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**Offtaker of Last Resort Advisory Group Discussion Paper 4.1:   
SETTING THE BACKSTOP PPA DISCOUNT**

# Overview

**Headlines:**

* The OLR is intended to be a ‘last resort’ route to market and to provide a ‘worst case’ level of revenue. We therefore consider that **discounts in backstop PPAs should take the form of a £/MWh discount** off the generator’s CfD reference price (rather than a % discount). This will ensure that the generator is not exposed to any additional wholesale price risk, reducing the risk that investors and lenders will attach to revenues under the OLR.
* We consider that backstop PPA discounts should be **fixed (in real terms) for the duration of a generator’s CfD**, **indexed by CPI** (in line with the CfD strike price). The alternative of discounts that increase over time would be hard to calibrate and may increase the risk of generators accessing the backstop if the trajectory was inaccurate.
* We are using a **project finance model to understand the impact of different backstop PPA discounts** under three scenarios:

- A levered project with a 15-year PPA with a credit-worthy counterparty (a reference scenario, as in the model the OLR has no impact on debt sizing or equity returns);

- An unlevered project receiving OLR revenues only (i.e. the ‘worst case’ revenues);

- A levered project with a 5-year PPA with a credit-worthy counterparty, followed by expected market revenues under a rolling 1-year PPA strategy.

* For the levered scenarios, gearing is calculated off contracted revenues and OLR revenues alone, while **return to equity is** based on expected market revenues for the life of the project.
* We propose selecting a backstop PPA discount that is **substantially higher than expected to be available in the market** but which enables **generators to get broadly similar or better equity returns** from a shorter-term contracting strategy as they would get in a 15-year PPA.
* We discuss whether we should set a **single backstop PPA discount** for all eligible generators or should **vary this by technology**, and would welcome the group’s views on this.

**Key Questions:**

[Q1: Do you agree that discounts in backstop PPAs should be set on a £/MWh basis?](#_Toc372555928)

[Q2: Do you agree that discounts should be fixed for the duration of a generator’s CfD?](#_Toc372555929)

[Q3: Do you agree that discounts should be indexed to CPI, in line with the CfD strike price?](#_Toc372555930)

[Q4: Do you agree with our general approach to understanding the impact of different discounts?](#_Toc372555931)

[Q5: Do you agree with the proposed criteria for selecting a backstop PPA discount?](#_Toc372555932)

[Q6: Does the group agree with our assessment of the different approaches to tailoring discounts to technologies?](#_Toc372555933)

[Q7: Which approach does the group consider strikes the best overall balance?](#_Toc372555934)

# Introduction

This paper is concerned with how the discount in backstop PPAs should be set. Specifically, it considers:

* the nature of the discount (e.g. % of the reference price or £/MWh fee, constant or varied over time, and indexation);
* the methodology for determining the discount, including the inputs used to model the potential impact of differing levels of discount;
* whether the discount should vary for different technologies or classes of generator.

Indicative results from modelling the impact of various discounts on certain classes of generator will be presented at the meeting (modelling is still in progress).

# Assessment Criteria

In setting the level of discount in backstop PPAs, the general principles should be (a) that it is large enough that it represents a genuine ‘last resort’ – i.e. it exceeds expected route to market costs; and (b) it provides sufficient protection to generators to allow them more flexibility in their contracting strategy.

Specific proposed assessment criteria are set out in Table 1 below.

**Table 1: Assessment criteria**

|  |  |
| --- | --- |
| **Criteria** | **Description** |
| **Availability of financeable routes to market for independents** | * The pricing in the Backstop PPA should provide sufficient levels of protection to enable generators to take a more flexible approach to PPA tenor and counterparty risk. |
| **Minimise system costs** | * The pricing in the backstop should minimise the risk of the OLR being triggered, which would result in removing balancing incentives from generators (and therefore potentially increasing costs to consumers), and having an impact on suppliers (both in term of being providers of backstop PPAs as well as funders of levelisation). |
| **Impact on suppliers** |
| **Potential for market distortions** | * The pricing of the backstop PPA should be such that it minimises distortions in (a) the PPA market (i.e. that it is used as a last resort) and (b) generators’ capital structures, and (c) capital allocations between technologies. |
| **Practicality and cost of implementation and administration** | * The methodology used to price the backstop should be sufficiently simple to be applied across technology types and be updated through time. |
| **Legal risk and potential compliance cost** | * The approach and assumptions used to price the backstop PPA should be transparent and consistent, both with the stated policy objective of the backstop; and wider EMR (i.e. strike price methodologies etc.) |

# Nature of the discount in backstop PPAs

This section considers whether the discount should be expressed as a percentage of the reference price or £/MWh fee, whether it should be fixed or vary over time, and whether it would be indexed.

## Percentage or absolute discount?

PPAs for intermittent plant in the market at present are typically structured as a percentage discount to a market price (e.g. the day ahead price). This makes sense from the offtaker’s perspective, as there is currently a degree of correlation between the day ahead price, intraday prices, and cash-out prices, so imbalance / basis risk is likely to be correlated with the market price at which the electricity has been sold. It also makes sense from a generator’s perspective, as the generator’s revenue will track movements in market prices (i.e. the generator’s total revenue will be higher when market prices are higher, notwithstanding the effect of the discount).

However, under the CfD the situation for generators will be different. A PPA struck at a percentage discount to the market price would result, all else being equal, in the generator receiving *less* total revenue as market prices increase (because the generator is topped up from the market price to a fixed strike price). Generators may therefore seek absolute discounts in the open market to remove this risk, or alternatively will have to factor in a degree of wholesale price risk into their business case.

The issue is therefore whether the discount in backstop PPAs should be on a percentage or absolute basis. Our view is that it is best structured as a fixed route-to-market fee expressed in £/MWh because:

* the backstop PPA is meant to represent ‘last resort’ revenues, so leaving the generator exposed to a degree of wholesale price risk would reduce the bankability of the revenue;
* the risk to offtakers from an absolute discount can be mitigated through the levelisation process;
* the open market may move in this direction in any case (one provider is already discussing offering PPAs on a fixed fee basis), so offering percentage discounts through the OLR would risk it being out of line (in a negative direction) with the open market;
* over time, the correlation between day ahead prices and imbalance cost for wind generators in particular may weaken as the volume of wind on the system grows (e.g. imbalance costs faced by wind may be highest when there is a strong wind forecast at the day ahead stage, depressing day ahead prices; however an unforecast drop in wind speed near to delivery could lead to high cash-out prices and high imbalance costs for those generators who are out of balance).

However, there are some risks with this approach:

* if the open market does not move towards absolute discounts, this could make the OLR more attractive to lenders (but this would be mitigated by the size of the discount);
* it could set a precedent for open market PPAs that is not appropriate;
* it may make it harder for Ofgem or offtakers to assess imbalance risk under backstop PPAs if imbalance costs remain correlated with day ahead prices.

1. Do you agree that discounts in backstop PPAs should be set on a £/MWh basis?

## Fixed or varying over time

Some elements of route to market costs – in particular imbalance costs for wind generators – are expected to increase over time, primarily driven by the increasing volume of intermittent generation on the system driving more volatile cash-out prices and increasing the risk that individual wind assets are out of balance in the same direction as the system.

Whilst PPAs in the market at present are typically structured with a fixed (percentage) discount, we are aware of some PPAs where the discount increases over time or that contain reopeners for the discount level at a future point in the contract, to reflect expectations that imbalance costs in particular may increase.

There is therefore a question as to whether the discount in backstop PPAs should be fixed for the duration of the generator’s CfD, or if it should increase over time to reflect the increased imbalance risk (see Figure 1 for an illustration of the two alternatives).

Figure 1: Fixed vs. increasing backstop PPA discount *(real 2012 prices)*

There are a number of factors to consider in choosing between these options:

* **Fixed discount**
  + A fixed discount is consistent with the objective of the OLR to protect against uncertain *long-term* route-to-market costs.
  + It is simpler to set the size for and assess the impacts of a fixed discount – there is less need to understand the likely trajectory of route to market costs in detail.
  + As shown in Figure 1, a fixed discount yields stable revenue (in real terms) under the OLR, whilst an increasing discount would lead to decreasing revenue (although when inflation is factored in, both are likely to lead to increasing revenue in nominal terms).
  + However, the difference between discounts in short-term open market PPAs and the backstop PPA is likely to be greatest in the near term and narrow over time (as per Figure 1(a)(i)), which could increase the likelihood of generators accessing the backstop towards the end of their CfD.
* **Varying discount**
  + This could be structured as a constant amount above expected route to market costs, with the intention of making the likelihood of generators accessing backstop PPAs constant over time, rather than highest at the far end of their CfD (assuming route to market costs follow the expected trajectory).
  + This might give more ‘room to manoeuvre’ in setting the discount, as it might be possible for *average* revenues under the backstop to be the same (or larger) as under a fixed discount, while having a higher margin above route to market costs in the long-term (when, for wind generators, imbalance costs are expected to be highest) – see Figure 1(b)(i). This might reduce the chance of generators actually accessing the backstop towards the end of their CfDs.
  + However, the evolution of route-to-market costs is uncertain – particularly for generators other than wind – so a trajectory of rising backstop discounts is more prone to error (for example, a rising profile could make it more likely that generators would access the backstop if, for example, imbalance costs spiked in the early 2020s but reduced in the late 2020s).
  + Also, not all technologies will have rising expected route to market costs, so this approach would not work for such technologies.

On balance, we feel that a fixed discount is more appropriate, particularly because it is simpler to set and in line with the objectives of the OLR.

1. Do you agree that discounts should be fixed for the duration of a generator’s CfD?

## Indexation

The intention of the OLR is to provide generators with a stable ‘worst case’ all-in price for their power (taking the CfD top-up and backstop PPA together). Since CfD strike prices are indexed to CPI, if the discount in backstop PPAs is set in £/MWh and fixed for the duration of the CfD, it would be necessary to index the backstop discount to CPI in the same way to achieve a stable return.

1. Do you agree that discounts should be indexed to CPI, in line with the CfD strike price?

# Setting the backstop PPA discount

*(N.B. The following discussion and our modelling assumes that, as discussed above, the backstop discount is a fixed £/MWh discount indexed at CPI for the duration of the generator’s CfD. The modelling is still in progress; we hope to present initial results for discussion at the meeting.)*

## Modelling approach

As stated in previous sections, the key objective when setting the backstop discount is to strike the right balance between a discount that is large enough to minimise the risk that it ends up being smaller than discounts in the market while still providing sufficient ‘firm’ revenue to allow projects to obtain a reasonable level of debt and equity returns.

We do not believe that there is a simple formula that can be used to determine the discount. Instead, our approach is to model the impact of different levels of discount on project finance metrics under various assumptions about route to market strategies and costs. This can illustrate a range of capital structures and returns to equity that might be feasible given particular backstop discounts – although of course, what individual projects can achieve will vary depending on the specifics of the project, PPAs available in the market, expectations over imbalance costs, and the risk appetite of debt and equity providers.

We have commissioned Deloitte to conduct project finance modelling of achievable gearing and project returns using assumptions provided by DECC and Baringa Partners. To date the modelling has focussed on onshore and offshore wind and solar PV, as eligibility of other technologies for the offtaker of last resort is still under consideration. For each technology, we have used the cost assumptions for the ‘marginal’ project expected to be viable under the draft strike prices published in the draft Delivery Plan in July. We have also made assumptions about potential route to market costs and typical financing strategies, including cost of debt and repayment profiles, informed by discussions with lenders, equity providers, and our advisers (Deloitte and Baringa Partners).

We are modelling three scenarios:

1. The level of gearing and equity IRR for a typical project that has obtained a 15-year PPA with a credit-worthy counterpart. After CfD expiry the generator is expected to obtain rolling 1-year PPAs for the remainder of the asset life. This is a ‘reference case’ for achievable gearing and returns without the OLR assuming an efficient, competitive market for long-term PPAs.
2. The equity IRR on an *unlevered project* based on backstop PPA revenues alone for the entire project life. This illustrates the ‘worst case’ unlevered return – it is not expected that any projects would actually proceed on this basis alone.[[1]](#footnote-1)
3. The level of gearing and equity IRR for a typical project that has obtained a 5-year PPA with a credit-worthy counterparty, and that expects to use rolling 1-year PPAs for the remainder of the asset life. The 5-year PPA discount is backed out of the 15-year discount using the same assumptions for route to market costs and an estimated risk premium.

In calculating the *level of gearing* for the levered projects (i.e. 1 and 3 above), we have assumed that debt sizing is based only on contracted revenues and OLR revenues, under ‘base case’ assumptions (P50 output, 1.25x debt service cover ratio (DSCR)). So for scenario 3, debt sizing is based off PPA revenues for the first 5 years, followed by OLR revenues to the end of the CfD. Note that these are conservative assumptions – some lenders have indicated they would treat backstop PPA revenues as a stress test (i.e. P90 output and 1.10x DSCR), and would take into account expectations about uncontracted market revenues in their base case. The debt tenor is assumed at 12 years, and debt repayments have been manually sculpted to achieve the required DSCR in each period.

*Equity IRR* is calculated using the level of gearing calculated in the preceding stage, and uses expected market revenues throughout the project life (i.e. the initial PPA followed by one-year rolling PPAs thereafter).

Scenarios 2 and 3 have been modelled for three different backstop discounts (£20, £25, and £30/MWh). The outputs will take the form of the following table.

Table 1: Modelling scenarios for various backstop PPA discounts

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **No OLR** | | **Backstop PPA discount** | | | | | |
| **£20/MWh** | | **£25/MWh** | | **£30/MWh** | |
| **Scenario** | *Gearing* | *Equity IRR* | *Gearing* | *Equity IRR* | *Gearing* | *Equity IRR* | *Gearing* | *Equity IRR* |
| 1. 15-year PPA + 1-year rolling PPAs. |  |  | - | - | - | - | - | - |
| 2. Unlevered project, OLR revenue alone for asset life. | - | - | - |  | - |  | - |  |
| 3. 5-year initial PPA + 1-year rolling PPAs. | - | - |  |  |  |  |  |  |

1. Do you agree with our general approach to understanding the impact of different discounts?

(a) Do you agree with the range of backstop PPA discounts we have chosen to model?

(b) Do you agree with the range of route-to-market scenarios we have selected?

## Choosing a backstop discount

### General principles

Given the objective of the OLR to be a ‘last resort’, we believe that the backstop discount should be large enough to minimise the risk that it ends up being smaller than discounts in the market while still providing sufficient ‘firm’ revenue to allow projects to obtain a reasonable level of debt and equity returns.

We therefore propose that the general principles for selecting an appropriate backstop discount should be as follows.

1. It should be larger than discounts that could reasonably be expected to be available in the market at any point over the CfD term.
2. With a shorter-term contracting strategy supported by the OLR, the project should be capable of supporting a reasonable level of gearing when compared with the gearing achievable if the project had a 15-year PPA.
3. With a shorter-term contracting strategy and reasonable assumptions about route-to-market costs thereafter, equity IRR as calculated by our model should be broadly similar to or greater than the expected IRR under a 15-year PPA. (That is, any reduction in leverage resulting from a move to a shorter-term contracting strategy should be more than offset by the increase in potential upside from better PPA pricing.)
4. Do you agree with the proposed criteria for selecting a backstop PPA discount?

### Different discounts for different eligible technologies?

An important question is whether there should be a single backstop PPA discount, or if it should vary across eligible technologies. There are a number of possible approaches:

1. Set a single discount in £/MWh for all eligible technologies.
2. Set a discount in £/MWh that represents the same percentage of the strike price for each technology.
3. Set a discount in £/MWh that represents the same percentage of expected route-to-market costs for each technology.
4. Tailor discounts to the particular characteristics of each technology so that it has the equivalent relative impact on equity return (e.g. so that the anticipated equity return under a 5-year contracting strategy represents the same percentage change to the anticipated return under a 15-year PPA).

There are advantages and drawbacks to each of these approaches. In particular, there is a general tension between simplicity and practicality of setting the discount (which favours approaches 1 and 2) and the risk of distorting investment decisions between technologies (which would favour approach 4). We have assessed the impacts of each approach against the assessment criteria in the table below, and would be grateful for the group’s views on the different approaches.

Clearly a significant factor affecting which approach should be selected is how many technologies are eligible for OLR. No decision has been made on this yet, so for the purposes of this paper it is assumed that all renewable CfD-holding generators are potentially eligible for OLR.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Criteria** | **1. Single discount** | **2. % of SP** | **3. % of RtM costs** | **4. Tailored** |
| **Availability of financeable routes to market for independents** | Discount may be too large for some technologies, reducing impact on route to market choice. | Discounts likely to represent a better fit as they are scaled with strike price. | Discounts likely to represent a better fit to technology risks. | Discounts should be optimal for each technology. |
| **Minimise system costs** | Discount may be too small for some technologies, increasing probability of access. | Discount may be too small for some technologies, increasing probability of access. | Discount sized appropriately to RtM costs, minimising probability of access. | Discount sized appropriately to RtM costs, minimising probability of access. |
| **Impact on suppliers** |
| **Potential for market distortions** | Potential to distort capital allocation between technologies if discount has differential impact. | Reduced distortion as discount is equivalent in terms of SP (but other factors may affect impact). | Reduced distortion as discount is equivalent in terms of RtM costs (but other factors may affect impact). | Discount has equivalent impact on all technologies, so minimal distortion. |
| **Practicality and cost of implementation and administration** | Simple to size, communicate and administer | Simple to size and communicate. Marginally more complex to administer. | More complex to size as requires estimating RtM costs for each technology, some of which may not be available. | Complex to size, as requires full understanding of RtM costs, required returns, etc. for each technology. |
| **Legal risk and potential compliance cost** | As long as the process is clearly set out and objective, legal risk should be minimal under all approaches. | | | |

1. Does the group agree with our assessment of the different approaches to tailoring discounts to technologies?
2. Which approach does the group consider strikes the best overall balance?

1. Note that it is not the intention for the OLR to be available to generators after CfD expiry. The assumption of OLR revenues for project lifetime here may represent an appropriate ‘worst case’ assumption for open-market revenues post-CfD expiry. [↑](#footnote-ref-1)