Overview:

In this document we provide a high level summary of our regulatory principles and the existing regulatory regimes in Great Britain (GB), including project assessment methodologies and criteria, which we apply to investments in transmission and gas storage infrastructure.

The document is published in accordance with the Article 13(6) of the EU Trans-European Energy Infrastructure Regulation (the TEN-E Regulation) which requires National Regulatory Authorities (NRAs) to publish their “methodology and the criteria used to evaluate investments in electricity and gas infrastructure projects and the higher risks incurred by them”.

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1. Introduction

In line with the Article 13(6) of the Trans-European Energy Infrastructure Regulation (the TEN-E Regulation)\(^1\), this document provides a high level summary of our regulatory principles and the existing regulatory regimes in Great Britain (GB), including project assessment methodologies and criteria, which apply to investments in transmission and gas storage infrastructure. We expect the present and future EU Projects of Common Interest (PCIs) to be assessed under one of the existing regulatory regimes in GB, depending on the nature of the project.

We hope that this information will be a useful high level summary of regulatory arrangements in GB for interested parties, including existing and prospective investors. More detailed information on our regulatory regimes is already available on our website and we provide references to it in this publication.

**Background**

In consultation with EU Member States, the European Commission has identified priority infrastructure corridors for electricity, gas and oil in Europe\(^2\) which are necessary to achieve the EU’s core energy policy objectives of competitiveness, sustainability and security of supply. To facilitate timely implementation of projects contributing to these objectives, the European Community has adopted the TEN-E Regulation. Under the TEN-E Regulation, projects of pan-European significance can be granted a Project of Common Interest (PCI) status\(^3\) which may allow them to benefit from faster and more efficient permit granting procedures, European funding and improved regulatory treatment, where appropriate.

In relation to this, the Agency for Cooperation of Energy Regulators (ACER) has recently published its recommendation\(^4\) on the regulatory treatment (ie risk assessment and incentives) of PCI projects. In the recommendation, ACER has

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\(^3\) Further information on the PCI status - [http://ec.europa.eu/energy/infrastructure/pci/pci_en.htm](http://ec.europa.eu/energy/infrastructure/pci/pci_en.htm)

highlighted the best regulatory practices in Europe and suggested particular risk mitigation measures to address project risks.

As a following step, Article 13(6) of the TEN-E Regulation requires National Regulatory Authorities (NRAs) to publish their “methodology and the criteria used to evaluate investments in electricity and gas infrastructure projects and the higher risks incurred by them”. As the NRA for GB (GB NRA), we provide a high level summary of our regulatory principles and existing regulatory regimes in this document.

Our regulatory principles

In GB, energy generation/production and retail supply have been liberalised over the last 20 years. But the networks that transport our energy within GB are largely monopolies, meaning an absence of choice for their customers. Our role as an economic regulator is to protect consumers from excessive costs and/or poor service, where it is not practical to rely on competition to deliver value to consumers. This protection involves ensuring charges to consumers are no higher than they need to be, whilst making sure that the network companies can raise finance to deliver and maintain network infrastructure so that the secure supply of energy is supported. In doing this, we consider risks facing network companies as part of our assessment of efficient investment costs.

Whilst we follow these general principles when regulating different infrastructure assets, we apply a range of specific mechanisms to reflect different contexts and market conditions. Where appropriate, we employ competition to provide the incentives for efficient investment. For instance, for transmission links to offshore generators we hold competitive tenders for the licence to operate those assets. These assets are large and easily separable so the costs of tendering are low relative to the benefits of competition. For interconnectors and gas storage we have followed a market-led approach as these assets are both separable and there are price signals that can drive efficient investment by developers.

Our approaches to regulating energy infrastructure are presented in the sections below.
2. Electricity regimes

Regulating onshore networks

We have more than 20 years’ experience applying upfront (ex ante) incentive regulation to GB onshore networks. We regulate these electricity and gas transmission and distribution network companies (including their infrastructure investments) by controlling their revenues. We apply upfront incentive regulation through controls that last for a fixed period (historically, five years and now, eight years). In our assessment of efficient revenues, we include the financing cost of the network companies, generally applying the weighted average cost of capital (WACC). We commit through the “regulatory asset value” that long-term investments will be funded by both existing and future consumers over the economic life of the investment.

Since 2013 we have applied our new form of incentive regulation known as RIIO (Revenue = incentives + innovation + outputs). Our RIIO approach retains key elements of the previous approach, including strong efficiency incentives (rewards for spending less than expected), whilst encouraging network companies to focus on outputs for their customers, innovating to reduce network costs, and contributing to a low carbon economy. We provide a summary of the RIIO regulatory framework in the table below.
Regulatory regimes in GB - a high level summary

Table 1. Summary of RIIO\(^5\)

<table>
<thead>
<tr>
<th>Feature of RIIO</th>
<th>Why is it beneficial?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight-year period</td>
<td>Extended regulatory period provides more regulatory stability and encourages longer-term focus.</td>
</tr>
<tr>
<td>Upfront (ex-ante) assessment</td>
<td>Sets base revenues and basis for changes in revenues over the subsequent eight-year period with limited possible reopeners providing a high level of certainty to the company.</td>
</tr>
<tr>
<td>Cost sharing mechanism</td>
<td>If the network company spends less than the target set, the savings are shared between the company and customers. This produces strong incentives to outperform. Conversely, if the company overspends, the extra costs are shared between the company and its customers the same way. This mitigates the impact of cost overruns.</td>
</tr>
<tr>
<td>WACC approach</td>
<td>Reimburses debt and equity investors at an appropriate level. We also update the cost of debt level annually which reduces financing risk to companies and risk of overcompensation to consumers.</td>
</tr>
<tr>
<td>Comprehensive quality outputs</td>
<td>Companies’ business plans need to be informed by and tailored to their customers’ needs e.g. level of network reliability, availability and environmental impacts.</td>
</tr>
<tr>
<td>‘Regulatory asset value’ (RAV) approach</td>
<td>Revenues for long-term investments are recovered over their lifetime as a return on the RAV so the costs are shared between all the customers who benefit from the investment.</td>
</tr>
<tr>
<td>Totex approach</td>
<td>Assesses total expenditure (totex), taking operational expenditure (opex) and capital expenditure (capex) together. This provides the company with incentives to choose the most economic option when deciding between opex and capex solutions.</td>
</tr>
<tr>
<td>Uncertainty mechanisms</td>
<td>Limited provisions to manage specific cases of uncertainty risk through possible revenue changes during the period, eg extra revenues for providing greater network capacity.</td>
</tr>
<tr>
<td>Promoting innovation</td>
<td>Encourages network companies to consider different ways to achieve greater cost savings or increase the scope of future delivery.</td>
</tr>
</tbody>
</table>

The way RIIO is applied to onshore network investments is similar across electricity and gas onshore transmission (and distribution) networks. However, there are some variations. For example, on the electricity transmission side, we have introduced specific arrangements for large transmission network reinforcements, known as

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Strategic Wider Works (see below). Variations for gas transmission infrastructure projects are summarised in the Chapter 3.

Assessing business plans

Under RIIO, companies must submit well-justified business plans for the eight-year period. These business plans detail how they intend to meet RIIO’s objectives. We assess the plans against criteria, including seeking evidence of stakeholder engagement and efficiency. We then review the plans using a range of tools including benchmarking and other comparisons. We determine the level of scrutiny based on the quality of the plans. If a company’s business plan is particularly high quality, we may accept it as submitted and fast-track the company’s price control settlement. We ask those companies that are not fast-tracked to resubmit their business plans.

**Strategic Wider Works**

As part of the RIIO-T1 arrangements for electricity transmission, we have developed a Strategic Wider Works (SWW) uncertainty mechanism. Under the SWW framework, a transmission owner (TO) is able to request an adjustment to its revenue allowances during the price control period for building infrastructure projects of wider system significance which were not sufficiently mature when setting the price control. Uncertainty around the economic need, costs and commissioning date of large transmission projects when the price controls are set might expose consumers to some risks if they were agreed upfront. For instance, if these investments are made earlier than needed this may create higher costs for consumers because of unnecessary infrastructure financing costs, or increase the risk of assets being built that turn out not to be needed. On the other hand, delays in delivering critical infrastructure could be detrimental to consumers’ because there is a possibility of higher costs to manage network constraints, higher greenhouse gas emissions, and risks to security of supply. To manage these uncertainties, we included the SWW arrangements to consider certain large transmission projects when more information is available. This is to help us decide whether the investment is in the interests of existing and future consumers.

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6 Efficiency does not necessarily mean least cost in the short term. Projects generating long-term efficiency savings can be justified.
How we assess projects

When a TO wishes to bring forward a project for consideration under the SWW arrangements, it must give us notice that it is proposing a new transmission project for regulatory approval. It must also submit information to justify its proposal and show that the costs of delivering the transmission project represent value for money. There are three main stages of the SWW project assessment process (see Table 2).

**Table 2. SWW project assessment process**

| 1. Eligibility stage  (up to two months) | a) Check if project meets SWW criteria:  
  • delivers additional network capacity  
  • not funded elsewhere in the price control  
  • meets a minimum financial threshold |
|-----------------------------------------|----------------------------------------------------------------------------------|
| 2. Needs case assessment including consultation  (three to six months) | a) Assessment of economic need  
  b) Cost-Benefit Analysis (CBA)  
  c) High level upfront cost assessment |
| 3. Project assessment including consultation  (up to six months) | a) Cost assessment  
  b) Assessment of technical design  
  c) Assessment of risk allocation |

Investment delivered so far

Since the launch of RIIO-T1 in April 2013, we have received applications for three SWW projects to significantly reduce bottlenecks on the transmission network in Scotland. These upgrades will allow new renewable generation to be connected. We have approved £197.6m (2013 prices) for the Kintyre-Hunterston project which will provide 270MW of transmission capacity in west Scotland and be completed in 2016. We have also approved £53.2m (2013 prices) for the Beauly-Mossford project which will provide an extra 252MW of transmission capacity northwest of Inverness by the end of 2015. We are currently assessing the Caithness-Moray project. We recently approved the needs case for the project to reinforce the transmission network in northeast Scotland by 2018 to cope with around 1.2GW of new renewable generation. We intend to consult on this project assessment in the autumn. This project is forecast to cost around £1.2 billion.

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7 For detailed SWW assessment methodology and process, please see here - https://www.ofgem.gov.uk/publications-and-updates/guidance-strategic-wider-works-arrangements-electricity-transmission-price-control-riio-t1-0
Interconnectors

Under the existing legal arrangements in GB, the same entity cannot hold an interconnector licence and a transmission licence. This means that interconnectors cannot be built by incumbent TOs and fall outside the RIIO onshore price controls. In August 2014, we finalised a regulated route for new near-term electricity interconnectors, known as the cap and floor approach. This builds on the model developed for the Nemo project between GB and Belgium and incorporates elements of the approach we used for Strategic Wider Works under our RIIO-T1 price control. We think the majority of the existing projects of common interest (PCIs) for GB that will be built are likely to fall under this regime. As an alternative to the cap and floor regulatory model, developers can still seek exemptions from the EU and domestic regulatory requirements.

The key principle of the cap and floor approach is that if developers’ revenues exceed the cap then the excess is returned to consumers. Conversely, if their revenues fall below the floor then consumers top up developers’ revenues to the level of the floor. The floor encourages interconnectors to be built as it reduces developers’ exposure to the potential significant loss, and makes the investment less risky. A brief summary of the regime, alongside intended benefits to interconnectors, is provided below.
Table 3. Summary of the cap and floor regime

<table>
<thead>
<tr>
<th>Regime design summary</th>
<th>Benefits to interconnectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regime length</td>
<td>25 years</td>
</tr>
<tr>
<td><strong>Cap and floor levels</strong></td>
<td>Based on applying mechanistic parameters to efficient costs: a cost of debt benchmark will be applied to give the floor, and an equity return benchmark to give the cap.</td>
</tr>
<tr>
<td>Assessment period</td>
<td>The base case is five-year assessment periods. To ensure the commercial viability of projects, there is an option of within-period annual adjustments where this is justified.</td>
</tr>
<tr>
<td>Assessment of efficient costs</td>
<td>Ex-ante capital expenditure (capex) assessment, with limited, specific re-openers for changes to the scope of work (eg due to unfavourable seabed or weather conditions). Ex-ante operational cost (opex) assessment with a discretionary re-opener after ten years of operation.</td>
</tr>
<tr>
<td>Cross-border coordination</td>
<td>We may vary elements of our basic regime design depending on discussions with key parties in the partner country.</td>
</tr>
</tbody>
</table>

How we assess projects
To apply for the cap and floor regime, developers need to submit the specific information in an application window. The first application window opened in August 2014 and closed at the end of September 2014. We have received five project applications from interconnector developers during this window. We plan for the next window to open in summer next year.

After receiving all submissions, we will assess projects individually. Firstly, we will check whether all applications meet the eligibility criteria, including whether developers have supplied all necessary information. Following that, we will assess the projects and their relative benefits, considering the impacts of different combinations of projects being built (the Initial Project Assessment). This will be similar to the “needs case” process for Strategic Wider Works. Finally, we will assess

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a project’s costs in detail. This will provide a firm basis for making our final decision on providing a cap and floor and to inform the cap and floor levels (the Final Project Assessment).

Table 4. Cap and floor project assessment process

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Eligibility check</td>
<td>a) Check if eligibility criteria is met:</td>
</tr>
<tr>
<td></td>
<td>• Interconnector licence (granted or application made)</td>
</tr>
<tr>
<td></td>
<td>• Connection date by the end of 2020 (or end of 2021 for the 2\textsuperscript{nd} window)</td>
</tr>
<tr>
<td></td>
<td>• Detailed and realistic plan for project operation by the end of 2020 (or end of 2021 for the 2\textsuperscript{nd} window)</td>
</tr>
<tr>
<td></td>
<td>• Complete submission information for Initial Project Assessment (IPA) stage.</td>
</tr>
</tbody>
</table>
| 2. Initial Project Assessment (IPA) | a) Quantitative CBA  
                               |   b) Risk assessment  
                               |   c) Social welfare assessment (focus on consumer benefits)                                                                                    |
|                               |   d) Hard-to-monetise benefits and risks                                                                                                     |
|                               |   e) Assessment of project plans                                                                                                             |
| 3. Final Project Assessment (FPA) | a) Assessment of updated IPA information  
                               |   b) Upfront (ex-ante) cost assessment                                                                                                        |
|                               |   c) Determination of final regime design                                                                                                     |

After the project assessment, we will decide whether to grant cap and floor regulated revenues. We will only do so if the analysis demonstrates that the project is in the interest of consumers.

Throughout the project assessment process we will closely work with relevant NRAs to agree an approach on a case-by-case basis. It will be important to ensure that the regulation in both countries provides aligned incentives to maximise consumer benefits and works together to be fit for purpose for the particular markets that are being connected.

**Offshore transmission**

Similar to interconnectors, offshore transmission assets connecting offshore wind generation to the onshore network are built outside the onshore price controls in GB. We use competitive tendering to license offshore transmission operators. The regime was designed to lower construction and operational costs, while enabling new players to bring technical and financial innovations to the connection of offshore wind.

The offshore transmission owner (OFTO) regime has attracted new transmission entrants and investment in offshore wind energy while ensuring high voltage
electricity links delivering power to shore are fit for purpose and provide value for money for consumers.

Ofgem recently consulted on a report by independent consultants which estimates consumer savings to date as between £200 and £400m\(^9\). We think that further savings are possible for future tender rounds. So far, licences have been granted for nine OFTO projects, attracting over £1.4billion of new investment into UK transmission. Currently, £1.5bn of assets are being tendered and there are further billions on the way.

The competitive tenders to date have been for an OFTO to operate and maintain transmission assets constructed by offshore generators ("developers"). The transmission assets are transferred from the developer to the successful OFTO at a transfer value determined by us. OFTO bidders are evaluated on their proposed revenue bid for buying the transmission assets and for 20 years’ operation and maintenance. In granting OFTO licences to date, the regime has opened the market to a full range of funding sources including commercial lenders, European Investment Bank, pension funds and the capital markets.

The OFTO regime also allows developers to ask Ofgem to appoint an OFTO to design and construct transmission assets. However, developers have not chosen this option yet.

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Table 5: Key features of the OFTO regime

<table>
<thead>
<tr>
<th>Feature</th>
<th>What are the benefits?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractive investment sector</td>
<td>• Opportunity for new transmission entrants</td>
</tr>
<tr>
<td></td>
<td>• Low risk asset class and low counterparty risk; National Grid pays revenues</td>
</tr>
<tr>
<td></td>
<td>• Availability-based exposure with protection from wind farm operating risk</td>
</tr>
<tr>
<td>Robust regulatory regime</td>
<td>• 20-year fixed revenue stream with limited regulatory intervention</td>
</tr>
<tr>
<td></td>
<td>• 98% availability target</td>
</tr>
<tr>
<td></td>
<td>• Poor performance deductions capped at 10% of annual revenue</td>
</tr>
<tr>
<td>Transparent competitive process</td>
<td>• Well-defined, and proven, tender process</td>
</tr>
<tr>
<td></td>
<td>• Structured to ensure level playing field and transparency</td>
</tr>
<tr>
<td></td>
<td>• 1-2 qualification stages followed by Invitation To Tender (ITT) stage</td>
</tr>
<tr>
<td></td>
<td>• with access to data rooms</td>
</tr>
<tr>
<td>Long term opportunity</td>
<td>• Multiple tender rounds over several years</td>
</tr>
<tr>
<td></td>
<td>• Long term Government support for offshore wind farms</td>
</tr>
<tr>
<td></td>
<td>• Future projects offer design and construction opportunities</td>
</tr>
</tbody>
</table>

How we assess projects - the OFTO tender process

The tender process covers a number of stages and is designed to be fair and transparent to developers and bidders. The tender arrangements are set out in specific regulations\(^{11}\). These provide for the publication (in advance) of tender rules\(^{12}\) and a cost recovery methodology which sets out how the costs of the tender will be managed and recovered.

In addition, detailed information on the transmission assets is available to bidders via a secure data room. The basis of the evaluation criteria to be used for bid assessment at each stage is published in advance. The criteria include competence to own, operate, maintain and decommission the assets, the financial stability of the OFTO, proposals to fund the OFTO (including purchasing transmission assets from the developer), and the annual revenue bid. The tender is carried out over several stages including qualifying the parties to bid in the process and then evaluating detailed bid submissions, before appointing a preferred bidder.


\(^{11}\) The Electricity (Competitive Tenders for Offshore Transmission Licences) Regulations 2013.

\(^{12}\) OFTO tender rules - [https://www.ofgem.gov.uk/ofgem-publications/86332/20140225tr3tenderrules.pdf](https://www.ofgem.gov.uk/ofgem-publications/86332/20140225tr3tenderrules.pdf)
Successful OFTOs receive the proposed annual revenue stream they have bid for the assets over the 20-year period. The revenue is collected by the system operator as part of the transmission charges paid by developers.

**Assessment of transmission asset transfer value**

Ofgem sets the transfer value, based on our assessment of costs incurred, using detailed information provided by the developer. The transfer value is paid by OFTO to the offshore wind farm developer. Ofgem carries out an ex-post forensic accounting and technical assessment of costs to ensure the transfer value reflects economic and efficient costs which ought to have been incurred in constructing the assets. Post transaction, the developer pays transmission charges for using the assets.

**Future arrangements for the electricity transmission regulation in GB**

The current regulatory regimes for electricity transmission have delivered considerable levels of investment in an efficient way. However, the GB energy system is facing new challenges from a changing energy mix and ageinig infrastructure that must be managed whilst maintaining security of supply. These challenges have the potential to trigger significant investment in transmission. Given the increasing scale and technical complexity of the network, we launched the Integrated Transmission Planning and Regulation (ITPR) project to look at whether the current arrangements will continue to provide the right framework over the longer term.

As part of our draft conclusions\(^\text{13}\) we are proposing that the role of the system operator in planning the electricity network should be enhanced and the use of competitive tendering should be extended to some onshore electricity transmission investments. We also propose that the cap and floor regime for interconnection should be extended, and provide some clarifications on how some potential new types of transmission projects will be regulated. These changes are designed to make sure that the network continues to be planned in a coordinated manner, and investments are made efficiently within a clear, predictable regulatory framework.

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3. Gas regimes

Onshore network

The onshore gas national transmission system (NTS) is operated by National Grid under its gas transporter licence. (Lower pressure gas distribution networks then transport this gas on to customers). The NTS is subject to eight-year RIIO revenue controls, as per onshore electricity transmission. The key difference from the price controls for electricity transmission is in relation to investments in new capacity.

Under RIIO price controls for gas transmission, these investments are market driven through the auctions for long-term capacity on the NTS and underpinned by a minimum level of firm financial commitment by network users. Extra capacity signalled through these auctions must be delivered by National Grid. The TO has a discretion as to how it meets that obligation (eg by making additional investments or contracting).

When National Grid decides to invest in new infrastructure, efficiency is ensured by using a set of unit costs established at the most recent price control. These are efficient levels of spend that can be multiplied by the volume of new assets needed including both pipelines and compressor stations.

Interconnectors

We regulate gas interconnectors through interconnector licences. Under the existing legal arrangements in GB, the same entity cannot hold a gas interconnector licence and a gas transporter licence. The interconnector licence reflects the requirements of the EU Third package (as well as European Network Codes) and includes provisions such as third party access (TPA). The licence provisions include an obligation on the licensee to operate, maintain and develop an economic, efficient, secure and reliable interconnector. Investments are market-driven, so will proceed where developers consider market rewards outweigh the risks; as with electricity, gas interconnectors can apply to Ofgem for exemptions from certain EU and domestic regulatory requirements. However, we do not currently see the same degree of need for new investment in gas interconnection as in electricity interconnection.
Gas storage and Liquefied Natural Gas (LNG) facilities

Gas storage and LNG investments are also market-driven, so assessments of potential revenues and whether they compensate for the risks of the project sit with the investor. Since March 2011, gas storage and LNG facilities have had an obligation to comply with the EU Third Package, and in particular the directly applicable provisions of the Gas Regulation, the relevant provisions of the Gas Directive as transposed into domestic legislation and the relevant provisions of the Gas Act. This sets out rules governing third party access, unbundling (for storage operators) and approval of tariffs or tariff methodologies (for LNG operators). There is more information in the guidance documents we produced for storage\textsuperscript{14} and LNG\textsuperscript{15}. Storage and LNG facilities can be exempt from some of these requirements by application to Ofgem.

Offshore transmission

Offshore gas pipelines connecting production facilities to the shore and the onshore terminals are outside Ofgem’s regulatory remit. Investment in offshore gas transmission is regulated via licences issued by the UK government.

4. Further information

RIIO

RIIO: A New Way to Regulate Energy Networks -

RIIO-T1 strategy document - https://www.ofgem.gov.uk/publications-and-updates/decision-strategy-next-transmission-price-control-riio-t1


Electricity interconnectors

Decision to roll out cap and floor to near-term electricity interconnectors -


Offshore transmission

Offshore Transmission – An Investor Perspective -

Regulatory regimes in GB - a high level summary


**Integrated Transmission Planning and Regulation**


**Gas storage**


**LNG**