Executive Summary

This consultation paper contains a set of high level criteria for the assessment of applications the Commission for Regulation of Utilities (CRU) has received, or will receive, from the developers of the electricity interconnection projects. In devising these criteria, we build on our previous policy papers on electricity interconnectors. In particular, we draw on the stakeholders' feedback to our initial call for comments on developing a policy for electricity interconnectors (CER/16/239). We are also cognisant of the Government’s policy as set out in the National Policy Statement on Electricity Interconnection issued on 6 July 2018 as well as the European rules and policies on electricity interconnection, in particular in relation to projects of common interest.

An electricity interconnector is essentially an electrical line or cable connecting the electricity transmission systems of two countries allowing them to exchange electrical power. Under EU law, new electricity interconnection projects which contribute to completing the EU internal energy market can be awarded a status of a “project of common interest” (PCI), and as such, benefit from streamlined permitting procedures, funding opportunities and various regulatory mechanisms put in place in order to facilitate their implementation.

The CRU has a number of competences in relation to assessing electricity interconnection projects and deciding on their regulatory treatment, and will assess them on a case by case basis. Developers of electricity interconnection projects can apply to the CRU on the basis of the Irish national law. If their projects are PCIs, they have a choice to apply directly under the provisions of the EU law or under the Irish national law. In accordance, the CRU’s approach in considering such applications may differ to some extent, depending on which process is chosen by the developer and the underlying legal basis for that assessment. Notwithstanding differences in process necessitated by this case by case approach, we have developed a set of high level assessment criteria that we would apply to each electricity interconnection application we may receive. This is to ensure consistency and fairness in our evaluation regardless of which process is chosen. This will also provide high level guidance for project developers as to the nature of assessment they can expect from the CRU, and the type of information we might request from them in order to aid our decision making process.
The CRU proposes to assess electricity interconnection applications on the basis of a set of technical, economic and regulatory criteria. In particular, we will assess the impact of each project both in terms of added value for society as well as in terms of costs under a range of different scenarios and sensitivities. However, we note that economic considerations are only one piece of information used in the decision-making process and will be complemented with information on qualitative, equity and distributional impacts as well as strategic issues. Accordingly, we will assess projects on a case-by-case basis and take a fair and balanced decision in the round against the criteria.

In carrying out our evaluation, we will have due regard for the long term interest of final consumers. In particular, when deciding on a project's financial structure and the level of public funding, if any, we will ensure that the impact on national tariffs does not represent a disproportionate burden for the Irish consumer.

Our assessment approach and the proposed criteria are set out in section 4 for public consultation. We group those criteria under three broad categories:

- Criteria for a technical assessment of the project
- Criteria for an economic assessment of the project
- Criteria for developing a regulatory model for the project

Application documents submitted by project promoters, including an analysis of project’s costs and benefits will be assessed by the CRU by means of an independent economic and technical appraisal in an objective and impartial manner. We may also conduct our own cost-benefit analysis and any further studies as required. It is recommended that project promoters engage with the CRU in advance of submitting their applications in order to determine the scope of their application and supporting studies at the early stages of the process. In accordance with the CRU’s best practice, we also intend to publish and separately consult on each electricity interconnection application.

Responses to this paper

Any comments or queries on our assessment approach and the proposed criteria set out in this consultation paper should be submitted to electricityinterconnectors@cru.ie by Friday, 10 August 2018. We will be aiming to review stakeholders’ feedback and issue a final decision by the end of September 2018.
Public Impact Statement

New interconnectors should be built to the extent that they benefit Irish consumers. That is, as long as the benefits of adding interconnection capacity outweigh or equal the costs. Therefore, the CRU’s assessment of each electricity interconnection application will balance potential benefits of a new interconnector to the Irish consumers against its costs.

Generally, new electricity interconnectors can offer multiple potential benefits to the Irish electricity system:

- providing an additional layer of security (security of supply);
- reducing emissions by facilitating the integration of wind and solar power into the energy system (renewable energy integration); and
- lowering costs for consumers if power can be generated cheaper abroad (lower prices).

In relation to security of supply, interconnectors allow physical imports of electricity to meet domestic demand. As such, a new interconnector would give Ireland yet another potential import route for electricity, diversifying Ireland’s energy supply. This diversification can have various dimensions. First, a new interconnector can provide geographic diversification if it links Ireland with a new country, or supplies power to a new (different) point on the Irish electricity system. A new interconnector can also mean economic diversification, as it supplies electricity according to the price dynamics between the two countries it links together. Finally, a new interconnector also means technological diversification in that it links markets with different technology choices or having different natural resources determining their energy mix. Each of these dimensions enables security of supply risks to be spread and reduced.

Regarding renewable energy, on very windy or sunny days there can be more renewable power available than the system can accept. When this happens, renewable generators are dispatched down or “curtailed off” i.e. blocked from supply, and a large volume of renewable energy goes unused. This is because wind or solar energy cannot displace conventional power plants below the minimum level needed for certain grid stability services. Additional interconnection could reduce this effect and allow more renewable energy onto the system (as it can safely be exported).
Lastly, regarding lower prices, interconnectors can utilise differences in the power systems (and electricity prices) between countries and increase social welfare for the entire area. Interconnectors can transport power in both directions, allowing for import or export. At times of high electricity prices in Ireland, interconnectors can allow cheaper electricity from another country to be imported into Ireland, thereby raising the supply and lowering the price in Ireland. Conversely, if the other country has high electricity prices, import of (cheaper) electricity from Ireland would bring those prices down, and lower the price for the entire interconnected area. Therefore, interconnectors allow market forces of supply and demand to lower electricity prices in peak-consumption periods.

However, on that last point, it is important to understand that the benefits of adding more interconnection may not be evenly distributed among stakeholder groups in the two countries at each side of the interconnector (such as generators, consumers, etc.) and adding a new interconnector may not always result in lower prices for the Irish consumer. For instance, exporting electricity out of Ireland to a market with a higher electricity price may increase its price in Ireland as the two prices will converge and become equal for the entire area.

Moreover, depending on the way an interconnector is regulated (and funded), it can be costly for the Irish consumers. Interconnectors derive their revenues from sales of interconnection capacity to users who wish to move electricity between markets with different prices (congestion revenues). There are various approaches to regulate interconnectors and determine who bears the risk of the interconnector being able to earn congestion revenues. In a merchant model, which is exceptional in Europe, the interconnector is fully reliant on its revenues and bears all the risks of not being able to recover its investment. In a fully regulated model, which is most common in Europe, investment costs are recovered through network tariffs, i.e. it is the end consumer that pays the investment costs in full and receives all the revenues from sales of interconnection capacity. Interconnectors can also be partly regulated, and therefore partly funded by the tariffs. For instance, in a so-called “cap and floor” model, interconnector’s sales revenues below the floor are topped up by network tariffs and its sales revenues above the cap are returned to the end consumer. Hence, regulated and partially regulated interconnectors can have a positive or negative impact on network tariffs, and ultimately on end consumers, depending on their performance. If interconnectors underperform financially, then this can be a cost to electricity customers by increasing network tariffs. In contrast, if electricity
interconnectors over-perform financially they can reduce electricity network tariffs. Therefore, the risk of underperformance and its potential cost to Irish consumers must be balanced against the potential benefits that a new interconnector may bring.
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# Glossary of Terms

<table>
<thead>
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<th>Term or Acronym</th>
<th>Definition or Meaning</th>
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<tr>
<td>ACER</td>
<td>Agency for the Cooperation of Energy Regulators</td>
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<tr>
<td>CBA</td>
<td>cost benefit analysis</td>
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<tr>
<td>CBCA</td>
<td>cross-border cost allocation</td>
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<tr>
<td>CEF</td>
<td>Connecting Europe Facility</td>
</tr>
<tr>
<td>CER</td>
<td>Commission for Energy Regulation (now, Commission for Regulation of Utilities)</td>
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<tr>
<td>CRU</td>
<td>Commission for Regulation of Utilities</td>
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<tr>
<td>DCCAE</td>
<td>Department of Communications, Climate Action and the Environment</td>
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<tr>
<td>ENTSO-E</td>
<td>European Network of Transmission System Operators for Electricity</td>
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<tr>
<td>ESB</td>
<td>Electricity Supply Board</td>
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<tr>
<td>GB</td>
<td>Great Britain</td>
</tr>
<tr>
<td>GTC</td>
<td>grid transfer capability</td>
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<tr>
<td>IRR</td>
<td>internal rate of return</td>
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<tr>
<td>I-SEM</td>
<td>Integrated Single Electricity Market</td>
</tr>
<tr>
<td>LNG</td>
<td>liquefied natural gas</td>
</tr>
<tr>
<td>NPV</td>
<td>net present value</td>
</tr>
<tr>
<td>NRA</td>
<td>national regulatory authority (i.e. CRU in Ireland)</td>
</tr>
<tr>
<td>OFGEM</td>
<td>Office of Gas and Electricity Markets (NRA for GB)</td>
</tr>
<tr>
<td>PCI</td>
<td>project of common interest</td>
</tr>
<tr>
<td>SEW</td>
<td>socio-economic welfare</td>
</tr>
<tr>
<td>TEN-E</td>
<td>trans-European networks for energy</td>
</tr>
<tr>
<td>TSO</td>
<td>transmission system operator</td>
</tr>
<tr>
<td>TYNDP</td>
<td>ten-year network development plan</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
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</tbody>
</table>
1 Introduction

1.1 Commission for Regulation of Utilities

The Commission for Regulation of Utilities (CRU) is Ireland's independent energy and water regulator. The CRU was established in 1999 and has a wide range of economic, customer protection and energy safety responsibilities. The CRU’s mission is to regulate water, energy and energy safety in the public interest.

Further information on the CRU’s role and relevant legislation can be found on the CRU’s website at www.cru.ie.

1.2 Background

1.2.1 Electricity interconnectors

An electricity interconnector is essentially an electrical line or cable connecting the electricity transmission systems of two countries allowing them to exchange electrical power. Interconnectors may run across a land border as overhead lines or underground cables, or connect two land areas separated by water, by way of a submarine cable.

For the purpose of EU law, Regulation 714/2009 defines an interconnector as transmission line which crosses or spans a border between Member States and which connects the national transmission systems of the Member States.

\[\text{Reference to Regulation (EC) No 714/2009}\]

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1.2.2 Electricity interconnection projects of common interest (PCIs)

Projects of common interest (PCIs) are key infrastructure projects, especially cross-border projects, which link the energy systems of EU countries. These projects concern electricity transmission, gas transmission and storage, and smart grids, and are considered key in terms of enhancing the resilience and efficiency of EU energy networks, improving security of supply and facilitating the development of EU renewable energy sector.

Every two years, the European Commission draws up a new list of PCIs. The first list was published in 2013 and the second in 2015. The third list of PCIs, adopted in November 2017, contains 173 projects, of which 8 projects are located on or involve the island of Ireland.¹

To become a PCI, a project must have a significant impact on energy markets and market integration in at least two EU countries, boost competition on energy markets and help the EU's energy security by diversifying sources, and contribute to the EU's climate and energy goals by integrating renewables.

A PCI is afforded a number of benefits under EU Regulation 347/2013 which aims at ensuring timely development of the trans-European energy infrastructure (TEN-E Regulation).³ These benefits include timely implementation through streamlined planning and permit granting processes, improved regulatory conditions, increased public participation via consultations, and increased visibility to investors. PCIs also have the right to apply for funding from the Connecting Europe Facility (CEF).

² More information on PCIs is available on the European Commission’s website. See also the current list of PCIs per country.
1.3 Purpose of this paper

The CRU has a number of competences in relation to assessing electricity interconnection projects and deciding on their regulatory treatment, and will assess them on a case by case basis. Developers of electricity interconnectors (project promoters) can apply to the CRU on the basis of the Irish national law. If their projects are PCIs, they have a choice to apply directly under the provisions of the EU law or under the Irish national law. In accordance, the CRU's approach in considering such applications may differ to some extent, depending on which process is chosen by the developer and the underlying legal basis for that assessment. Notwithstanding differences in process necessitated by this case by case approach, we have developed a set of high level assessment criteria that we would apply to each electricity interconnection application we may receive. This is to ensure consistency and fairness in our evaluation regardless of which process is chosen. This will also provide high level guidance for project developers as to the nature of assessment they can expect from the CRU, and the type of information we might request from them in order to aid our decision making process.

Our proposed approach and assessment criteria are set out in section 4 for public consultation.

1.4 Responding to this paper

Any comments or queries on our assessment approach and criteria set out in this consultation paper should be submitted to electricityinterconnectors@cru.ie by Friday, 10 August 2018. We will be aiming to review stakeholders’ feedback and issue a final decision in that respect by the end of September 2018.

Unless marked confidential, all responses may be published on the CRU’s website. Respondents may request that their response is kept confidential, and the CRU shall respect this request, subject to any obligations to disclose information. Respondents who wish to have their responses remain confidential should clearly mark the document to that effect and include the reasons for confidentiality.
Responses from identifiable individuals will be anonymised prior to publication on the CRU website unless the respondent explicitly requests their personal details to be published.

Our privacy notice sets out how we protect the privacy rights of individuals and can be found here.
2 Legal and policy context

2.1 Legal basis for electricity interconnection applications

The CRU has a number of competences in relation to assessing electricity interconnection projects and deciding on their regulatory treatment. An overview of those competences under the Irish and the European law is provided in our information paper (CRU/18/056). Here we only discuss two provisions which are most relevant to this consultation as they provide legal bases for the CRU’s assessment of the applications the CRU has received, or is expecting to receive, from electricity interconnection project promoters.

2.1.1 Electricity Regulation Act 1999, Section 2A

The CRU has already received an electricity interconnection PCI application, requesting a determination under section 2A of the Electricity Regulation Act 1999, as amended (1999 Act).

Section 2A states that an interconnector owned by a person other than the Board (i.e. ESB) may, where the CRU determines that it is in the public interest, be considered to be part of the transmission system for the purposes of calculating and imposing charges for the use of the transmission system.

If the CRU determines that it is in the public interest to consider an electricity interconnection project to be part of the transmission system as per section 2A, it will then subsequently consider its regulatory treatment.
2.1.2 TEN-E Regulation, Article 12

The CRU expects to receive a second electricity interconnection PCI application shortly, requesting a determination under Article 12 of the TEN-E Regulation.\(^4\)

The TEN-E Regulation aims to facilitate implementation of PCIs. The Regulation explains (at recital 35) that the costs of developing and operating a PCI project should in general be fully borne by the infrastructure users, i.e. recovered by the tariffs paid by those users. However, if projects’ costs cannot be expected to be recovered by the tariffs, Article 12 of the Regulation provides for a mechanism allowing for projects’ costs to be shared among countries benefitting from the project, i.e. cross-border cost allocation (CBCA).

As set out in Article 12, a PCI project may apply to the relevant national regulatory authorities (NRAs) for energy for a coordinated CBCA decision, and the NRAs have then six months to make such a joint decision. Applying for a CBCA is at the project promoter’s discretion, and should be used as an exemption, only for projects that would not materialise otherwise. The requirements for requesting a CBCA and the key elements of a CBCA decision process are defined by the TEN-E Regulation. In the past, the CRU, in coordination with OFGEM and the Utility Regulator in Northern Ireland, made two decisions on cross-border cost allocation for gas projects, Gaslink Twinning (CER/14/137) and Shannon LNG (CER/14/138).

Separately to the CBCA decision, the CRU will consider the project’s regulatory treatment with respect to any costs allocated to Ireland.

\[\text{\footnotesize 4 See note 3.}\]
2.2 EU policy on electricity interconnection

When assessing electricity interconnection applications the CRU takes into consideration the European guidance and best practices for such assessments. Accordingly, the criteria proposed here are aligned with the relevant recommendations and methodologies issued by the Agency for Cooperation of Energy Regulators (ACER) and the European Network of Transmission System Operators for Energy (ENTSO-E) in relation to electricity interconnection projects. Three key documents relevant to the CRU’s assessment are briefly discussed below.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Document Title</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>ACER</td>
<td>Recommendation 5/2015 on good practices for the treatment of the investment requests including cross border cost allocation requests for electricity and gas projects of common interest</td>
<td>December 2015</td>
</tr>
<tr>
<td>ENTSO-E</td>
<td>Ten Year Network Development Plan (TYNDP) (Scenarios)</td>
<td>December 2016</td>
</tr>
<tr>
<td>ENTSO-E</td>
<td>Guideline for Cost Benefit Analysis (CBA) of Grid Development Projects</td>
<td>February 2015</td>
</tr>
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</table>

2.2.1 ACER’s CBCA Recommendation 5/2015⁵

ACER shares best practices with NRAs and PCI project promoters in order to facilitate CBCA processes and to ensure a consistent approach in deciding on the allocation of cost across borders. The latest Recommendation of 2015 provides guidance to project promoters on the submission of an investment request to the relevant NRAs requesting CBCA under Article 12 of the TEN-E Regulation. It also formulates the main principles that NRAs should follow when assessing such requests and deciding on the allocation of costs.

⁵ ACER Recommendation 5/2015 of 18 December 2015 on good practices for the treatment of the investment requests including cross border cost allocation requests for electricity and gas projects of common interest, available on ACER’s website.
2.2.2 ENTSO-E’s TYNDP

The European Commission selects PCI projects from a list of projects included in ENTSO-E’s pan-European network development plan for the next ten years (TYNDP). The principal aim of the plan is to provide a consistent view of the pan-European electricity infrastructure, signal potential gaps in future investment and capture the wider dynamics of the European electricity market. ENTSO-E use a number of scenarios to represent future developments of the power system. ACER recommends that project promoters use TYNDP scenarios in their CBAs submitted to NRAs, while noting that additional robust scenarios can also be provided.6

ENTSO-E update their plan every two years. The previous edition, the TYNDP 2016, was published in December 2016. The 2018 edition is currently under preparation.7

2.2.3 ENTSO-E’s CBA Guideline

TEN-E Regulation also required ENTSO-E to establish a methodology for evaluating the benefits and costs (CBA) of all the projects included in their TYNDP from a pan-European perspective. The main objective of this CBA methodology is to provide a common and uniform basis for the assessment of key infrastructure projects with regard to their value to the European society. The first CBA methodology was adopted in 2015 and ENTSO-E currently work on a new version (CBA 2.0).8

Each project included in the TYNDP (and therefore each PCI project) is assessed using the above pan-European CBA methodology which stems from EU policies on market integration, security of supply and sustainability. As such the benefit of each project is assessed against nine indicators ranging from technical aspects to sustainability considerations, as illustrated below. In their updated methodology,

6 ACER Recommendation (note 5 above), Annex I.1.
7 See TYNDP website for updates.
8 See note 7.
CBA 2.0, ENTSO-E regroup the nine indicators into three separate categories (costs, benefits and residual impacts) and our proposed criteria follow this new structure.\(^9\)

![Diagram of project assessment categories]

*Source: ENTSO-E.*

ACER recommends that project-specific CBAs are consistent with the ENTSO-E’s CBA methodology.

### 2.3 Government’s policy on electricity interconnection

When assessing electricity interconnectors, the CRU is mindful of the Government’s policy on electricity interconnection. This is set out in the most recent National Policy Statement on Electricity Interconnection published by the Department of Communications, Climate Action and Environment (DCCAE) on 6 July 2018.\(^{10}\) This Policy Statement builds on DCCAE’s initial consultation\(^{11}\) which set out to identify an appropriate evidence base in the evaluation of electricity interconnection projects.

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\(^9\) See section 4 for details.

\(^{10}\) DCCAE, National Policy Statement on Electricity Interconnection, 6 July 2018, available [here](#).

\(^{11}\) DCCAE, Draft National Policy on Electricity Interconnection in Ireland: Public Consultation, available [here](#).
These initial proposals and stakeholders’ responses to DCCAE’s consultation in that matter\(^\text{12}\) have also informed the CRU in developing the criteria set out in this paper.

Relevant Government’s policy documents:

- **Jul 2012**  Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure
- **Dec 2015**  Ireland’s Transition to a Low Carbon Energy Future 2015-2030 (Energy White Paper)
- **Jan 2018**  Draft National Policy on Electricity Interconnection in Ireland: Public Consultation
- **Jul 2018**  National Policy Statement on Electricity Interconnection

### 2.5 CRU’s policy to date

Since late 2015, the CRU has published six documents which outline the CRU process in the development of a regulatory framework for assessing electricity interconnectors, in particular those with a PCI status. These documents are listed below, and this consultation paper should be read in conjunction with them. In particular, we draw on the stakeholders’ feedback to the [CER/16/239](#) information paper and call for initial comments which is discussed next (section 3) in more detail.

- **CER/15/269**  PCI Incentive Methodology in accordance with Article 13(6) of EU Regulation 347/2013  information paper
- **CER/15/284**  Review of Connection and Grid Access Policy: Initial Thinking & Proposed Transitional Arrangements  consultation paper
- **CER/16/239**  Policy for Electricity Interconnectors – Consultation Process and Call for Initial Comments  information paper
- **CRU/17/300**  Grid Connections for Electricity Interconnectors with PCI status  direction to EirGrid
- **CRU/18/056**  Electricity Interconnectors  information paper
- **CRU/18/119**  Greenlink Electricity Interconnector  consultation paper

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\(^\text{12}\) All responses are published on DCCAE’s [consultation website](#).
3 Responses to CER/16/239

In August 2016, the CRU requested stakeholders’ views on developing an overarching policy for electricity interconnectors (CER/16/239). We have received five responses from the following parties:

- Bord Gáis Energy
- EirGrid
- ESB Generation and Wholesale Markets
- Greenlink Interconnector
- Irish Wind Energy Association

The respondents highlighted a broad range of matters to be considered, and informed our thinking when developing this paper. In particular, they helped us to identify some key areas to be considered when evaluating electricity interconnection proposals. These are listed below, and further discussed in the next sections.

- CBA and related studies
- Regulatory treatment
- Fair, non-discriminatory grid access
- Impact on system operation and technical requirements
- TSO’s conflict of interest
- Brexit
3.3 CBA and related studies

One respondent noted the importance of considering the costs and benefits of an electricity interconnector on a holistic basis. For instance, the respondent noted that the CRU should consider:

- total societal benefit, including ancillary services benefit and capacity benefit
- methodology for assessment of net present value (NPV)
- cross border cost allocation
- methodology for assessing losses
- enhanced competition benefits
- congestion management of the wider transmission system

Another respondent noted that any economic assessment carried out by a project promoter should be published and assessed by the CRU through a comprehensive and independently verified economic appraisal in an open and transparent manner. Some respondents suggested that grid reinforcements and their impact on end users should form part of the CRU’s analysis. One respondent noted that the CRU’s assessment should also take into account any wider policy differences between the two countries involved, such as differences in renewable support schemes and interconnector funding models.

**CRU comment**

In the interest of final consumers, project promoters’ studies and CBA will be assessed by the CRU by means of an independent economic and technical appraisal. In addition, the end user impact, the impact on tariffs and renewable support schemes will be considered as part of the assessment in order to ensure that the Irish impacts do not represent a disproportionate burden for Irish consumers.

In the interests of transparency and public participation as well as in line with its current practice, the CRU will publish redacted copies of applications submitted by project promoters alongside its own assessment of those applications.
3.4 Regulatory treatment

One respondent advised careful consideration of the project's funding model in order to ensure that the Irish consumer is not faced with a disproportionate level of risk relative to the benefits. The same respondent noted that the CRU's assessment should explore and take into account different financing structures that could be deployed for a project.

**CRU comment**

If the CRU is required to make a decision on a project's funding model for the purpose of the CBCA process or otherwise, the CRU will ensure that the impact on national tariffs does not represent a disproportionate burden for the Irish consumers. The CRU will also evaluate different regulatory models and consider the likely sources of finance for an interconnector project to be realised.

3.5 Fair, non-discriminatory grid access

A number of respondents believe that there must be fair, non-discriminatory access to the grid for all connecting parties. Furthermore, the majority of respondents noted that the CRU must consider the interactions between the electricity interconnection policy and other policies, for example the connection policy (for generation) as well as decarbonisation objectives and the need for connecting more flexible generation.

One respondent is of the view that the interconnection policy must go hand in hand with the generation connection policy in order to ensure an efficient use of the grid. Other respondents considered electricity interconnection policy to be in competition with generation connection policy, while there were also views that interconnection generally fosters competition in generation.

**CRU comment**

Fairness and non-discrimination are the underlying objectives for any CRU policy regulating network access. This is, of course, subject to other considerations, such as system needs, efficiency, national and European policy and, last but not least, the consumer interest.
In the 2015 consultation on connection policy (CER/15/284), the CRU asked stakeholders whether interconnection should be subject to a specific policy which is separate from the policy governing generation and demand connections. The majority of respondents to that consultation agreed that interconnectors should be treated differently to generation and demand connections. Consequently, the CRU set about developing a separate policy for electricity interconnectors and recognising, in particular, the priority status of PCI projects.

Accordingly, the CRU is going to assess electricity interconnection applications in a fair and transparent manner while considering matters specific to Ireland. Pursuant to EU policy, PCI projects will be prioritised in this process.

### 3.6 Impact on system operation and technical requirements

Two respondents stated that the CRU needs to consider interconnector losses in its assessment of a proposed electricity interconnector. One respondent notes that the ENTSO-E methodology for assessing losses does not accurately reflect the operation of a HVDC interconnector, and suggests a standardised method for assessing losses should be set out for Ireland. Another respondent suggested the consideration of interconnector ramp rates in the CRU assessment.

One respondent noted that technical considerations are different for each interconnector project, and if the new largest single in-feed to the Irish electricity system is to increase to 700MW then this would have an impact on the technical requirements of the whole system. For example, the rate of change of frequency (RoCoF) limit and operating reserve requirements would likely increase.

**CRU comment**

The CRU notes the respondents’ concerns and is mindful of the impact an electricity interconnector will have on technical operation of the electricity system in Ireland. We expect to receive independent technical advice when considering the operational and technical impacts of an electricity interconnector on the Irish system. We also expect that such impacts will be captured and assessed as part of the CBA.
3.7 TSO’s conflict of interest

The majority of respondents raised concerns regarding the conflict of interest between EirGrid as the licensed transmission system operator (TSO) implementing the CRU’s connection and interconnection policies and the TSO as a project promoter of the Celtic interconnector. Some respondents requested more details on how this conflict of interest will be managed in a fair and transparent manner.

**CRU comment**

In order to address the above concerns, on 9 March 2018 we requested EirGrid to outline in detail how it ensures appropriate ring-fencing of duties within its organisation between discharging of functions under the TSO licence and any work as a project promoter, together with the French TSO, for the Celtic project. The CRU requested EirGrid to demonstrate this compliance in a report taking into account condition 17 of the TSO licence (duty of non-discrimination). The report has been submitted and we are currently examining it.

3.8 Brexit

Two respondents expressed concerns about building any new electricity interconnectors between Ireland and Great Britain (GB) in light of the United Kingdom’s decision to leave the European Union.

**CRU comment**

The CRU notes the respondents’ concerns regarding Brexit and for the purposes of the CBA study, the CRU’s base assumption will be that the electricity markets of the Republic of Ireland and Northern Ireland will remain coupled. However, we expect project promoters of the two proposed interconnection projects to include Brexit sensitivities in their analysis. The sensitivities should simulate market frictions between GB and Ireland.

13 EirGrid’s TSO licence is available on the [CRU website](#).
4 Proposed assessment approach and criteria

Following review and consideration of the responses to CER/16/239, and keeping in mind the relevant rules and guidelines outlined in section 2, the CRU proposes to assess electricity interconnection applications on the basis of a set of technical, economic and regulatory criteria. In particular, we will assess the impact of each project both in terms of added value for society as well as in terms of costs under a range of different scenarios and sensitivities. However, we note that economic considerations are only one piece of information used in the decision-making process and will be complemented with information on qualitative, equity and distributional impacts as well as strategic issues. Accordingly, we will assess projects on a case-by-case basis and take a fair and balanced decision in the round against the criteria.

In carrying out our evaluation, we will have due regard for the long term interest of final consumers. In particular, when deciding on a project’s financial structure and the level of public funding, if any, we will ensure that the impact on national tariffs does not represent a disproportionate burden for the Irish consumer.

We group the proposed assessment criteria under three broad categories:

- Criteria for a technical assessment of the project
- Criteria for an economic assessment of the project
- Criteria for developing a regulatory model for the project

We also note that the lists provided below, in sections 4.1 - 4.3, are non-exhaustive and we reserve the right to add additional criteria or carry out additional assessments as required. Finally, some of the criteria listed below may not apply to each and every application we receive (e.g. consideration of a CBCA request).

Application documents submitted by project promoters, including CBA and other relevant studies will be assessed by the CRU by means of an independent economic and technical appraisal in a manner that is objective and impartial. We may also
conduct our own cost benefit analysis and any further studies if deemed appropriate or necessary. In order to aid this process, the CRU expects that project promoters will supplement their CBA with transparent information on costs and benefits considered in the modelling, methodology and resulting, modelling assumptions, data sources and limitations of their assessments. Where benefits or costs are unable to be quantified or monetised, they can be described qualitatively.

It is recommended that project promoters engage with the CRU in advance of submitting their applications in order to determine the scope of their application and supporting studies at the early stages of the process.

In accordance with the CRU’s best practice, we also intend to publish and separately consult on each electricity interconnection application.
### 4.1 Technical criteria

<table>
<thead>
<tr>
<th>Criteria for a technical assessment of the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Choice of technology and its rationale, including economic cost comparisons of technologies used for the project.</td>
</tr>
<tr>
<td>2. Technical specification of the interconnector, including capacity, ramp rates and losses under various operating scenarios.</td>
</tr>
<tr>
<td>3. Demonstration of how the technical specifications meet the grid code requirements of the relevant jurisdictions.</td>
</tr>
<tr>
<td>4. Tender and supplier selection specifications (if available). Tendering and procurement process.</td>
</tr>
<tr>
<td>5. Project’s costs and assumptions underpinning these.</td>
</tr>
<tr>
<td>6. Planned route including project’s connection locations; rationale behind project’s location.</td>
</tr>
<tr>
<td>7. Implementation timeline and project’s current development stage.</td>
</tr>
<tr>
<td>8. Risk factors that could affect project’s implementation at any stage and the risk mitigation measures envisaged to reduce their impact.</td>
</tr>
<tr>
<td>9. Project’s current stage in the permitting process in the two countries at each end of the interconnector (hosting countries).</td>
</tr>
<tr>
<td>10. Project’s grid connection in each hosting country and its firmness.</td>
</tr>
<tr>
<td>11. Deep reinforcements required to connect the project to the Irish system and their impact on use of system charges.</td>
</tr>
</tbody>
</table>
# 4.2 Economic criteria

## Criteria for an economic assessment of the project

### 4.2.1 Costs

Costs are total project expenditure (reported as pre-tax values). Where costs or risks are unable to be quantified or monetised, they can be described qualitatively.

<table>
<thead>
<tr>
<th>1. Capital expenditures, e.g. construction costs, financial costs, connection costs as well as expected costs for temporary solutions which are necessary to realise the project.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Operation and maintenance costs (including costs of devices that have to be replaced within the project’s life-cycle).</td>
</tr>
<tr>
<td>3. Environmental costs, e.g. costs avoided, mitigated or compensated under existing legal provisions.</td>
</tr>
<tr>
<td>4. Consenting costs, e.g. costs of planning procedures.</td>
</tr>
<tr>
<td>5. Decommissioning costs.</td>
</tr>
<tr>
<td>6. Technical justifications of cost estimates.</td>
</tr>
<tr>
<td>7. Main risk factors, whether technical or economic, that could affect the project’s estimated costs, and the mitigation measures envisaged to reduce their impact.</td>
</tr>
</tbody>
</table>
### Criteria for an economic assessment of the project

#### 4.2.2 Benefits

Benefits can be fully or partially accounted for in the calculation of socio-economic welfare (SEW)\(^{14}\) or calculated separately.\(^{15}\) Benefits and risks that cannot be monetised and quantified can be described qualitatively.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rationale behind the need for the project, such as price arbitrage opportunities, expected evolution of the generation mixes in each hosting country, e.g. development of wind energy in Ireland.</td>
</tr>
<tr>
<td>2.</td>
<td>Interconnector’s expected usage and revenues, e.g. flows, usage rate, trading volumes, and congestion rents.</td>
</tr>
<tr>
<td>3.</td>
<td>SEW(^{16}) benefits assessed for each group of beneficiaries in the hosting countries, e.g. consumers, producers, other energy market stakeholders if applicable.</td>
</tr>
<tr>
<td>4.</td>
<td>Change in grid transfer capability (GTC)(^{17}) between the interconnected systems and within each of them, reflecting reduced congestion.</td>
</tr>
<tr>
<td>5.</td>
<td>Variation in CO(_2) emissions resulting from the project.</td>
</tr>
<tr>
<td>6.</td>
<td>Variation in thermal losses in the transmission system resulting from the project.</td>
</tr>
<tr>
<td>7.</td>
<td>Generation cost savings resulting from the project, e.g. reduced fuel costs.</td>
</tr>
<tr>
<td>8.</td>
<td>Avoided curtailment of RES generation (primarily wind and solar) resulting from the project (RES integration).</td>
</tr>
</tbody>
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\(^{14}\) Socio-economic welfare (SEW) analysis is a commonly used tool to capture the overall benefit, in monetary terms, to society from a given interconnection project. The SEW analysis is usually done on a national basis, for the two countries at each end of the proposed interconnector, and reflects the lower cost of electricity resulting from the addition of a new interconnector. Estimating SEW benefits involves assessing impacts on consumer and producer costs as a result of changes in power flows between the connected markets and changes in generation dispatch.\(^{15}\)

\(^{15}\) For instance, RES integration benefits (4.2.2, point 8) can be quantified and monetised in SEW since estimated generation cost savings or changes in total surplus tend to reflect avoided renewable curtailment. See also ENTSO-E’s CBA Guideline (section 2.2.3).

\(^{16}\) Socio-economic welfare (see note 14).

\(^{17}\) GTC reflects the ability of the grid to transport electricity across a boundary. A boundary is a bottleneck in the power system (not necessarily a border between states).
9. Security of supply and capacity benefits of the project. Counterfactual situation will take into account the specific reserve requirements of a small system such as the SEM.\(^{18}\)

10. Ancillary services benefits resulting from the project.

11. Main risk factors that could affect the project’s rationale and estimated benefits, and the mitigation measures envisaged to reduce their impact, e.g. impact of Brexit on the project’s rationale and benefits.

### Criteria for an economic assessment of the project

#### 4.2.3 Other impacts and considerations

Other impacts are additional (positive or negative) externalities of the project, where not quantified and monetised in the SEW calculation. Impacts that cannot be monetised and quantified can be described qualitatively.

1. Impact on the electricity system’s technical requirements in Ireland, e.g. if the project constitutes the largest single in-feed.

2. Wider impact on the functioning of the wholesale energy markets in each hosting country, e.g. impacts on competition, prices of wholesale products in I-SEM, capacity payments, generation costs and revenues per technology type.

3. Wider impact on other energy market participants, distributional impacts, e.g. impact on gas networks, gas tariffs and their knock-on impacts on gas consumers and/or I-SEM prices, impacts on other existing and/or potential electricity interconnectors.

4. Environmental impacts (after potential mitigation measures).

5. Social impacts, e.g. impact on local population.

6. Any other relevant impacts, e.g. relating to innovation, solidarity, market integration.

7. Potential alternatives to electricity interconnection, e.g. gas interconnection, gas/electricity storage, demand side response, energy efficiency.

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\(^{18}\) Security of supply means system adequacy as well as system stability. **System adequacy** is the ability of a power system to provide an adequate supply of electricity to meet demand, and taking into account the variability of climatic effects on demand and RES production. **System stability** is the ability of a power system to return to its normal or stable conditions after being disturbed.
### 4.3 Regulatory criteria

**Criteria for developing project’s regulatory model**

1. Project’s forecasted costs and revenues over the project’s technical lifetime.
2. Project’s net present value (NPV) and internal rate of return (IRR).
3. Intended method and sources of financing the project, e.g. corporate or project finance, and the project’s current stage of raising finance. Main risk factors that could affect project’s financing.
4. Status of the project as per the most recent TYNDP list.
5. Status of the project as per the most recent PCI list.
6. Project promoters’ intention to (or not to) apply for grants (such as CEF) and the project’s eligibility to such funding, according to project promoter. If applicable, current stage of application for grants.
7. Project promoter’s proposed regulatory model in each country in light of expected sources of revenue, e.g. congestion rents, capacity mechanism.
8. Expected impacts of the proposed model on regulated prices (network tariffs) in Ireland.
9. If applicable, project promoter’s request for cross border cost allocation (CBCA).
10. If applicable, information on non-hosting countries’ TSOs consultations and their results (as required by TEN-E Regulation\(^\text{19}\)).

\(^{19}\) Discussed in section 2.1.2.
5 Summary and Next Steps

The CRU will assess electricity interconnection applications on a case by case basis and in doing so, we propose to use a set of high level assessment criteria set out in section 4 of this consultation paper.

Any comments or queries on our assessment approach and proposed criteria should be submitted to electricityinterconnectors@cru.ie by Friday, 10 August 2018. We will be aiming to review stakeholders’ feedback and issue a final decision in that respect by the end of September 2018.