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of Energy &
Climate Change

Offtaker of Last Resort Advisory Group

Setting the backstop PPA discount

Meeting 4 – Wednesday 20th November 2013

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Agenda

14.00	Introductions
14.05	Presentation of the Pricing paper
14.50	Discussion of the Pricing paper
15.45	Forward look & A.O.B.
16.00	Close

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Contents

1. Nature of the backstop PPA discount
2. Modelling approach
3. Selecting a discount
4. Indicative modelling results
5. Annex: calculating route to market costs

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Nature of the discount

% or £/MWh?

- Currently, PPAs typically pay a % discount of a market price
- But combined with a CfD top-up, this would leave generators exposed to a degree of wholesale price risk (higher wholesale prices → lower revenue)
- The OLR is meant to represent 'last resort' revenues, so we believe it will be more effective if it removes remaining wholesale price risk
- Any additional costs to suppliers could be compensated through levelisation

Q1: Do you agree that discounts should be set on a £/MWh basis?

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Nature of the discount

Fixed or increasing over time?

- Aspects of route to market costs – in particular imbalance costs for wind generators – are expected to increase over time
- Backstop PPA discounts could be set to increase over time as well, to aim to keep a constant distance above expected route to market costs
- This could reduce the chance of generators accessing backstop PPAs towards the end of their CfDs, compared with fixed-price discounts
- However, the evolution of route to market costs are uncertain, and determining the appropriate trajectory would be prone to significant error
- Also, not all technologies are expected to have rising route to market costs

Q2: Do you agree that discounts should be fixed for CfD term?

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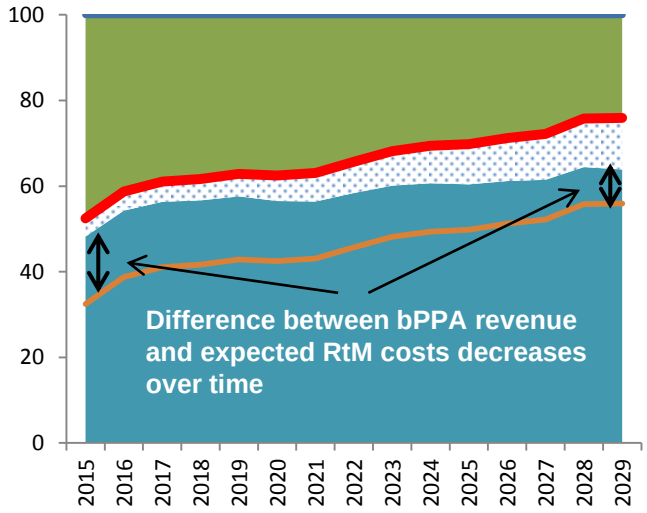
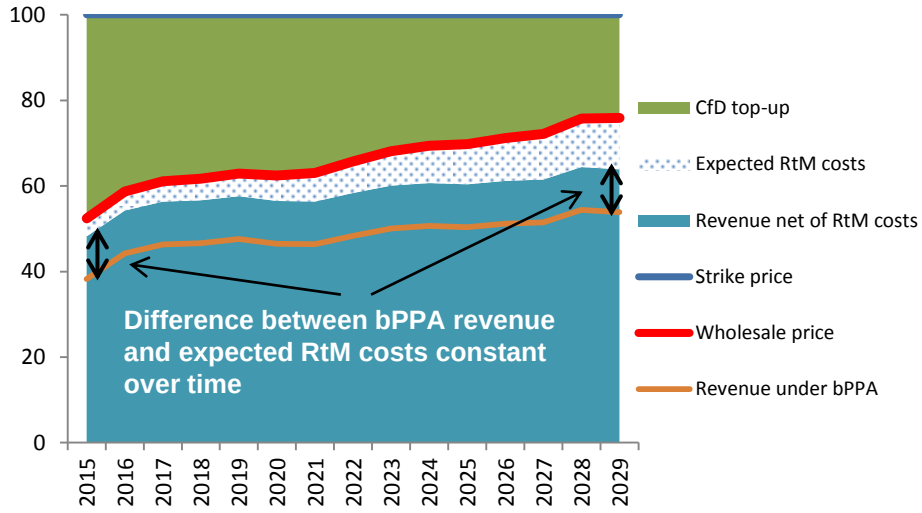
(a) Fixed bPPA discount

(i) market revenue

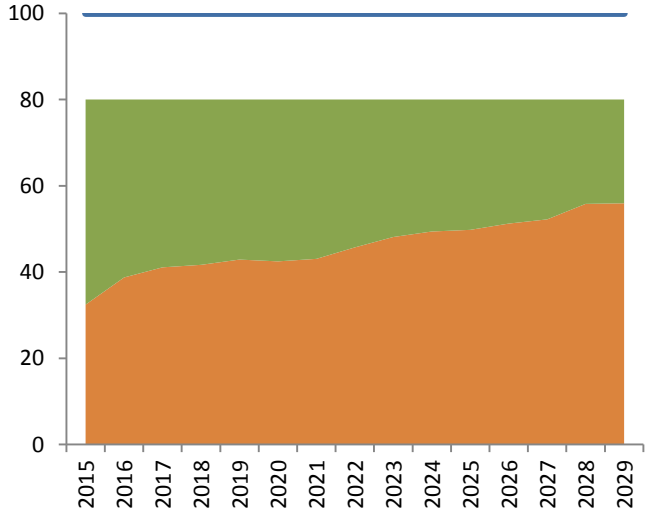


(b) Increasing bPPA discount

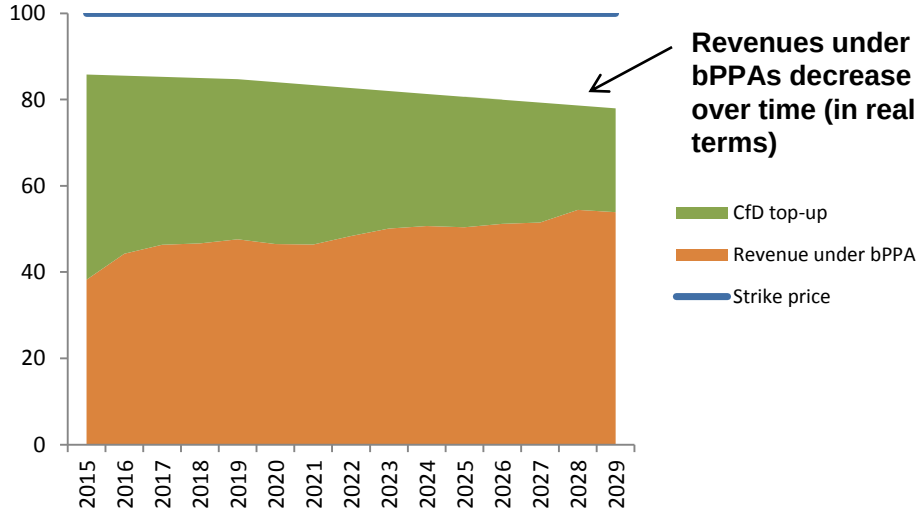
(i) market revenue



(ii) revenue under OLR



(ii) revenue under OLR



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Nature of the discount

Indexation

- CfD strike prices will be indexed by CPI
- The OLR is intended to provide stable ‘worst case’ all-in revenues when taken together with CfD top-ups
- We therefore believe that the backstop discount should be indexed to CPI in line with CfD strike prices

Q3: Do you agree that discounts should be indexed to CPI?

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Modelling approach

- Use a project finance model to explore the impact of different backstop discounts on gearing and returns to equity
- Modelling based on the ‘marginal’ project expected to be viable under draft strike prices in the July draft Delivery Plan
- Assume that debt is sized based on an initial PPA followed by revenues under the backstop PPA on base case assumptions (P50 output, 1.25x DSCR); repayments are sculpted to meet the target DSCR in each year
- Equity returns calculated from contracted revenues followed by expected revenues from rolling 1-year PPAs for asset lifetime, using gearing calculated above
- Assume a debt tenor of 12 years with 1 year debt tail
- Shorter-term PPA discounts are backed out from assumed 15-year discounts informed by the Baringa imbalance projections for the Ofgem EBSCR, factoring in a risk premium to account for long-term uncertainty

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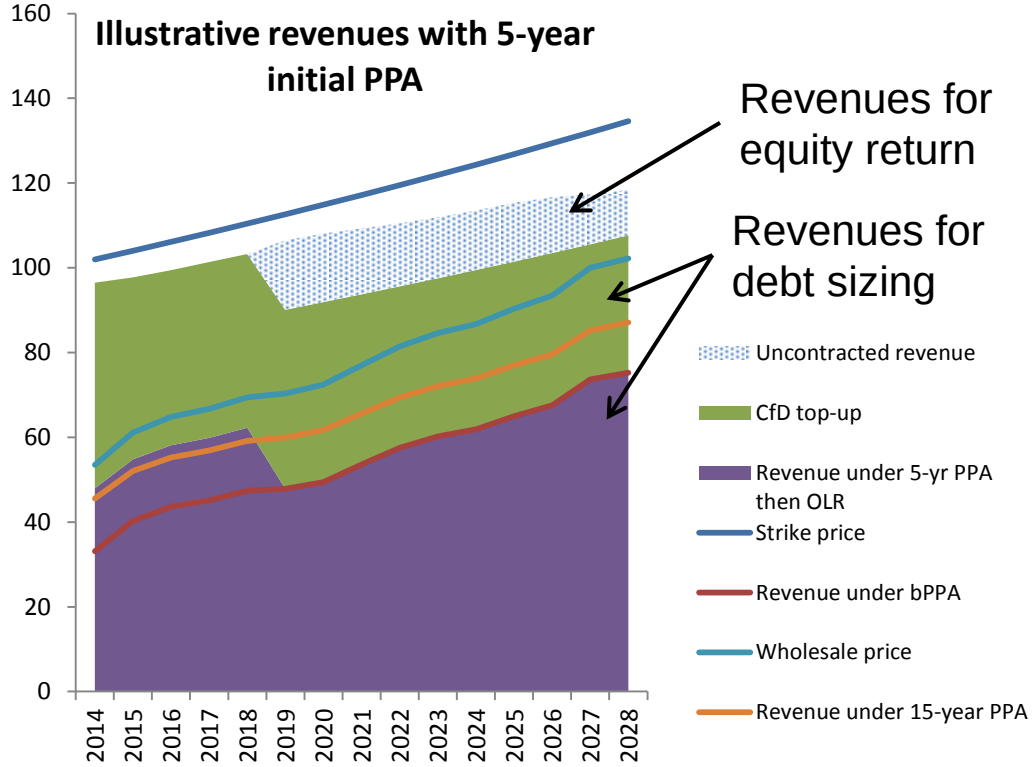
Modelling approach

Illustrative assumptions
Strike price = £100/MWh
CPI indexation @ 2%p.a.
UEP projections for wholesale prices
15-yr PPA discount = 15%
Backstop PPA discount = £20/MWh

- We have modelled three scenarios
  1. **Reference scenario.** Gearing and equity IRR for a project with a 15-year PPA, followed by rolling 1-year PPAs for asset life (no impact of OLR)
  2. **Minimum project returns.** *Project* IRR based on backstop PPA revenues alone for asset lifetime.
  3. **Shorter-term contracting strategy.** Gearing and equity IRR for a project with a 5-year PPA, followed by rolling 1-year PPAs for asset lifetime.
- Scenarios 2 and 3 are modelled for three different backstop discounts:
  - **£20/MWh, £25/MWh, and £30/MWh**



Q4: Do you agree with our general modelling approach?
(a) Do you agree with the range of discounts?
(b) Do you agree with the range of scenarios?

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Selecting a backstop discount

General principles

- The discount should be larger than discounts that could reasonably be expected to be available in the market at any point over the CfD term.
- 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.
- With a shorter-term contracting strategy and reasonable assumptions about route-to-market costs thereafter, equity IRR should be broadly similar to or greater than the expected IRR under a 15-year PPA.

Q5: Do you agree with the general principles for selecting a discount?

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Selecting a backstop discount

Discounts for different technologies

Four possible approaches:

1. One discount for all eligible technologies.
2. A discount that represents the same percentage of the strike price for each technology.
3. A discount that represents the same percentage of expected route-to-market costs for each technology.
4. Tailored discounts for each technology that have the same relative impact on equity IRR

The answer may depend in part on which technologies are eligible – could set a single discount for technology groupings (e.g. intermittent vs. baseload).

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Discounts by technology

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.			

Q6: Do you agree with our assessment of the different approaches?
Q7: Which approach do you think strikes the best overall balance?

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Draft modelling outputs

Downside IRR = project IRR on OLR revenues alone
Gearing & equity IRR assume 5 year PPA + rolling 1-year PPAs

Technology	Reference case (15-year PPA)		£20/MWh discount			£25/MWh discount			£30/MWh discount		
	Gearing	*Equity IRR*	*Down-side IRR*	*Gearing*	*Equity IRR*	*Down-side IRR*	*Gearing*	*Equity IRR*	*Down-side IRR*	*Gearing*	*Equity IRR*
Onshore wind	70.6%	13.1%	9.5%	67.6%	13.3%	8.5%	65.1%	13.0%	7.4%	62.7%	12.7%
Offshore wind	75.5%	15.2%	11.4%	73.8%	15.5%	10.6%	71.9%	15.2%	9.8%	69.8%	15.0%
Solar PV	63.9%	10.3%	8.8%	60.3%	10.3%	8.1%	58.7%	10.2%	7.4%	57.1%	10.1%

Note: *these are draft results from modelling performed by Deloitte LLP on behalf of DECC. Analysis is based on hypothetical not actual projects, assumes non-recourse financing, fixed debt margins with no 'step ups', and generic debt assumptions. The analysis is draft and has not been through Deloitte's internal review procedures.*

Route to market assumptions

	15-year PPA discount	5-yr PPA discount (average over 15 yrs)	1-yr PPA discounts (average over 15 ys)
Onshore wind	15%	10% (11.5%)	6.5 – 16% (10.5%)
Offshore wind	16%	10%(12%)	7 – 16% (11%)
Solar PV	10%	7% (8%)	5 – 11% (7%)

Key

- Equity IRR below reference case (<0.1%)
- Equity IRR = reference case (±0.1%)
- Equity IRR above reference case (>0.1%)

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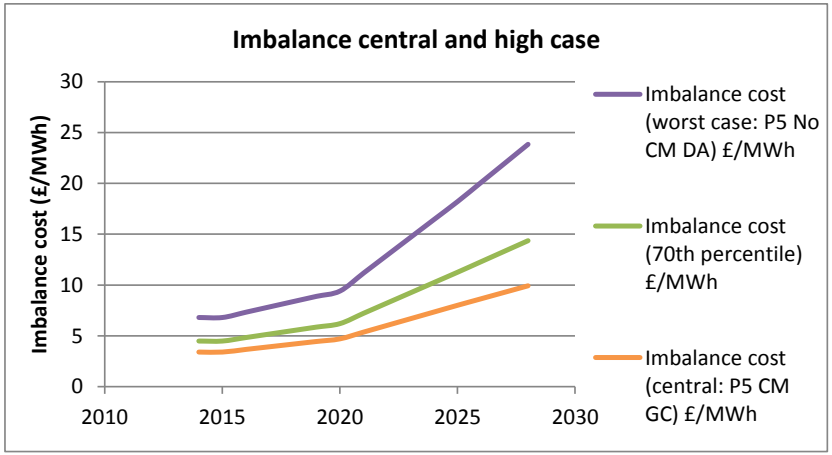
Annex – calculating RtM costs

- **1-year PPAs:** central case imbalance costs + fixed non-imbalance costs
- **5-year PPA:**
  - risk margin for offtaker by pricing off 70th percentile of possible imbalance outcomes (estimated from central and high cases)
  - plus risk premium to cover possible high imbalance scenario (assumes funds set aside at 8% cost of capital)
- **15-year PPA:** as with 5-year PPA, but over 15-year time horizon

Note: *These calculations were carried out by Baringa Partners on behalf of DECC. They are based on a number of assumptions and should not be relied on for any purposes.*



Assumptions

- DECC UEP wholesale price projections
- For wind, imbalance cost scenarios derived from Baringa's analysis for Ofgem's EB SCR (PAR1, single cash-out)
- Central case: CM in place, gate closure – delivery imbalance risk
- High case: no CM, day-ahead – delivery imbalance risk
- Fixed non-imbalance RtM costs of £0.38/MWh (derived from NFPA data)
- Same imbalance costs for onshore and offshore wind (but differentiated by start date
- Solar PV costs assume a 10% 15-year PPA, and calculate 5-year and 1-year discounts using ratios derived above

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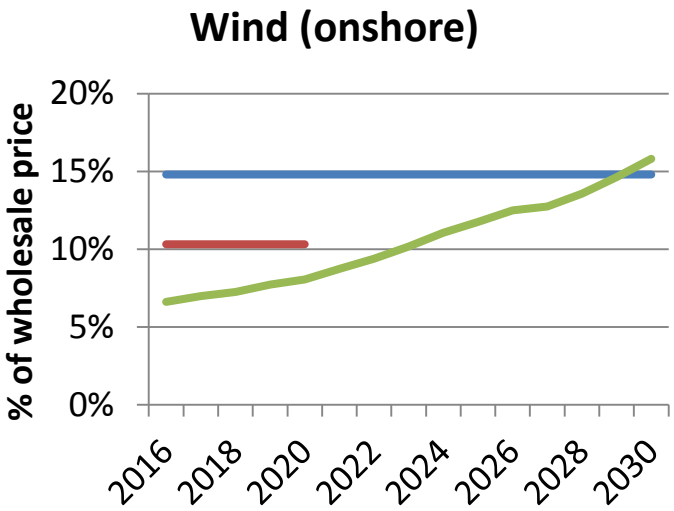
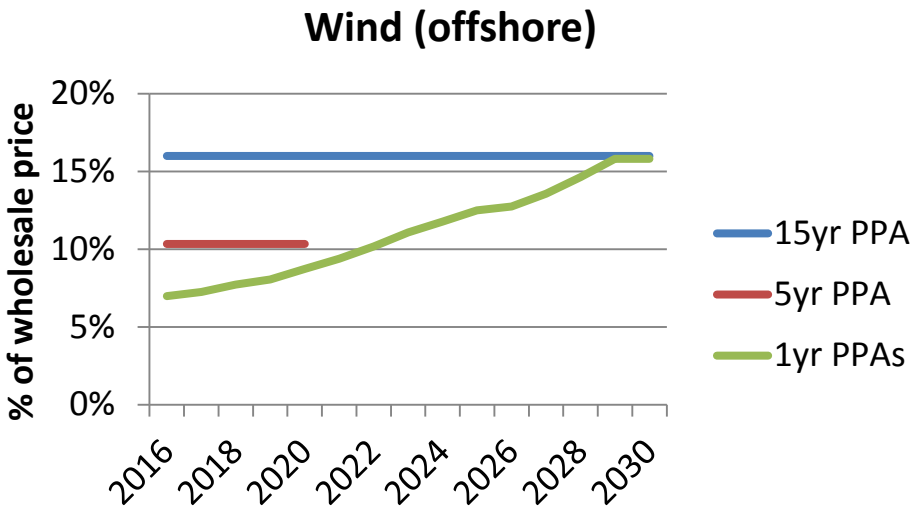
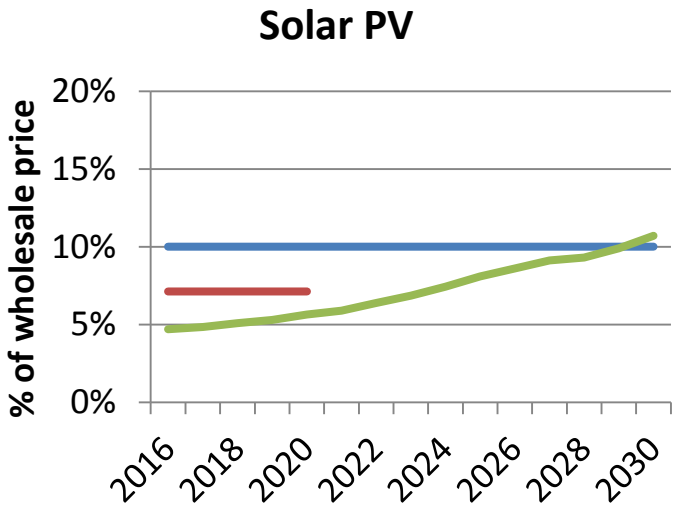
Annex – illustrative PPA costs







Imbalance costs assumed flat after 2030, but cannabilisation scalar applied to wholesale revenues

Note: these do not represent DECC's view of likely PPA discounts, but are intended to illustrate possible differences in discounts between PPAs of different tenors.