



National Audit Office

Gas and Electricity Markets Authority
Department of Energy and Climate Change

Offshore electricity transmission: a new model for delivering infrastructure

Appendix Two

JUNE 2012

Methodology

1 This appendix describes the research methods we used for our report *Offshore electricity transmission: a new model for delivering infrastructure*. It adds further detail to the description of the methodology in Appendix One of the main report.

2 Offshore wind farms have the potential to contribute between a third and a half of the UK's renewable electricity requirement by 2020. The wind farms require significant new infrastructure to transport electricity from them to the main electricity transmission network. The Department of Energy and Climate Change (the Department) and the Gas and Electricity Markets Authority (the Authority) introduced a licensing regime for such offshore transmission infrastructure. We use the term 'the Department' to refer to the Department of Energy and Climate Change and its two predecessor departments which were responsible for developing the licensing regime, the Department of Trade and Industry and the Department for Business, Enterprise and Regulatory Reform.

Study scope

3 The report assesses whether the licensing regime is likely to deliver value for money for consumers by examining the work of the Department and the Authority in designing the licensing regime; and the outcomes from the Authority's first competitions for licences. It also identifies wider lessons for securing value for money in infrastructure investment.

Assessment criteria and approach

4 To establish whether the licensing regime is likely to deliver value for money for consumers we used two criteria:

- Whether the design of the licensing regime was well conceived.
- Whether the first competitions for licences have returned good deals.

5 Our approach consisted of four main elements:

- Review of the options appraisal and licence conditions.
- Quantitative analysis and benchmarking.
- Review of the Authority's savings estimates.
- Semi-structured interviews with a range of stakeholders.

Review of options appraisal and licence conditions

6 We reviewed key consultation documents and regulatory impact assessments between 2005 and 2011 which underpin the development of the licensing regime. The review aimed to:

- understand, and assess the clarity of, the objectives for an offshore licensing regime;
- assess the quality of the consultation and responsiveness to concerns of different parties;
- assess the analysis underpinning the Department's and the Authority's decisions;
- understand the rationale for attractive licence conditions and consider the impact of the conditions on the cost to consumers; and
- understand how the licence and the regime are developing and the nature of any delays.

7 We also examined the basis of the Department's quantitative cost benefit analysis in the 2009 impact assessment which predicted savings, compared with doing nothing, of between £461 million and £1,390 million in present value terms, excluding any transitional arrangements.

Quantitative analysis and benchmarking

Transaction costs

8 The Authority recovers its costs by charging fees to bidders and the generators for running the competitions and arranging the transfer of transmission assets. Generators' transaction costs are added to the price licensees pay for the transmission assets. Winning bidders then recover these, and their own costs, through the licence revenue stream. We examined the transaction costs included in licensees' income and tabulated them as percentages of the associated asset values.

Transfer values

9 The Authority sets the values at which generators sell their assets to the new licensees. These transfer values are based on the actual costs incurred by generators in building the assets. To assess whether the values reflect efficient and economic build costs we reviewed:

- the Authority's process for validating generators' cost submissions and ensuring that costs have been appropriately split between the transmission assets (cables and sub-stations) and the wind farm itself; and
- the Authority's use of benchmarks, derived by technical consultants, to test validated costs for efficiency and to resist late price changes.

10 The build costs of transmission assets vary widely per gigawatt of generation capacity. This appears to be largely due to project specific issues. The wide range of costs makes it difficult to benchmark costs and we were unable to identify any additional external benchmarks.

Bidders' financial models

11 We analysed bidders' financial models for the first four licence competitions to assess whether the competitions have returned prices that could be value for money for the consumer. We looked at the initial financial models of all the short-listed bidders and the competition winners' financial models at licence award. We also looked at the changes in the winners' models between the initial bids and awarding the licences.

Debt costs

12 For each competition we compared the debt costs in bids to each other. For the final debt costs in winning bids we looked at the all-in yield in excess of that on 15-year gilts on the date of financial close¹ (which are a reasonable proxy for a risk-free rate) and how this spread changed over time as competitions ended. We compared these spreads to reported spreads above gilts for PFI deals closed since the banking crisis of 2008-09.² We would expect the spreads for transmission licences to be lower than for PFI because:

- PFI rates reflect the additional risks of construction; and
- the Authority included limited risk transfer in licence terms.

Equity returns

13 Using data extracted from bidders' financial models we calculated internal rates of return to give us figures for the equity returns each bidder was targeting. We compared these to each other and to returns included in agreed terms for awarded licences. Since bidders were acquiring operating transmission assets, we also compared these returns to those required by investors in operating PFI projects, typically 8 per cent to 9 per cent in mid-2011.³

¹ Prices midway between bid and offer as observed on Bloomberg screens. This 15-year rate approximates a risk free rate attributable to debt with an amortisation schedule that is fully repaid within 20 years.

² See Comptroller and Auditor General, *HM Treasury: Financing PFI projects in the credit crisis and the Treasury's response*, Session 2010-11, HC 287, National Audit Office report, 27 July 2010, p.23 Figure 10.

³ See Comptroller and Auditor General, *HM Treasury: Equity investment in privately financed projects*, Session 2010-2012, HC 1792, National Audit Office report, 10 February 2012, p31 Figure 12.

14 We developed a model to help us compare the equity returns being targeted by transmission licensees to returns for similar companies (companies that undertake electricity transmission but are not involved in other activities like electricity generation). Our model drew on work for the Authority by Grant Thornton⁴ which was based on the Capital Asset Pricing Model using the risk premium attributable to electricity transmission companies.⁵

Operating and maintenance costs

15 We compared the operating and maintenance costs as a percentage of asset transfer values to each other. For some competitions the generating company that had built the transmission assets and associated wind farm made an offer to undertake the operating and maintenance work, this offer was available on the same terms to all bidders. We looked at which bidders based their estimates of operating and maintenance costs on generator offers and whether this had any impact on eventual costs. We were unable to identify any external benchmarks for these costs.

Number of bidders

16 To assess whether the regime is encouraging effective competition we assessed the number of bidders for the first two rounds of competitions for transmission licences using our experience of auditing other public sector run competitions.

17 The Crown Estate awards leases to allow generating companies to develop wind farms in waters around England, Wales, Scotland and Northern Ireland. To assess whether the introduction of the licensing regime has had any impact on the appetite of generating companies to invest in offshore wind we compared the number of bidders for leases before and after introduction of the regime.

Review of savings estimate

18 The Authority estimated that the licensing regime would generate £350 million savings compared to an alternative model based on the onshore transmission owners (National Grid, Scottish Power and Scottish Hydro Electric Transmission) owning and maintaining all the transmission assets. The Authority subsequently updated its savings estimate using a wider range of comparators. We reviewed the Authority's updated estimate and the Authority's own internal review done by PKF.

⁴ Available at: <http://www.ofgem.gov.uk/Networks/offtrans/pdc/cdr/Cons2011/Documents1/Grant%20Thornton%20-%20Interest%20during%20construction%20for%20offshore%20transmission%20assets.pdf> accessed on 21 May 2012

⁵ The value of the premium is reflected in the company's equity price volatility (or real asset beta value) compared to the broader equity investment market, taken together as a premium above the risk free rate.

Semi-structured interviews

19 To confirm and supplement our findings from other methods we conducted semi-structured interviews with officials from the Department and the Authority who were, or had been, involved in developing the licensing regime or in running the licence competitions. We also interviewed staff from the following bodies:

- The Crown Estate.
- National Grid which, in its role as National Electricity Transmission System Operator is responsible for planning and operating Great Britain's transmission network and for balancing electricity demand and supply across Great Britain.
- Scottish Hydro Electric Transmission which is responsible for owning and maintaining onshore transmission in the North of Scotland.
- Eight companies which were members of consortia which expressed an interest in bidding for, or who actually did bid for an offshore transmission licence. This included the four preferred bidders for the first round of licence competitions.
- Four lenders to licensee companies.
- Five electricity generating companies who are, or will be involved in developing offshore wind farms.

20 We also wrote to other companies in the categories above asking for written evidence submissions which we received from four electricity generating companies and one potential bidder for a licence.

21 After we conducted the interviews we sent a few supplementary questions to lenders and generating companies asking for further detail about likely financing costs under the licensing regime and received nine responses.