Derogation Criteria for the High Voltage Direct Current Network Code

Consultation Paper

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Regulating Water, Energy and Energy Safety in the Public Interest
Executive Summary

Commission Regulation (EU) 2016/1447 of 26 August 2016 a Network Code on High Voltage Direct Current Systems and Direct Current-Connected Power Park Modules (HVDC NC)\(^1\) is one of a suite of European network codes and guidelines that have been developed following implementation of the European Third Energy Package.

The HVDC NC is one of three regulations related to grid connection that specify the requirements that apply to all new long distance DC connections, new links between different synchronous areas (e.g. interconnectors) and new DC-connected generation (e.g. offshore wind farms).

The HVDC NC allows HVDC system owners and DC-connected PPM owners, or their prospective owners, to seek derogations from the CER from one or more of the provisions of the HVDC NC\(^2\). Moreover, HVDC NC Article 80 allows for relevant system operators or relevant TSOs to request a derogation for classes of HVDC systems or DC-connected PPMs connected or to be connected to their network. Certain PPMs are not required to carry out a cost-benefit analysis and assess the impacts on cross-border trade when applying for a derogation. Specifically, a request for a derogation to the provisions of Article 40(1)(b) and (c), Article 40(2)(a) and (b), and Articles 41 to 45 shall not be subject to Article 79(2)(d)\(^3\) and (e)\(^4\) where it relates to a DC-connected PPM that has, or will have, a single connection to a single synchronous area.

The purpose of this paper is to consult on the CER’s proposed criteria for granting derogations pursuant to Articles 79 to 81 of the HVDC NC. This paper outlines (in section 2.1) the proposed criteria that the CER would use when assessing derogation requests.

As with the derogation process for the RfG (CER/17/084) and DCC (CER/17/116), the CER will carry out a holistic assessment against all of the criteria and the CER’s decision will depend on the specific case. In other words, the application will be viewed in the round against the criteria, meeting or failure to meet an individual criterion will not necessarily mean that the application succeeds or fails.

Taking into account the CER’s duties under the required legislation and the requirements of the HVDC NC, the CER proposes that the following criteria be applied when a derogation from one or more provisions of the HVDC NC is considered:

- The Impact on the Electricity System of Non-compliance

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\(^2\) See Articles 79-81 of HVDC

\(^3\) Detailed reasoning, with relevant supporting documents, and cost-benefit analysis pursuant to the requirements of Article 66

\(^4\) Demonstration that the requested derogation would have no adverse effect on cross-border trade
The Reason for Non-compliance/Technical Limitation

The Level of Non-compliance and Efforts Made to Improve/Achieve/Maximise Compliance

The Costs Involved to Achieve Compliance

The Impact on the Interests of Consumers/Other Parties

The Potential for Discriminating Treatment of HVDC systems and DC-connected PPMs

The Effect on Cross-Border Trade

The Cost-Benefit Analysis Pursuant to Requirements of the HVDC NC Article 66

The Effect on Converter Stations

The Required Duration of Derogation

Existing HVDC systems or DC-connected PPMs are not subject to the requirements of the HVDC NC except where they make substantial modifications. However, the National Regulatory Authority may decide, following an application by the TSO, to require compliance by an existing HVDC system or DC-connected PPM.

The CER welcomes comments on the proposed criteria to assess an application for a derogation pursuant to Articles 79 to 81 of the HVDC NC. The CER will consider the submissions it receives prior to making a final decision. In summary the CER is asking the following questions:

1. Do you agree with the CER’s proposed HVDC NC criteria for derogations assessment and that they properly reflect the requirements set out in the HVDC NC?

2. Are there other derogation criteria the CER should consider in relation to compliance of HVDC systems or DC-connected PPMs to the HVDC NC?

3. Are there any other issues the CER should consider in relation to this matter?

Following the public consultation the CER will notify the European Commission of the CER’s decision and will publish its decision on the HVDC NC derogation assessment criteria on the CER’s website.

Responses to the consultation should be sent to hvdc@cer.ie by 17.00 Thursday, 31 August 2017.
Public Impact Statement

HVDC stands for high voltage direct current; power systems operate on AC, or alternating current. DC, or direct current, as typically seen in batteries in the home are normally at low voltage, whereas HVDC is typically used to transmit large amount of power between power systems e.g. interconnectors or offshore generation.

There are a number of EU network codes. Together, the network codes will facilitate the achievement of the three objectives of the Third Package:

- The secure operation of European power systems;
- The integration of large volumes of low carbon generation; and
- The creation of a single European electricity market.

The swift completion of a fully functioning and interconnected internal energy market in Europe is crucial to maintaining security of energy supply, increasing competitiveness and ensuring that all consumers can purchase energy at affordable prices. The HVDC NC is seen as one of the main drivers for creating harmonised solutions and products necessary for an efficient pan-European (and global) market in generator technology.
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# Glossary of Terms and Abbreviations

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<th>Definition or Meaning</th>
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<td>HVDC NC</td>
<td>Commission Regulation (EU) 2016/1447 of 26 August 2016 on requirements for grid connection of high-voltage direct current systems and direct current-connected power modules</td>
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<td>HVDC</td>
<td>High Voltage Direct Current</td>
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<tr>
<td>TSO</td>
<td>Transmission System Operator</td>
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<td>DSO</td>
<td>Distribution System Operator</td>
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<td>CER</td>
<td>Commission for Energy Regulation</td>
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<td>DC</td>
<td>Direct Current</td>
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<td>AC</td>
<td>Alternating Current</td>
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<td>PPM</td>
<td>Power Park Module</td>
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1 Introduction

1.1 Commission for Energy Regulation

The CER is Ireland’s independent energy and water regulator. The CER was established in 1999 and now has a wide range of economic, customer protection and safety responsibilities in energy. The CER is also the regulator of Ireland’s public water and wastewater system.

Further information on the CER’s role and relevant legislation can be found in here.

1.2 Purpose of this Paper

The purpose of this paper is to consult on the CER’s proposed criteria for granting derogations pursuant to Articles 78 to 82 of the HVDC NC.

1.3 Background

1.3.1 EU Network Codes

The European network codes intend to deliver a harmonised set of rules for the operation of the gas and electricity sector in Europe. Commission Regulation (EU) 2016/1447 of 26 August 2016, Network Code on High Voltage Direct Current (HVDC NC), is one of a suite of European Electricity network codes and guidelines that have been developed following implementation of the Third Package. This consultation paper is driven by the HVDC NC, which specifies the technical connection requirements that new long distance DC connections, new links between different synchronous areas (e.g. DC interconnectors) and new DC-connected generation (e.g. offshore wind farms) must adhere to. There are seven other European Electricity network codes:

- Requirements for Grid Connection of Generators network code (RfG) – specifies the technical connection requirements that new generators must adhere to;
- Demand Connection Code network code (DCC) – specifies the technical connection requirements that new distribution networks connecting to the transmission system, new demand users connecting to the transmission system and new customers wanting to provide demand side response services, must adhere to;
- Transmission System Operation Guideline (SOGL) – specifies the requirements for assessing the adequacy and operational security of the interconnected power systems.

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system and for planning outages required by TSO’s and grid users when they have cross borders impacts on power flows;

- Emergency and Restoration network code (ER) – deals with the procedures and remedial actions to be applied in the Emergency, Blackout and Restoration states;

- Electricity Balancing Guideline (EB) – defines the roles and responsibilities of TSOs and market participants in balancing electricity networks, and will drive harmonisation of balancing markets across Europe;

- Capacity Allocation and Congestion Management network code (CACM) – specifies the requirements for operating pan-European day ahead and intraday markets, and sets out the processes for determining how capacity is calculated, congestion is managed and the criteria and process for reviewing bidding zones;

- Forward Capacity Allocation Guideline (FCA) – specifies the requirements for calculating and buying capacity in forward markets (before day ahead). It also sets rules for hedging price risk between bidding zones in these markets.

The HVDC NC entered into force on 15 September 2016. The HVDC NC is one of three regulations related to grid connection that specify the requirements that apply to all new HVDC system and DC-connected Power Park Module (PPM) connections. The HVDC NC sets out the technical requirements that will apply to all new HVDC systems and DC-connected PPMs procured after 15 September 2018 and does not apply to existing HVDC systems and DC-connected PPMs.

The CER has nine months from the date of entry into force to consult and decide upon the criteria that the CER will use to assess derogation applications. The CER notes that the full implementation of the requirements of the HVDC NC will entail changes to Grid Code requirements, connection contracts etc. for all new HVDC systems and DC-connected PPMs, which the TSO and DSO are currently assessing. As this process is still ongoing the CER has developed and is proposing derogation criteria that aim to cover the high level assessments that will need to be undertaken when reviewing derogation requests. The full suite of implementation processes and requirements for the HVDC NC are required to be in place by 15 September 2018.

1.3.2 Parties affected by the HVDC NC

Except for Articles 26, 31, 33 and 50 of the HVDC NC, existing HVDC systems and existing DC-connected PPMs are not subject to the requirements of the HVDC NC, unless where an existing HVDC system or DC-connected PPM has been modified to such an extent where its connection agreement has to be substantially revised.

However, the National Regulatory Authority may decide, following an application by the TSO to require compliance by an existing HVDC system or DC-connected PPM.

The HVDC NC allows HVDC system owners and DC-connected PPM owners, or their prospective owners, to seek derogations from the CER from one or more of the
provisions of the HVDC NC\textsuperscript{6}. Moreover, HVDC NC Article 80 allows for relevant system operators or relevant TSOs to request a derogation for classes of HVDC systems or DC-connected PPMs connected or to be connected to their network. Certain PPMs are not required to carry out a cost-benefit analysis and assess the impacts on cross-border trade when applying for a derogation. Specifically, a request for a derogation to the provisions of Article 40(1)(b) and (c), Article 40(2)(a) and (b), and Articles 41 to 45 shall not be subject to Article 79(2)(d)\textsuperscript{7} and (e)\textsuperscript{8} where it relates to a DC-connected PPM that has, or will have, a single connection to a single synchronous area.

1.3.3 Derogations

The HVDC NC contains articles that describe the process for derogating from the HVDC NC. Derogation requests from HVDC system owners and DC-connected PPM owners or prospective owners are to be filed with the relevant System Operator (DSO or TSO). Additionally relevant System Operators can also file request derogations for classes of HVDC systems or DC-connected PPMs connected or to be connected to their network. The HVDC NC gives the CER the role of reviewing, and making decisions on the HVDC NC derogation requests. At the end of the implementation phase, the CER may review and if necessary revise and refine the criteria to assess derogation requests under the HVDC NC. The HVDC NC provides for the revision and modification of the criteria, at most once a year.

1.4 Legal Background

Regulatory authorities may grant HVDC system owners and DC-connected PPM owners or prospective owners derogations from one or more provisions of this Regulation for new and existing HVDC systems and DC-connected PPMs in accordance with Articles 79 to 81 of the HVDC NC.

Regulatory authorities shall, after consulting relevant system operators and HVDC system owners and DC-connected PPM owners and other stakeholders whom it deems affected by the HVDC NC, specify the criteria for granting derogations pursuant to Articles 78 to 82. The criteria should be published on its website. Regulatory authorities should notify the European Commission within nine months of the entry into force of the HVDC NC. Regulatory authorities may review and amend at most once every year the criteria for granting derogations in accordance with paragraph 1.

1.5 Related documents


\textsuperscript{6} See Articles 79-81 of HVDC
\textsuperscript{7} detailed reasoning, with relevant supporting documents, and cost-benefit analysis pursuant to the requirements of Article 66
\textsuperscript{8} demonstration that the requested derogation would have no adverse effect on cross-border trade
1.6 Structure of this paper

This consultation paper is structured as follows:

- **Section 1**, introduction and background.
- **Section 2**, provides an overview of the proposed HVDC NC derogation criteria.
- **Section 3**, outlines conclusions and next steps.

1.7 Responding to this Consultation

The deadline for submitting responses to the CER regarding the criteria for granting derogations pursuant to Articles 79 to 81 of the HVDC NC is 17.00 Thursday, 31 August 2017. Responses to this consultation should be sent to hvdc@cer.ie at the CER.

In this paper the CER is consulting on the criteria that the CER should use to assess derogation requests under the HVDC NC. The CER is not consulting on or amending the criteria used to assess the Grid and Distribution Codes derogations.

Moreover, please note that the CER intends to publish all responses received unless marked confidential. Where your responses includes confidential information please put this in a separate annex where possible.
2 Criteria for Derogation

2.1 Proposed Criteria for Derogation Request

HVDC system owners and DC-connected PPM owners or prospective owners in accordance with the HVDC NC, may request a derogation to one or several requirements of the HVDC NC for HVDC systems and DC-connected PPMs within their facilities. Also, relevant system operators or relevant TSOs may request a derogation for classes of HVDC systems or DC-connected PPMs connected or to be connected to their network.

A request for a derogation should be submitted to the relevant System Operator. The CER will seek the view of the relevant System Operator(s) before reviewing an application for a derogation. The CER will provide further guidance on this process in due course.

As with the derogation process for the RfG (CER/17/084) and DCC (CER/17/116), the CER will carry out a holistic assessment against all of the criteria and the CER’s decision will depend on the specific case. In other words, the application will be viewed in the round against the criteria, meeting or failure to meet an individual criterion will not necessarily mean that the application succeeds or fails.

Taking into account the CER’s duties under the required legislation and the requirements of the HVDC NC, the CER proposes that the following criteria be applied when a derogation from one or more provisions of the HVDC NC is considered:

1. **The Impact on the Electricity System of Non-compliance**
   
The applicant has demonstrated that the derogation request will not have adverse effects on the electricity network system.

2. **The Reason for Non-compliance/Technical Limitation**
   
The reason for non-compliance provided by the applicant has been justified.

3. **The Level of Non-compliance and Efforts Made to Improve/Achieve/Maximise Compliance**
   
The applicant has demonstrated that the applicant has investigated reasonable solutions to non-compliance and has made reasonable efforts to maximise compliance.

4. **The Costs Involved to Achieve Compliance**
   
The applicant has demonstrated evidence of the materiality of the issue and demonstrated that the cost involved to achieve compliance is material and sufficiently high to justify a derogation.
5. **The Impact on the Interests of Consumers/Other Parties**

The applicant has proved that the derogation request will not have negative impact on the interest of consumers (e.g. competition, sustainable development, health and safety and other affected parties).

6. **The Potential for Discriminating Treatment of HVDC systems and DC-connected PPMs**

The applicant has confirmed with the relevant system operator that none of the other comparable HVDC system and DC-connected PPM (in terms of size and technology) facility owners have already demonstrated that it is possible to comply with the relevant provision of the HVDC NC.

7. **The Effect on Cross-Border Trade**

The applicant has demonstrated that the requested derogation would have no adverse effect on cross-border trade.

8. **The Cost-Benefit Analysis Pursuant to Requirements of the HVDC NC Article 66**

The applicant has presented a robust, economic case that supports the application for a derogation.

9. **The Effect on Converter Stations**

In the case of a DC-connected PPM connected to one or more remote-end HVDC converter stations, the applicant has provided evidence that the converter station will not be affected by the derogation or, alternatively, agreement from the converter station owner to the proposed derogation.

10. **The Required Duration of Derogation**

The applicant has demonstrated that the time period requested for the derogation is appropriate.
3 Conclusion & Next Steps

The CER welcomes comments on the proposed criteria to assess an application for a derogation pursuant to Articles 79 to 81 of the HVDC NC. The CER will consider the submissions it receives prior to making a final decision. In summary the CER asks the following questions:

1. Do you agree with the CER’s proposed HVDC NC criteria for assessment of derogations and that they properly reflect the requirements set out in the HVDC NC?

2. Are there other derogation criteria the CER should consider in relation to compliance of HVDC systems and DC-connected PPMs to the HVDC NC?

3. Are there any other issues the CER should consider in relation to this matter?

Following the public consultation the CER will notify the European Commission of the CER’s decision and will publish its decision on the HVDC NC derogation assessment criteria on the CER’s website.

The deadline for submitting responses to the CER regarding the criteria for granting derogations pursuant to Articles 79 to 81 of the HVDC NC is 17.00 Thursday, 31 August 2017. Responses to this consultation should be sent to hvdc@cer.ie at the CER.

Please note that the CER intends to publish all responses received unless marked confidential. Where your responses includes confidential information please put this in a separate annex where possible.