

Grid update for offshore wind

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RenewableUK (formerly BWEA)

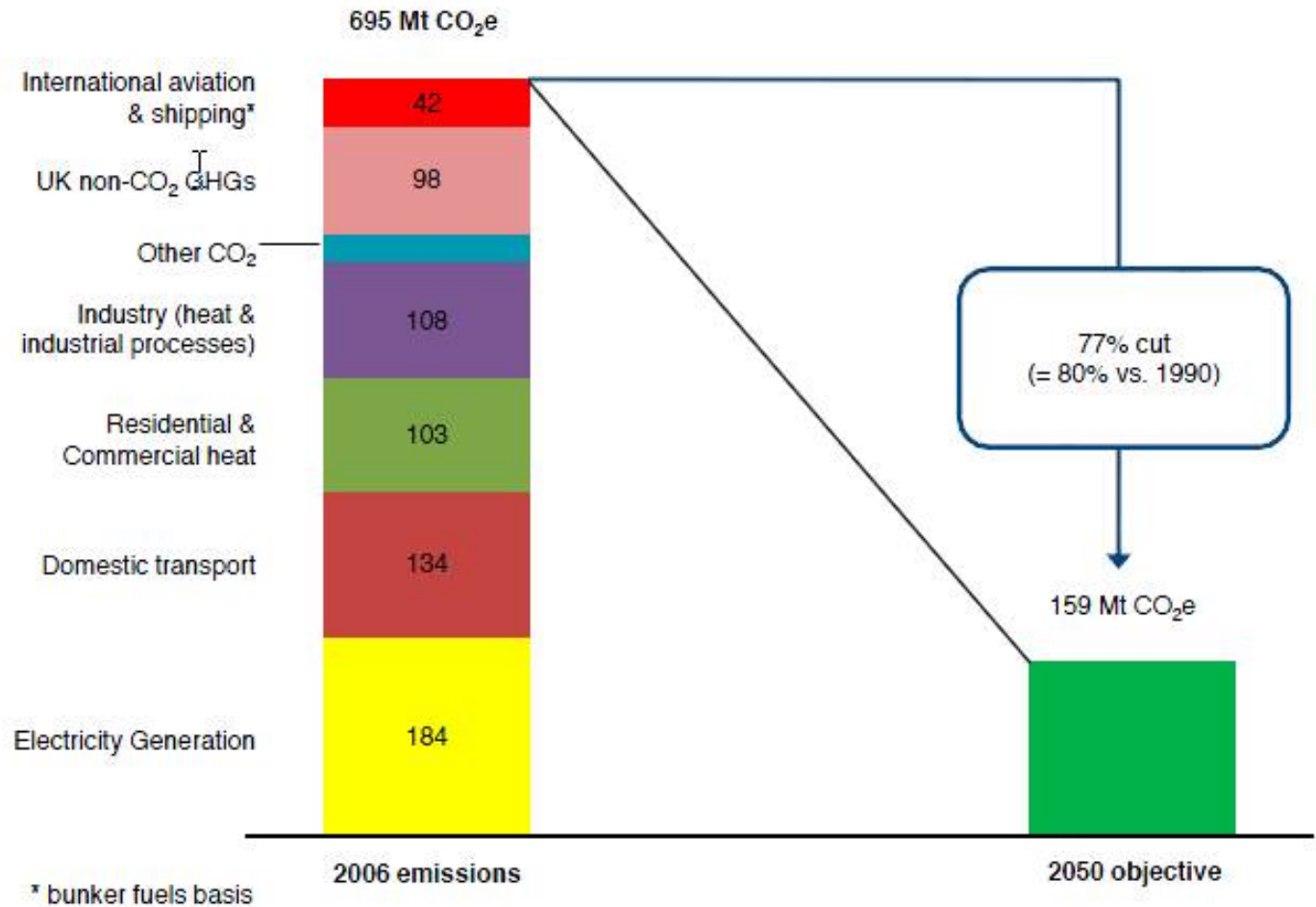
- Established in 1978
- 600 corporate members
- Wind and Marine energy



Agenda

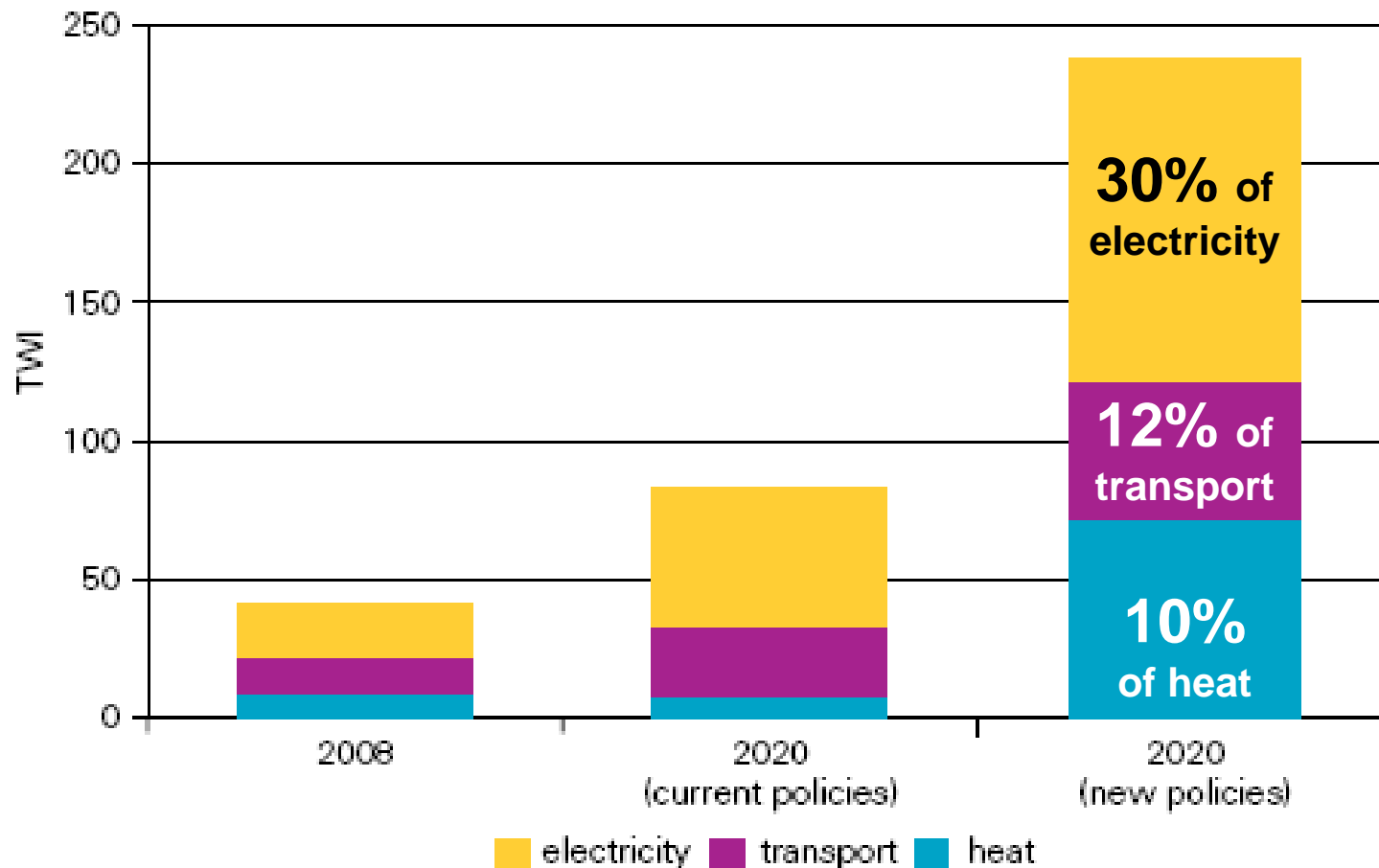
- Importance of offshore wind in UK climate change objectives
- Deployment and projections
- Connection proposals
 - Offshore Development Information Statement (ODIS)
- Radial (point to point) connections
- North Sea Grid
- Offshore transmission licensing
- Transmission reinforcements and finance

Scale of the UK low carbon challenge



Source: UK National Atmospheric Emissions Inventory (2008).

2020 EU renewable energy target

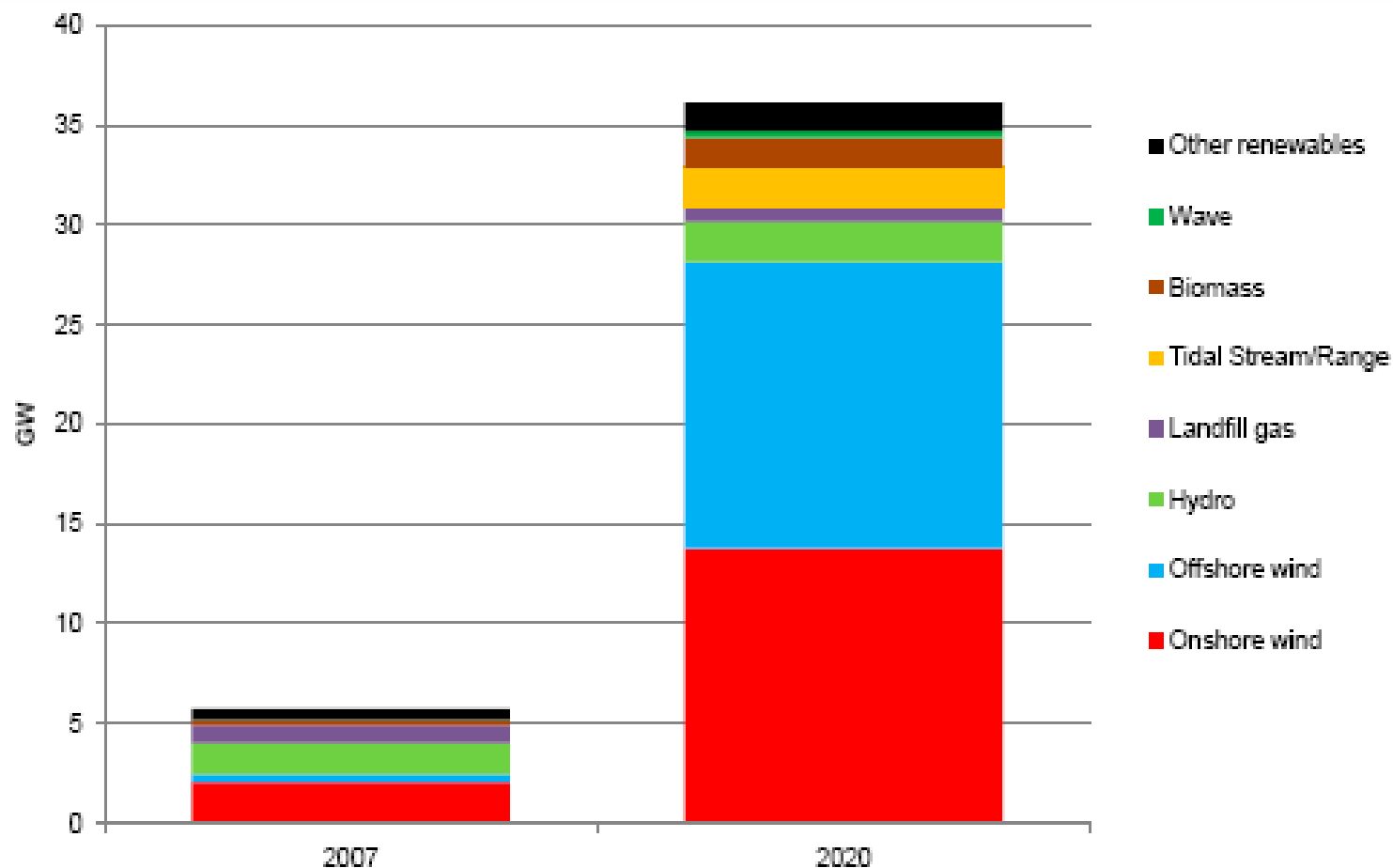


Source: Energy Trends June 2009 and DECC internal analysis.

Source DECC RES

15% of UK energy from renewables by 2020

Renewable Generation scenarios 2007-2020

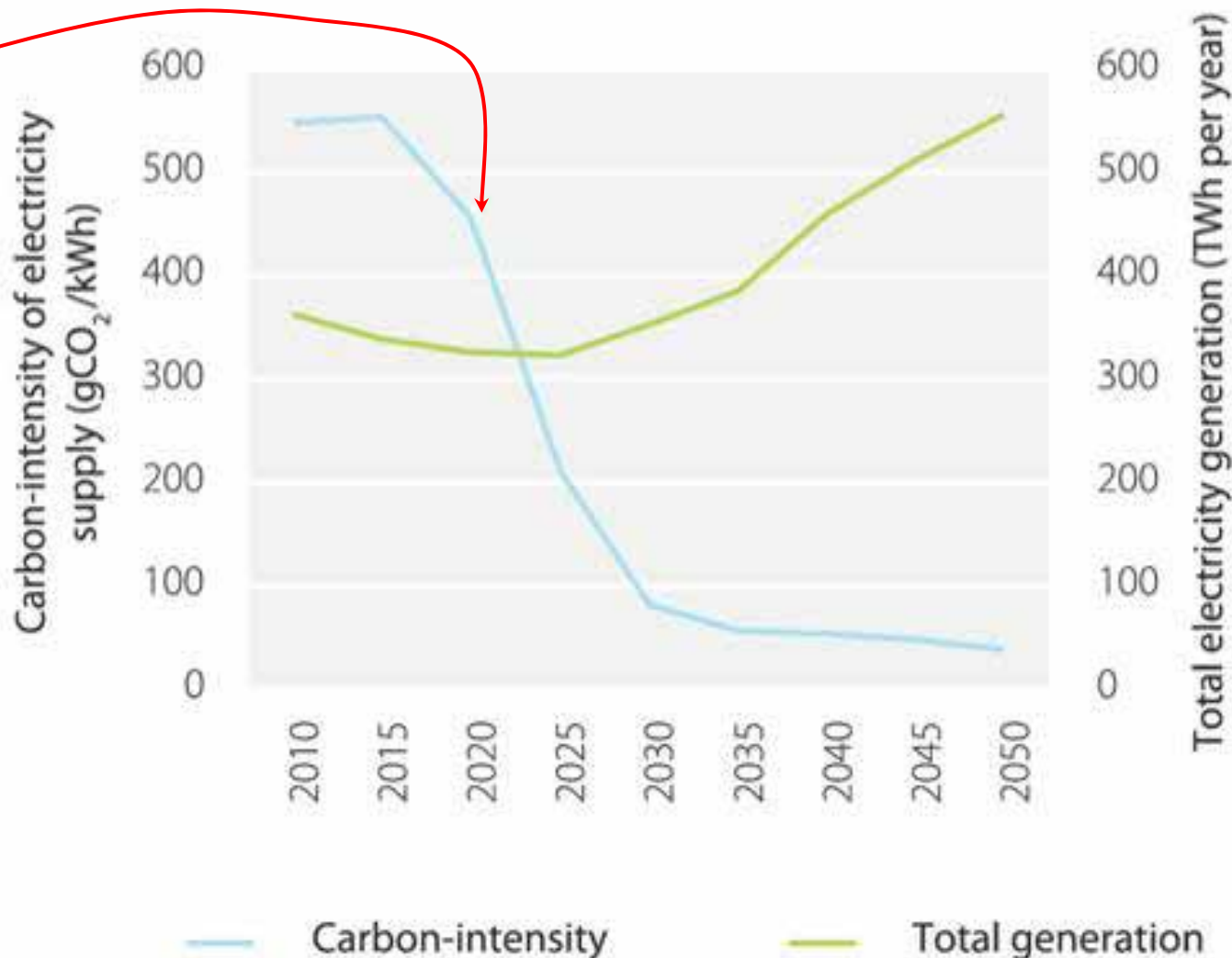


Source: DUKES (2008); BERR Renewable Energy Strategy Consultation (2008).

Note: Other renewables includes solar PV, municipal solid waste (MSW) and sewage sludge.

Decarbonisation of electricity

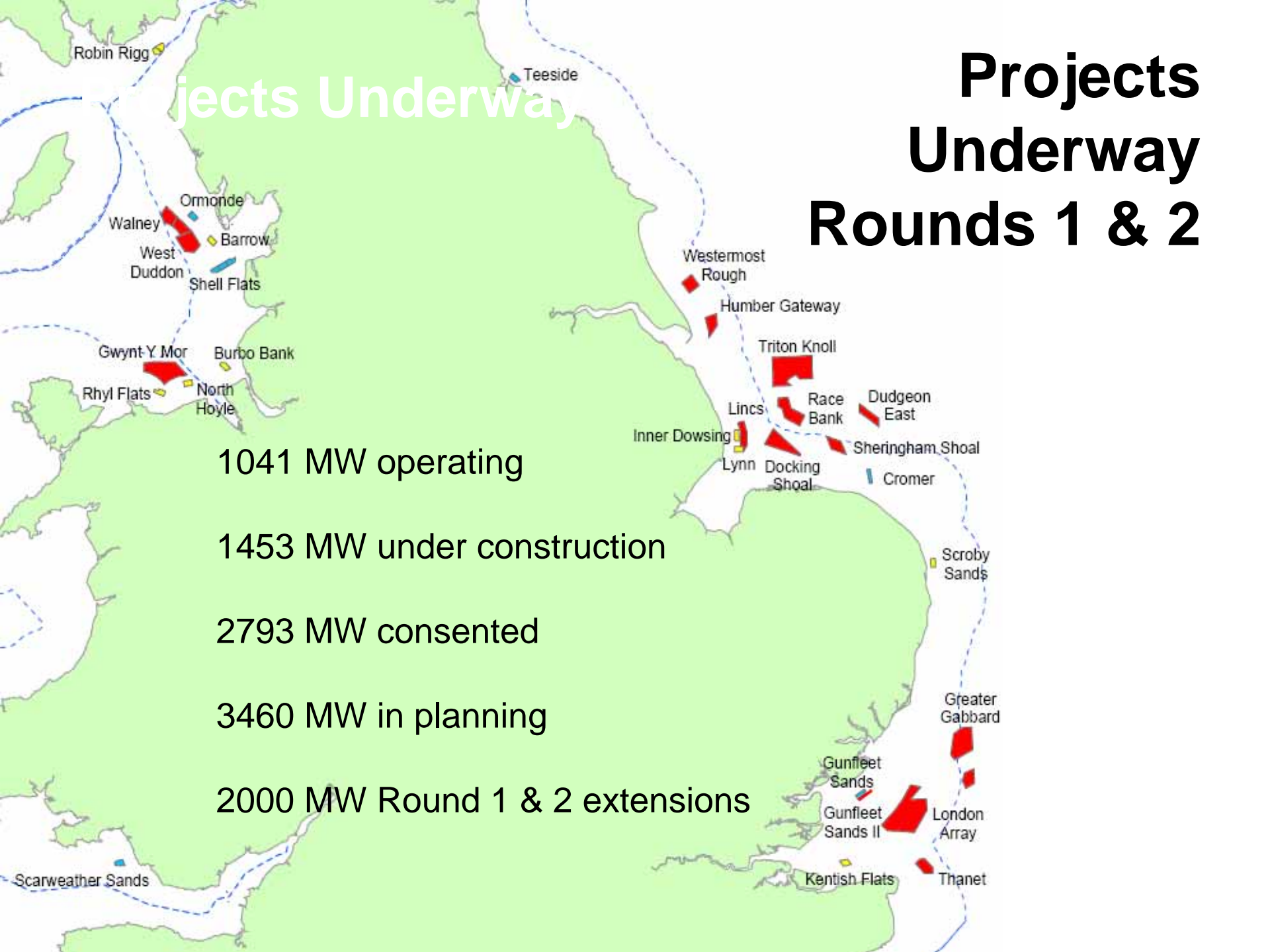
**2020
renewable
energy target
- is only the
first step**



Projects Underway

Rounds 1 & 2

Projects Underway



1041 MW operating

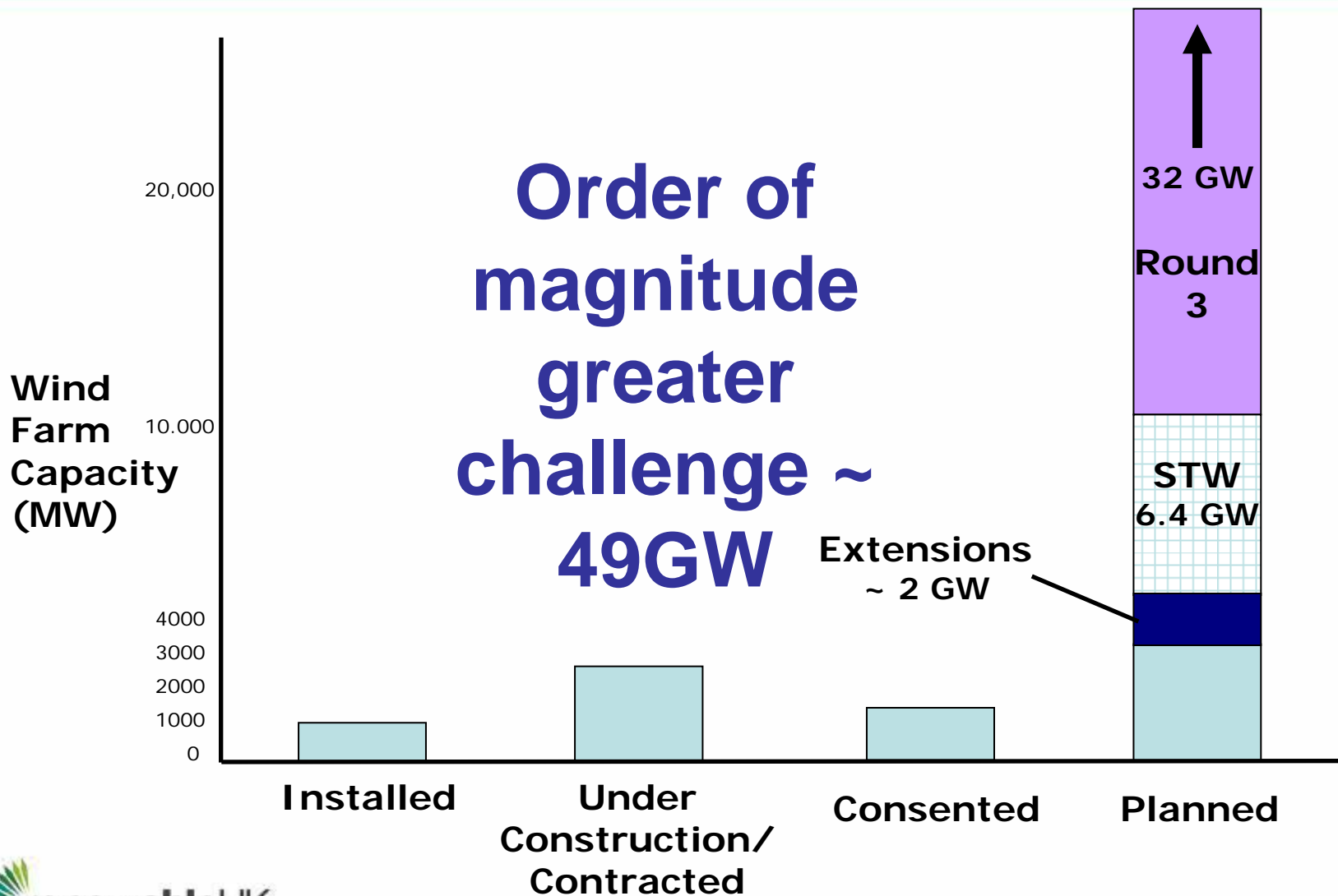
1453 MW under construction

2793 MW consented

3460 MW in planning

2000 MW Round 1 & 2 extensions

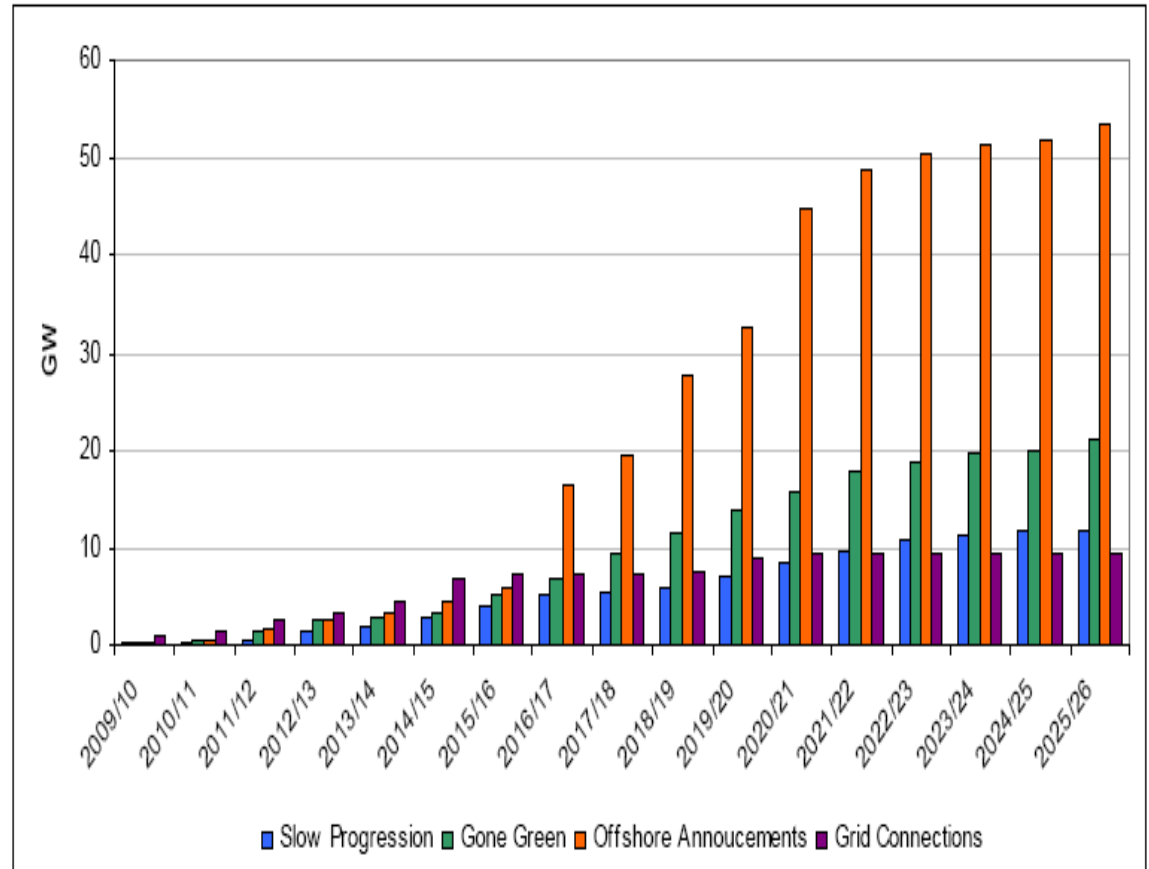
Offshore Wind Development



Deployment scenarios

- Scenarios from 2009 ODIS (figure 3.14).
- A reasonable starting point.
- Must consider sustainable deployment rate & supply chain.
- Douglas Westwood report for RenewableUK out later today with more considered scenarios...

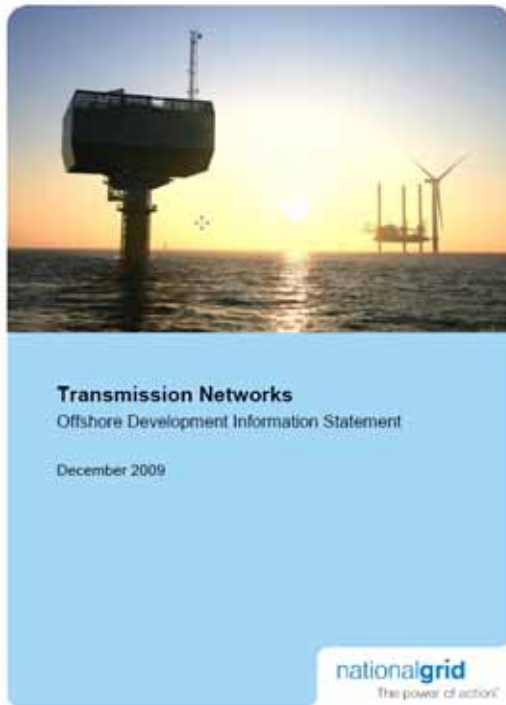
FIGURE 3.14 – Future scenarios comparison: offshore transmission wind



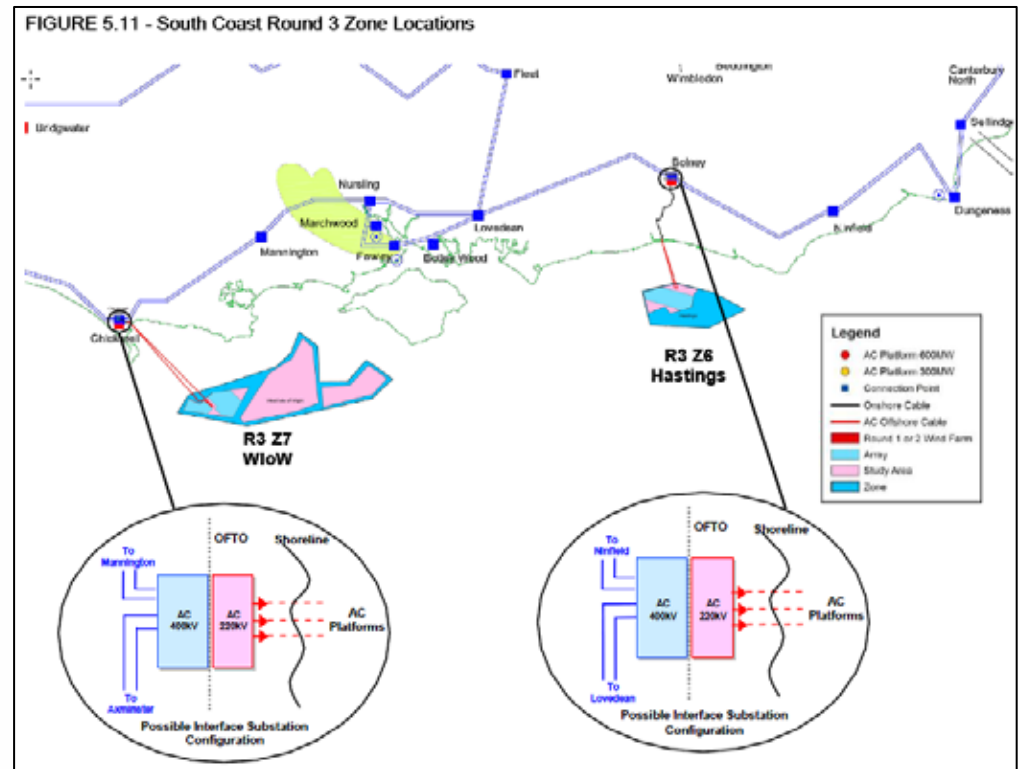
Source: National Grid: Offshore Development Information Statement 2010

Connection proposals

- ODIS provides helpful information e.g. connection proposals, diagrams, technology information.

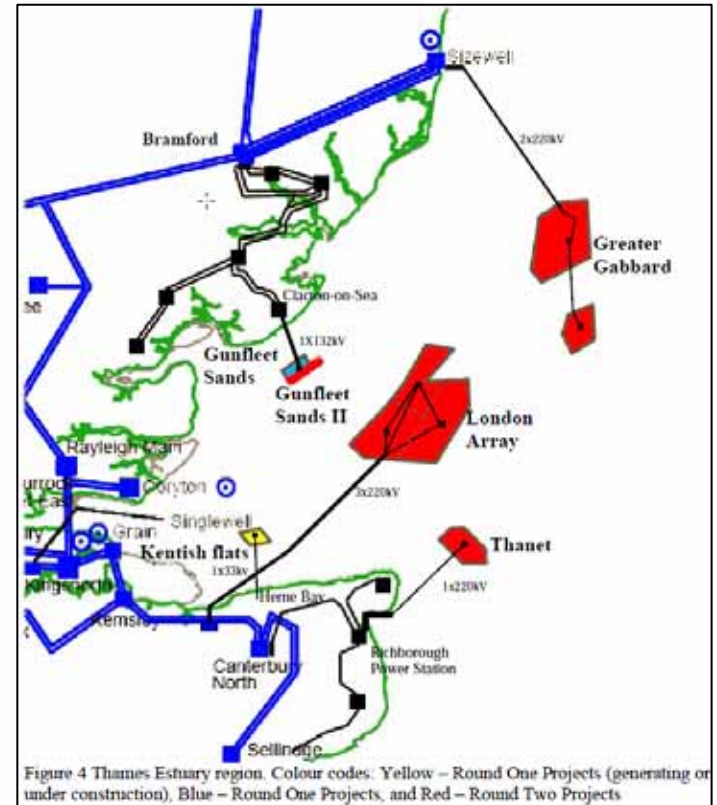


<http://www.nationalgrid.com/uk/Electricity/ODIS/Archive/>



Radial connections or offshore grid?

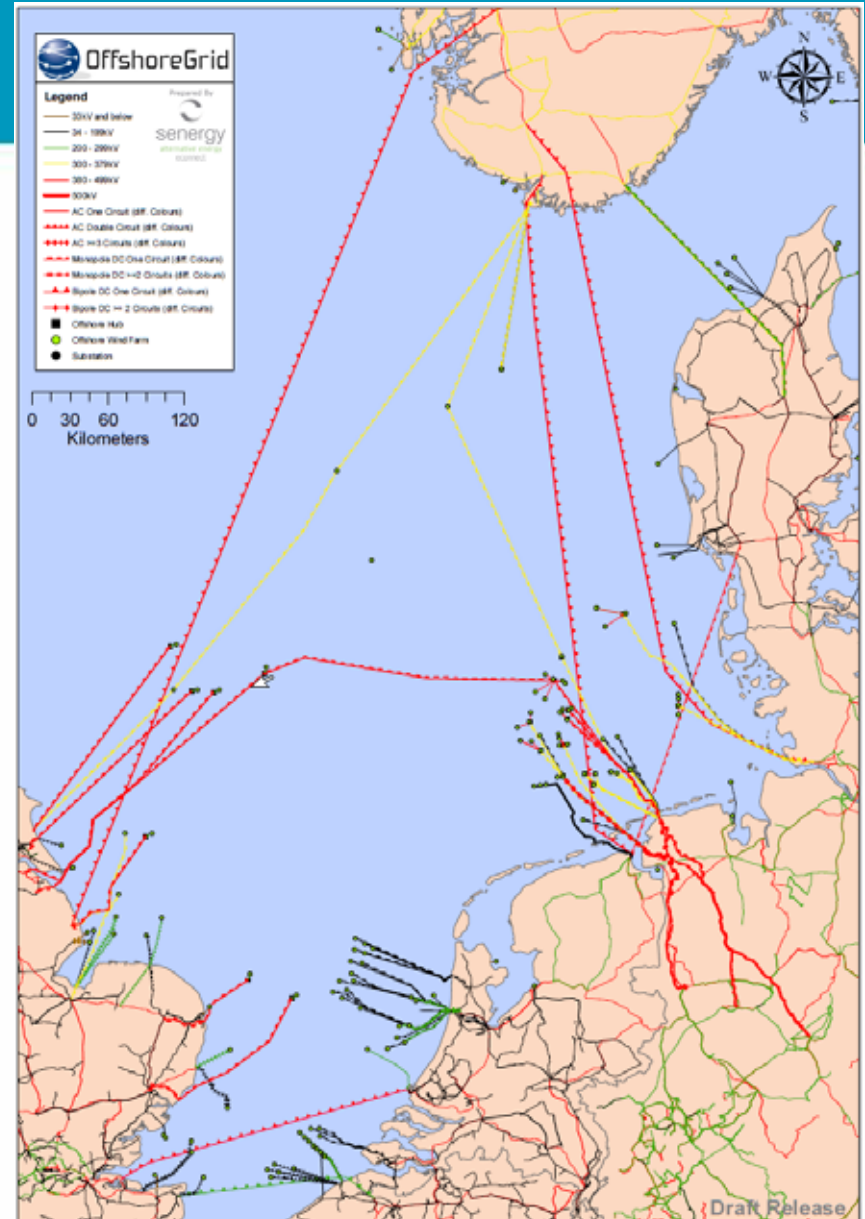
- Several studies (list below) have considered grid connections of offshore projects.
 - Many point-to-point / radial connections have been designed and built.
 - Most connections will be radial.
 - Offshore interconnection benefits are very limited.
- 2005. Round 2. Econnect for DTI.
 - 2006. Round 1&2. Imperial for DTI and Ofgem.
 - 2008. Round 3. National Grid & Senergy Econnect for Crown Estate.
 - 2009. All Rounds. National Grid. ODIS.



Example of Radial Connections-Imperial Study

North Sea Grid?

- Extensions of grid connections to offshore windfarms can link across the north sea.
- Work in progress examining these opportunities.
- It is important that we progress onshore connections – regardless of other opportunities.



Offshore Transmission Licensing

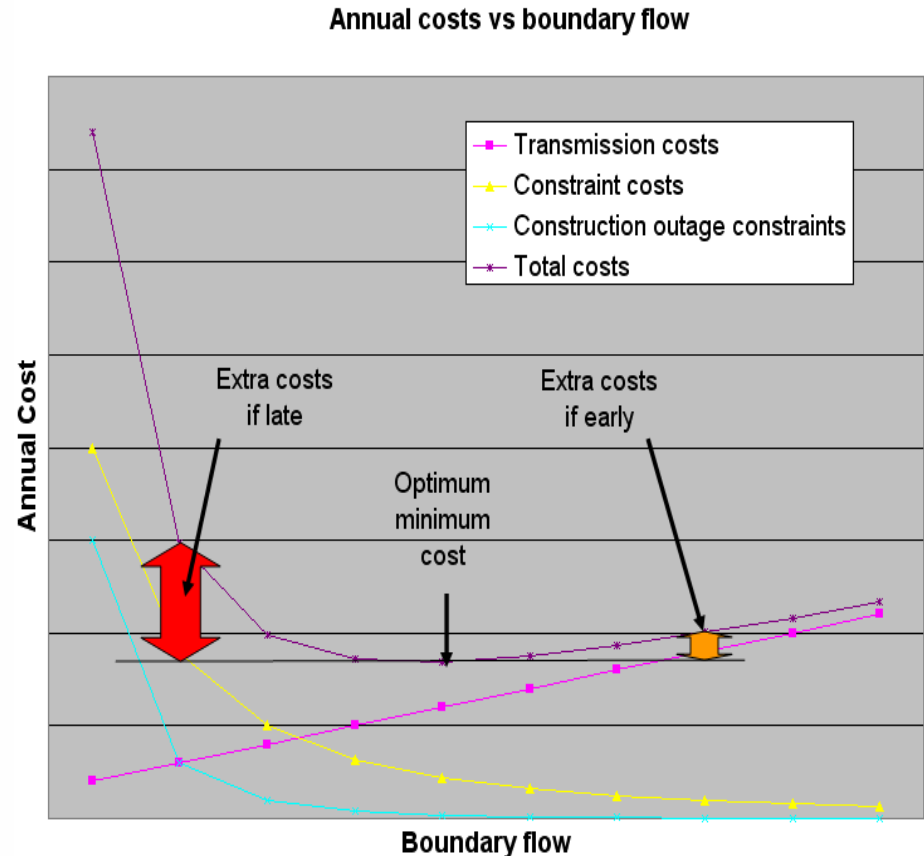
- Offshore assets $\geq 132\text{kV}$ have been classified as “offshore transmission” and will be licensed.
- Under the new legislation offshore transmission can no longer be owned by the generator.
- Existing 132kV assets will be sold to Offshore Transmission Owners (OFTOs) under a competition organised by Ofgem.
- The transfer of existing assets, “go-live”, was expected this month.
- In future RenewableUK and offshore industry wants generators to be able to continue designing and building offshore transmission – which is handed over to an OFTO (“transitional arrangements”).
- There have been indications that Ofgem and DECC want to prevent generators continuing to design, build and transfer.
- RenewableUK view is that all options for OFTOs “late” and “early” should be available.

Financial securities for grid connection

- Currently new connections to the GB transmission system must financially “secure” reinforcements required for their connection.
- Known as “user commitment”.
- Mechanisms of “Final Sums” or “IGUC (IGUM)”.
- Aims to avoid unnecessary transmission reinforcements.
- However, most reinforcements are needed for many different projects and are not for a sole user or technology.
- This requirement for financial security is a major barrier to industry and increases development costs and risks.
- RenewableUK wants to see anticipatory investment to avoid delays in connections.

Transmission reinforcement costs

- “Just In Time” transmission is impossible due to planning & development uncertainties.
- Transmission will be too early or too late.
- It is far more cost effective to be early.



Summary & Contact

- Offshore wind key to UK's 2020 renewable targets, 2030 decarbonisation of electricity and 2050 CO2 reductions.
- Connections will be point-to-point/ radial.
- Onshore reinforcements should be progressed as anticipatory investments for lowest costs.
- Generators must be allowed to continue to build and transfer connections to OFTOs.
- Look out for deployment scenarios in RenewableUK- Douglas Westwood report.

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