



**LOW CARBON**  
CONTRACTS COMPANY

# Final Installed Capacity (“FIC”) Guidance for Onshore and Offshore Wind

**Version 1.0**

Issued on 06 April 2018

Applicable to Investment Contracts, CFD Agreement and CFD  
Standard Terms and Conditions issued in August 2014 and March 2017

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## Disclaimer

*This guidance does not and is not intended to supersede or replace the provisions of the CFD. This guidance does not constitute legal or investment advice and should not be relied upon as such. Generators should consult their professional advisors where they require advice, whether legal or otherwise. LCCC further reserves the right to amend this guidance and any associated guidance from time to time.*

*This guidance should not be viewed as in any way restricting LCCC in the nature, type and/or amount of evidence, information and documentation it will require to satisfy itself of the Generator's fulfilment of the Final Installed Capacity requirement, nor as to the nature, level and timing of our consideration or reconsideration of the evidence that is provided. LCCC reserves the right at any time to request further or additional evidence, and to review or reconsider the evidence already provided.*

1.1 Pursuant to Condition 7 "Final Installed Capacity; Maximum Contract Capacity" of Part 4 (Adjustments to Installed Capacity Estimates) of the CFD Standard Terms and Conditions ("STCs") the Generator shall, following the Start

## Section 1: Introduction

This document provides generators with guidance on the forms of evidence that the Low Carbon Contracts Company considers acceptable to be provided with the Final Installed Capacity (“FIC”) Notice.

- 1.1 Pursuant to Condition 7 "*Final Installed Capacity; Maximum Contract Capacity*" of Part 4 (Adjustments to Installed Capacity Estimates) of the CFD Standard Terms and Conditions (“STCs”) the generator shall, following the Start Date, and no later than ten (10) Business Days after the Longstop Date, submit to the Low Carbon Contracts Company (“LCCC”) a Final Installed Capacity (“FIC”) Notice. The FIC Notice shall specify the Installed Capacity that has been Commissioned and include Supporting Information to confirm it, including details of the assets comprising the Facility.
- 1.2 This guidance is intended to assist CFD generators (“Generators”) whose Generation Technology is Onshore Wind or Offshore Wind in considering what Supporting Information they will need to provide to LCCC to demonstrate they have fulfilled the requirement to submit a FIC Notice.
- 1.3 LCCC would encourage Generators to engage early in the FIC process. This will enable the parties to discuss the Supporting Information required and mitigate any risk of delay.
- 1.4 Before the Generator proceeds with the formal submission, we recommend that submissions are made in draft form so that LCCC can comment on any evidence that the Generator is intending to submit with the FIC Notice.
- 1.5 Supporting Information that LCCC requires from Generators in order to demonstrate the Final Installed Capacity of the Facility may in some cases be the same evidence Generators submit to fulfil Operational Conditions Precedent (“OCP”). Going forward LCCC is willing to consider using any part of the Supporting Information previously submitted and accepted in order to fulfil the OCP, to accompany the FIC Notice to determine the FIC or the assets comprising the Facility. This is subject to the provision of an appropriate Directors’ Certificate to certify that the information documented at the time is still valid and current (providing a detailed reference to the document with its file name and date of original submission), and by using LCCC approved system for managing and storing this evidence.

## Section 2: Definitions

- 2.1 The “CFD Counterparty” is the Low Carbon Contracts Company Ltd.
- 2.2 Defined terms used in this guidance and not defined herein should be given the meaning provided in the “CFD” (which is comprised of the CFD Agreement and the CFD Standard Terms and Conditions as published by the Department of Energy and Climate Change on 29 August 2014<sup>1</sup> and in March 2017<sup>2</sup>). This guidance is also applicable to Investment Contracts. However, Generators with Investment Contracts are advised to review the equivalent clauses.
- 2.3 Please note that Installed Capacity is determined at the Facility Metering System at the Boundary Point. This document refers to the Installed Capacity and Final Installed Capacity guidance<sup>3</sup> issued by LCCC which defines Installed Capacity as *“the capacity of the Facility (expressed in MW) were it to be operated on a continual basis at the maximum capacity possible without causing damage to it (assuming any source of power used by it to generate electricity was available to it without interruption)”*.

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<sup>1</sup>Department of Energy and Climate Change, Contract for Difference: Standard Terms and Conditions, published in 29 August 2014.

<sup>2</sup>Department for Business, Energy & Industrial Strategy, Contracts for Difference: standard terms and conditions, version 2 published in 13 March

<sup>3</sup> Low Carbon Contracts Company, Guidance: Installed Capacity and Final Installed Capacity, published in January

## Section 3: Context

- 3.1 Pursuant to Condition 7 "*Final Installed Capacity; Maximum Contract Capacity*" of Part 4 (Adjustments to Installed Capacity Estimates) of the CFD Standard Terms and Conditions ("STCs") the Generator shall, following the Start Date, and no later than ten (10) Business Days after the Longstop Date, submit to LCCC a FIC Notice. **The FIC Notice shall specify the Installed Capacity that has been Commissioned and include Supporting Information to confirm it, including details of the assets comprising the Facility.**
- 3.2 No later than twenty (20) Business Days after receipt of the FIC Notice the LCCC shall provide to the Generator a FIC Response Notice specifying either that:
- FIC as specified in the FIC Notice is agreed; or
  - that it has not received sufficient Supporting Information to determine FIC or the assets comprising the Facility
- 3.3 **The Required Installed Capacity ("RIC")** is defined in the CFD Agreement. For Offshore Wind RIC is 85% of the Installed Capacity Estimate ("ICE") or, the ICE less the size (in MW) of one of the Facility's wind turbine generators ("WTGs"). For Onshore Wind RIC is 95% of the ICE or, the ICE less the size (in MW) of one of the Facility's WTGs. The FIC cannot be less than the RIC.
- 3.4 **The Initial Installed Capacity Estimate ("IICE")** is defined in the CFD Agreement. Pursuant to Condition 5 "*Adjustment to Installed Capacity Estimate: Relevant Construction Event*" and Condition 6 "*Adjustment to Installed Capacity Estimate: Permitted Reduction*" of the CFD STCs, the IICE can be reduced. The ICE is the Generator's estimate of Installed Capacity from time to time. The FIC cannot exceed the ICE.
- 3.5 This effectively gives a cap and collar in which FIC must sit. A fuller explanation of Installed Capacity is available from our "Installed Capacity & Final Installed Capacity" guidance.<sup>7</sup>
- 3.6 **Our objective for the FIC process is to adopt an approach to determining Installed Capacity which is: proportionate; repeatable; auditable; and robust.**

We have considered two alternative Options through which the Generator can choose to determine the FIC:

- **Option 1** - the aggregate nameplate capacity of WTG's minus electrical losses and parasitic loads; or
- **Option 2** - a measure of maximum output from a thirty (30) minute period measured at the Facility Metering System at the Boundary Point.

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<sup>4</sup>Under Condition 7.1 ("Final Installed Capacity; Maximum Contract Capacity") of the CfD Standard Terms and Conditions.

<sup>5</sup>Under Condition 53.1 (D)(i) ("Termination Events") of the CfD Standard Terms and Conditions, the CFD can be terminated if the FIC is lower than the Required Installed Capacity.

<sup>6</sup>Pursuant to Part A of Annex 3 to the CFD Agreement and Part 5A Payment calculations: Baseload Technologies of the CfD Conditions.

<sup>7</sup>[https://lowcarboncontracts.uk/sites/default/files/20160131\\_Installed%20Capacity%20Guidance%20%28003%29\\_0.pdf](https://lowcarboncontracts.uk/sites/default/files/20160131_Installed%20Capacity%20Guidance%20%28003%29_0.pdf)

## Section 4: Option 1 – Nameplate Minus Losses

- 4.1 Under this option, a measure of net capacity, expressed in MW, would be determined from the sum of the nameplate capacity (or effective rated power including power modes) of all WTGs making up the Facility minus Facility wide parasitic loads and electrical losses up to and including the Facility Metering System at the Boundary Point (this should therefore include WTG losses, array losses and losses within the substation as far as such assets are part of the CFD Facility). For this Option, we expect electrical losses to be calculated through a desktop study, similarly to the process for OCP 2.1 (B).
- 4.2 Listed below, in brief, is the Supporting Information we expect to be necessary for Option 1.

### **(i) Evidence of the commissioning of all WTGs comprising the Facility**

- a. Dated, signed and valid Take Over Certificates (“TOCs”). The Criteria under which those TOCs can be issued in the form of either:
- a document, to the satisfaction of LCCC, with extracts of the relevant contractual provisions for issuing the TOCs under the contracts accompanied by a letter signed by an appropriately qualified and authorised person referencing the contract and its date, confirming such contractual provisions are the only relevant provisions in relation to the TOCs; or
  - extracts from relevant contracts (where appropriate these can be redacted, subject to LCCC being able to review the unredacted extract where it considers this to be necessary), including both the front and signatory pages and the relevant contractual provisions, accompanied by a letter signed by an appropriately qualified and authorised person referencing the contract and its date and confirming that these provisions extracted are a true reflection of the relevant provisions of the contract and are the only relevant provisions in relation to the TOCs; and

### **(ii) Evidence of the commissioning of Electrical Balance of Plant (“EBOP”)**

- a. Dated, signed and valid TOCs for each contractor supplying and/or installing part of the EBOP. The Criteria under which those TOCs can be issued in the form of either:
- a document, to the satisfaction of LCCC, with extracts of the relevant contractual provisions for issuing the TOCs under the contracts accompanied by a letter signed by an appropriately qualified and authorised person referencing the contract and its date, confirming such contractual provisions are the only relevant provisions in relation to the TOCs; or
  - extracts from relevant contracts (where appropriate these can be redacted, subject to LCCC being able to review the unredacted extract where it considers this to be necessary), including both the front and signatory pages and the relevant contractual provisions, accompanied by a letter signed by an appropriately qualified and authorised person referencing the contract and its date and confirming that these provisions extracted are a true reflection of the relevant provisions of the contract and are the only relevant provisions in relation to the TOCs; and
- b. The assets we would typically expect to be included as part of EBOP are: inter array cable(s); transmission cable(s), export cable(s); substation(s) (onshore and/or offshore as applicable) with associated equipment (main transformer(s), switchgears etc.); SCADA system. For Generators whose Generation Technology is Offshore Wind, the Generator is expected to provide evidence of the commissioning of the Offshore Transmission System.

### **(iii) Evidence of whole Facility Commissioning**

- a. Final Operational Notification (“FON”) as required by the Grid Code; or
- b. Should the FON not be available, the Generator will need as a minimum to provide Interim Operational Notice (“ION”) with no Operational Restrictions applicable to the connection in order to evidence that

the Facility can be operated at the net capacity set out in the FIC Notice without any constraint. For Generators whose Generation Technology is Offshore Wind, the Generator is expected to provide only the ION part B.

- c. For Facilities connected to the distribution system, the G59 test.
- d. Where the Generator has completed the transfer of the Offshore Transmission System assets to the Onshore Transmission Owner (“OFTO”) prior to take-over, Generators should get in touch with LCCC to discuss and agree acceptable evidence to be provided at the time the commissioning is completed

**(iv) Confirmation of Capacity**

- a. Type certificate of the WTGs issued by the turbine manufacturer indicating the nameplate capacity (or effective rated power including power modes) of the WTG model deployed at the Facility.
- b. Letter from WTG supplier confirming rated power of all WTGs deployed at the Facility, including power modes and/or de-rating.
- c. Desktop study for Facility wide electrical losses and parasitic loads. Electrical losses and parasitic loads should be calculated up to the Boundary Point and should be expressed as a percentage of FIC. Electrical losses and parasitic loads should be calculated using the as-built parameters of the electrical system and should be calculated at maximum production.

**(v) Confirmation of assets making up the Facility**

- a. Updated Facility Description stating the FIC (MW) and the assets comprising the Facility.
- b. Single Line Diagram as-built.
- c. As-laid coordinates and plan.
- d. Site visit (onshore visit with option for offshore visit should LCCC require).

4.3 **(vi) EPC TOC**

- a. Where all construction works at the Facility are covered by a single/overarching Engineering, Procurement, and Construction (EPC) contract, the requirement re TOCs of the EBOP can be fulfilled by the submission of the TOC for the EPC. The commissioning of any asset that is not covered by the EPC will have to be evidenced separately.
- b. In those special circumstances where there is an EPC TOC issue has been held off by Generators for reasons that would not to compromise or affect the ability of the Facility to operate at maximum capacity, LCCC will consider alternative evidence. Generators will have to provide evidence that the outstanding works do not compromise the ability of the Facility to operate.

## Section 5: Option 2 – Output and Calculation of Capacity

5.1 Under this option, a measure of net capacity, expressed in MW, shall be calculated from the maximum output recorded at the Facility Metering System at the Boundary Point at a thirty (30) minute resolution over the period from Start Date to the date of the FIC Notice. The Generator shall provide evidence of such measurement of the FIC from the maximum output achieved in a single thirty (30) minute period recorded at the Facility Metering System at the Boundary Point over the period from Start Date to the date of the FIC Notice. The calculation should also be supported by evidence of all WTGs being available and producing at rated power during the selected thirty (30) minute period.

5.2 We acknowledge that output will vary with ambient conditions; that ambient conditions are unpredictable; and, therefore that conditions will dictate when maximum output can be achieved, potentially constraining when Generators can fulfil FIC.

5.3 To achieve an accurate measure of the maximum capacity from Option 2 Generators would need to provide:

- (i) WTG output at all WTG terminals;
- (ii) Electrical output of the Facility measured at the Facility Metering System at the Boundary Point (deducting any TLM related loss adjustment);
- (iii) Operational status and availability of all WTGs comprising the Facility;
- (iv) Average wind farm wind speed; and
- (v) Average air pressure and temperature.

5.4 For Option 2 we would also require:

**(i) Evidence of the commissioning of all WTGs comprising the Facility**

a. Dated, signed and valid TOCs. The Criteria under which those TOCs can be issued in the form of either:

- a document, to the satisfaction of LCCC, with extracts of the relevant contractual provisions for issuing the TOCs under the contracts accompanied by a letter signed by an appropriately qualified and authorised person referencing the contract and its date, confirming the listed contractual provisions are the only relevant provisions in relation to the TOCs; or
- extracts from relevant contracts (where appropriate these can be redacted, subject to LCCC being able to review the unredacted extract where it considers this to be necessary), including both the front and signatory pages and the relevant contractual provisions, accompanied by a letter signed by an appropriately qualified and authorised person referencing the contract and its date and confirming that these provisions extracted are a true reflection of the relevant provisions of the contract and are the only relevant provisions in relation to the TOCs; and

**(ii) Evidence of the commissioning of Electrical Balance of Plant (“EBOP”)**

a. Dated, signed and valid TOCs for each contractor supplying and/or installing part of the EBOP. The Criteria under which those TOCs can be issued in the form of either:

- a document, to the satisfaction of LCCC, with extracts of the relevant contractual provisions for issuing the TOCs under the contracts accompanied by a letter signed by an appropriately qualified and authorised person referencing the contract and its date, confirming the listed contractual provisions are the only relevant provisions in relation to the TOCs; or

- extracts from relevant contracts (where appropriate these can be redacted, subject to LCCC being able to review the unredacted extract where it considers this to be necessary), including both the front and signatory pages and the relevant contractual provisions, accompanied by a letter signed by an appropriately qualified and authorised person referencing the contract and its date and confirming that these provisions extracted are a true reflection of the relevant provisions of the contract and are the only relevant provisions in relation to the TOCs; and
- b. The assets we would typically expect to be included as part of EBOP are: inter array cable(s); transmission cable(s) export cable(s); substation(s) (onshore and/or offshore as applicable) with associated equipment (main transformers, switchgear etc.); SCADA system. For Generators whose Generation Technology is Offshore Wind, the Generator is expected to provide evidence of the commissioning of the Offshore Transmission System.

**(iii) Evidence of whole Facility Commissioning**

- a. Final Operational Notification (“FON”) as per required by Grid Code; or
- b. Should the FON not be available, the Generator will need as a minimum to provide Interim Operational Notice (“ION”) with no Operational Restrictions applicable to the connection in order to evidence that the Facility can be operated at FIC without any constraint. For Generators whose Generation Technology is Offshore Wind, the Generator is expected to provide only the ION part B.
- c. For Facilities connected to the distribution system, the G59 test.
- d. Where the Generator has completed the transfer of the Offshore Transmission System assets to the Offshore Transmission Owner (“OFTO”) prior to take-over, Generators should get in touch with LCCC to discuss and agree acceptable evidence to be provided at the time of the commissioning is completed.

**(v) Confirmation of Capacity**

- a. Type certificate of the WTGs issued by the turbine manufacturer indicating the nameplate capacity (or effective rated power including power modes) of the WTG model deployed at the Project.
- b. Letter from WTG supplier confirming rated power of all WTGs deployed at the project, including power modes and/or de-rating.

**(vi) Confirmation of assets making up the Facility**

- a. Updated Facility Description stating the FIC (MW) and the assets comprising the Facility.
- b. Single Line Diagram as-built.
- c. As-laid coordinates and plan.
- d. Site visit (onshore visit with option for offshore visit should LCCC require).

**5.5 (vii) EPC TOC**

- a. Where all construction works at the Facility are covered by a single/overarching Engineering, Procurement, and Construction (EPC) contract, the requirement re TOCs of the EBOP can be fulfilled by the submission of the TOC for the EPC. The commissioning of any asset that is not covered by the EPC will have to be evidenced separately.

In those special circumstances where there is an EPC TOC issue has been held off by Generators for reasons that would not to compromise or affect the ability of the Facility to operate at maximum capacity, LCCC will consider alternative evidence. Generators will have to provide evidence that the outstanding works do not compromise the ability of the Facility to operate.

## Section 6: Phased Projects

- 6.1 The Supporting Information requirements set out in Sections 4 and 5 of this guidance apply per phase for multiphased projects. With regards to metering phased contracts, the SCADA requirements under 4.2 (ii) and 5.4 (ii) above will differ.
- 6.2 When SCADA TOC is not available for each of the phases, evidence of the commissioning of the SCADA system for all WTGs belonging to the phase applying for FIC should be fully evidenced; and TOC of the SCADA for all phases shall be submitted with the FIC notice for the final phase to be completed.
- 6.3 Generators with Apportioned Metering contracts are invited to discuss with LCCC at the earliest opportunity how they can meet this requirement.

