

**Summary note: LCCC Wind Generator Commissioning Test workshop
4 August 2017**

Attendees:

Wind industry:		
Ailsa	Goodliff	DONG Energy
Ajai	Ahluwalia	Statoil
Alan	Borland	Beatrice Offshore Windfarm Ltd
Alwyn	Poulter	EA1
Andy	Robins	Innogy
Anthony	Winter	MHI Vestas
Babak	Mataji	Dong Energy
Ben	Fawcett	EDF Energy
Brett	O'Connor	Common Barn
Christiane	Sykes	DONG Energy
Dan	Thomas	Banks Renewables
David	Griffiths	Innogy
Enrique	Alvarez Cordobes	EDPR
Fraser	Merry	RES
Gillian	Fletcher	Nanclach
Jamie	Scurlock	RES
Javier	Villalba Mansanet	EA1
Karl	Zammit	DONG Energy
Mark	Lawson	EDF Energy
Markos	Asimakopoulos	RES
Michele	Schiavone	EDF Energy
Low Carbon Contracts Company:		
Ruth	Herbert	Head of Strategy and External Relations
Leo	Papanikolaou	Lead Commercial Manager
Federica	Maranca	Lead Commercial Manager
Ryan	Trow	Lead Commercial Manager
Filiberto	Tartari	Mott Macdonald (adviser)
Christos	Kolliatsas	Mott Macdonald (adviser)

Discussion:

OCP Requirement 2.1(B)

1. LCCC outlined the approach to development of the guidance, in particular the early engagement of current CfD holding counterparties, which commenced in October 2016 with the initial draft guidance being sent out for comments. LCCC had recently gained significant learning on two wind projects that had recently fulfilled their OCPs and received written feedback on the guidance from generators, which had flagged up some areas that could benefit from a discussion with other counterparties and wider stakeholders. In addition, recent stakeholder engagement had highlighted that process of developing the revised February version of the guidance had not been as interactive as generators would have liked, and that an industry wide discussion beyond current counterparties would be welcome – this was another key driver for the workshop.

2. The contractual requirement was outlined, which is “to evidence that 80% of the installed capacity has been commissioned”, with reference to relevant supporting definitions being: “commissioned” to a “Reasonable and Prudent Standard”; and “able to generate electricity” or “fit for commercial operation”. The importance of the definition of “installed capacity”, as the “capacity of the facility were it to be operated on a continual basis” was also referred to.

WTG Commissioning tests

3. The evidence to prove that individual turbines had been commissioned was discussed. Some generators welcomed the opportunity to use Take Over Certificates (TOCs), as they planned to have those at the time of approaching OCPs with LCCC. Other generators noted that the commissioning process generally follows: CCC (commercial operation, grid export and manufacturer sign off), reliability testing (this gives the Generator comfort that the commercial obligations within the WTG contact have been successfully fulfilled and the WTG can be taken over), TOC (payment of milestone and handover to the Generator). LCCC made clear that its proposal was for TOCs to be optional.
4. There was a debate around whether or not LCCC should be asking for the 120/240 hr test (or equivalent) or should instead accept Commissioning Completion Certificates (CCC). There was a consensus that the CCC is the manufacturer’s commissioning test for a turbine. Generators explained that the CCC proves that the type tested WTG has passed the supplier’s stringent commissioning processes and is technically commissioned, at which point the WTG is able to export power and the WTG can be controlled by the Generator, confirming its ability to generate electricity and export power. Some generators pointed out that the tests undertaken in order to issue the CCC prove that other parts of the plant are operational (SCADA, balance of plant). A WTG manufacturer noted that the WTG has to prove the ability to export to the grid in order to obtain the CCC. However, it was also noted by participants that the WTG has to operate only for a short duration for the CCC to be issued (several minutes).
5. There was a consensus that the 120/240hr test prove the ability to continuously generate electricity. Some generators said that the 120/240hr tests were an essential pre-requisite for turbine hand over from the manufacturer (this test aids the Generator when assessing that each WTG has met all commercial and contractual obligations prior to milestone completion and handover) prior to commercial operation, and others said that they were not always required. It was noted by some generators that these tests could be phased out or reduced as WTG commissioning becomes more standardised and generators seek further cost reductions. Again, it was pointed out that the use, or not, of 120/240hr tests prior to partial operation was a commercial and contractual matter, and often depended on the warranties offered by the manufacturer.

Electrical Balance of Plant (EBoP)

6. Generators suggested that the OFTO assets do not need to be demonstrated as being commissioned as they are not part of the windfarm, and the OFTO is already subject to

its own stringent testing. LCCC explained that the OFTO is part of the Facility as this is defined in the CfD and therefore subject to the OCPs. LCCC undertook to reconsider what level of evidence regarding OFTO would be required.

7. Some generators raised concerns over the lack of certainty in relation to LCCC's evaluation of the completeness of the EBoP commissioning tests list and a few generators stated that they would feel more comfortable if a minimum set of tests were introduced. LCCC's view was that early engagement would remove risks on this and the group discussed the possibility of each developer defining and signing off the testing strategy with the LCCC prior to commencement. LCCC commented that it didn't feel a specific testing list was necessary but suggested that if generators could come up with such a list that they were all content with then it would be considered. It was noted by the LCCC that take over certificates would be optional and some generators highlighted that take over certificates may not be available at the 80% completion stage (TOC availability is dependent on commercial arrangements).

Electrical losses

8. Generators were supportive of a desktop study rather than a test, however some remained concerned that there were not detailed specific requirements for the study and therefore they were concerned that generators would take different approaches and there was a risk that LCCC sign off would not be straightforward. LCCC's view was that generators could share their internal desktop study methodology and results with the LCCC for sign off prior to commissioning commencement for early approval rather than during the commissioning process to remove any potential uncertainty. LCCC commented that it didn't feel that a specification was necessary but suggested that if generators put together a list of minimum requirements for a desktop electrical losses study that all generators were content with then it would be considered. The LCCC noted that the losses test is needed to prove that 80% of the net capacity has been commissioned.
9. Some generators asked whether they could still opt for the analytical electrical losses determination set out in the February 2017 guidance document and LCCC confirmed this was still acceptable.

Reliability

10. It was accepted by some generators that there may be issues identified post-CCCs that would impact on the output of the windfarm. Although the CFD did not require LCCC to confirm reliability, the definition of Installed Capacity referred to "continuous operation", and a manufacturer noted that the CCC is only issued once the turbine is "commissioned" and therefore able to operate and export. Some generators highlighted that reliability risk was a commercial one, as they would only receive payments for what they generated, as the CfD mechanism encourages maximum production, and therefore the risk should sit with the generator, not LCCC.

11. However, it was pointed out that the requirement in the CFD to evidence that 80% of installed capacity was operational (as opposed to first export) could not be watered down by LCCC, and the 80% threshold must be satisfied before payments could commence. Furthermore, the condition had emerged as a result of consultations with generators who wanted to receive revenue earlier in the process, rather than waiting until they were fully operational at their final installed capacity. This led to the discussion of the 80% test.

80% Whole Facility test

12. LCCC explained its approach was to try to rely on utilising evidence from existing industry standards and tests, but that it had found difficulty in identifying sufficient existing standard tests that would demonstrate capability to operate at 80% of installed capacity (which is net of parasitic losses and loads). LCCC had suggested a whole facility test to meet this purpose but was aware that the proposed construct had no immediate link to an industry standard. Generators were asked to give their view on what might be a suitable alternative, including a test with a shorter duration of 4 hours, that could be applied equally across all wind generators, Industry welcomed the LCCCs approach to utilising existing evidence and noted that the previous 7 day test would be challenging.

13. Some generators welcomed the reduction to 4 hours, some other generators noted that the 4 hour test may still increase development risk during a complex commissioning process. Other generators argued that CCCs for the WTGs could be provided up to or greater than 80% of capacity (taking into account net definition of installed capacity), which include individual turbine SCADA being tested, and these, in combination with the ION B (or an equivalent test where the IONB is not applicable), should be sufficient and is in line with current industry standards. LCCC questioned whether the above would reasonably prove that 80% of the facility could operate simultaneously.

In response, some generators suggested that the ION B's 70% constraint lifting test was an effective demonstration that:

- i. SCADA was working at a facility level.
- ii. The facility as a whole can export power, because the 70% constraint lifting test required, amongst other things, that 50% of the capacity of the BMU(s) being operational and exporting for a short period of time (in the region of 20 minutes); i.e. a whole facility test.

It was suggested that NGET's test determined that there were no foreseeable issues in scaling up from 50% to 80%, and providing a generator had commissioned the individual turbines to 80% they were ready to generate at that level if they had passed ION-B.

14. ION-B was only applicable to generators over 100MW that are transmission-connected. The G59 test was not comparable, as was typically only done at 20%. Onshore wind generators were concerned about weather making a whole facility test difficult to achieve, though they were challenged as to why they would commission when there wasn't enough wind to generate. It was noted that the commissioning test should be fair and equal for all Generators.

15. There seemed to emerge towards the end of the discussion a broad consensus that the following tests should be sufficient:

- ION-B 70% threshold lifting test (only relevant for over 100MW, offshore) plus individual turbines commissioned totalling 80%net
- OR
- 30+ minutes to 4 hours whole facility operation plus individual turbines commissioned totalling 80%net (for generating stations where the ION-B 70% threshold lifting test does not apply).

16. It was noted that the NGET grid compliance tests are not necessarily aligned to the phases in the CfD contracts therefore individual project discussions may need to take place. It was also noted that the full Scada system would not be available at 80% and one Generator noted that the SCADA requirements could be moved to the FIC.

Guidance Process

17. On the broader engagement piece generators did not view any of LCCC's guidance as purely operational and claimed that even simple documents had impacts on all generators and should be developed transparently with the entire industry. They understood that LCCC would still need to take individual generators through processes whilst guidance was in "draft" form and this was acceptable.

18. It was suggested that LCCC needed a governance process that made clear how guidance would work including that no guidance would apply retrospectively. LCCC stated that in many cases guidance simply described in writing the approach we had been taking with generators already, and the need for a flexible and timely approach when clarifying areas for individual projects. However, LCCC recognised that guidance would in some cases be different for different rounds. LCCC expressed concern that increased engagement on all guidance documents could become resource intensive and asked if trade associations or industry working groups might be useful in coordinating industry feedback. Generators noted processes followed by other industry parties for example the NGET CUSC or the Ofgem E-serve. It was suggested that a further working group look at this issue with a view to defining an acceptable process, Generators suggested forming underlying principles for the guidance and engagement process.

19. Generators requested that there is sufficient time to review the FIC guidance.

Actions agreed in workshop:

LCCC:

1. To reconsider what evidence that the OFTO asset has been commissioned is required.
2. To set up a small working group to further develop its guidance process.

Wind industry:

1. Generators to collectively suggest a minimum set of tests that must be included in the list of tests submitted for the Electrical Balance of Plant.
2. Generators to collectively suggest a list of minimum requirements/standards that the desktop electrical losses study should adhere to.

Post-workshop suggested attendee actions:

3. In light of the discussion around the whole facility test, LCCC would like to ask all attendees individually to:
 - a. Confirm that our understanding with regards to the consensus amongst generators described in para 15 of these minutes is accurate.
 - b. Explain why they consider that the evidence as set out in para 15 would confirm that the Facility can generate electricity at a level not less than 80% of its installed capacity.
 - c. Provide their own assessment as to the equivalence of the ION-B 70% threshold lifting test when compared with a 30+ minutes to 4 hours whole facility test, including whether the two tests place a similar and proportionate burden on the generator, or whether instead a whole facility test should be required across all generators if LCCC is to uphold its commitment to treat projects consistently.