

Offshore Transmission Expert Group Great Britain Security and Quality of Supply sub-group

Summary of cost benefit analysis results Cover note to results presentation

Introduction

The aim of the cost benefit analysis has been to determine the optimum economic and technical solution for offshore transmission networks, taking into account the external factors of offshore transmission that were likely to have an impact on the outcome of the assessment.

The cost benefit analysis studies have been carried out by the DTI centre for Sustainable Energy and Distributed Generation (SEDG), totalling approximately 20,000 with several hundred results consulted upon by the sub-group. The appendix to this note illustrates the key outputs that have been concluded upon.

Scope

The scope of the analysis was to assess windfarms up to 100km from the onshore electricity grid connection point, and up to 1500MW capacity.

The network models created were populated with real data from a set that has been collated from suppliers, developers and onshore Transmission Owners (TO's) with each network design then being optimised with reactive compensation provided both on and offshore.

Analysis results

The results of the analysis have been presented to the sub-group at each of the meetings held, and have been represented graphically against the results for alternative options.

The aim of the analysis has been to assess the minimum solution, and then justify reinforcement above that value. The results that are presented along with this note illustrate the total cost for each solution, which include the capital cost of the assets to be installed, cost of system losses, value of estimated energy curtailed, cost of reactive compensation and cost of maintenance.

It should be noted from the results presented that each of the key input parameters have been tested to find the value at which the conclusion changes. These demonstrate the robustness of the recommendations made.

Conclusion

The analysis results have been presented and conclude that offshore transmission network capacity should be planned to a level no greater than the capacity of the windfarms connected, and there is no justification for redundancy to be installed

Transformer capacity should be planned such that capacity is provided post fault, however there is no requirement for provision of cable network circuit capacity post fault. (assuming maximum connection considered of 1500MW)

It should be noted that for shared windfarm connections the provision of circuit capacity should be lower than the installed capacity of the wind farm, and should equal 90% of the installed windfarm capacity. Where the application of this value marginally requires additional assets to be installed, this value can be further lowered to account from the substantive cost of offshore transmission assets.