



Can the Grid Deliver?

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All Energy'08

Econnect - Energising Renewables

Contracting Consultancy Technology

UK & Ireland

Worldwide

Offices in UK, Ireland,
Australia & New Zealand

Can the Grid Deliver?

- Context
- A technical perspective
- A regulatory perspective

Can the Grid Deliver?

CONTEXT - Government

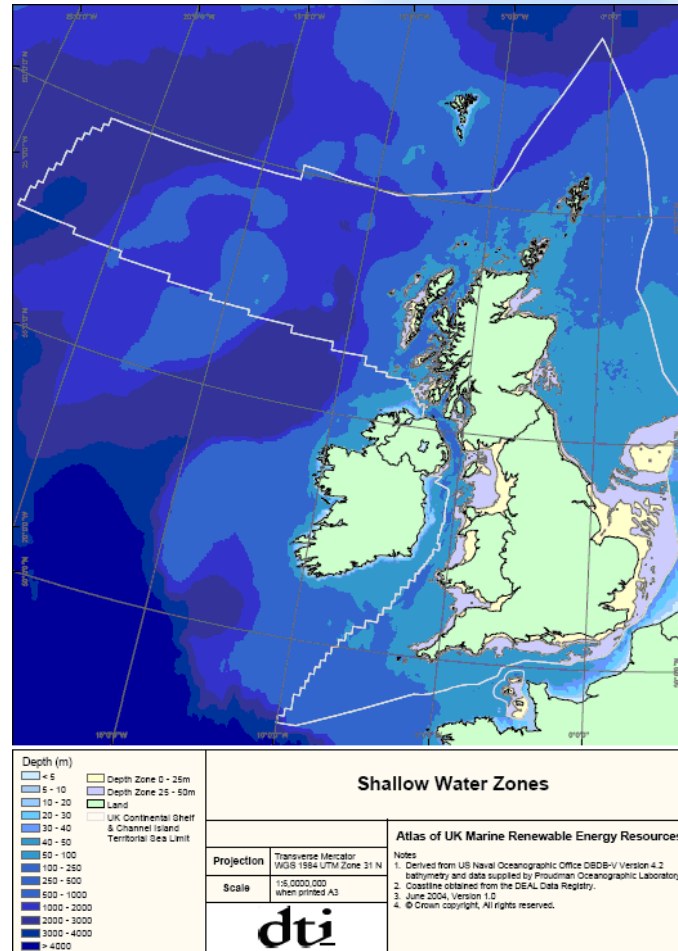
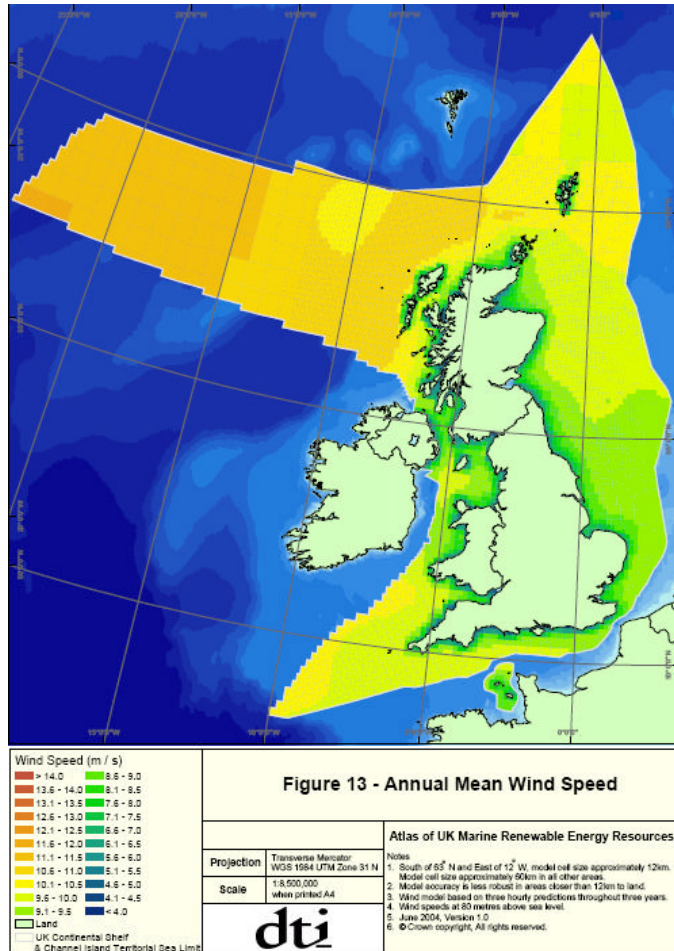
- EU Directive – UK to deliver 15% renewables by 2020, presently less than 2% - target equates to 30+% electrical generation
- Offshore wind seen as a prime driver to achieving the target – reflected in banded ROCs, for example

“Government is absolutely committed to a major expansion of offshore wind... ...December we launched a draft plan for the expansion of offshore wind – Round 3 - with up to 25GW of new offshore wind development... ...at present, offshore projects through planning represents about 8GW of offshore wind.”

Malcolm Wicks, Minister of State for Energy, addressing the Offshore Investment Conference, Feb 2008.

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CONTEXT - Opportunity



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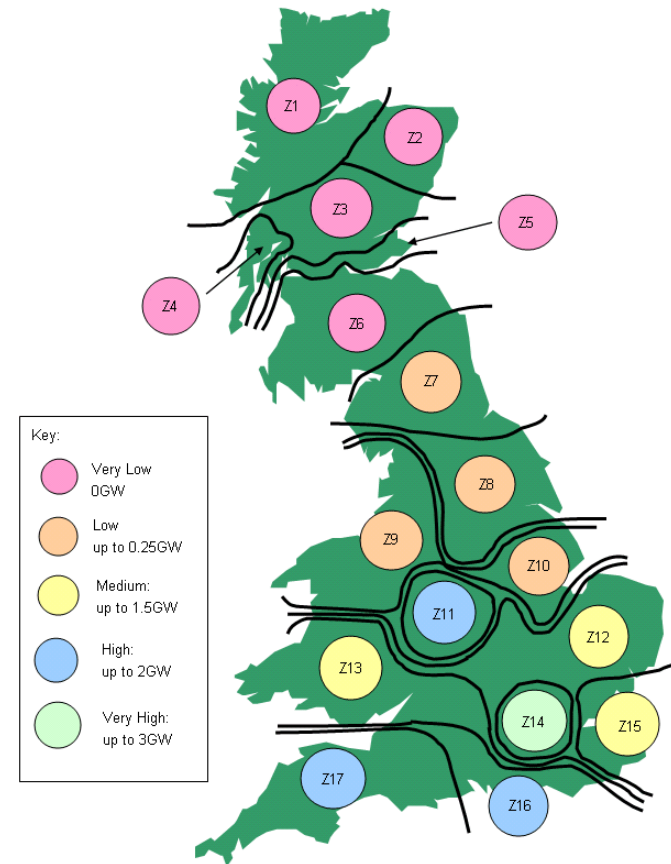
CONTEXT - Constraints

- Policy constraints
 - Access to the grid both onshore and offshore
 - Planning consents
 - Financial support mechanisms
- Supply chain constraints
 - Exploding demand on a global scale
 - Delivery times for turbines 2+ years
 - Knowledge and skill base
- However.....
 - 25GW of development = opportunity

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A TECHNICAL PERSPECTIVE

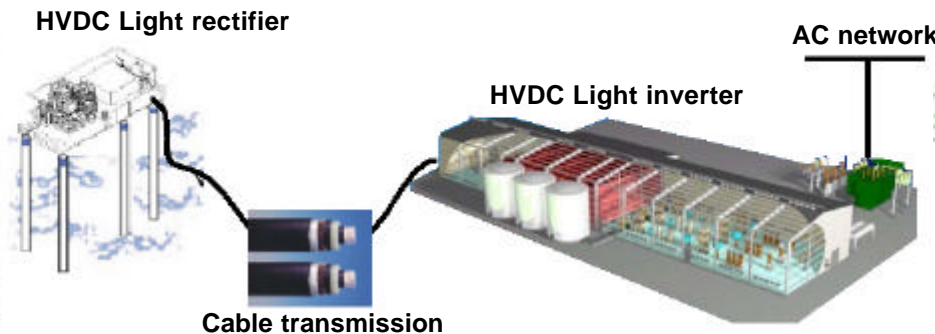
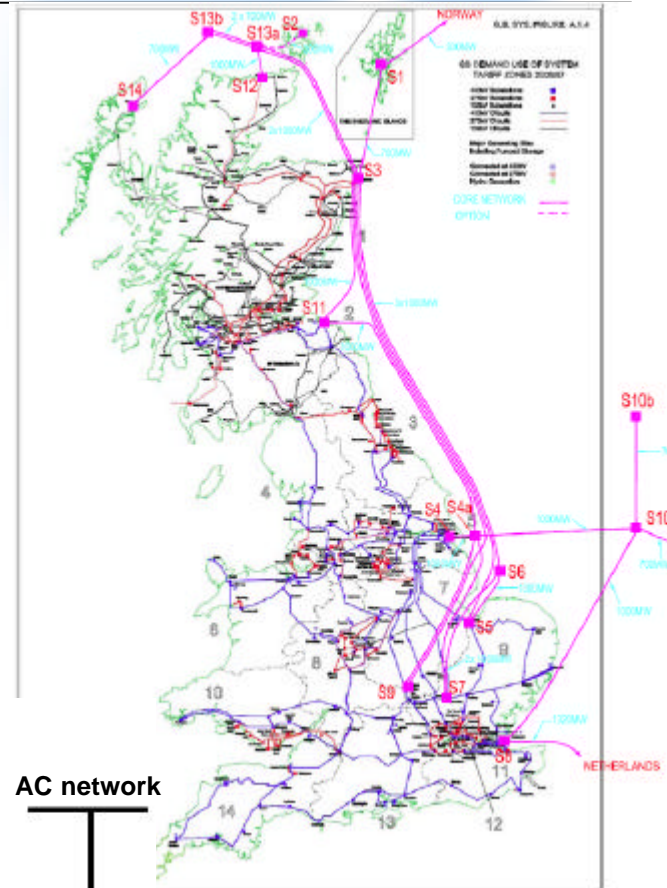
- SYS shows some onshore opportunity - approx. 15GW



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A TECHNICAL PERSPECTIVE

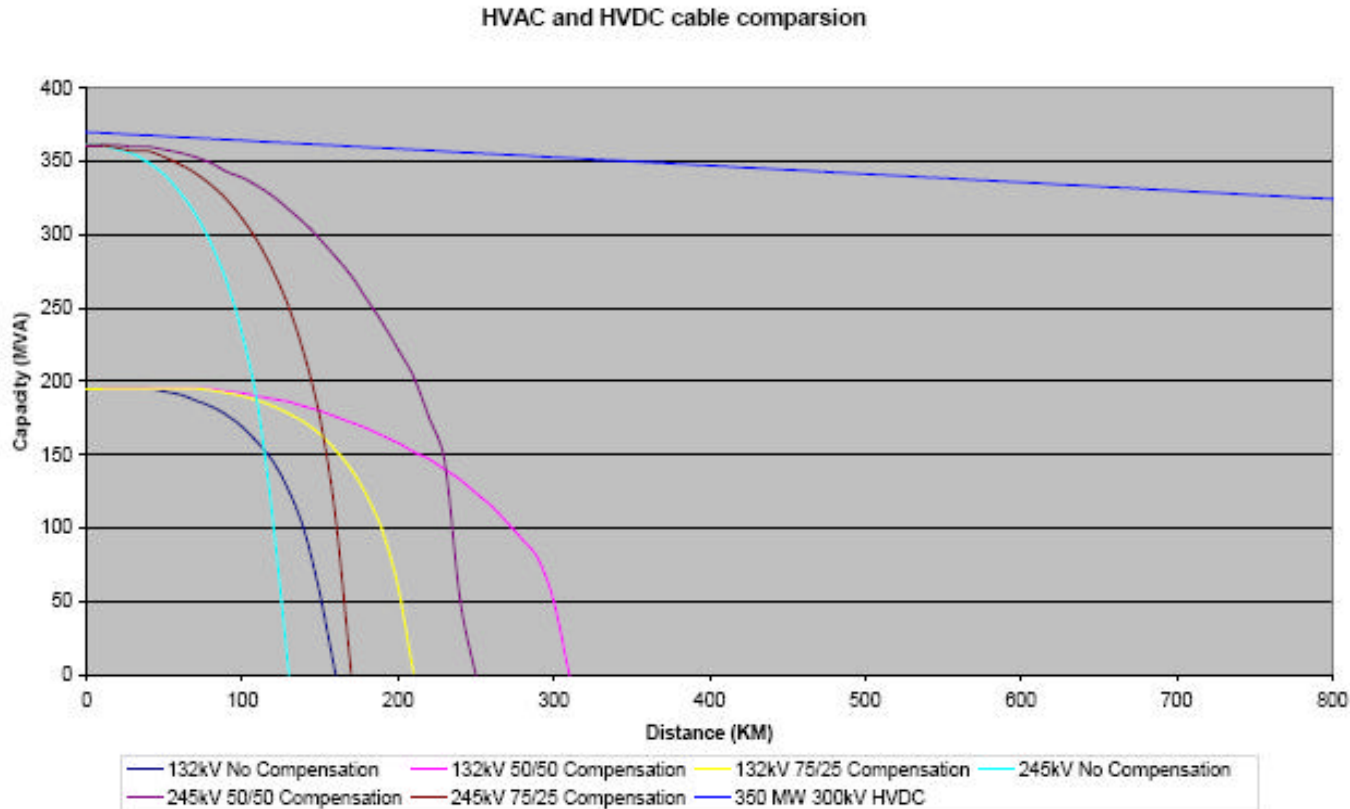
- SYS shows some onshore opportunity - approx. 15GW
- Offshore interconnector can reshape the transmission network
- Voltage Source Converter (VSC)
High Voltage Direct Current (HVDC) solution



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A TECHNICAL PERSPECTIVE

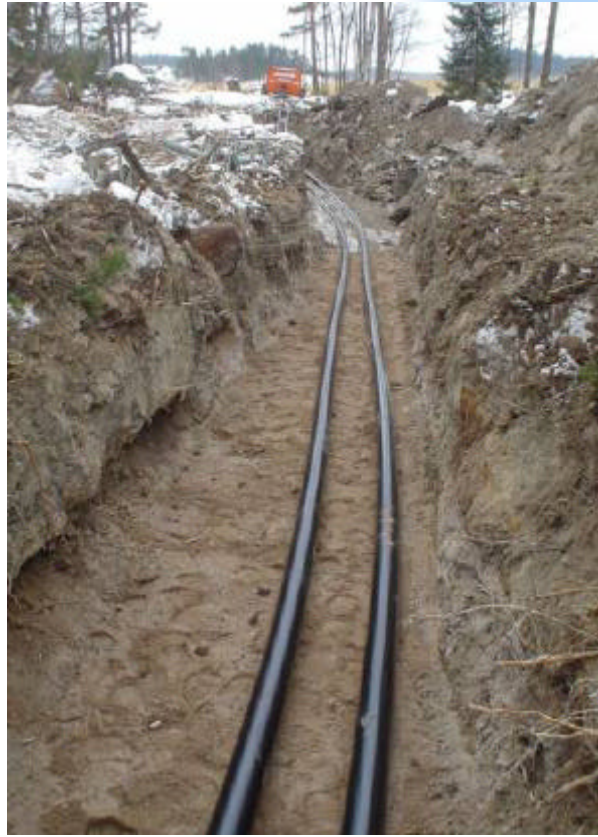
- VSC/HVDC v HVAC
 - Reduced losses ? no reactive power compensation required



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A TECHNICAL PERSPECTIVE

- VSC/HVDC v HVAC
 - Reduced losses ? no reactive power compensation required
 - Fewer, smaller cables



Can the Grid Deliver?

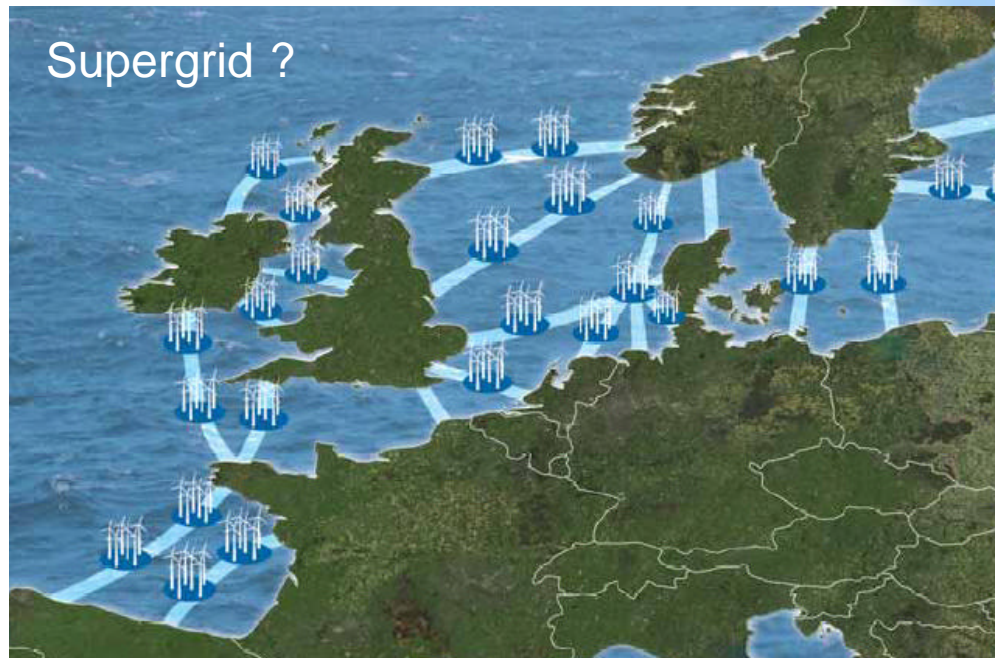
A TECHNICAL PERSPECTIVE

- VSC/HVDC v HVAC
 - Reduced losses ? no reactive power compensation required
 - Fewer, smaller cables
 - No independent power source required ? flexibility of location
 - Multi-terminal operation allows interface with the AC system at any number of points
 - Can provide infeed to a demand centre

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A REGULATORY PERSPECTIVE

- Offshore Electricity Transmission – Regulatory Policy
 - Licensed Price Control
 - Exemption for Distribution connections
 - GBSO role extended offshore



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European Parliament proposal highlights that delivery of the EU Directive should develop a framework for delivery of 4 key projects, one of which is “...a coordinated approach to harvest the enormous offshore wind and marine energy in the North Sea and the Baltic.”

Claude Turmes, Green MEP Luxembourg, Rapporteur for the Renewable Energy Directive, European Parliament: Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources Jan 2008.

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A REGULATORY PERSPECTIVE

- Offshore Electricity Transmission – Regulatory Policy
 - Licensed Price Control
 - Exemption for Distribution connections
 - GBSO role extended offshore
 - Competition for OFTO licences
 - OFGEM to run tenders

Claude Turmes proposal – “Without prejudice to [security of supply]...
...Member States and competent regulatory authorities shall... provide
for priority access to the grid system of electricity produced from
renewable energy sources”

Can the Grid Deliver?

SUMMARY

- EU Directive driving govt engagement with offshore development
- UK resource opportunity is significant and market enabling
- Robust and viable technical solution exists for offshore transmission that can enable a 'supergrid', will need upgrade to onshore network
- **Regulatory policy still under review: potentially inhibits supergrid concept, complex financial framework leads to uncertain risks – THIS IS THE DRIVER FOR DELIVERY**

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