

Grid Access for GB Wind

Will networks policy strangle the renewables industry?

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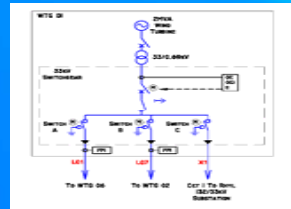


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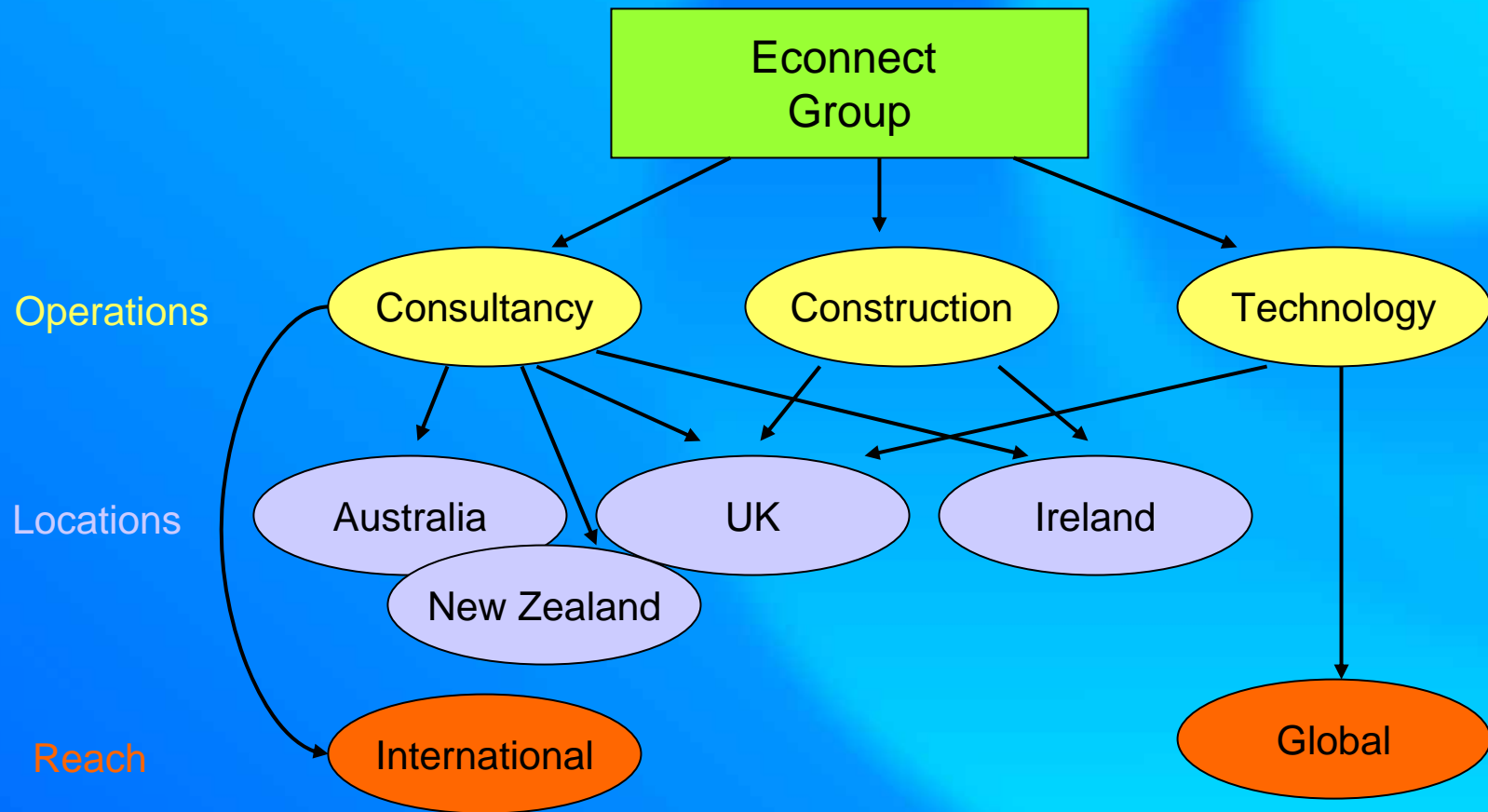
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Econnect – Ops, locations and reach



- Good news
 - BETTA.
 - Incentives on Distribution Network Operators to connect generators.
 - IFI and RPZ for DNOs.
 - Changes in Final Sums Liabilities for Transmission Connections.
 - ARODG – Transmission Access Reform Options Development Group.
 - Movement on offshore regulatory regime.
 - Energy review.
- Bad news
 - Projects with planning ready to build in Scotland cannot connect.
 - Delays in transmission system developments for renewables.
 - Grid Access is a major issue for wave and tidal technology development.
 - Transmission constraints and charges rolling down into distribution networks.
 - Many, many other issues.

Focus today on transmission and access

Two approaches to connection

- Invest and Connect
 - Current approach on transmission.
 - Minimises constraint costs.
 - Delays for connections due outage planning, Section 37 consents.
 - Wind projects with planning permission are delayed.
 - Planning permission can run out whilst waiting.
 - Risks of “stranded assets”.
 - Wasted emissions savings and poorer RO performance.
- Connect and Manage
 - Approach proposed by renewables industry.
 - Constraint will be higher.
 - Constraint costs can be managed.
 - No stranded assets.
 - Proven need in planning enquiries for new transmission assets.
 - Generators can connect as soon as local assets are built.
 - Low risk of planning permission expiry.
 - Immediate benefit to RO and emissions.

Let's consider constraints..

Generators can accept constraints

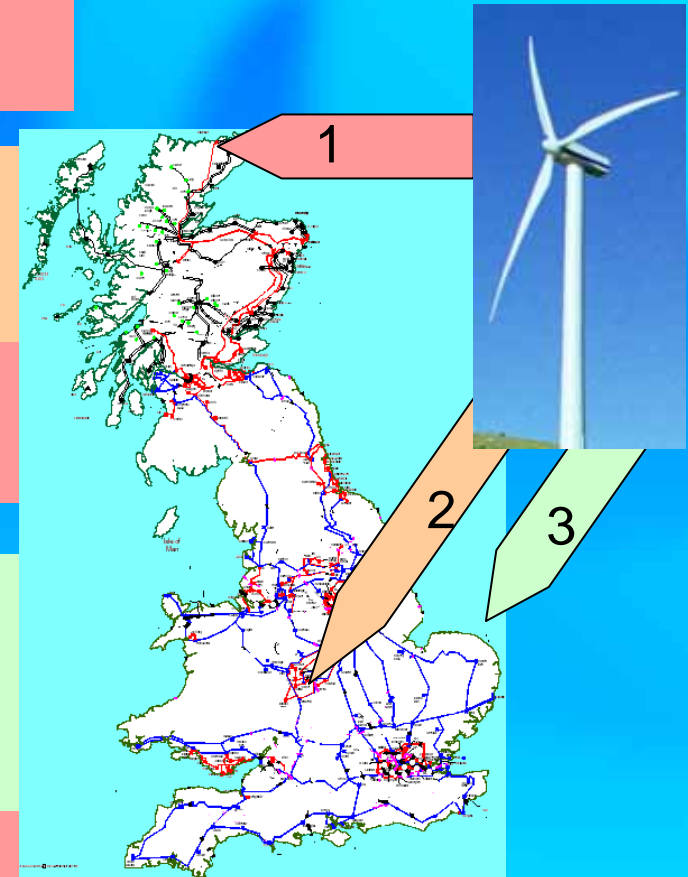
1 Assume turbine in north has 45% Capacity factor (CF).

2 Assume CF onshore southern England of 30%

- Equivalent to a 33% energy constraint in north.

3 Assume CF offshore southern England of 35% and cost premium of 50%.

- Equivalent to a 48% energy constraint in north.



Note: very simplified assumptions to make a point!

Northern Norway

Zone / System Spur

Zonal capacities	MW
Hydro capacity	380
Min demand	75
Max Demand	350

Interconnect

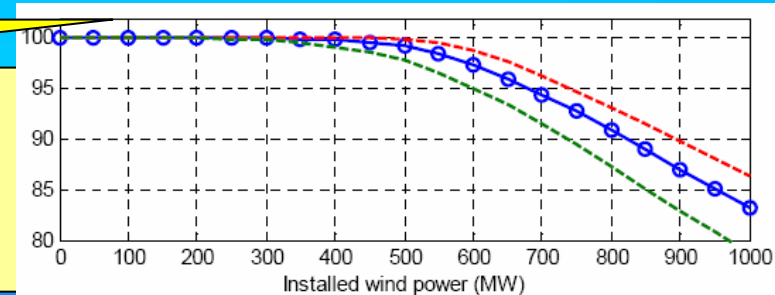
Export capacity
(average) = 420MW

Main System

Sintef study: 30
years of data.
Connect 670MW
wind with only
5% constraint
costs

Wind connection capacity

$$420 - 380 + 75 = 115\text{MW}$$



Kintyre Generation

Kintyre data	MW
<2001 hydro	106
<2001 wind	38
<2001 min load	23
Total export potential	121
Single circuit capacity	106MVA
Deucheran wind capacity*	15
Further wind capacity	>19
Current potential export	155



Double circuit 132kV into Sloy with fault on one



Potential overload of second circuit

* Ofgem determination to connect and constrain

Renewables need:

- Access to the transmission system.
- Not 100% access.
- A guaranteed minimum level of access for a long period.
 - Not short term access products.
- Immediate access when projects are ready to build – no long delays.
- = Connect and Manage.

So why is this not happening?

- Energy Review and White Paper contrasted to:
 - 1. Interconnector reinforcement delays.
 - 2. Transmission Price Control Review.
 - 3. System operator incentives.

- Energy White Paper 2003

The Government has set four goals for the country's energy policy:

- To put ourselves on a path to cut the UK's CO₂ emissions by some 60% by about 2050, with real progress by 2020;
- To maintain the reliability of energy supplies;
- To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and
- To ensure that every home is adequately and affordably heated.

- Energy Review 2006

5.17 Renewable energy is an integral part of the Government's long-term aim of reducing CO₂ emissions by 60% by 2050. As it produces very little carbon dioxide and other greenhouse gases, it plays an important part in tackling climate change.

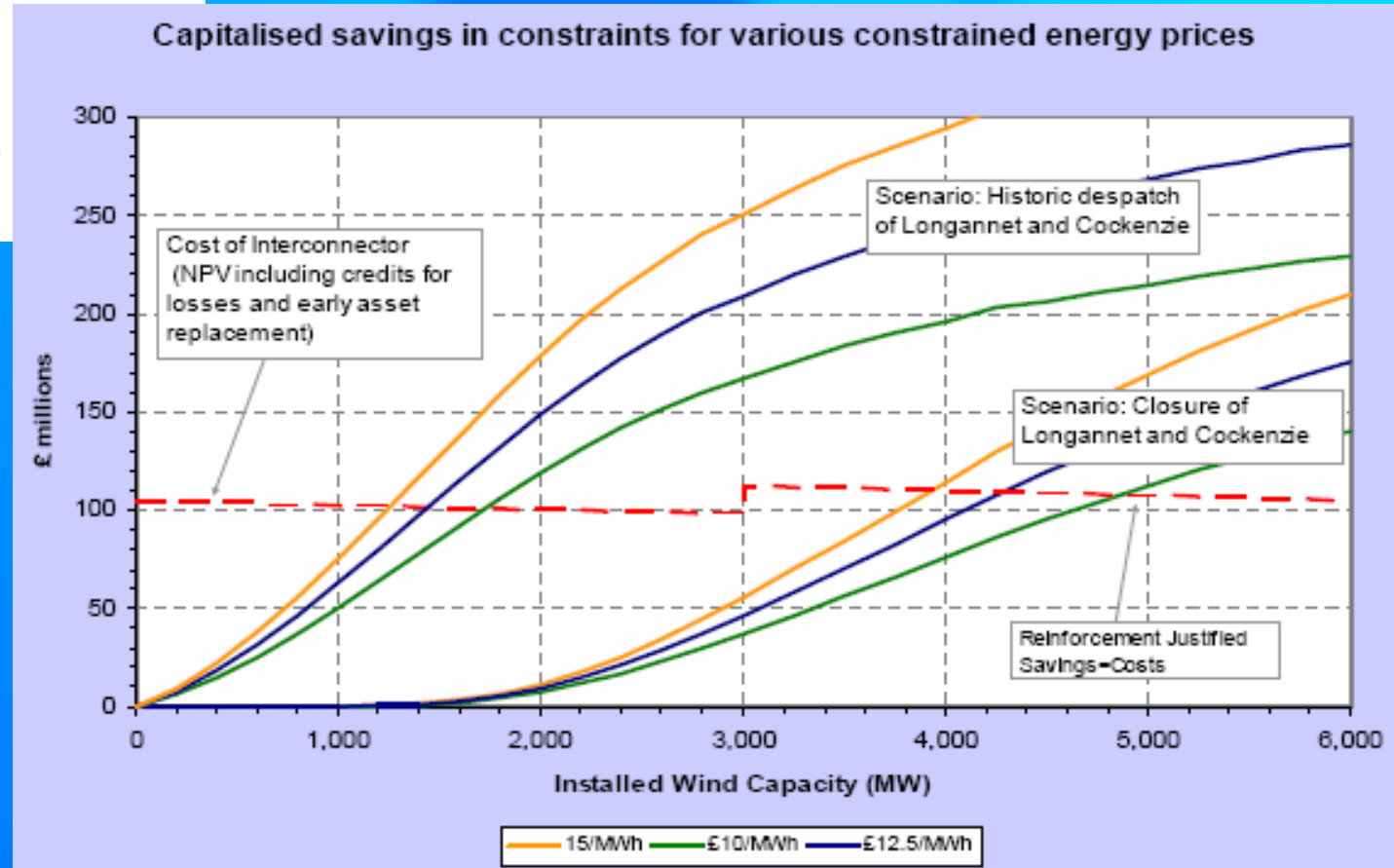
Interconnector reinforcement

Transmission investment for renewable generation

Final proposals


December 2004

288/04



Real cost is ~£70/MWh not £10-15/MWh

System Operator (NGET) incentive



Promoting choice and value for all gas and electricity customers

National Grid Electricity Transmission and National Grid Gas System Operator Incentives from 1 April 2007

Document type: Preliminary views consultation

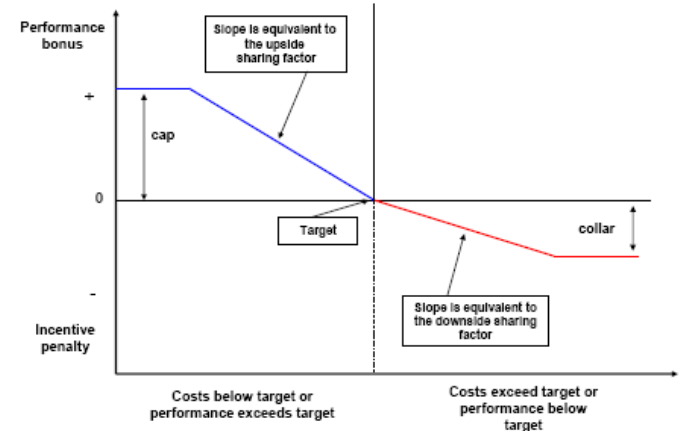
Ref: 179/06

Date of publication: 2 October 2006

Deadline for response: 30 October 2006

Target audience: This document will be of interest to generators, shippers, suppliers, customers and other interested parties.

Figure 2.1: Representative SO incentive scheme



No incentive for Security of Supply
Incentive to Invest before Connect
Incentives work against renewables.

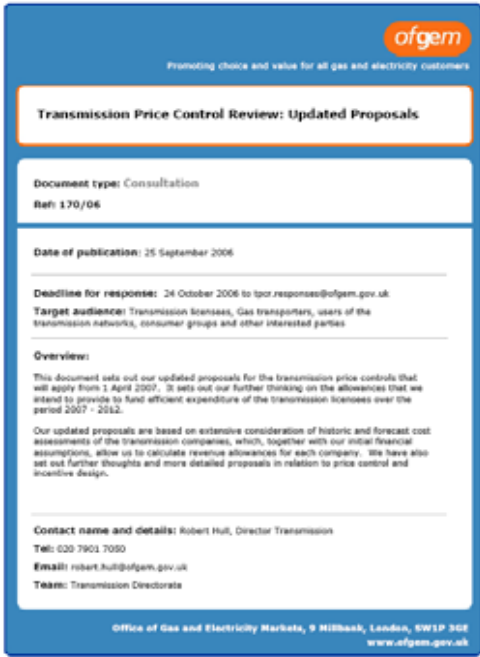
Transmission price control review

- Environmental aspects
- 1) SF6
 - Proposals to limit emissions equivalent 0.36MtC = 0.25% of UK emissions.

sustainable development and wider environmental duties. It proposes the introduction of incentives to reward the electricity transmission companies for reducing leakage rates of SF6, an extremely potent greenhouse gas used as an insulating agent in high voltage switchgear, as a means of complementing the incentives provided through the EU Emissions Trading Scheme (ETS). It also sets

- *No mention of the 45MtC = 30% of UK emissions from fossil fuel generation.*

- 2) Losses
 - Proposals to reduce 6TWh of transmission losses.
 - *To get more renewable energy on the system quickly we will have to increase losses.*



The screenshot shows a document header for OFGEM (Office of Gas and Electricity Markets) with the tagline 'Promoting choice and value for all gas and electricity customers'. The document title is 'Transmission Price Control Review: Updated Proposals'. It is a consultation document with reference number 170/06, published on 25 September 2006. The deadline for responses is 24 October 2006. The target audience includes transmission licensees, gas transporters, users of the transmission networks, consumer groups, and other interested parties. An overview section states that the document sets out updated proposals for transmission price controls from 1 April 2007, aiming to provide a fair and efficient expenditure of transmission licenses. It mentions that the proposals are based on extensive consideration of historic and forecast cost assessments and that further thoughts and more detailed proposals will be provided in relation to price control and incentive design. Contact details for Robert Hull, Director Transmission, are provided: Tel: 020 7901 7050, Email: robert.hull@ofgem.gov.uk, Team: Transmission Directorate. The footer includes the OFGEM address: Office of Gas and Electricity Markets, 9 Millbank, London, SW1P 3BG, and the website www.ofgem.gov.uk.

- Will networks policy strangle the renewables industry?

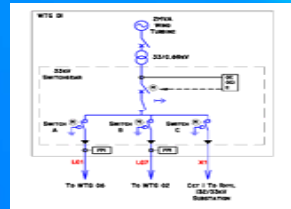


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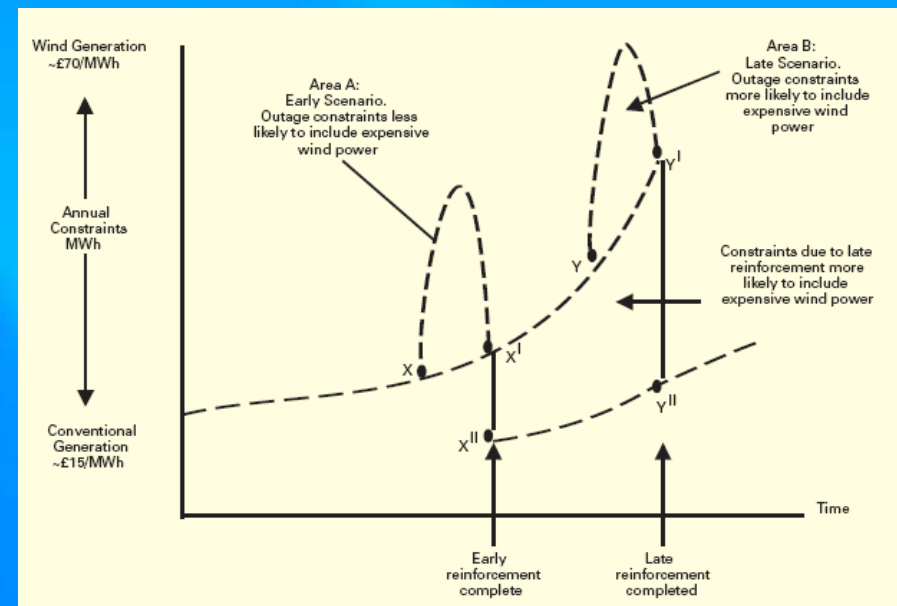
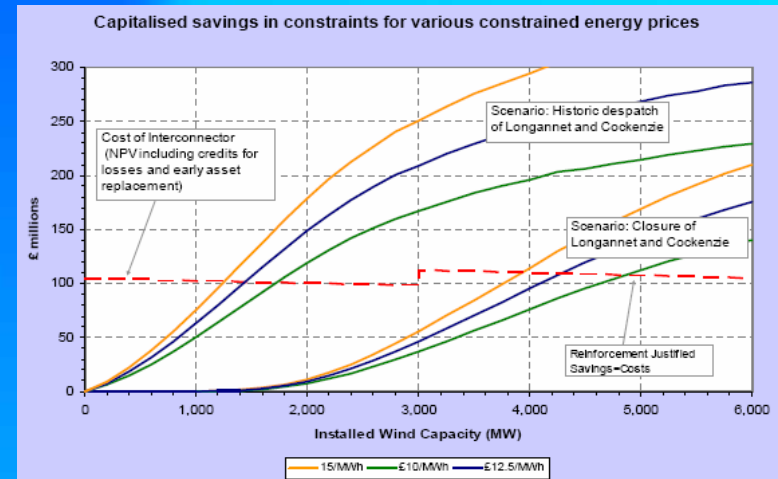
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Storing up trouble

- Ofgem want to see constraints before allowing reinforcements.
- NGET as SO are incentivised to reduce constraints.
- SO resists connecting generators – despite queue.
- Therefore reinforcements don't happen fast enough.
- This is heaping up costs for the future.



- Ofgem interconnector reinforcement
- Add SKM report cover

