Interconnectors

Investor Relations | National Grid

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nationalgrid

- **National Grid owns and operates half of the BritNed and Interconnexion France Angleterre (IFA) interconnectors**
- **Increased interconnection aids a greater diversity of supply, facilitates competition across Europe and helps the intermittency issues posed by renewables**
- **National Grid is working with Ofgem and other European regulators on a new regulatory model, which would combine elements of the UK and mainland European model**
- **Potential future opportunities include interconnectors between England and Belgium, Norway, France, Ireland, Denmark and Iceland**

Interconnectors

A greater level of interconnection provides a greater diversity of potential supplies, facilitates competition in the European market and assists the transition to a low carbon energy sector by integrating various renewable sources.

Increased interconnection with Ireland and mainland Europe can also help with intermittence issues posed by renewable generation (mainly wind), supporting electricity security of supply.

Interconnectors not only provide a potentially attractive investment proposal but also form part of our strategic thinking as the Great Britain System Operator (GBSO), ensuring that we manage energy security, cost to consumers and long term sustainability.

Commercial models for interconnectors

Under the typical UK model, National Grid's UK interconnectors earn their revenues by auctioning capacity based on the price differences between markets at each end of the link and are referred to as merchant interconnectors. The typical mainland European model is for interconnectors to be built and owned as regulated transmission assets.

We are working with Ofgem and other European regulators on a new regulatory model, which would combine elements of merchant income within certain cap and floor parameters.

Interconnectors connected to National Grid's network

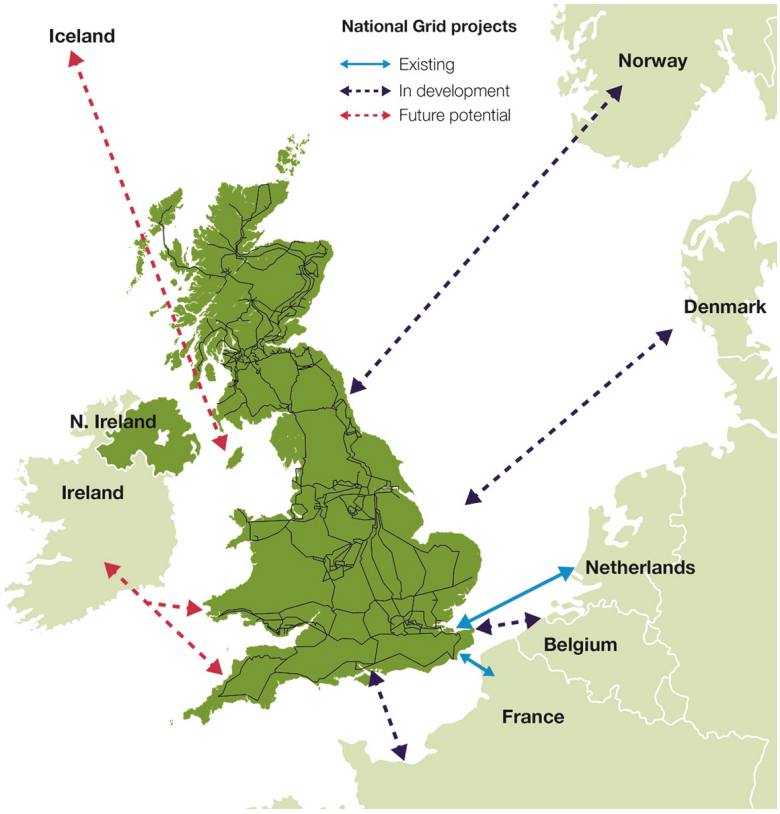
National Grid owns and operates half of the BritNed and IFA interconnectors:

BritNed – BritNed Development Ltd
On the 1 April 2011, commercial operation commenced with BritNed. National Grid owns half of the 260 km bi-pole HVDC electricity interconnector – 1000MW each way capacity between the Isle of Grain, UK to Maasvlakte, Netherlands. BritNed is a 50/50 joint venture with TenneT, the Dutch electricity transmission system operator (TSO). National Grid invested £250m into the project.

IFA – Interconnection France - Angleterre
The 2000MW high voltage direct current (HVDC) electricity interconnector between England and France was commissioned in 1986. It is part of a joint agreement between National Grid Interconnectors Limited and the French TSO, RTE. The interconnector is 70km in length (with 45km of subsea cable).

The East West interconnector is wholly owned by EirGrid:

East West Interconnector
EirGrid, the Irish System Operator, has developed a 500MW HVDC interconnecter to join Eire to the NGET network at Deeside. The interconnector became operational in 2012.



Total current GB interconnection is ~4GW

Potential future interconnector opportunities

Europe's ambition of a single diversified energy market that includes the integration of offshore wind provide potentially attractive electricity interconnection investment opportunities.

UK – Belgium

National Grid and the Belgian TSO, Elia, continue to work jointly to develop the first electricity interconnector between the two countries. The interconnector will consist of approximately 150km of subsea cable connecting the south east of England with Zeebrugge in Belgium with a capacity of 1000MW. The project is planned to complete in 2019, subject to planning consent and regulatory treatment.

UK – Norway

National Grid and the Norwegian TSO, Statnett, are working together to develop an electricity interconnector linking the two countries. The link would consist of approximately 700–750km of subsea cable connecting the East of England with the West coast of Norway. The interconnector would have a capacity of 1,400MW and has a target operation date of 2020.

UK – France

National Grid and the French TSO, Réseau de Transport d'Electricité (RTE), continue to progress the development of a second electricity interconnector between the two countries. IFA2 will be a 1,000MW high voltage direct current (HVDC) link between the French and British transmission systems. The interconnector will be a total of 230km in length and will connect the central south coast of the UK with the Normandy region of France. A full seabed survey was completed in 2013 and IFA2 is expected to be operational in 2020.

UK – Denmark

National Grid and Denmark's Energinet.dk signed a cooperation agreement in 2013 and are conducting feasibility studies on both the technical and economic aspects of an electricity interconnector between the UK and Denmark. The interconnector could unlock significant economic benefits for both countries in helping to maximise the potential of both offshore and onshore wind, add to security of supply and enable a competitive market. The HVDC link would be around 600km in length with completion planned in 2020.

UK – Iceland

National Grid is jointly investigating the feasibility of interconnector between UK and Iceland with the Icelandic transmission owner Landsnet and electricity generator Landsvirkjun. The interconnector would enable UK to have access to electricity generated from low carbon geo-thermal, hydro and wind. This link would be the longest interconnector by length in the world.

UK – Ireland

National Grid continues to explore opportunities for connection of Irish wind generation to the UK Electricity Grid.

Regulatory Model

It is anticipated that different interconnectors will be subject to different regulatory models. Some are expected to be part of a market arbitrage model and others a mix of market arbitrage and regulated transmission asset models.

National Grid has worked closely with both Ofgem and European regulators to develop a regulatory model that combines a market arbitrage interconnection with protection for both consumers and developers through a cap and floor mechanism. National Grid expects the Belgian, Norwegian, French and Danish links to be regulated with this mechanism.

Interconnection levels

The new interconnection under development by National Grid would more than double the current 4GW of UK interconnection.

Capital Costs

If all the interconnectors under consideration were constructed, then the total investment by National Grid would be in the range of £3bn–£4bn. This represents 50% of the cost of construction with the balance of 50% financed by partners.

Further information

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