

Synthetic PPA Toolkit for **Local Authorities**



A report by Bristol City Council.

Produced on behalf of and in conjunction with Devon County Council and the South West Energy Hub.



Synthetic PPA Toolkit for Local Authorities

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1. Glossary and Abbreviations

Buyer	The entity purchasing electricity from the Generator (for the purposes of this report that will be the Local Authority).
CFD	<p>In the context of this report a Contract for Difference is a financial instrument between two parties involving them exchanging the difference between a set strike price for power and that which would be available on the wholesale market.</p> <p>This should be distinguished from the UK Government CFD scheme which comprises a system of reverse auctions designed to promote investment in low carbon electricity generation.</p>
DPS	Dynamic Purchasing Systems.
Generator	The owner of the renewable energy generation station providing the electricity for the purposes of a Power Purchase Agreement.
Licensed Supplier	Means the holder of a license under section 6 (1)(d) of the Electricity Act 1989 (i.e. an entity that has a license to supply electricity (and gas) such as Octopus Energy).
PPA	Means a power purchase agreement being a contractual agreement between a Buyer and a Generator for the purchase of electricity which confirms the specific arrangements agreed between both parties such as any minimum volumes, the price to be paid and the period of time the agreement shall run for.
Strike Price	A guaranteed price to be paid to a Generator of electricity under a contract, whether via a PPA or a CFD.

2. Executive Summary

The use of Power Purchase Agreements (PPAs) for Local Authority electricity purchasing (and in particular from community energy organisations) has been a goal for some time. This report provides a set of questions for the Authority to ask once it has considered the options available to it for both purchase of electricity and the ability of the Authority to enter into a financial instrument.

The ability of Authorities to purchase direct from renewable energy generators has many benefits:

- Increased financial viability by working directly with Generators
- Long-term security of supply from green energy
- An ability to ensure social value is maximised
- Working towards net zero goals
- An opportunity to maximise local spend
- A means to increase local generation in the current climate of no subsidies for small scale renewable electricity generation
- An ability to ensure contribution to local area plans
- Greater governance over ownership and management of the renewable asset

There are three main types of PPA's – direct, sleeved and synthetic. Direct PPA's involve running a cable from the equipment generating the power to the location where the power will be used and do not involve the National Grid or the local distribution network. Sleeved PPA's require the involvement of a third party licenced supplier to deal with the transfer of the power generated by the Generator via the local distribution network to the Buyer. The licenced supplier will also deal with payments and any additional power the Buyer requires that the Generator is unable to supply. Synthetic PPAs involve no power at all and are purely a financial instrument that provide a mechanism for payments between the parties based on the difference between an agreed strike price and that which would be available on the whole sale power market.

Direct PPAs are commonly found on rooftop solar schemes where the power is used by the building upon which the panels are installed but their widespread adoption is limited by geographical proximity between Generator and Buyer. Sleeved PPAs are more common but come with the need for a Buyer and Generator to engage a licensed supplier and potentially a bank or finance institution. Synthetic PPAs have been a model operating worldwide for some time but are not yet common place within the UK energy markets due in part to the complexity of the contracting arrangements. The main contracting arrangement of a synthetic PPA is a financial instrument which does not achieve some of the benefits Authorities may be able to derive as set out above and this is examined in more detail in Appendix 3.

This report considers sleeved and synthetic PPAs rather than direct PPAs as other than situations where an Authority is placing roof top solar generation on top of existing assets, Authorities will most likely encounter situations where the location of the generation is at a distance from the Authority's assets which require electricity. In the main the PPA's considered in this report are likely to be from larger scale generation (such as solar farms and wind farms) rather than roof top solar and although large scale roof top solar could take part in a Sleeved PPA project, such larger scale generation will be in present in locations where connecting them directly to the Authority building requiring power will be unfeasible due to costs of connection and transmission losses from distances covered from the Generator to the Buyer.

This report sets out a guide for Authorities on the different types of power purchase agreements available whilst focusing on synthetic PPAs (and the financial instrument required under a synthetic



PPA). It looks at procurement of PPA's and issues surrounding procurement and possible state aid complications. An overview of procurement of all types of PPA has been undertaken in order that Authorities may best decide which suits their needs. Finally, the report contains a more precise review of financial instruments for Authorities and their application in the purchase of renewable electricity and provides as an example a PPA Sleeved Pool trial currently being researched by Bristol City Council more details of which can be seen at <https://www.regen.co.uk/project/feasibility-analysis-of-bristol-city-councils-electricity-sleeving-pool/>

3. Types of Power Purchase Agreement and Procurement of each type

	Sleeved	Synthetic	New Models
Description	<p>A Sleeved supply is where the Generator enters into an agreement with a Buyer to supply electricity over the distribution network. See Diagram 1 below on page 21.</p> <p>The Generator will need to agree the PPA with a licenced supplier and terms of the contract should mirror the terms with the Buyer.</p> <p>Typical contents of what will be within a sleeved PPA can be seen in the draft Heads of Terms contained at Appendix 2 (albeit these are for a direct PPA).</p>	<p>A synthetic PPA is an agreement between a Generator and Buyer which primarily sets a Strike Price for energy created by the Generator. The Buyer guarantees the Generator will receive this Strike Price for energy generated.</p> <p>When the Generator goes to the wholesale power market if the price they receive is less than the Strike Price then the Buyer pays to the Generator the short-fall. If the wholesale price is higher than the Strike Price then the Buyer receives the profit from the Generator.</p> <p>A synthetic PPA is purely a financial instrument separate from a PPA. See Diagram 2 below on page 22.</p>	<p>This could involve Buyers joining a DPS/framework to access renewable energy generation from a pool of renewable energy generators (a 'Sleeving Pool').</p> <p>To run alongside the DPS Bristol City Council are trialling a new PPA model to be provided to Generators which differs because the structure allows demand customers, such as a local authority, to sign Power Purchase Agreements directly with multiple generators and pay them for all electricity generated. Any remaining power from these sources of generation is then assigned to a Sleeving Pool that demand sites can draw from.</p> <p>Bristol City Council has an existing DPS for traditional electricity supply contracts which could be accessed pending the PPA trial or the authority wishing to procure a PPA supply would have to wait until the full scale Sleeved Pool framework was set up and running in due course. This new model is provided as an example for other Local Authorities to review to see the options available.</p>
Comment	<p>The Generator will have a PPA with a supplier (either a licensed supplier, via a DPS or through a procurement portal) and the Buyer will have a supply agreement with the same supplier.</p> <p>A licensed supplier is necessary to arrange and pay the Generator for the generation, to pass the generation through to the Buyer and deals with settling and imbalance.</p> <p>Payments to the Generator are likely to be made by the licensed supplier. Half Hourly ('HH') settlement would be required – which is possible on most Authorities commercial estates.</p>	<p>A synthetic PPA between the generator and the authority is similar to a contract for difference with payments between the generator and the authority adjusted as wholesale power prices change.</p> <p>A reference price for power will be required with consideration given as to whether this should reflect the underlying wholesale market price or whether an increase is warranted on this due to the social value elements coming from entering into a synthetic PPA with say a renewable energy community energy scheme.</p> <p>In addition to the synthetic PPA documentation, the Generator needs a separate PPA with a licensed supplier in respect of their export to the grid and the Buyer needs an unrelated PPA to deal with their power requirements.</p>	<p>The Authority pays Generators directly for electricity generated and makes this available to the licensed supplier for supply/sleeving. This would be a pass through cost for the licenced supplier.</p> <p>Use of a DPS provides a way to ensure additional social value can be achieved.</p> <p>Two models of pricing are being reviewed for the generator PPA:</p> <p>a) A flex tracker with a floor price. The Authority agree a minimum price per kWh that at least covers the Generator's operating expenses, and that is paid no matter how far the market falls. This gives Generators confidence that no matter what the market does their minimum costs are at least covered. Above this floor price, the Authority links the price paid on a monthly basis to an agreed suitable market index, at a level slightly less than what would be paid on the grid, slightly more than what the Generator could get elsewhere. The floor price could be reviewed subject to agreed changes in minimum operating costs, and could offer this form of contract on a shorter term, giving Generators flexibility to terminate the agreement if they believe they can obtain better terms elsewhere.</p> <p>b) A whole-life tariff. The price paid per kWh is based on the whole-life design, purchase, construction, and operating costs of the generation system, plus a reasonable profit margin, minus any FIT or other grant income at commencement and/or over the lifetime of the system, with all this then divided by the expected number of kWh that will be generated over the lifetime of the asset, allowing for availability and reasonable interruptions for maintenance, etc. So if the whole life costs of a generation system was £10M, plus 20% profit mark-up (£12M), and it would generate 300GWh over a 25 year lifetime (12 GWh p.a.), the supplier would pay 4p/kWh (£12,000,000/ 300,000,000 kWh). For 25 years. This would have to be a long-term arrangement, which guarantees a set income for the generator and guarantees a set price for a Buyer.</p>

	Sleeved	Synthetic	New Models
Procurement	<p>Contractual arrangements for a Buyer here would involve:</p> <ul style="list-style-type: none"> -A contract with the Generator whereby the Generator will supply power to the third party supplier; and -A contract with the licenced supplier whereby it buys electricity from the third party supplier; <p>Under both arrangements, there will be a contract for pecuniary interest concluded in writing between an economic operator and the Authority, and having as its object the provision of services. It is anticipated that both contracts will be in excess of the relevant financial threshold and both contracts will fall within the scope of the public Contracts Regulations 2015.</p>	<p>Contractual arrangements here would be likely to involve:</p> <ul style="list-style-type: none"> -A contract with the third party supplier to purchase electricity. The contract would be for services, and be subject to the Public Contracts Regulations 2015 as listed above. -A contract with a Generator under which payments would be made by the Buyer to the Generator where wholesale energy prices dropped below a "Strike Price", and payments would be received by a Buyer where prices rise above the Strike Price in order to smooth fluctuations in wholesale power prices; This is purely a financial arrangement which serves to smooth changes in energy price for the generator in respect of energy fluctuations. The Buyer is effectively paying a sum to the Generator to secure long-term piece of mind and there may be additional responsibilities on the Generator which are ancillary to the core purpose set out above which the Buyer needs the Generator to undertake. These may fall within the definition of "Services". 	<p>The new Sleeved Pool Framework to be operated by Bristol City Council will have undergone a procurement process. The existing DPS is already set up. Due diligence will be needed to ensure that the authority is able to utilise the DPS.</p>

5. Advantages and disadvantages

	Sleeved	Synthetic	New Models
Pros	<p>Length of Term – can be a long term contract</p> <p>Less price risk for the authority and generator if price is fixed in the back to back PPA</p> <p>A relationship between the Buyer and Generator is more established due to the direct relationship by the Generator selling the electricity direct to the Authority at the meter point.</p>	<p>Length of Term – can be a long term contract</p> <p>The financial instrument element of the Synthetic PPA serves to smooth changes in the electricity price for a Buyer in respect of electricity price fluctuations.</p> <p>More flexibility in allowing other generation and buyers to be incorporated not restricted to particular sites or MPANs.</p> <p>Price to be negotiated can include additional social value elements to tie in with wholesale electricity pricing due to the fact that the financial instrument can account for social value</p> <p>No requirement for procurement of the financial instrument part of the contracting arrangements (procurement is still required for the agreement with the supplier)</p>	<p>Length of Term – can be a long term contract</p> <p>Pre procured.</p> <p>Enables new generators to enter.</p> <p>Allows for flexibility in the supplier arrangements – the supplier can be re procured and can join the DPS at any point during the existence of the DPS, and can be changed if better products come onto the market</p>
Cons	<p>Requirement for Supplier involvement/settlement means negotiation will be required with more than just a single party</p> <p>Set pricing – which may need to be adjusted over time. This results in a less flexible structure unless it is built into the document suite.</p> <p>Procurement requirement with associated difficulty in ensuring local social value.</p> <p>Less flexible than a synthetic PPA and may require only one buyer site to be the recipient of the electricity.</p>	<p>Requirement for Supplier involvement/settlement means negotiation will be required with more than just a single party</p> <p>A number of contracts are required to be entered into which increases complexity and risk.</p> <p>The Authority will need to trust the pricing forecast as it may be that during the early years of the contract, the market price for electricity is lower than the strike price and so it is making payment to the Generator, whereas in later years the market price increases significantly, but in that time the Generator will have suffered financial difficulties.</p> <p>In order for Authorities to become comfortable with the pricing a financial institution will need to involve to hedge the pricing.</p> <p>Professional guidance on pricing levels is required and the cost of this needs to be factored into the project costings.</p> <p>More fees in dealing with the contracts (legal and financial).</p>	<p>Reliant on generators wanting to enter the sleeved pool arrangement and there being sufficient demand from Buyers</p> <p>Requires a supplier to manage the pool and to have a third party intermediary dealing with the balancing and settlement – potentially more costs added onto the PPA because of this</p>

Note that Appendix 1 contains draft heads of terms for the financial instrument application of the synthetic PPA and Appendix 2 contains draft heads of terms for a direct PPA.

6. RAG Review of Options

PPA Structure	Sleeved	Synthetic	New Models
Complexity/Risk for Authority	Low	Medium	Low once the trial has completed
Number of contracts involving the Buyer	One	Two	Two
Price Certainty	Set pricing subject to any agreed reviews	Dependant on the strike price set in financial instrument and any agreed swap/hedging terms.	Depending on the model chosen could be fixed or tracker (with cap and collar)
Contract length	Long-term	Long-term	Long Term
Ability to include social objectives	Possible to include terms for this within the PPA.	Limited to support of community renewable energy generation by having them as a counterparty.	Possible to include Social Value criteria through procurement of the Generator
Supplier involvement/settlement required	Supplier involvement required	No supplier involvement in the synthetic PPA but supplier involvement would be required as part of any sleeved PPA arrangements of the Buyer.	Supplier Involvement Required
Ability to claim carbon credits/offsets	Yes	None	Yes

6. Questions for Local Authorities to Consider for a Synthetic PPA:

1. **What type of Generation (wind/solar/storage) is to be covered by the PPA rather than the contract for difference (financial instrument)?**

Reasons behind this may be that a Local Authority wishes to support a particular type of generation – for example wind, in conjunction with local planning policy or climate emergency, a wind project takes longer to develop and requires early commitment to a PPA for development

2. **What is the Seller (Generator) type (community/commercial operator/local authority own generation) and how secure to a contracting body that Seller is? (i.e. do they have sufficient financial stability to enter into a financial instrument or will a guarantee/bank need to be involved?)**

Some authorities may wish to support community energy generation for additional social value purposes or may find their existing procurement structure does not allow procurement from a community energy generator due to difficulties with credit worthiness

3. **What is the amount of electricity to be procured by the Authority? (all of the Authorities requirements/partial) – is the Authority prepared to take a risk on its entire procured supply of electricity?**

If an authority wishes to supply say just one building from a synthetic PPA this is less risky than transferring the entirety of the supply to a PPA option

4. **What are the existing arrangements for electricity procurement? Does the contract with existing supplier allow for a PPA to be entered into/can Synthetic PPAs be incorporated into a procurement for complete supply?**

Existing terms of supply arrangements may be restrictive on taking buildings out of the contract, may have terms requiring a specific demand profile

5. **What is the Authority willing to/able to pay for renewable energy generation through a synthetic PPA?**

It is possible that procuring electricity supply from a synthetic PPA may cost more than a standard fossil fuel supply however the benefits of the green supply and social value may outweigh the additional costs but this would need specific approval from the authorities financial team

6. **Can it include community renewable energy generation as a social value aspect and therefore monetise the social value through the financial instrument?**

7. **Does the Authority wish to contract direct with the Generator or go through a procurement portal DPS?**

8. **Does the Authority wish to encourage new renewable energy generation through the PPA to meet its net zero targets?**

9. **Is the Authority comfortable with the procurement and state aid position around using a financial instrument?**

10. **How long does the Authority wish to be in a contract for – long term (i/e over 10 years)?**

11. **Does the Authority wish to use its own assets for generation and if so can it then procure a financial instrument – would it need to use a third party?**

7. CFD's in Synthetic Power Purchase Agreements for Local Authorities

A synthetic PPA can provide the mechanism for sharing risk on the long term price of electricity (or a component of the price of electricity) reflecting either the wholesale market element of the electricity price or a base price willing to be paid by Local Authorities but it is completely separate from the everyday requirement to source energy for an Authorities assets which require it which will still need to be undertaken via other means.

The Contract for Difference within a synthetic PPA serves to mitigate the risk of adverse changes in the electricity price for a Buyer (e.g. a Local Authority electricity purchaser) caused by electricity price fluctuations and provides security for both Generator and Buyer by setting the parameters which serve to offset losses elsewhere.

A strike price is agreed, which can vary in line with inflation/wholesale electricity pricing/green energy requirements/costs of development for example. Payments between the Buyer and Seller (e.g. a renewable energy generator/developer) over the period of the contract are then determined by the difference between this strike price and the market price for electricity. Settlement is then made according to the terms of the PPA, perhaps every three months for example.

Through the contract, the Buyer is able to obtain certainty over some of its energy costs over the long term and the Seller (generator/community energy organisation) is able to secure income per unit of energy generated (or perhaps a proportion of that generated) for a similar period. This secured income stream can be used to enable the Seller to construct a new renewable energy project. Note however that a pure Contract for Difference agreement does not need a renewable energy scheme sitting behind it to operate. Without such a project however, the Seller will be exposed within the synthetic PPA to market price fluctuations without being able to hedge this against its ability to sell electricity on the open market and as such this creates risk for the Seller. In addition, until such a generation project is operating the Buyer may have a secured a hedge for a component of its energy costs, but it has not created or facilitated any of the other benefits set out on page 4 above.

Un-procured CfDs

The Contract for Difference approach can be used by Local Authorities and other organisations to tie in present market rates over a long term, such as via interest rate swaps. These are arranged at an agreed strike price with a bank that takes a margin, and payments are made between the two parties dependent on the difference between the strike price and the market rate. In the situation where the market rate is low at the beginning of the contract and the strike price is agreed near to that rate, if the market rate then rises the buyer will receive payment from the bank. As such, the Buyer is fixing in some component of the low interest rates. Local Authorities can secure these contracts without the need for a procurement exercise, as a contract for financial services in connection with the issue, sale, purchase or transfer of securities or other financial instruments, within the meaning set out in Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments ("Mifid ii") falls outside of the scope of the Public Contracts Regulations.

The risk to the Buyer (the Authority) from a similar arrangement in relation to electricity is that perhaps during the early years of the contract, the market price for electricity is lower than the strike price and so it is making payment to the Seller, whereas in later years the market price increases significantly, but in that time the Seller has become bankrupt. The Bristol City Council Slewing Pool is examining such a risk and modelling existing generation sites to ensure the price paid enables the



Seller to operate with a profit. Making such an agreement with a bank that has a strong credit rating would provide a sense of security to the Buyer whereas that might not be the case if the agreement was made directly with a small renewable energy generator. Therefore, it might be worth exploring this opportunity with a bank that could provide loans to a renewable energy generator, such that the Contract for Difference agreement is between the Buyer and the bank. The bank could then agree to provide a loan for the construction of a new project and they would make the payments relating to the Contract for Difference to the Seller.

Contractual arrangements would likely involve:

- The Seller securing a standard Power Purchase Agreement with a supplier in order to export to the grid.
- The Buyer securing a contract with a licenced supplier of electricity for the purchase of electricity. This contract would be for services and will be subject to the Public Contracts Regulations 2015.
- A Contract for Difference between the Buyer and the Seller (or via a financial intermediary, such as a bank).

Green attributes of CfDs.

There may be additional services which the Buyer wishes the Seller to provide, which are ancillary to the core purpose of the Contract for Difference contract. The Contract for Difference itself does not provide the Buyer with electricity, nor any component of green attributes associated with generating from renewable energy sources. And securing these green attributes could require some form of procurement that falls within the procurement regulations. However, the Buyer may well be able to take comfort that contractual protection around these types of social and environmental objectives are not needed, in the light of other pre-existing non-contractual protections (such as any restrictions within the Seller's constitution). Alternatively, or in addition, the procurement exercise performed to secure a licenced electricity supply could also include an agreement to secure REGOs (Renewable Energy Guarantees of Origin). The price of REGOs is very low and they are in themselves not widely recognised as providing additional benefit in terms of new renewable energy being generated. They could be considered as just a paper exercise with some organisations paying a small amount to show that they have secured the rights over the green attributes, reducing the green component of the electricity supplied to other organisations (also see 'green washing' where organisations offset REGOs acquired against their brown power procurement within their carbon emission calculations) however, by securing both REGOs and electricity through a procurement exercise and agreeing a Strike Price through a pure Contract for Difference the Buyer will have:

- a) Secured an auditable source, demonstrating that it has purchased the green elements attributed to REGOs.
- b) Know that they have stimulated the development of a new renewable energy project through the Contracts for Difference arrangement.

Note that the Contracts for Difference in itself does not guarantee that the Seller, or the financial intermediary will build a new renewable energy project, or supply electricity from that project. Perhaps an overarching agreement would need to be put in place to guarantee this at the risk of such agreement falling within procurement regulations. Alternatively, the Buyer could just rely on the acquisition of REGOs to demonstrate its support of green electricity until a new scheme is developed by the Seller, and once this scheme is generating the Buyer could then publicise its success in helping to establish a new renewable energy project. If a pure market rate was used in setting the strike price, then this uncertainty regarding whether the Seller is generating from a (new) renewable energy scheme might not be of particular issue to the Buyer as they will have secured a



long term hedge for a component of their electricity supply. If however the strike price took into account any Social Value and as such was higher than the present market rate that could otherwise be obtained for a Contract for Difference, then the Buyer would surely want to guarantee that the renewable energy project was built out and subsequently generates. Note any mechanism to ensure a project is built which involved a contractual obligation to perform a service by the Seller might itself lead it to fall within the procurement regulations.

Issues to explore include:

- It may be preferable for both sides if the payment is only made in relation to electricity generated on a particular site and exported to the grid, though whether this requirement would bring the Contracts for Difference agreement into the procurement regulations is uncertain. It may not as it could be seen as just another reference variable that is used to determine the settlement amounts being paid but this would have to be determined on a case by case basis.
- A decision will need to be made as to which market reference price for electricity is used. There is an inherent risk as the market reference price used may not exactly match the revenue stream for the Seller, nor the wholesale element of the Buyer's electricity bill.
- Professional guidance on pricing levels is required and the cost of this needs to be factored into the project costings.
- In agreeing the strike price, consideration could be made on whether it purely reflects the market price, or whether there is an increase due to the Social Value elements stemming from a new renewable community energy scheme, for example.

Procured CfDs

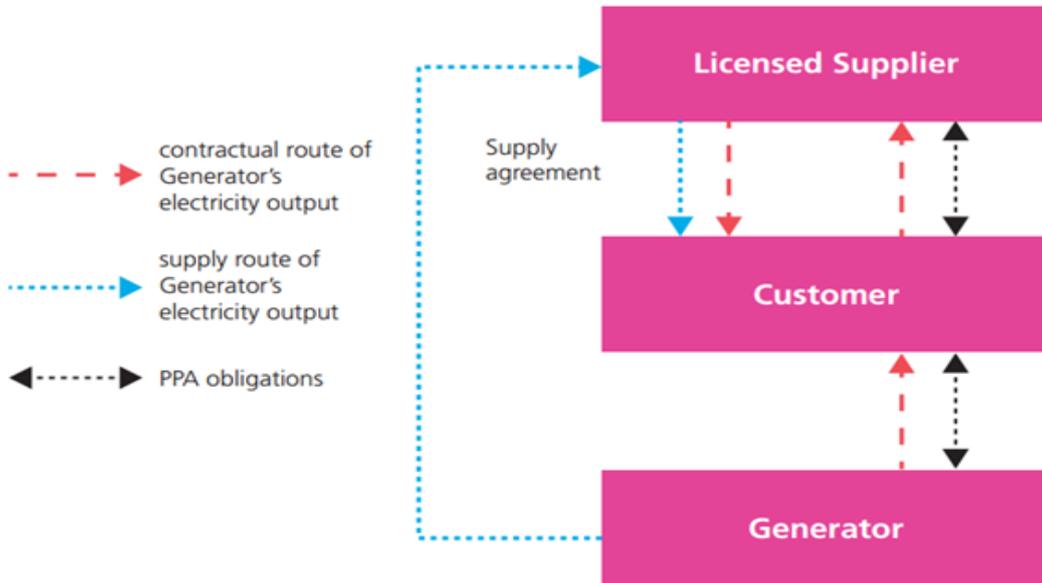
Whilst not requiring procurement, as CfDs fall outside of the procurement regulations required to be followed by Local Authorities, it might be that a Local Authority wishes to use the procurement process to meet other requirements, including ensuring best value for the Council.

A Contract for Difference provider could be procured through a call for tender operated by the Local Authority, or via Dynamic Procurement System run by a third party. As such, the agreement could include other components that would usually be included in a Power Purchase Agreement (PPA) and this would enable the green components and other Social Value attributes to be secured via a competitive tender. The PPA, or synthetic PPA could then be added to the suite of documents required in addition to the agreement that the Buyer needs to have with a licenced electricity supplier.

However, there are additional costs associated with running a procurement exercise itself and note there is likely to be an ongoing margin taken by any organisation running the DPS.

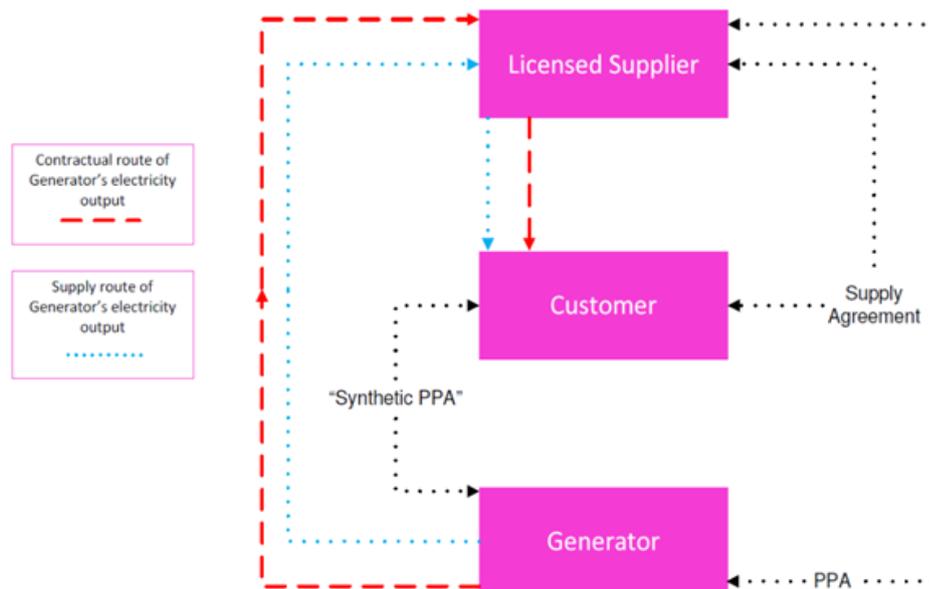
8. Diagram 1: Corporate Sleeved PPA

Corporate “Sleeved” PPA:



9. Diagram 2: Corporate Synthetic PPA

Corporate “Synthetic” PPA:



10. Bristol City Council Sleeved Pool Presentation and Summary

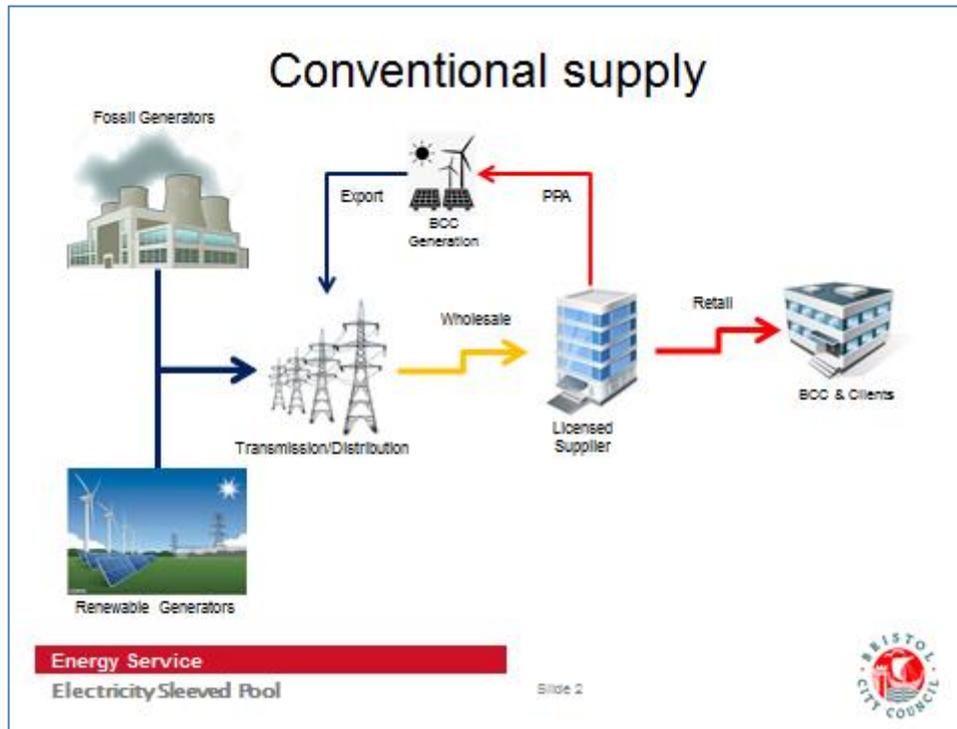
Sleeved Electricity Pool

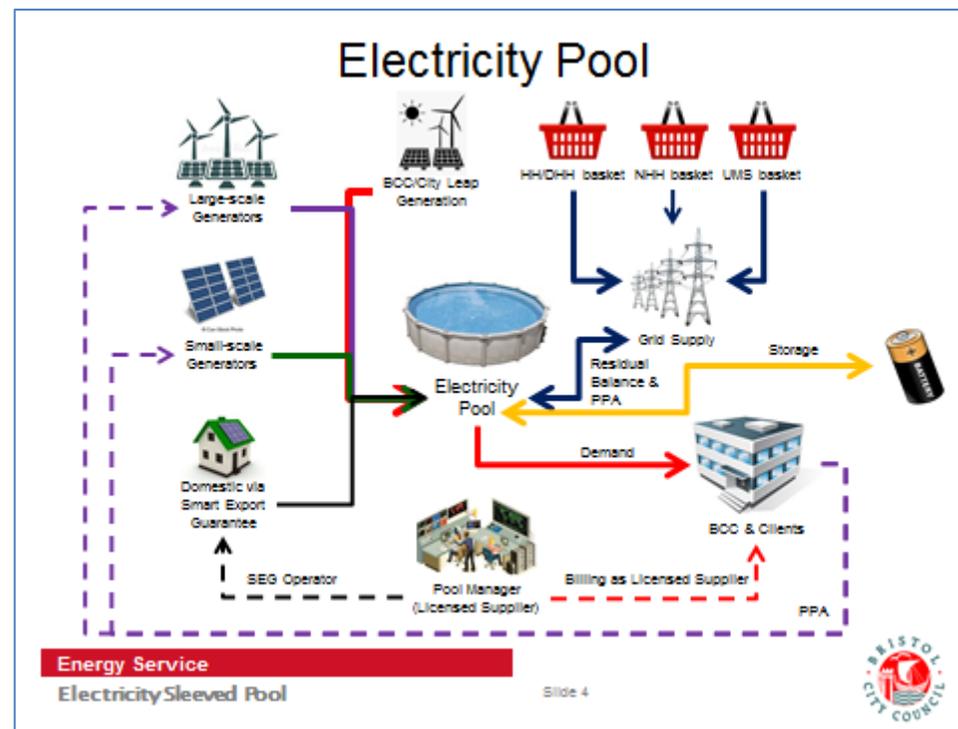
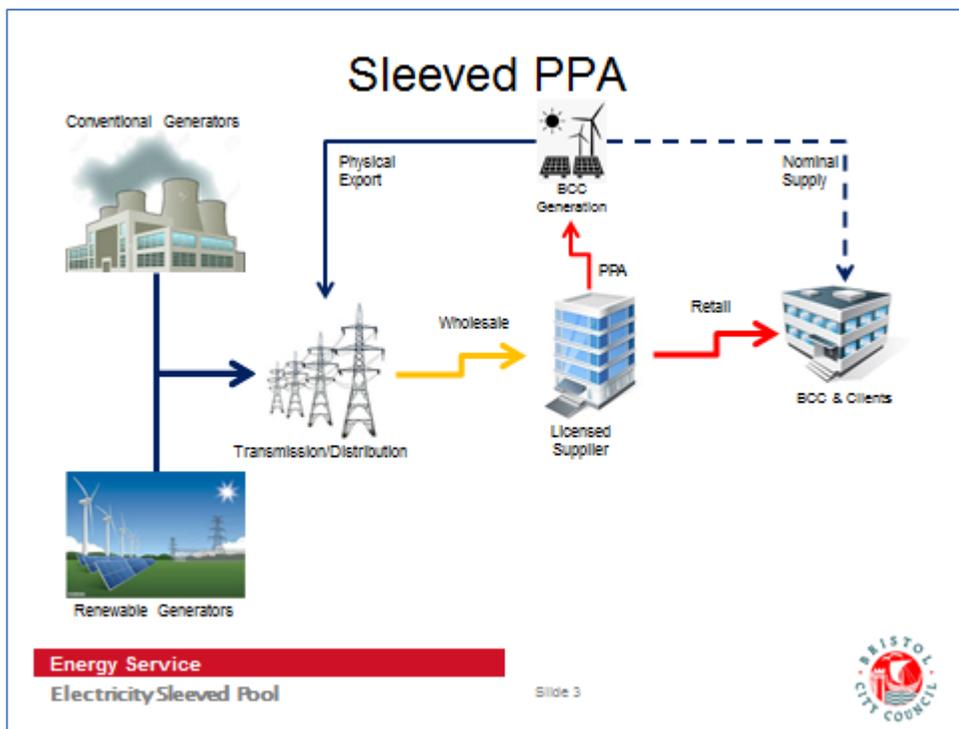


Energy Service
 Electricity Sleeved Pool



Slide 1





Sleeved Pool PPAs

- Direct contract between BCC and generator
- Pool Manager required for supply license
- Low carbon for local use
 - Promotes low carbon generation
 - Supports local generators, large and small scale
- Generator revenue
 - Steady income
 Or
 - Best price
 - (or mixture – hybrid model?)
- Pricing mechanisms
 - Market Tracker & Floor Price
 - Whole-Life tariff



Energy Service

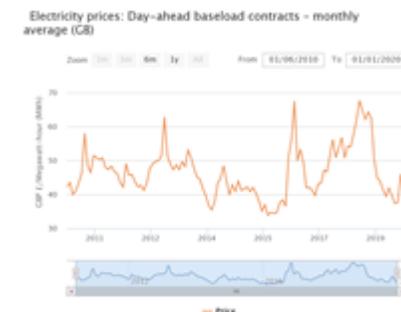
ElectricitySleeved Pool

Slide 5



Tracker + Floor Price

- Market Tracker
 - Price paid to Generator follows a Market index
 - Monthly, Seasonal, Annual tracker?
- Floor Price
 - Guaranteed minimum price
 - Covers minimum operating costs
- Short/Med term contracts
- Annual Floor Price review



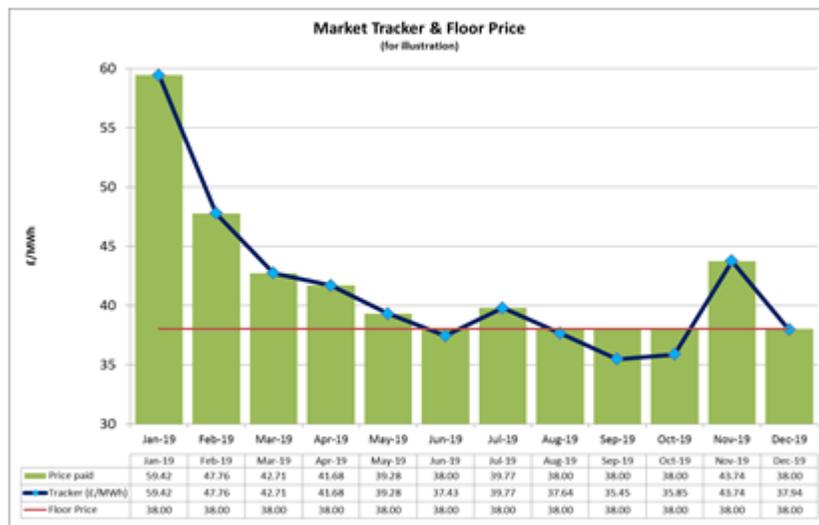
Energy Service

ElectricitySleeved Pool

Slide 6



Market Tracker & Floor Price example



Energy Service
ElectricitySleeved Pool

Slide 7



Whole-Life Tariff

- Whole-life costs
 - Planning
 - Construction
 - Maintenance & repair
 - Operating costs
 - Profit margin
- Whole-life revenue (excluding power sales)
 - FITs
 - REGOs
- Net Whole-life cost/Whole-life generation (kWh) = whole-life tariff
- Price fixed for decades
- Long-term contract

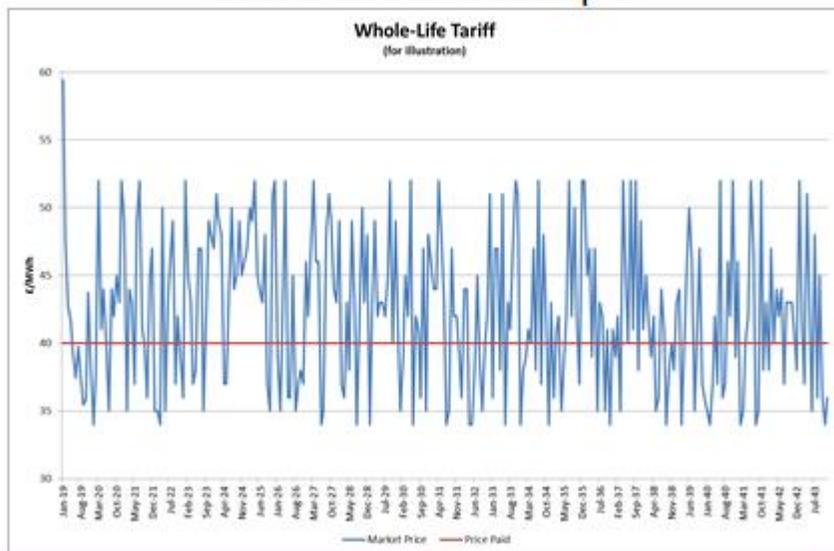


Energy Service
ElectricitySleeved Pool

Slide 8

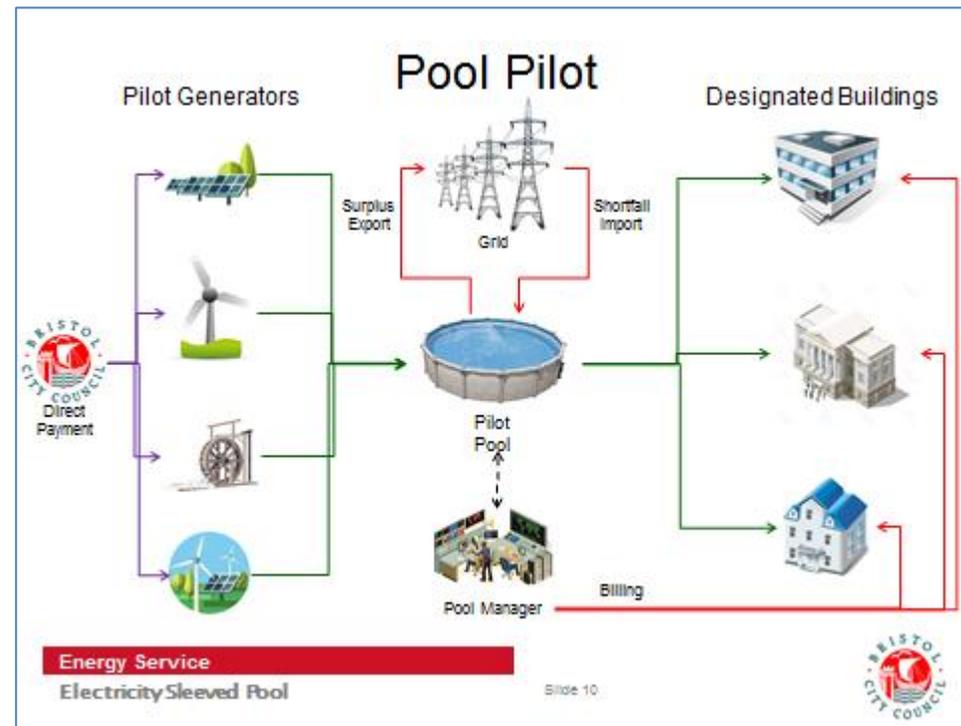


Whole-Life tariff example



Energy Service
ElectricitySleeved Pool

Slide 9



Energy Service
ElectricitySleeved Pool

Slide 10



Appendix 1: Heads of Terms for Synthetic PPA Financial Instrument

These Heads of Terms are intended to identify certain, but not all, of the elements of a potential transaction that would be embodied in a financial instrument with a community organisation.

Also included in a separate table below are terms that would be included in a separate power purchase agreement.

Clause	Rationale
Conditions Precedent.	<p>This would typically be a number of minimum criteria for preconditions that the Generator would have to meet in order to ensure it is not contractually bound to enter into the contract until the Generator has provided evidence that it is appropriate for it to do so. For example:</p> <ul style="list-style-type: none"> • Planning Permission obtained • Appropriate supply licence (or exemption) evidenced • Commissioning undertaken • Metering in place
Appropriate corporate authorisations and execution of applicable documents.	<p>This will ensure that the organisation has followed requisite decision making processes in agreeing to sign the documents i.e.</p> <ul style="list-style-type: none"> • Funder Consent • Governance consent (depending on the structure of the generator) • Member consent if community organisation
A copy of constitutional documents.	<p>This will provide a “snapshot” of the generator’s constitution and will enable the Authority to be comfortable that the generator is acting within its powers and objects, although it wouldn’t in itself give any guarantee that the constitution will remain the same.</p>
Provision of financial information.	<p>This is required in order to ensure an appropriate track record of similar projects and that a Generator is financially robust enough to deal with this contract in much the same way as any organisation procured to provide a service/financial instrument to an Authority would be required to do . In the case of the financial instrument rules under then PCR wouldn’t apply albeit it would still be important to check a Generator’s financial standing and whether there have any obligations outstanding.</p>
Other documents and evidence	<p>Authorisations and business plans necessary to demonstrate that the underlying business is sufficiently robust to last the duration of the contract.</p> <p>Commissioning certificates/electrical testing etc (although care should be taken not to rely too heavily on energy related documents as this is a financial instrument not a traditional PPA).</p>
General Covenants.	<p>These are general obligations designed to ensure the suitability of the Generator.</p>
Negative Pledge and Restrictions on	<p>The purpose of a negative pledge is to prevent the Generator from creating security over its assets in support of indebtedness of obligations owed to other</p>

disposals;	<p>creditors, so improving the position of those other creditors at the expense of the Authority whilst understanding that the Generator will have funding for project finance.</p> <p>Just as the negative pledge seeks to protect the asset base to which an Authority has recourse by restricting the creation of security in respect of the Generator’s assets, so the disposals covenant seeks to preserve the asset base of the Generator by restricting disposals of assets. The agreement may also contain provisions ensuring the Generator takes steps to maintain such assets and otherwise prevent an erosion of their value.</p>
Compliance with the law, and maintenance of tax affairs;	<p>Where the failure by the Generator to comply with any law would materially impair its ability to perform its obligations under the facility agreement then the Authority will want the generator to comply with that law. Compliance with law could be directly linked to laws relating to status as a Charity/Community Benefit Society/CIC which would effectively give the Authority a cause of action against the Generator if the Generator breaches its obligations as a community company (if the emphasis is on the social value obligations of the organisation for example).</p>
Merger and reorganisation restriction.	<p>The Authority will want to prevent the Generator from merging with a company that is in a less financially healthy state or that carries on a different type of business to that of a Generator (or community based company if that is the emphasis), or in any other way erodes its ability to participate in the financial instrument.</p>
Change of business restriction.	<p>The Authority will likely argue that its credit assessment of the Generator is based on the Generator conducting a particular business, and that any change in the nature of that business will affect the suitability assessment that the Authority will have taken in deciding to work with the Generator.</p> <p>If the Generator is part of a wider group of companies, it might prefer that this covenant refers to the business of that wider group.</p>
Requirement for the provision of financial statements.	<p>This will give certainty as to how income received by the Generator is applied. In addition to ensuring that the organisation continues to be able to service the financial instrument, it will, if provided in sufficient detail, provide an overview of the expenditure incurred in connection with community benefit if this is a provisions which is required (and only applies to community generators – or those with a community fund liability).</p>
Restriction on changes in accounting practices.	<p>This will ensure consistency in terms of reporting in a year-on-year basis. This is important to ensure the ability to offset for carbon counting etc.</p>
Financial Covenants.	<p>Before entering into a long-term financial arrangement, the Authority will want to see financial projections showing how the Generator will finance its ongoing involvement during the term of the arrangement. The financial covenants are included in the agreement so that the Authority can check whether the Generator is meeting those projections or not.</p>

	<p>The Authority may use financial covenants as tools to:</p> <ul style="list-style-type: none"> • Objectively monitor the financial performance of the Generator over the life of the financial instrument; • Impose financial discipline on the Generator, to stop them taking actions which might put servicing of the financial instrument at risk. • Act as an early warning signal if the Generator’s financial condition starts to deteriorate such that repayment of the financial instrument is put at risk.
Warranties.	<p>Broadly, these are promises that the Generator would give as to certain states of affairs that exist within the Generator organisation. Although they serve a different legal purpose to a covenant (i.e. they are a promise that something has or hasn’t happened rather than an obligation to do something or not to do something) in terms of subject matter there is often a significant overlap with covenants and we would envisage they would cover many of the same measurements.</p>
Security.	<p>The Authority may seek a charge or other security over the assets of the counterparty. This will provide clarity on this together with how and when the terms of it would be enforced.</p>
Mechanical payment arrangements setting out how the “CFD” will work.	<p>These will be commercial arrangements setting out how the instrument will work:</p> <ul style="list-style-type: none"> • How the Strike Price is set; • Identifying the underlying “commodity”; • How payments are to be made; • Arrangements for netting or setting off payments.
Events of Default.	<p>This will set out certain situations which automatically result in a breach of the agreement (such as the insolvency of one of the parties) and the timeframes for any forfeiture actions that may be taken as a result.</p>
Termination.	<p>This will outline how and when the agreement may be brought to an end together with the consequences of termination.</p>

Appendix 2: Heads of Terms of Direct PPA

Item	Details
Parties	<p>[] incorporated and registered in England and Wales with company number [] whose registered office is [] (“Buyer”);</p> <p>[], or a subsidiary, associate or affiliate of [], incorporated and registered in England and Wales with company number [] whose registered office is at [] (“Generator”)</p> <p>Each a “Party” and collectively (the “Parties”)</p>
Proposed Transaction	<p>The Generator owns and operates electricity generating plant and has agreed to sell, and the Buyer has agreed to purchase, certain volumes of zero-carbon electricity generated by the Plant on the terms of a power purchase agreement (the “PPA”).</p>
Plant	<p>Roof top mounted photovoltaic panels/ground mounted photovoltaic panels/hydroelectric generation/wind generation.</p> <p>The site will be installed with a [] kWp solar array/wind turbine/hydro generation, which is expected to generate up to [] MWh/year</p> <p>The generating capacity of each item of Plant to be agreed by the Parties based in-depth calculations and design appropriate to each site.</p>
Proposed Sites	<p>[] including other such sites as agreed between the Parties.</p>
Initial Term	<p>The Term will be for a period commencing on the Commissioning Date and ending on the Expiry Date.</p>
Price	<p>The Buyer shall pay to the Generator [] pence per kWh (the “Price”) in respect of the volume of metered output purchased by the Buyer generated from the Plant.</p> <p>The Price shall be increased by 3% per annum on each anniversary of the Commissioning Start Date.</p>
Transaction Dates	<p>[●] the date on which the Plant is commissioned “Commissioning Start Date”</p> <p>[●] the date on which on the Plant is first fully commissioned, and is generating Electricity “Commercial Operations Date”</p> <p>[] the date of expiry of the Proposed Transaction, being [] years from the Commercial Operations Date “Expiry Date”</p> <p>The Commissioning Period means the period commencing on the</p>

	Commissioning Start Date up to the Commercial Operations Date.
Minimum Purchase Amount	<p>The Buyer shall be obliged to purchase [%] of the annual KWh of metered output per contract year generated by the Plant (Minimum Purchase Amount).</p> <p>[0-5%] KWh of metered output generated by the Plant, in excess of the Minimum Purchase Amount, will be supplied to a Third Party Offtake (or parties), without recourse to the buyer (Third Party Purchase Amount).</p> <p>The Buyer will have the option to acquire the electricity generated in excess of the Minimum Purchase Amount and the Third Party Purchase Amount in any contract year at the passing PPA Price for that contract year.</p> <p>Any electricity generated in excess of the Minimum Purchase Amount and the Third Party Purchase Amount and not purchased by the Buyer shall be available for the Generator to sell and transfer to a another third party (or parties), without recourse to the Buyer, provided that the technical configuration of the Plant permits export.</p>
Third Party Offtake	<i>[If permitted under the terms of connection agreement]</i>
Metering	The Generator shall procure the installation of a metering system capable of clearly and accurately metering (at least half-hourly) all electricity delivered to the point of supply (the “ Metering System ”).
Payment	No later than twenty [20] Working Days after the end of the calendar month, the Generator shall provide the Buyer with an invoice setting out in respect of the immediately preceding calendar month the amount payable by the Buyer under the PPA, which shall be due and payable within fourteen (14) days after receipt.
Operation and Maintenance	The Generator shall at all times operate, maintain, repair and, where required, remove the plant and metering system in accordance with operation and maintenance guidelines recommended by the manufacturers of the plant and equipment, applicable laws, directives, licences, authorisations and the industry rules and good industry practice.
Outages	<p>The aggregate of planned outages in any such period cannot exceed [] weeks.</p> <p>No later than 3 months prior to the beginning of each calendar year during the Term, the Generator shall provide the Buyer with a non-binding detailed planned outage schedule for the forthcoming year and the Generator shall not be required to provide electricity during any planned outage.</p> <p>Generator shall provide the Buyer as much advance notice as practicable of any proposed or necessary maintenance outages. The Parties shall work</p>

	to plan such outage to mutually accommodate, as practicable, the reasonable requirements of the Generator and the reasonable requests of the Buyer.
Route to Market and Export Price	<p>Where the Buyer’s demand for electricity is forecast by the Buyer to fall consistently below the Minimum Purchase Amount due to [] it may request the Generator to find a route to market, for export of electricity, via a distribution network or other private wire arrangement for supply to a third party off-taker or off-takers for a price (the “Export Price”) to be agreed between the Parties.</p> <p>To the extent the Generator incurs costs and expense in progressing such arrangements, the Buyer shall reimburse such reasonably incurred costs and expenses to the Generator.</p>
Generator Compensation	<p>The Buyer shall compensate the Generator (the “Generator Compensation Sum”) in respect of any shortfall, measured in kWh, in the Minimum Purchase Amount by payment of a compensation sum per the following formula:</p> <p><i>“Generator Compensation formula = Shortfall Volume X Shortfall Price.”</i></p> <p>The Shortfall Volume shall be calculated as the Minimum Purchase Amount in any contract year less the metered output purchased by the Buyer in the equivalent contract year in kWh.</p> <p>The Shortfall Price in respect of any Shortfall Volume that the Generator was able to export, shall be calculated as the Price for that volume less the Export Price for the equivalent volume.</p>
Buyer Compensation	<p>The Generator shall compensate the Buyer (the “Buyer Compensation Sum”) in respect of any shortfall, measured in kWh, in the Minimum Purchase Amount by payment of a compensation sum per the following formula:</p> <p><i>“Buyer Compensation formula = Supply Shortfall Volume X Supply Shortfall Price.”</i></p> <p>The Supply Shortfall Volume shall be calculated as the Minimum Purchase Amount in any contract year less the metered output in the equivalent contract year in kWh.</p> <p>The Supply Shortfall Price shall be calculated as the Price equal to the difference between the Buyer’s grid rate per kWh less the equivalent PPA Price.</p>
Green	The Generator shall acquire and immediately transfer (at no expense or

Attributes	cost to the Buyer, free from any encumbrance and with full title guarantee) all associated green attribute benefits in the proportion of the metered output purchased by the Buyer (e.g. REGO's).
Buyer Consent and Instruction	The Generator shall not engage sub-contractors to perform any material part of its obligations under the PPA without the prior written consent of the Buyer, such consent not to be unreasonably withheld or delayed.
Assignment and Transfer	<p>The Buyer may assign any right or novate, transfer or otherwise dispose of all or any of its rights or obligations under the PPA to any member of the Buyer's Group, without the prior consent of the Generator.</p> <p>The Buyer may not otherwise novate, transfer or otherwise dispose of any or all of its obligations under the PPA without the prior written consent of the Generator (not to be unreasonably withheld or delayed).</p> <p>The Generator shall not assign, novate, transfer or otherwise dispose of all or any of its rights or obligations under the PPA without the prior written consent of the Buyer, such consent not to be unreasonably withheld or delayed.</p> <p>The Generator may, subject to providing the Buyer with prior written notice, assign all or any of its rights under the PPA by way of a security assignment to a lender without the prior consent of the Buyer.</p>
Voluntary Termination	The Buyer may terminate this agreement for its convenience on no less than [●] months' written notice to the Generator. The Buyer shall compensate the Generator in accordance with the Generator Compensation Sum, noting that the Buyer may request the Generator to find a Route to Market, for export of electricity to minimise any payment under the Generator Compensation Sum.
Default	The PPA shall include customary events of default including for failure to make payments when due, failure to perform a material obligation, breach of representation or warranty, bankruptcy.
Default Termination	<p>If the Generator commits a material breach in the terms of the agreement, which causes the termination of the agreement (a "Default Termination"), the Generator shall pay the Buyer Compensation Sum calculated as follows:</p> <p><i>"the Buyer's grid supply rate - Price at the date of termination x predicted electricity generation for [12] months"</i></p> <p>The PPA will contain a buy-out price table agreed between the parties for</p>

	the purchase and transfer of the Plant upon an event of Default Termination.
Change in Law	Where it is agreed that a relevant change in law has occurred, the Parties shall seek to agree in good faith such amendments to the PPA as may be necessary or appropriate to take account of such relevant change in Law so that each Party is substantially in the same position as it was in prior to such relevant change in law.
Dispute Resolution	Certain specified technical disputes shall be referred to a single technical expert (to be designated by the Parties) for expedited, binding resolution; other disputes shall proceed through judicial resolution.
Indemnification and Insurance	The PPA shall include market standard indemnities between the Parties and market standard insurance provisions.
Limitation of Liability	The PPA shall include market standard limitations of liability.
Force Majeure	If a Party is prevented from performing its obligations by reason of Force Majeure for a continuous period in excess of [12] months, either Party may terminate this Agreement immediately by notice to the other Party. The occurrence of Force Majeure shall not entitle a Party to any compensation from the other Party due to such event of Force Majeure
Confidentiality and Announcements	<p>The contents of these Heads of Terms are strictly confidential, except as required by law, court order or stock exchange regulations, and may not be disclosed to any person other than the Parties own partners, shareholders, directors, employees, contractors and professional advisers who have a need to know the information for the purposes of the proposed transaction unless prior written consent of the other party is obtained.</p> <p>Neither Party shall make any announcement relating to the other Party, these Heads of Terms, or the PPA, without the other Party's prior written consent (except as required by applicable law or by any competent authority).</p>
Costs	Each party will pay its own expenses relating to the negotiation and preparation of the transaction documentation.
Non-binding	Other than as to confidentiality these Head of Terms are not binding and will not give rise to any legal right or obligation, it being intended that only a formal written agreement, if executed and delivered by the Parties will bind the parties.
Governing Law	The PPA shall be governed by and construed in accordance with the law of England

Appendix 3: PPA Decisions

The following provides a set of queries which an Authority can work through in order to produce suggestions as to which PPA model may be preferable. An Authority will need to weight and prioritise the following questions to suit their individual needs and unless there are specific decisions of such importance that they immediately exclude certain models then an Authority may find their answers to various questions suggest different PPA models. This would indicate there is no perfect solution and a balanced view of the benefits and drawbacks of each model can provide would be required.

