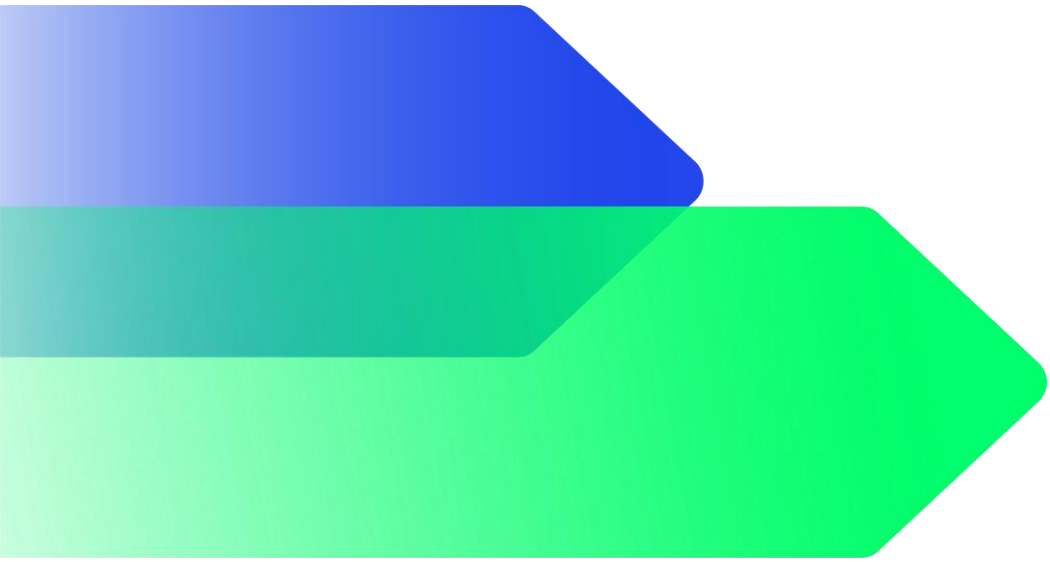
CARBON TRUST

FLOATING WIND JOINT INDUSTRY PROGRAMME S3P1

Clarification Question Responses

Power Curve Validation for Floating Turbines

March 2023



#	Type	Question	Response
1	Project specific	For WP1 ”If any datasets are available which could be used to test power curve validation methodologies”. Can you clarify, please, what shall be done with the data? What is it meant here by “testing (PCV) methodologies”?	The contractor should identify if there is access to any datasets which could be used to validate the model developed as part of WP4.
2	Project specific	For WP3 “The report should draw conclusions on the likely uncertainties”. Is this requiring developing a complete uncertainty assessment method for floating WT PCV (using NML and “other potential solutions”)? Or does it refer to estimates obtained from WP1 and WP2? Will the Carbon Trust provide a specific application case?	The contractor is unlikely to be required to develop the method from scratch and can utilise existing methods (such as adapting IEC 61400-50-3), though this is dependent on results from WP1 and WP2.
3	Project specific	For D3.2 Would you explain what work is expected in this report, please? Is it general guidance concerning the listed items, or specific examples involving different combinations of these items? What is it meant here by “power curve comparison/analysis”?	The contractor should provide details for the proposed work plan for WP4, based on learnings from WP1 – WP3, including those items listed. The power curve comparison/analysis refers to comparison between fixed and floating. Simulations for bottom-fixed and floating turbines are both part of WP3 and comparison should be feasible.
4	Project specific	For D4.2 What is the expectation for the model? Does it refer to a mathematical or analytical model which takes floater types and environmental conditions as inputs and provide an uncertainty as output? Does it refer to the floating turbine model, which is a description or file of the turbine and floater? Or does it refer to hydro-servo-elastic software and floating turbine model that the partners can reproduce the simulation result?	The contractor should use mid-fidelity modelling tools, like aero-hydro-servo-elastic software such as Bladed for the turbine model and OrcaFlex for the floater model (or OpenFAST ad OrcaFLEX) to properly capture the impact of floating effects and of the main impacting parameters on the floating power curve. This will be achieved with a turbine

			model and a floater model as inputs into the mentioned software.
5	General	Shall the time and expenses required for the monthly meetings at London considered part of the basic project budget, or will they be accounted for additionally? Are any those meetings expected to be replaced by teleconferences?	The contactor should consider these as additional expenses, please include in WPB of the table on page 10 of the ITT. Presentations to partners are expected to take place virtually.
6	General	For other Carbon Trust tenders there is usually an anticipated timeframe for the length of the work program. Are you able to provide an anticipated length or end reporting date please?	The anticipated timeframe can be found in section 5.7, page 9 of the ITT.
7	General	For other Carbon Trust tenders there is usually an anticipated budget cost or target tender price. Is there one available for this project or an anticipated budget please?	The budget can be found in section 5.1, page 9 of the ITT.
8	Project specific	For the software simulations in WP4, are you expecting tenderers to produce a package from scratch? Use an available package? Or recommend a package that could be used?	The contractor should not need to provide a turbine and floater model from scratch, and can use one of the public domain models for turbine and floater. It shall be the responsibility of the contractor to select a model, to be approved by the FLW JIP partners at the Go/No-Go decision. Also see response #4. As part of the Floating Wind JIP Phase 4 projects, reference designs were developed for a 15MW turbine on 4 floater designs, which can be provided to the contractor, should the contractor choose. The reference floater designs are provided as numerical model input files for OpenFAST and Orcaflex.

9	Project specific	The ITT has a clear focus on nacelle mounted lidar (NML) but includes scanning lidar and floating lidar within the scope of the literature review in WP1. To what extent is it expected to consider scanning lidar and floating lidar during WP2 and WP3? When it says in WP3 “the contractor should make a clear recommendation which LiDAR technology is suitable to measure floating power curves” does “technology” here refer to different types of NML or does it potentially include scanning and floating lidar too?	Based on current knowledge, it is expected that the NML will be the most appropriate method, though this is not known for certain and hence forms a focus for WP1 and WP2. It is likely that the main focus shall be NML, however, this is dependent on the conclusions drawn from WP1 and WP2 to determine the best solution, which may include other considerations.

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+44 (0) 20 7170 7000

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