 2016, the date of entry into force of the NC DC (Article 4(2)(a) of the NC DC). Moreover, as specified in Article 4(2)(b) of the NC DC, a demand system connected to the network after the entry into force of the NC DC may still be considered as existing if a final and binding contract for the purchase of the main demand equipment or the demand unit has been concluded by two years after the entry into force of the NC DC (7 September 2018).
- (51) Following a similar framework, a HVDC system connected to the network by 28 September 2016 shall be considered as existing (Article 4(2)(a) of the NC HVDC). A HVDC system is also considered as existing in case a HVDC system owner has concluded a final and binding contract for the purchase of the main generating plant or HVDC equipment by two years after the entry into force of the NC HVDC (28 September 2018). This provision refers to Article 4(2)(b) of the NC HVDC.

⁴⁵ Pursuant to Article 4(1) of the NC HVDC.

⁴⁶ E.g. an existing transmission-connected demand facility, an existing transmission-connected distribution facility, an existing distribution system, or an existing demand unit within a demand facility at a voltage level above 1 000 V or a closed distribution system connected at a voltage level above 1 000 V.

⁴⁷ Or where applicable the MS.

- (52) All the demand systems and HVDC-connected systems for which the relevant clauses above do not apply are to be considered as new demand systems or HVDC-connected systems and therefore within the scope of application of the NC DC or NC HVDC, respectively.
- (53) Finally, the last paragraph of Article 4(2) of the NC DC still allows the MS to let the NRA determine whether a demand system is to be considered as existing or new. The same provision is envisaged in Article 4(2) of the NC HVDC concerning the HVDC-connected systems.
- (54) Concerning the classification of a demand system or a HVDC system as new or existing, ACER asked five questions. The first question concerned the connection rules for new demand systems or HVDC-connected systems if the requirements of general application concerning the relevant NC have not been established yet. The following three questions investigated the criteria adopted to determine the level of modernisation of a demand system and HVDC system or the level of replacement of the corresponding equipment. The last question focused on Article 4(2) of the NC DC and on Article 4(2) of the NC HVDC concerning the conclusion of a final and binding contract for the purchase of main demand equipment or unit (in case of the NC DC), or the main generating plant or HVDC equipment (in case of the NC HVDC).
- (55) The implementation of the provisions of Article 4 of the NC DC and of Article 4 of the NC HVDC is analysed in the continuation of this Section, while the set of NRAs' responses in full are included in Section 2 of Annex I.

3.2 Connection in absence of establishment of requirements of general application

- (56) ACER asked the NRAs about the set of rules that would apply to new connecting demand systems and HVDC-connected systems in case the requirements for general application of the corresponding NCs have not been adopted yet. In particular, the question aimed at assessing whether connecting demand systems or HVDC-connected systems have to comply with the old rules or wait for the establishment of new requirements. In this context, NRAs could:
- act within their powers concerning the determination of existing vs. new demand systems (last paragraph of Article 4(2) of the NC DC) and existing vs. new HVDC-connected systems (last paragraph of Article 4(2) of the NC HVDC) or,
 - explore, as per Article 50 of the NC DC or Article 77 of the NC HVDC, the possibility of granting demand systems or HVDC-connected systems derogations from one or more provisions listed in the NC DC or NC HVDC, respectively (including the requirements of general application, especially if these have not been formally established yet).
- (57) E-Control (AT) and ILR (LU) did not clarify the set of rules for connecting demand systems in case the requirements of general application were not approved yet⁴⁸. ACM (NL) stated that

⁴⁸ However, according to the information communicated by E-Control (AT) and ILR (LU) and included in Annex I, requirements of general application of the NC DC have been approved on 7 September 2019 and 21 March 2019, respectively.

no further rules have been considered for new connecting demand systems until the approval of the requirements of general application.

- (58) Since the requirements of general applications of both the NCs analysed have not been approved yet, CNMC (ES) explained that the Royal Decree 1955/2000 of 1 December on the Transmission, Distribution, Marketing, and Supply of Electricity and the Authorisation Procedure for Electricity Generation Plants currently applies. Ei (SE) is authorised to issue secondary legislation in accordance with the System Responsibilities for Electricity. The web links to the secondary legislations concerning the NC DC and NC HVDC are provided in Section 2 of Annex I.
- (59) HERA (HR) reported that the requirements of general application for the NC DC and NC HVDC are currently being implemented in the national grid codes. However, HERA (HR) does not indicate whether a different set of rules applies until the implementation process is concluded. A similar framework is reported by ERSE (PT).
- (60) CRE (FR) reported⁴⁹ the publication on 9 June 2020 of the ministerial order defining the requirements of general application and the criteria for modification of demand systems and HVDC-connected systems. To date, no HVDC-connected system is connected to the French network.
- (61) The rest of the responding⁵⁰ NRAs referred to the approval of the requirements of general application for the NC DC and/or for the NC HVDC as the set of rules for the connection of new demand systems and new HVDC-connected systems.

3.3 Modernisation / replacement of existing demand systems and HVDC-connected systems

- (62) This section deals with the answers to three questions concerning the definition of relevant criteria to determine up to which extent the modernisation of a plant or the replacement of a demand system's or HVDC system's equipment may require the revision of the connection agreement or the stipulation of a new one, pursuant to Article 4(1)(a) of the NC DC and NC HVDC, respectively.
- (63) The first question investigates the definition and adoption of qualitative criteria. The second inquires about the presence of quantitative measures. The last one concerns possible decisions reached by NRAs or MSs and that are relevant to the procedures laid down in Articles 4(1)(a)(iii) or 4(1)(b) of the NC DC and Articles 4(1)(a)(iii) or 4(1)(b) of the NC HVDC.

3.3.1 Qualitative criteria

- (64) Initially, NRAs have been asked to explain whether qualitative criteria, assessing the level of the modernisation or equipment replacement of demand systems or HVDC-connected systems, were present in the relevant MS.

⁴⁹ Additional information together with the web link to the ministerial order of 9 June 2020 are included in Section 1 of Annex I.

⁵⁰ i.e. excluding EWRC (BG) in accordance with paragraph 12 of Section 1.3.

- (65) As reported in Figure 1, the analysis of the collected answers revealed that four NRAs (BNetzA (DE), CRE (FR), HERA (HR) and AGEN-RS (SI)) have established qualitative criteria (green area in Figure 1). These deal with changes to relevant parameters such as the active power, the nominal voltage at the connection point, the power ratings of the equipment replaced (including the transformer(s)). Moreover, BNetzA (DE) and HERA (HR) have specified that these criteria pertain only to the NC DC.
- (66) Moreover, five other NRAs (CREG (BE), CNMC (ES), UR (UK-NIR), CRU (IE) and ERSE (PT)) reported that the definition of qualitative criteria is in progress or already completed but awaiting full implementation (blue area in Figure 1).
- (67) In addition, seventeen NRAs⁵¹ have not defined or adopted any qualitative criteria. However, some of these NRAs i.e. ARERA (IT), RAE (GR), NERC (LT), IRL (LU), PUC (LV), Ei (SE) and RONI (SK) confirmed that the evaluation of the level of modernisation or equipment replacement can still proceed on a case-by-case basis (grey area in Figure 1).
- (68) Finally, EWRC (BG) did not reply to the questionnaire or provided an answer relevant to the adoption of qualitative criteria. ACER reasonably assumes that the definition and adoption of these criteria is still pending in BG (red area in Figure 1).

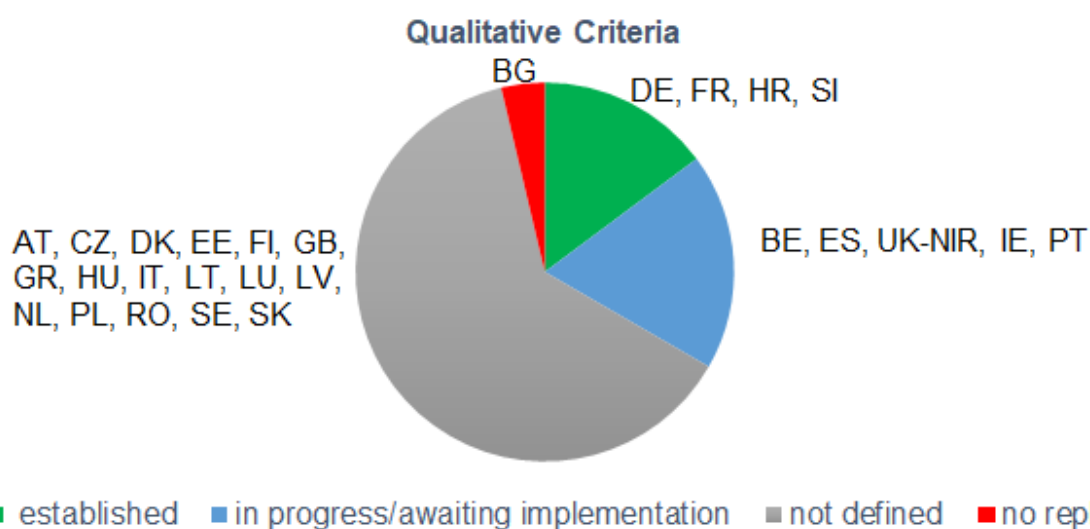


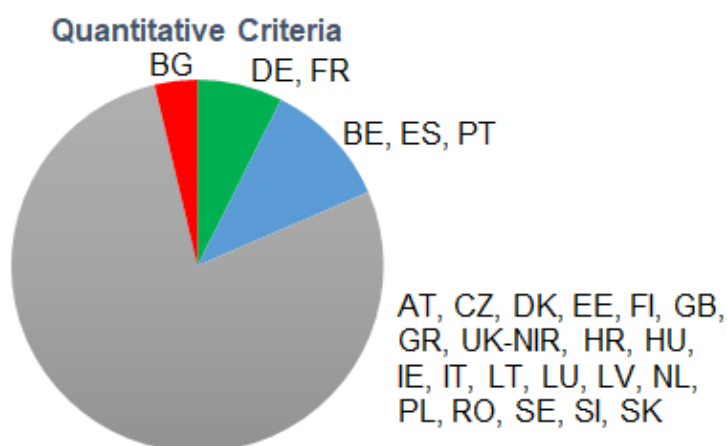
Figure 1 Implementation of qualitative criteria assessing the level of the modernisation or equipment replacement of demand systems or HVDC-connected systems.

3.3.2 Quantitative criteria

- (70) Additionally, NRAs have been asked to specify if they have adopted quantitative criteria to determine the level of modernisation or the level of equipment replacement of demand systems and/or HVDC-connected systems possibly leading to a revision of the connection agreement or the stipulation of a new one.

⁵¹ E-Control (AT), ERO (CZ), DUR (DK), ECA (EE), EV (FI), RAE (GR), HEA (HU), Ofgem (GB), ARERA (IT), NERC (LT), IRL (LU), PUC (LV), ACM (NL), URE (PL), ANRE (RO), Ei (SE) and RONI (SK).

- (71) As reported in Figure 2, the analysis of the collected answers shows that only BNetzA (DE) and CRE (FR) have adopted quantitative criteria (green area in Figure 2). The answer provided by BNetzA (DE) explains up to which extent a given change or replacement of appliances has to be or not to be considered as substantial⁵².
- (72) Moreover, three other NRAs (CREG (BE), CNMC (ES), and ERSE (PT)) reported that the definition of quantitative criteria is in progress or already completed but awaiting full implementation (blue area in Figure 2).
- (73) In addition, twenty-one NRAs⁵³ have not defined or adopted any quantitative criteria (grey area in Figure 2).
- (74) Finally, EWRC (BG) did not reply to the questionnaire or provided an answer relevant to the adoption of quantitative criteria. ACER reasonably assumes that the definition and adoption of these criteria is still pending in BG (red area in Figure 2).



- (75) ■ established ■ in progress/awaiting implementation ■ not defined ■ no reply

Figure 2 Implementation of quantitative criteria determining the level of the modernisation or the level of equipment replacement of demand systems and/or HVDC-connected systems.

3.3.3 Decisions issued

- (76) Furthermore, ACER inquired the NRAs about the possible issuance of decisions in the context of Articles 4(1)(a)(iii) and/or 4(1)(b) of the NC DC and of Articles 4(1)(a)(iii) and/or 4(1)(b) of the NC HVDC. The question also aimed to highlight whether the decision was actually issued by the NRA or, instead, by the competent entity as designated by the MS.

⁵² Detailed information about the quantitative criteria explained by BNetzA (DE) can be found in Section 2.2.2 of Annex I.

⁵³ E-Control (AT), ERO (CZ), DUR (DK), ECA (EE), EV (FI), RAE (GR), HERA (HR), HEA (HU), Ofgem (GB), UR (UK-NIR), ARERA (IT), CRU (IE), NERC (LT), IRL (LU), PUC (LV), ACM (NL), URE (PL), ANRE (RO), Ei (SE), AGEN-RS (SI) and RONI (SK).

- (77) Only CRE (FR) reported⁵⁴ the publication on 9 June 2020 of the ministerial order defining the requirements of general application and the criteria for modification of demand systems and HVDC connected-system. The publication of the ministerial order was followed by the issue of a decision of CRE (FR) on 16 July 2020 concerning only the provisions of the NC DC and NC HVDC in the event of a modification of demand systems and HVDC connected-system, as defined in the ministerial order of 9 June 2020.

3.4 Existing or new system users

- (78) Article 4(2)(b) of the NC DC and Article 4(2)(b) of the NC HVDC state that a demand system and HVDC system, respectively, shall be considered existing if the relevant owner has concluded a final and binding contract for the purchase of the main demand equipment or the demand unit (for the NC DC) and for the purchase of the main generating plant or HVDC equipment (for the NC HVDC) by two years after the entry into force of the corresponding regulation (7 September 2018 for NC DC and 28 September 2018 for the NC HVDC). ACER inquired NRAs about the implementation of this Article to monitor whether any decisions postponing the timeline in Article 4(2)(b) of the NC DC and Article 4(2)(b) of NC HVDC have been issued.
- (79) ARERA (IT) established⁵⁵ that the demand systems and HVDC-connected systems already in operation by 5 March 2019 are considered as existing for the purposes of the NC DC and NC HVDC, respectively.
- (80) At federal level⁵⁶, Article 35, §8, of the new Belgian federal grid code made it possible to apply the third paragraph of Article 4(2)(b), and has fixed the specified circumstances under which the regulatory authority may determine whether demand systems or HVDC-connected systems are to be considered existing or new.
- (81) Article 4(2)(b) of the NC DC has been implemented in BE also at regional level⁵⁷. In the Flemish region, in order to avoid uncertainty, the determination of demand systems as existing or new entered in force two months after the requirements of general application were eventually approved by the relevant regulatory authority (VREG, regional regulator in the Flemish region) on 27 August 2019. Article 4(2) has been applied by the decision of CWaPE⁵⁸ (25 October 2018), the regional regulator in the Walloon region. No further information concerning the outcomes of the decision in the Walloon region have been communicated in the answer received from CREG (BE). BRUGEL, the regional regulator in the Brussels-Capital region, linked the date after which new installations are considered to be new with the approval of the requirements of general application. Hence, all installations connected later than two months after the approval of the requirements of general application (i.e. 1 November 2019) are considered as new.

⁵⁴ Additional information together with the web link to the ministerial order of 9 June 2020 and the CRE (FR) decision of 16 July 2020 are included in Section 1 of Annex I.

⁵⁵ Through the issue of Resolution 82/2019/R/eel (<https://www.arera.it/it/docs/19/082-19.html>).

⁵⁶ Voltage level at the connection point above 70 kV.

⁵⁷ Voltage level at the connection point lower or equal to 70 kV.

⁵⁸ Relevant information is available at <https://www.cwape.be/docs/?doc=3660>

- (82) DUR (DK) reported that the Danish TSO has received notifications pursuant to Article 4(2)(b) of the NC DC concerning a small number⁵⁹ of demand systems. Eventually, these have been classified as existing. Additionally, Article 4(2)(b) of the NC HVDC has been adopted in case of the COBRA cable⁶⁰ and Krigers flak⁶¹.
- (83) URE (PL) communicated that Article 4(2)(b) of the NC DC and Article 4(2)(b) of the NC HVDC have been applied through Article 1(4) of act of 9 November 2018 amending Energy Law and some other acts⁶². However, the answer received from by URE (PL) does not provide information concerning the relevant outcomes of the application of the above-mentioned articles.
- (84) The remaining NRAs⁶³ reported that the above-mentioned provisions of the NC DC and the NC HVDC have not been applied yet. It is worth noting that ACER did not receive relevant answers from EWRC (BG) and CRE (FR), concerning the implementation of Article 4(2)(b) of the NC DC and Article 4(2)(b) of the NC HVDC.

3.5 Conclusions and discussion

- (85) ACER aimed to monitor the implementation status concerning the definition of criteria determining whether demand/HVDC-connected systems have to be considered as existing or new (Article 4 of the NC DC and Article 4 of the NC HVDC, respectively).
- (86) In general, ACER identified that the implementation of Article 4 of the NC DC and Article 4 of the NC HVDC is still ongoing. Only four NRAs (BNetzA⁶⁴ (DE), CRE (FR), HERA (HR) and AGEN-RS (SI)) reported a formal adoption of qualitative criteria determining the level of modernisation of a plant or the level of equipment replacement that could lead to a revision/new connection agreement. In addition, five other NRAs (CREG (BE), CNMC (ES), UR (UK-NIR), CRU (IR) and ERSE (PT)) highlighted the ongoing definition of qualitative criteria. Among these, CREG (BE), CNMC (ES), and ERSE (PT) reported the ongoing definition of quantitative criteria.
- (87) Moreover, the analysis performed by ACER confirmed that only CRE (FR) reported to have issued a decision concerning Articles 4(1)(a)(iii) and/or 4(1)(b) of the NC DC and of Articles 4(1)(a)(iii) and/or 4(1)(b) of the NC HVDC.
- (88) Finally, ACER considers that the implementation of the NC DC is successful with regard to the two years transition period after the entry into force of the NC DC, laid down in Article 4(2)(b) of the NC DC. In fact, the vast majority of the NRAs respected the deadlines set in Article 4(2).

⁵⁹ DUR (DK) has not monitored the implementation of decisions pursuant to Article 4(2)(b) of the NC DC and pertaining to the DSO level.

⁶⁰ A ±320 kV, 700 MW submarine HVDC cable connecting Copenhagen, Brussels and Amsterdam.

⁶¹ A 600 MW offshore wind farm under construction in the Baltic Sea. It will be connected to a new 400 MW interconnector between Denmark and Germany.

⁶² The amending act has been issued by Polish legislator and it is publicly available under the address: <http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20180002348/O/D20182348.pdf>

⁶³ E-Control (AT), ERO (CZ), BNetzA (DE), ECA (EE), CNMC (ES), EV (FI), RAE (GR), HERA (HR), HEA (HU), CRU (IE), UR (UK-NIR), Ofgem (GB), NERC (LT), IRL (LU), PUC (LV), ACM (NL), ERSE (PT), ANRE (RO), EI (SE), AGEN-RS (SI) and RONI (SK).

⁶⁴ BNetzA also reported the definition of quantitative criteria.

A similar situation is reported concerning the implementation of Article 4(2) of the NC HVDC. Minor variations have been established in IT and BE (also at regional level).

4. Requirements of general application

4.1 Objectives

- (89) Article 6 of the NC DC and Article 5 of the NC HVDC establish the regulatory aspects concerning the requirements of general application for demand systems and HVDC-connected systems. The requirements of general application of the NC DC are technical requirements that demand systems shall comply with in order to be connected to the network. Similarly, HVDC-connected systems shall demonstrate the compliance with the technical requirements of general application of the NC HVDC in order to be connected to the network.
- (90) Moreover, it is worth noting that some of these requirements are non-exhaustive, letting individual MSs some flexibility in the definition of specific parameters or capabilities, i.e. the requirements provide a degree of flexibility to the MSs for the definition of parameters (either numerical values or technical capabilities). In fact, the NC DC and NC HVDC typically provide upper/lower bounds and each MS can select a value within such interval, following the procedure laid down in Article 6(1) of the NC DC and Article 5(1) of the NC HVDC.
- (91) The requirements of general application are to be established by the relevant system operators or TSOs and shall be subject to approval by the entity designated by the MS and be published. Note that the designated entity shall be the NRA unless otherwise provided by the MS.
- (92) The relevant system operators or TSOs shall submit a proposal for requirements of general application within two years⁶⁵ of entry into force of the relevant regulation. Hence, the proposals for the requirements of general application of the NC DC were due by 7 September 2018⁶⁶. The deadline to submit the proposals for the requirements of general application of the NC HVDC is 28 September 2018⁶⁷.
- (93) Pursuant to the provisions in Article 6(6) of the NC DC and Article 5(6) of the NC HVDC, designated entities shall take decisions on proposals for requirements within six months following the receipt of such proposals.
- (94) In this context, ACER included ten questions in the questionnaire that was circulated with the NRAs. In particular:
- a. The first three questions focus on the proposals for the requirements of general application submitted by the relevant system operators or TSOs (Section 4.2 of the Report). The first question examines the dates of submission of the proposals and it relates them with the deadlines envisaged in the corresponding regulations. The second monitors the completeness of proposals⁶⁸. The third aims to cluster the requirements proposed by a TSO and those proposed by a relevant system operator.

⁶⁵ In accordance with Article 6(4) of the NC DC and Article 5(4) of the NC HVDC.

⁶⁶ In accordance with Article 59 of the NC DC.

⁶⁷ In accordance with Article 86 of the NC HVDC.

⁶⁸ Inquiring whether the submitted proposals include all the requirements of general applications laid down in the relevant regulation.

- b. The fourth question concerns the process to approve the requirements of general application by the NRA or the competent entity (Section 4.3 of the Report). The question aims to monitor the respect of the timeline in Article 6(6) of the NC DC and in Article 5(6) of the NC HVDC and to provide an overview on the status of the implementation of the requirements of general application.
 - c. The fifth question inquires about the procedures adopted to ensure transparency in the process of approval of the proposals for the requirements of general application, as laid down in Article 6(3)(b) of the NC DC and Article 5(3)(b) of the NC HVDC (Section 4.4 of the Report).
 - d. The sixth question focuses on the measures adopted by the TSO to guarantee the coordination with relevant DSOs⁶⁹, in accordance with Article 6(3)(e) of the NC DC and Article 5(3)(e) of the NC HVDC (Section 4.5 of the Report).
 - e. The seventh question seeks information concerning the public consultation with the stakeholders and the NRA (or the competent authority) that shall be carried out by the relevant system operators and relevant TSOs, in accordance with Article 9(1)(d) of the NC DC (Section 4.6 of the Report).
 - f. The eighth and ninth questions aim to monitor the compliance of the approved non-exhaustive requirements with the ranges of values included in the NC DC and in the NC HVDC (Section 4.7 of the Report).
 - g. Finally, the tenth question aims to monitor the existence in the national regulations of further requirements on frequency/voltage which are additional to those already established in the NC DC and NC HVDC concerning the relevant system users (Section 4.8 of the Report).
- (95) The NRAs' answers to these questions on the implementation of requirements of general application of the NC DC and NC HVDC is analysed in the continuation of this Section (Sections 4.2 – 4.9), while the corresponding set of NRAs' responses in full are included in Section 3 of Annex I.

4.2 Proposals for the requirements of general application

- (96) As a first step to monitor the implementation of the requirements of general application, ACER asked the NRAs about the date they received the proposals for the requirements of general application from the relevant system operators or TSOs.

4.2.1 Submission of the proposals concerning the NC DC

- (97) The answers collected by ACER⁷⁰ and relevant to the NC DC are graphically presented in Figure 3. The deadline for TSO or relevant system operator to submit the proposals is 7 September 2018, i.e. two years after the entry into force of the NC DC, in accordance with Article 6(4) and Article 59 of the NC DC.

⁶⁹ In particular, inquiring whether the potential impact on DSOs' systems has been assessed.

⁷⁰ And reported in full in Section 3.1.1 of Annex I.

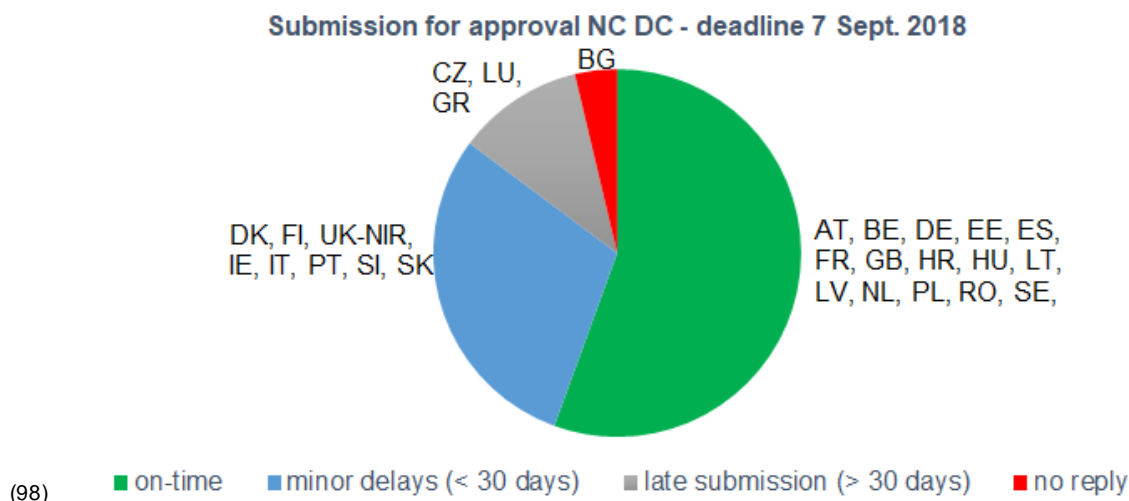


Figure 3 Submission of proposals for requirements of general application concerning the NC DC.

- (99) In some MSs⁷¹, a proposal concerning certain requirements was submitted by the TSO, whereas the proposals for other requirements were submitted by the relevant system operators. In these cases, ACER decided to adopt the latest date in order to fill the chart in Figure 3. Moreover, HERA (HR) and CNMC (ES) only provided the month during which the proposals were submitted. For the purpose of compiling Figure 3, ACER assumed that these proposals were submitted the first day of the reported month.
- (100) In general, the submission of proposals for requirements of general application of the NC DC was filed earlier than the deadline in BE, DE, GB, HR, PL and RO and within the envisaged deadline in AT, EE, ES, FR, HU, LT, LV, NL and SE (green area in Figure 3). It is worth noting that the initial proposals for the requirements of general application have been amended in BE and LT requiring further re-submissions of the proposals. The amended proposals followed formal decisions of rejections from the designated national entities (e.g. BE). Further details are provided in Section 4.3 concerning the dates and process leading to the approval of the proposals for the requirements of general application in these MSs.
- (101) Minor delays⁷² have been reported in DK, FI, UK-NIR, IE, IT, PT, SI and SK (blue area in Figure 3). The proposal for the requirements of general applications in SK were initially accepted by the competent entity. Amendments were proposed by the TSO (or the relevant system operator). New decisions have been issued to approve the amended parameters.
- (102) In addition, noticeable delays⁷³ were registered in CZ, GR and LU (grey area in Figure 3). With regard to CZ, the requirements of general application proposed by the TSO were submitted on 10 September 2018⁷⁴ (thus with a minor delay). However, the major source of delay concerns the submission of proposals from the three main regional DSOs⁷⁵ occurred on 13

⁷¹ BE, DK, CZ and SK.

⁷² Less than 30 days after the envisaged deadline.

⁷³ More than 30 days after the envisaged deadline.

⁷⁴ Three days after the deadline 7 September 2018 concerning the submission of the proposals for the requirements of general application of the NC DC.

⁷⁵ ČEZ Distribuce, E.ON Distribuce and PRE distribuce.

June 2019. Concerning LU, the proposals for the requirements of general application of the NC DC were initially submitted on 11 September 2018. However, further complementary submissions were filed on 8 February 2019 and 15 March 2019⁷⁶. With regard to GR, an initial proposal was submitted by the TSO to RAE on 26 September 2019, after conducting public consultations. Following further consultations, RAE (GR) requested amendments in February 2020. The final proposal was then submitted by the TSO to RAE on 5 June 2020.

- (103) Finally, EWRC (BG) did not reply to the questionnaire (red area in Figure 3).

4.2.2 Submission of the proposals concerning the NC HVDC

- (104) In accordance with the approach outlined with regard to Figure 3, the answers relevant to the date of submission of the proposals for the requirements of general application of the NC HVDC are graphically presented in Figure 4.

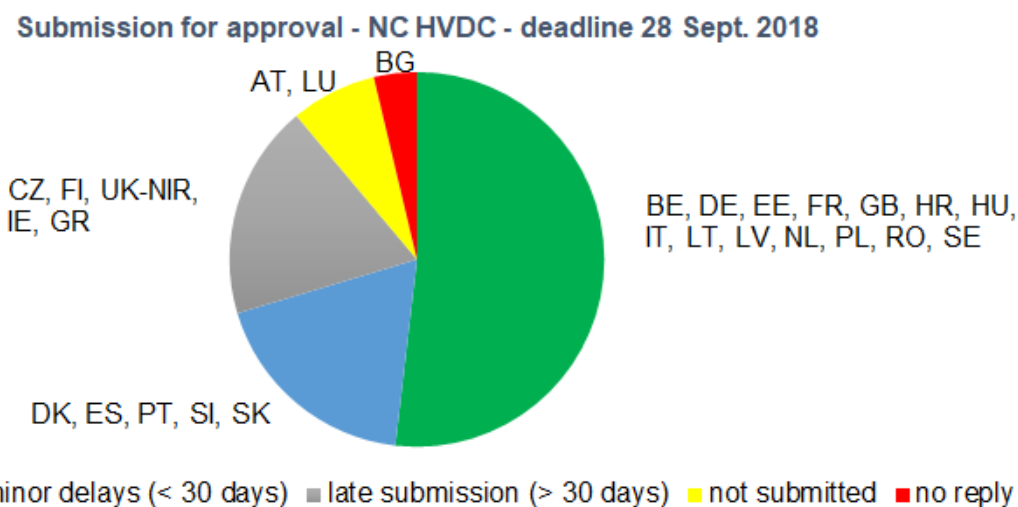


Figure 4 Submission of proposals for requirements of general application concerning the NC HVDC.

- (106) The deadline for TSO or relevant system operator to submit the proposals is 28 September 2018, i.e. two years after the entry into force of the NC HVDC, in accordance with Article 5(4) and Article 86 of the NC HVDC.
- (107) In general, the deadline for the submission of proposals for requirements of general application of the NC HVDC was met in EE, FR, HU, IT, LT, LV, NL, PL, RO, SE; submissions were filed remarkably earlier than the deadline in BE, DE, GB and HR (green area in Figure 4).
- (108) As previously reported concerning the NC DC, the initial proposals for the requirements of general application of the NC HVDC have been amended in BE, LT and RO. Further details

⁷⁶ It is worth pointing out that the submissions on the 8 February 2019 and 15 March 2019 are not consequence of preceding decisions of rejection of the proposals (submitted on 11 September 2018 and 8 February 2019, respectively) from ILR (LU). In fact, ILR (LU) has issued a decision only with regard to the proposals for the requirements of general application received on 15 March 2019.

are provided in Section 4.3 concerning the dates and process leading to the approval of the proposals for the requirements of general application in these MSs.

- (109) Minor delays (less than 30 days after the deadline) were registered in DK, ES, PT, SI and SK (blue area in Figure 4). Noticeable delays⁷⁷ were registered in CZ⁷⁸, FI, GR, UK-NIR and IE (grey area in Figure 4).
- (110) With regard to GR, an initial proposal was submitted by the TSO to RAE on 20 November 2019, after conducting public consultations. Following further consultations, RAE (GR) requested amendments in February 2020. The final proposal was then submitted by the TSO to RAE on 5 June 2020. .
- (111) Furthermore, Figure 4 indicates that AT and LU are included in the yellow area since the proposals for the requirements of general applications of the NC HVDC have not been submitted as communicated by the corresponding regulatory authorities⁷⁹. Finally, EWRC (BG) did not reply to the questionnaire (red area in Figure 4).

4.2.3 Contents of the proposals

- (112) ACER asked the NRAs whether all the requirements of general application have been included in the submitted proposals with regard to the NC DC and NC HVDC. NRAs were also requested to specify the parameter(s) that were not included.
- (113) Four NRAs (BNetzA (DE), ILR (LU), URE (PL), and Ei (SE)) reported that the requirements of general application were not included in full in the relevant proposals.
- (114) BNetzA (DE), ILR (LU) and URE (PL) stated that the demand response requirements⁸⁰ were not included in the submitted proposals.
- (115) In particular, BNetzA (DE) explained that the proposals for these requirements were not included because demand response capabilities are not considered as a prerequisite for grid connection of a demand unit. In fact, demand systems may provide demand response services to a relevant system operator or a relevant TSO in accordance with Article 27(2), Article 28(1), Article 29(1) and Article 30(1) of the NC DC. ILR (LU) reported that the relevant TSO has been requested to provide a roadmap to propose these requirements⁸¹. URE (PL) explained that the definition of these requirements has been postponed due to lack of stakeholders' interest in such services and experience at the time of establishing requirements of general application.

⁷⁷ More than 30 days after the envisaged deadline.

⁷⁸ The delay registered in CZ is due to a late submission of the proposal for those requirements of general application of NC HVDC indicated by relevant system operators. Instead, the TSO submitted the relevant proposal for the requirements of general application on time.

⁷⁹ Further details have been reported in Section 1.3.1 concerning AT and LU.

⁸⁰ Presented in Title III, Chapter 1 of the NC DC.

⁸¹ For clarity, the information provided concerning LU refers only to the NC DC. The proposal for the requirements of general application of the NC HVDC has not been received by ILR (LU) in accordance with the approach outlined in Section 1.3.1.

- (116) Furthermore, Ei (SE) reported that not all parameters have been included in the submitted proposals. Concerning the NC DC, few requirements⁸² are missing. Ei (SE) also registers a more significant lack of proposals for the requirements of general application of the NC HVDC⁸³.
- (117) HERA (HR) and DUR (DK) answered that all the non-exhaustive requirements concerning the NC DC and NC HVDC have been submitted. However, many parameters have been declared as site-specific, thus unique values were not proposed.
- (118) The remaining 20 NRAs, out of the 26 responding to this questionnaire, reported that all the requirements of general applications have been included in the proposals submitted by the relevant TSOs and relevant system operators and concerning both NC DC and HVDC⁸⁴.

4.2.4 Requirements of general application proposed by the relevant system operator other than the TSO

- (119) The requirements of general application can be established by the relevant system operator or the TSO (Article 6(1) of the NC DC and Article 5(1) of the NC HVDC). Nonetheless, where the requirements under these regulations are to be established by a relevant system operator that is not a TSO, MSs may provide that instead the TSO is responsible for establishing the relevant requirements (Article 6(9) of the NC DC and Article 5(9) of the NC HVDC).
- (120) ACER asked the NRAs to specify which of the requirements of general application have been proposed by the relevant system operators other than the TSO. The result of the analysis of the collected answers has been graphically summarised in Figure 5.

Participation of TSOs and relevant system operators to the drafting of the requirements of general application

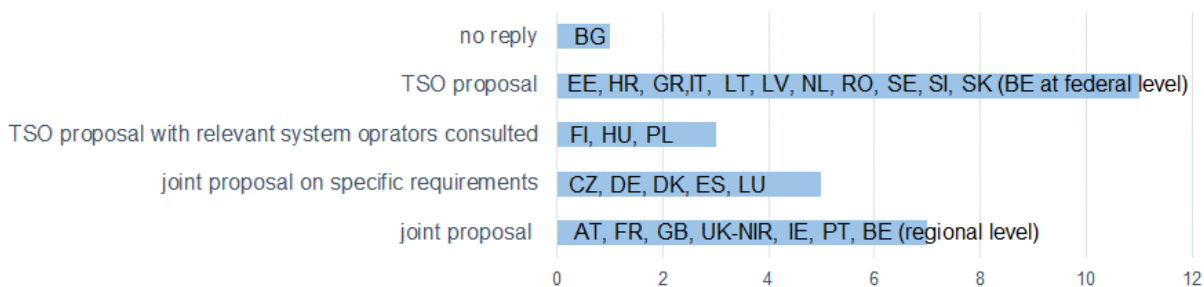


Figure 5 Participation of TSOs and relevant system operators to the drafting of the requirements of general application.

- (121) As illustrated in Figure 5, seven NRAs⁸⁵ reported that the requirements of general application have been drafted jointly by the TSO and the relevant system operators. Moreover, other four

⁸² The missing requirements of the NC DC in SE pertain to Article 15(2)(a)-(b), 14(1), 14(5), 19 (partly), 16(1), 17(1), 18(1)-(3). Regarding 18(1), this will be dealt with in the TSOs project for real-time data.

⁸³ Around 40 requirements are missing as reported by Ei (SE) and included in Section 3.1.2 of Annex I.

⁸⁴ E-Control (AT), CREG (BE), ERO (CZ), ECA (EE), CNMC (ES), EV (FI), CRE (FR), RAE (GR), HEA (HU), CRU (IE), UR (UK-NIR), Ofgem (GB), ARERA (IT), NERC (LT), PUC (LV), ACM (NL), ERSE (PT), ANRE (RO), AGEN-RS (SI) and RONI (SK), with the exception of E-Control (AT) concerning the requirements of applications of the NC HVDC since these have not been submitted in accordance with the approach outlined in Section 1.3.1.

⁸⁵ E-Control (AT), CREG (BE) at regional level, CRE (FR), Ofgem (GB), UR (UK-NIR), CRU (IE) and ERSE (PT).

NRAs (BNetzA (DE), DUR (DK), CNMC (ES) and ILR (LU)) reported that some specific requirements have been proposed jointly by the TSO and the relevant system operators. In addition, ERO (CZ) acknowledged the cooperation between the relevant system operators and the TSO in preparation of the proposals for the requirements of general application. Nonetheless, each entity (TSOs and relevant system operators) carried out the submission of the proposal of the relevant requirements of general application, separately.

- (122) The remaining NRAs⁸⁶ answered that the requirements of general application were proposed only by the TSO, although EV (FI), URE (PL) and HEA (HU) specified that DSOs were consulted.
- (123) Finally, EWRC (BG) did not provide answers.

4.3 Approval of the requirements of general application

- (124) The fourth question aims to monitor the implementation status of the requirements of general application. ACER asked the NRAs about the formal approval of the requirements.

4.3.1 Approval of the requirements of general application of the NC DC

- (125) With regard to the NC DC, results are graphically presented in Figure 6. The maximum time interval for the proposal's approval is set at six months after receiving the proposals, in accordance with Article 6(6) of the NC DC.
- (126) As pointed out in Section 4.2.1, the proposals for the requirements of general application were submitted by the TSO and by relevant system operators in different dates. Following the same approach, ACER decided to include the latest date for the purpose of filling the chart in Figure 6. More details concerning the dates of approval of the initial or amended proposals for the requirements of general application are available in Section 3.2 of Annex I, where the relevant answers collected by the NRAs are reported in full.
- (127) The results of the questionnaire reported in Figure 6 revealed that eight NRAs⁸⁷ approved all the requirements of general application of the NC DC within the specified deadline⁸⁸ or with minor delay⁸⁹.
- (128) It is worth highlighting the process that led to the approval of the requirements of general application of the NC DC in LT. Initial proposals for the requirements of general application of the NC DC were submitted on 5 September 2018. NERC (LT) requested amendments. Accordingly, the TSO amended the parameters and it submitted them again to NERC on 25 March 2019. The formal approval from NERC (LT) was reached on 27 March 2019.
- (129) The approval of the proposals for the requirements of general application submitted by the TSO has been reached by RONI (SK), at a first stage, on 6 March 2019. Following a request

⁸⁶ Including CREG (BE) at federal level.

⁸⁷ ECA (EE), EV (FI), Ofgem (GB), HEA (HU), ARERA (IT), NERC (LT), AGEN-RS (SI) and RONI (SK).

⁸⁸ i.e. respecting the limit of six months for the competent authority to issue a decision on the received proposals (Article 6(6) of the NC DC).

⁸⁹ Within 30 days after the envisaged deadline of six months (Article 6(6) of the NC DC).

for amendments, the TSO re-submitted the proposal on 25 November 2019, which were eventually approved by RONI (SK) on 4 December 2019. The proposals for the requirements of general application submitted by the three relevant system operators⁹⁰ were approved by RONI (SK) without intermediate requests of amendments and consequent re-submissions on 6 March and 10 April 2019.

- (130) Furthermore, as reported in Figure 6, the approval of the full set of the requirements of general application for the NC DC exhibited noticeable delays⁹¹ in AT, BE, CZ, DK, GR, HR, IE, FR, LV and RO.
- (131) It is worth highlighting the process that led to the approval of the requirements of general application of the NC DC in GR. An initial proposal for the requirements of general application of the NC DC was submitted on 26 September 2019. Following a public consultation, RAE (GR) requested amendments in February 2020. Accordingly, the TSO submitted a revised proposal to RAE on 5 June 2020. The formal approval from RAE (GR) was reached on 30 July 2020 (published in the Gov. Gaz on 3 September 2020).
- (132) Concerning BE, the formal approval at federal level was made by the Belgian Government through a Royal Decree on 22 April 2019. Then, at regional level, the three competent entities⁹² have initially rejected the proposals. After the submission of revised proposals, the requirements of general application of the NC DC were conditionally approved. A third edition of the proposals for the requirements of general application was approved by the Walloon regulatory authority on 28 August 2019, by the Flemish regulatory authority on 27 August 2019 and by the regulatory authority for the region of Brussels on 4 September 2019.
- (133) ERO (CZ) reported that the requirements of general application for the NC DC submitted by the TSO on 10 September 2018 have been approved on 8 March 2019, thus respecting the six-month deadline. On the other hand, the requirements submitted by the relevant system operators on 13 June 2019 have been approved on 21 February 2020, not meeting the six-month deadline. Since ACER is monitoring the approval of the full spectrum of the requirements of general application and in accordance with the reasoning concerning the compiling of Figure 6 explained in paragraph (126), CZ has been included in the group 'formal approval with major delay (>30 days)'.

⁹⁰ The three relevant system operators submitted the proposals on 7 September 2018 and 10 September 2018.

⁹¹ More than 30 days after the envisaged deadline of six months (Article 6(6) of the NC DC).

⁹² The Flemish regulatory authority, the Walloon regularity authority and the BRUGEL regulatory authority (for the Brussel area).

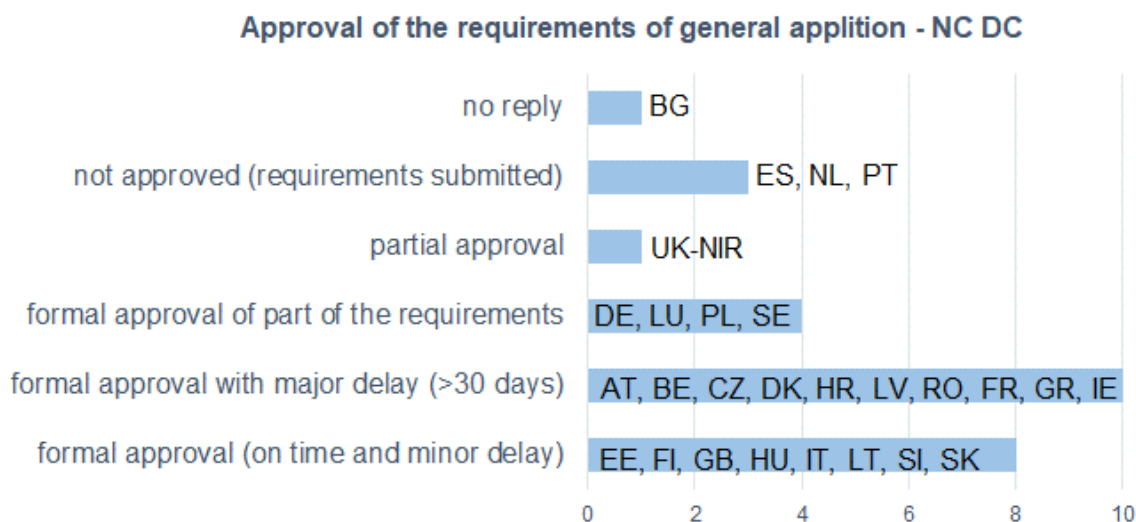


Figure 6 Approval of proposed requirements for general application of NC DC.

- (134) Figure 6 also presents the case where only a part of the requirements has been formally approved. The information in Figure 6 concerning the formal approval of only a part⁹³ of the requirements of general application of the NC DC in DE, LU, PL and SE combines the answers provided by the relevant NRAs concerning the questions analysed in this section and in Section 4.2.2.
- (135) Only a partial approval of the requirements of general application of the NC DC has been reached in UK-NIR, as reported in Figure 6. The status of the implementation of the provisions in Article 6 of the NC DC concerning the approval of the requirements of general application is still pending in ES, NL and PT since a formal approval of these requirements has not been reached yet, although the proposals have been duly submitted by the TSO or relevant system operators⁹⁴. The information relative to PT combines the questions analysed in this section and in Section 4.6.
- (136) Finally, EWRC (BG) did not reply to the questionnaire. ACER reasonably assumes that the requirements of general application concerning the NC DC have not been approved in BG by the competent authority.

4.3.2 Approval of the requirements of general application of the NC HVDC

- (137) Following the same approach adopted for Figure 6, the answers relevant to the approval of the proposals for the requirements of general application for the NC HVDC are graphically presented in Figure 7.

⁹³ Excluding those concerning the demand units providing demand side services (Chapter 1 of TITLE III of the NC DC) for DE, LU, PL and PT. Concerning SE, the missing requirements are those established in Article 15(2)(a)-(b), 14(1), 14(5), 19 (partly), 16(1), 17(1), 18(1)-(3) of the NC DC.

⁹⁴ As reported in Figure 3.

Approval of the requirements of general application - NC HVDC

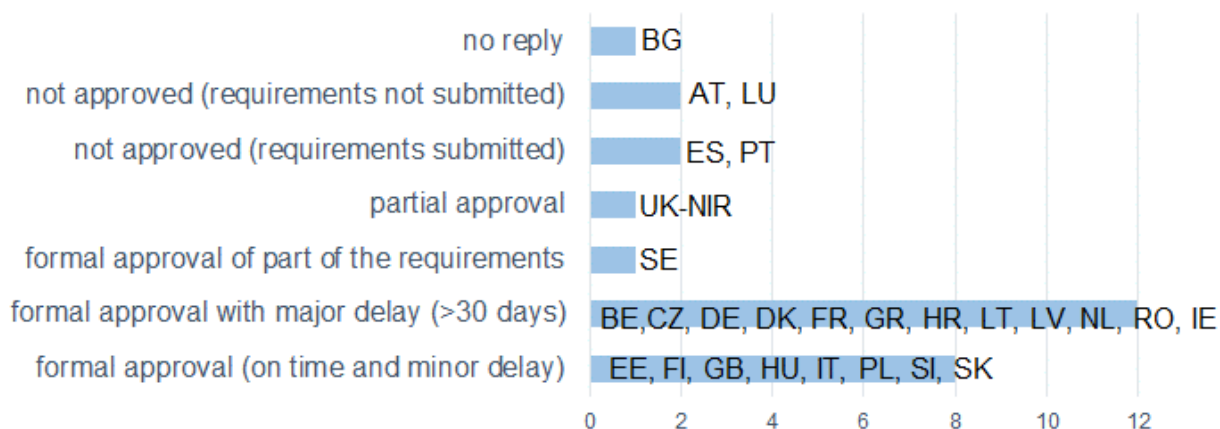


Figure 7 Approval of proposed requirements for general application of NC HVDC.

- (138) The analysis of the collected answers revealed that the formal approval of the requirements of general application of the NC HVDC has been reached, on time⁹⁵ or with minor delay⁹⁶, in EE, FI, GB, HU, IT, PL, SI and SK. The approval of the full set of the requirements of general application for the NC HVDC exhibited noticeable delays⁹⁷ in BE, CZ, DE, DK, FR, GR, HR, IE, LT, LV, NL and RO.
- (139) The same considerations provided in paragraph 133 concerning ERO (CZ) apply here with respect to the approval of the requirements of general application of the NC HVDC.
- (140) Regarding the process that led to the approval of the requirements of general application of the NC HVDC in LT, initial proposals were submitted on 5 September 2018. NERC (LT) requested amendments. Accordingly, the TSO amended the parameters and it submitted them again to NERC on 26 April 2019. The formal approval from NERC (LT) was reached on 7 May 2019. A similar process is reported also by ANRE (RO) which reached the formal approval on the amended proposals for the requirements of general application of the NC HVDC on 28 August 2019.
- (141) Concerning GR, the initial proposal for the requirements of general application of the NC HVDC was submitted on 20 November 2019. Following a public consultation, RAE (GR) requested amendments on February 2020. Accordingly, the TSO submitted the revised proposal to RAE on 5 June 2020. Finally, RAE (GR) approved the proposal on 30 July 2020 (published in the Gov. Gaz. on 7 September 2020).
- (142) Only a partial approval of the requirements of general application of the NC HVDC has been reached in UK-NIR. Furthermore, only a part⁹⁸ of the requirements of the NC HVDC have been

⁹⁵ i.e. respecting the limit of 180 days for the competent authority to issue a decision on the received proposals (Article 5(6) of the NC HVDC).

⁹⁶ Within 30 days after the envisaged deadline of 180 days (Article 5(6) of the NC HVDC).

⁹⁷ More than 30 days after the envisaged deadline of 180 days (Article 5(6) of the NC HVDC).

⁹⁸ Around 40 requirements of general application of the NC HVDC have not been defined and thus have not yet been approved in SE.

approved in SE. The information concerning SE combines the answers provided by Ei (SE) concerning the questions analysed in this section and in Section 4.2.2.

- (143) As indicated in Figure 7, the status of the implementation of the provisions in Article 5 of the NC HVDC concerning the approval of the requirements of general application is still pending in ES and PT since a formal approval of these requirements has not been reached yet, although the corresponding proposals have been duly submitted by the TSO or relevant system operators⁹⁹. In particular, it is worth highlighting that ERSE (PT) intends to implement the requirements of general application of the NC HVDC only as a guiding reference and not as a binding regulation¹⁰⁰.
- (144) The proposals for the requirements of general applications for the NC HVDC have not been submitted (as communicated by E-Control (AT) and ILR (LU), respectively¹⁰¹) to the respective competent entities. These, in turn, did not issue relevant decisions.
- (145) Finally, EWRC (BG) that did not reply to the questionnaire. ACER reasonably assumes that the requirements of general application concerning the NC HVDC have not been approved in BG by the competent authority.

4.4 Ensuring transparency

- (146) Pursuant to Article 6(3)(b) of the NC DC and Article 5(3)(b) of the NC HVDC, Member States, competent entities and system operators shall ensure transparency when applying and implementing each of the network codes. In particular, ACER asked the NRAs about the measures adopted to ensure transparency in the process leading to the approval of the requirements of general application of the NC DC and the NC HVDC.
- (147) All the NRAs reported that the transparency in the proposals for the requirements of general application has been ensured, since public consultations have been organised informing the stakeholders about relevant information. Moreover, workshops or working groups were organised.

4.5 Coordination between TSO and relevant DSOs

- (148) Article 6(3)(e) of the NC DC and Article 5(3)(e) of the NC HVDC establish that MSs, competent entities and system operators shall consult with relevant DSOs and take account of potential impacts on their system when applying the corresponding network codes. Pursuant to this provision, ACER asked the NRAs how the coordination between the TSO and relevant DSOs has been established and to focus on the assessment of the potential impact on DSOs' systems.
- (149) The analysis of the collected answers revealed that all the NRAs, except Ei (SE), have confirmed the establishment of coordination between the TSO and the relevant DSOs through close collaborations, working groups, meetings, and consultations. Ei (SE) reported that it is

⁹⁹ As reported in Figure 4.

¹⁰⁰ This was reported by ERSE (PT) when answering to the first question of the circulated questionnaire. The answer in full is available in Section 2.1 of Annex I.

¹⁰¹ Further details have been reported in Section 1.3.1

not aware of TSO-DSOs consultations and of the assessment of the potential impact on DSOs' systems.

- (150) With regard to the assessment of the potential impact on DSOs' system, only four NRAs (BNetzA (DE), DUR (DK), Ofgem (GB) and Agen-RS (SI)) reported relevant insights. BNetzA (DE) explained that DSOs had the opportunity to evaluate the impact on their systems and to take part to consultations and to the meetings organised to discuss the outcome of the consultation. DUR (DK) stated that the TSO has assessed the impact on the distribution-system focusing on the exchange of reactive power between transmission and distribution systems. Moreover, the assessment also identifies the necessary signals which need to be sent from the TSO to DSOs.
- (151) Ofgem (GB) confirmed that the DSOs themselves assessed the impact of proposals on their systems and consulted with wider stakeholders about the impact of proposals on their systems. Agen-RS (SI) reported that the impact of the requirements of general application on the distribution network was assessed in consultation by TSO and DSOs.

4.6 Consultation with stakeholders

- (152) Article 9(1)(d) of the NC DC establishes that relevant system operators and relevant TSOs shall carry out a consultation with stakeholders, including the competent authorities of each MS cornering the requirements for demand units specified in accordance with Article 28(2)(c),(e),(f),(k) and (l) and Article 29(2)(c) to (e) of the NC DC.
- (153) ACER inquired the NRAs about the status of the implementation of the above-mentioned provisions. The relevant results have been graphically summarised in Figure 8.

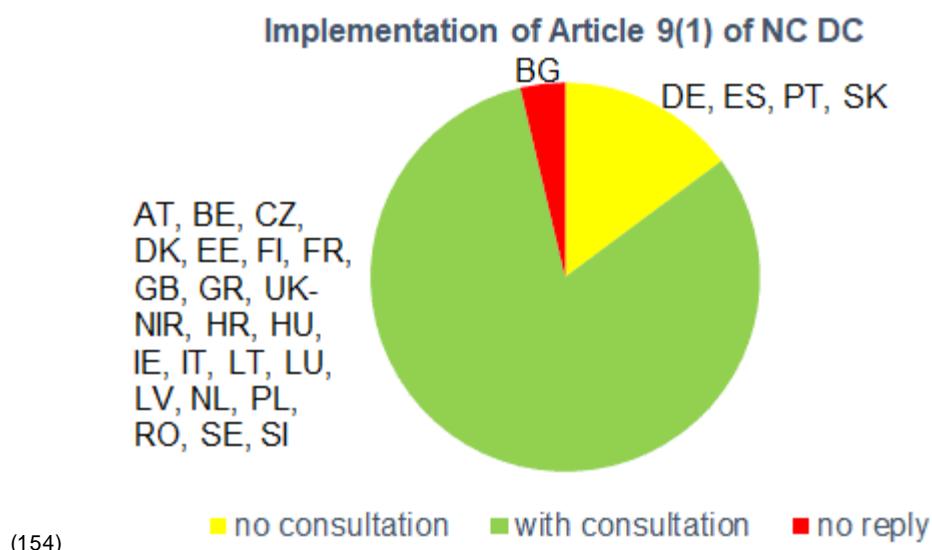


Figure 8 Status of the implementation of Article 9(1) of the NC DC.

- (155) The analysis of the answers provided by four NRAs (BNetzA (DE), CNMC (ES), ERSE (PT) and RONI (SK)) revealed that the relevant system operators and relevant TSOs did not carry out any consultation with stakeholders (yellow area in Figure 8). BNetzA (DE) explained that such consultation was not organised since the requirements concerning the abovementioned articles have not been submitted/approved (see Section 4.2.2.).

- (156) A similar situation is reported by ERSE (PT). RONI (SK) explained that the consultation was not carried out because the TSO sets requirements for demand units connected at a voltage level 110 kV and higher. However, ACER deems this answer not relevant to justify the missed implementation of Article 9(1)(d) of the NC DC.
- (157) CNMC (ES) reported that the public consultation pursuant to Article 9(1)(d) of the NC DC was not carried out in ES without providing relevant justifications.
- (158) EWRC (BG) did not provide answers (red area in Figure 8). The remaining NRAs (green area in Figure 8) reported that consultations relevant to Article 9(1)(d) of the NC DC have been carried out (mostly in 2018). The NRAs also provided links to the call for public consultations, which are included in Section 3.5 of Annex I.

4.7 Establishment of requirements of general application within specified ranges

4.7.1 Stricter/looser thresholds

- (159) The NRAs have been asked to specify whether, in the approved requirements of general application, any value/condition happens to be stricter/looser than the most/least onerous related threshold (as established in the NC DC and in the NC HVDC). Moreover, if any value/condition is stricter than the most onerous threshold, NRAs were invited to confirm if this requirement is enforced to all the demand systems and/or HVDC-connected systems, or it follows from an agreement between a demand system owner / HVDC system owner and the relevant TSO, in accordance with Article 12(2) of the NC DC and Articles 11(2) or 39(2)(b) of the NC HVDC.
- (160) The analysis of the collected answers revealed that all the submitted/approved requirements of general application comply with the NC DC and NC HVDC, respectively, as reported by 23 NRAs¹⁰².
- (161) Moreover, ECA (EE) reported that the values of the requirements of general application approved for the NC DC are the same adopted for the implementation of the NC Requirements for Generators¹⁰³. However, with regard to Article 39(2)(a) of the NC HVDC, the time period for operation within the frequency range 47,0 Hz – 47,5 Hz is set at 60 seconds, instead of at 20 seconds as provided in the Annex VI of the NC HVDC. ECA (EE) does not supply a justification for this deviation from the provisions in the NC HVDC.
- (162) UR (UK-NIR) reported that a value of 60 minutes for operation time in the frequency range of 48.5 – 49.0 Hz has been set concerning the demand systems in the scope of application of the NC DC. However, the NC DC provides that the operation time in the frequency range of 48.5 – 49.0 Hz shall be specified by the TSO but not less than 90 minutes¹⁰⁴. Concerning the

¹⁰² E-Control (AT), CREG (BE), ERO (CZ), BNetzA (DE), DUR (DK), CNMC (ES), EV (FI), CRE (FR), Ofgem (GB), RA E (GR), HERA (HR), HEA (HU), ARERA (IT), NERC (LT), ILR (LU), PUC (LV), ACM (NL), URE (PL), ERSE (PT), ANRE (RO), (Ei) SE, AGEN-RS (SI) and RONI (SK)

¹⁰³ Commission Regulation (EU) 2016/631 establishing a network code on requirements for grid connection of generators (available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL_2016_112_R_0001#d1e311-1-1).

¹⁰⁴ In accordance with the table in Annex 1 of the NC DC concerning the synchronous area Ireland and Northern Ireland and entitled "Frequency ranges and time periods referred to in Article 12(1)".

same parameter, CRU (IE) reported that an equal value of 60 minutes was set in the Irish grid code. However, the implementation process of the NC DC, recently completed in IE, established that this value shall be 90 minutes i.e. the closest value to the one in the national grid code and compliant with the NC DC provisions. CRU(IE) reported that the Irish Grid Code needs to be adapted accordingly.

- (163) Furthermore, the answers provided by the two abovementioned NRAs do not specify whether similar situations occur with regard to the NC HVDC. ACER has verified the occurrence of discrepancies also in the context of the NC HVDC. In fact, the EirGrid Grid Code¹⁰⁵ requires an unlimited operation to all the interconnectors in the frequency range 47.5 Hz -52 Hz¹⁰⁶, whereas such unlimited operation only applies to the range of frequencies 49 Hz – 51 Hz in the NC HVDC¹⁰⁷. Moreover, the EirGrid Grid Code requires the HVDC system to remain connected to the network for 30 seconds in the frequency range 47 Hz – 47.5 Hz, whereas the corresponding operation time in the NC HVDC is 60 seconds for those HVDC-connected systems complying with Article 11 of the NC HVDC and 20 seconds for those that comply with Article 39(2)(a) of the NC HVDC.

4.7.2 Additional binding requirements

- (164) Furthermore, NRAs were asked to provide information whether, in the national regulation on grid connection implementing the European regulations NC DC and NC HVDC, there is one or more additional binding requirements that refer to a range of values beyond the maximum/minimum thresholds defined in the NC DC and in the NC HVDC.
- (165) Three NRAs (ERO (CZ), CRU (IE) and UR (UK-NIR)) reported the presence of additional binding requirements that refer to a range of values beyond the maximum/minimum thresholds defined in the NC DC and in the NC HVDC.
- (166) ERO (CZ) reported that the relevant system operators¹⁰⁸ have their own grid codes, which are approved by ERO (CZ) and contain several other requirements for system users (mainly applicable to NC DC, as there are no HVDC grids within the CZ). However, ERO (CZ) did not elaborate on the specificities of these additional binding requirements.
- (167) CRU (IE) and UR (UK-NIR) reported that their Grid Codes impose additional requirements that refer to a range of values beyond the maximum/minimum thresholds defined in the NC DC. In particular, the national regulation imposes demand systems to remain connected to the network for 20 seconds and 60 minutes whether frequency lies in intervals 47 Hz - 47.5 Hz and 51.5 Hz - 52 Hz, respectively. It is worth pointing out that the NC DC does not envisage any requirement on time period for operation in these frequency ranges for the synchronous area Ireland and Northern Ireland¹⁰⁹.
- (168) The two NRAs invoked Article 12(2) of the NC DC to justify the application of the abovementioned requirements. However, the mentioned article clearly refers to the reaching

¹⁰⁵ EirGrid is the TSO in IE (<http://www.eirgridgroup.com/site-files/library/EirGrid/Grid-Code.pdf>)

¹⁰⁶ Paragraph CC.7.5.1.1 of the EirGrid Grid Code.

¹⁰⁷ Annex I and Annex VI of the NC HVDC.

¹⁰⁸ More than 200 DSOs are registered in CZ.

¹⁰⁹ Annex I "Frequency ranges and time periods referred to in Article 12(1)" of the NC DC.

of an agreement between the TSO and the demand facility owner or the distribution system operator. In other words, the compliance with these requirements shall not be a binding prerequisite for prospective demand systems seeking connection to the network.

- (169) Based on the analysis of the answers collected by the remaining NRAs, ACER concludes that there are no additional binding requirements in AT, BE, DE, DK, EE, ES, FI, FR, GR, HR, HU, GB, IT, LT, LU, LV, NL, PL, PT, RO, SE, SI¹¹⁰ and SK.

4.8 Additional requirements concerning frequency / voltage

- (170) Finally, ACER asked the NRAs to specify whether, concerning the subject matters of the general requirements of the NC DC and NC HVDC and focusing only on those concerning frequency/voltage issues, any additional requirements, thus different from those included in the NC DC and NC HVDC, had been implemented in the national regulation on grid connection for relevant system users.
- (171) In this context, E-Control (AT) reported that additional requirements to those included in the NC DC have been implemented in the national regulation. In fact, E-Control (AT) explained that the additional requirements with regard to frequency, voltage, reactive power and short-circuit are specified in the 'DCC Anforderungs-V'¹¹¹.
- (172) Moreover, ERO (CZ) affirmed that additional requirements are included in the Grid Codes. The regulatory authority claims that system operators are responsible for the grid codes. Based on this, they can propose any requirements that are not against the law or which do not create an imbalance in the market. However, ERO (CZ) does not elaborate on the characteristics of these additional requirements and does not show how their presence in the grid codes prevents EU market distortions.
- (173) With regard to the rules for connection of demand systems, URE (PL) confirmed the presence of additional requirements on voltage/frequency in the national grid codes. However, the compliance with these requirements is mandatory only for existing demand systems. On the other hand, new demand systems have to comply only with the provisions of the NC DC.
- (174) For completeness, it is worth mentioning the answer to this question provided by ANRE (RO). The Romanian NRA explained that, in the voltage range 1,118 - 1,15 p.u., the minimum time period during which disconnections of demand systems from the network are not allowed is set at not less than 30 minutes. Annex II¹¹² of the NC DC establishes that, in this particular voltage range, the TSO can select a value for time period for operation greater than 20 minutes and lower than 60 minutes. Hence, the requirement implemented in RO is not relevant to the analysis in this section and it correctly lies within the prescribed interval.

¹¹⁰ Agen-RS (SI) reported the presence in the national regulations of binding requirement that are beyond thresholds defined in the requirements of general application of the NC DC and/or NC HVDC. However, these additional requirements are not binding for the facilities' owners.

¹¹¹ DCC Anforderungs-V, available at:

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20010756>

¹¹² Pursuant to Article 13(1) of the NC DC.

- (175) The remaining NRAs¹¹³ reported the absence of additional requirements concerning frequency or voltage in the relevant national regulations.

4.9 Conclusion and discussion

- (176) ACER aimed at monitoring the implementation status concerning the proposal and approval of the requirements of general application of the NC DC and NC HVDC (as per Article 6 of the NC DC and Article 5 of the NC HVDC).
- (177) This section deals with the conclusions reached by ACER after having analysed the questions relevant to this Section and included in the questionnaire circulated with the NRAs.
- (178) In most of the MSs, the proposals for the requirements of general application of the NC DC and NC HVDC were filed by the TSOs and/or relevant system operators respecting the deadlines laid down in the corresponding NCs. The most remarkable exceptions refer to AT and LU, where the proposals for the requirements of general application of the NC HVDC have not been submitted yet and are not planned to be submitted¹¹⁴.
- (179) The proposals for the requirements of general application of the NC DC submitted in DE, LU and PL are partial since they do not include a proposal for the requirements laid down in Chapter 1 of TITLE III of the NC DC. Similarly, incomplete submissions have been filed in SE with regard to both the NC DC and NC HVDC.
- (180) The proposals for the requirements of general application have been drafted only by the relevant TSOs¹¹⁵ or with simple consultation with the relevant system operators as reported by several NRAs¹¹⁶. Other NRAs¹¹⁷ reported that the proposals have been drafted, partially or entirely, by the TSO and the relevant system operators.
- (181) The implementation of Article 6(3)(b) and (e) of the NC DC and Article 5(3)(b) and (e) of the NC HVDC is successful since all NRAs confirmed that transparency was ensured in the proposals for the requirements of general application. Similarly, all NRAs¹¹⁸ reported that the coordination between the TSO and the relevant DSOs was guaranteed through close collaboration, working groups, meetings, and consultations.
- (182) Article 9(1)(d) of the NC DC has been well implemented as reported by the majority of the NRAs. In fact, only four NRAs (BNetzA (DE), CNMC (ES), ERSE (PT) and RONI (SK)) revealed that the relevant system operators and relevant TSOs did not carry out public consultations pursuant to Article 9(1)(d) of the NC DC and related to the requirements for

¹¹³ CREG (BE), BNetzA (DE), DUR (DK), ECA (EE), CNMC (ES), EV (FI), CRE (FR), RAE (GR), HERA (HR), HEA (HU), CRU (IE), Ofgem (GB), UR (UK-NIR), ARERA (IT), NERC (LT), IRL (LU), PUC (LV), ACM (NL), ERSE (PT), Ei (SE), AGEN-RS (SI) and RONI (SK).

¹¹⁴ More details have been included in Section 1.3.1.

¹¹⁵ Although consultations with relevant system operators have been arranged.

¹¹⁶ CREG (BE) concerning the federal level, ECA (EE), EV (FI), RAE (GR), HERA (HR), HEA (HU), ARERA (IT), NERC (LT), PUC (LV), ACM (NL), URE (PL), ANRE (RO), Ei (SE), AGEN-RS (SI) and RONI (SK).

¹¹⁷ E-Control (AT), CREG (BE) concerning the regional level, ERO (CZ), BNetzA (DE), DUR (DK), CNMC (ES), CRE (FR), CRU (IE), UR (UK-NIR), Ofgem (GB), IIR (LU) and ERSO (PT).

¹¹⁸ With the exception of Ei (SE). The Swedish regulatory authority answered to be not aware of TSO-DSOs consultations and of the assessment of the potential impact on DSOs systems.

demand units specified in accordance with Article 28(2)(c),(e),(f),(k) and (l) and Article 29(2)(c) to (e) of the NC DC.

- (183) The implementation should be considered successful where competent entities (e.g. NRAs) have approved, by the specified deadline, the proposals for all requirements of general application established by the relevant system operators or TSOs.
- (184) The outcomes of the analysis of the collected replies from NRAs is summarised in Table 1 and Table 2 concerning the NC DC and NC HVDC, respectively.

(185) *Table 1: Status of the implementation of the requirements of general application of the NC DC.*

Status	Country abbreviation	Remarks
successful	AT, BE, CZ, DK, EE, FI, FR, GB, GR, HR, HU, IE, IT, LT, LV, RO, SI, SK	Competent authorities in AT, BE, CZ, DK, FR, GR, HR, IE, LT, LV, RO ¹¹⁹ , SK approved the proposals later than the six month deadline envisaged in Article 6(6) of the NC DC
advanced	DE, LU, PL, SE	Not all the requirements of general application have been approved ¹²⁰ .
incomplete	BG, ES, UK-NIR, NL, PT	<ul style="list-style-type: none"> • UK-NIR, IE (only a partial approval) • ES, NL, PT (proposal submitted by the TSO/relevant system operators) • BG¹²¹ (no replies)

(186) *Table 2: Status of the implementation of the requirements of general application of the NC HVDC.*

Status	Country abbreviation	Remarks
successful	BE, CZ, DE, DK, EE, FI, FR, GB, GR, HR, HU, IE, IT, LT, LV, NL, PL, RO, SI, SK	competent authorities in BE, CZ, DE, DK, FR, GR, HR, IE, LT, LV, NL and RO ¹²² approved the proposals later than the six

¹¹⁹ ANRE (RO) reports that the delay in approving the proposal for the requirements of general application of ND DC was experienced due to extensive consultation with all the involved stakeholders.

¹²⁰ Competent authorities in DE, LU and PL have not approved the requirements concerning non-mandatory demand response services referring to TITLE III of the NC DC. With regard to SE, the missing requirements of the NC DC Article 15(2)(a)-(b), 14(1), 14(5), 19 (partly), 16(1), 17(1), 18(1)-(3).

¹²¹ ACER reasonably presumes that the implementation in BG is incomplete since the relevant NRA has not provided answers to the questionnaire.

¹²² ANRE (RO) reports that the delay in approving the proposal for the requirements of general application of ND HVDC was experienced due to extensive consultation with all the involved stakeholders.

		month deadline envisaged in Article 5(6) of the NC HVDC
advanced	SE	Not all the requirements of general application have been approved. ¹²³
incomplete	AT, BG, ES, UK-NIR, LU, PT	<ul style="list-style-type: none"> • UK-NIR (only a partial approval) • ES, IE, PT (proposal submitted by the TSO/relevant system operators) • AT, LU(proposal not submitted) • BG¹²⁴ (no replies)

- (187) Concerning the outcomes presented in Table 1 and regarding DE, LU and PL, ACER emphasizes that the compliance with the requirements laid down in TITLE III of the NC DC concerning demand response service does not represent a pre-requisite for demand system to obtain connection to the network. In fact, the provision of demand response services from demand systems is not mandatory. However, prospective or new¹²⁵ demand systems, willing to provide demand response services¹²⁶, should not be obstructed by the lack of approved and publicly available relevant requirements. In fact, prospective demand systems could eventually delay their projects, whereas new demand systems may require potentially costly retrofitting actions in order to comply with the requirements in TITLE III, once approved. A fully successful implementation of the NC DC should not offer this picture since all the requirements of the NC DC have already entered into application¹²⁷.
- (188) The implementation of the requirements of general application in the national regulations was not always conducted in full alignment with the provisions of the NC DC and NC HVDC. The application of looser/stricter requirements compared to the values indicated in the NC DC have been confirmed by UR (UK-NIR). This NRA, together with E-Control (AT), CRU (IE) and ERO (CZ), also confirmed the application of additional requirements, which are not present in the NC DC. On the other hand, the rest of the NRAs confirmed that the implementation of the requirements of general application did not deviate from the provisions laid down in the NC DC.
- (189) With regard to the NC HVDC, the application of looser/stricter requirements compared to the values indicated in the NC HVDC were reported by ECA (EE). ACER consulted the EirGrid¹²⁸ Grid Code and has verified the occurrence of discrepancies also in the context of the NC HVDC.

¹²³ Around 40 requirements of general application of the NC HVDC have not been defined and thus have not yet been approved in SE.

¹²⁴ ACER reasonably presumes that the implementation in BG is incomplete since the relevant NRA has not provided answers to the questionnaire.

¹²⁵ In accordance with Article 3 and Article 4 of the NC DC.

¹²⁶ And thus comply with associated requirements.

¹²⁷ In accordance with Article 59 of the NC DC.

¹²⁸ The TSO in IE.

5. Operational notification and compliance testing

5.1 Objectives

- (190) Chapter II of Title II¹²⁹ and Chapter II of Title III¹³⁰ of the NC DC establish the operational notification procedure for connection of new demand systems. Similarly, Title V of the NC HVDC deals with the operational notification procedure for connection of new HVDC-connected systems¹³¹.
- (191) In accordance with Article 24 of the NC DC and Article 57 of the NC HVDC, an interim operational notification ('ION') shall be issued by the relevant TSO, subject to completion of the data and study review process as required by those Articles. Similarly, Article 62 of the NC HVDC sets the same provision for DC-connected power park modules.
- (192) The ION entitles the owners of demand systems or HVDC-connected systems to operate the assets by using the grid connection for a time limited period.
- (193) Furthermore, with regard to the data and study review, the relevant TSO shall have the right to request the owner of the demand system or the HVDC system to provide equipment certificates issued by an authorised certifier where these are relied upon as part of the evidence of compliance.
- (194) Moreover, the owners of demand systems and HVDC-connected systems shall demonstrate that these systems comply with the relevant provisions of the corresponding regulations (NC DC and NC HVDC, respectively). The provisions concerning the compliance testing for demand systems are in Chapter 2 of Title IV of the NC DC. The corresponding provisions for the case of HVDC-connected systems are in Chapter 2¹³² of Title VI of the NC HVDC.
- (195) In this context, ACER asked two questions. The first deals with the operational notification procedure and it aims to ascertain what documents/information are required by the relevant system operator in the absence of equipment certificates. The second pertains to the compliance testing and it asks to elaborate on how the requirements of the NC DC and NC HVDC are verified in the absence of equipment certificates.
- (196) The analysis of the collected answers is presented in the next sections, while the NRAs' responses in full are included in Section 4 of Annex I.

¹²⁹ Concerning the connection of transmission-connected demand facilities, transmission-connected distribution facilities and distribution systems.

¹³⁰ Concerning the connection of demand units used by a demand facility or a closed distribution system to provide demand response services to system operators.

¹³¹ Chapter 1 of Title V refers to HVDC-connected systems whereas Chapter 2 of Title V refers to DC-connected power park modules.

¹³² In particular, Article 71 in Chapter 2 refers to the compliance testing for HVDC systems, whereas Article 72 in Chapter 2 refers to the compliance testing for DC-connected power park modules and remote-end HVDC converter units.

5.2 Interim operational notification procedure

- (197) Concerning the interim operational notification, as part of the operational notification procedure for connection of relevant system users, ACER asked the NRAs to provide information on the documents that are required by the relevant system operator in the absence of equipment certificates.
- (198) The analysis of the collected answers revealed that equipment certificates are usually already provided in HR by relevant system users during the process of interim operational notification. Hence, HERA (HR) communicated that there is no need for additional documents/information in this process.
- (199) The set of documents and information concerning the operational notification procedure in absence of equipment certificates is being developed in AT, PT, SI and LU.
- (200) The answers provided by most of the NRAs¹³³ revealed the use/request of specific information/documents to be provided in case of absence of equipment certificates. In general, these are statements of compliance provided by the manufacturer or the installer, compliance testing and simulation and the provision of technical data. Specific information is available in Section 4 of Annex I.
- (201) Moreover, UR (UK-NIR) affirmed that the regulatory authority is not currently aware of the status of the operational notification in the case of demand connections or HVDC interconnectors.
- (202) HEA (HU) provided the web link providing information regarding the network connection process. Finally, CRE (FR) did not reply to this question.

5.3 Compliance testing

- (203) Concerning the compliance testing, ACER asked the NRAs how the requirements of the NC DC and of the NC HVDC are verified in the absence of equipment certificates.
- (204) Most of the NRAs¹³⁴ communicated the specific information concerning the compliance testing. In most of the cases, the required tests directly refer to the provisions included in the corresponding NC DC and NC HVDC. In addition, the analysis confirms that the requirements of the compliance tests have been (or are in the process of being) implemented in the relevant national regulations. Specific information is available in Section 4 of Annex I.
- (205) Ei (SE) did not report any available documents/information in the context compliance testing in absence of equipment certifiers. A similar answer was provided by AGEN-RS (SI), which added that documents/information will be provided according to the results of an ongoing study.

¹³³ CREG (BE), BNetzA (DE), ERO (CZ), ECA (EE), CNMC (ES), RAE (GR), NERC (LT), PUC (LV), EV (FI), CRU (IE), ARERA (IT), DUR (DK), Ofgem (GB), ACM (NL), URE (PL), ANRE (RO) Ei (SE) and RONI (SK).

¹³⁴ E-Control (AT), CREG (BE), ERO (CZ), BNetzA (DE), ECA (EE), CNMC (ES), DUR (DK), EV (FI), RAE (GR), CRU (IE), Ofgem (GB), NERC (LT), PUC (LV), ARERA (IT), ACM (NL), URE (PL), ANRE (RO) and RONI (SK).

- (206) According to ERSE (PT), the aspects investigated in this question are being addressed in the ongoing revision of regulations for the transmission and distribution networks.
- (207) After consultation with the relevant TSO, ILR (LU) reported that specific procedures, dealing with documents and information concerning the compliance testing and to be shared with parties, still need to be developed or implemented. The treatment of such cases, expected to be very limited, is being assessed.
- (208) HEA (HU) provided the web link providing information regarding the network connection process.
- (209) The answers provided by UR (UK-NIR) and HERA (HR) are not pertinent to this question since they repeat those communicated with regard to the operational notification procedure in the previous section. Finally, CRE (FR) did not reply to this question.

5.4 Conclusion and discussion

- (210) ACER monitored the implementation of Article 24 of the NC DC and Articles 57 and 62 of the NC HVDC concerning the ION issued by the relevant TSO.
- (211) The analysis of the answers included in the questionnaire revealed that the implementation of these articles is well on track. The majority of the NRAs have:
- a. already reported the specific information/documents to be provided in case of absence of equipment certificate, or
 - b. affirmed that equipment certificates are already in use with regard to the ION.
- (212) Few NRAs¹³⁵ communicated that the implementation of the above-mentioned provisions is still pending, since the set of documents and information concerning the operational notification procedure in absence of equipment certificates is still under development or lacking. CRE (FR) and EWRC (BG) did not provide communication concerning the status of the implementation of the above-mentioned provisions. ACER thus concludes that the implementation is still pending.
- (213) Moreover, ACER monitored the implementation of the requirements relating to the compliance testing¹³⁶ of new system users in absence of equipment certificates. In this context, ACER has verified that the implementation of the corresponding articles in the NC DC and ND HVDC is overall well on track, as communicated by most of the responding NRAs¹³⁷. Moreover, ACER deems that the status of the implementation is still pending in SE, SI, PT, LU, HU, NL, UK-NIR and HR. ACER concludes that the status of the implementation of the requirements relating to the compliance testing is still pending in BG and FR due to the lack of information provided by the relevant regulatory authorities.

¹³⁵ E-Control (AT), ERSE (PT), AGEN-RS (SI), ILR (LU).

¹³⁶ The provisions concerning the compliance testing for demand systems are in Chapter 2 of Title IV of the NC DC. The corresponding provisions for the case of HVDC-connected systems are in Chapter 2 of Title VI of the NC HVDC.

¹³⁷ E-Control (AT), CREG (BE), ERO (CZ), BNetzA (DE), ECA (EE), CNMC (ES), DUR (DK), EV (FI), Ofgem (GB), RA E (GR), CRU (IE), NERC (LT), PUC (LV), ARERA (IT), URE (PL), ANRE (RO) and RONI (SK).

6. Relevant clauses in contracts and general terms

6.1 Objectives

- (214) Article 58(1) of the NC DC and Article 84(1) of the NC HVDC regulate the amendment of contracts and general terms and conditions. According to these provisions, regulatory authorities shall ensure that all relevant clauses in contracts and general terms and conditions relating to the grid connection of new demand systems and HVDC-connected systems are brought into compliance with the requirements of the NC DC and the NC HVDC.
- (215) ACER sought feedback from NRAs concerning the relevant clauses in contracts and general terms.
- (216) The implementation of Article 58(1) of the NC DC and Article 84(1) of the NC HVDC is analysed in the continuation of this Section, while the NRAs' responses in full are included in Section 5 of Annex I.

6.2 Modalities adopted

- (217) Concerning Article 58(1) of the NC DC and Article 84(1) of the NC HVDC, ACER asked the NRAs to explain the modalities adopted to ensure that all relevant clauses in contracts and general terms and conditions relating to the grid connection of new demand systems and new HVDC-connected systems are brought into compliance with the requirements of the relevant regulations.
- (218) The analysis of the collected answers revealed that CRE (FR) and CNMC (ES) have not implemented any specific modality to implement Article 58(1) of the NC DC and Article 84(1) of the NC HVDC yet. Similarly, Ei (SE) reported that the development of a specific modality has not started yet. However, Ei (SE) plans to supervise this process which is expected to start by the end of 2020.
- (219) In the case of PT and BE, the process to ensure the compliance of all contracts with the NC DC and the NC HVDC is still ongoing. In fact, ERSE (PT) reported that this issue will be addressed in an ongoing review project. CREG (BE) stated that, at federal level¹³⁸, the relevant articles of the model connection agreement and access agreement will be adapted to the new Belgian federal grid code after an in-depth review in the coming months. A similar process is envisaged at regional level¹³⁹.
- (220) The remaining NRAs confirmed that they ensure that all relevant clauses in contracts and general terms and conditions comply with the NC DC and NC HVDC. Further insights on the specific modalities adopted can be found in Section 5 of the Annex I.

¹³⁸ Voltage level at the connection point above 70 kV.

¹³⁹ Voltage level at the connection point below or equal 70 kV.

6.3 Conclusion and discussion

- (221) The implementation of Article 58(1) of the NC DC and Article 84(1) of the NC HVDC is well on track. In fact, it can be highlighted that 21 out of 26 responding NRAs currently ensure that all relevant clauses in contracts and general terms and conditions relating to the grid connection of new demand systems (for the NC DC) and new HVDC-connected systems (for the NC HVDC) are brought into compliance with the requirements of the relevant regulations.
- (222) However, although at different stages, the implementation is still ongoing in BE, FR, ES, SE and PT.

Annex I: NRAs' responses to the questionnaires

1. Overview

- (1) This annex includes the responses in full received from the NRAs to each question of the questionnaire on the implementation monitoring of the NC DC and NC HVDC. Text in red font is added by ACER for the sole purpose of clarification.
- (2) The questionnaire was circulated on 19 December 2019 and NRAs were asked to submit their answers by 12 March 2020. The report is based on the answers given by the NRAs and submitted by 4 December 2020¹⁴⁰.
- (3) It is worth noting that CREG (BE), ERSE (ES) and ILR (LU)¹⁴¹ provided a general introductory note before answering all the questions. The relevant notes are included in the table below (Table 3). This table also includes the communications received from RAE (GR) in order to motivate the late submission of the answers to the questionnaire sent by ACER.
- (4) ACER highlights the communication received from CRE (FR) on 26 October 2020 concerning:
 - the publication on 9 June 2020 of the ministerial order¹⁴² defining the requirements of general application and the criteria for modification of demand systems and HVDC-connected systems, and
 - the decision¹⁴³ of CRE (FR) on 16 July 2020 concerning only the provisions of the NC DC and NC HVDC applying in the event of a modification of demand systems and HVDC-connected system as defined in the ministerial order of 9 June 2020.
- (5) The approval of the abovementioned ministerial order and, in turn, the decision of CRE (FR) provided additional information concerning certain answers submitted¹⁴⁴ by CRE (FR) when responding to questionnaire circulated by ACER. In fact, the answers reported by CRE (FR) and included in Table 5-7 and Table 12 were referring to only a prospective publication of the ministerial order.

¹⁴⁰ NRAs were given an opportunity to further submit their answers, or to amend and update their initial inputs.

¹⁴¹ The note from ILR (LU) is part of an email communication sent to ACER on 08 May 2020.

¹⁴² La Ministre de la transition écologique et solidaire, Arrêté du 9 juin 2020 relatif aux prescriptions techniques de conception et de fonctionnement pour le raccordement aux réseaux d'électricité, version en vigueur au 16 septembre 2020.

Available at: <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000042032189/2020-09-16/#:~:text=r%C3%A9seaux%20d%C3%A9lectricit%C3%A9,Arr%C3%AAt%C3%A9%20du%209%20juin%202020%20relatif%20aux%20prescriptions%20techniques%20de,raccordement%20aux%20r%C3%A9seaux%20d%C3%A9lectricit%C3%A9>

¹⁴³ Commission de Régulation de l'énergie, Délibération N. 2020-184 de la CRE du 16 juillet 2020, portant décision relative aux installations, réseaux et systèmes faisant l'objet de modifications au sens des articles 4 des règlements (UE) 2016/631, 2016/1388 et 2016/1447 de la Commission.

Available at: <https://www.cre.fr/Documents/Deliberations/Decision/installations-reseaux-et-systemes-faisant-l-objet-de-modifications-au-sens-des-articles-4-des-reglements-ue-2016-631-2016-1388-et-2016-1447-de>

¹⁴⁴ On 8 May 2020 via email communication.

- (6) ACER adopted the most up-to-date information provided by CRE (FR) when compiling the Report. Finally, CRE (FR) included a note at each of these tables to highlight the changes introduced by the publication of the ministerial order and the decision of CRE (FR).

(7) Table 3: General notes and marks.

MS	General note
BE	<p><i>In Belgium the federal regulator, CREG is competent for the transmission grid (grid >70 kV).</i></p> <p><i>The regional regulators, BRUGEL, CWaPE and VREG are competent for local transmission and distribution (grids <=70 kV). If relevant, different answers are given for the federal and regional voltage levels.</i></p> <p><i>The scope of the NC HVDC, is been considered as a competence of the federal level, so the answers for the regional level do not cover the NC HVDC. The proposal for requirements of general application for the NC HVDC have been submitted to the regional regulators for information only and not for approval.</i></p>
ES	<p><i>A Ministerial Order setting requirements of general application is under process of approval and expected to be adopted by the end of the first quarter of 2020. Any provided information upon this point 2 is based on the requirements that were established on the version of the ministerial order that was subjected to public consultation. Please, bear in mind that some changes could be arise from the approbation process, so provided information must be taken with all due reservations.</i></p>
GR	<p>First communication of RAE (GR) of 23 March 2020:</p> <p><i>The Regulator in Greece is expecting proposals with the revised general requirements for the three codes from the TSO and hopefully proceed with the approval shortly after. In other words we are approaching the complete implementation of the three codes.</i></p> <p>Second communication of RAE (GR) of 27 October 2020:</p> <p><i>The Greek NRA (RAE) has taken all the decisions required by the three NC (RfG, DCC, HVDC). Hence in Greece we have approved</i></p> <p><i>1) RAE Decision for RfG, Thresholds and Requirements for General Applications (both in one decision): 1165/2020 (Gov. Gaz. 3757 B, 7 Sept. 2020)</i></p> <p><i>2) RAE Decision for DCC, Requirements for General Applications: 1166/2020 (Gov. Gaz. 3698 B, 3 Sept. 2020)</i></p> <p><i>3) RAE Decision for HVDC, Requirements for General Applications: 1167/2020 (Gov. Gaz. 3762 B, 7 Sept. 2020)</i></p> <p><i>4) RAE Decision Derogations for RfG, DCC, HVDC (common criteria for the three): 778/2018 (Gov. Gaz. 4643 B, 18 Oct. 2018)</i></p>

	5) We skipped the decision for the emerging technologies in RfG since we missed the time intervals described in the Regulation.
LU	No answers were provided for HVDC as this is not relevant for Luxembourg (no HVDC today nor envisaged in the future).

2. Defining new or existing demand systems and HVDC-connected systems

2.1 Connection in absence of establishment of requirements of general application

- (8) **Q.1.a. In case the requirements of general application for the NC DC and/or for the NC HVDC have not been established yet, explain which rules are currently considered to connect new demand facilities that fall in the scope of application of the NC DC and new HVDC systems that fall in the scope of application of the NC HVDC.**

(9) Table 4: Applicable rules

MS	Answer
AT	<p><i>No reply</i></p> <p><i>Clarification provided by the NRA upon ACER's requests:</i></p> <p>Instead of submitting a proposal for non-exhaustive requirements for HVDC systems, system operators provided a letter stating that HVDC infrastructures is not existent and even not planned in Austria.</p> <p>Further, the implementation of HVDC infrastructure into the Austrian electricity transmission / distribution network would take at least 5 to 10 years after initial commencement of such planning and would be reflected in the respective network development plan. This would grant E-Control the adoption of a respective decree in due time.</p> <p>Against this background E-Control decided not to demand, decide upon and publish requirements as long as this situation remains unchanged.</p>
BE	<p>Federal level (grids >70kV):</p> <p>The requirements of general application for the NC DDC and for the NC HVDC have been established and the Belgian federal grid code has been adapted in this way on 22 April 2019.</p> <p>http://www.ejustice.just.fgov.be/mopdf/2019/04/29_1.pdf#Page26</p> <p>Regional level (grids <=70kV):</p> <p>The requirements of general applications have been established, they entered into force in the Flemish Region on November 1, 2019.</p> <p>https://www.vreg.be/nl/document/besl-2019-38</p> <p>https://www.vreg.be/nl/document/besl-2019-37</p> <p>The same in Wallonia (Nov 1, 2019):</p> <p>decision 0349: https://www.cwape.be/docs/?doc=4985</p>

	<i>decision 0346: https://www.cwape.be/docs/?doc=4982 Same for the Brussels-Capital Region (cf. question 2.d).</i>
BG	<i>No reply</i>
CZ	<i>Currently requirements of general application prepared by the TSO are already approved. However, some requirements are also established by the DSOs and these documents are currently in the national approval process. Nevertheless, until these are approved, the DSO Grid Codes are applied.</i>
DE	<i>The requirements of general application for the NC DC and for the NC HVDC have been established by the authorized entity VDE FNN by means of the following “Technical Connection Rules” (“Technische Anschlussregeln (TAR)”):</i> <ul style="list-style-type: none"> - VDE-AR-N 4110 (“Technical requirements for the connection and operation of customer installations to the medium voltage network (TAR medium voltage)”) - VDE-AR-N 4120 (“Technical requirements for the connection and operation of customer installations to the high voltage network (TAR high voltage)”) - VDE-AR-N 4130 (“Technical requirements for the connection and operation of customer installations to the extra high voltage network (TAR extra high voltage)”) <i>See here: https://www.vde.com/en/fnn/topics/european-network-codes/dcc</i> <ul style="list-style-type: none"> - VDE-AR-N 4131 (“Technical requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (TAR HVDC)”) <i>See here: https://www.vde.com/en/fnn/topics/european-network-codes/hvdc</i>
DK	<i>The DCC and HVDC codes have been implemented. Consequently new demand facilities and new HVDC systems shall comply with the DCC and HVDC connection codes.</i>
EE	<i>Currently requirements of general application prepared by the TSO are already approved.</i>
ES	<i>Royal Decree 1955/2000 of 1 December on the Transmission, Distribution, Marketing, and Supply of Electricity and the Authorisation Procedure for Electricity Generation Plants (Title VII; Chapter IV): https://www.boe.es/buscar/act.php?id=BOE-A-2000-24019</i>
FI	<i>Both are in force.</i>
FR	<i>TSO apply to new demand facilities requirements that should not be jeopardized with the publication of the forthcoming order.</i>
GB	<i>The requirements of the general application for NC DC and NC HVDC have been implemented here in GB.</i>
UK-NIR	<i>Articles of DCC that have been approved by the UR have been proposed to be incorporated into Grid Code, The latest version of the Grid Code with current rules can be found http://www.soni.ltd.uk/how-the-grid-works/grid-codes/</i> <i>The rules that are currently considered to connect new demand facilities can be found under the following Connection Charging Methodology Statements. SONI Limited Transmission Connection Charging Methodology Statement - http://www.soni.ltd.uk/media/documents/SONI-TCCMS-1-April-2019.pdf</i>

	<p>NIE Networks Transmission Connection Methodology Statement https://www.nienetworks.co.uk/documents/regulatory-documents/transmission-charging-statement-01-04-2019.aspx NIE Networks Connection Charging statement https://www.nienetworks.co.uk/statementofcharges</p>
GR	<p>The requirements of general application for the NC DC and for the NC HVDC have been established by IPTO (Greek TSO) and approved by RAE on 30 July 2020 with the following decisions:</p> <p>1) RAE Decision for DCC, Requirements for General Applications: 1166/2020 (Gov. Gaz. 3698 B, 3 Sept. 2020)</p> <p>2) RAE Decision for HVDC, Requirements for General Applications: 1167/2020 (Gov. Gaz. 3762 B, 7 Sept. 2020)</p>
HR	<p>NC DC and NC DCC requirements of general application are currently in the process of implementation in the amended grid code and are in the final stage of approval from NRA. https://www.hops.hr/en/connection-network-codes Non-exhaustive parameters were proposed by the TSO and approved by the NRA. https://www.hops.hr/page-file/wzeBznhVQP1kyrLNm28Nq0/pravila-za-prikljucenja/DCC_zahtjevi.pdf https://www.hops.hr/page-file/6oOZSuyJOoH3ojLV08Xlh7/pravila-za-prikljucenja/HVDC%20zahtjevi.pdf Non-exhaustive parameters and general requirements are being implemented in the grid codes. https://www.hops.hr/page-file/1BT7SQ2I2qMy4TLb082Wa3/connection-network-codes/Prijedlog%20izmjena%20i%20dopuna%20Mre%C5%BEnih%20pravila.pdf</p>
HU	<p>They are already adopted, find accordingly:</p> <ul style="list-style-type: none"> - for NC DC https://www.mavir.hu/documents/10373/229644074/7.1.+DCC_alapveto_kovetelmenyek_ENG.pdf/f11c8299-da56-cdbd-ae40-7c1aa0b3aa6d?version=1.0 - for HVDC https://www.mavir.hu/documents/10373/230346904/8.1.+HVDC_alapveto_kovetelmenyek_elolap_ENG_osszefuzve.pdf/e41ef6b5-0f88-10c1-5c79-44fa0027c705?version=1.0
IE	<p>Articles of DCC that have been approved by the CRU have been proposed to be incorporated into Grid Code, more details here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-info/modifications/. The latest version of the Grid Code with current rules can be found here: http://www.eirgridgroup.com/site-files/library/EirGrid/Grid-Code.pdf</p>
IT	<p>In Italy the requirements of general application for the NC DC and for the NC HVDC have already been established.</p>
LT	<p>The requirements are established.</p>
LU	<p>N/A</p>
LV	<p>The requirements of general application for the NC DC and/or for the NC HVDC have been already established. The requirements are contained in the Grid Code in Electricity Sector (Grid Code) (Annex 10 and 11)</p>

NL	<i>Until approval of the requirements of general application, there are no further rules considered to connect new demand facilities.</i>
PL	<i>Requirements of general application for both: NC DC and NC HVDC have been established already.</i>
PT	<i>The NC DC and NC HVDC have not been implemented at national level. Although the non-exhaustive requirements proposed by TSO are consolidated proposals between the TSO and the DSO, those requirements are being considered in the ongoing review of national network framework. Those topics are in Portuguese regulations for the transmission and distribution networks. There are no criteria for CCAT installations. A general note regarding NC HVDC. Given the uniqueness of this type of systems, their constant technological evolution and taking into account the fact that, to date, there is no applicable case in our country, non-exhaustive requirements were defined as a guiding reference. Thus, the final definition of requirements to be applied will always be carried out on a case-by-case basis and adjusted, if necessary, to the specificity of the future projects concerned.</i>
RO	<i>NC DC The requirements of general application for the NC DC have been implemented. NC HVDC The requirements of general application for the NC HVDC have been implemented.</i>
SE	<i>Ei as the NRA is authorised to issue secondary legislation according to the System Responsibilities for Electricity, "Förordning (1994:1806) om systemansvaret för el, 16 b § and 16 d §" Link: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/forordning-19941806-om-systemansvaret-for-el_sfs-1994-1806. The secondary legislation adopted concerning DCC is the "Energimarknadsinspektionens föreskrifter om fastställande av generellt tillämpliga krav för anslutning av förbrukare, EIFS 2019:6" (Ei ref. no. 2018-102196). Link: https://www.ei.se/Documents/Publikationer/foreskrifter/EI/EIFS_2019_6.pdf. And for HVDC it is the "Energimarknadsinspektionens föreskrifter om fastställande av generellt tillämpliga krav för nätanslutning av system för högspänd likström och likströmsanslutna kraftparksmoduler, EIFS 2019:3" (Ei ref. no. 2018-102197). Link: https://www.ei.se/Documents/Publikationer/foreskrifter/EI/EIFS_2019_3.pdf</i>
SI	<i>Requirements have been established by TSO and approved by the NRA.</i>
SK	<i>The requirements of general application have been established.</i>

2.2 Modernisation/replacement of existing demand systems and HDVC systems

2.2.1 Qualitative criteria

- (10) **Q.1. b. Demand facilities defined as existing are not subject to the requirements of the NC DC, unless the exemptions in Article 4(1)(a)-(b) of the ND DC apply . Similarly, existing HVDC systems are not subject to the requirements of the NC HVDC, unless the exemptions in Article 4(1)(a)-(b) of the NC HVDC apply. Explain what are the**

modernisation/replacements criteria adopted to determine if the connection agreement of a relevant system user must be revised or if a new one is needed.

(11) Table 5: Qualitative modernisation/replacement criteria

MS	Answer
AT	Art. 4 (1)(a) DCC provides a process to be followed giving a role to the relevant system operator and the NRA.
BE	<p>Federal level (grids >70kV): According to article 162, §2, of the new Belgian federal grid code the TSO has to develop these criteria, submit them to the NRA for advice, and publish the criteria on its website. At this moment the NRA is developing these criteria in consultation with representatives of the stakeholders. As yet the criteria are not finalised but we expect that this will be done in the near future.</p> <p>Regional level (grids <=70kV): Art. 2.2.52, §3 of the Technical Rules for the Distribution System for Electricity in the Flemish Region states that the distributions system operators, in collaboration with the transmission system operator, formally propose, after a public consultation, the modernisation/replacements criteria when a connection agreement of a relevant system user must be revised or if a new one is needed, to the regulatory authority (VREG for the Flemish Region).</p> <p>For the local Transmission system of electricity in the Flemish Region, a public consultation is ongoing to implement a similar rule in the Technical Rules for the Local Transmission system for electricity in the Flemish Region. The relevant system operator must formally propose the above mentioned criteria.</p> <p>Art.74 and 75 of Technical Rules for de Distribution System for Electricity in Wallonia (version 2011 under revision) disposes that the DSO analyse if specific demands of modification are to be considered as minor or not. The regulator authority may arbitrate any complaint.</p>
BG	<i>No reply</i>
CZ	Currently there are no such criteria in place.
DE	<p>NC DC: If components or system parts are replaced by a modification or modernization and if this replaces 50 % of the total connected active power agreed for the grid connection point (based on all components or system parts at the time of initial commissioning), this is always considered a significant change.</p> <p>(VDE-AR-N 4110 (“TAR medium voltage”), Chapter 1, page 14 and VDE-AR-N-4120 (“TAR high voltage”), Chapter 1, page 12 and page 13)</p> <p>NC HVDC: No modernisation/replacements criteria have been explicitly adopted yet. However, if the situation would occur in practise, it is likely that an analogical test as the one adopted for PGMs and demand facilities would apply.</p>
DK	DUR will address the assessment of modernisation as a matter of legal interpretation of the connection agreement. The assessment will be based on the desired technical changes (e.g in MW or Mvar) and the reasoning for the desired change. This will be

	<p>compared to the original connection agreement and to the reasoning from the RSO to set the general values for connection in the first place. DUR has not set predetermined quantifiable values in terms of deciding on the question of substantially modernisation.</p>
EE	<p>Currently there are no such criteria in place.</p>
ES	<p>A Royal Decree that establishes these criteria is under administrative processing and expected to be approved by the end of first quarter of 2020. Below it is explained what was included on the version that was subjected to public consultation . Please, bear in mind that some changes could be arise from the approbation process so that provided information must be taken with all due reservations.</p> <p>When referring to demand facilities connected to either transmission or distribution networks, following conditions will be considered as modifications that will require substantially revising the connection agreement:</p> <p>a) Contracted power increases to such an extent that it substantially affects technical capabilities</p> <p>b) Modification of an equipment or set of equipment with an individual or aggregated power at or above 50% of the maximum contracted power of all tariff periods. Cumulative nature of the replacements or modernizations will be taken into account.</p> <p>c) Replacements on the connection facilities. In this case, only these facilities must comply with regulation (EU) 2016/1388</p> <p>When referring to distribution systems, addition of a new power transformer or substitution of an existing one by another bought beyond two years after entry into force of ND DC.</p> <p>No criteria adopted in case of HVDC systems (including DC-connected power park modules).</p>
FI	<ul style="list-style-type: none"> - All features that affect the fulfilment of the technical requirements. - Described fully in the TSO grid code specifications for demand connection under the paragraph 5.2 - link to the (DCC) document: https://www.fingrid.fi/globalassets/dokumentit/en/customers/grid-connection/kulutuksen-jarjestelmatekniset-vaatimukset-kjv2018_-en.pdf - Described fully in the TSO grid code specifications for HVDC (only in Finnish) under the paragraph 6.2. - Link to the (HVDC) document: https://www.fingrid.fi/globalassets/dokumentit/en/customers/grid-connection/suurjannitteisten-tasasahkojarjestelmien-jarjestelmatekniset-vaatimukset-hvdc2018.pdf - Principals are the same in the RfG, DCC and HVDC but in the DCC there are some examples described.
FR	<p>The ministerial order defining the requirements of general application that should be published in the coming weeks will define a list of criteria for which the NC DC and the NC HVDC apply to existing demand facilities and HVDC systems.</p> <p>The provisions of the NC DC and NC HVDC that have to be applied in the case of the changes described before will be defined by CRE after the ministry order is published.</p> <p>Updated information provided by CRE (FR):</p>

	<p>The ministerial order defining the requirements of general application and the criteria for modification has been published on 9 June 2020. CRE issued a decision on 16 July 2020 concerning only the NC DC and NC HVDC requirements applicable in the event of a modification of demand systems and HVDC-connected system, as defined in the ministerial order of 9 June 2020.</p>
GB	<p>No, these paragraphs have not been applied.</p>
UK-NIR	<p>All relevant clauses in contracts and general terms and conditions relating to the grid connection of new system users refer to continued compliance with applicable Grid Code requirements. NC HVDC is being implemented through grid code modifications, details of which can be found at http://www.soni.ltd.uk/how-the-grid-works/grid-codes/ And at distribution level via the Northern Ireland Distribution Code Review Panel https://www.nienetworks.co.uk/about-us/distribution-code/dc-review-panel</p> <p><i>Clarification provided by the NRA upon ACER's requests:</i></p> <p>We had discussed this in the Q4 Northern Ireland SONI Grid Code Review Panel, see attached the minutes of that meeting and a paper from SONI the Transmission Operator on the Application of Connection Network Codes to existing Users, these documents are yet to be uploaded to the SONI Web site, I have chased them to upload them, hopefully they should appear on their website http://www.soni.ltd.uk/how-the-grid-works/grid-codes/ shortly.</p> <p>In regards to NIE Networks the distribution company within the Distribution Code sections 20.3.3 & 20.3.4 (copied below) deal with application to existing users. - https://www.nienetworks.co.uk/about-us/distribution-code/dc-review-panel</p> <p><i>See Figure 9 in the Annex II</i></p> <p>Also NIE Networks are planning to consult shortly on drafted changes to G99/NI, within in this consultation, there is a new section Annex A.6 – Scenario examples in respect of the application of EREC G59/1/NI and EREC G99/NI to new or modified sites after 27/04/2019 (copied below).</p> <p>A.6. Scenario examples in respect of the application of EREC G59/1/NI and EREC G99/NI to new or modified sites after 27/04/2019 These scenarios present examples in respect of connection to new sites or modifications to existing sites, as well as considering whether a modification to an existing Power Generating Module would be considered to be substantial and therefore compliance with this EREC G99/NI would be required.</p> <p><i>See Figure 10 in the Annex II</i></p>
GR	<p>DCC</p> <p>No such criteria are adopted so far. For existing demand facilities, requirements of general application are described in the relevant sections newly edited Hellenic Electricity Transmission System Code (Gov. Gaz. 4658 B, 22 Oct. 2020). In case of</p>

	<p>modernisation/replacements of existing demand facilities, the provisions of Article 4(1)(a)-(b) of the ND DC are applied on a case by case basis (site specific).</p> <p>HVDC</p> <p>No such criteria are adopted since there are no existing HVDC systems in Greece. The first HVDC system is expected to be commissioned by 2023 (internal subsea connection between Attica and island of Crete)</p> <p>Clarification provided by the NRA upon ACER's requests:</p> <p>The HVDC link between Italy and Greece belongs to Italian TSO TERNA. For this reason we don't consider it as part of the Greek Transmission System and consequently we did not include it in our answer</p>
HR	<p>There are no HVDC system connected, or none are foreseen.</p> <p>Modernisation/replacement criteria adopted to determine if the connection agreement of a relevant system user related to NC DC must be revised should include any modification on facility or TSO/DSO interface: for e.g. change of the nominal voltage connection level, new DSO/TSO transformer, modification to enhance the quality of supply, increase of the nominal power (on the demand side), modifications of electrical characteristics due to a new power unit connected to the DSO network (protection, communication etc.).</p>
HU	<p>There are no specific criteria adopted as these procedures were not yet executed, also the Regulation itself lays down the basic procedural steps and regulatory aspects.</p>
IE	<p>The TSO and DSO are currently working on a consultation to determine what constitutes a substantial modification, and therefore require a new connection agreement. This topic was presented to the Grid Code Review Panel in Q4 2019, the consultation is expected soon.</p>
IT	<p>The Italian Regulatory Authority, approving the proposal of the Italian TSO (Terna S.p.A.) and according to Article 4 (1)(a)-(b) of the NC DCC and according to Article 4(1)(a)-(b) of the NC HVDC, has provided that the NC DCC and the NC HVDC apply also for demand facilities defined as existing and for existing HVDC systems subject to significant modifications, partial or total rebuilding.</p> <p>The user shall notify the TSO of planned modification to allow the TSO to assess its significance. Within 60 days the notification receipt, TSO verifies the impact of the modernisation on technical performance and then assess its significance.</p>
LT	<p>Currently, NERC has not established modernisation/replacements criteria adopted to determine if the connection agreement of a relevant system user must be revised or if a new one is needed. We consider that such criteria should be determined on case by case basis when NRA receives the proposal for exemption. Currently, we have not received such proposals.</p>
LU	<p>Nothing defined. On a case by case basis.</p>
LV	<p>The modernisation/replacements criteria have not been adopted. The NRA will assess the application of the requirements of the NC DC to existing demand facilities on a case-by-case basis. There is no HVDC system in Latvia.</p>

NL	Not specified
PL	<p>No precise modernisation criteria have been adopted. TSO in cooperation with DSOs prepared rules/procedure on how to proceed with modernisation/replacements under NC DC and NC HVDC. By TSO principles developed have been included in documents: “Procedura objęcia istniejącego odbioru wymogami NC DC w przypadku modernizacji lub wymiany - Przewodnik” and “Procedura objęcia istniejącego modułu parku energii z podłączeniem prądu stałego wymogami NC HVDC w przypadku modernizacji lub wymiany - Przewodnik”. These documents are publicly available on website: www.pse.pl/dokumenty in bookmarks: Kodeksy Sieci -> NC DC -> Modernizacja istniejących odbiorów Kodeksy Sieci -> NC HVDC -> Modernizacja istniejących PPM DC An example for DSO can be seen at the link: https://www.operator.enea.pl/dladomu/uslugidystrybucyjne/kodeksy-sieci (relative to NC DC - separate documents for distribution installations and equipment, located in different network locations) and https://www.operator.enea.pl/operator/dla-domu/kodeks-sieci-nc-hvdc/2.pdf (relative to NC HVDC).</p>
PT	<p>Those criteria are yet to be defined and will be published by decree, like NC RfG. In any case, we recall the principles that TSO has been considering and that will serve as the basis for its proposal: Application to an existing transmission-connected demand facility</p> <ul style="list-style-type: none"> • Replacement / upgrading of its equipment with a nominal power equivalent to more than 50% of its contracted power, except for the interconnection transformer; • Increase more than 10% of its contracted power; • Change the connection point or the supply voltage level; <p>Application to an existing transmission-connected distribution facility and an existing distribution system</p> <ul style="list-style-type: none"> • Install a new transformer or replace an old one in a substation directly connected to the transmission grid that exceeds more than 10% of the total power transformer capacity installed; <p>There will only be new HVDC systems.</p>
RO	<p>NC DC In case of modernisation/replacements of the existing demand facilities provided in Article 4(1)(a)-(b) of the ND DC, the connection regulation in force is applied. NC HVDC Not applicable since there are no existing HVDC systems in Romania.</p>
SE	No criteria are adopted, no cases have reached the NRA so far, we will handle the modernisations case by case, but we will consider adopting criteria if necessary.
SI	Criteria are established in national grid code for transmission system and national grid code for distribution system. In general new connection agreement is required always when extent of modernisation impacts operational limits and technical characteristics of the PGM's given in existed connection agreement.
SK	The individual criteria are not specified. The TSO will deal with each request individually, and if the need to change the connection agreement is assessed, it will submit a request to the URSO to decide on the necessary changes to the agreement.

2.2.2 Quantitative criteria

- (12) **Q.1.c. Specify if there are any quantitative measures to determine the extent of the modifications brought to the relevant system users, above which the connection agreement must be substantially revised. If yes, describe them and provide links to relevant decision(s). Besides the criteria mentioned in Article 4(1)(a)-(b) of NC DC and in Article 4(1)(a)-(b) of NC HVDC, are there other criteria adopted to assess the level of modernisation of a relevant system user or replacement of equipment? If yes, provide exhaustive insights and links to a relevant decision(s)**

(13) Table 6: quantitative modernisation/replacement criteria

MS	Answer
AT	No, there are no quantitative measures.
BE	<p>The modernisation/replacement criteria to determine if the connection agreement of a relevant system user must be revised or if a new one is needed, are in development. This is being discussed with representatives of the stakeholders within the Workgroup Belgium Grid. A public consultation is foreseen later on this year.</p> <p>https://www.elia.be/-/media/project/elia/elia-site/ug/wg-belgiangrid/20200204_wg-belgian-grid/modernisation_ug_04_02_2020finalpptv3.pdf</p> <p>We expect that the main principle will be that all new elements will have to be compliant with the new regulation.</p>
BG	<i>No reply</i>
CZ	No there are no quantitative measures to determine the extent of the modifications.
DE	<p>NC DC:</p> <p>A change or replacement of consumer appliances shall be considered a substantial change if the change or replacement causes the electrical characteristics of these appliances to deviate from the original state (before the change). Substantial changes can be:</p> <ul style="list-style-type: none"> - Change of the agreed connected active power or the agreed connected apparent power; - deterioration of the system perturbations in such a way that the system perturbations that were present at the time of the original grid connection test violated the valid system perturbations limits; - modification of the protection concept; - modifications of the electrical infrastructure (such as power transformers or medium-voltage cable connections, conversion, extension or dismantling of a transfer station). <p>A simple replacement of consuming devices of the same type or technically equivalent types or components of more recent construction, for example due to a defect, is not a significant change as long as it is ensured that the electrical behaviour does not deteriorate. This also applies if more than 50 % of the total connected active power agreed for the grid connection point (based on all components or system parts at the time of initial commissioning) is substituted.</p>

	<p>(VDE-AR-N 4110 (“TAR medium voltage”), Chapter 1, page 14 and VDE-AR-N-4120 (“TAR high voltage”), Chapter 1, page 12 and page 13)</p> <p>NC HVDC:</p> <p>No quantitative measures to determine the extent of the modifications have been explicitly adopted yet. However, if the situation would occur in practise, it is likely that an analogical test as the one adopted for PGMs and demand facilities would apply.</p>
DK	DUR has not set predetermined quantifiable values in terms of deciding on the question of substantially modernisation.
EE	No, there are no quantitative measures to determine the extent of the modifications.
ES	See answer to question 1.a) No relevant decision have been taken yet.
FI	None.
FR	<p>For demand facilities, the criteria are:</p> <ul style="list-style-type: none"> - increase in connection power by more than 10%, or - modification of the connection reference voltage, or - modification of the electrical characteristics of the planned installation which is likely to lead to a deterioration in its previous performance, or - installation of new means of production in the installation. <p>For distribution facilities, the criteria is the addition of a HV/LV transformer.</p> <p>For HVDC systems, the criteria are :</p> <ul style="list-style-type: none"> - modification of the connection reference voltage or, - modification of the electrical characteristics of the installation having an impact on the technical capacities of the HVDC system. <p>These criteria have been the subject of a public consultation.</p> <p>CRE organized a public consultation (from December 12, 2019 to January 12, 2020) to decide on the provisions of the NC DC and NC HVDC that have to be applied when the criteria described before are met. CRE will published its decision after the ministerial order publication.</p> <p><i>Updated information provided by CRE (FR):</i></p> <p>The ministerial order defining the requirements of general application and the criteria for modification has been published on 9 June 2020. CRE issued a decision on 16 July 2020 concerning only the NC DC and NC HVDC requirements applicable in the event of a modification of demand systems and HVDC-connected system, as defined in the ministerial order of 9 June 2020.</p>
GB	No quantitative measures introduced.
UK-NIR	This has not been determined yet.

GR	No quantitative measures applied. Every case is examined on a site specific basis as foreseen in Article 4(1)(a)-(b) of NC DC and in Article 4(1)(a)-(b) of NC HVDC.
HR	None.
HU	Not applicable.
IE	This has not been determined yet.
IT	The quantitative measures to determine the extent of the modifications are the same described at the previous letter b.
LT	No quantitative measures are applied above which the connection agreement must be substantially revised.
LU	No.
LV	There are no measures.
NL	Not specified
PL	No quantitative measures have been applied.
PT	See point 1.b. National decisions are not yet established.
RO	NC DC Not applicable. NC HVDC Not applicable.
SE	There are yet no quantitative measures to determine the extent of the modifications.
SI	No quantitative measures and additional criteria are given.
SK	There are no quantitative measures. TSO will take a measure for every request individually.

2.2.3 Decisions issued

- (14) **Q.1.d. Has the regulatory authority or, where applicable the Member State, issued any decision in accordance with Article 4(1)(a)(iii) and/or Article 4(1)(b) of the NC DC and with Article 4(1)(a)(iii) and/or Article 4(1)(b) of the NC HVDC? If yes, provide a link (preferably a web link) to such decision.**

(15) Table 7: Decisions issued concerning existing/new demand facilities and HVDC systems.

MS	Answer
AT	No.
BE	Federal level (grids >70kV): No, until now no demands are made to the NRA for the federal level.

	<i>Regional level (grids <=70kV): For the Flemish Region there aren't any decisions in accordance with Article 4(1)(a)(iii) and/or Article 4(1)(b) for the NC DC. The same for the Walloon Region and for the Brussels-Capital Region: no regulatory decision in context of DCC at this time.</i>
BG	<i>No reply</i>
CZ	<i>There is currently no decision as of yet (10th of March 2020) and we do not expect any at the moment.</i>
DE	<i>No.</i>
DK	<i>No.</i>
EE	<i>There is currently no decision and we do not expect any at the moment.</i>
ES	<i>No.</i>
FI	<i>No.</i>
FR	<p><i>No decision has been issued yet. CRE will issue a decision shortly after the Ministry order is published.</i></p> <p><i>Updated information provided by CRE (FR):</i></p> <p><i>The ministerial order defining the requirements of general application and the criteria for modification has been published on 9 June 2020. CRE issued a decision on 16 July 2020 concerning only the NC DC and NC HVDC requirements applicable in the event of a modification of demand systems and HVDC-connected system, as defined in the ministerial order of 9 June 2020.</i></p>
GB	<i>No.</i>
UK-NIR	<i>No.</i>
GR	<i>No</i>
HR	<i>There are none.</i>
HU	<i>There was no such decision adopted yet</i>
IE	<i>No.</i>
IT	<i>No.</i>
LT	<i>No decisions have been made.</i>
LU	<i>No.</i>
LV	<i>No.</i>
NL	<i>No.</i>
PL	<i>No such decision has been issued.</i>
PT	<i>See point 1.b. National decisions are not yet established.</i>

RO	NC DC Not applicable. NC HVDC Not applicable.
SE	No decisions so far.
SI	No decision issued yet.
SK	NO

2.3 Existing or new system users

- (16) **Q.1.e. Have the second paragraph of Article 4(2)(b) of the NC DC and/or the second paragraph of Article 4(2)(b) of the NC HVDC, concerning the determination of demand facilities (NC DC) and HVDC systems (NC HVDC) as existing or new, been applied in your Member State? If yes, provide more insights on the outcomes, the name of the entity that issued the decision and specify the circumstances referred to in this paragraph, based on which the decision was issued. In addition, if available, provide a web-link as reference to the decision**

(17) Table 8: Transition period for the purchase of the main generating plant.

MS	Answer
AT	Not applied in the Member State.
BE	<p><i>Federal level (grids >70kV):</i> Article 35, §8, of the new Belgian federal grid code made it possible to apply the third paragraph of Article 4(2)(b), and has fixed the specified circumstances under which the regulatory authority may determine whether demand facilities or HVDC systems are to be considered existing or new. However, the possibility to introduce a demand ended at 27 October 2019 and no demand was made.</p> <p><i>Regional level (grids <=70kV):</i> Yes, Article 4(2)(b) of the NC DC has been applied in the Flemish Region. On the advise of the VREG, regulatory authority in the Flemish Region, Article 15.3.5/21 was inserted into the Energy Decree (Flemish legislation). This article provides the regulatory authority the possibility to decide whether installations are to be considered as existing or new. This is the legal basis for the VREG for his decision BESL-2019-06 (https://www.vreg.be/nl/document/besl-2019-06) in which is stated which installations, under what conditions, can be considered as existing. On the date of the entry in force of the NC DC, the relevant system operators had issued a proposal for general requirements, but this was rejected by the regulatory authority. To avoid uncertainty about the requirements that are applied to installations from system users, the determination of demand facilities as existing or new entered in force 2 months after the general requirements were finally approved by the regulatory authority [cfr. decisions VREG: BESL-2019-37 (https://www.vreg.be/nl/document/besl-2019-37) and BESL-2019-38 (https://www.vreg.be/nl/document/besl-2019-38)].</p>

	<p><i>For the Walloon Region:</i> <i>The article 4.2 has been applied by the decision of CWaPE (25 oct 2018) to avoid uncertainties and ensure security of investment (see DECISION: https://www.cwape.be/docs/?doc=3660).</i></p> <p><i>For the Brussels-Capital Region:</i> <i>BRUGEL has taken decision 91 , based on article 4(2)(b) in order to provide a clear frame for installation owners linking the date from which installations were considered to be “new” with the approval of the requirements of general application. All installations to be connected later than 2 months after the approval of the requirements of general application (i.e. 1 November 2019) are considered “new”.</i></p>
BG	<i>No reply</i>
CZ	<i>No, the second paragraph of Article 4(2)(b) has not been applied in the Czech Republic, as the Member state did not provide this.</i>
DE	<i>No.</i>
DK	<p><i>The Danish TSO has received notification pursuant to DCC art. 4(2)(b) in a small number of cases. This has led to the facilities as being “existing”.</i></p> <p><i>The HVDC art. 4(2)(b) has been used in case of the cobra cable and Krigers flak.</i></p> <p><i>DUR has not monitored the use of article 4(2)(b) at DSO level.</i></p>
EE	<i>No, the second paragraph of Article 4(2)(b) has not been applied in Estonia, as the Member state did not provide this.</i>
ES	<i>No.</i>
FI	<i>No.</i>
FR	<i>No reply</i>
GB	<i>No.</i>
UK-NIR	<i>No.</i>
GR	<i>No</i>
HR	<i>None.</i>
HU	<i>That was not applied in Hungary</i>
IE	<i>No.</i>
IT	<i>Yes. Considering the provisions of the NC DCC, the provisions of the NC HVDC and the Italian Regulatory Authority resolution 82/2019/R/eel (https://www.arera.it/it/docs/19/082-19.htm), the consumer plants, the distribution systems, the consumer units and the HVDC systems already in operation on the date of entry into force of the resolutions 82/2019/R/eel (5 March 2019) are classified among the existing systems pursuant to and for the purposes of the NC DCC and the NC HVDC, without carrying out further checks.</i>
LT	<i>Articles have not been applied.</i>
LU	<i>No.</i>

LV	Second paragraph of Article 4(2)(b) of the NC DC and/or the second paragraph of Article 4(2)(b) of the NC HVDC have not been applied.
NL	Not applied.
PL	Yes, it has been applied through art. 1(4) of act of November 9th, 2018 amending Energy Law and some other acts. The amending act has been issued by polish legislator and it is publicly available under the address: http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20180002348/O/D20182348.pdf
PT	National decisions are not yet established.
RO	NC DC The provisions of article 4(2)(b) of the NC DC have been transposed into Romanian NC DC connection procedure. The Regulatory Authority (ANRE) is the entity who decide the applicability of the NC DC to the existing demand facilities. No decision issued yet. NC HVDC Not applicable.
SE	No.
SI	Not applied yet.
SK	No

3. Requirements of general application

3.1 Proposal for the requirements of general application

3.1.1 Submission of the proposals

(223) **Q.2.a. When have the requirements of general application, in accordance with Article 6(1) of the NC DC and Article 5(1) of the NC HVDC, been formally proposed by the relevant system operators or TSO?**

(224) Table 9: Moment of the proposal of the requirements of general application

MS	Answer
AT	31.08.2018
BE	Federal level (grids >70kV): On 17 May 2018, the relevant TSO (Elia) has submitted the final proposals for general requirements for NC RfG, NC DC and NC HVDC to the competent federal authorities. Regional level (grids <=70kV): The relevant system operators (DSO's and TSO) have formally proposed the requirements of general application, in accordance with Article 6(1) of the NC DC for the first time on the 17 of May 2018. The Flemish regulatory authority rejected this first proposal on the 27 of November 2018. https://www.vreg.be/sites/default/files/document/besl-2018-102.pdf ,

	<p>https://www.vreg.be/sites/default/files/document/besl-2018-104.pdf The Walloon regulatory authority rejected it on the 16 of November 2018: https://www.cwape.be/docs/?doc=3674 https://www.cwape.be/docs/?doc=3675 (+ https://www.cwape.be/?dir=4.1.05.1) A first proposal has been made by the relevant system operators (TSO and DSOs) on 17 May 2018 and has been refused by BRUGEL and the other regional regulators in November 2018. The second proposal of the requirements of general application by the relevant system operators was received on 20 May 2019. These second proposal has been conditionally approved by the Flemish regulatory authority on the 17 of July 2019. https://www.vreg.be/sites/default/files/document/besl-2019-30.pdf, https://www.vreg.be/sites/default/files/document/besl-2019-31.pdf In concertation, the Walloon regulatory authority conditionally approved it on the 11th of July 2019: https://www.cwape.be/docs/?doc=4970 https://www.cwape.be/docs/?doc=4971 (+ https://www.cwape.be/docs/?doc=4971) By decision of 27 August 2019, VREG approved the (third) proposal of general application requirements for the network code DCC, submitted by the distribution system operators. https://www.vreg.be/sites/default/files/document/besl-2019-38.pdf This had previously been conditionally approved by decision BESL -2019-31 (https://www.vreg.be/nl/document/besl-2019-31). By decision of 27 August 2019, VREG approved the (third) proposal of general application requirements for the network code DCC, submitted by Elia (local transmission system operator). https://www.vreg.be/sites/default/files/document/besl-2019-37.pdf This had previously been conditionally approved by decision BESL -2019-30 (https://www.vreg.be/sites/default/files/document/besl-2019-30.pdf). Final approvals in Wallonia (28.08.19) can be find here: https://www.cwape.be/docs/?doc=4982 https://www.cwape.be/docs/?doc=4985 The second proposal submitted on 20 May 2019 and updated by a proposal in August which BRUGEL has finally been approved on 4 September 2019 (cf. question 2.d.).</p>
BG	<i>No reply</i>
CZ	<p>TSO sent both DC and HVDC requirements of general application on the 10th of September 2018. From the 3 main regional DSOs (ČEZ Distribuce, E.ON Distribuce and PREdistribuce) we have received these requirements on the 13th of June 2019.</p>
DE	<p>The requirements of general application have been proposed by the relevant system operator or TSO:</p> <ul style="list-style-type: none"> - by 31 July 2017 as far as requirements for extra high voltage grid connection are concerned, - by 28 April 2017 as far as requirements for high voltage grid connection are concerned and - by 17 February 2017 as far as requirements for medium voltage grid connection are concerned.

DK	<i>DUR received the DCC proposal from the TSO on the 10. September 2018. The DSOs send their proposal on the 7. September 2018. The HVDC proposal was received from the TSO on the 8. October 2018</i>
EE	<i>TSO sent DC requirements of general application on the 28th of August 2018. TSO sent HVDC requirements of general application on the 27th of September 2018.</i>
ES	<i>NOTE: A Ministerial Order setting requirements of general application is under process of approval and expected to be adopted by the end of the first quarter of 2020. Any provided information upon this point 2 is based on the requirements that were established on the version of the ministerial order that was subjected to public consultation . Please, bear in mind that some changes could be arise from the approbation process, so provided information must be taken with all due reservations. As to this specific question: NC DC: may 2018 (TSO); September 2018 (Relevant system operators) NC HVDC: October 2018</i>
FI	<i>DCC 14.9.2018 HVDC 30.11.2018</i>
FR	<i>In accordance with article 6(1) of the NC DC, RTE – the French TSO – and ADEeF (Association des Distributeurs d'Electricité en France) – the French DSO's federation – have formally submitted to the ministry responsible for energy the outcome of the consultation they had conducted by letter dated 31, August 2018. In accordance with article 5(1) of the NC HVDC, RTE has formally submitted to the ministry of energy, sustainable development and energy the outcome of the consultation it had conducted by letter dated 10, September 2018.</i>
GB	<i>The requirements of general application for NC HVDC were formally proposed on 20 February 2018. The requirements of general application for NC DC were formally proposed on 25 June 2018.</i>
UK-NIR	<i>SONI and NIE Networks (DSO) jointly submitted their DCC proposal on 18 September 2018. SONI submitted their HVDC proposal on 21 December 2018.</i>
GR	<i>Initial proposals submitted by the TSO to RAE on 26 Sept. 2019 (DCC) and on 29 Nov. 2019 (HVDC), after conducting public consultations. RAE conducted its public consultations on the initial proposals and asked for amendments on Feb. 2020. The final proposals were submitted by the TSO to RAE on 5 June 2020.</i>
HR	<i>NC DC and NC HVDC non-exhaustive parameters have been submitted to the NRA, after conducted public consultation, in July 2018. Requirements of general application in accordance with Article 6(1) of the NC DC and Article 5(1) of the NC HVDC, are being implemented in the TSO grid codes and have passed public consultations, however TSO's amended grid code was not yet submitted to the NRA for final approval</i>
HU	<i>Proposal for NC DC by MAVIR was received on 5 Sept 2018. Proposal for NC HVDC by MAVIR was received on 11 Sept 2018.</i>
IE	<i>EirGrid and ESB Networks (DSO) jointly submitted their DCC proposal on 20 September 2018, link here: http://www.eirgridgroup.com/site-files/library/EidGrid/Proposal-for-</i>

	<i>General-Application-of-DCC-Requirements-for-Ireland-V1.0.pdf</i> EirGrid submitted their HVDC proposal on 21 December 2018, link here: http://www.eirgridgroup.com/site-files/library/EirGrid/Proposal-for-general-application-of-HVDC-Requirements-for-Ireland_for-Pu....pdf
IT	September 20th, 2018, following a public consultation.
LT	DCC: Initial submission of DCC parameters issued on 5th of September 2018. National NRA requested amendments. Accordingly, TSO amended the parameters, internally approved the parameters and repeatedly submitted parameters to the NRA on 25th of March 2019. HVDC: Initial submission of parameters issued on 5th of September 2018. National NRA requested amendments. Accordingly, TSO amended the parameters, internally approved the parameters and repeatedly submitted parameters to the NRA on 26th of April 2019.
LU	Parameters submitted by TSO on 11 September 2018, completed on 8 February 2019 and 15 March 2019.
LV	The requirements of general application, in accordance with Article 6(1) of the NC DC and Article 5(1) of the NC HVDC submitted by TSO have been approved by NRA on 30May 2019. The requirements of general application have been specified in Annex 10 and 11 to Grid Code . <i>Clarification provided by the NRA upon ACER's requests:</i> The proposal for requirements of general application, in accordance with Article 6(1) of the NC DC and Article 5(1) of the NC HVDC had submitted by TSO on 6 and 14 September 2018 to NRA. The requirements of general application have been specified in Annex 10 and 11 to Grid Code[1].
NL	7 September 2018 (DCC), 28 September 2018 (HVDC)
PL	TSO have formally proposed NC DC requirements of general application on 7th of September 2018 by submitting them for approval by the President of the ERO. Before submission for the regulatory approval, the public consultation process was organized and conducted by the TSO from May 18, 2018 to June 18, 2018. TSO have formally proposed NC HVDC requirements of general application on 24th of September 2018 by submitting them for approval by the President of the ERO. Before submission for the regulatory approval, the public consultation process was organized and conducted by the TSO from March 27, 2018 to May 10, 2018.
PT	In both NC DC and NC HVDC, the proposals were consolidated between the TSO and the DSO. <i>Clarification provided by the NRA upon ACER's requests:</i> The requirements of general application were formally proposed on 2018-09-20 for NC DC and on 2018-10-10 NC HVDC.

RO	<p>NC DC</p> <p><i>In period 03.08.2017 – 06.09.2017 the proposal for requirements of general application supported a preliminary public debate organized by the Romanian TSO (CNTEE Transelectrica SA) with DSOs participation.</i></p> <p><i>On 06.09.2017 CNTEE Transelectrica SA organized a workshop with representatives of the users connected to the transmission network, DSOs and ANRE.</i></p> <p><i>On 06.10.2017, the TSO's proposals was formally sent to ANRE for approval.</i></p> <p><i>In period 21.11.2017 – 21.12.2017 the draft of NC DC connection procedure was published on ANRE's website for public consultation.</i></p> <p><i>The draft of NC DC connection procedure was revised and posted on ANRE's website for the 2nd public consultation between 31.05.2018 – 30.06.2018. This document considered the proposals coming from the public consultation, as well as the approval, on 31.01.2018, of the ENTSO-E Implementation Guidance Documents with relevant provisions to be implemented regarding:</i></p> <ul style="list-style-type: none"> - the accepted limits of the frequency variation speed (RoCoF), - the need for synthetic inertia for frequency regulation, - the demand response - system frequency control, - the frequency ranges. <p>.....</p> <p>.....</p> <p>NC HVDC</p> <p><i>The proposal for requirements of general application, in accordance with Article 5(1) of the NC HVDC, was consulted by the Romanian TSO (CNTEE Transelectrica SA), during 16.07.2018 – 16.08.2018, by publishing it on its website.</i></p> <p><i>On 26.07.2018 CNTEE Transelectrica SA organized a workshop with representatives of companies that are performing grid connection studies, DSOs and ANRE.</i></p> <p><i>On 11.09.2018, the TSO's proposal was formally sent to ANRE for approval. After analysing it, ANRE reached to the conclusion that Transelectrica did not took into consideration all the recommendations provided by ENTSO-E through the Implementation Guidance Documents, and also the proposal was not fully compliant with the provisions of the NC HVDC, so ANRE requested Transelectrica to resubmit the proposal.</i></p> <p><i>The final and compliant version was published on ANRE's website for public consultation during 24.06.2019-25.07.2019.</i></p>
SE	<p><i>For DCC: The TSO submitted the requirements of general application on the 7th of September 2018. For HVDC: The TSO submitted the requirements of general application on the 27th of September 2018.</i></p>
SI	<p><i>NC DCC proposed by the TSO on 02. 10. 2018</i></p> <p><i>NC HVDC proposed by the TSO on 02. 10. 2018</i></p>

SK	<p>Requirements of general applications were formally proposed:</p> <p>DCC</p> <ul style="list-style-type: none"> - TSO 6.9.2018 and amendment 25.11.2019 (URSO did not receive any complaints from relevant system users) - And from others system operators 7.9.2018, 10.9.2018 and 10.9.2018. <p>HVDC</p> <ul style="list-style-type: none"> - TSO 01.10.2019
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3.1.2 Contents of the proposals

(225) **Q.2. b. Have all the requirements of general application been included in the submitted proposals, concerning both the NC DC and the NC HVDC? Specify any parameter that was not included and provide motivations.**

(226) Table 10: Content of the proposal of the requirements of general application

MS	Answer
AT	Yes.
BE	<p>Federal level (grids >70kV): All the requirements of general application have been included in the submitted proposals.</p> <p>Regional level (grids <=70kV): All requirements of general application have been included in the submitted proposal for the NC DC.</p> <p>The proposal for requirements of general application for the NC HVDC has been submitted to the regional regulators for information only and not for approval.</p>
BG	<i>No reply</i>
CZ	<p>What we discerned as requirements of general application were all included after exhaustive discussions with the relevant system operators.</p> <p>In case the question is leading towards the establishment of a harmonised approach across Europe, it would be prudent to have a list of all requirements of general application, per your consideration. This would help us verify whether we have correctly discerned all of them.</p>
DE	<p>For NC DC all requirements of general application have been implemented in the national connection rules, except for demand response requirements. The rationale behind is, that demand response capabilities are not considered as a prerequisite for grid connection of a demand unit.</p> <p>For NC HVDC all requirements of general application have been implemented in the national connection rules.</p>
DK	The Danish TSO has proposed several articles as being site-specific. See attached Annex.
EE	Yes.
ES	<p>Concerning NC DC, yes for all mandatory requirements.</p> <p>Concerning NC HVDC, yes.</p>

FI	Yes.
FR	All the requirements have been included in the proposal.
GB	For both NC DC and NC HVDC all the requirements of general application were included.
UK-NIR	As of yet, we have not received any derogation requests for DCC or HVDC.
GR	All mandatory (and some non-mandatory) and non-exhaustive requirements of general application have been included for both DCC and HVDC, either as a parameter value or as site specific.
HR	DC and HVDC non-exhaustive parameters have been included, however many of them were declared as site specific, with no exactly proposed value. Requirements in amended TSO's grid code are based on the non-exhaustive parameters and general application requirements proposed in NC DC and NC HVDC.
HU	<p>NC DC parameters are available on this link (also in English) https://www.mavir.hu/documents/10373/229644074/7.1.+DCC_alapveto_kovetelmenyek_ENG.pdf/f11c8299-da56-cdbd-ae40-7c1aa0b3aa6d?version=1.0</p> <p>NC HVDC parameters are available on this link (also in English) https://www.mavir.hu/documents/10373/230346904/8.1.+HVDC_alapveto_kovetelmenyek_elolap_ENG_osszefuzve.pdf/e41ef6b5-0f88-10c1-5c79-44fa0027c705?version=1.0</p> <p>They are exhaustively defined (both).</p>
IE	As of yet, we have not received any derogation requests for DCC or HVDC.
IT	Yes.
LT	All of the general application requirements have been included.
LU	Demand response requirements as described in Chapter 1 – Title III of NC DC were not provided, a roadmap to do so was asked to TSO.
LV	All mandatory requirements of general application have been included.
NL	Yes.
PL	Defining of requirements for demand response services has been postponed due to lack of: (1) stakeholders interest in such services (2) experience at the time of establishing requirements of general application. When the proposal for these requirements will be ready, it will be submitted by TSO to NRA for approval.
PT	<p>In both NC DC and NC HVDC, the proposals were consolidated between the TSO and the DSO.</p> <p>Clarification provided by the NRA upon ACER's requests:</p> <p>All the requirements were included in the NC DC and NC HVDC proposals.</p>
RO	<p>NC DC</p> <p>All the requirements of general application have been included in the TSO's submitted proposal, with exception of article 13 (4) and (5) related to Spain and Baltic synchronous area.</p>

 NC HVDC Yes, all the requirements of general application have been included in the submitted proposal.
SE	No they were not, for both DCC and HVDC not all parameters were included in the submitted proposals. For DCC there are a few requirements missing, and for HVDC there are around 40 requirements missing. We are aware of this and will go through them all to doublecheck to see if some of them are implemented through other legislative acts. The missing requirements of the DCC: Article 15(2)(a)-(b), 14(1), 14(5), 19 (partly), 16(1), 17(1), 18(1)-(3). Regarding 18(1), this will be dealt with in the TSOs project for real-time data: Link https://www.svk.se/aktorsportalen/elmarknad/eu-s-inre-elmarknad/realtidsmatvarden/realtidsdataprogrammet/
SI	Yes, all the requirements of general application been included in the submitted proposals , concerning both the NC DC and the NC HVDC.
SK	All relevant system operators and TSO provided requirements of general applications according NC DC and TSO also for NC HVDC, even though that they do not operate such lines and do not plan to operate.

3.1.3 Requirements of general application proposed by the relevant system operator other than the TSO

(227) **Q.2.c. Specify which of the requirements of general application have been proposed by the relevant system operators other than TSO (in accordance with Article 6(9) of the NC DC and Article 5(9) of the NC HVDC).**

(228) Table 11: Proposal by the relevant system operators other than TSO

MS	Answer
AT	The requirements have been proposed by all relevant system operators together.
BE	Federal level (grids >70kV): On federal level all the requirements of general application have been proposed by the TSO. Regional level (grids <=70kV): The proposal of requirements of general application is established by a collaboration between all the relevant system operators (TSO and DSO's). There are two proposals: one from the local transmission system operator and one from the distribution system operators. Due to a close collaboration between the system operators, both proposals contain the same requirements of general application. However, regarding the DSO's proposal, BRUGEL, CWaPE and VREG only took a decision on the articles which are applicable on the distribution level in Belgium.
BG	No reply
CZ	We identified 3 different categories on how relevant system operators would propose these requirements: 1. If the NC states that only the TSO will propose, then it is only for the TSO 2. In case the NC states that the relevant system operators proposes, then it means that

	<p>it is both for the TSO and DSO for their own systems</p> <p>3. In case the NC states that the relevant system operator proposes in coordination with the TSO, then it is only the DSO who proposes, as the TSO could hardly cooperate with itself.</p>
DE	The above-mentioned requirements for medium voltage grid connection have been proposed by the relevant DSOs. However, all four above mentioned sets of requirements were elaborated within the framework of the VDE FNN in a consensual way (see below). Hence, DSOs and TSOs alike were involved.
DK	The DSOs have pursuant to the DCC-regulation proposed requirements in accordance with art. 28(2)(c), 28(2)(e), 28(2)(f).
EE	All requirements of general application have been proposed by TSO.
ES	Concerning NC DC, requirements for demand side response (DSR) will be established in the specific regulation for that each specific service, and it will be done by either the TSO or DSOs, according to the provisions of NC DC. Concerning NC HVDC, all the requirements have been set by the TSO taking into consideration its wider experience, although the proposal has been agreed by TSO and DSOs.
FI	Relevant TSO has proposed the all the requirements but the TSO has consulted DSOs during preparation of the requirements.
FR	All requirements have been proposed together by the TSO (RTE) and the association of DSOs (ADEeF).
GB	The TSO and other relevant system operators set up a joint working group to form common proposals to be taken forward.
UK-NIR	NIE Networks (the Distribution System Operator for the Northern Ireland) and SONI jointly submitted the DCC proposal, - http://www.soni.ltd.uk/media/documents/Proposal-for-General-application-of-the-DCC-Requirements-for-Northern-Ir....pdf
GR	All the requirements of NC DC and NC HVDC have been proposed by the TSO.
HR	All DC and HVDC requirements of general application were proposed by TSO.
HU	TSO submitted the proposal both for DC and HVDC. For DC DSO views received during the public consultation were taken into account, also the TSO closely coordinated with DSOs during the proposal elaboration. HEA obliged the TSO in case of DC to consult in every half year with the DSO and report to HEA.
IE	ESB Networks (the Distribution System Operator for the Republic of Ireland) jointly submitted the DCC proposal, as referred to on page 8 here: https://www.esbnetworks.ie/docs/default-source/publications/proposal-for-general-application-of-dcc-requirements-for-ireland-(doc-120419-eyy).pdf?sfvrsn=1c0805f0_0
IT	No requirement of general application has been proposed by the relevant system operators other than TSO.
LT	All the requirements have been proposed by the TSO.
LU	Requirements from Article 19(1)c of NC DC were jointly proposed by TSO and RSO
LV	Other system operators have not proposed any requirements.
NL	None.

PL	<i>In accordance with art 5(9) of the NC DC and art. 6(9) of the NC HVDC, and on the basis of art. 9ga of amended in December 2018 Polish Energy Law, responsibility for establishing of requirements of general application was transferred on TSO and thus none of requirements differ. The TSO has developed and consulted the requirements involving, among others, DSOs.</i>
PT	<i>In both NC DC and NC HVDC, the proposals were consolidated between the TSO and the DSO.</i>
RO	<p>NC DC <i>The requirements of general application have not been established by a relevant DSO in accordance with article 6 (9).</i> </p> <p>NC HVDC <i>The requirements of general application were established by the TSO – Transelectrica.</i></p>
SE	N/A
SI	None
SK	No.

(229)

3.2 Approval of the requirements of general application

- (230) **Q.2.d. When were the proposals for the requirements of general application approved by the regulatory authority or the competent entity, in accordance with Article 6(4) of the NC DC and Article 5(4) of the NC HVDC? Provide the internet link(s) to the published requirements of general application.**

(231) *Table 12: Approval of the requirements of general application.*

MS	Answer
AT	<p>07.09.2019 https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20010756</p>
BE	<p><i>Federal level (grids >70kV): The formal approval has been made by the government by royal decree on 22 April 2019 (the new federal grid code): http://www.ejustice.just.fgov.be/mopdf/2019/04/29_1.pdf#Page26</i></p> <p><i>Regional level (grids <=70kV): The relevant system operators (DSO's and TSO) have formally proposed the requirements of general application, in accordance with Article 6(1) of the NC DC for the first time on the 17 of May 2018. The Flemish regulatory authority has rejected this first proposal on the 27 of November 2018. https://www.vreg.be/sites/default/files/document/besl-2018-102.pdf, https://www.vreg.be/sites/default/files/document/besl-2018-104.pdf</i></p> <p><i>The Walloon regulatory authority rejected it on the 16 of November 2018: https://www.cwape.be/docs/?doc=3674 https://www.cwape.be/docs/?doc=3675 (+ https://www.cwape.be/?dir=4.1.05.1)</i></p>

	<p>The second proposal of the requirements of general application by the relevant system operators has done on the 20 of May 2019. These second proposal has been conditionally approved by the Flemish regulatory authority on the 17 of July 2019. https://www.vreg.be/sites/default/files/document/besl-2019-30.pdf, https://www.vreg.be/sites/default/files/document/besl-2019-31.pdf In concertation, the Walloon regulatory authority conditionally approved it on the 11th of July 2019: https://www.cwape.be/docs/?doc=4970 https://www.cwape.be/docs/?doc=4971 (+ https://www.cwape.be/docs/?doc=4971) By decision of 27 August 2019, VREG approved the (third) proposal of general application requirements for the network code DCC, submitted by the distribution system operators. https://www.vreg.be/sites/default/files/document/besl-2019-38.pdf This had previously been conditionally approved by decision BESL-2019-31 (https://www.vreg.be/nl/document/besl-2019-31). By decision of 27 August 2019, VREG approved the (third) proposal of general application requirements for the network code DCC, submitted by Elia (local transmission system operator). https://www.vreg.be/sites/default/files/document/besl-2019-37.pdf This had previously been conditionally approved by decision BESL-2019-30 (https://www.vreg.be/sites/default/files/document/besl-2019-30.pdf). Final approvals in Wallonia (28.08.19) can be find here: https://www.cwape.be/docs/?doc=4982 https://www.cwape.be/docs/?doc=4985 + approved proposal: https://www.cwape.be/docs/?doc=4979 For Brussels: the proposals for the requirements of general application of the NC DC have been approved by BRUGEL on the 4th September 2019 by decisions 115 and 116. Decision 115: French version (https://www.brugel.brussels/publication/document/decision/2019/fr/DECISION-115-D%C3%A9cision-DCC-Elia.pdf), Dutch version (https://www.brugel.brussels/publication/document/beslissingen/2019/nl/BESLISSING-115-BESLISSING-DCC-Elia.pdf) Decision 116: French version (https://www.brugel.brussels/publication/document/decision/2019/fr/DECISION-116-DCC-Synergrid.pdf), Dutch version (https://www.brugel.brussels/publication/document/beslissingen/2019/nl/BESLISSING-116-DCC-sYNERGRID.pdf)</p>
BG	No reply
CZ	<p>The TSO proposal was approved by ERU on the 8th of March 2019. Link for DC https://www.ceps.cz/cs/nc-dcc Link for HVDC https://www.ceps.cz/cs/nc-hvdc The proposals of the 3 main regional DSOs (which are identical) were approved on the 21st of February 2020. (for example at https://www.cezdistribuce.cz/edee/content/file-other/distribuce/energeticka-legislativa/ppds/ppds-2020_priloha-6.pdf for ČEZ Distribuce, a.s.).</p>

DE	<p>In accordance with Article 7(1) sentence 2 of the RfG, the German lawmaker has designated the association "VDE FNN" to approve the requirements of general application established by DSOs/TSOs under the RfG, see Art. 19 Sec. 4 of the German Energy Act http://www.gesetze-im-internet.de/enwg_2005/_19.html).</p> <p>The proposals concerning the NC DC have all been approved by the VDE FNN by 19 October 2018 (https://www.vde.com/en/fnn/topics/european-network-codes/dcc and). The proposals concerning the NC HVDC have all been approved by the VDE FNN by 8 September 2019 (https://www.vde.com/en/fnn/topics/european-network-codes/hvdc).</p>
DK	<p>Approval in accordance with DCC: TSO requirements on the 28 may 2019. DSO requirements on the 13. May 2019. Approval accordance to HVDC happened on the 14. October 2019. DCC TSO approval: https://forsyningstilsynet.dk/el/afgoerelser/afgoerelse-af-generelle-tilslutningskrav-for-nye-forbrugsanlaeg-og-distributionssystemer-tilsluttet-tx-samt-nye-enheder-der-leverer-efterspoergselsreaktion</p> <p><i>See Figure 11 in the Annex II</i></p> <p>DCC DSO approval: https://forsyningstilsynet.dk/el/afgoerelser/afgoerelse-om-dansk-energis-anmeldelse-af-forslag-om-generelle-tilslutningskrav-for-nye-forbrugsenheder-anvendt-til-efterspoergselsreaktion-efter-forordning-20161388-dcc</p> <p><i>See Figure 12 in the Annex II</i></p> <p>HVDC approval: https://forsyningstilsynet.dk/el/afgoerelser/godkendelse-af-energinets-forslag-til-generelle-krav-jf-hvdc</p> <p><i>See Figure 13 in the Annex II</i></p>
EE	<p>The TSO DC proposal was approved by ECA on the 22th of February 2019. The TSO HVDC proposal was approved by ECA on the 27th of March 2019. Both decisions are available at: https://www.konkurentsiamet.ee/et/elekter-maagaas/elekter/vorgueeskirjad</p>
ES	<p>They have not been approved yet. Both NC DC and NC HVDC requirements of general application are going to be set in a ministerial order that is still in process of approval. It is expected to adopted by the end of first quarter of 2020.</p>
FI	<p>- 7.3.2019 https://energiavirasto.fi/documents/11120570/12993028/P%C3%A4%C3%A4t%C3%B6s+Fingrid+Oyjn+kulutuksen+j%C3%A4rjestelm%C3%A4teknisten+vaatimusten+vahvistamisesta/2a8f4c05-104a-5481-b24f-874af6d003e9/P%C3%A4%C3%A4t%C3%B6s+Fingrid+Oyjn+kulutuksen+j%C3%A4rjestelm%C3%A4teknisten+vaatimusten+vahvistamisesta.pdf?version=1.0 - 29.5.2019 https://energiavirasto.fi/documents/11120570/12993028/P%C3%A4%C3%A4t%C3%B6s%20Fingrid%20Oyjn%20suurj%C3%A4nnitteisten%20tasas%C3%A4hk%C3%B6j%C3%A4rjestelmien%20j%C3%A4rjestelm%C3%A4teknisten%20vaatimusten%20(HVDC%202018)%20vahvistamisesta/6fe02727-b4f6-d9b5-9415-4b86dd73183b</p>

FR	<p>The requirement of general application have not been approved yet. They will be approved by a ministerial order together with the requirements of general application of the NC RfG.</p> <p><i>Updated information provided by CRE (FR):</i></p> <p>The ministerial order defining the requirements of general application and the criteria for modification has been published on 9 June 2020.</p>
GB	<p>We approved the NC HVDC requirements on 15 May 2018 – as part of three separate decisions. https://www.ofgem.gov.uk/system/files/docs/2018/05/gc0100_d.pdf https://www.ofgem.gov.uk/system/files/docs/2018/05/gc0101_d.pdf https://www.ofgem.gov.uk/system/files/docs/2018/05/gc102_d.pdf</p> <p>We approved the NC DC requirements on 4 September 2018. https://www.ofgem.gov.uk/system/files/docs/2018/09/gc0104_-_decision_letter_04092018_0.pdf</p>
UK-NIR	<p>UR issued a partial approval of DCC general application on 09 April 2019, https://www.uregni.gov.uk/sites/uregni/files/media-files/20190409%20%20Approval%20and%20RfA%20of%20the%20NIEN%20and%20SONI%20DCC%20Methodology.pdf .</p> <p>UR issued a partial approval and part request for Amendment of Technical Requirements in accordance with HVDC EU network Code on 29 June 2019, https://www.uregni.gov.uk/sites/uregni/files/media-files/2019-06-26%20%20Part%20Approval%20Part%20RfA%20of%20SONI%20HVDC%20Methodology_0.pdf</p> <p>UR is yet to issue full approval of HVDC paper. A decision paper has been drafted, UR is working with SONI through this.</p>
GR	<p>The requirements of general application for the NC DC and for the NC HVDC have been established by IPTO (Greek TSO) and approved by RAE on 30 July 2020 with the following decisions:</p> <p>1) RAE Decision for DCC, Requirements for General Applications: 1166/2020 (Gov. Gaz. 3698 B, 3 Sept. 2020) http://www.et.gr/idoocs-nph/search/pdfViewerForm.html?args=5C7QrtC22wHUdWr4xouZundtvSoClrL8JuopUJlixPuFUDqazHcNeJInJ48_97uHrMts-zFzeyCiBSQOpYnTy36MacmUFCx2ppFvBej56Mmc8Qdb8ZfRjQznsAdk8Lv_e6czmhEembNmZCMxLMta_YKXdcAZZIKfZkuF6p9sj6OC84szlcPjPPTkhz_oPN</p> <p>2) RAE Decision for HVDC, Requirements for General Applications: 1167/2020 (Gov. Gaz. 3762 B, 7 Sept. 2020) http://www.et.gr/idoocs-nph/search/pdfViewerForm.html?args=5C7QrtC22wHUdWr4xouZundtvSoClrL8RQNGuy-8PDnnMRVjyfnPUeJInJ48_97uHrMts-</p>

	zFzeyCiBSQOpYnTy36MacmUFCx2ppFvBej56Mmc8Qdb8ZfRjgZnsIAdk8Lv_e6czmhEembNmZCMxLMtYBbJuKb85h3B3YW5fAmmZm4zTmSrG78ZzxWj_BK2v4
HR	DC and HVDC non-exhaustive parameters are approved by NRA on the 1st of March 2019. Link: https://www.hops.hr/en/connection-network-codes Non-exhaustive parameters and requirements of general application are being implemented in the TSO's grid code.
HU	NC DC parameters were approved on 08 March 2019, while NC HVDC parameters were approved on 04 June 2019.
IE	CRU issued a partial approval of DCC general application on 12 September 2019, link here: https://mk0cruiefjep6wj7niq.kinstacdn.com/wp-content/uploads/2019/09/CRU-19101-Demand-Connection-Code-Technical-Parameters-decision-paper.pdf . CRU is yet to issue approval of HVDC paper. A decision paper has been drafted; CRU is working with EirGrid through this. <i>Additional clarification provided by the CRU (IE)</i> Status change after the DCC/RfG/HVDC approval in October: HVDC and DCC can now be considered implemented. You can find the CRU's decision on HVDC parameters here, and our decision approving derogations from RfG/HVDC/DCC and requests for amendment from DCC here.
IT	March 5th , 2019 for NC DC and NC HVDC by the Italian Regulatory Authority with resolution 82/2019/R/eel (https://www.arera.it/it/docs/19/082-19.htm).
LT	NC DC: 27th of March 2019 NC HVDC: 7th of May 2019 Both NC DC and NC HVDC can be found in the following link: TSO page LT: https://www.litgrid.eu/index.php/energetikos-sistema/es-tinklo-kodeksai/prijungimo-kodeksai/3675 TSO page EN: https://www.litgrid.eu/index.php/power-system/network-codes/connection-codes/3942 NRA page: https://www.regula.lt/Docs/Nutarimas_2019_03E-89.pdf#search=03E%2D89 https://www.regula.lt/Docs/Nutarimas_2019_03E-138.pdf#search=03E%2D138
LU	Decision ILR on 21 March 2019 approving the DC requirements in version 19 February 2019 as submitted on 15 March 2019. http://legilux.public.lu/eli/etat/leg/rilr/2019/03/21/a212/jo
LV	The requirements of general application, in accordance with Article 6(1) of the NC DC and Article 5(1) of the NC HVDC have been approved by NRA on 30 May 2019. Available: https://likumi.lv/ta/id/257943-tikla-kodekss-elektroenergijas-nozare
NL	HVDC : 07 October 2019 Link : https://zoek.officielebekendmakingen.nl/stcrt-2019-53886.html DCC : not yet approved

PL	<p>Requirements of general application of NC HVDC were approved on 20th of March 2019. http://bip.ure.gov.pl/download/3/10766/PSE-wymogiogolnegostosowania.pdf Requirements of general application of NC DC were approved on 12th of February 2019. http://bip.ure.gov.pl/download/3/10604/PSEwymogiogolnegostosowania.pdf Both documents are simultaneously published on TSO webpage.</p>
PT	<p>In both NC DC and NC HVDC, the proposals were consolidated between the TSO and the DSO.</p> <p><i>Clarification provided by the NRA upon ACER's request:</i></p> <p>PT hasn't published those requirements yet, but, has an ongoing project about national grid framework, that will take into account both NC DC and NC HVDC codes. Those codes, in PT, have a much lower impact compared to RfG.</p>
RO	<p>NC DC The NC DC was approved by ANRE on 11.06.2019 and entering into force at 18.08.2019 (ANRE's Order no. 67/2019). The requirements of general application are posted on ANRE's website: https://www.anre.ro/ro/energie-electrica/legislatie/coduri-paneuropene1476186098/regulamentul-ue-nr-1388-2016-dcc NC HVDC The proposal for the requirements of general application was approved by ANRE on 28.08.2019 and is published at the following link: https://www.anre.ro/ro/energie-electrica/legislatie/coduri-paneuropene1476186098/regulamentul-ue-nr-1447-2016-hvdc , Alongside with all the other documents related to NC HVDC (derogation criteria, derogation procedure, the operational notification and compliance monitoring procedure).</p>
SE	<p>A general application for DCC was approved on the 14th of July 2019 and for HVDC at the 19th of March 2019.</p>
SI	<p>Requirements of general application NC DCC approved by NRA on 29. 03. 2019 Requirements of general application NC HVDC approved by NRA on 01. 04. 2019</p>
SK	<p>Requirements of general applications were approved: - TSO 06.03.2019 and amendment 04. 12.2019 - And from others system operators 06.03.2019, 10.04.2019 and 10.04.2019. For HVDC - TSO 01.04.2019 All decisions a share here: http://www.urso.gov.sk/?q=rozhodnutia/Sie%C5%A5ov%C3%A9%20predpisy</p>

3.3 Ensuring transparency

(232) **Q.2.e. How was the transparency, in accordance with Article 6(3)(b) of the NC DC and Article 5(3)(b) of the NC HVDC, ensured in the approval of the proposals for the requirements of general application?**

(233) Table 13: Transparency ensuring

MS	Answer
AT	<i>The regulation DCC Anforderungs-V has been publicly consulted. Interested stakeholders have been informed.</i>
BE	<p><i>Federal level (grids >70kV):</i> <i>The proposal represents the final position of Elia after discussions with the stakeholders for each of the relevant topics. The document was gradually completed and presented to stakeholders, especially during the Federal Grid Code workshops, until all non-exhaustive general requirements were included.</i> <i>The TSO (Elia) has also organized a public consultation on the final proposals for general requirements for NC DC and for NC HVDC from 19 March till 23 April 2018.</i></p> <p><i>Regional level (grids <=70kV):</i> <i>The Belgium transmission system operator had set up a series of workshop concerning the establishment of the requirement of general application. During the workshops there where intensive discussions with the market players.</i> <i>Before the proposals where submitted to the competent authorities, the system operators have organized a common public consultation and submitted a joint proposal. Furthermore, after the refusal of the first proposal, the different regulators and the system operators held several meetings in order to discuss and improve the proposals. Finally, the motivated decisions of the regulators are publicly available online.</i></p>
BG	<i>No reply</i>
CZ	<p><i>The TSO organised a workshop on the 26th of July 2018 with relevant parties, where they also asked for additional questions to be submitted until the end of August 2018. The link for the summary of the workshop can be found under this link all in https://www.ceps.cz/cs/nc-dcc Czech as usual).</i> <i>There was also a public consultation when it was already submitted to ERÚ, per national procedures.</i></p>
DE	<p><i>The German TSOs and DSOs are members of the "VDE FNN" along with about 36,000 other persons (1,300 of which are undertakings) from the energy sector.</i></p> <p><i>The adoption of the "Technical Connection Rules" ("Technische Anschlussregeln (TAR)") of the VDE FNN follows a firm procedure, which is described in the procedural rules of the VDE FNN, i.e. the rules contained in VDE-AR-N 4000 (formally VDE-AR-N 100). This "rule book" determines the procedure from the proposal, through consultation and adoption of new connection rules and finally their publication.</i></p> <p><i>Under these procedural rules anyone, i.e. not only VDE FNN members, but also non-members, may propose the adoption of a "Technical Connection Rule" ("Technische Anschlussregeln (TAR)"). The proposal will be assessed by the competent body of the VDE FNN. If the body confirms the proposal, it will establish a project group, which is comprised of representatives of different stakeholders (e.g. generators, DSOs, TSOs,</i></p>

	<p>equipment producers). This project group will do the actual work of drafting a TAR. The proposition will be published and consulted upon publicly.</p> <p>Hence, there is a procedural guarantee for all stakeholders to have the opportunity to be involved in the drafting and adoption of a new connection rule or the reform of an existing connection rule.</p> <p>The members of the project group are obliged to try to find a compromise and to decide in consensus. However, there is an internal legal and technical remedy procedure that may be followed, if consensus is not achieved. Of course, these internal remedies do not hamper the possibility to seek legal review by the Bundesnetzagentur under Article 6(5) and (8) NC DC and Art. 5(5) and (8) NC HVDC.</p> <p>https://www.vde.com/en/fnn/topics/standardization/development-vde-applicationrules-fnn-vde-ar-n-100</p>
DK	<p>DUR launched public consultations on both DCC and HVDC proposals before starting the approval process. DUR launched public consultation on the draft for approval (on both DCC and HVDC). Within the draft (and final approval) DUR has replied and taking into account consultation answers. DUR has published the final approval.</p>
EE	<p>The TSO organised 3 public consultations regarding DC:</p> <ol style="list-style-type: none"> 1) 14.06.2018-11.07.2018 2) 11.07.2018-26.07.2018 3) 04.07.2018 – workshop in Elering <p>The TSO organised 1 public consultation regarding HVDC: 14.08-14.09.2018</p>
ES	<p>First of all, several working groups were created in order to respectively discuss all implementation matters concerning NC codes. That also included discussions about requirements of general application which had to be proposed and after that approved by the competent entity.</p> <p>These working groups were coordinated by TSO and made up of relevant parties (DSOs, associations of consumers and generators). National regulator (CNMC) and the currently called Ministry for the Ecological Transition and the Demographic challenge were also invited to attend these groups.</p> <p>TSO submitted its proposal in the form of a modification of existing operational procedures. According to national regulation, that entailed obligation of TSO to submit its proposal to a public consultation process before submitting it to competent entity.</p> <p>Finally, ministerial order that is going to approve requirements of general application has also been submitted to public consultation.</p>
FI	<ul style="list-style-type: none"> - Same process as in RfG. - TSO has organized a working group to prepare and coordinate the requirements with DSOs. Relevant TSO has also organized conferences and public events to present and discuss the requirements. Regulator has also participated these public events. - The relevant TSO has conducted a public consultation before sending the proposal to regulator. Regulator has also made its own public consultation about the proposal. Regulator has forwarded the statements to the relevant TSO and asked the relevant TSO to comment and make needed changes to the proposal based on the statements. Relevant TSO has responded and provided a reasoned reply and made the changes that were necessary. In the end regulator has evaluated the proposal and its reasons and approved it by decision.

	<p>- Requirements binds also every DSO. DSOs have implemented the necessary requirements on their own terms of connection. Regulator has confirmed and approved these terms by decisions.</p> <p>- Connecting customers can make a request for investigation if they suspect that the conditions have not been met.</p>
FR	<p>Regular meetings and consultations have been organised by the ministry responsible for Energy and the operators. The Higher Council for Energy (CSE) has also be consulted in addition of CRE. The Higher Council for Energy is an advisory committee in charge of advising the Ministry responsible for Energy. It is composed of MP representatives, regional authorities, consumers representatives and energy sector companies.</p>
GB	<p>The proposals were developed alongside industry as part of an open working group. Our decision was published on our website.</p>
UK-NIR	<p>SONI consulted on DCC http://www.soni.ltd.uk/media/documents/Proposal-for-General-application-of-the-DCC-Requirements-for-Northern-Ir....pdf , and on HVDC http://www.soni.ltd.uk/media/documents/Proposal-for-general-application-of-HVDC-Requirements-for-Northern-Irela....pdf . These codes have also been discussed at Industry Stakeholder Forums in conjunction with CRU and Eirgrid, for example at this one specifically on Network Codes on 21 February 2019.</p> <p>Further information and approvals can be found under the consultation section of http://www.soni.ltd.uk/customer-and-industry/european-integration/integration/</p>
GR	<p>TSO conducted public consultations before submitting the initial proposals to RAE. RAE in turn conducted public consultations on initial proposals and then asked TSO for amendments and resubmission of proposals.</p>
HR	<p>Transparency is ensured by conducting public consultations (amended TSO's grid code) and by the approval of non-exhaustive parameters for DC and HVDC by the relevant NRA.</p>
HU	<p>For DC: MAVIR held a public consultation from 18 June 2018 till 18 July 2018. http://mavir.hu/web/mavir/lezart-nuksz-konzultaciok In its proposal MAVIR informed HEA that the proposal was strongly and closely coordinated with DSO before final submission. In its approval decision HEA obliged the TSO make available the approved requirements in an easy and transparent way on its website. Furthermore HEA obliged MAVIR to report the approval to the relevant domestic committees (operational, market and distribution committees – including representatives of small-large generators, etc.).</p> <p>For HVDC: MAVIR held a public consultation from 20 July 2018 till 20 August 2018. http://mavir.hu/web/mavir/lezart-nuksz-konzultaciok In its proposal MAVIR informed HEA that no such HVDC connections exist in the Hungarian network, accordingly the TSO basically relied upon the guidance issued by ENTSO-E in this matter. In its approval decision HEA obliged the TSO make available the approved requirements in an easy and transparent way on its website. Furthermore HEA obliged MAVIR to report the approval to the relevant domestic committees (operational, market and distribution committees – including representatives of small-large generators, etc.).</p>

IE	EirGrid consulted on DCC here: http://www.eirgridgroup.com/site-files/library/EirGrid/DCC-Parameter-Consultation-Ireland.pdf , and on HVDC here: http://www.eirgridgroup.com/site-files/library/EirGrid/HVDC-Parameter-Consultation-Ireland.pdf . These codes have also been discussed at Industry Stakeholder Forums, for example at this one: http://www.eirgridgroup.com/site-files/library/EirGrid/190221-All-island-European-stakeholder-forum-slides_final_for_web.pdf , specifically on Network Codes on 21 February 2019.
IT	The transparency was ensured by the public consultation makes by the Italian TSO (Terna S.p.A.).
LT	The transparency has been ensured by presenting the proposals to the stakeholders afterwards a public consultation has been called. The public consultation has been carried out through a period of one month (both HVDC and DCC on the same time) from 20th of July 2018 to 20th of August 2018. No remarks have been issued.
LU	Public consultation by TSO (see link at bullet g.).
LV	TSO organized public consultation. After that TSO revised proposals and submitted to NRA. Amendments to the Grid Code regarding NC DC and NC HVDC requirements had been publicly consulted by the NRA from 18 January 2018 till 2 February 2018. No comments received.
NL	The TSO has consulted the proposals within a national market expert group. The NRA has consulted the decision publically. The decision itself is public.
PL	Transparency was ensured by: <ul style="list-style-type: none"> • Cooperation of TSO and DSOs in establishing proposal of requirements of general application, • Having held consultation process as well as series of meetings with stakeholders, • Information on TSO webpage <ul style="list-style-type: none"> o https://www.pse.pl/dcc o https://www.pse.pl/hvdc Regarding to NC DC - the TSO has conducted a consultation process from May 18, 2018 to June 18, 2018 - more information about this process is available here: https://www.pse.pl/dcc Regarding to NC HVDC - the TSO has conducted a consultation process from March 27, 2018 to May 10, 2018. - more information about this process is available here: https://www.pse.pl/hvdc
PT	In both NC DC and NC HVDC, the proposals were consolidated between the TSO and the DSO.
RO	NC DC First of all, TSO published on its website all the information regarding the DCC connection code, the general requirements and the procedures derived from the code implementation: http://www.transelectrica.ro/web/tel/regulamentul-european1 http://www.transelectrica.ro/web/tel/proceduri-ce-decurg-din-implementarea-codului1 As mentioning at point 2 a., TSO (CNTEE Transelectrica SA) organised a workshop and public debate before sending general requirements to ANRE and in order to receive observations and proposals. The announce and the documents are posted on: http://www.transelectrica.ro/web/tel/consultari-inchise

	<p>http://www.transelectrica.ro/web/tel/norme-le-in-curs-de-implementare1</p> <p>.....</p> <p>.....</p> <p>NC HVDC TSO published on its website all the information regarding the NC HVDC, the general requirements and the procedures derived from the code implementation, for public consultation, at the following link: http://www.transelectrica.ro/web/tel/norme-le-in-curs-de-implementare2</p> <p>Also, Transelectrica organised a workshop and a public debate before sending the proposal for general requirements to ANRE. It can be seen at the following link: http://www.transelectrica.ro/web/tel/regulamentul-european</p>
SE	<p>Through public consultation by Ei as NRA, concerning the new secondary legislation. Please see for DCC: https://www.ei.se/sv/nyhetsrum/nyheter/nyheter-2019/pa-remiss-foreskrifter-om-faststallande-av-generellt-tillampiga-krav-enligt-dcc/ and for HVDC: https://www.ei.se/sv/nyhetsrum/nyheter/nyhetsarkiv/nyheter-2018/pa-remiss-foreskrifter-for-natanslutning-av-system-for-hogspand-likstrom-och-likstromsanslutna-kraftparksmoduler-hvdc/</p>
SI	Public consultation of the proposals was carried out.
SK	URSO assessed in detail the submitted requirements and their compliance with Article 6(3)(b) of the NC DC and Article 5(3)(b) of the NC HVDC.

3.4 Coordination between TSO and relevant DSOs

- (234) **Q.2.f. How was the coordination by the TSO with relevant DSOs in accordance with Article 6(3)(e) of the NC DC and Article 5(3)(e) of the NC HVDC carried out? How was the potential impact on DSOs' systems assessed?**

(235) Table 14: Coordination between TSO and relevant DSOs

MS	Answer
AT	Via their interest associations.
BE	The proposal of requirements of general application is established by a collaboration between all the relevant system operators (TSO and DSO's). In each of the three regions, there are two identical proposals: one from the local/regional transmission system operator and one from the distribution system operators. Both proposals have, thanks to the good and intense collaboration, the same requirements of general application.
BG	No reply
CZ	This was carried out within a specific expert group set up for this purpose. There were also expert groups set up between DSOs and the TSO.
DE	The above mentioned Technical Connection Rules ("TAR") were elaborated by project teams, which represented the relevant stakeholders including DSOs. In addition, the draft national standards were publicly consulted, see above. DSOs had the opportunity

	<i>to evaluate the impact on their systems and to participate in the consultations and subsequent meetings on the consultation feedback.</i>
DK	<i>The Danish TSO launched meeting with the DSOs before sending DCC proposals to DUR. Within the approval process, DUR asked TSO to reconsider several requirements, which has lead the TSO to further meetings with the DSOs. In relation to an impact assessment, the TSO has assessed the impact from the Distribution-system in relation to exchange of MVar between transmission and distribution systems. An assessment was also carried out in relation to identifying which signals (from which units and substations) in the distribution-system was necessary for the TSO to receive.</i>
EE	<i>The DSOs participated on all public consultations. There was communication between DSOs and TSO on that matter.</i>
ES	<i>See point e)</i>
FI	<i>Relevant TSO organized a working group with the DSOs to prepare and coordinate the requirements. Relevant TSO has also organized conferences and public events to present and discuss the requirements.</i>
FR	<i>DSOs participated in the drafting of the proposal along with the TSO through the association of DSOs (ADEeF).</i>
GB	<i>The TSO and other relevant system operators set up a joint working group to form common proposals to be taken forward. The DSOs themselves assessed the impact of proposals on their systems. The DSOs consulted with wider stakeholders about the impact of proposals on their systems and stakeholder responses were taken into account.</i>
UK-NIR	<i>In relation to DCC, NIE Networks and SONI jointly consulted on general application (http://www.soni.ltd.uk/media/documents/Proposal-for-General-application-of-the-DCC-Requirements-for-Northern-Ir....pdf)</i> <i>In the context of the Northern Ireland, HVDC legislation is irrelevant to NIE Networks.</i>
GR	<i>DSO's agreement on the non-exhaustive parameters proposed by TSO.</i>
HR	<i>DC and HVDC non-exhaustive parameters are bilaterally agreed between TSO and DSO.</i>
HU	<i>See answers above for point c) and point e)</i>
IE	<i>In relation to DCC, ESB Networks and EirGrid jointly consulted on general application (here: http://www.eirgridgroup.com/site-files/library/EirGrid/DCC-Parameter-Consultation-Ireland.pdf), while ESB Networks also responded to the consultation itself, as alluded to on page 8 here: https://www.esbnetwork.ie/docs/default-source/publications/proposal-for-general-application-of-dcc-requirements-for-ireland-(doc-120419-eyy).pdf?sfvrsn=1c0805f0_0.</i> <i>In the context of the Republic of Ireland, HVDC legislation is irrelevant to ESB Networks.</i>
IT	<i>The Italian TSO (Terna S.p.A.) consulted the DSOs.</i>
LT	<i>A consultant has been hired to coordinate between the needs of the TSO and DSO and define the threshold values.</i>
LU	<i>Meetings & Workshops.</i>
LV	<i>TSO organized public consultation during which asked for DSOs opinion. After that TSO revised proposals and submitted to NRA.</i>

	<i>Amendments to the Grid Code regarding NC DC and NC HVDC requirements had been publicly consulted by the NRA from 18 January 2018 till 2 February 2018. No comments received.</i>
NL	<i>The TSO has consulted the DSOs.</i>
PL	<i>TSO coordination with relevant DSOs was carried out by mutual work of TSO and DSOs association on establishing requirements of general application.</i>
PT	<i>In both NC DC and NC HVDC, the proposals were consolidated between the TSO and the DSO.</i>
RO	<p>NC DC <i>In period 03.08.2017 – 06.09.2017 CNTEE Transelectrica SA posted for public consultation on its website the draft of NC DC document. http://www.transelectrica.ro/web/tel/consultari-inchise On 06.09.2017 CNTEE Transelectrica SA organized a workshop with representatives of DSOs, users connected to the transmission network and ANRE. http://www.transelectrica.ro/documents/10179/3992480/Prezentare+%C3%AEntre+OTS-OD-ANRE-ACUE-Produc%C4%83tori++privind+condi%C8%9Biile+tehnice+de+racordare+la+re%C8%9B+elele+de+interes+public+a+consumatorilor/b161e8f4-3452-431b-af80-3b312222f2e3</i></p> <p>.....</p> <p>NC HVDC <i>TSO published on its website all the information regarding the NC HVDC, the general requirements and the procedures derived from the code implementation, for public consultation, at the following link: http://www.transelectrica.ro/web/tel/norme-le-in-curs-de-implementare2</i></p> <p><i>Also, Transelectrica organised a workshop and a public debate before sending the proposal for general requirements to ANRE. It can be seen at the following link: http://www.transelectrica.ro/web/tel/regulamentul-european During the public consultation and the workshop, DSOs had the chance to submit any observations or proposals. They also were consulted during the public consultation held by ANRE.</i></p>
SE	<i>We do not know if the TSO had consultations. Ei does not have the knowledge about the potential impact on DSOs systems that was assessed by the TSO.</i>
SI	<i>Consultation between TSO and DSO on relevant questions with impact on DSO.</i>
SK	<i>TSO and relevant DSO´s actively communicate during the implementation of all network codes. In the case If DSO´s would to provide any complaint on mentioned requirements, URSO will assesses this complaint and If will be identified of potential impact which is not accordance NC, URSO changes decision.</i>

3.5 Consultation with stakeholders

(236) **Q.2.g. Concerning Article 9(d) of the NC DC, did the relevant system operators and relevant TSO carry out a public consultation with stakeholders (including the regulatory authority or competent authority in the Member State) concerning the requirements for demand units specified in accordance with Article 28(2)(c),(e),(f),(k) and (1) and Article**

29(2)(e) to (e)? If yes, provide the reference to the call for public consultation(s) (or similar). If no, provide an explanation.

(237) Table 15: Consultation with stakeholders.

MS	Answer
AT	The public consultation was held from 14.02. to 14.03.2019. https://ebutilities.at/utilities/konsultationen/detail.php?ConsultationID=8
BE	A public consultation has been held between 15 March and 23 April 2018 and has been organized by Belgian's TSO. As the Belgian public system operators (regrouped by Synergrid) would submit a joint proposal for requirements of general application, the RSO's (DSOs) did not organize their own public consultation but invited their stakeholders to react to the public consultation of the TSO, including with regard to the demand units connected to the distribution system and used to provide demand active response services to the system operators as in accordance with article 28(2)(c),(e),(f),(k) and (1) and Article 29(2)(e) to (e).
BG	No reply
CZ	The TSO organised a workshop on the 26th of July 2018 with relevant parties, where they also asked for additional questions to be submitted until the end of August 2018. The link for the summary of the workshop can be found under this link https://www.ceps.cz/cs/nc-dcc , all in Czech as usual). At least some of the DSOs did consult these with us and at the very least with the TSO and other DSOs.
DE	No. Please, see response to 2.b.
DK	A call has be made by the Danish TSO on the 10. July 2018. "https://energinet.dk/EI/Horinger/Afsluttede-horinger/REGLER-FOR-EFTERSPORGSELSREAKTIONSYDELSE" (No English version seems to be available)
EE	Yes. See also our previous answer.
ES	No.
FI	- Yes. - As mentioned to the question e. below, relevant TSO has organized public events and working groups to present and discuss the requirements. Relevant TSO has also conducted a written public consultation (5.7.2018) that was informed to all stakeholders (including regulator) by email. We do not have a link to the call for public consultation.
FR	The public consultation has been organised in the first half of the year 2018.
GB	Yes all consultations can be found here: https://www.nationalgrideso.com/codes/grid-code/modifications/gc0104-eu-connection-codes-gb-implementation-demand-connection-code
UK-NIR	Yes, http://www.soni.ltd.uk/media/documents/Proposal-for-General-application-of-the-DCC-Requirements-for-Northern-Ir....pdf
GR	Yes. TSO held a public consultation on requirements of general application of DCC from 03.07.2019 to 05.08.2019.

	<i>Link: https://www.admie.gr/nea/diaboyleyseis/dimosia-diaboyleyysi-shetika-me-tin-efarmogi-toy-kanonismoy-20161388-tis-ee-gia-ti</i>
HR	<i>The public consultations were conducted by TSO. Call for the public consultation is available on the following link: https://www.hops.hr/en/connection-network-codes.</i>
HU	<i>https://www.mavir.hu/web/mavir/lezart-nuksz-konzultaciok https://www.mavir.hu/documents/10258/227351949/DCC_parameters_konzult%C3%A1ci%C3%B3ra.xlsx/33938d76-67d9-72e5-03fb-d996a09c6119?download=true</i>
IE	<i>Yes, from page 36 onwards here: http://www.eirgridgroup.com/site-files/library/EirGrid/DCC-Parameter-Consultation-Ireland.pdf</i>
IT	<i>Yes, in the same public consultation indicated in the previous point a.</i>
LT	<i>Yes. NC DC: https://www.litgrid.eu/index.php/naujienos-ir-ivykiai/naujienos/viesoji-konsultacija-del-apkrovos-prijungimo-bendruju-reikalavimu/3947 DC HVDC: https://www.litgrid.eu/index.php/naujienos-ir-ivykiai/naujienos/viesoji-konsultacija-del-aukstosios-itamos-nuolatinės-srovės-sistemos-prijungimo-reikalavimu/3960 <i>Please note that the content is only available in Lithuanian language.</i></i>
LU	<i>https://www.creos-net.lu/de/aktuelles/aktuelles/article/consultation-publique-sur-les-parametres-techniques-applicables-au-raccordement-des-reseaux-de-distr.html</i>
LV	<i>TSO organized public consultation regarding all requirements included in proposal. Available: http://www.ast.lv/lv/events/priekslikuma-tikla-piesleguma-prasibas-generatoriem-sabiedriski-apsprisa Available: http://www.ast.lv/lv/events/tikla-piesleguma-prasibu-elektroenerģijas-parvades-sistemas-lietotajiem-sabiedriski Amendments to the Grid Code regarding NC DC and NC HVDC requirements had been publicly consulted by the NRA from 18 January 2018 till 2 February 2018. No comments received. Available: https://www.sprk.gov.lv/content/publiskas-konsultacijas and https://www.sprk.gov.lv/sites/default/files/editor/Sabiedribas_lidzdaliba/Elektroenerģija/EL_Konsultaciju%20dokumenti/KD%20par%20grozijumiem%20tikla%20kodeksa%202018g%20janvaris.pdf</i>
NL	<i>Yes Link : https://www.acm.nl/sites/default/files/documents/2019-10/voorstel-br-2018-1418-dcc-bijlage-4-verslag-gen.pdf Link : https://www.acm.nl/sites/default/files/documents/2019-10/voorstel-br-2018-1418-dcc-bijlage-5-commentarenmatrix.pdf</i>
PL	<i>Requirements of general application (including requirements of art. 28 and 29 NC DC) have been consulted with stakeholders. All information about the process can be found under following address: www.pse.pl/dcc As a result of consultation with stakeholders, it has been agreed that requirements of art. 28 and 29 NC DC will be refined by future amendment of requirements of general application.</i>

PT	<i>It was decided not to include in the national implementation proposal any requirements associated with DSR, since they were reserved for future decisions to be taken by the regulator (ERSE).</i>
RO	<i>NC DC Yes, the same answer as for point 2 f.</i>
SE	<i>Link to the public consultation by the TSO (regarding article 28 and 29 in DCC): https://www.svk.se/om-oss/nyheter/natkoder/2019/redogorelse-for-offentligt-samrad-om-forslag-till-krav-for-forbrukningsenheter/</i>
SI	<i>Public consultations of the complete proposals were carried out between 16. 01. 2019 and 25. 02. 2019 for both NC DCC as well as NC HVDC requirements of general application (https://www.agen-rs.si/izvajalci/elektrika/kodeksi-omrezja/posvetovanja-o-predlogih-odlocitev).</i>
SK	<i>TSO did not need carry out public consultation, because TSO set requirements for demand units connected at a voltage level 110 kV and higher.</i>

3.6 Establishment of requirements of general application within specified ranges

3.6.1 Stricter / looser onerous threshold

- (18) **Q.2.h. Concerning the NC DC and the NC HVDC, specify whether, in the submitted and/or accepted proposals for requirements of general application, any value/condition happens to be stricter/looser than the most/least onerous related threshold (as established in the relevant NC). Provide justification for each of such cases.**
- (19) **Concerning the NC DC, if any value/condition happens to be stricter than the most onerous threshold, confirm if this requirement is enforced to all the demand facilities or it follows from an agreement between a demand facility's owner or DSO and the relevant system operator, in accordance with Article 12(2) of the NC DC.**
- (20) **Concerning the NC HVDC, if any value/condition happens to be stricter than the most onerous threshold, confirm if this requirement is enforced to all the HVDC systems or it follows from an agreement between a HVDC system's owner and the relevant TSO, in accordance with Article 11(2) or Article 39(2)(b) of the NC HVDC, accordingly.**

(238) Table 16: Stricter / looser onerous threshold.

MS	Answer
AT	<i>No, not applicable.</i>
BE	<i>The accepted proposals for requirements of general application haven't any value/condition that happens to be stricter/looser than the most/least onerous related threshold.</i>
BG	<i>No reply</i>
CZ	<i>The question is not clear for us. In the example, NC DC is prescribing minimum time periods for the frequency range between 47.5 Hz and 51. 5 Hz.</i>

	<p>Possible time periods for operation beyond these thresholds is not an issue of NC DC and is not, at least from our point of view, part of the requirements of general application.</p> <p>Based on the abovementioned, a situation which you describe is not possible as everything we approved should be within these thresholds (as anything, and this is not limited to frequency ranges but to all other thresholds as well is then outside of the scope).</p>
DE	None.
DK	All requirements approved for both DCC and HVDC is within any pre-given interval / value. DUR has not granted any derogation from fixed intervals or values given in the DCC and HVDC regulation.
EE	Regarding DC the same values/conditions as in RfG. Regarding HVDC mainly the same values/conditions as in NC HVDC Annex VII, with exemption of frequency range 47,0 Hz – 47,5 Hz, where Time period for operation is 60 sec.
ES	No. However, concerning NC DC, TSO proposal included particular requirements for power quality, both in emission limits by facilities and in capability of facilities for withstanding without damage and disconnection particular ranges of distortion. Anyway, it is foreseen that these aspects will be implemented in future regulation.
FI	None of the requirements are stricter or looser than the options stated in the NC DCC and NC HVDC.
FR	No stricter/looser requirement than the most/least onerous related threshold established in the relevant NC has been proposed.
GB	All requirements of general application comply with the NC DC and NC HVDC.
UK-NIR	<p>Article 12.1 - DCC Frequency Band difference with justification: The DCC states that the operation time in the frequency range of 48.5 – 49.0 Hz shall be specified by the TSO but not less than 90 minutes. The current Grid Code requirement in this frequency range is 60 minutes. The proposed parameter of 90 minutes is the closest allowable to the current Grid Code requirement. Please note the Grid Code also requires demand side units to remain connected to the network as follows:</p> <ul style="list-style-type: none"> • between 47- 47.5 Hz for 20 seconds • and between 51.5 - 52 Hz for 60 minutes <p>These requirements will remain in the Grid Code in addition to the DCC requirements in the table above.</p> <p>It is proposed that under Article 12.2, which states “The transmission-connected demand facility owner or the DSO may agree with the relevant TSO on wider frequency ranges or longer minimum times for operation. If wider frequency ranges or longer minimum times for operation are technically feasible, the consent of the transmission-connected demand facility owner or DSO shall not be unreasonably withheld.”, to apply the existing Grid Code requirements within the ranges of 47.0 - 47.5 Hz and 51.5 - 52.0 Hz to all TCDF, TC distribution facilities, and TCDS.</p> <p>The above is taken from page 14 of http://www.soni.ltd.uk/media/documents/Proposal-for-General-application-of-the-DCC-Requirements-for-Northern-Ir....pdf</p>

GR	<i>There are no such cases. All requirements approved for both DCC and HVDC are within the defined limits as established in NC DC and NC HVDC.</i>
HR	<i>All DC and HVDC requirements of general application are inside defined limits.</i>
HU	<i>There are no such cases. We attach the defined parameters (also in English)</i>
	<i>There are no such cases.</i>
IE	<p><i>Article 12.1 - DCC Frequency Band difference with justification: “The DCC states that the operation time in the frequency range of 48.5 – 49.0 Hz shall be specified by the TSO but not less than 90 minutes. The current Grid Code requirement in this frequency range is 60 minutes. The proposed parameter of 90 minutes is the closest allowable to the current Grid Code requirement. Please note the Grid Code also requires demand side units to remain connected to the network as follows:</i></p> <ul style="list-style-type: none"> <i>• between 47- 47.5 Hz for 20 seconds</i> <i>• and between 51.5 - 52 Hz for 60 minutes</i> <p><i>These requirements will remain in the Grid Code in addition to the DCC requirements in the table above. It is proposed that under Article 12.2, which states “The transmission - connected demand facility owner or the DSO may agree with the relevant TSO on wider frequency ranges or longer minimum times for operation. If wider frequency ranges or longer minimum times for operation are technically feasible, the consent of the transmission-connected demand facility owner or DSO shall not be unreasonably withheld.”, to apply the existing Grid Code requirements within the ranges of 47.0 - 47.5 Hz and 51.5 - 52.0 Hz to all TCDF, TC distribution facilities, and TCDS.”</i></p> <p><i>The above is taken from page 14 here: http://www.eirgridgroup.com/site-files/library/EirGrid/DCC-Parameter-Consultation-Ireland.pdf</i></p> <p><i>Clarification provided by CRU (IE)</i></p> <p><i>The proposed and approved parameter is 90 minutes and is the closest allowable to the existing Grid Code requirement. The Grid Code needs to be adapted accordingly.</i></p>
IT	<i>The frequency ranges are the same of NC DC and of NC HVDC. However, it is not permitted to limit the performance of the facility if it is able to operate in wider frequency ranges; regarding DCC, where applicable, such feature is agreed with the user by Operational Agreement.</i>
LT	<i>No additional binding requirements that refers to a range of values beyond the maximum/minimum thresholds.</i>
LU	<i>No.</i>
LV	<p><i>No reply</i></p> <p><i>Clarification provided by the NRA:</i></p>

	<i>In 2.h. answer would be - we don't have in Latvia any stricter/looser requirement in cases.</i>
NL	<i>N/A</i>
PL	<i>There are no such cases.</i>
PT	<i>All proposals are within the ranges provided for in the NC DC and NC HVDC.</i>
RO	<i>NC DC It doesn't exceed European regulation. NC HVDC It doesn't exceed European regulation.</i>
SE	<i>No. N/A</i>
SI	<i>Requirements of general application, established by TSO and approved by NRA, are within the ranges under NC DC. Requirements of general application, established by TSO and approved by NRA, are within the ranges under NC HVDC.</i>
SK	<i>URSO did not identified requirements which are stricter/looser than the most/least onerous related threshold.</i>

3.6.2 Additional binding values

- (21) **Q.2.i. Concerning the requirements of general application established in the NC DC and in the NC HVDC, specify if, in the national regulation on grid connection for relevant system users, there is one or more additional binding requirement that refers to a range of values beyond the maximum/minimum thresholds defined in the NC DC and the NC HVDC? Provide insights on relevant TSO(s) motivations.**

(239) Table 17: Additional binding values.

MS	Answer
AT	<i>No.</i>
BE	<i>There is no additional binding requirement that refers to a range of values beyond the maximum/minimum thresholds as defined in the NC DC and the NC HVDC.</i>
BG	<i>No reply</i>
CZ	<i>The system operators (of which there is more than 200 DSOs) have their own so called Grid Codes, which are approved by ERÚ. These contain a lot of other requirements for system users, which are well beyond this questionnaire and we cannot allocate the time to answer this. This applies mostly to NC DC, as there are no HVDC grids within the Czech Republic and therefore no such requirements have been established before NC HVDC.</i>
DE	<i>None.</i>

DK	<i>No additional requirements for grid connection coming for (additional) national regulation.</i>
EE	<i>Regarding DC the same values/conditions as in RfG. Regarding HVDC mainly the same values/conditions as in NC HVDC Annex VII, with exemption of frequency range 47,0 Hz – 47,5 Hz, where Time period for operation is 60 sec.</i>
ES	<i>No.</i>
FI	<i>There are none.</i>
FR	<i>Concerning the requirements of general application, no additional requirement has been proposed.</i>
GB	<i>We have existing technical requirements that comply with NC DC and NC HVDC, but we did not introduce new requirements that go beyond the maximum/minimum thresholds defined in the NC DC and NC HVDC.</i>
UK-NIR	<i>See 2(h)</i>
GR	<i>There are no such cases.</i>
HR	<i>All DC and HVDC requirements of general application are inside defined limits.</i>
HU	<i>There are no such cases.</i>
IE	<i>See 2(h)</i>
IT	<i>In the national regulation on grid connection for relevant system users there aren't any additional binding requirements than expected by NC DC and by HC HVDC. However, it is not permitted to limit the performance of the power-generating module if it is able to operate in wider frequency ranges; regarding DCC, where applicable, such feature is agreed with the user by Operational Agreement.</i>
LT	<i>No additional binding requirements that refers to a range of values beyond the maximum/minimum thresholds.</i>
LU	<i>No. In case of inconsistency between RfG requirements and national regulation on grid connection a general sentence was added in the approval of the general requirements stating that in case of discrepancy the RfG (and DCC) requirements prevail. "En cas de conflit entre les exigences techniques acceptées par le règlement E15/01/ILR du 9 janvier 2015 portant acceptation des conditions techniques de raccordement au réseau haute tension exploité par Creos Luxembourg S.A. ou le règlement E09/35/ILR du 15 décembre 2009 portant acceptation des conditions techniques de raccordement aux réseaux moyenne tension pour le territoire du Grand-Duché de Luxembourg et les présentes exigences techniques applicables conformément au règlement (UE) 2016/631 du 14 avril 2016, ces dernières prévalent."</i>
LV	<i>General requirements are included in the Grid Code.</i>
NL	<i>N/A</i>
PL	<i>NC DC and NC HVDC established a superordinate requirements in this area and thus new facilities have to be compliant with requirements of those codes. In case of any</i>

	<i>discrepancy between NCs and national regulations in this area, requirements of NCs prevail.</i>
PT	<i>All proposals are within the ranges provided for in the NC DC and NC HVDC and do not change the current practice in connecting consumer facilities to the transmission network.</i>
RO	NC DC <i>No, it is not the case.</i> NC HVDC <i>No, it is not the case.</i>
SE	<i>No.</i>
SI	<i>Additional binding requirement in National regulation, that are beyond thresholds defined in the NC DC and/or NC HVDC requirements of general application, are not binding for facility owner.</i>
SK	<i>URSO did not identified requirements which are one or more additional binding requirement that refers to a range of values beyond the maximum/minimum thresholds defined in the NC DC and the NC HVDC.</i>

3.7 Additional requirements concerning frequency / voltage

- (240) **Q.2.j. Concerning the subject matters of the general requirements in the NC DC and NC HVDC and focusing only on those concerning frequency/voltage issues, specify if additional requirements, thus different from those included in the NC DC and NC HVDC, have been implemented in the national regulation(s) on grid connection for system users relevant to the NC DCC and NC HVDC, respectively. If any, provide motivations.**

(241) *Table 18: Additional requirements concerning frequency / voltage.*

MS	Answer
AT	<i>The additional requirements regarding frequency, voltage, reactive power and short-circuit are specified within the DCC Anforderungs-V.</i> <i>Clarification provided by the NRA upon ACER's request:</i> <i>The Regulation defines the generally applicable requirements, which are not exhaustively defined in the NC DC in accordance with Article 6(1) of the NC DC.</i> <i>https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20010756</i>
BE	<i>No additional requirements regarding frequency/voltage issues have been implemented.</i>
BG	<i>No reply</i>
CZ	<i>The national legislation does not contain such issues. However, if you consider the Grid Codes of relevant system operators as a part of national regulation, certain requirements concerning frequency and voltage issues are part of these Grid Codes. The Grid Codes are primarily the responsibility of the system operators and they can</i>

	<i>propose in them any requirements that are not against the law or which do not create an imbalance in the market.</i>
DE	<i>None.</i>
DK	<i>No additional requirements are implemented.</i>
EE	<i>There are no such additional requirements implemented.</i>
ES	<i>Neither in NC DC nor in NC HVDC</i>
FI	<i>There are none.</i>
FR	<i>No additional requirements regarding frequency/voltage issued have been introduced.</i>
GB	<i>As part of this process, we did not introduce new requirements. We amended existing requirements to comply with the RfG.</i>
UK-NIR	<i>See 2(h)</i>
GR	<i>No additional requirements on frequency/voltage issues.</i>
HR	<i>All DC and HVDC requirements of general application are inside defined limits.</i>
HU	<i>There are no such cases.</i>
IE	<i>See 2(h)</i>
IT	<i>No additional frequency/voltage requirements have been defined at national level.</i>
LT	<i>No additional requirements have been implemented.</i>
LU	<i>No.</i>
LV	<i>General requirements are included in the Grid Code.</i>
NL	<i>N/A</i>
PL	<i>Additional requirements concerning frequency/voltage issues (the ones not included in NC DC) are specified in system operator grid code (TSO or relevant DSOs) and apply to existing facilities. There are no requirements for existing HVDC facilities. For new facilities NC DC requirements prevail and NC HVDC requirements applies.</i>
PT	<i>All proposals are within the ranges provided for in the NC DC and NC HVDC.</i>
RO	<i>NC DC The time period for voltage ranges 1, 118 pu-1, 15 pu: not less than 30 minutes. NC HVDC Not applicable.</i>
SE	<i>No.</i>
SI	<i>No additional requirements, different from those included in the NC DC and NC HVDC have been implemented.</i>
SK	<i>URSO did not identified requirements concerning frequency/voltage issues , which are different from those included in the NC DC and NC HVDC.</i>

4. Operational notification and compliance testing

4.1 Interim operational notification procedure

(242) **Q.3.a. Concerning the interim operational notification, as part of the operational notification procedure for connection of relevant system users, what documents/information are required by the relevant system operator in the absence of equipment certificates? Elaborate the relevant details concerning different types of demand facilities (Article 24 of the NC DC) or HVDC systems (Articles 57 and 62 of the NC HVDC, respectively).**

(243) Table 19: Documents and information required concerning the interim operational notification.

MS	Answer
AT	<p>The design of these requirements takes place with the implementation of the national grid code <i>Netze und Lasten</i>.</p> <p><i>Clarification provided by the NRA upon ACER's request:</i></p> <p>The design of these requirements takes place in the national grid code, technical and organisational rules for network operators and users (TOR). The implementation of this national grid code "<i>TOR Netze und Lasten</i>" is currently taking place with the involvement of all stakeholders. https://www.e-control.at/marktteilnehmer/strom/marktregeln/tor</p>
BE	<p>Federal level (grids >70kV): The compliance of the connection installations with regard to all technical requirements is determined by the satisfactory implementation of the conformity tests and the simulations as referred to in the federal grid code. The details of the operational notification procedure are given in articles 171 to 179 of the Belgian federal grid code: http://www.ejustice.just.fgov.be/mopdf/2019/04/29_1.pdf#Page26</p> <p>Regional level (grids <=70kV): The actual connection contract between the grid user and the system operator does not yet take into account the interim operational notification. The new installation has to be compliant with the relevant requirements (NC DC and NC HVDC). Compliancy is tested during the procedure for connection, whether through the equipment certificates or through specific testing in the absence of certificates (see question b). In case of modernisation, only the replaced equipment has to be compliant (modernisation rules are currently under discussion with stakeholders). An in-depth review of the connection contract is foreseen (see question 4).</p>
BG	<i>No reply</i>
CZ	<i>In case of absence of equipment certificates it is necessary to prove the compliance with NC DC and NC HVDC requirements by compliance tests or/and compliance simulations according to the TITLE IV CHAPTER 2 and CHAPTER 3 of NC DC and NC HVDC. The TSO will apply more of a case to case approach without general guidelines.</i>
DE	<p>Demand facilities (Article 24 NC DC): There are numerous documents/information necessary in order to obtain a Final</p>

operational certification (see below). However, other than for power generating facilities (see especially Article 4.2.4 of VDE-AR-N 4130), the Technical Connection Rules of VDE FNN do not provide for an Interim operational notification for the connection of demand facilities (see Article 3.1.11.2 of VDE-AR-N 4110 / 4120 / 4130).

In this sense, the documents/information needed to obtain a (final) operational notification are as follows:

- Address of the demand facility
- Master Data of the network connection user/demand facility owner
- Master Data of the owner of the land property
- Master Data of the installer of the demand facility
- Measure (new construction, extension, decommissioning)
- Local location of the property to be supplied (general plan on a suitable scale and detailed plan on a scale of at least 1:500) with drawn suggestions for possible station locations
- Power requirement, its characteristics and, if necessary, expansion stages
- Master data of the metering point operator
- Specific requirements regarding the reliability of supply
- Building site power requirements
- System perturbations of the consumer appliances (see standard form/questionnaire E.2. for further details)
- the construction schedule and the planned commissioning date.
(Article 4.2.2 of VDE-AR-N 4110 / Art. 4.2.2 of VDE-AR-N 4120)
- Scaled site plan of the property with drawn-in location of the transfer station, the network routes, as well as the existing and planned development, at least on a scale of 1:500;
- single-phase overview circuit diagram of the substation including boundary of ownership, operational management, disposal and operating area, power transformers, measuring, protection and control devices (if protective devices are present, representation where the measured variables for the short-circuit protection devices and, in the case of generating installations, additionally for the decoupling protection devices are recorded and on which switching devices the protective device acts, data of the auxiliary power source) representation of the customer's own medium-voltage line connections, details of cable types, lengths and cross-sections and specification of the technical characteristics of the customer's own downstream medium-voltage switchgear;
- Drawings of all medium/high/extra high-voltage switchgear panels with arrangement of the devices (assembly drawings);
- representation of the measuring concept, arrangement of the measuring and counting equipment with devices for remote data transmission, arrangement of the telecontrol technology, network plan with all secondary technical components, communication interfaces and process data scope in the transfer station;
- ground plans and sectional drawings, if possible on a scale of 1:50, of the electrical operating rooms for the medium-voltage switchgear and mains transformers. These drawings must also show the route of the cables and access to the switchgear;
- Under VDE-AR-N 4110: proof of short-circuit resistance for the entire transfer station, proof of protection against the risk of arcing in accordance with DIN EN 62271-202 (VDE 0671-202) or DIN EN 62271-200 (VDE 0671-200) (e.g. IAC classification) or DIN EN 61936-1 (VDE 0101-1) (including pressure calculation and discharge of the arcing gases);
- Under VDE-AR-N 4120: Proof of protection against the risk of arcing in accordance with DIN EN 62271-202 (VDE 0671-202) or DIN EN 61936-1 (VDE 0101-1) (including

pressure calculation);

- Mutual agreement on the location and operation of the transfer station between the owner of the house and land and the owner of the demand facility/, if these are different persons, and consent of the land owner to the construction and operation of the network routes;

- Under VDE-AR-N 4110: Declaration of compliance with the technical requirements of the applicable rules of Technical Connection Rules laid down in VDE-AR-N 4110 and the network operator's general terms and conditions;

- Under VDE-AR-N 4120: Proof of compliance with the technical requirements of the grid operator according to the Technical Connection Rule VDE-AR-N 4120.
(Article 4.2.4 of VDE-AR-N 4110 and Article 4.2.4 of VDE-AR-N 4120)

- Under VDE-AR-N 4130: Data and models that are required for network analyses purposes: Information on the demand for active and reactive power at the grid connection point in the reference case in stationary operating conditions. This includes full load, minimum load and standstill/revision. Grid operators and demand facility owners determine on the basis of the load structure whether a static load behavior is sufficient to simulate the customer's grid or whether a dynamic model is additionally required. Unless otherwise agreed, a specific model data must be provided for static loads.

(Article 6.4.1. of VDE-AR-N 4130)

HVDC systems (Article 57 NC HVDC):

Article 4.2.1.1 of VDE-AR-N 4131 does provide for an interim operational notification for HVDC systems.

The relevant network operator shall issue an interim operational notification/license once the verification of the data and studies has been completed. The following data and studies are to be submitted to the relevant network operator by the HVDC system user:

- a declaration of conformity with regard to all individual components;

- the detailed technical data on the new HVDC system important for grid connection, as specified by the relevant grid operator in Section A.1 (Remark: a very extensive list; if needed, BNetzA will translate it and provide it to ACER);

- certificates of equipment for HVDC systems or HVDC converter units, if these are part of the proof of conformity;

- simulation models or exact replicas of the control system according to Article 10.4.6 and according to the specifications defined by the relevant network operator in coordination with the relevant transmission system operator(s);

- studies to prove the expected steady-state and dynamic operating behaviour according to Section 10;

- details on planned conformity tests according to Article 11.5;

- details of the planned practical method for carrying out the conformity tests pursuant to Section 11.

(Article 4.2.1.3 of VDE-AR-N 4131)

DC-Connected Power Park Modules (Article 62 NC HVDC):

Article 4.2.2.1 of VDE-AR-N 4131 does provide for an interim operational notification for DC-connected power park modules.

The relevant network operator shall issue an interim operational notification/licence, provided that the verification of the data and studies described in this section has been completed. The following data and studies must be submitted to the relevant network

	<p>operator by the user:</p> <ul style="list-style-type: none"> - the detailed technical data on the generating installation important for grid connection, as specified by the relevant grid operator in section B.1; - the simulation models specified by the relevant grid operator in section B.6; - system studies according to Article 11.8; - detailed description of the conformity tests required for the final operating permit according to Article 11.6. <p>(Article 4.2.2.3 of VDE-AR-N 4131)</p>
DK	The Danish TSO require a statement of compliance, detailed technical data, simulation models and a proposal for a test-plan of the facility. ION is then given in order to carry out the actual tests of the facility.
EE	In case of absence of equipment certificates it is necessary to prove the compliance with NC DC and NC HVDC requirements by compliance tests or/and compliance simulations according to the TITLE IV CHAPTER 2 and CHAPTER 3 of NC DC and NC HVDC. The TSO will apply more of a case to case approach without general guidelines.
ES	Concerning NC DC at the ION stage, the compliance procedure (to be effective after national implementation of NC DC), which does not consider neither the compulsory use of equipment certificates neither a certification scheme, establishes the necessary tests and simulation for each technical requirement. More detailed information is available in the “Compliance document for demand” (only Spanish version available).
FI	<ul style="list-style-type: none"> - Notification is fully described under 5.3.1 (DCC) and 6 (HVDC). - See the document links before
FR	<i>No reply</i>
GB	<p>The documents include:</p> <ul style="list-style-type: none"> • Updated Planning Code data • Details of any special equipment protection • Simulation studies • A schedule of test to demonstrate compliance. • An interim compliance statement. <p>See ECP.1 of the Grid Code for exact requirements. https://www.nationalgrideso.com/codes/grid-code?code-documents</p>
UK-NIR	We are not currently aware of the status of Operational Notifications in the case of demand connections or HVDC interconnectors.
GR	<p><u>DCC</u></p> <p>Concerning demand facilities, the required documents/information are described in section 8 of the <u>newly edited Hellenic Electricity Transmission Code (Gov. Gaz. 4658 B, 22 Oct. 2020)</u> and are fully complied with the provisions of NC DC. Furthermore, pursuant to RAE’s decision (1166/2020 (Gov. Gaz. 3698 B, 3 Sept. 2020) on the approval of the requirements of general application of DCC, TSO may further elaborate the issue of operational notification procedure, as appropriate.</p> <p>HVDC</p>

	<i>There are no existing HVDC systems in Greece. Additionally to the application of general provisions of NC HVDC for such future systems, TSO may further elaborate the issue of operational notification procedure, as appropriate, pursuant to RAE's decision (1167/2020 (Gov. Gaz. 3762 B, 7 Sept. 2020) on the approval of the requirements of general application of HVDC.</i>
HR	<i>Equipment certificates are usually already provided by relevant system users during the process of interim operational notification, so there is no need for additional documents/information.</i>
HU	<p>https://www.mavir.hu/hu/web/mavir/halozati-csatlakozasok Legal background:</p> <ul style="list-style-type: none"> • TSO Business Code and its annexes https://www.mavir.hu/web/mavir/uzletszabalyzat • Operational Code and its guidelines http://mavir.hu/web/mavir/uzemi-szabalyzat • DSO Business Code (point 5.7) and its annexes https://www.eon.hu/content/dam/eon/eon-hungary/documents/hatarozatok-szabalyzatok-aram/EED/H2674_2019_EED_elo_usz_torz.pdf <p>All above are approved by HEA.</p>
IE	<p><i>No reply</i></p> <p><i>Clarification provided by the NRA upon ACER's request:</i></p> <p><i>In advance of connection, the TSO requires additional technical information, typically, this includes a clarification on the final choice of parameters and additional detailed information about dynamic modelling and harmonics.</i></p> <p><i>The TSO requires this information sufficiently in advance of connection to allow EirGrid to perform pre-connection technical studies. This means that the information is required 12 months in advance of connection. The same applies regardless of facility type.</i></p>
IT	<p><i>The parts relevant to the reliability and continuity of the transmission network service (such as, for example, machines, equipment or control systems) must be supplied by manufacturers operating under certified quality. For these devices, the user must transmit to the TSO the declaration of conformity provided by the manufacturer/installer certifying:</i></p> <ul style="list-style-type: none"> - compliance with the technical requirements set out in the Italian Grid Code; - the installation of components and materials constructed in a workmanlike manner, certified and suitable for the place of installation; - the group's compliance with regards to safety and functionality. <p><i>What described is valid both for different types of demand facilities (in case of NC DC) and for HVDC systems (in case of NC HVDC).</i></p>
LT	<i>If the certificates are not present, on site energy quality measurements shall be carried out in the demand facilities at the connection point. The previous condition is applied both for DC and HVDC applications.</i>
LU	<p><i>No reply</i></p> <p><i>Clarification provided by the NRA upon ACER's request:</i></p> <p><i>After exchanges with our TSO, it seems that some specific procedures, dealing with</i></p>

	<p>documents and information to be shared between parties, still need to be developed or implemented. The treatment of such cases, expected to be very limited, is being assessed.</p>
LV	No experience with equipment certificates so far. Only testing is in force in accordance with Grid Code and NC DC.
NL	<p>Yes see links below: https://www.netbeheernederland.nl/_upload/Files/Regulering_20_61efcb554e.pdf https://www.netbeheernederland.nl/_upload/Files/Regulering_20_0b9f270fe0.pdf</p>
PL	<p>In case of absence of equipment certificates, upon facility owner request it could be allowed to use declarations of conformity of equipment issued by manufacturer, in the meaning of PN-EN ISO/IEC 17050- 1, December 2010, confirming compliance with NC DC/NC HVDC requirements. For TSO all documents related to compliance process are publicly available at PSE.A.'s website https://www.pse.pl/dokumenty in the bookmark:</p> <ul style="list-style-type: none"> • For the NC DC certificates' and compliance tests' topics: Kodeksy Sieci -> NC DC -> Procedura testowania oraz warunki wykorzystania certyfikatów dla odbiorów • For the NC HVDC certificates' and compliance tests' topics: <ul style="list-style-type: none"> o PPM DC : Kodeksy Sieci -> NC HVDC -> Procedura testowania oraz warunki wykorzystania certyfikatów dla PPM DC o HVDC systems: Kodeksy Sieci -> NC HVDC -> Procedura testowania oraz warunki wykorzystania certyfikatów dla systemów HVDC
PT	These aspects are to be addressed in the ongoing revision of regulations for the transmission and distribution networks.
RO	<p>NC DC The interim operational notification is issued by the relevant system operator only if all information and relevant details concerning different types of demand facilities are provided. In the absence of equipment certificates, the required documents are: technical data for main components, component certificates (regarding equipment component's), equipment's models or component's model, the results coming from the manufactory tests, the list of technical data and in specific cases a declaration of conformity, especially for parameters which have not standards for testing - e.g. RoCoF.</p> <p>.....</p> <p>NC HVDC The interim operational notification is issued by the relevant system operator only if all information and relevant details are provided. In the absence of equipment certificates, information (tests and their results etc.) must be provided in accordance with the instructions given by relevant system operator, which refer to the applicable technical requirements, specific to the HVDC system / DC-connected power park modules.</p>
SE	<p>The TSO is updating the processes for connections to adjust them to the network codes. Today there are three documents available (in accordance with the previous process) for connecting a distribution system to the transmission system. The connection of distribution system is subject to the following requirements (published by the TSO): General Terms and Conditions: https://www.svk.se/siteassets/aktorsportalen/elmarknad/anslut-till-stamnatet/allmanna-avtalsvillkor.pdf Technical contract terms: https://www.svk.se/siteassets/aktorsportalen/elmarknad/anslut-till-stamnatet/tekniska-</p>

	avtalsvillkor_2018-03-01.pdf and Technical guidelines: https://www.svk.se/aktorsportalen/teknik-och-entreprenad/tekniska-riktlinjer/
SI	Not implemented yet. Documents/information will be provided according to the results of the undergoing study.
SK	TSO requires documents in accordance with TP https://www.sepsas.sk/Dokumenty/TechnickePodmienky/2020/01/20/TP-Dok_N_2020_upr.pdf , point 4.3.2 HVDC line does not exist in Slovak republic and it is not planned.

4.2 Compliance testing

- (22) **Q.3.b. Concerning the compliance testing, how are the requirements of the NC DC verified in the absence of equipment certificates? Elaborate the relevant details concerning different types of demand facilities. Similarly, how are the requirements of the NC HVDC verified in the absence of equipment certificates? Elaborate the relevant details concerning different types of HVDC systems.**

(244) Table 20: Requirements verification.

MS	Answer
AT	The design of these requirements takes place with the implementation of the national grid code TOR Netze und Lasten.
BE	Federal level (grids >70kV): The compliance of the connection installations with regard to all technical requirements is determined by the satisfactory implementation of the conformity tests and the simulations as referred to in the federal grid code. The details of the operational notification procedure are given in articles 171 to 179 of the Belgian federal grid code: http://www.ejustice.just.fgov.be/mopdf/2019/04/29_1.pdf#Page26 Regional level (grids <=70kV): In the absence of equipment certificates, specific testing procedures are followed to see if the installation meets the relevant requirements. From experience, most of the installations (HVDC or DC) hold equipment certificates, making this procedure a case-by-case approach.
BG	No reply
CZ	The interim operational notification is issued by the TSO only if all information and relevant details concerning different types of demand facilities or HVDC systems according to the article 24 of NC DC and the articles 47 and 62 of NC HVDC are provided. The proving obligation of the compliance of NC DC of NC HVDC facilities to the system is a part of the interim operational notification and it could be proved either by equipment certificate or by compliance test/simulation according to the NC DC.
DE	See above under 3.a. Additionally a very detailed description of the compliance testing for HVDC-Systems and DC-connected PPMs can be found in Section 11 of VDE-AR-N 4131.
DK	The facility owner shall propose a test-plan. IONs are given in terms of carrying out the actual tests.

EE	<p>For regular Demand Connection no special Compliance Testing is not performed. TSO assesses compliance from documentation provided during connection for example relay protection (Voltage and Frequency) settings must be provided and approved before energization. Transformer Factory Acceptance Test Reports must be provided to TSO to assess compliance with requirements.</p> <p>For demand connections which would provide system services, additional testing program will be agreed separately, similarly with Power-Generating Modules.</p> <p>For single demand units above 10MW calculation models must be provided for dynamic studies.</p> <p>For HVDC TSO will perform compliance testing in case-by-case basis depending on the connecting facilities. If there is wind farm connecting, similar testing will be done as for power-park modules according to RfG. If there is HVDC link connected to system, technology based compliance testing procedure will be agreed with client.</p>
ES	<p>Concerning NC DC at the ION stage, the compliance procedure (to be effective after national implementation of NC DC), which does not consider neither the compulsory use of equipment certificates neither a certification scheme, establishes the necessary tests and simulation for each technical requirement.</p> <p>More detailed information is available in the “Compliance document for demand” (https://api.esios.ree.es/documents/563/download?locale=es) (only Spanish version available).</p>
FI	<ul style="list-style-type: none"> - Commissioning tests are described under chapter 10 (DCC document) - Commissioning test are described under chapter 14 (HVDC document) <ul style="list-style-type: none"> i. only in Finnish but same principals as in RfG and DCC. ii. Modelling requirements are described under chapter 15. The calculation models provided from the DC system should repeat the real functionality and characteristics of the DC system.
FR	<p><i>No reply</i></p>
GB	<p>The compliance process is outlined in the Grid Code and Distribution Code. It covers three main areas:</p> <ul style="list-style-type: none"> • Compliance process – the process by which parties demonstrate their plant can meet the requirements of the codes. • Simulation – the submission of plant performance based on simulations. • Plant testing – to validate actual test results against simulated results. <p>See the Compliance Process section of the Grid Code for exact requirements: https://www.nationalgrideso.com/document/162271/download</p>
UK-NIR	<p>We are not currently aware of the status of Operational Notifications in the case of demand connections or HVDC interconnectors.</p>
GR	<p>DCC</p> <p>Concerning demand facilities, the compliance procedures are described in section 8 of the newly edited Hellenic Electricity Transmission Code (Gov. Gaz. 4658 B, 22 Oct. 2020) and are fully complied with the provisions of NC DC. Furthermore, pursuant to RAE’s decision (1166/2020 (Gov. Gaz. 3698 B, 3 Sept. 2020) on the approval of the requirements of general application of DCC, TSO may further elaborate the compliance testing, as appropriate.</p> <p>HVDC</p>

	<i>There are no existing HVDC systems in Greece. Additionally to the application of general provisions of NC HVDC for such future systems, TSO may further elaborate the compliance testing, as appropriate, pursuant to RAE's decision (1167/2020 (Gov. Gaz. 3762 B, 7 Sept. 2020) on the approval of the requirements of general application of HVDC.</i>
HR	<i>Equipment certificates are usually already provided by relevant system users during the process of interim operational notification, so there is no need for additional documents/information.</i>
HU	<i>See 3) a).</i>
IE	<i>No reply</i> <i>Clarification provided by the NRA upon ACER's request:</i> <i>Connections provide a model of their load on the system to the TSO to conduct a simulation on the system. Afterwards, a series of live on-load testing, where they are energised to the connection system are conducted, where compliance is tested, including judging frequency response, minimum and maximum load, verifying if they can connect at different frequency points and assessing ramp rates. The model is then amended to reflect the connection's capabilities. The same applies regardless of facility type.</i>
IT	<i>The requirements of the NC DC and the NC HVDC are verified based on technical tests. In addition, for the parts relevant to the reliability and continuity of the transmission network service, the user must transmit to the TSO the declaration of conformity provided by the manufacturer/installer certifying (see previous question).</i>
LT	<i>If the certificates are not present, on site energy quality measurements shall be carried out in the demand facilities at the connection point. The previous condition is applied both for DC and HVDC applications.</i>
LU	<i>No reply</i> <i>Clarification provided by the NRA upon tACER's request:</i> <i>After exchanges with our TSO, it seems that some specific procedures, dealing with documents and information to be shared between parties, still need to be developed or implemented. The treatment of such cases, expected to be very limited, is being assessed.</i>
LV	<i>No experience with equipment certificates so far. Only testing is in force in accordance with Grid Code and NC DC.</i>
NL	<i>N/A</i> <i>Clarification provided by the NRA upon ACER's request:</i> <i>Yes, see link: https://www.netbeheernederland.nl/_upload/Files/Regulering_20_0b9f270fe0.pdf</i>
PL	<i>In case of absence of equipment certificates, upon facility owner request it could be allowed to use declarations of conformity of equipment issued by manufacturer, in the meaning of PN-EN ISO/IEC 17050- 1, December 2010, confirming compliance with NC</i>

	<p>DC/NC HVDC requirements. If facility owner fails to provide equipment certificates or declaration of conformity full test of facility shall be carried out accordingly to publicly available documents related to compliance process.</p> <p>For TSO all documents related to compliance process are publicly available at PSE.A.'s website https://www.pse.pl/dokumenty in the bookmark:</p> <ul style="list-style-type: none"> • For the NC DC certificates' and compliance tests' topics: Kodeksy SieciàNC DCà Procedura testowania oraz warunki wykorzystania certyfikatów dla odbiorów • For the NC HVDC certificates' and compliance tests' topics: <ul style="list-style-type: none"> o PPM DC: Kodeksy Sieci -> NC HVDC -> Procedura testowania oraz warunki wykorzystania certyfikatów dla PPM DC o HVDC systems: Kodeksy Sieci -> NC HVDC -> Procedura testowania oraz warunki wykorzystania certyfikatów dla systemów HVDC
PT	These aspects are to be addressed in the ongoing revision of regulations for the transmission and distribution networks.
RO	<p>NC DC</p> <p>In case of absence of equipment certificates, it is necessary to prove the compliance with NC DC requirements by compliance tests or/and compliance simulations. Concerning the compliance testing, the tests refer to commissioning tests of equipment and to the tests in connection point. The procedures for equipment commissioning are presented to the relevant system operator and the procedures of testing in connection points are approved by the relevant system operator. Based on models and real test results, the relevant system operator ORR have the right to do simulations.</p> <p>.....</p> <p>.....</p> <p>NC HVDC</p> <p>In case of absence of equipment certificates, it is necessary to prove the compliance with NC HVDC requirements by compliance tests or/and compliance simulations. Concerning the compliance testing, the tests refer to commissioning tests of equipment and to the tests in connection point. Based on models and real test results, the relevant system operator have the right to do simulations.</p>
SE	No documents are available.
SI	Not implemented yet. Documents/information will be provided according to the results of the undergoing study.
SK	<p>Compliance test procedures for customers are listed in TP of TSO https://www.sepsas.sk/Dokumenty/TechnickePodmienky/2020/01/20/TP-Dok_N_2020_upr.pdf, chapter 4.4</p> <p>HVDC line does not exist in Slovak republic and it is not planned.</p>

5. Relevant clauses in contracts and general terms

- (23) **Q.4.a. Concerning Article 58(1) of the NC DC and Article 84(1) of the NC HVDC, explain the modalities adopted to ensure that all relevant clauses in contracts and general terms and conditions relating to the grid connection of new system users are brought into compliance with the requirements of the relevant regulations.**

(245) Table 21: Relevant clauses in contracts and general terms.

MS	Answer
AT	<i>The national gridcode TOR Netze und Lasten is part of the general conditions.</i>
BE	<p><i>Federal level (grids >70kV):</i> <i>According to article 4, §1, of the new Belgian federal grid code the NRA has to approve, among others, the model connection agreement and access agreement and their modifications. The relevant articles of these contracts will be adapted after an in-depth review in the coming months.</i></p> <p><i>Regional level (grids <=70kV):</i> <i>With respect to grid connection, the relevant modalities and requirements are described in the General requirements, drafted by the grid operator and approved by the regulator in 2019. Relevant articles in the connection contract will be adapted during an in-depth review of the existing connection contract.</i> <i>For the Brussels-Capital Region, relevant articles in the connection contract will be adapted during the ongoing in-depth review of the regional grid codes of which the connection contract is an annex.</i></p>
BG	
CZ	<i>The general principle applicable is that connection agreements refer to the Grid codes of relevant system operators and these will in the future contain the requirements of general application.</i>
DE	<p><i>Under Article 19(1) of the German Energy Act, the connection contracts refer to or mirror the technical rules of the designated entity VDE FNN, the VDE-AR-N 4110, 4120, 4130, 4131, which in turn implement the NC DC and NC HVDC.</i></p> <p><i>http://www.gesetze-im-internet.de/enwg_2005/___19.html</i></p>
DK	<i>DUR has approved the general terms and condition for grid connection pursuant to DCC and HVDC. DUR has monitored that these requirement are public available and a procedure for grid connection pursuant to DCC has been publish by the Danish TSO as well. Any party can complain pursuant to DCC art. 6(8) and HVDC art. 5(8). DUR has not received any complaints.</i>
EE	<i>The general principle applicable is that connection rules refer to the connection conditions of relevant system operators and these contain the requirements of general application.</i>
ES	<i>New regulation about access and connection to the grid is expected to be adopted in a near future. This new regulation shall take into account this NC RfG provision.</i>
FI	<i>See the answer for question 2 e.</i>
FR	<i>No modality has not yet been adopted. After the publication of the ministerial order, the TSO will submit to CRE for approval the new models of connection agreement including the requirements of the network codes.</i>
GB	<i>The requirements of our industry codes (Grid Code and Distribution Code) required National Grid ESO and the Distribution Network Operators to ensure all connection contracts and general terms/conditions complied RfG.</i>
UK-NIR	<i>Compliance requirements are met by changes to the Grid Code. SONI is responsible for the development and maintenance of the Transmission Grid Code in Northern Ireland, through the Grid Code Review Panel (GCRP). The GCRP is a standing body mandated to review and discuss the Grid Code, its workings and offer suggestions for</i>

	<p>amendments. Each member of the GCRP represents the interests of the constituents of their appointing body and has the responsibility of engaging with their constituents and discussing their views.</p> <p>All relevant clauses in contracts and general terms and conditions relating to the grid connection of new system users refer to continued compliance with applicable Grid Code requirements. NC RfG is being implemented through grid code modifications, details of which can be found at http://www.soni.ltd.uk/how-the-grid-works/grid-codes/ And at distribution level via the Northern Ireland Distribution Code Review Panel https://www.nienetworks.co.uk/about-us/distribution-code/dc-review-panel</p>
GR	<p><u>The newly edited Electricity Transmission Code (Gov. Gaz. 4658 B, 22 Oct. 2020)</u> has incorporated as references, the NC DC and HVDC together with Regulatory decisions regarding the requirements of general application for the NC DC and for the NC HVDC.</p>
HR	<p>NRA has issued decisions with approval of DC and HVDC non-exhaustive parameters, which were proposed by the TSO.</p> <p>DC and HVDC non-exhaustive parameters, as well as general requirements are implemented in the proposal of the amended TSO grid code, which also should be approved from the NRA and is in the final stage of finalisation, however the final version is not yet submitted for the approval from the NRA.</p> <p>Public consultations have been conducted as well.</p>
HU	<p>No specific modality was adopted yet as the requirements and directly binding and well published on the TSO website. When HEA (NRA) approved the proposals for the general requirements HEA ordered the TSO to consult in each every half year with DSOs and report to the Authority (in case of DC), also to inform the industrial stakeholders (about both codes) during the following (Operational/Market/DSO) committee meeting on these developments.</p>
IE	<p>Compliance requirements are met by changes to the Grid Code. EirGrid is responsible for the development and maintenance of the Grid Codes in Ireland, through the Grid Code Review Panel (GCRP). The GCRP is a standing body mandated to review and discuss the Grid Code, its workings and offer suggestions for amendments. Each member of the GCRP represents the interests of the constituents of their appointing body and has the responsibility of engaging with their constituents and discussing their views.</p>
IT	<p>The Italian Regulatory Authority, approving with resolution 82/2019/R/eel the changes to the Italian Grid Code envisaged by the Italian TSO (Terna S.p.A.) and implementing with resolution 149/2019/R/eel the technical requirements (Norma CEI 0-16 and Norma CEI 0-21) for connections to distribution networks, guarantees that all new connections are compliant with NC DCC and with NC HVDC (in this case concerning only the resolution 82/2019/R/eel).</p>
LT	<p>All requirements are implemented into the connection agreement and transmission services agreement. NERC approves standard terms and conditions of transmission services agreement which are prepared by TSO. The compliance of the requirements is tested before final operation notice is issued.</p>
LU	<p>Technical requirements (TAB - Technischen Anschlussbedingungen) and General Terms & Conditions are submitted for approval to NRA by TSOs and DSOs.</p>
LV	<p>The TSOs have a general obligation to take into account regulatory requirements when drawing up relevant documents. Accordingly, the new framework is taken into account</p>

	<i>when developing the relevant general requirements. The requirements for their deployment have been included within the framework of the Grid Code.</i>
NL	<i>1. The general non-exhaustive requirements from the NC DC and HVDC are implemented in the Dutch technical codes. 2. The Dutch technical codes are also the terms and conditions from the grid operators. 3. On 3 October 2019 ACM established a decision in which ACM amended the Dutch technical codes for the implementation of the NC HVDC. 4. We assume that the TSO will adopt the relevant clauses. If not, we expect disputes.</i>
PL	<i>No specific modalities are adopted. The TSO and DSOs shall ensure that the clauses in the contracts and general conditions for connecting to the network are adjusted. In the event of a dispute regarding the content of the contract for the provision of transmission services, the regulatory authority shall, at the request of any party to the contract, determine the final content of the legal relationship (Article 8 of the Energy Law).</i>
PT	<i>These aspects are to be addressed in the ongoing revision of regulations for the transmission and distribution networks.</i>
RO	<i>NC DC The connection contract is approved by ANRE's Order and its relevant clauses in contracts and general terms and conditions are in line with the NC DC requirements. NC HVDC The connection contract is approved by ANRE's Order and its relevant clauses in contracts and general terms and conditions are in line with the NC HVDC requirements.</i>
SE	<i>The work has not yet started at Ei, we plan to start later this year with the planning of the NRAs supervision. The system operators have reported that they have started to work with the compliance of contracts and conditions, including the general terms of agreements.</i>
SI	<i>Connection approvals and connection contracts must in accordance with the national legislation comply with the national grid code for the transmission system. In the process of approving the requirements of general application the Energy Agency (NRA) has order the TSO to implement the approved proposal and publish it in the national grid code.</i>
SK	<i>Each new device must comply with TP of TSO, which also includes verification of the device's compliance with the requirements in accordance with Regulation 138/2016 (DCC) - HVDC line does not exist in Slovak republic and it is not planned.</i>

Annex II: Figures

UK-NIR

20.3.3 Where a **Power Generating Module** installed under EREC G59/1/NI is modified substantially such that its fundamental characteristics are changed (and which are reflected in a modified **connection agreement**) then it will be necessary for that **Power Generating Module** to be modified to be compliant with EREC G99/NI. Modifications to a EREC G59/1/NI compliant **Power Generating Module** that do not result in a change of fundamental characteristics can remain compliant with EREC G59/1/NI.

20.3.4

For the special case where an existing **Power Generating Module** of less than 5MW **Registered Capacity** (ie of a size that is less than Type C) that complies with EREC G59/1/NI is being relocated to another existing site where the **Power Generating Module(s)** on that other site is also existing and EREC G59/1/NI compliant, then the relocated **Power Generation Module** will only need to comply with EREC G59/1/NI provided that the relocated **Power Generating Module**:

- has the same **Registered Capacity** as, or
- has a smaller **Registered Capacity** than,

the **Power Generating Module** it is replacing.

If an existing **Power Generating Module** is being relocated to an existing site where it has a larger **Registered Capacity** than the **Power Generating Module** it is replacing, or it is being relocated to a new site, then full compliance with EREC G99/NI will be required in either case.

Figure 9 UK- NIR related to question 1.b.

	Scenario	DNO position	EREC G99/NI?	Rationale
1	Small PGM (ie a few hundred kW or less connected where DNO has waived witnessing) connected post 27/04/19 under EREC G59/1/NI. DNO becomes aware on receipt of Commissioning Forms from Generator .	The DNO gives notice to the Generator to make the PGM compliant with EREC G99/NI within a reasonable time (6 months).	✓	Any new PGM should, unless compliant with the RfG agreed process, be EREC G99/NI compliant. In this case had the DNO witnessed the commissioning it would have been picked up earlier.

2	<p>EREC G59/1/NI phased installation with a Connection Agreement for the capacity of the whole site (all PPMs), where the full capacity is built in a single build spanning 27/04/19. Contracts for the major plant placed before 17/05/18. (Not where the site is effectively complete but at a lower Registered Capacity than in the Connection Agreement – see scenario 3).</p>	<p>Connection under EREC G59/1/NI is permitted.</p>	x	<p>This is effectively a single site that just happens to be constructed across the 27/04/19 date – but the arrangements are all compliant with the RfG.</p>
3	<p>EREC G59/1/NI Connection Agreement for a PPM. Project built is significantly less than set out in the Connection Agreement. Additional new Generating Units to be added post 27/04/19.</p>	<p>The additional Generating Units added significantly after the first build should be treated as a new PPM and be EREC G99/NI compliant.</p>	✓	<p>If the build (and investment) has essentially stopped, then the next phase should be considered as new build for the purposes of EREC G99/NI (and RfG) compliance.</p>
4	<p>EREC G59/1/NI phased installation with a Connection Agreement for capacity of the whole site – all Synchronous PGMs.</p>	<p>Synchronous PGMs commissioned after 27/4/19 must be compliant with EREC G99/NI. Units commissioned before this date may be compliant with EREC G59/1/NI. If the Generator had placed contracts for the additional modules before 17/05/18 they could be connected under EREC G59/1/NI.</p>	✓	<p>As Synchronous PGMs are all separate (because they are synchronous), each should be treated separately.</p>
5	<p>Existing EREC G59/1/NI PPM site, the Generator adds an additional PPM after 27/4/19.</p>	<p>The new PPM to be compliant with EREC G99/NI.</p>	✓	<p>This is a new investment and cannot sensibly be integrated with the existing module (see figure 6.4 in EREC G99/NI).</p>

6	Existing EREC G59/1/NI installation – the Generator moves the Interface Protection within the existing site.	The Generator does not need to upgrade the equipment to comply with EREC G99/NI. However, if the relay and generation equipment is capable of accepting EREC G99/NI protection settings, the DNO shall ask the Generator to upgrade the settings to the latest version of EREC G99/NI or EREC G59/1/NI. The DNO would witness the moved Interface Protection if there have been any wiring or relay changes, and according to the witness thresholds in each license area.	x	This is just a maintenance issue – there is no change to generation characteristics etc. Note that under the Accelerated Loss of Mains Change Programme revised settings will be required anyway.
7	Existing EREC G59/1/NI installation – the Generator replaces the Interface Protection but makes no change to PGM .	As 6 above.	x	As 6 above.
8	Existing EREC G59/1/NI installation – the Generator changes the fuel source (eg gas to bio-fuel, landfill gas to natural gas), with no change to main electrical equipment eg alternator or Inverter .	If no significant change to the electrical characteristics there is no need to upgrade to be compliant with EREC G99/NI.	x	The assumption is that the investment associated with the main plant to make this change is modest and that there is no significant effect on the characteristics of the machine.

9	Existing EREC G59/1/NI installation – the Generator changes the prime mover (eg landfill gas site replaces landfill gas engine with a natural gas engine).	Assuming a new engine this is a significant change and the modified installation should comply with EREC G99/NI. Note - a replacement like for like engine would not require EREC G99/NI compliance.	✓	Significant investment in the main plant. The change to the prime mover could have significant effect on some electrical characteristics –eg stability and fault current contribution.
10	Existing EREC G59/1/NI installation – the Generator replaces / upgrades the control system (eg AVR, excitation system).	Replacement of components of a PGM with modern equivalent components would normally be considered to be maintenance work and therefore the PGM does not need to be upgraded to comply with EREC G99/NI, unless this results in changes to the fundamental performance characteristics of generation. However, any reduction in the specific reactive capability specified in the Connection Agreement could trigger the need for full compliance with the latest EREC G99/NI. Similarly the control system might influence other technical issues eg system stability which may trigger the need for compliance with EREC G99/NI.	x	In the main these sorts of changes are not likely to have significant effect on the electrical characteristics of importance to network operators.
11	Existing EREC G59/1/NI installation – the Generator changes from Short Term Parallel, or Standby only, to Long Term Parallel operation.	Does not need to be upgraded to comply with EREC G99/NI. Does need to comply with the full EREC G59/1/NI requirements.	x	The PGM is already connected and is not being modified (although protection upgrades might be needed).
12	Existing Synchronous PGM EREC G59/1/NI installation – the Generator replaces the alternator with a new non-identical unit.	Significant modification – the PGM needs to be compliant with the EREC G99/NI.	✓	This is a significant investment with change to electrical characteristics.

13	Existing Synchronous PGM EREC G59/1/NI installation – the Generator replaces the alternator with one of the same vintage and identical Manufacturers type (eg a reclaimed or spare unit).	Provided the replacement alternator is identical, the PGM does not need to be upgraded to be compliant with EREC G99/NI.	x	This is a maintenance issue – there is no change to generation characteristics etc. This covers the case of strategic spares – there is no change to electrical characteristics.
14	Existing EREC G59/1/NI installation – the Generator replaces a failed Inverter at a PPM comprising multiple Inverters .	Like-for-like replacements do not immediately lead to EREC G99/NI compliance for the whole module. The new Inverter does need to be compliant with the latest EREC G99/NI.	x	This is a maintenance issue – the overall characteristics of the PPM are essentially unchanged.
15	EREC G59/1/NI installation – the Generator replaces one Generating Unit in a PPM , eg one wind turbine on a site of several wind turbines.	Like-for-like replacements do not immediately lead to EREC G99/NI compliance for the whole module. The new Generating Unit does need to be compliant with the latest EREC G99/NI.	x	This is a maintenance issue – there is no change to generation characteristics etc.
16	EREC G59/1/NI installation – the Generator fully replaces a PGM (no increase in Registered Capacity) with a new module.	EREC G99/NI 20.3.2: New PGM must be compliant with EREC G99. 20.3.3: If there are other PGMs at the Generator's Installation that were installed under EREC G59/1/NI, these do not need to be upgraded / replaced.	✓	There is significant investment in replacing a PGM with a new PGM . Significant changes are likely to the electrical characteristics at the Connection Point .

17	<p>EREC G59/1/Nl installation – the Generator fully replaces a Type A or Type B PGM with a PGM that has previously been installed elsewhere under EREC G59/1/Nl. No increase in Registered Capacity at the destination site.</p>	<p>Provided the relocated unit is Type A or Type B and comes from an EREC G59/1/Nl compliant site, the destination site is also EREC G59/1/Nl compliant, and there is no increase in Registered Capacity at the destination site, then compliance with EREC G59/1/Nl only is required.</p>	x	<p>This is a modest investment compared to the costs of a new PGM. There is no net change to the electrical characteristics at the destination site.</p>
18	<p>EREC G59/1/Nl installation – the Generator installs an additional PGM that has previously been installed under EREC G59/1/Nl but interlocked as a standby set to the existing PGM(s).</p>	<p>A variant of scenario 17 if the additional unit was connected under EREC G59/1/Nl, has been relocated to use as a standby/spare on the site, and is interlocked so it cannot run in parallel with the existing PGM(s) such that the effective Registered Capacity (and/or export capacity) of the site is unchanged compliance with EREC G59/1/Nl only is required,</p>	x	<p>There is no effective change to the electrical characteristics of the site and no need to comply with EREC G99/Nl.</p>
19	<p>EREC G59/1/Nl installation – the Generator fully replaces a PGM (increase in Registered Capacity).</p>	<p>EREC G99/Nl paragraph 20.3: The new PGM must be compliant with EREC G99/Nl. Other EREC G59/1/Nl units that are not being replaced do not need to be upgraded.</p>	✓	<p>Replacing a module with a new module is a significant investment. There are likely to be significant changes to the electrical characteristics at the Connection Point.</p>
20	<p>EREC G59/1/Nl installation – the Generator replaces the transformer between the PGM terminals and the Connection Point with similar unit.</p>	<p>A like for like replacement has no effect on electrical characteristics. The PGM does not need to comply with EREC G99/Nl.</p>	x	<p>This is a maintenance issue – there is no change to generation characteristics etc.</p>
21	<p>EREC G59/1/Nl installation – the Generator replaces the transformer between the PGM terminals and the Connection Point with one of significantly different impedance.</p>	<p>The replacement transformer will have an effect on fault level contribution and reactive capability. Any reduction in the reactive capability specified in the Connection Agreement could trigger the need for full compliance with</p>	x	<p>This is a maintenance issue – there is no change to generation characteristics etc.</p>

		EREC G99/N1 – but otherwise the PGM can remain as EREC G59/1/N1.		
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Figure 10 UK- NIR related to question 1.b.

Denmark



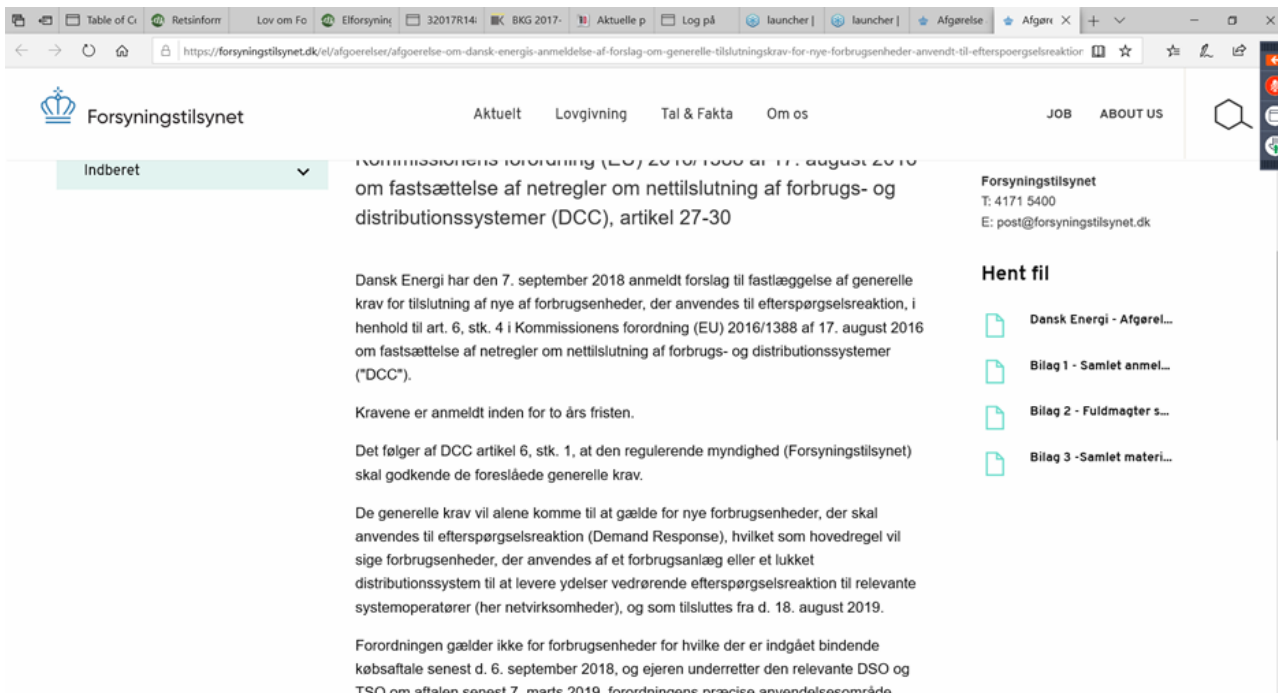
The screenshot shows the website of the Danish Energy Regulatory Authority (Energiregulator). The main content area displays a decision regarding general connection requirements for new transmission and distribution systems. The text is in Danish and mentions the Commission's Regulation (EU) 2016/1388 of 17 August 2016. It states that Energinet.dk has submitted a proposal for general connection requirements for new transmission and distribution systems in accordance with Article 6, paragraph 4, of the DCC Regulation. The proposal was submitted on 7 September 2018. The requirements are submitted within the two-year deadline. It follows from DCC Article 6, paragraph 1 and 6, that the regulating authority (Energiregulator) shall approve the proposal and that a decision shall be made no later than 6 months after the submission. The general requirements from Energinet will alone be sufficient to cover for new transmission and distribution systems, as well as new units that are used for transmission or distribution systems. The precise application area is found in DCC Article 3 and 4.

Navigation menu: Akbælt, Lovgivning, Tal & Fakta, Om os

Left sidebar: Regulering, REMIT, Indberet

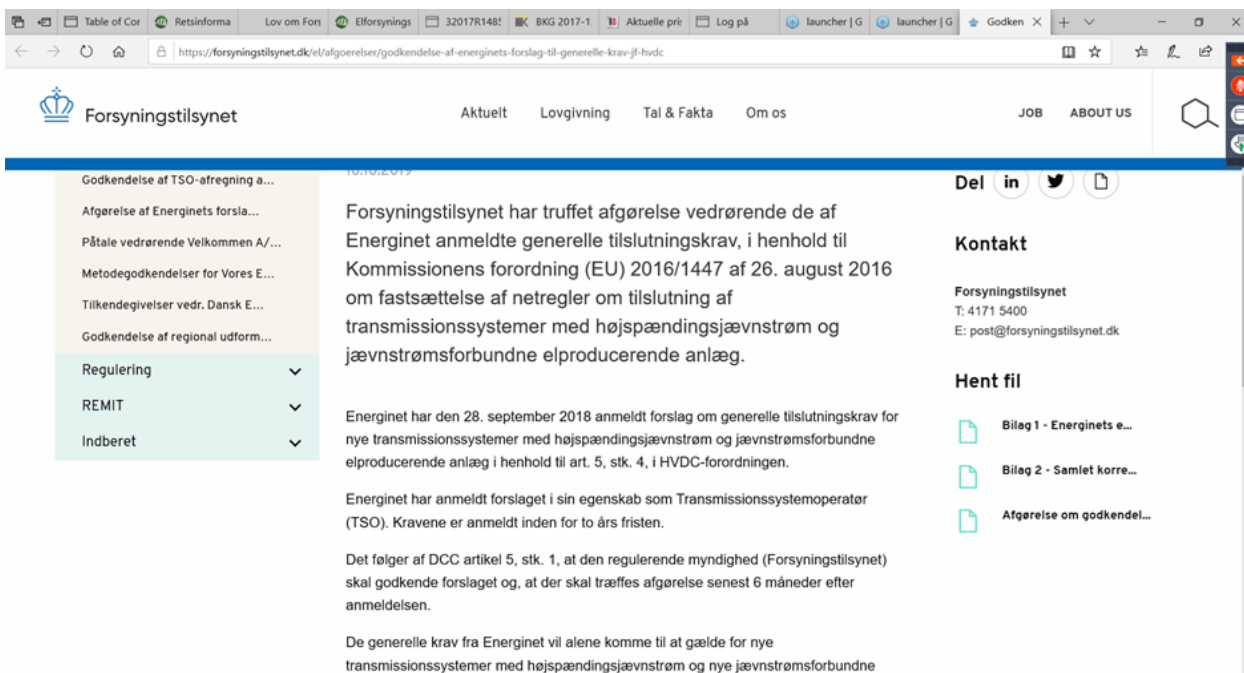
Right sidebar: Kontakt (Forsyningstilsynet, T: 4171 5400, E: post@forsyningstilsynet.dk), Hent fil (Afgørelse.pdf, Bilag 1 - Samlet anmeld..., Bilag 2 - Samlet korre..., DCC forordning.pdf)

Figure 11 DK related to question 2.d.



The screenshot shows the website of the Danish Energy Regulatory Authority (Elsforsyning). The main article is titled "Kommissionens forordning (EU) 2016/1388 af 17. august 2016 om fastsættelse af netregler om nettilslutning af forbrugs- og distributionssystemer (DCC), artikel 27-30". The article text states that Dansk Energi has submitted a proposal for general requirements for new electricity consumers as of September 7, 2018. It mentions that the requirements must be submitted within a one-year deadline. The article also notes that the general requirements will apply to new electricity consumers, which include Demand Response (DR) and closed distribution systems for electricity production facilities. The requirements apply to consumers who have entered into a purchase agreement by September 6, 2018, and whose DSO and TSO contracts are finalized by March 7, 2019.

Figure 12 DK related to question 2.d.



The screenshot shows the website of the Danish Energy Regulatory Authority (Elsforsyning). The main article is titled "Godkendelse af TSO-afregning a...". The article text states that the Danish Energy Regulatory Authority has received a proposal from Energinet regarding general connection requirements for new transmission systems with high-voltage direct current (HVDC) and high-voltage alternating current (HVAC) systems. The requirements are based on Commission Regulation (EU) 2016/1447 of August 26, 2016. Energinet has submitted the proposal in its capacity as Transmission System Operator (TSO). The requirements must be submitted within a one-year deadline. The article also notes that the general requirements will apply to new transmission systems with high-voltage direct current (HVDC) and high-voltage alternating current (HVAC) systems.

Figure 13 DK related to question 2.d.

Annex III: List of abbreviations & country codes

Acronym	Definition
ACER	Agency for the Cooperation of Energy Regulators
EC	European Commission
ENTSO-E	European Network of Transmission System Operators for Electricity
EU	European Union
NC	Network Code
NRA	National Regulatory Authority
DC	Demand Connection
HVDC	High Voltage Direct Current
TSO	Transmission System Operator
DSO	Distribution System Operator

ISO code	Country
AT	Austria
BE	Belgium
BG	Bulgaria
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GB	Great Britain
UK-NIR	Northern Ireland
GR	Greece
HR	Croatia

ISO code	Country
IE	Ireland
LT	Lithuania
LV	Latvia
HU	Hungary
IT	Italy
LU	Luxembourg
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia

Abbreviation	NRA
ACM	Autoriteit Consument & Markt/Authority for Consumers & Markets
ARERA	Autorità di Regolazione per Energia Reti e Ambiente
AGEN-RS	Agencija za Energijo/Energy Agency

Abbreviation	NRA
ANRE	Autoritatea Națională de Reglementare în Domeniul Energie/Regulatory Authority for Energy
BNetzA	Bundesnetzagentur/Federal Network Agency for Electricity, Gas, Telecommunications, Posts and Railways
CRU	The Commission for Regulation of Utilities
CRE	Commission de régulation de l'énergie
CREG	Commission de Régulation de l'Électricité et du Gaz/Commissie voor de Regulering van de Elektriciteit en het Gas
CNMC	La Comisión Nacional de los Mercados y la Competencia/The National Commission on Markets and Competition
DUR	Forsyningstilsynet/Danish Utility Regulator
E-Control	Energie-Control Austria
ECA	Konkurentsiamet/Estonian Competition Authority
Ei	Energimarknadsinspektionen/Swedish Energy Markets Inspectorate
ERO	Energetický regulační úřad/Energy Regulatory Office
ERSE	Entidade Reguladora dos Serviços Energéticos/Energy Services Regulatory Authority
EWRC	комисия за енергийно и водно регулиране (KEBP)/Energy and Water Regulatory Commission
EV	Energjavisto /Energy Authority
HEA	Magyar Energetikai és Közmű-szabályozási Hivatal/ The Hungarian Energy and Public Utility Regulatory Authority
HERA	Hrvatska energetska regulatorna agencija/Croatian Energy Regulatory Agency
ILR	Institut Luxembourgeois de Régulation
Ofgem	Office of Gas and Electricity Markets
PUC	Sabiedrisko pakalpojumu regulēšanas komisija/Public Utilities Commission
RAE	Ρυθμιστική Αρχή Ενέργειας/The Regulatory Authority for Energy
RONI	Úrad pre reguláciu sieťových odvetví/Regulatory Office For Network Industries
UR	Utility Regulator of Northern Ireland
URE	Urząd Regulacji Energetyki/Energy regulatory Office
NERC	National Energy Regulatory Council



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