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Operation and Maintenance Agreement Issues for Wind Turbines

This paper discusses informally the key issues relating to operation and maintenance ("O&M") agreements for wind farm projects in the current market. It may not be relied upon as legal advice and these issues may change as market conditions change from time to time.

Introduction

This paper only deals with issues specific to wind farm projects. The usual operation and maintenance matters - such as labour and material cost fluctuations, foreign exchange risk, consenting, intellectual property licences - should be considered in addition to the issues mentioned below. This paper does not address the issues associated with other agreements the Owner of a wind farm may enter into as part of the operation and maintenance of a project, including power purchase agreements, foundation maintenance agreements and power cable maintenance agreements. This briefing assumes that the operation and maintenance contractor ("WTG Contractor") is the same company, or a member of the same group of companies, as the contractor responsible for the supply and installation of the wind turbine generators ("WTGs") under a turbine supply agreement ("TSA").

1. **THE SERVICES**

1.1 The services to be performed by the WTG Contractor will normally fall into three categories: scheduled maintenance, unscheduled maintenance and additional services. Whilst the O&M agreement will contain an obligation to perform the scheduled and unscheduled maintenance, it may be that a WTG Contractor will resist an obligation to perform additional services (regardless of the mechanism used to determine payment) and instead require the agreement of additional services on a case by case basis. When faced with an O&M agreement in which there is no obligation to perform additional services, Owners will look to ensure that either no essential services are included in the scope of additional services, or that essential services included in the description of additional services (perhaps for pricing reasons) are made subject to individual obligations to perform.

1.2 WTG Contractors will generally insist upon exclusivity for the term of the O&M agreement in relation to scheduled and unscheduled maintenance. That said, Owners will generally require that the O&M agreement allows scheduled and unscheduled maintenance to be performed by another competent contractor in limited circumstances, for example where a health and safety risk occurs due to non-performance by the WTG Contractor.

1.3 The O&M agreement will generally contain a list of events that, if they occur, will either temporarily or permanently relieve the WTG Contractor from its obligations to carry out the O&M services and/or allow the WTG Contractor to claim additional money to carry out the affected services. The O&M agreement will also often provide relief to the WTG Contractor from the impact of such events on WTG availability (see section 8 below on availability warranties). Common examples of these events include:

1.3.1 force majeure;

1.3.2 changes in site conditions that adversely affect the carrying out of the services. This is a particularly important issue in offshore projects, where wave heights, current speeds, wind speeds, etc., may be higher

than stated in the Owner's site data and as a result access to the site is found to be dangerous during certain months of the year;

1.3.3 third party interference with the WTGs, including by other contractors employed by the Owner; and

1.3.4 failure of the interface contractors and/or their works (see section 1 of the separate briefing note entitled "Supply Agreement Issues for Wind Turbines" on disaggregated procurement and interface risk), etc.

1.4 Payment for the scheduled and unscheduled maintenance will normally be by way of the annual service charge (see section 7 below on payment), whereas payment for additional services will either be calculated on a time charge basis applied against a schedule of rates or a lump sum agreed between the parties prior to commencement of the services in question.

1.5 One important issue for Owners is the term of the O&M agreement, as the expected operational life of a wind farm is now around the 20 year mark, but a typical O&M agreement will run for between 5 and 10 years, with 5 year agreements often containing a right for the Owner to elect to extend towards the end of the initial term. It is unlikely that any WTG Contractors would be willing to enter into an O&M agreement for a 20 year term and therefore Owners will invariably find themselves having, prior to the expiry of the O&M agreement term, to renegotiate terms with the same WTG Contractor or find a replacement O&M contractor capable of maintaining the WTGs for the remainder of the operational life of the wind farm.

2. SPARE PARTS AND SPARE PARTS WARRANTY

2.1 The Owner and the Owner's funders ("**Funders**") will be concerned to ensure that the O&M agreement requires the WTG Contractor to supply spares, together with an associated defects warranty, for use in scheduled and unscheduled maintenance and, if achievable, for a period following termination or expiry of the O&M agreement.

WTG Contractors will generally accept a provision within the O&M agreement requiring the supply of spare parts to the Owner, subject to various caveats and limitations, such as:

2.1.1 the spares only being used in relation to the project; and

2.1.2 the obligation falling away where the O&M agreement is terminated for Owner default.

2.2 O&M agreements will also generally deal with what is to happen in the event that the WTG Contractor, or its supplier, ceases production of a particular spare part. This may not be of particular concern where generic parts are available in the market, however, in the case of a specialist part, the Owner will want to ensure continued availability of spares.

2.3 Some WTG Contractors may agree to include a list of prices (subject to annual indexation, etc.) for spare parts in the O&M agreement, however others will resist this in favour of spare parts being supplied at the WTG Contractor's prevailing market rates.

2.4 It is likely that the WTG Contractor will require the ability to use refurbished spare parts, subject to certain conditions (for example, the refurbished spare parts not affecting the original 'type certification' given to the WTGs). If this is the case, appropriate provisions dealing with the standard of refurbishment should be included in the O&M agreement. Consideration should also be given to who will own the replaced parts after their removal, as the WTG Contractor is likely to want to retain parts for refurbishment and reuse.

2.5 The O&M agreement will almost certainly contain provisions dealing with the warranty attaching to spare parts installed or supplied by the WTG Contractor. Owners will want to achieve a warranty for spare parts that runs for the same length of time as the defect liability period under the TSA, however the length of this warranty will generally be negotiated on a case by case basis. Unlike contractors engaged in relation to other power projects, WTG Contractors are unlikely to accept provisions giving rise to an evergreen warranty on spare parts.

2.6 The interrelationship between obligations and liabilities under the O&M agreement and the defects protection under the TSA is of crucial importance (see section 7 of the separate briefing note entitled "Supply Agreement Issues for Wind Turbines" for information on defects).

2.7 WTG Contractors will not usually accept liability for latent defects in spare parts unless it is not permissible to contract out of such liability in the jurisdiction of the site where the wind farm is located (e.g. civil law countries where decennial liability applies). Similarly, WTG Contractors will not usually accept liability for serial defects, or, if some serial defect cover is offered, it will not usually be as extensive as in traditional power projects (for example, any redesign obligation may well be excluded).

2.8 It is common to see provisions excluding all other statutory or otherwise implied warranties from the WTG Contractor in relation to the spare parts, including any warranties relating to fitness for purpose.

3. UPGRADES, UPDATES AND IMPROVEMENTS

The technology being utilised within the wind energy sector is currently, and has for some time been, rapidly advancing. If this trend continues, and there seems to be little evidence that it will not, it is possible that during the lifetime of a project much of the technology in the original WTGs and the techniques employed to maintain the WTGs will be updated, upgraded or replaced. As a result, WTG Contractors may require that the O&M agreement allows them discretion to include updated technology in the WTGs and to change the way in which the maintenance of the WTGs is carried out. Similarly, Owners will want the most efficient technology and techniques to be used in connection with their wind farms and therefore, subject to minimum standards being met, the ability to update, upgrade and replace technology and techniques is generally considered to be mutually beneficial. Certain Owners may also be concerned to ensure that the updated technology to be included within their machines has first obtained 'proven technology' status.

4. QUALITY WARRANTIES AND COMPLIANCE WITH LAWS AND PERMITS

As discussed in the separate briefing note entitled "Supply Agreement Issues for Wind Turbines", issues also arise in O&M agreements in relation to quality warranties and compliance with laws and permits, namely:

4.1.1 quality warranties, such as compliance with the relevant grid codes, may be difficult to achieve;

4.1.2 WTG Contractors may not be willing to take the risk of compliance with laws and permits insofar as they relate to noise emissions for offshore projects, whereas in onshore projects the allocation of risk of noise emissions tends to vary depending on how well developed the market is in the jurisdiction; and

4.1.3 as regards other laws and permits, WTG Contractors will usually seek entitlement to additional costs for changes occurring after an agreed base date.

The factors above will also be of concern where the incorporation of spare parts and upgrades, etc., into the WTGs gives rise to potential grid code compliance and permitting issues.

5. OWNER'S OBLIGATIONS

5.1 In addition to providing access to the site, the Owner may have obligations beyond those that would be considered normal for traditional power projects, such as:

5.1.1 making available to the WTG Contractor O&M facilities within a reasonable distance of the wind farm, or, in the case of offshore projects, in or near the O&M harbour used to access the offshore site (in offshore projects the Owner may also be required to provide mooring space for the WTG Contractor's crew vessels). These facilities will generally need to accord with the WTG Contractor's minimum standards set out in the O&M agreement; and

5.1.2 site-specific issues, such as removal of ice and snow from access ways and, in the offshore context, maintenance of boat landings.

5.2 It should be noted that, unlike the provision of installation vessels under the TSA, WTG Contractors are still generally willing to accept responsibility for the provision of their own crew transfer and maintenance vessels, given that the vessels used for O&M activities are generally much smaller and more readily available than those required for installation.

6. INTERFACE AND CO-OPERATION

6.1 It is common for larger wind farm projects to have separate contractors responsible for maintenance of the WTGs, the foundation bases and the power cables. Whilst onshore foundations may require very little maintenance throughout the lifetime of the project, in offshore projects the foundation structures will require more frequent attention. This multi-contractor structure can lead to interface concerns that will need to be managed either directly by the Owner or by a third party employed by the Owner. Some WTG Contractors may be willing to take on this co-ordination role, however others may strongly resist this obligation.

6.2 There are certain contractual provisions that Owners and Funders will seek to include in O&M agreements to mitigate the interface risk as far as possible, including provisions requiring the WTG Contractor to provide advance information on its planned maintenance activities as well as co-operating with others on site and allowing joinder of related disputes between contractors.

7. PAYMENT

7.1 The O&M agreement will require payment of an annual fee for the provision of the base services, often referred to as the 'annual base fee'. Generally WTG Contractors require that this fee is paid in advance and, whilst payment intervals can vary, it is typical that instalments will be pre-paid on a quarterly or monthly basis.

7.2 The annual base fee will generally include the cost of all consumables and spare parts required as part of the scheduled and unscheduled maintenance, save where certain exceptions apply (e.g. if a spare part is required due to the occurrence of one of the events described in paragraph 1.3 above).

7.3 The cost of additional services will be in addition to the annual base fee. Generally payment for additional services will be made following completion of the services in question, however, where the value of additional services is high, a proportion of the overall cost may be required up front.

7.4 In addition to the annual base fee and payments for additional services, some O&M agreements may include incentive payments to the WTG Contractor where the annual average availability of the wind farm exceeds a pre-agreed level.

8. AVAILABILITY WARRANTIES

8.1 One of the most fundamental parts of any O&M agreement is the part dealing with the warranted minimum level of availability for the WTGs within the wind farm. If these minimum levels are not met, the O&M agreement will normally provide for the payment of availability liquidated damages ("**LDs**") by the WTG Contractor to the Owner. See also section 3 of the separate briefing note entitled "Supply Agreement Issues for Wind Turbines" in relation to the power curve test conducted under the TSA and the damages flowing from a failure of the WTGs to meet the guaranteed power curve.

8.2 The warranted minimum level of availability will vary from project to project and will be based on a number of factors, such as the Owner's wish to ensure sufficient headroom over and above the availability level used in calculating the financial base case, site and climatic conditions and the findings of the Owner's wind distribution studies, etc.

8.3 For the purpose of calculating the actual average availability of the WTGs within the wind farm, not all WTG 'downtime' will be treated as unavailability. The O&M agreement will normally include a list of events similar to, but often wider than, the list described in paragraph 1.3 above. If any of these events occur and adversely affect the availability of the WTGs, the O&M agreement will provide that, during these periods of downtime/reduced

availability, the affected WTGs will be treated as being available when assessing whether the warranted minimum level of availability has been met. A question which is often heavily negotiated is whether, during periods of deemed availability, WTGs should be taken as being 100% available or whether their deemed level of availability should be calculated by reference to past performance, or some other measure.

The adjusted average availability figures will then be used to calculate the level of availability LDs, if any, payable by the WTG Contractor to the Owner in each year of production.

8.4 There are various long term factors outside the WTG Contractor's control that could affect a wind farm's overall availability, for example:

8.4.1 development of adjacent structures, including other wind farms (this is of growing concern to WTG Contractors given the recent tendency for developments to be constructed in several phases); and

8.4.2 actual average wind speeds being outside the range contained within the Owner's wind distribution studies.

The O&M agreement may therefore contain provisions governing how the adverse impact of such external factors will be dealt with. The Owner's/Funders' technical adviser will need to be consulted as to which factors will be relevant on a case by case basis and over what period of time the effects should be measured so as to be meaningful.

8.5 The O&M agreement should also contain provisions dealing with a change to the overall number of WTGs in the wind farm, and the impact of such a change on the availability warranty. The change in WTG numbers could be due to several factors, such as the Owner's breach of the TSA or a variation of the TSA to increase or decrease the number of WTGs to be constructed, etc. Careful consideration of what will and will not lead to an amendment of the availability warranty will be needed.

9. CAPS AND LIMITATIONS ON LIABILITY

9.1 There are numerous ways in which the WTG Contractor's maximum aggregate liability for claims arising under or in connection with the O&M agreement (excluding those that cannot be excluded or limited by law) can be set, such as a straight percentage of the annual base fee multiplied by the term of the O&M agreement. Certain WTG Contractors will be reluctant to offer a 100% cap, and some may require annual caps on availability warranty liability also based on the annual base fee.

9.2 Careful consideration should be given as to which liabilities, if any, are carved out of the aggregate cap on liability so as to avoid exhausting the cap, such as intellectual property and third party claims.

9.3 Often WTG Contractors will also insist on an exclusive remedies clause being included in the O&M agreement, limiting the Owner's right to claim against the WTG Contractor for non-performance of the services to a claim for availability LDs.

10. TERMINATION

10.1 It used to be the case that WTG Contractors would generally contest termination for the Owner's convenience, even if the Owner were prepared to pay the WTG Contractor's loss of profit. However, recently we have seen a softening of this position, with termination for the Owner's convenience being accepted so long as profit is paid on the remaining amount of the O&M annual base fee for the remaining term.

10.2 Cross defaults under the O&M agreement and TSA leading to termination need to be considered on a case by case basis (e.g. what happens if the TSA is terminated before the wind farm is complete, will the O&M agreement/obligation continue and will this differ where the work for the WTGs is complete but defects liability remains under the TSA?).

10.3 The liability of the WTG Contractor to the Owner for the cost of procuring of a replacement O&M contractor following O&M agreement termination is likely to be a hotly contested topic.

10.4 Consideration will also need to be given as to whether any specialist tools or equipment used by the WTG Contractor should be made available for purchase by the Owner where the O&M agreement is terminated, including any crew vessels owned or rented by the WTG Contractor.

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