



NETWORKS

ESB Networks' proposal for the general application of technical requirements in accordance with Articles 28 and 29 of the Commission Regulation (EU) 2016/1388 establishing a Network Code on Demand Connection

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1. Executive Summary

A consultation paper entitled ‘EirGrid and ESB Networks’ proposal for the general application of technical requirements in accordance with Articles 12 – 30 of the Commission Regulation (EU) 2016/1388 establishing a Network Code on Demand Connection’ [DCC Network Code] was issued on 7th July 2018 by the Transmission System Operator, EirGrid plc, (hereafter referred to as the “TSO”), and the Distribution System Operator, ESB Networks Limited, (hereafter referred to as the “DSO”).

The purpose of the consultation paper was for the TSO and DSO to propose certain non-exhaustive parameters and the making of non-mandatory requirements mandatory, as required under the DCC Network Code, and to seek views from the public on the proposals with a view to compiling these proposals for approval by the National Regulatory Authority, the Commission for Regulation of Utilities (hereafter referred to as the “CRU”) as set out in the DCC Network Code.

This document sets out the sets out a summary of the responses to the public consultation, and the DSO’s proposals, which are now being presented to the CRU for approval. A similar document from TSO presents the TSO’s proposals to the CRU for approval.

The DSO has also proposed an alternative approach to the TSO proposal to make the non-mandatory requirements in Article 15 of the DCC Network Code mandatory.

2. Introduction

On the 7th September 2016, the Commission Regulation (EU) 2016/1388 establishing a network code on requirements for demand connection (hereafter referred to as 'DCC') entered into force.

The scope of this document is to seek approval from the National Regulatory Authority on ESB Network's (hereafter referred to as the "ESBN") proposal for the general application of technical requirements in accordance with Articles 28 and 29 of the Commission Regulation (EU) 2016/1388 establishing a network code on requirements for demand connections.

This proposal document is produced by ESBN in their role as the DSO in Ireland. References in this document to the TSO refer to Eirgrid plc. References in this document to the Relevant System Operator (hereafter referred to as the 'RSO') mean the operator of the system to which the user is connected to, i.e. either TSO or DSO. Section 6 gives details of which parameters are proposed by the DSO.

The requirements of the DCC apply from three years after its publication in the Official Journal of the EU (OJEU) as per Article 59.

It is set out in the DCC that "this Regulation should apply tonew distribution systems" and "this Regulation should not apply toexisting demand units, demand facilities, distribution systems or closed distribution systems". A demand unit, demand facility, distribution system or closed distribution system is defined in Article 4 as existing if:

- It is already connected to either the transmission or distribution network in Ireland by two years on entry into force of the DCC (7th September 2018); or
- The demand facility owner has concluded a final and binding contract for the purchase of the main demand plant by two years after entry into force of the DCC (7th September 2018).

The Irish distribution system is an existing distribution system, whose development is by extension of the existing interconnected system, rather than by establishing new distribution systems.

The only other conditions in which the DCC would apply are in case regulatory approval were obtained for a TSO application to retrospectively impose the DCC, based on a full cost-benefit analysis, or in cases of substantial modernisation of the distribution system. The DSO has been advised by the TSO that this refers to very significant modernisation of the whole distribution system and that the TSO are not seeking to pursue retrospective application of the DCC.

As such it is unclear that there are any conditions in which the DCC would apply to the distribution system in Ireland.

Under Article 6 (4), the RSO or TSO is required to submit a proposal for requirements of general application for approval by the Commission for Regulation of Utilities (CRU) within two years of entry into force of this regulation, i.e. 7th September 2018. The National Regulator then has six months to approve the proposal. It is not a requirement of the DCC to consult upon our proposals for all of the requirements of general application prior to submission to the CRU, only a subset of proposals as specified in DCC. The TSO and DSO issued a joint Consultation Document in the interest of transparency and to ensure that the TSO and DSO have the best information available to them to submit an appropriate set of recommendations to the CRU for the proposal of requirements of general application.

Over the course of the consultation, it has become apparent that there is only one article within the DCC, Article 15 Reactive Power Requirements which the TSO and DSO are not currently able to reach a common understanding. The TSO is proposing making Article 15, which is non-mandatory under the DCC, a mandatory requirement. The DSO are proposing an alternative approach for the application of Article 15, as set out in Section 7.

The DSO are submitting our proposals to the CRU for the general application of the non-exhaustive parameters in accordance with those set out in Title III Articles 28 and 29 of the DCC.

The TSO are separately submitting their proposals to the CRU for the general application of the non-mandatory requirements and non-exhaustive parameters in accordance with those set out in Title II Articles 12 - 21 and Title III Articles 27 - 30 of the DCC.

2.1 Associated Documents

All references to Article in this document refer to Articles set out in the DCC unless otherwise specified. The DSO recommend that all readers review the [DCC Network Code](#)¹ and the [DCC Consultation on Parameter Selection – Ireland](#)².

2.2 Definitions and Interpretations

For the purposes of this proposal document, the terms used shall have the meaning of the definitions included in Article 2 of DCC.

In this proposal document, unless the context requires otherwise:

- a) the singular indicates the plural and vice versa;
- b) the table of contents and headings are inserted for convenience only and do not affect the interpretation of this proposal;
- c) any reference to legislation, regulations, directive, order, instrument, code or any other enactment shall include any modification, extension or re-enactment of it then in force;
- d) Site Specific:

Where the term “Site Specific” is used in the parameter proposal tables in section 6, it is intended to specify these parameters, taking consideration of the following;

- the appropriate system security studies; and
- consultation with the necessary users e.g. demand facility owners, distribution system owners.

2.3 Structure of this document

The remainder of this document is structured in the following manner:

- Section 3 sets out the scope of this document.
- Section 4 sets out the background of this document and the DCC Network Code.
- Section 5 provides a consultation update, where detail on submissions are reported.
- Section 6 sets out the DSO proposals on the non-exhaustive parameter selection for which it is responsible. It details the proposal, justification, and applicability of parameter or requirement as appropriate.
- Section 7 sets out the reasons why the DSO opposes the TSO proposal to make the non-mandatory requirements in Articles 15.2, 15.3 and 15.4 mandatory, along with the DSO alternative proposed approach for the application of Articles 15.2, 15.3 and 15.4.
- Section 8 provides a conclusion to this submission, and a recommendation to the CRU.
- Section 9 houses the consultation responses.

¹ https://electricity.network-codes.eu/network_codes/dcc/

² <http://www.eirgridgroup.com/site-files/library/EirGrid/DCC-Parameter-Consultation-Ireland.pdf>

3. Scope

The scope of this document is to seek approval from the National Regulatory Authority (CRU) on ESNB's proposal for the general application of technical requirements in accordance with Articles 28 and 29 of the Commission Regulation (EU) 2016/1388 establishing a Network Code on Demand Connection. Our proposals include:

- Parameter selection for the non-exhaustive parameters

Note: this document does not seek approval for the making mandatory of any non-mandatory requirements.

Note: this document does not seek approval on the mandatory requirements or exhaustive parameters. These were set by the Commission and cannot be changed. Further information on some of the background to these decisions is available online at:

- [DCC Public Consultation](#)³
- [DCC Implementation Guideline](#)⁴

For the purpose of clarity, under the DCC, either the TSO and/or DSO as RSO is responsible for the proposal of each of the necessary parameters.

The DSO is responsible for the proposal of the necessary parameters for the following articles:

- 28.2(c);
- Article 28.2 (e) and (l) for distribution connected demand units;
- 28.2 (i) for distribution connected demand units; and
- 29.2 (c) for distribution connected demand units;

while the TSO is responsible for the proposal of all other DCC required parameters.

It is acknowledged that the TSO has made formal proposals to make non-mandatory requirements in Articles 15.2, 15.3 and 15.4 mandatory. The DSO strongly oppose these proposals on the basis that the DSO does not consider it necessary, proportionate or appropriate and because it does not represent the best interests of Irish electricity system customers of the Irish electricity system. Further explanation and reasoning are provided in Section 7.

³ [https://www.entsoe.eu/fileadmin/user_upload/library/news/DCC_public_consultation/120627_DCC - Explanatory Note.pdf](https://www.entsoe.eu/fileadmin/user_upload/library/news/DCC_public_consultation/120627_DCC_-_Explanatory_Note.pdf)

⁴ [https://www.entsoe.eu/fileadmin/user_upload/library/resources/DCC/131016 - DCC implementation guideline.pdf](https://www.entsoe.eu/fileadmin/user_upload/library/resources/DCC/131016_-_DCC_implementation_guideline.pdf)

4. Background

The DCC applies across the European Union, but provides that some of the requirements for the general application are to be specified at National level, i.e. by TSO, DSO or RSO of the member state, rather than at EU level. Such National level specification is subject to public consultation, wherein stakeholders have an opportunity to engage and contribute on a national level to system specific proposals which will affect them.

To give effect to this concept the DCC contains requirements that are commonly described as either mandatory or non-mandatory, and also requirements that are commonly described as exhaustive or non-exhaustive.

- A **mandatory requirement** must be applied by the TSO/DSO/RSO as appropriate
- A **non-mandatory requirement** is one which is not considered at European level to warrant universal application in Europe.

The TSO/DSO/RSO as appropriate may choose to seek to apply these requirements, however in such cases must engage in meaningful consultation, engaging and considering the merit of stakeholders concerns and proposals.

- An **exhaustive parameter** has a specified value or range in the DCC which the TSO/DSO/RSO as appropriate must apply
- A **non-exhaustive parameter** is one for which either:
 - The DCC provides a range from which the TSO/DSO/RSO as appropriate must select the applicable value for their region; or
 - The DCC does not specify a value and the TSO/DSO/RSO as appropriate must select the applicable value for their region.

As mandatory and exhaustive parameters are not at the discretion of the TSO/DSO/RSO, as appropriate, to modify they do not form part of this proposal document.

Note: The DSO have not chosen to make any non-mandatory requirements mandatory.

4.1 Principles underpinning the Proposals

Some of the requirements for general application exist in Ireland today in the Grid and/or Distribution Codes. The assumptions for selecting the non-mandatory requirements and non-exhaustive parameters are set out below.

Non-Mandatory Requirement Selection

In the majority of cases the following assumptions are made:

- where the requirement provided in the DCC is an existing requirement in Ireland, the requirement is made mandatory nationally under the DCC;
- where the requirement provided in the DCC is not an existing requirement in Ireland, the requirement is not made mandatory nationally under the DCC.

Non-Exhaustive Parameter Selection

There are two examples of non-exhaustive parameter selection under DCC;

1. DCC requests that the TSO/DSO/RSO selects the value from within a range; or
2. DCC does not specify a range and requests that the TSO/DSO/RSO specify a value.

In the majority of cases, the following assumptions are made:

- where the range for a non-exhaustive parameter provided in the DCC includes the existing value applied in Ireland, the existing value is proposed;
- where the range for a non-exhaustive parameter provided in the DCC does not include the existing value applied in Ireland then the value proposed represents the minimum amount of change possible;
- where the DCC does not provide a value for a non-exhaustive parameter but requests that the RSO defines the value and it is an existing parameter in Ireland, the existing value is proposed; and
- where the DCC does not provide a value for a non-exhaustive parameter but requests that the RSO defines the value and it is not an existing parameter in Ireland, a justification is given.

4.2 Overview of Demand Connection Types

There are a number of different demand connection types allowed for within the DCC. These include the following:

- Transmission-connected distribution systems (TCDS)
- Transmission-connected demand facilities (TCDF)
- Closed distribution systems (CDS)
- Transmission-connected distribution facility (TC distribution facility)
- Distribution-connected demand facility (DCDF)

In addition to these demand connection types, the DCC code also refers to the following:

- Demand facility (DF)
- Demand unit (DU)

For ease of reading, the abbreviations above and the following additional abbreviations for each of the demand connection types are used throughout the document:

Closed distribution systems owner	CDSO
Demand facility owner	DFO
Demand unit	DU
Demand Response	DR

Table 1: Additional abbreviations for Demand Connection Types

5. Consultation Update

TSO and DSO held a joint consultation on their proposals for the general application of technical requirements in accordance with Articles 12 – 30 of the Commission Regulation (EU) 2016/1388 establishing a Network Code on Demand Connection. This consultation opened on the 6th July 2018 for a period of 5 weeks until 10th August 2018.

5.1 Summary of submissions

Two individual submissions were received on the consultation of which one was confidential and the other was from ESNB. Please note ESNBs' response has been included as an appendix to this proposal document.

5.2 ESB Networks' Submission

ESBN submitted a consultation response in which ESNB strongly oppose the TSO proposal to make the non-mandatory requirements in Articles 15.2, 15.3 and 15.4 mandatory.

A detailed explanation of the issues raised and a proposed alternative approach are provided in Section 7.

ESBN recommend that the CRU does not approve the TSO proposal regarding Articles 15.2, 15.3 and 15.4 and request CRU consideration of ESNB's proposed alternative approach.

6. DSO Proposals

This section covers the proposals for the non-exhaustive parameter selection, for which the DSO is responsible.

The main theme is Demand Response (DR) Control.

Each section includes the article number and the topic being discussed. A brief description of the requirement is provided alongside a table of the items being consulted on. The tables contain:

- a description of the parameter or requirement;
- the DCC allowable range or an indication that a parameter needs to be specified by the RSO;
- the proposal for the parameter or requirement;
- the DCC Article reference;
- a list of the demand connection types that this applies to; and
- a justification code.

Justification Codes

The justification codes identify which of three categories the proposed parameters falls into. For category 1 further rationale is only provided where it is felt it is required to aid understanding. If a proposal falls into category 2 or 3, an explanation is provided.

1. "In line with existing"
The proposed parameter is in line with the existing Grid or Distribution Code requirements.
2. "As close as possible to the existing"
The existing Grid or Distribution Code requirements do not fit within the allowable DCC range. In this case the proposed parameter is as close to the existing Grid or Distribution Code requirements as is allowable under DCC.
3. "New or Different"
The requirement does not exist in our Grid/Distribution Codes today and a rationale for the selection is provided. In some cases we have the requirement today but we are proposing a different value and a rationale is provided for this choice.
4. "N/A"

6.1 Demand Response Control

The non-exhaustive DR control parameters cover a number of different requirements. The following sub-themes are discussed in the next sections:

- Provisions for DUs with DR Active Power Control, Reactive Power Control and Transmission Constraint Management
- Specific Provisions for DUs with DR Frequency Control

6.1.1 Provisions for Demand Units with Demand Response Active Power Control, Reactive Power Control and Transmission Constraint Management

Article 28.2(c)

Non-exhaustive parameter selection

Applies to:

- DUs offering active power control, reactive power control and transmission constraint management

Requirement:

DUs with DR active power control, DR reactive power control, or DR transmission constraint management shall comply with the following requirements, either individually or, where it is not part of a transmission-connected demand facility, collectively as part of demand aggregation through a third party:

- (c) be capable of operating across the normal operational voltage range of the system at the connection point, specified by the RSO, if connected at a voltage level below 110 kV. This range shall take into account existing standards and shall, prior to approval in accordance with Article 6, be subject to consultation with the relevant stakeholders in accordance with Article 9.1;

Proposal:

Parameter	Parameter in DCC	Proposal	Article Number	Type Applicability	Justification Code																					
Capability to operate across normal voltage range at the connection point specified by the RSO	Not specified	<p>This table represents the maximum and minimum voltage ranges but please refer to relevant sections of distribution code for specific situations.</p> <table border="1"> <thead> <tr> <th>Nominal voltage</th> <th>Highest voltage</th> <th>Lowest voltage</th> </tr> </thead> <tbody> <tr> <td>230V</td> <td>253V¹</td> <td>207V¹</td> </tr> <tr> <td>400V</td> <td>440V¹</td> <td>360V¹</td> </tr> <tr> <td>10kV</td> <td>11.3kV²</td> <td>9.6kV²</td> </tr> <tr> <td>20kV</td> <td>22.5kV²</td> <td>19.3kV²</td> </tr> <tr> <td>38kV</td> <td>43.8kV²</td> <td>35.6kV²</td> </tr> <tr> <td>110kV</td> <td>123kV²</td> <td>99kV²</td> </tr> </tbody> </table> <p>¹ The DSO shall operate the Distribution System so as ensure that the voltage at the supply terminals, as defined in EN 50160, complies with that standard. The Low Voltage range tolerance shall be 230V +/- 10%.</p> <p>² DSO reserves the right to operating at voltages outside these ranges in emergency situations.</p>	Nominal voltage	Highest voltage	Lowest voltage	230V	253V ¹	207V ¹	400V	440V ¹	360V ¹	10kV	11.3kV ²	9.6kV ²	20kV	22.5kV ²	19.3kV ²	38kV	43.8kV ²	35.6kV ²	110kV	123kV ²	99kV ²	28.2(c)	DUs offering DR	1
Nominal voltage	Highest voltage	Lowest voltage																								
230V	253V ¹	207V ¹																								
400V	440V ¹	360V ¹																								
10kV	11.3kV ²	9.6kV ²																								
20kV	22.5kV ²	19.3kV ²																								
38kV	43.8kV ²	35.6kV ²																								
110kV	123kV ²	99kV ²																								

Table 2: Capability to operate across normal voltage range

Justification:

It is proposed to align the parameters with current Distribution Code Parameters.

Article 28.2(e) and (l)**Non-exhaustive parameter selection****Applies to:**

- DUs offering active power control, reactive power control and transmission constraint management

Requirement:

DUs with DR active power control, DR reactive power control, or DR transmission constraint management shall comply with the following requirements, either individually or, where it is not part of a transmission-connected demand facility, collectively as part of demand aggregation through a third party:

- (e) be equipped to receive instructions, directly or indirectly through a third party, from the RSO or the TSO to modify their demand and to transfer the necessary information. The RSO shall make publicly available the technical specifications approved to enable this transfer of information. For DUs connected at a voltage level below 110 kV, these specifications shall, prior to approval in accordance with Article 6, be subject to consultation with the relevant stakeholders in accordance with Article 9(1);
- (l) where modification to the power consumption is specified via frequency or voltage control, or both, and via pre-alert signal sent by the RSO or the relevant TSO, be equipped to receive, directly or indirectly through a third party, the instructions from the RSO or the relevant TSO, to measure the frequency or voltage value, or both, to command the demand trip and to transfer the information. The RSO shall specify and publish the technical specifications approved to enable this transfer of information. For DUs connected at a voltage level below 110 kV, these specifications shall, prior to approval in accordance with Article 6, be subject to consultation with the relevant stakeholders in accordance with Article 9(1).

Proposal:

Parameter	Parameter in DCC	Proposal	Article Number	Type Applicability	Justification Code
Technical specification for the exchange of information	Not specified	DSO will make public all technical specifications to enable the transfer of information available for Distribution-connected DUs	28.2(e) and (l)	DUs	3

Table 3: Demand response active power control, demand response reactive power control, or demand response transmission constraint management

Justification:

The detailed requirements for the specification of information exchange for DUs offering active power control, reactive power control and transmission constraint management will be determined as part of the implementation phase of the DCC. Once determined, the specification will be made publically available on the ESBN's website.

Article 28.2(i)**Non-exhaustive parameter selection****Applies to:**

- DUs offering active power control, reactive power control and transmission constraint management

Requirement:

DUs with DR active power control, DR reactive power control, or DR transmission constraint management shall comply with the following requirements, either individually or, where it is not part of a transmission-connected demand facility, collectively as part of demand aggregation through a third party:

- notify the RSO or relevant TSO of the modification of demand response capacity. The RSO or relevant TSO shall specify the modalities of the notification.

Proposal:

Parameter	Parameter in DCC	Proposal	Article Number	Type Applicability	Justification Code
Definition of the modalities of notification in case of a modification of the DR capability	Not specified	DSO, as the RSO, shall specify the modalities of the notification of modifications of demand response capacity	28.2(i)	DUs	3

Table 4: Modalities of notification in case of a modification of the Demand Response capability

Justification:

The definition of the modalities of notification in case of a modification of DR capability for DUs offering active power control, reactive power control and transmission constraint management will be determined as part of the implementation phase of the DCC. Once determined, the definition of the modalities of notification in case of a modification of the DR capability will be made publically available.

6.1.2 Specific Provisions for Demand Units with Demand Response System Frequency Control

Article 29.2 (c)

Non-exhaustive parameter selection

Applies to:

- DUs offering DR System Frequency Control

Requirement:

DUs with demand response system frequency control shall comply with the following requirements, either individually or, where it is not part of a transmission-connected demand facility, collectively as part of demand aggregation through a third party:

- (c) be capable of operating across the normal operational voltage range of the system at the connection point, specified by the RSO, if connected at a voltage level below 110 kV. This range shall take into account existing standards, and shall, prior to approval in accordance with Article 6, be subject to consultation with the relevant stakeholders in accordance with Article 9(1);

Proposal:

Parameter	Parameter in DCC	Proposal	Article Number	Type Applicability	Justification Code																					
Capability to operate across normal voltage range at the connection point specified by the RSO	Not specified	<p>This table represents the maximum and minimum voltage ranges but please refer to relevant sections of distribution code for specific situations.</p> <table border="1"> <thead> <tr> <th>Nominal voltage</th> <th>Highest voltage</th> <th>Lowest voltage</th> </tr> </thead> <tbody> <tr> <td>230V</td> <td>253V¹</td> <td>207V¹</td> </tr> <tr> <td>400V</td> <td>440V¹</td> <td>360V¹</td> </tr> <tr> <td>10kV</td> <td>11.3kV²</td> <td>9.6kV²</td> </tr> <tr> <td>20kV</td> <td>22.5kV²</td> <td>19.3kV²</td> </tr> <tr> <td>38kV</td> <td>43.8kV²</td> <td>35.6kV²</td> </tr> <tr> <td>110kV</td> <td>123kV²</td> <td>99kV²</td> </tr> </tbody> </table> <p>¹ The DSO shall operate the Distribution System so as ensure that the voltage at the supply terminals, as defined in EN 50160, complies with that standard. The Low Voltage range tolerance shall be 230V +/- 10%.</p> <p>² DSO reserves the right to operate at voltages outside these ranges in emergency situations.</p>	Nominal voltage	Highest voltage	Lowest voltage	230V	253V ¹	207V ¹	400V	440V ¹	360V ¹	10kV	11.3kV ²	9.6kV ²	20kV	22.5kV ²	19.3kV ²	38kV	43.8kV ²	35.6kV ²	110kV	123kV ²	99kV ²	29.2(c)	DU offering DR	1
Nominal voltage	Highest voltage	Lowest voltage																								
230V	253V ¹	207V ¹																								
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10kV	11.3kV ²	9.6kV ²																								
20kV	22.5kV ²	19.3kV ²																								
38kV	43.8kV ²	35.6kV ²																								
110kV	123kV ²	99kV ²																								

Table 5: Capability to operate across normal voltage range at the connection point specified by the Relevant System Operator

Justification:

It is proposed to align the parameters with current Distribution Code parameters.

7. ESB Networks' Proposed Approach for Articles 15.2, 15.3 and 15.4

7.1 ESB Networks' Position on Articles 15.2, 15.3 and 15.4

Over the course of the consultation, it has become apparent that there is only one article within the DCC, Article 15 Reactive Power Requirements which the TSO and DSO are not currently able to reach a common understanding. The TSO is proposing making Article 15, which is non-mandatory under the DCC, a mandatory requirement. ESNB recommends that this proposal be rejected.

ESBN strongly opposes the proposal on the basis that we do not believe it represents the best interests of Irish electricity customers or the Irish electricity system. ESNB is proposing an alternative, and more efficient, proportionate and justified approach as laid out in Section 7.2. In case there are concerns of a technical nature, ESNB's reasoning is set out below in Section 7.3 and as per its response to the relevant consultation (see Appendix).

As discussed in Section 2, it is unclear that there are any conditions in which the DCC would apply to the distribution system in Ireland. This point notwithstanding, ESNB believes it necessary to clarify a number of concerns regarding the proposals made by the TSO for Article 15, in case any conditions should arise in future wherein they might be considered applicable.

7.2 ESB Networks' Proposed Approach for the Application of Articles 15.2, 15.3 and 15.4

ESBN proposes that in cases where the TSO identifies reactive power management challenges in a specific grid location, agreement should be reached by the TSO and DSO as to the nature of the problem and the most cost effective solution, where judged necessary, through joint analysis involving both TSO and DSO. Such analysis, where agreed necessary, must account for site specific design considerations and actual costings.

This approach achieves the intent of Articles 15.2, 15.3 and 15.4 with regard to system performance, but on the premise of a collaborative approach which is not provided for in the TSO's proposal for the relevant articles of the DCC.

ESBN notes the solution adopted in GB, for the application of Articles 15.2, 15.3 and 15.4, wherein a collaborative approach requiring agreement between System Operators has been approved by the Authority Ofgem. GB Grid Code modifications have been published on 7th September 2018 to reflect this and the modifications in relations to the application of Articles 15.2, 15.3 and 15.4 are reproduced below.

ECC.6.4.5.2 Where agreed with the **Network Operator** who is an **EU Code User** and justified through appropriate **System** studies, **NGET** may reasonably require the **Network Operator** not to export **Reactive Power** at the **EU Grid Supply Point** (at nominal voltage) at an **Active Power** flow of less than 25 % of the **Maximum Import Capability**. Where applicable, the **Authority** may require **NGET** in coordination with the **Relevant Transmission Licensee** to justify its request through a joint analysis with the relevant **Network Operator** and demonstrate that any such requirement is reasonable. If this requirement is not justified based on the joint analysis, **NGET** in coordination with the **Relevant Transmission Licensee** and the **Network Operator** shall agree on necessary requirements according to the outcomes of a joint analysis.

ECC.6.4.5.3 Notwithstanding the requirements of ECC.6.4.5.1(b) and subject to agreement between **NGET** and the relevant **Network Operator** there may be a requirement to actively control the exchange of **Reactive Power** at the **EU Grid Supply Point** for the benefit of the **Total System**. **NGET** and the relevant **Network Operator** shall agree on a method to carry out this control, to ensure the justified level of security of supply for both parties. Any such solution including joint study work and timelines would be agreed between **NGET** and the relevant **Network Operator** as reasonable, efficient and proportionate.

ECC.6.4.5.4 In accordance with ECC.6.4.5.3, the relevant **Network Operator** may require **NGET** to consider its **Network Operators System** for **Reactive Power** management. Any such requirement would need to be agreed between **NGET** and the relevant **Network Operator**.

Source: <https://www.nationalgrid.com/uk/electricity/codes/grid-code?code-documents>

By introducing the phrase “*where agreed with the Network Operator who is an EU Code User*” in ECC.6.4.5.2., OFGEM has provided a simple solution wherein the objective of Article 15.2 can be achieved through agreement between the TSO (“NGET”) and the DSO (“the Network Operator”).

As with ESNB’s proposal, this offers a balanced and proportionate approach which achieves the intent of Articles 15.2, 15.3 and 15.4 with regard to system performance, but on the premise of a collaborative approach which is not provided for in the TSO’s proposal for the relevant articles of the DCC.

In developing high value projects, paid for by electricity system users, it is strongly in the interests of customers to pursue a whole system approach. This means trying to identify and deliver the least cost solution available on a case by case basis. ESNB notes that on this occasion, a case by case approach is practical as Article 15.2 is likely to arise very infrequently in practice. Any additional analysis arising from the DSO proposal periodically is unlikely to exceed the necessary due diligence required in any capital project.

Naturally, ESNB would welcome the opportunity to engage with the TSO on developing the necessary processes and requirements, to deliver this in an efficient and repeatable manner.

7.3 Justification

ESB Networks’ reasons for opposing the making mandatory of Articles 15.2, 15.3 and 15.4:

ESBN does not consider it necessary, proportionate or appropriate to make non-mandatory requirements in Articles 15.2, 15.3 and 15.4 mandatory for the following reasons:

- i. The proposal lends itself to unnecessarily high investment.
- ii. There is no practical need.
- iii. There is no legal need.
- iv. There could be a significant cost impact for electricity system users.
- v. Planning and delivery challenges and delays.
- vi. Proposed collaborative approach in GB.

i. The proposal lends itself to unnecessarily high investment

ESBN does not consider it appropriate to approach reactive power management challenges pertaining to a very small volume of very high value projects without considering the specific projects themselves on a case by case basis, as has been proposed. Such case by case analysis should consider the range of options available to address the challenge. These options include both capital solutions and the use of system services. Costs and practical considerations require the expertise and knowledge of both TSO and DSO, particularly insofar as they relate to distribution station specific design and delivery costs.

As such, ESNB has proposed that in cases where the TSO identifies reactive power management challenges, joint analysis involving both TSO and DSO, based on site specific design considerations and actual costings should be taken.

ESBN’s understanding is that the TSO considers a standalone desktop electrical study / [cost benefit analysis](#) ⁵, undertaken by the TSO a number of years ago in the ENTSO-E discussions regarding the application of Article 15, as adequate justification for its proposals, which would apply universally going forward. This approach fails to acknowledge the real life conditions which drive costs in electricity infrastructure delivery. In practice, these civil and structural issues can have at least as significant an impact on project costs as pure electrical capacity and connectivity considerations.

ESBN’s position is that this standalone desktop study / cost benefit analysis is incomplete for the reason above, and therefore it is not supported by ESNB. Furthermore, ESNB notes that the solutions to any given system challenge may be efficiently met by service based solutions. ESNB does not consider it prudent to pre-judge the effectiveness with which system service based solutions might offer a cost effective alternative to the approach proposed over the coming years.

⁵ https://www.entsoe.eu/fileadmin/user_upload/library/consultations/Network_Code_DCC/120405-DCC_Call_for_Stakeholder_Input.pdf

In summary, given the substantial cost of capital works in existing high voltage stations on the Irish distribution system, ESBN does not consider it realistic or efficient to prejudge that a given technical solution (additional capital investment on the distribution system) will in all, or almost all, cases prove the most cost effective. Given the low volume of projects involved, ESBN does not consider it excessive that case by case joint analysis would be undertaken.

ii. There is no practical need.

ESBN has stated and demonstrated previously that it will undertake or facilitate measures agreed with the TSO, where they are judged and agreed by both parties to be the most economic technically acceptable solution.

Irrespective of the provisions of the EU Network Codes, ESBN has stated that it will continue to facilitate the best technical and economic solution, where the CRU has approved the associated cost as efficient and allowed the requisite funding. ESBN remains committed to cooperating with the TSO to develop solutions to system wide issues. Furthermore, the regulation and governance of the relationship between TSO and DSO, in their respective roles and responsibilities, will continue to mandate such cooperation into the future. Experience to date has demonstrated the effectiveness of joint TSO/DSO delivery of cooperative solutions where such system wide issues required it.

There is no risk, precedent, or practical need to impose a legal obligation for ESBN to undertake something it would do anyway, where it is jointly agreed as the right thing to do.

iii. There is no legal need.

The proposals in question are not mandatory in the EU Code. They are options, which the TSO on this occasion has chosen to pursue. Both TSO and DSO have repeatedly confirmed to industry throughout the process of introducing the EU Network Codes that they do not intend on using the implementation of the EU Network Codes as a vehicle to impose new rules or obligations. To introduce these discretionary requirements in DCC would fail to respect the commitment which the TSO and DSO have made to industry.

iv. There could be a significant cost impact for electricity system users.

ESBN does not believe that it would be proportionate or in the interests of electricity customers to require structural compensation or active control of reactive power by default. It would drive additional costs for new or modified demand or mixed demand-generation connections, and for DUoS customers when investment is needed to support local and regional growth. Decisions with this kind of investment cost impact warrant case by case consideration; a collaborative, analytical approach would be more prudent than a rules based approach.

Regarding Article 15.3, reactive power management may offer a resource of value to the TSO, but retained in DSO management, it also has the potential to help release local capacity for demand or generation customers. ESBN does not consider it appropriate or in customers' interests to forfeit this value on their behalf, without careful, case by case joint consideration, consultation and agreement.

An agreed protocol on the treatment of reactive power from Distributed Energy Resources (DERs) is already in place between the TSO and DSO, which recognises how topology and electrical distance from the TSO-DSO boundary inform how and by whom, reactive power is treated. The resulting spectrum of implementations, ranging from direct control by TSO, to some shared control by means of a "Nodal Controller", to static or dynamic agreed power factor ranges, to designation for use by DSO only, is one of the key achievements in system operation in Ireland in recent years.

v. Planning and delivery challenges and delays.

In case of Article 15.2 being made mandatory as proposed, the TSO has suggested that it would determine on a case by case basis whether to invoke the associated requirement, when distribution system planned projects are identified. ESBN's project selection is typically based on an options analysis of a range of technical solutions. As such, having identified a preferred solution, the ex-post imposition of reactive power obligations (and thus project costs) could mean that a given proposal is no longer the Least Cost Technically Acceptable Option, and the development of an alternative Planning Design in cases where the proposal substantially alters the planned costs of a project.

Furthermore, in cases where reactive power compensation or other measures are required as part of project costs, ESBN is concerned that this may drive additional construction time, and the lead times associated with additional procurement. As such, ESBN considers it appropriate that any such additional investment is justified and agreed on a case by case basis.

vi. Collaborative approach in GB

ESBN notes the approach in GB, wherein a collaborative approach requiring agreement between System Operators has been approved by the Authority OFGEM, as discussed in Section 7.2.

As ESN's proposal, this approach achieves the intent of Articles 15.2, 15.3 and 15.4 with regard to system performance, but on the premise of a collaborative approach which is not provided for in the TSO's proposal for the relevant articles of the DCC.

8. Conclusion

This concludes the submission from ESNB to the Commission for the Regulation of Utilities of the proposals for the general application of technical requirements in accordance with Articles 28 and 29 of the Commission Regulation (EU) 2016/1388 establishing a Network Code on Demand Connection.

ESNB would now like to request the approval of the CRU for each of the requirements proposed in this document.

ESNB strongly oppose the TSO proposal to make the non-mandatory requirements in Articles 15.2, 15.3 and 15.4 mandatory.

ESNB recommend that the CRU does not approve the TSO proposal regarding Articles 15.2, 15.3 and 15.4 and ESNB request CRU consideration of ESNB's proposed alternative approach to this, as laid out in Section 7.

9. Appendix

Two individual submissions were received on the consultation of which one was confidential and the other was from ESNB.

ESNBs' response is included in the following section.



Demand Connection Code Consultation

ESB Networks Response

Status:	Submitted
Date:	10.08.2018

Contents

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1. Background and purpose of this document

As distribution system operator (DSO), distribution asset owner (DAO) and transmission asset owner (TAO), ESB Networks (ESBN) works to meet the needs of all Irish electricity customers, safely providing universal affordable access to the electricity system, by delivering and managing the performance of a system of:

- c. 155,000 km of overhead networks,
- over 23,000 km of underground cables,
- over 646 high voltage substations,
- approaching 2.3 million demand customers,
- almost 300 generation customers.

On the 7 September 2016, the Commission Regulation (EU) 2016/1388 establishing a network code on requirements for demand connection (hereafter referred to as "DCC") entered in force.

On 6 July 2018, the Irish transmission system operator (TSO, EirGrid), published a consultation document detailing proposals for the general application of technical requirements in accordance with Articles 12 – 30 of the DCC. ESBN herein notes that this document does not represent the views of the DSO. This publication was not a DSO approved proposal document.

A number of proposals in this document are of particular concern given their likely impact on capital projects' scope and cost. ESBN has consistently proposed an alternative, collaborative and more proportionate approach. The TSO has communicated that at this time it does not see the merit of a collaborative approach.

The purpose of this document is to formally respond to the consultation, highlighting ESBN's material concerns regarding a number of proposals, and recommending that the CRU does not approve them.

2. Consultation proposals of concern

The DCC applies across the European Union, but provides that some of the requirements for general application are to be specified at National level, i.e. by TSO, DSO or relevant system operator (RSO) of the member state, rather than at EU level. Such National level specification is subject to public consultation, wherein stakeholders have an opportunity to engage and contribute on a national level to system specific proposals which will affect them.

To give effect to this concept, the DCC contains requirements that are commonly described as either mandatory or non-mandatory. A non-mandatory requirement is one which is not considered at European level to warrant universal application in Europe. The TSO, DSO or RSO, as appropriate, may choose to seek to apply these requirements, and in such cases must engage in meaningful consultation, engaging and considering the merit of stakeholders concerns and proposals.

In the Consultation Proposal document, the TSO has proposed to make non-mandatory requirements in Articles 15.2, 15.3 and 15.4, which relate to reactive power requirements, mandatory. ESNB does not consider this a necessary, proportionate or appropriate measure.

ESNB would be concerned if the TSO were to consider any prior consultation, in Brussels or elsewhere in Europe, over the period when these non-mandatory proposals were being developed by the ENTSO-E, to represent sufficient consultation. ESNB would be concerned if the TSO considers that further meaningful consideration of established approaches at a national level is somehow less necessary as a result.

Applicability

It is set out in DCC that “this Regulation should apply tonew distribution systems” and “this Regulation should not apply to ...existing distributions systems.”. The Irish distribution system is an existing distribution system, whose development is by extension of the existing interconnected system, rather than by establishing new distribution systems.

The only other conditions in which DCC would only apply are in case regulatory approval were obtained for a TSO application to retrospectively impose the DCC, based on a full cost-benefit analysis, or in cases of substantial modernisation of the distribution system.

Regarding the former, ESNB understands that the TSO is not seeking to pursue retrospective application of the DCC. Regarding the latter, ESNB is advised that this refers to very significant modernisation of the whole distribution system.

As such it is unclear that there are any conditions in which the DCC would apply to the distribution system in Ireland. This point notwithstanding, ESNB believes it necessary to clarify a number of concerns regarding these proposals, in case any conditions should arise in future wherein they might be considered applicable. These concerns apply in all cases, though in particular they refer to any proposals affecting the development, modernisation or extension of the existing distribution system.

Approach

ESBN acknowledges that there may be locations and conditions where the TSO faces challenges managing reactive power transfer between the transmission and distribution systems. ESBN notes that to date the TSO and DSO have worked collaboratively to identify the most economic and effective solution to system challenges involving both transmission and distribution systems and resources. ESBN considers it appropriate that such an approach should continue, and represents the best interest of Irish electricity system users. ESBN would support a cooperative, evidenced based, balanced approach to the challenge of managing reactive power challenges.

3. Specific Concerns with the TSO Proposal

i. The proposal lends itself to unnecessarily high investment

ESBN does not consider it appropriate to approach reactive power management challenges pertaining to a very small volume of very high value projects without considering the specific projects themselves on a case by case basis, as has been proposed. Such case by case analysis should consider the range of options available to address the challenge. These options include both capital solutions and the use of system services. Costs and practical considerations require the expertise and knowledge of both TSO and DSO, particularly insofar as they relate to distribution station specific design and delivery costs.

As such, ESBN has proposed that in cases where the TSO identifies reactive power management challenges, joint analysis involving both TSO and DSO, based on site specific design considerations and actual costings should be taken.

ESBN's understanding is that the TSO considers a standalone desktop electrical study, undertaken by the TSO a number of years ago as adequate justification for its proposals, which would apply universally going forward. This approach fails to acknowledge the real life conditions which drive costs in electricity infrastructure delivery. In practice these civil and structural issues can have at least as significant an impact on project costs as pure electrical capacity and connectivity considerations.

Furthermore, ESBN notes that the solutions to any given system challenge may be efficiently met by service based solutions. ESBN does not consider it prudent to pre-judge the effectiveness with which system service based solutions might offer a cost effective alternative to the approach proposed over the coming years.

In summary, given the substantial cost of capital works in existing high voltage stations on the Irish distribution system, ESBN does not consider it realistic or efficient to prejudge that a given technical

solution (additional capital investment on the distribution system) will in all, or almost all, cases prove the most cost effective. Given the low volume of projects involved, ESNB does not consider it excessive that case by case joint analysis would be undertaken.

ii. There is no practical need.

ESNB has stated and demonstrated previously that it will undertake or facilitate measures agreed with the TSO, where they are judged and agreed by both parties to be the most economic technically acceptable solution.

Irrespective of the provisions of the EU Network Codes, ESNB has stated that it will continue to facilitate the best technical and economic solution, where the Commission for Regulation of Utilities (CRU) has approved the associated cost as efficient and allowed the requisite funding. ESNB remains committed to cooperating with the TSO to develop solutions to system wide issues. Furthermore, the regulation and governance of the relationship between TSO and DSO, in their respective roles and responsibilities, will continue to mandate such cooperation into the future. Experience to date has demonstrated the effectiveness of joint TSO/DSO delivery of cooperative solutions where such system wide issues required it.

There is no risk, precedent, or practical need to impose a legal obligation for ESNB to undertake something it would do anyway, where it is jointly agreed as the right thing to do.

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v. Planning and delivery challenges and delays

In case of Article 15.2 being made mandatory as proposed, the TSO has suggested that it would determine on a case by case basis whether to invoke the associated requirement, when distribution system planned projects are identified. ESBN's project selection is typically based on an options analysis of a range of technical solutions. As such, having identified a preferred solution, the ex-post imposition of reactive power obligations (and thus project costs) could mean that a given proposal is no longer the Least Cost Technically Acceptable Option, and the development of an alternative Planning Design in cases where the proposal substantially alters the planned costs of a project.

Furthermore, in cases where reactive power compensation or other measures are required as part of project costs, ESBN is concerned that this may drive additional construction time, and the lead times associated with additional procurement. As such, ESBN considers it appropriate that any such additional investment is justified and agreed on a case by case basis.

4. Conclusion

ESBN strongly opposes the proposal to make the non-mandatory requirements in Articles 15.2, 15.3 and 15.4 mandatory.

ESBN wishes to reiterate its commitment to cooperating with the TSO to develop solutions to system wide issues and will facilitate the best technical and economic solution. ESBN would welcome any further queries or comments the TSO or the CRU may have with regard to this response.