Department for Energy Security & Net Zero

Cabinet Office

Government Property Function

CATAPULT Energy Systems

Power Purchase Agreement Guide

north west net zero hub

Public Sector Decarbonisation Guidance

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Contents

Introduction

A Power Purchase Agreement (PPA) is an increasingly popular option for the procurement of green energy. It is a contractual agreement that sets out the terms for the sale/purchase of energy from one party to another and is typically agreed between a generator and either a licensed supplier or offtaker.

The need to rapidly deliver on Net Zero targets, coupled with volatility in wholesale electricity markets is driving public sector organisations to act to reduce emissions from their estate and drive down energy costs. For those wanting to invest in green infrastructure, there is a need to lock in finance over the next 5-20 years. A PPA enables organisations to act now to deliver on these mutually beneficial objectives.

This guide is for Local Authorities, schools and other public sector organisations who might be considering if a PPA is right for them.

It is designed to help you think about PPAs and how they might support your organisation to deliver its goals. It sets out the key things you will need to think about, the critical people to engage and the common issues organisations face when adopting a PPA. It also signposts to further resources which may support your thinking further.

Compared with purchasing electricity from a licensed supplier or public sector buying organisation, a PPA can offer your organisation and/or local area significant additional benefits, beyond a reliable source of electricity. There are however risks, and delivering a PPA can be complex.

From the start it is helpful to understand three key terms, generator, supplier and offtaker.

Generator - an organisation that generates and sells electricity.

Supplier - a licenced energy supplier that can be involved in a PPA, depending on the type.

Offtaker - the organisation that is buying the electricity.

The table below sets out the roles organisations commonly take. Where there is sufficient capital, larger organisations may wish to consider investing in the renewable asset themselves and being both the supplier and offtaker. The guide touches on that, but mainly focusses on the adoption of PPAs.

Role	Options to consider
NHS trusts	Offtaker and/or generator
Schools	Offtaker and/or generator
Local Authorities	Offtaker and/or generator
Community energy groups	Generator

What do I need to understand when considering a PPA?

In this section we have highlighted the key things it is helpful to understand as you begin to consider if a PPA is right for your organisation.

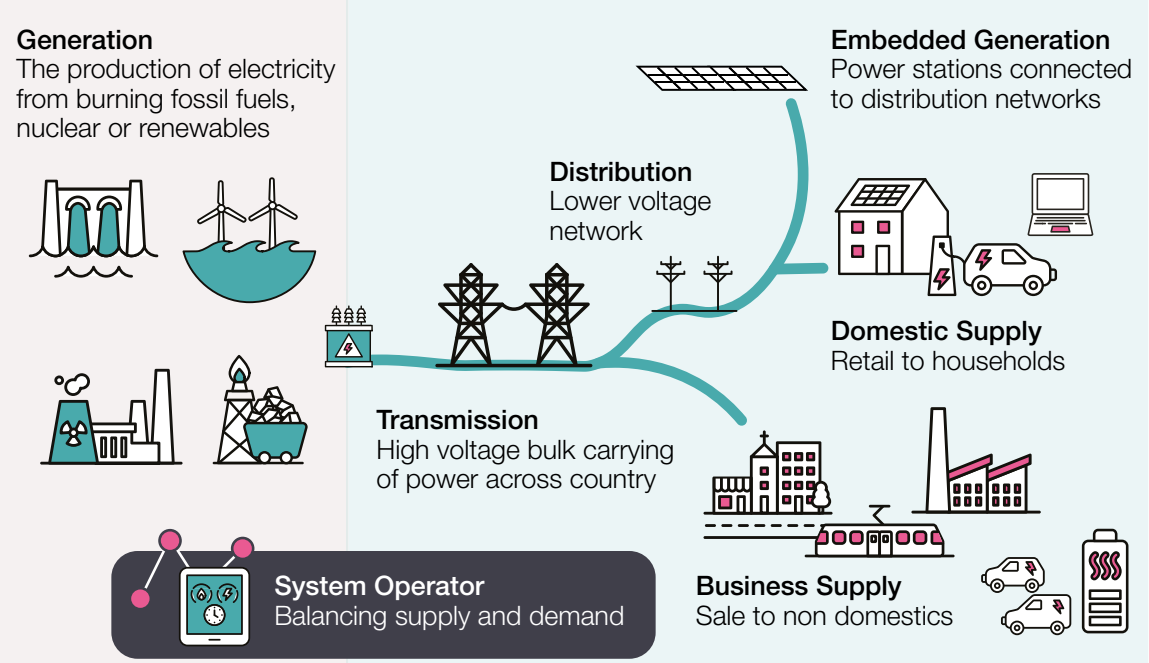
2.1. The electricity market

Great Britain's electricity system comprises sources of energy input (electricity generators) and networks to transmit energy from where it is produced to where it is consumed by its final users (see Figure 1). National Grid ESO is the electricity system operator and is responsible for balancing supply and demand.

Electricity generation involves the production of electricity from a range of sources including gas, wind, solar, nuclear, tidal and biomass. Generation can be either large scale (connected to the transmission network) or small-scale (connected to the distribution network).

The transmission network provides bulk transport of power up and down the country at high voltages. It connects large generation assets, interconnectors (cables which transfer power to and from European countries), and large electricity consumers. Transmission infrastructure in Great Britain is owned by 3 companies: National Grid Electricity Transmission, Scottish Hydrogen Electric Transmission Ltd. and SP Energy Networks.

Distribution Network Operators (DNOs) are responsible for distributing power from the national transmission system to homes and businesses via the distribution network(s). In Great Britain there are six DNOs across the fourteen regional distribution networks. Independent Distribution Network Operators (IDNOs) may also carry power to homes and businesses. IDNOs are responsible for designing, developing, operating, and maintaining local electricity distribution networks. IDNO networks are either connected directly to the DNO networks or indirectly to the DNO via another IDNO. Please see our guide on **Local DNO capacity** for more information.



2.1.1. Energy bills and tariffs

Electricity is bought and sold on the **wholesale electricity market** before being sold to consumers. In the wholesale market, energy suppliers purchase electricity from generators. Energy suppliers then sell electricity to their customers. Suppliers are also responsible for paying **network and policy costs** which are passed through to customers. A breakdown of an average electricity bill is shown below. Please note that the component costs are not fixed and the percentages shown are for illustrative purposes only. The percentage components of each cost may also change depending on the sector or type of electricity supply agreement.

RETAIL BILL (PRE-VAT) 2022 - 2023

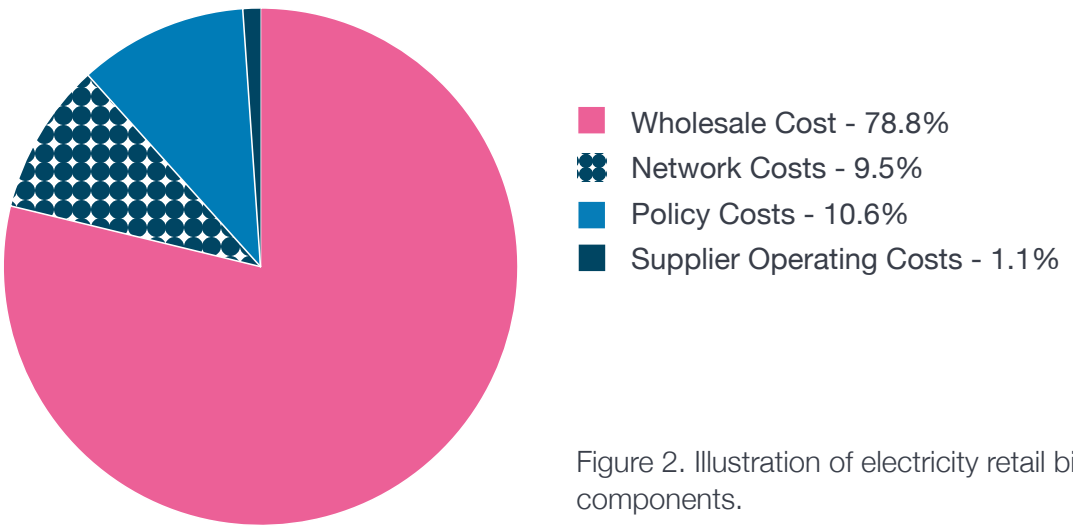


Figure 2. Illustration of electricity retail bill components.

Energy suppliers offer different electricity supply contract structures. In the most basic arrangement of a fixed pricing structure, the unit price (p/kWh) of electricity does not change for the duration of the contract. The price is fixed based on market prices at the time the contract is agreed. Fixed tariffs typically last between 12-36 months. Although fixed tariffs can increase cost-certainty for organisations, there is a risk that customers may be locked into high energy prices throughout the duration of the contract.

With a variable pricing structure, customers are exposed to fluctuations in market prices. This means that the cost per unit of electricity may decrease and/or increase throughout the duration of the contract. Budgeting activities can therefore be more difficult with variable electricity prices. There are also newer types of pricing structures, for example time-of-use tariffs or tariffs particularly for large energy users/industry.

Organisations may wish to purchase a green tariff where some or all the units of electricity purchased are "matched" by units generated from a verified renewable energy source (e.g., a wind farm, a solar farm or a hydroelectric power plant) (see Table 2 - PPA alternatives in Section 3). Green energy tariffs may come at a cost premium for the customer.

It's also worth noting that the Government is currently undertaking a major and widescale Review of Electricity Market Arrangements (REMA). This includes consideration for how government could stimulate the PPA market, and what form this stimulation could take. Clarification is expected once the next consultation is released.

2.1.2. Energy procurement

Energy procurement (in this case buying your electricity) requires several key skills including strong negotiation skills, relationship management, adaptability, risk management and a sound understanding of the energy market and procurement processes.

Purchasing electricity from the 'merchant market' is the most traditional approach to energy procurement for public sector organisations. This may be done in-house through direct engagement with energy suppliers, or via public buying organisations (PBOs). PBOs negotiate and procure energy on behalf of public sector organisations. Purchasing energy through PBOs can have distinct benefits for public sector organisations such as saving time and resources and the (potential) provision of a wider package of services (incl. audits, contract management, and bill validation services). See Section 3 to help you understand the alternatives.

2.2. The different types of PPA, the different organisation roles and what is included in a PPA

2.2.1. Organisation roles

A power purchase agreement is a contractual agreement between a generator and an offtaker that makes provisions for the sale of energy. Typically, PPAs are signed for long-term periods (between 5-20 years). However, short-term contracts that cover a c. 2-year period are also possible for an existing operational asset.

There are different types of PPAs, some of the PPA types differ in terms of how electricity is delivered to the offtaker (e.g., through private wire connection, via the grid or virtually). This is explained further in Table 1 - Types of PPA in Section 2.2.2.

When adopting a PPA, organisations could assume the role of generator, offtaker or both (generator and offtaker). Undertaking both roles is most likely for local authorities and is less likely for a small organisation such as a school, where they are likely to be the offtaker only. Community energy groups will be acting as generators.

GENERATOR

As a generator in a PPA, you would sell energy from a renewable generation asset to a third-party offtaker to generate revenue. In doing so, you would assume the responsibility of designing, developing, constructing, and overseeing the operation and maintenance of the renewable generation asset (if it is not yet developed).

OFFTAKER

As an offtaker in a PPA, you would buy electricity from a renewable generation asset that is owned by a third-party organisation to reduce electricity costs.

GENERATOR AND OFFTAKER

As generator and offtaker in a PPA, you would develop the renewable generation asset (if not done so already) and consume the energy that it generates. This means that you would benefit from the revenue generation and cost-saving opportunities outlined above.

The role that you chose when adopting a PPA will affect factors including revenue generation/cost-saving potential, price certainty, resource requirements and risk (e.g., market risk, revenue risk, volume risk and counter-party risk). As a result, some roles may be more desirable than others.

For example, typically, generators will have more power when negotiating key PPA terms (i.e., pricing structure, contract length, power price) as they have financial metrics that must be achieved to obtain project sign-off. This could be an important consideration for you if you wish to have more control over the terms of contractual arrangements.

The following table provides further resources about the different PPA models depending on the role you wish to take on:

Resource	What does it provide you with?
Energising procurement – The Local Government Association	This report gives further information on the different types of energy supply contracts, different options for procuring energy and an overview of PBOs.
Welsh Government Energy Service – policy briefing	Local authorities who wish to assume the role of both generator and offtaker should consider section 10 of the policy briefing note by the Welsh Government Energy Service which sets out how PPA contracts could accommodate this, allowing the organisation to hedge against electricity price fluctuations.
Detailed Design of Short-Term Renewable Generation Business Models Report	ESC has released this deliverable from the Unlocking Energy in Greater Manchester (UCEGM) project. This is a really useful resource for information on how PPA roles affect revenue saving/cost saving potential, price certainty, resource requirements and risk for the different parties.
CCS Frameworks	Central Government departments cannot take on a generator role and are required to use CCS frameworks to procure a sleeved PPA with a utility company. They also offer support to run and manage the PPA for you. **Frameworks:** RM6251 – Supply of Energy 2 RM6289 – Provision of a Power Purchase Agreement

2.2.2. Types of PPAs

There are three overarching types of PPA set out below:

1. **Private wire PPA** – a direct physical connection that is between a generator and offtaker that doesn't require the use of a sleeving party. It may or may not require the use of existing or new grid infrastructure.	*Example 1: A nearby solar generator and offtaker set up a direct physical connection for the delivery of electricity from the solar farm to the offtaker.* *Example 2: A 3rd party installs roof or ground mounted solar panels at your site for on-site renewable generation and consumption.*
2. **Utility/ Merchant PPA** – agreement between a generator and licensed utility supplier.	*Example: As a generator, you secure agreement for a guaranteed revenue stream over the next 5-10 years via a PPA with a utility company. Short term PPAs could also be agreed for 2-5 years.*
3. **Corporate PPA** – Agreement between a generator and an offtaker for the sale of energy, that depending on the variation might require facilitation from a licensed utility supplier.	*Example: As an offtaker you may wish to negotiate a price with a generator and/or licensed utility supplier to buy your energy over an agreed period (usually 5-20 years).*

The table below breaks down your options for a PPA depending on whether you are the generator, offtaker or both:

Your role	PPA Types	Varia-tions	Description
Generator or Offtaker	Private wire		**Private wire or 'Direct'** Involves a direct physical connection between the generator and offtaker. This could take the form of either: • Roof mounted solar at the building/site • A physical connection from the solar farm or wind generation to the site
Generator	Utility / Merchant PPA		Under a Utility or Merchant PPA, a generator will sell to a utility/balancing company for an agreed price and timeframe.
Offtaker	Corporate PPA	Sleeved / Physical	**Sleeved or 'Indirect Wire via Grid'** An energy supplier will act as an intermediary between the generator and offtaker, and balance supply and demand for a sleeving fee. The electricity will then be delivered to the offtaker via the grid.
		Virtual / Synthetic	This is a **financial instrument** rather than a contract to buy energy between the two parties. It would involve: • **The generator** – sells electricity to a licensed supplier. • **Offtaker** – buys electricity from another unrelated supplier. The Virtual PPA would involve the two parties agreeing to compensate each other if the market deviates from an agreed strike price.
Generator and Offtaker	Combina-tion		A **combination of a Corporate/Private PPA and a Merchant PPA** could be used. If you're a local authority with lots of tenants, a sleeving party could be used to deliver generation from your asset to your offtakers (sleeved PPA) instead of a Private Wire PPA. Where you have excess generation a Merchant PPA could be used to sell it back to a supplier for additional revenue.

Table 1 – Types of PPA

In addition to these types of PPAs, landowners may wish to consider leasing land to third parties. This could work for organisations that are lacking capital but wish to support the local area and make some rental income via leasing their land for use by a local community energy group for a generation project. This is likely to be of most interest to local authorities.

2.2.3. Short versus longer-term PPAs

PPAs can vary in length, and whether you choose a short term PPA (c. 2 years) or a longer term PPA (5-20 years) will depend on your objectives.

If an asset is already operational, a shorter term PPA allows offtakers and generators to take action now to reduce emissions, whilst allowing time to build the business case for a longer term PPA. However, where generators are looking to secure investment to build an asset, or offtakers want long term security on their future energy costs , a longer term PPA is likely to be required. These can take anywhere from 6-18 months to implement.

Section 6.3. covers this in more detail, including weighing up risk appetite and objectives against the different timeframes. It also provides support with pricing and volume structures for longer term PPAs.

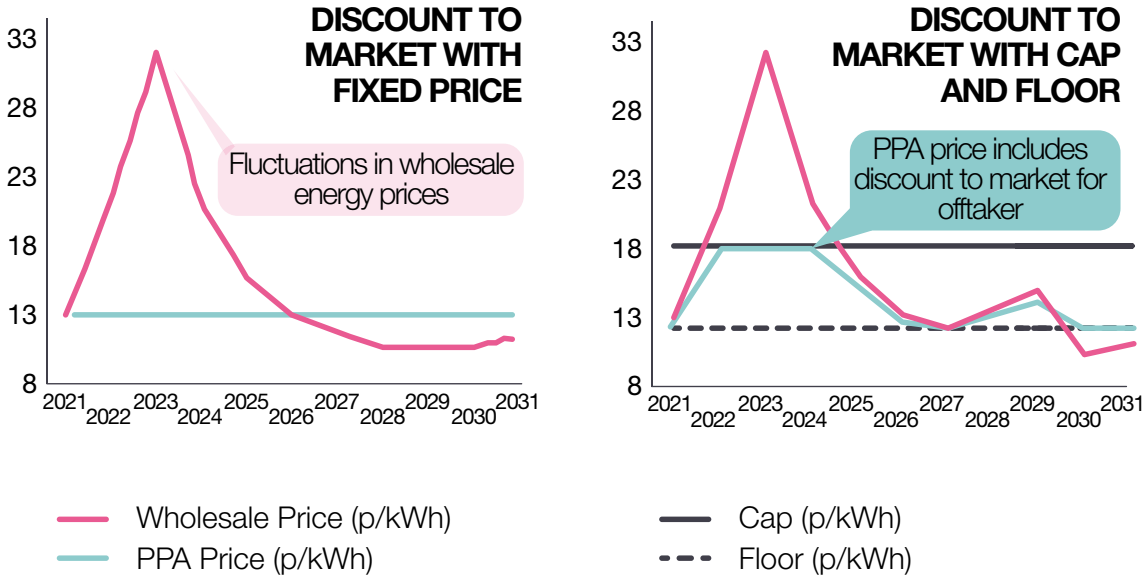
The following table provides some more detail on the different types of PPAs.

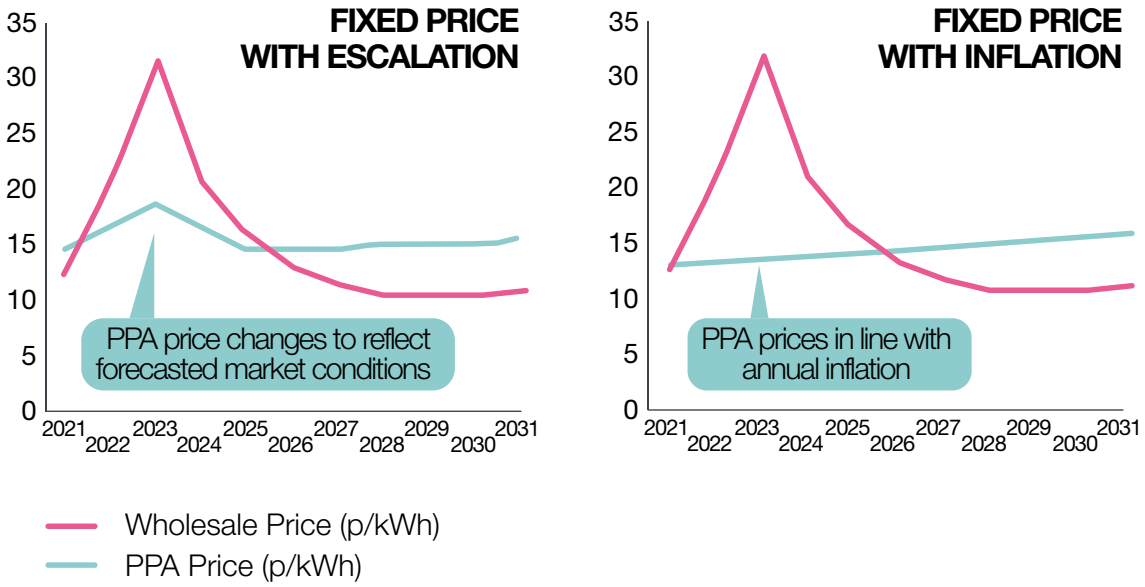
Resource	What does it provide you with?
CCS Introduction to Power Purchase Agreements	Provides more detail on the different types of PPAs and terminology used.
Power offtaker options – Welsh Government Energy Service	This briefing note covers the types of PPA with diagrams to illustrate the different models.
Detailed Design of Short Term Renewable Generation Business Model	This report, delivered as part of the Unlocking Clean Energy in Greater Manchester project (UCEGM) covers the sleeved PPA option in detail with the different roles.
Regen – Local authority models for developing renewable energy	This report tailors PPA models so they're specific to Local Authorities. Whilst they broadly cover the options discussed above, there's a focus on local models and using a 'Sleeving pool' to sign different types of PPAs with multiple local generators.

Resource	What does it provide you with?
Energy Procurement and investment models for local authorities	The Greater South East Net Zero Hub have produced a guide on the various procurement and investment models for local authorities. Section 7 also covers land leasing options.
Solar Farms – benefits for landlords	This article looks at the various benefits for landlords considering leasing land for solar farms. It also gives an indicative range of the £/acre you could expect to receive.
Best Practice Note on Private Wires	This guide covers the options for private wire PPAs and points of connection to the grid, which will require engagement with your DNO.

2.2.4. Pricing Structures

When thinking about a PPA, having a basic understanding of pricing structures is helpful. Whilst it's most common for a fixed price (p/MWh) to be agreed between parties in a PPA, there are a few variations which are set out below. In these cases, a review period may be incorporated into a PPA so, although the PPA has a fixed length, the price may change every year based on wholesale prices. The following pricing structures are taken from the 'Unlocking Clean Energy in Greater Manchester - Detailed design deliverable'





The following table provides more support on understanding how the different pricing structures work:

Resource	What does it provide you with?
Unlocking Clean Energy in Greater Manchester (UCEGM) – Detailed design deliverable	The detailed design deliverable will give you more detail on the pricing structures included above. It also breaks them down by PPA type and illustrates offtaker versus generator benefit under each structure.
UCEGM report	This report looks at improving the business case for local renewable energy projects in the current market and under future market scenarios.
World Business Council for Sustainable Development – Pricing Structures for corporate renewable PPAs	Gives a very detailed overview of the different pricing structures with illustrative examples.

2.2.5. What does a PPA include?

The following list gives a high-level overview of the terms you are likely to see in a PPA. For real-world examples of PPA agreements you can visit the Net Zero Go portal. If you're not a local authority, please email us at psdecarbguidance@es.catapult.org.uk and we will send you the documents.

A PPA will set out the terms regarding the sale of the electricity including:

- Price agreement for sale/purchase (£/MWh or p/KWh) and structure (explained above). Review periods should also be included where necessary
- Availability/volume of electricity to be supplied
- Length of agreement

It is also likely to need to cover:

- Renewable Energy Guarantee of Origin (REGO) certificates (these are often sold separately)
- Embedded benefits/costs
- Balancing services and fees
- Infrastructure and asset ownership
- Insurance/warranties
- Access/security for assets
- Commissioning period
- Operation and Maintenance of the equipment
- Risk allocation between parties
- Termination clauses

2.3. How my organisation is using energy

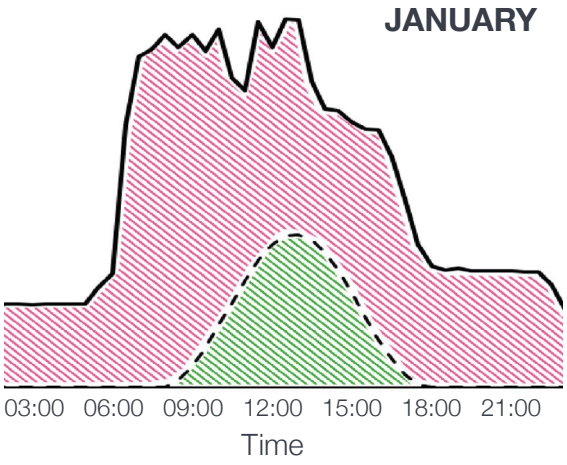
Before considering your options for adopting a PPA, you'll first need to understand your baseline energy consumption and costs for your building/site and how these are likely to change over time. This is important because a PPA (or indeed onsite generation) works best when supply is closely matched with demand. A PPA can be used to source all, or a portion, of your demand and could be integrated with your existing supply contracts.

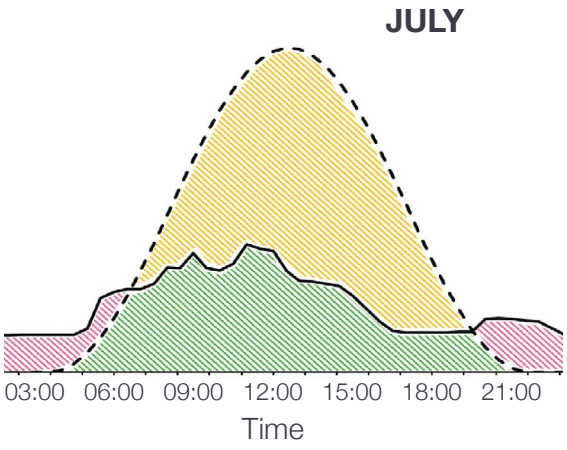
To understand your energy requirements, you will need to:

- Select an appropriate consumption reference year
- Collect your energy data from bills or meter readings
- Generate both daily and seasonal generation/consumption profiles. (This will help with matching supply and demand under a PPA, and flexibility requirements)
- Calculate your business-as-usual energy consumption and cost forecast
- Consider how energy consumption could be reduced through demand management and energy efficiency
- Undertake optioneering around self-generation and battery storage, and, if feasible, how a PPA could be used to source any excess demand or sell where there's excess supply (generator role only)

The seasonal variations of solar generation and energy demand are also important to the sizing of renewable generation assets.

(see the 'UCEGM - Improving the business case for local renewable energy projects in the current market and under future market scenarios' deliverable for further details)





Energy Consumption
Solar Generation

Grid Imported Energy
Exported Solar Energy
Self-Consumed Solar Energy

The following table provides resources for calculating your baseline energy consumption and interventions optioneering:

Resource	What does it provide you with?
Theme 1 guide – Developing and delivering your strategy	You should first consider how a PPA would fit in with your wider organisational decarbonisation strategy and help you achieve emissions reductions.
Understanding your energy data	This guide provides best practice guidance on how to collect your energy data and develop carbon predictions.
Business as usual estimator (BAU)	This estimator allows input of building, site, or portfolio level energy consumption data. It provides a baseline of energy use over time. It also allows for known future changes to the site to be captured and incorporated into future systems.
Decarbonisation Interventions Estimator	This estimator uses the BAU estimator forecast to measure the impact of interventions against. This is a useful tool for optioneering i.e., looking at a combination of energy efficiency and self-generation.

2.4. Checking for any deal-breakers

Before you delve into the finer details of adopting a PPA, you'll need to carry out a quick assessment of your existing arrangements to make sure there are no deal-breakers. You should consider:

Organisation type - you should check whether your organisation has any restrictions around the roles. For example, central government departments can't be a generator and are also required to procure a PPA using the Crown Commercial Service (CCS).

Site suitability - is your site/building suitable for installation of roof-mounted panels? Have you got land near your site/building for a ground array or wind generation? You are likely to need to get a site survey carried out to confirm suitability for an onsite private wire PPA.

Planning permission - when installing assets on your site, you may require planning permission.

Mortgaged buildings - you'll need to inform your mortgage lender of plans and potentially seek their approval for any installation.

Lease v ownership - if your building is leased you will need to get permission from your landlord. For example, schools may need to obtain permission from their local council/authority.

Length of building lease - longer term PPA contracts are typically for 5-20 years. Is it possible that you will need to move/sell the property before the end of the PPA contract? In this case the buyer/new tenant will need to be either willing to take over the PPA or you'll need to include a buyout clause in your PPA.

Existing energy supply contracts - can the PPA be integrated into existing supply contracts? Or, do you need to procure a new contract? If so, have you considered timescales i.e., when your existing energy supply contracts will be up for renewal (more in Section 5).

Energy profile matching - as a generator you should consider seasonal differences in your generation profile and the level of solar resource available at your site. As an offtaker you will need to map out your seasonal demand profiles and identify peak demand. Profiles will need to match for an offtaker and generator to partner.

2.5. Community Energy Groups

If you're interested in delivering additional local benefits, you may wish to approach a community energy group, or they may have already contacted you directly about PPA opportunities.

Community energy includes the delivery of community-led renewable energy projects, either controlled by communities themselves or in partnership with commercial or public sector partners.

Community Energy England provides an overview of what community energy groups are and how they work. This includes information on the definition, impact and sector potential. They also have an interactive map that is the most comprehensive national dataset of community energy groups, projects, and their locations. This is a good first step for identifying groups in your locality.

If you wish to take forward and haven't been approached directly, you would need to contact the community energy group, who would then carry out a site survey, look at your energy consumption and consider the suitability of the project. If both parties were content, a price offer would be made depending on site suitability and the length of contract you are interested in.

It's worth carrying out some desk-based research and speaking to a couple of community energy groups to get the best offer.

> **At the point when this guide was published (Nov 2023) consensus is that you should expect a price in the ballpark of 14-20 p/kW.**

Community Energy Resources	What does it provide you with?
National Community energy group hubs	Community Energy England Community Energy Scotland Community Energy Wales
Local Energy Scotland	Guide and toolkit to support development and implementation of community-led local energy projects in Scotland.

Why might organisations be interested in a PPA?

All public sector organisations recognise the need to tackle climate change and rapidly reduce their own emissions. As well as transitioning vehicle fleets to EVs, improving energy efficiency in buildings, and introducing low carbon heating technologies to reduce emissions, public sector bodies should also consider how they are procuring and consuming electricity. For Local Authorities and Community Energy Groups, there is the additional consideration of whether they wish to develop renewable energy generation, either on-site, locally or support its addition to the grid elsewhere.

The following table sets out the pros and cons of a PPA versus the common alternatives of developing your own onsite generation, purchasing energy using a green tariff, or for Local Authorities and Community Energy Groups, acting as a merchant generator.

Role	Alternative	What is this?	Pros	Cons
Generator and Offtaker	Generating electricity on site	This would involve planning for, installing, running and eventually commissioning your own renewable asset.	Electricity cost per unit will be cheaper than via a PPA or traditional supply contract/green tariff.	You will require the upfront capital to install the renewable asset and the capability to operate and decommission. You can only consume the renewable energy at that site, whereas a sleeved PPA could allow you to build one large generation asset and the 'sleeve' to more than one site.
Generator	Merchant Generator	As a merchant generator you'd be selling your electricity directly to the wholesale power market. This would then be distributed centrally through the grid. This is compared to selling directly to a particular organisation via a PPA.	Using the day ahead markets will allow you to track wholesale prices more closely. As wholesale prices (p/kWh) are currently above prices being negotiated through PPAs, you may earn more revenue from merchant trading in the nearer term.	The **Smart Export Guarantee** (SEG) is only available for assets up to 5MWh. Volatility in wholesale electricity markets can make it difficult to get the business case for the generation asset signed off as you won't have certainty over your long-term revenue.
Offtaker	Purchasing energy using a green tariff	Tariffs are labelled green if some (or all) of the units of electricity you purchase are 'matched' by units generated from a verified renewable energy source. The **Renewable Energy Guarantees of Origin (REGO) scheme** was brought in to increase transparency about the proportion of electricity suppliers source from renewable energy.	Green tariff contracts are typically offered over a shorter period (4-8 years). This is likely to align more comfortably with traditional business planning horizons. The supplier takes on all the risk and you don't need to negotiate with a generator.	Suppliers do not actually need to generate new renewable energy to sell you a REGO, as REGOs can be bought for electricity that is already available. Purchasing Renewable Energy Certificates (RECs) doesn't guarantee that you are adding any new generation to the grid, and you could still be funding fossil fuels.

Table 2 - PPA alternatives

3.1. What are the benefits and risks of a PPA?

Before pursuing a PPA, it is important to understand your underlying objective(s) for doing so. This will inform which role may be most suitable for your organisation (e.g., generator, offtaker or both). At its core, a PPA is an agreement between parties to share risk and ensure they have greater certainty over the future revenue from a renewable asset (generator) or future energy costs (offtaker). A PPA therefore offers you the ability to act now and secure greater certainty, and it can offer a whole host of other benefits that support your objectives. However, it is important to carefully consider the risks and benefits.

Example objectives include the following:

- To generate revenue to invest in subsequent low-carbon projects/ opportunities
- To maximise cost-savings on energy spending
- To provide energy resilience
- To provide cost security over an agreed period of time
- To maximise carbon emission reduction potential
- To provide additional social value in your local community
- To maximise the value from a piece of land

Example risks include the following:

- Timescales for procurement
- Leasing and HMRC accounting
- Additional costs/fees incurred
- Financial risk from uncertainty
- Uncertainty around future wholesale market trends and regulation

Benefits	Risks / Costs
Clean energy procurement and carbon emissions reductions are achieved through adopting a PPA over traditional supply/green tariffs. **Renewable Energy Guarantees of Origin** (REGOs) are issued per megawatt hour (MWh) of eligible renewable output to generators of renewable electricity. As an offtaker ownership of REGOs can be transferred in PPA clauses or purchased separately. These can be used for DEFRA/GHG reporting.  Offtaker	Uncertainty as to future wholesale electricity prices. You could end up paying more in the long run using a PPA, if wholesale prices drop below your agreed price and you've opted for some type of fixed price structure.  Offtaker
Investment in economic growth/social value your local area through partnering with a local community energy group.  Offtaker	Accounting needs to be considered. A virtual PPA is a financial instrument therefore will need to be recorded on your balance sheet. Whether a corporate PPA is considered a lease or not is subject to **IFRS 16**.  Offtaker
Certain types of pricing structures will shield your organisation from long term volatility in power markets. A PPA can give greater long-term certainty over the revenue from an asset (generator) or energy costs (offtaker).  Offtaker and Generator	Sleeving fees will be passed onto your bill from your supplier who will adjust the generator's supply schedule to match your demand. For more information on fees, see the **UCEGM detailed design deliverable**.  Offtaker
Investing in either an existing renewable asset or a new to earth generation asset helps to decarbonise your own supply chain, rather than offsetting which focuses on compensating for carbon dioxide already emitted.  Offtaker and Generator	PPA may take a while to negotiate and come to fruition. Option to use a shorter term PPA as a 'bridging contract' to act now to reduce your emissions. This allows time to prepare the business case for a longer term PPA to start once the short term PPA ends.  Offtaker and Generator

Benefits	Risks / Costs
Avoided embedded costs through connecting at the distribution level rather than at the transmission level.  Offtaker and Generator	If supply and demand are not well-aligned, generators could be charged for imbalance fees. For more information on fees, see the **UCEGM detailed design deliverable.**  Generator
If you choose a private wire or behind the meter PPA, you can avoid non-commodity costs which can form up to 60% of the price negotiated under a sleeved PPA.  Offtaker	If the length of your energy supply contract is shorter than the length of your PPA contract, you may need to make provisions to 'port' balancing and shaping responsibilities (typical supplier tasks associated with facilitating a sleeved PPA) to a new electricity supplier.  Offtaker
The new Smart Export Guarantee (SEG) Scheme is also only available for eligible assets up to 5MW, so the PPA route is likely to be one of the only viable options for larger assets. It'll also give greater control over price negotiations and length of contract than merchant trading. For assets >5MW, you may be able to have a separate merchant PPA to sell excess to a supplier.  Generator	
If battery storage is present, there may also be the opportunity to secure an optimisation contract for additional revenue. See the **Warrington case study** for an example of this model.  Generator	

The following table provides a high-level overview of the benefits and costs/risks (above)broken down by type of PPA. These will vary depending on the length of your PPA contract and the size of your organisation and the role you take on, be it as a generator, offtaker, or both:

	PPA type	Benefits						Risks / costs
		Carbon emissions reduction	Energy cost savings	Local benefits	New renewable generation	Revenue security	Export potential	
All public sector bodies e.g. LAs, NHS, schools etc as offtakers	Corporate PPA Sleeved / Physical	√ REGOs can be sold with contract Green under DEFRA/GHG reporting	√ Price negotiated below current market price	? Procurement regulations changing from Q2 2024 which might allow locality to be specified in tendering	√ Supporting an existing renewable asset/ funding development of a new asset	√ Long term contracts span 5-20 years. Greater security with budgets.	n/a for offtaker	• Sleeving fees apply for use of licenced supplier • Non-commodity costs must be paid for use of the grid • Uncertainty around future electricity market trends
	Corporate Virtual	√ REGOs can be sold separately Green under DEFRA/GHG reporting	√ Quicker to enact than sleeved contracts Continue to use your existing supply contract	√ Cuts out tendering process so easy to choose a local generator		√ Long term contracts span 5-20 years Risk sharing through reconciliation around a strike price	n/a for offtaker	• PPA must be reported on your balance sheet as it's a financial instrument • Uncertainty around future electricity market trends. You'll have to compensate the generator if market prices drop below your agreed strike price
	Private wire	√ Only option that is net zero carbon under both GGC reporting and GHG/ DEFRA	√ Reduced reliance on volatile grid energy prices	√ Yes, if you choose a direct physical connection with a local generator	√ Likely to support new generation with a direct connection to a new renewable asset	√ 5-20 years if you choose a longer-term PPA	n/a for offtaker	• Setting up direct wire infrastructure can be very costly, the further the distance between the generator and offtaker, the more expensive the infrastructure is likely to be • No balancing party involved, so arrangement works best if supply can be closely matched to demand

Table 3 – PPA benefits and risks

	PPA type	Benefits						Risks / costs
		Carbon emissions reduction	Energy cost savings	Local benefits	New renewable generation	Revenue security	Export potential	
Community energy group or Local Authority (as generator)	**Merchant PPA (selling to a supplier)**	√ Helping to decarbonise UK grid.	√ Generation can be used for own site before excess is sold via a PPA.	? Supplier won't necessarily sell electricity to local offtakers.	√ Adding new generation to grid	√ Depends on pricing structure. Can either choose a short-term fixed price contract or a longer-term flexible contract.	? (for excess generation) SEG payments are only eligible for generation assets below 5MW. Better to closely match supply with energy sold to supplier/ offtakers under PPAs. If asset is >5MW, you may be able to have a separate merchant PPA to sell excess to a supplier.	• Need careful consideration of pricing structures. Fixed prices are typically negotiated under shorter contracts (<4 years)
	Sleeved PPA (Delivering energy to offtaker using a sleeving party)	√ Helping to decarbonise offtakers' estates		? Procurement regulations changing from Q2 2024 which might allow locality to be specified in tendering				• Non commodity costs are passed through from energy suppliers to offtakers. • Uncertainty around future electricity market trends.
	Virtual PPA (with local offtaker)			√ Cuts out tendering process to partner with a local offtaker.		√ 5-20 years Risk sharing – reconciliation around a strike price	√ A Virtual PPA is not a contract to sell electricity to offtakers, but a generator is eligible for SEG payments if asset is less than 5MW. If asset is >5MW, you may be able to have a separate merchant PPA to sell excess to a supplier.	• PPA must be reported on your balance sheet as it's a financial instrument. • Uncertainty around future electricity market trends. You'll have to compensate offtakers if market prices drop below your agreed strike price.
	Private wire (with local offtaker)	√ Only option that is net zero carbon under both GGC reporting and GHG/ DEFRA	√ Generation can be used for own site before excess is sold via a PPA	√ Yes, if you choose a direct physical connection with a local offtaker		√ 5-20 years if you choose a longer-term PPA	√ SEG payments eligible for generation assets below 5MW. Better to closely match supply with energy sold to supplier/ offtakers under PPAs. If asset is >5MW, you pay be able to have a separate merchant PPA to sell excess to a supplier	• Setting up direct wire infrastructure can be very costly, the further the distance between the generator and offtaker, the more expensive the infrastructure is likely to be • No balancing party involved, so arrangement works best if supply can be closely matched to demand. Battery storage likely to be needed for flexibility
Local Authority (both generator and offtaker)	**Sleeved Corporate PPA** Energy delivered using supplier as a sleeving party.	√ 100% renewable guarantee from self -generation	√ Reduced reliance on volatile grid energy prices	√ Supporting decarbonisation of your local area Offtakers might include any parties leasing council owned buildings i.e.., schools, social housing tenants etc	√ Additionality/ new to earth asset – investing in a new renewable asset directly and taking ownership	√ Can hedge against market volatility. All profits retained within your locality.	√ Any excess could be exported back to the grid for SEG payments; however revenue is only eligible for generation assets less than 5MW. If asset is >5MW, you pay be able to have a separate merchant PPA to sell excess.	• Upfront capital required to build and commission asset. • Renewable generation could be coupled with battery storage to maximise the balance between supply and demand - though the viability of battery storage would need to be considered • Selling excess back to the grid or to a supplier through a separate merchant PPA would add complexity to the model.
	Private wire with battery storage	√ Only option that is net zero carbon under both GGC reporting and GHG/ DEFRA						

Who am I likely to need to engage to set up a PPA and why?

It is important that the correct project team is assembled to implement the PPA. Numerous departments and teams may be involved including legal, finance, energy, sustainability, and estates.

Organisations may also wish to consider whether there are opportunities to collaborate with other local stakeholders such as local authorities, community energy groups, schools, and NHS trusts. Where this is the case, it is important to ensure that all stakeholders are aligned on objectives to provide clarity, ease governance arrangements and avoid delays in implementation.

Outside of the core project team, there will also be external stakeholders that you need to engage with or experts you need to bring in. These stakeholders and experts, their importance to PPA implementation, and their applicability to the role an organisation may assume in a PPA are outlined here:

Distribution Network Operator

- If your organisation is developing a renewable generation asset, it is crucial to engage with the DNO during the project concept and feasibility stage.
- The DNO can advise on the potential level of grid reinforcement required (if applicable) and the cost of obtaining a grid connection for potential sites, as well as **wait times to obtain your connection.**
- The cost of the grid connection has the potential to significantly influence the financial viability of a PPA and wait times can be long.
- The DNO also provides **grid connection offers** and **grid connection agreements**.
- For generation connections at 50kW and above, Electricity North West have published an **overview of the application process**. For more information on regional capacity see the **Local DNO capacity guidance**.

√ Generator

√ Generator and Offtaker

Finance Provider

- If your organisation is developing a renewable generation asset, you will likely need to engage with a finance provider.
- Finance providers issue the necessary funds for renewable projects through a contractual agreement with the generator.
- They also advise on eligibility, loan structures and repayment terms.
- The terms of the finance agreement will influence what price you need to charge for power in the PPA to achieve necessary financial metrics (e.g., net present value, internal rate of return, project payback)

√ Generator

√ Generator and Offtaker

Energy Supplier (or other BRP)

- In a sleeved PPA, an energy supplier is required to facilitate the 'sleeving' of energy between the generator and offtaker.
- They will charge a 'sleeving fee' for this service which is paid by the offtaker.
- They also provide balancing services and charge the offtaker for any additional power not met through the Sleeved PPA.
- It is therefore important for an organisation to engage with energy suppliers as early as possible to understand the full range of products and services that are available (and their associated cost).
- Energy suppliers may also purchase surplus energy that is exported to the grid from a renewable generation asset.
- This will require an additional commercial agreement separate to the PPA between the generator and energy supplier (unless the generator is just opting for a utility/ merchant PPA).
- Please note that energy suppliers may not provide final quotations until generators have a commercial operations date (COD) in place for the renewable asset(s) and have obtained planning permission.

√ Generator

√ Offtaker

√ Generator and Offtaker

Legal Advisor

- PPAs can be complex to implement, and legal advice will be required.
- The right legal advisors can provide guidance on the contractual elements of PPAs such as pricing structure, volume structure, risk allocation and tenor (contract length).
- Legal responsibilities may be outsourced to external organisations at a cost.

√ Generator

√ Offtaker

√ Generator and Offtaker

Project Delivery Contractor

- If your organisation is developing a renewable generation asset, you will need to consider what contractors you need to procure for project design and delivery (e.g. engineering consultants, O&M contractors, and decommissioning contractors).
- Local Energy Scotland have published the following guide on the development of renewable energy projects: **Community and Renewable Energy Scheme Project Development Toolkit**
- The Welsh Government have also published a **Community Energy Toolkit**.

√ Generator

√ Generator and Offtaker

Procurement Advisor

- Training courses for energy procurement are available from a range of providers including the **Energy Institute, Energy Managers Association, SR Supply Chain Consultants** and the **Chartered Institute of Procurement and Supply**.
- **CCS frameworks** provide procurement, consultancy and legal advice for PPA adoption.
  - RM6251 – Supply of Energy 2
  - RM6289 – Provision of a Power Purchase Agreement
- The **Procurement routes and frameworks document** provides an overview of procurement support available.
- For more information see **Section 6.1 – Procurement – getting the right outcome.**

√ Generator

√ Offtaker

√ Generator and Offtaker

What is the basic process for setting up a PPA

The initial stages of PPA optioneering will require thinking around site suitability. This might involve carrying out feasibility studies to see if a private wire arrangement is possible, and whether any grid reinforcements would be needed. At this stage offtakers and generators/local energy community groups would need to have engaged with one another. Local authorities might also be required to carry out consultations and publish any plans as part of their overarching decarbonisation strategy.

It then usually takes between 6-18 months for PPAs to be implemented. This is mainly attributable to the procurement process and legal consultations. Where possible, it is important to ensure that the start date of PPAs align with other important milestones. For example, as a generator, you should try to ensure that the PPA start date aligns with the date that the renewable generation asset is energised (especially if financial modelling is based on this assumption). Though, if necessary, it may still be possible to secure temporary export agreements while waiting for PPAs to be finalised.

As an offtaker, you may need to align PPA start dates with the renewal of energy supply contracts. For example, for Sleeved PPAs specifically, your existing energy supply contract may not permit sleeving which means that you may have to wait until it ends before securing a PPA with an alternative energy supplier.

The process for implementing a PPA will differ depending on the role that your organisation assumes (e.g., generator with third party offtaker, offtaker with third party generator or generator and offtaker). The figure below provides an example overview of what the PPA implementation process *may* look like for different roles (this excludes a virtual PPA).

GENERATOR WITH THIRD PARTY OFFTAKER	OFFTAKER WITH THIRD PARTY GENERATOR	GENERATOR AND OFFTAKER
Applicable to all PPA Types	**Applicable to Private Wire, Virtual and Sleeved PPAs**	**Applicable to Sleeved PPAs**

Understanding Characteristics of Energy Generation Asset

- To be in a position to negotiate a PPA, as a generator, you will first need to know key technical details about the renewable generation asset such as its estimated installed capacity and anticipated annual generation (and how this varies hourly, daily and seasonally).
- Grid connection offers and other consents may also be required to evidence to prospective offtakers that certain development milestones have been reached.

Define Tendering Criteria

- As an offtaker, you will need to understand the range of options that are available for PPAs in relation to provider types, generation technology types, PPA types, pricing structures, volume structures and contract duration.
- You should then work with the project team to define the acceptability of each option.
- For example, you may decide that that solar generation is preferred to wind generation.
- You may therefore identify renewable energy from solar assets as ‘preferred’ and renewable energy from wind assets as ‘less acceptable’.
- You may also wish to give some factors more weighting than others.

Understanding Characteristics of Energy Generation Asset

- To be in a position to negotiate a PPA, generators will first need to know key technical details about the renewable generation asset such as estimated installed capacity and anticipated annual generation (and how this varies seasonally).

Considering Commercial and Contractual Terms[1]

- At this stage, you will need to consider the potential structure and terms of the PPA contract.
- Key components you will need to consider include the power price (p/kWh), pricing structure, volume structure, risk allocation and the duration of the agreement (tenor).
- As a generator, you will need to perform financial modelling to understand what power price (and pricing structure) is appropriate to generate financial metrics that may be required to receive project sign-off.
- As part of the Unlocking Clean Energy in Greater Manchester project, the Catapult developed a modelling tool which allows organisations to explore the PPA price that may be required for potential solar PV projects.
  - The tool can be accessed **here**.
- As an offtaker, you will need to indicate your preference for PPA contract terms – noting that generators typically have more negotiation power. You will also need to provide an indication of the volume of power you wish to procure under the PPA.

Drafting and Issuing Invitation to Tender (ITT)/ Request for Proposal (RFP) Documentation[2]

- Drawing on the outputs from the previous steps, you will then need to draft and issue an Invitation to Tender (ITT) or Request for Proposal (RFP) to prospective PPA partners.
- Please note that as an offtaker in a Sleeved PPA specifically, you may need to issue an ITT/RFP to third party generators and energy suppliers (if your current energy supplier does not provide sleeving services).
- As generator and offtaker in a sleeve-to-self PPA, you may only need to issue an ITT/RFP to energy suppliers for sleeving services.
  - Contractual terms for the sale of energy (i.e., between the generator and offtaker) could be negotiated internally.
- Please note that a PPA contract will still be required – even if the same organisation acts as generator and offtaker.

Evaluating and Short-Listing Responses

- At this stage, you will compare and evaluate responses based on how well they match your pre-determined criteria from earlier steps

Clarifying Terms with Prospective PPA Partners

- You may wish to interview prospective PPA partners to seek further clarity on commercial and contractual terms.
- This stage also presents the opportunity for further negotiation.
- After discussions with prospective partners, you will need to re-evaluate responses to determine a preferred PPA partner (and energy supplier if applicable).

Final Negotiation of PPA Terms

- Before agreeing and signing the PPA contract, you may wish to undertake a final negotiation with the chosen PPA partner.

[1] For further information on different contractual considerations for PPAs, please refer to the Catapult’s **Detailed Design of Short-Term Renewable Generation Business Models report** (a deliverable from the Unlocking Energy in Greater Manchester (UCEGM) project)

[2] Instead of going out to tender, you may be able to identify potential PPA partners by going out to platforms or by going through a broker. These potential options are discussed further in the following source: **Energy Procurement and Investment Models for Local Authorities.**

Common issues faced/that need to be addressed

This section breaks down some of the key stumbling blocks identified when looking to adopt a PPA. Sight of these early in the process will help optimise the outcome of negotiations and speed up delivery.

6.1. Procurement – getting the right outcome

The procurement route you choose will depend on whether the PPA can be integrated as part of your existing supply contract or not. You'll need to speak to your supplier and consider the expiry date for the existing contract. The Crown Commercial Service recommends that three procurement exercises are undertaken when negotiating a PPA:

1. **Consultancy support** – business modelling and consideration of volume and pricing structures.

2. **Legal expertise** – agreement of commercial terms including leasing.

3. **Management of tendering exercise** – this will help prioritise specific procurement criteria.

Procurement of a PPA is a lot like procurement of any other project, therefore public sector organisations need to make sure they are compliant with UK **Public Procurement Policy**. This requires proof that the opportunity has been offered in a fair and free market in the interest of achieving value for money. However, running a full competitive procurement process is lengthy and there's no guarantee that if you wish to contract with a local generator, you will be able to do so.

The new Procurement Policy Bill will reform existing EU Procurement rules. The **new regulations** will come into force in Q2 2024, and aim to be more flexible which should allow for qualitative assessment to prioritise local benefits in tenders. Make sure you talk to your procurement team and get updates on the progress and how to comply.

Further resources for procurement of PPAs for public sector bodies:

Resource	What does it provide you with?
Introduction to Power Purchase Agreements	The Crown Commercial Service (CCS) has an introductory guide to PPAs, with Section 4 covering best practice procurement. It's recommended that you carry out three procurement exercises to obtain consultancy support, legal expertise, and management of the tendering process for the PPA itself.
CCS frameworks	CCS has frameworks to help procure a PPA and integrate it into your existing supply contracts. RM6251 – Supply of Energy 2 RM6289 – Provision of a Power Purchase Agreement

6.2. Getting all the relevant parties onboard – this can require some education

Preparing a business case for a PPA and getting it signed off will also require early engagement with internal parties. You'll need to think about tailoring messaging for each team to address key concerns or decision points.

It's worth investing time in educating the key stakeholders early on and keeping them in the loop, as this will speed up the process of getting the business case approved. You might also need to get any externally procured parties (consultancy/legal firm) to come in and speak to stakeholders, to make sure everyone is on the same page.

Finance team

Cost Benefit Analysis with financial metrics

Wholesale electricity market forecasts.

Pricing and volume structures.

Will PPA need to be recorded on your balance sheet?

Legal team

Commercial arrangements

Ownership of assets. Will there be a lease involved? (see above)

Who's responsible for insurance and warranties?

Property team

Will equipment need to be installed on premises by a third party? Is the site suitable?

Will equipment affect the value of the property? Are there flooding/ damage risks?

Are there any concerns about what the generations assets will look like?

Board Members/Senior decision makers

You'll need to demonstrate that all the above have been considered when presenting to the board. Tailoring messaging depending on what benefits/KPIs they're most interested in will help to secure agreement.

6.3. Setting terms over a long period

As a longer-term PPA could last between 5-20 years you'll likely need to procure a specialist consultant to help forecast future energy prices and model different scenarios for your organisation. Pricing and volume structure will need careful consideration, as well as any review periods. Whilst the Greenbook and Cornwall Insight provide the best estimates available for future electricity prices, there are of course risks with any forecasts.

It's worth considering your underlying objectives and the level of overall risk you are willing to take. With a fixed price, long term contract you can guarantee long-term price certainty but can't guarantee you'll make the most revenue or achieve the best cost savings. For generators, however, long-term contracts can help improve investor confidence where you're looking to secure finance for a renewable development. If a PPA is priced so that it'll cover costs and provide some margin, this will be favourable for investors. Similarly, for offtakers, pricing PPAs in this way is likely to be much cheaper than a standard tariff bought from the wholesale market.

There's also the option to set shorter term contracts, or use review periods wisely to reduce the risk of being locked in at unfavourable prices. However, there may then be the need to negotiate numerous PPAs throughout the lifetime of the asset if you're an asset owner. To avoid this you could use a combination of both a shorter term 'bridging' PPA and longer term contract where a generation asset is existing. The short term PPA will allow you to act now whilst giving you time to prepare the business case for the longer term PPA.

The following table provides resources to help with setting terms to optimise your contract:

Resource	What does it provide you with?
A simple guide to PPA pricing structures	This guide offers an overview of the different types of pricing structures that can be negotiated in a PPA.
PPA Volume structures	This LinkedIn post provides a simple explanation of the three main types of volume structure for PPAs. It's useful to have an understanding of how volume structures are used to match generation and consumption.
Greenbook Guidance and flat files for energy and carbon	The Green Book provides forecasted electricity prices and emissions factors for up to 2050.

Resource	What does it provide you with?
UCEGM Financial modelling tool	This tool was produced as part of the Unlocking Cleaner Energy in Greater Manchester project and helps assess the economic sustainability of solar PV installations. It uses forecasted electricity prices from Cornwall Insight.
Cornwall Insight	Cornwall Insight is a consultancy that provides energy market intelligence and analysis. Forecasted electricity prices can be procured from them

6.4. Commercial leasing arrangements and operational rents

A PPA is a contract between a generator and an offtaker for the sale of electricity produced by the generator. However, this contract alone is unlikely to include necessary rights for a generator to install their equipment at an offtaker's site i.e., for a private wire solar PV arrangement. In this case a lease agreement may need to be coupled to the PPA contract.

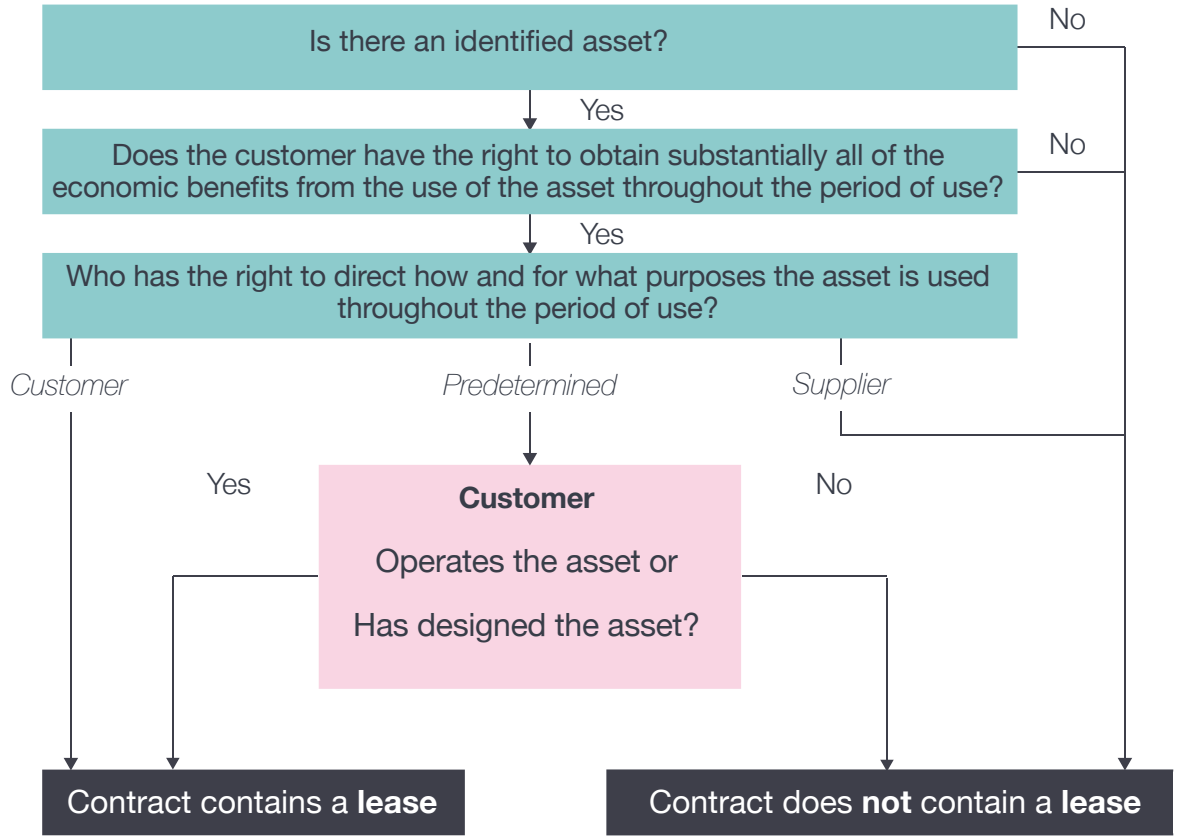
A lease is defined by IFRS 16 as a "right to direct the use of an identified asset throughout the period of use". The need for a lease agreement for PPA-related assets will depend upon whether all three of the following criteria are met:

- Is there an identified asset in the PPA?
- Does the offtaker have the right to obtain substantially all of the economic benefits from use of the asset throughout the term of the PPA?
- Does the offtaker have the right to direct how and for what purpose the identified generated asset is used throughout the term of the PPA?

If the conclusion is that the PPA contains a lease, the offtaker has to recognise a 'right of use asset' (ROU) and corresponding lease liability on their balance sheet. Even if the underlying generation equipment does not meet the definition of a lease, land and battery storage assets may.

Virtual PPAs aren't a contract to buy or sell energy, but rather an agreement to reconcile against an agreed strike price, therefore a lease isn't involved under IFRS 16. However, as a virtual PPA is a financial derivative, therefore they will need to be accounted for under IFRS 9.

Identifying a lease



IFRS accounting outline for PPAs (2018)

For more detail see the following resources:

Resource	What does it provide you with?
IFRS 16 Lease: Application guidance	HM Treasury IFRS 16 requirements for disclosure of leases.
Energy transition: lease considerations in respect of power purchase agreements	Guidance specifically around PPAs and IFRS lease criteria. The guide provides a flow-diagram to help you determine whether a lease would be required to PPA equipment installed on your building/site.
IFRS accounting outline for Power Purchase Agreements	The paper aims to deepen awareness and understanding of PPA clauses that could trigger an undesirable accounting outcome.

6.5. Insurances and warranties

When negotiating the terms of your PPA, you'll need to make sure you have a clear understanding of which party is responsible for the insurance of the system and providing the required warranties. These are likely to linked with ownership of the asset. However, there may be some caveats, so you'll need to make sure responsibility is embedded into your contract terms.

The following assets need to be considered:

- Land
- Generation assets
- Any battery storage assets

The following should be discussed with your legal and property teams:

PPA Role	Insurance and Warranties
Generator 	**As a generator, insurance and warranty arrangements will depend on the commercial arrangements around the assets.** • **Performance warranties** - for example these will need to be agreed before purchasing/leasing solar panels. You'll have to provide guarantees to offtakers when negotiating contracts. • **Insurance requirements** - where you have bought the assets, you'll be responsible for insuring them. If not, you'll need to check with the party you are leasing from. • **Maintenance and servicing** - responsibility should lie with the generator rather than the offtaker. • **Security and access** - if your assets have been installed on an offtakers site, or on leased land, you'll need to agree security and access terms.
Offtaker 	**As an offtaker, you'll need to negotiate:** • **Performance warranties** for the generation asset - your generator/3rd party installer should provide a performance guarantee when negotiating contract terms. • **Insurance requirements** - as you don't own the asset, the 3rd party will be responsible for insuring. However, you will need to inform your building insurers/mortgage lenders of any planned changes to your site. • **Maintenance and servicing** - responsibility would fall on the generator to maintain and service their assets. However, if you have purchased/ leased battery storage units, you'll need to agree with your supplier. It's worth also checking that the generator would pay for removal and re-installation of a roof-mounted system if roof repairs were required. • **Security and access** - you'll need to agree this with your generator where assets have been installed on your site.
Both generator and offtaker 	You'll have responsibility for the generation asset and the site/building that is using the energy. Before purchasing/leasing any assets you'll need to determine responsibility/ negotiate performance warranties, insurance requirements, maintenance and servicing, security and access with the relevant 3rd parties.

Table 4 – Insurance and warranties

Case studies

There's a wealth of case studies out there for the various permutations of a PPA.

The table below provides some examples of existing agreements:

Case Study	Type of PPA	Role	Description
Plymouth City Council	Virtual	Offtaker	Plymouth City Council partnered with Plymouth energy Community (PEC) to set up a Virtual PPA. This enabled them to bypass the procurement process and select a local generator. As a first, annual reconciliation around a strike price was agreed rather than using the day ahead market. The report is available on the SW Net Zero Hub website.
Warrington	Sleeved	Generator and Offtaker	Warrington council purchased two solar arrays, one paired with an electricity storage unit. Gridserve was contracted to build and operate the assets, however ownership lies with the council. Power is sold to the Council via a sleeving deal, and to the open market, with battery storage used to deliver grid services and time-shift generation to peak power consumption periods. Under this model, the council has not just entered into a corporate PPA as an offtaker, but invested in the generation asset itself, keeping profits in its own hands.
City of London	Sleeved	Offtaker	The City of London signed a £40m PPA with Voltalia for a 49MW solar farm in Dorset. This is an example of a council supporting renewable generation without having the risks of owning their own energy firm or infrastructure and relying on government funding. It guarantees that the energy it purchases from the farm is 100% green, as opposed to using Green Tariffs.
West Sussex County	Sleeved	Generator and Offtaker	West Sussex County Council have built a 7.4MW solar PV array, coupled with a large-scale lithium-ion battery.
Flintshire County Council	n/a	Landowner	Flintshire County Council has not entered into a PPA as either a generator or offtaker but have leased some of their land to a utility company. This is an option to generate some revenue from brownfield land and help add renewable generation to the grid.

Examples of PPA documents

Resources to help when negotiating and structuring your PPA contract:

Resource	Description
Cheshire West and Chester Council PPA	Cheshire West and Chester council have put three PPAs in place with community energy groups since 2016. A redacted PPA is accessible via the Net Zero Go portal. If you're not a local authority, feel free to contact us via psdecarbguidance@es.catapult.org.uk and we'll send you a copy.
Plymouth City Council and Plymouth Energy Community (PEC)	*Coming soon The Virtual PPA document will shortly be uploaded to the SW Net Zero Hub Website
PPA Checklist: 10 Key points you shouldn't miss in negotiations	This checklist is a free downloadable resource that covers off the key agreement terms that need to be negotiated.
The World Bank PPPLRC	The World Bank has provided example PPA agreements that are worth using as a template/ to help with terms you'll need to negotiate for your own PPA.

Key contacts

Contact	Support provided
Net Zero Hubs	Your local Net Zero Hub is likely to be the first port of contact, when considering local energy procurement/generation. North West Net Zero Hub North East and Yorkshire Net Zero Hub Midlands Net Zero Hub Greater South East Net Zero Hub South West Net Zero Hub
Community Energy Groups	The Community Energy groups have guidance on their web pages on how to engage. Community Energy England Community Energy Scotland Community Energy Wales
Energy Systems Catapult - The Public Sector Decarbonisation Guidance (PSDG)	The PSDG has over 40 guides, estimators, and checklists to support you with your decarbonisation journey. These are centred around seven themes. Theme 1 guide – Developing and delivering your strategy covers strategic planning, which is likely to be useful when considering how a PPA could form part of your decarbonisation strategy. Theme 3 covers procurement, with the **Understanding energy utilities and pricing guide** taking you through green energy procurement.

Glossary

Term	Description
Corporate PPA = Indirect Wire PPA	An agreement to purchase electricity between an offtaker and a generator. This may either be a sleeved/physical or virtual/synthetic.
Direct Wire PPA	This involves delivery of electricity from generator to offtaker without the use of a sleeving party.
Embedded benefits	Embedded benefits arise where embedded generation offsets the need for generation (and associated charges) from the transmission network.
Existing assets	Where an existing generation asset exists, the generator may offer PPAs to a number of offtakers to match supply with aggregated demand.
Generator	Party that owns the generation asset i.e.., solar farm or solar array installed at the offtaker's site.
Green Tariff	Electricity can be purchased from a supplier that offers a green tariff. They can then sell you the REGOs.
Imbalance fees	The price paid for imbalance on the UK's power grid. Generators may have to pay this.
Indirect Wire PPA	This is a PPA that uses a sleeving party or existing supply contract for the delivery of the electricity, rather than through a 'direct' or 'private wire' arrangement.
Merchant PPA = Utility PPA	A contract that is closed between the generator and a utility company/balancer.
Merchant Trading	If you are a generator you may wish to sell your electricity directly to the grid, using the day ahead markets.
New to earth assets	These are referred to as 'additionality' as they provide new generation capacity. An offtaker may agree to a PPA with a generator to commence once an asset is up and running. This gives the generator future revenue certainty to get the business case signed off and build and commission the asset.

Term	Description
Non-Commodity costs	Non-commodity costs are the third-party costs that are passed onto your energy bill. If you choose a PPA deal other than a private wire, you will need to pay non-commodity costs for use of the grid network which will make up c.60% of the price negotiated.
Offtaker	Party that is consuming the energy.
Operational rental/ lease	PPAs could fall into this trap if you as the offtaker are deemed to have control over any of the renewable assets that are owned by the generator . HMRC would then require you to apply the relevant accounting processes, as the PPA will need to be considered under profit margins.
Private Wire PPA = Direct PPA	There is a direct connection between the generator rather than delivery of the energy via the grid. This is facilitated through a direct physical connection between the parties or installation of the renewable asset at the offtaker's premises i.e., roof mounted solar
REGOs	Renewable Energy Guarantees of Origin (REGOs) are certificates that demonstrate that a portion of electricity purchased from a supplier has been generated from renewable sources. These are issued by Ofgem.
Right of Use asset	This is the case where it's deemed you have the right to use a leased asset over a leased term. This can come into play where a generator has installed equipment on an offtaker's premises.
Sleeved PPA = Physical PPA	An agreement between a generator and supplier that is sleeved by a utility company. A sleeving fee is paid to the supplier to help match supply from the generator with demand from the offtaker.
Sleeving fees	Fees charged by suppliers to facilitate sleeving of energy from one party to another.
Virtual PPA = Synthetic PPA = Financial PPA	A financial derivative rather than a contract to buy or sell energy. Both parties will buy and sell their energy from different suppliers, however they have an agreement to reconcile deviation from the agreed strike price.

Department for Energy Security & Net Zero

Cabinet Office

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