

# How Solar Energy can deliver for Climate and Communities

A guide for Local Authorities

Solar Energy UK



## About Us

**As an established trade association working for and representing the entire solar and energy storage value chain, Solar Energy UK represents a thriving member-led community of over 240 businesses and associates, including installers, manufacturers, distributors, large-scale developers, investors, and law firms.**

**Our underlying ethos has remained the same since our foundation in 1978 – to be a powerful voice for our members by catalysing their collective strengths to build a clean energy system for everyone's benefit.**

**Our mission is to empower the UK solar transformation. Together with our members, we are paving the way for solar to deliver 40GW by 2030 by enabling a bigger and better solar industry.**



**Public Power Solutions** is a developer of renewable energy and storage projects, wholly-owned by Swindon Borough Council.

**LASER** is a leading UK public sector energy procurement and energy management service providers. LASER serves more than 65,000 end users with a combined energy spend of over £450 million.

**Weightmans** is top 45 UK law firm, with over 1300 people working from our offices in Birmingham, Glasgow, Leeds, Leicester, Liverpool, London, Manchester and Newcastle. Our national team of renewable energy and decarbonisation lawyers work closely with stakeholders in the low carbon energy sector, including large utilities, project developers, funders, new energy services companies, local authorities, waste companies and major energy consumers, providing them with the very best advice to prosper in a rapidly changing and evolving market. With expertise across areas including corporate, commercial, finance, planning, real estate, environmental, disputes and energy regulation, we can provide tailored advice to our clients across the entire lifecycle of a project.

**AceOn** are solar energy and battery storage specialists, passionate about helping the public sector and the country as a whole to meet net zero carbon ambitions and targets. AceOn work across the UK and have delivered and supported major solar PV and energy storage projects for social housing in England and Wales in 2021.

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## Report Contributors

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**The Local Authorities Working Group** is a collection of Solar Energy UK members who support Local Authorities to deliver solar projects across their land and building portfolios, in addition to navigating clean energy procurement.

Solar Energy UK would like to place on record, its appreciation and thanks to all individuals who have contributed to the creation of this guidance. Special thanks to Matt Sandell, former chair of the Local Authorities Working Group and Sales Director at GRIDSERVE for his time and contribution to the production of this guidance.

Please note that the report and its contents do not necessarily represent the views of any of these organisations.

# Glossary

**Battery storage** – A type of rechargeable energy storage. Batteries are used to store surplus power produced by a solar energy system for later use

**Certificates of Guaranteed Origin (REGO)** – scheme provides transparency to consumers about the proportion of electricity that suppliers source from renewable generation. One REGO certificate is issued per megawatt hour (MWh) of eligible renewable output to generators of renewable electricity.

**Distribution Network Operators (DNOs)** – is a company licensed by Ofgem to distribute electricity in the UK. There are six operators in the UK.

**Dynamic Purchasing Schemes (DPS)** – An electronic method of procurement used by the public sector which consists of a list of prequalified suppliers who can offer specific goods or services to the buyer.

**Electricity Grid** – The interconnected network of cabling and other equipment which transports electricity around the country

**Energy Company Obligation Scheme** – is a government scheme to help reduce carbon emissions and fuel poverty.

**Feed in Tariff (FiT)** – This was the Government subsidy scheme that justified the installation of residential and small commercial solar systems in the UK. It ended in March 2019, by which point nearly a million homes in the UK had installed solar technology

**Kilowatt(KW)** – A measure of electric power equivalent to 1000W

**Low Carbon Infrastructure Transition Programme (LCITP)** – is a Scottish led programme with the objective to accelerate the deployment of low carbon energy projects throughout Scotland.

**Megawatt (MW)** – A measure of electric power equivalent to 1,000 kilowatts

**Net Zero** – This means that any greenhouse gas emissions produced by an economy are reduced to as close to zero as possible, and any remaining emissions are taken out of the atmosphere or offset by other means, resulting in a net carbon neutral system.

**National Grid Electricity System Operator (ESO)** – moves electricity from where it is generated to where it is needed, balancing supply and demand.

**OJEU** – Official Journal of the European Union  
**Power Purchase Agreement** – A contract between two parties for the supply and purchase of energy. These are typically sleeved, wholesale or private wire.

**Rooftop solar** – solar installations deployed on residential and commercial rooftops

**Smart Box** – is the technology used to operate smart control of PV and battery systems which optimises operation to benefit the householder and manages provision of grid services.

**Social Housing Decarbonisation Fund** – A government scheme to improve the energy performance of social rented homes over a 10-year period in England

**Social Housing Net Zero Heat Fund** – A government fund to support the decarbonisation of social housing across Scotland as part of the LCITP

**Solar PV** – solar photovoltaic. A type of solar energy system which converts light into electricity

**Teckal Exemption** – Teckal Exemption is where a public sector body contracts with a legally distinct entity, which will usually be one that the public sector body has set up, either on its own or alongside others, to provide services. The Exemption means the contractual arrangement does not need to be procured using the standard public sector contract regulations, but rather is treated as an in-house administrative process. There are conditions which need to be met in order for this arrangement to be valid and legal guidance must be sought.

**Utility scale solar** – Solar installations where panels are typically mounted on the ground and the electricity generated is supplied to the grid as opposed to a single end user. These can also be referred to as ground-mounted solar, solar farms or solar parks

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## Foreword

Chris Hewett, Chief Executive,  
Solar Energy UK



**Solar energy is now one of the most cost effective ways to get the UK to net zero carbon emissions by 2050. The industry has a target to achieve a tripling of all solar energy in the UK by 2030, which would be 40GW in total capacity and more than 10% of the country's electricity demand. Integrating solar heat, battery storage and electric vehicle charging technologies will also ensure solar is decarbonising the heat and transport sectors.**

**One of the most important features of solar is that it can be used at a wide variety of scales and locations, making it one of the most accessible solutions to climate change, and enabling Local Authorities to make a real contribution to climate change using solar on disused land, public buildings, and homes.**

**Solar Energy UK has been working with Local Authorities for a number of years, recognising the growing interest of local leaders, not only in raising awareness of the climate emergency, but increasingly using their ability to convene local stakeholders, to use planning powers on construction and to directly invest or procure clean energy for council and tenant needs.**

**In 2018 we published *Leading Lights, how local authorities make solar and energy storage work today*<sup>o</sup>, we have run numerous events promoting renewable purchasing for public bodies and have established a dedicated members working group to explore and promote opportunities for solar and energy storage at a local level. This report has been generated and written by members of the group, with the aim of demonstrating to a wider local government audience what can be achieved with solar in the here and now.**

**More and more councils across the UK are investing in solar on their own land or buildings, signing power purchase agreements to support the expansion of solar energy or enabling local residents to have solar on their own roofs. More often than not, these are linked to other zero carbon initiatives to charge electric vehicles, decarbonise heat or reduce fuel poverty. These projects create local jobs and support the growth of a skilled workforce that will deliver future zero carbon projects.**

**We look forward to continuing to work with local government in future years as the opportunities of solar continue to expand.**



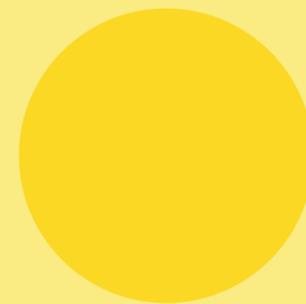
# Introduction

As part of its response to climate change, the UK has adopted a legally binding commitment to achieve a net zero economy by 2050. To deliver this, the UK will need to drastically increase the amount of electricity it generates from renewable energy. This will mean the UK must re-think the way energy is generated, distributed, and consumed.<sup>1</sup> This includes rethinking the way that clean electricity can be used to supply homes and businesses with power, as well as the role of renewable electricity in the decarbonisation of heating and transport technologies, such as electric vehicles and heat pumps.

If the Government is to meet their ambitious climate targets, engagement and collaboration between the public sector, private organisations, and communities across all regions will be vital.<sup>2,3</sup> Local Authorities are the foundation of climate change partnerships acting as a critical instrument of communication between inter-governmental organisations and communities and encouraging a bottom-up approach to meeting net zero. Local Authorities will play a key role in achieving decarbonisation as they can influence individual and collective action, set up appropriate governance structures to create the buy-in and participation necessary to make a net zero energy system a reality.<sup>4</sup>

Local Authorities have continued to demonstrate leadership throughout the energy transition with nearly three quarters (74%) of councils having declared a climate emergency. Many have also developed ambitious climate action plans outlining how they will tackle climate change and setting out 'locally determined contributions' to national net zero targets.<sup>5,6</sup>

However, Local Authorities are now coming under rising pressure to show how they will deliver their action plan commitments. Recent reports by the NAO highlight that there are multiple barriers to a Local Authority's ability to contribute and deliver net zero targets. The combination of ongoing challenges with uncertainties in Local Authorities' power, lack of clear leadership, policy barriers, resource constraints and cuts in funding create a host of challenges.<sup>7</sup>



# The role of solar in delivering climate action plans

Renewable energy technologies are an essential building block in the race to decarbonise our economy.<sup>8</sup> Analysis undertaken by Solar Energy UK has shown that the UK will need to deploy 40GW of solar by 2030 to ensure the UK remains on track to achieve net zero by 2050. The Climate Change Committee (CCC) has shown that solar generation capacity will need to at least double again by 2050 (to 85-90GW) to achieve net zero.<sup>9</sup>

Solar is now a well-established, reliable, and proven technology which will be central in the transition to a low-carbon future. Solar photovoltaics (PV) is one of the most popular, fast-to-deploy and cost-effective of all renewable energy technologies.<sup>10</sup> Solar is incredibly versatile and can be deployed at any scale, from domestic and commercial rooftops to utility scale solar farms. Previous Solar Energy UK research has demonstrated that solar has a range of benefits both for individual consumers and the wider generation and distribution system. These benefits can be maximised when solar is used in combination with energy storage.

For Local Authorities committed to reducing their carbon emissions, solar PV offers a host of benefits from reducing energy bills, delivering smart modern housing, providing long-term sustainable jobs, and unlocking new sources of revenue. Ambitious Local Authorities are already transforming who owns and generates renewable energy and are delivering consistent low prices for consumers.<sup>12</sup>

Addressing fuel poverty is also playing a greater role in the reasoning for Local Authorities to choose to invest in renewable technologies. As the UK emerges from the pandemic, it is anticipated that Local Authorities will see a greater shift in behavioural change in communities in support of PV to benefit society on a local and national level.

Local Authorities are uniquely situated to take advantage of a range of procurement options, as listed throughout this guidance. The adaptable nature of solar PV has seen many Local Authorities invest in solar projects on businesses, parks, urban offices, warehouses, and market spaces as valuable sources of future council income. Prime projects can generate revenue and cost savings immediately, and profits generally within ten years.<sup>13</sup>

Business parks and offices often provide ideal sites for retrofitting with solar, either on-roof or, even more cost-effectively, through private wire connections to a nearby site for utility-scale solar. The mechanics of this are explained in detail in the section on Power Purchase Agreements. By retrofitting solar to supply power to offices, a Local Authority can also earn revenue on competitively priced electricity provision to occupants, as well as enhancing the environmental credentials of properties for new tenants.<sup>13</sup> Revenue created by such projects can support the delivery of other local services.

## Case study: Swindon Borough Council, Chapel Farm

Swindon Borough Council for example built Chapel farm, a 5MW solar park built on a former landfill site in Swindon, developed by Public Power Solutions and owned by Swindon Borough Council. Aside from generating enough electricity to supply the equivalent of 1,200 homes, the site has also created a new biodiversity hotspot on an ex-landfill site, thereby contributing to tackling the twin crisis of biodiversity decline and climate change.

The annual returns from the solar farm can be invested into the local community to support the development of local services, for example improving social housing, healthcare, and education.



The majority of councils have some experience of deploying renewable energy technologies, however fewer may be aware of the full range of procurement opportunities available when seeking to maximise their contribution to decarbonisation across their jurisdiction.<sup>14</sup>

This guide explains the most common procurement options available to Local Authorities to support the deployment of high quality solar and energy storage projects across the public sector. It offers clear and concise step by step guidance across three main procurement methods to support Local Authorities in their efforts to decarbonise their operations and support the delivery of their net zero objectives.

### Procurement Methods:

- 1 Procurement Frameworks**
- 2 Power Purchase Agreements**
- 3 Collective Purchase Schemes**

In each chapter there is an overview of the procurement process, step by step guidance outlining the processes sequentially from a user's perspective, and case studies of previous successful projects across local authorities. Each section also includes relevant background information to support the user in understanding the current UK renewable energy procurement market.<sup>15</sup>

In Chapter 4, we look at one of the key areas in the public sector, Social Housing; where a big impact from solar deployment can be achieved. In this chapter, we look at two of the different types of procurement that can be used.

# Chapter 1 – Procurement Frameworks & Dynamic Purchasing Systems

Chapter led by John Taylor, with contributions from Kane Stockwell and Richard Sansom.

## Introduction

With Local Authorities increasingly declaring ambitious climate emergency targets and seeking early action to move their own estates and council areas towards net zero, solar electricity generation can be a quick win. Councils often have control over a wide variety of buildings which will be suitable for rooftop solar including leisure centres, schools, social housing, depots, and their own operational buildings. They may also lease out buildings to community organisations and businesses but can still take action as the landlord to install renewable energy generation onsite.

Procurement frameworks and DPS offer a quick and relatively risk-free approach to engaging contractors to deliver solar projects on public sector estates. They offer the following advantages:

- A pre-selected list of qualified and experienced solar energy consultants and suppliers which will have been compiled through a competitive tender.
- With a DPS, suppliers are able to join at any time, assuming they appease the necessary criteria to join, allowing entrance to businesses that are new or may not have had the opportunity to join initially.
- Fully compliant with public procurement rules such as Official Journal of the European Union (OJEU).

- Potential to leverage collective buying power alongside other public sector bodies.
- Ease the delivery burden from time constrained staff through support from framework providers as well as pre-agreed terms and conditions and contracts.
- Clear fees for accessing and using the framework/DPS.

## Different types of procurement Frameworks

### Framework Agreement

A Framework Agreement is a common feature of public sector procurement and is used to set out common commercial terms between Local Authorities and potential suppliers of goods and services over a specific period of time, commonly four years. They typically set out the scope of works on offer, the value and the volume of services that will be procured during that period, which are advertised out to potential contractors. Once the suppliers have responded and been chosen, the list of participants is then fixed for the duration of the framework. Local Authorities and other qualifying bodies can then access the services offered through the framework via a Central Purchasing Body, which may be a Local Authority acting as lead on behalf of the others. This has the advantage of being a streamlined 4 to 6 week process rather than the local Authority needing to run their own fully detailed tender. Several frameworks that offer solar energy services are active at the moment, more details on which can be found in this chapter.

## Dynamic Purchasing System

Another procurement route for the public sector is a Dynamic Purchasing System (DPS). These are designed to reflect a more open market approach to procurement in that new suppliers can join throughout the duration of the DPS instead of only at the beginning like a

Framework. In a fastly evolving and innovating sector like solar this allows more flexibility in who might be able to procure and will also give new entrants the chance to compete against more established suppliers, as well as the option to support and grow local supply chains.

## When to use Frameworks or Dynamic Purchasing Systems

There are frameworks and DPS available for each stage of a solar energy project, from initial feasibility through to installation and operation and maintenance. It is your choice to pick and choose from each project stage as you need, or one can opt for a holistic energy performance contract style service that handles the whole turnkey solution. Your choice will depend on how much risk exposure vs potential financial reward your organisation is happy to take.

- **Advisory, Design and Technical Services** – This stage includes engaging a professional consultant to complete initial desktop assessment of rooftops, covering energy generation potential, carbon savings and financial modelling, through to site and structural surveys, grid capacity checks and solar array design. In cases where it is required, they can help obtain planning permission as well.
- **Delivery and Installation** – This stage includes procuring the equipment required for the installation and a contractor to complete and sign off the installation. External project management support may also be covered to oversee delivery for larger projects.

- **Operation and Maintenance Services** – Once sites are installed and generating, they will require annual maintenance and ongoing monitoring to ensure efficient energy and income generation. This may include meter reading, cleaning, ad hoc repairs as well as overseeing any warranties. This can be procured separately from installation.
- **Energy Performance Contracting** – Instead of taking on responsibility for the array themselves, a Local Authority may choose an Energy Performance Contracting approach, whereby a third party takes on responsibility for all the above project stages, with a council receiving a guaranteed financial, energy and carbon saving in return but with reduced risk exposure. This model is suited to both private sector and community energy sector partnerships.

## How to procure using a framework or DPS



Figure 1: Framework procurement model, outlining the steps to procurement.

## Key Scoring Factors for Frameworks & DPS

- **Cost** – The financial value of a contract is clearly a major factor in any project. When it comes to scoring bids, your Authority can either award the most points to the lowest cost bidder or opt for another value-for-money based metric which takes into account other factors such as experience.
- **Quality of Response** – Ensuring the response you’ll receive matches the brief put out in your tender shows the contractor made an effort to tailor their response to your project rather than taking a cookie cutter approach. Additional points may be scored if the supplier goes beyond the brief and shows added value or innovation beyond the minimum specification.
- **Experience** – Having a track record of delivered installations backed up by case studies and customer testimony will generally score higher than a new entrant to the market.
- **Social Benefits** – a council may choose to put additional weighting on contractors and suppliers who can demonstrate additional social benefits through their delivery. This could include increased local employment opportunities, skills development, and training opportunities such as apprenticeships, or contributions to a local community benefit fund (often a common feature of community energy schemes). There is also increasing awareness about labour practices in product supply chains that can factor into procurement decisions.
- **Environmental Benefits** – Local Authorities can use their purchasing power to positively influence the behaviour of their supply chain as well. Many are increasingly looking to work with businesses who match their aspirations for net zero delivery and may put extra weighting on clear and concrete plans for suppliers to decarbonise their own business operations.

## Case Study: LASER's Consult, Design & Install Dynamic Purchasing System

LASER's Consult, Design & Install Dynamic Purchasing System is designed to assist public sector bodies procure a wide variety of energy related services to help achieve their net zero goals. Going live in 2021, it is open to a variety of suppliers (and their specialisms) to join to assist in achieving those goals.

It is split in to four lots:

**Lot 1:** Site survey and modelling – helping to understand and identify where opportunities may be within your portfolio.

**Lot 2:** Energy/Sustainability management consultancy soft specialisms that assist in the planning and delivery of the projects (e.g. financial, organisation structure, legal guidance)

**Lot 3:** Technological solutions consultancy – technology specific consultancy helping scope and design your requirements.

**Lot 4:** Technological solutions delivery – technology specific delivery helping build your requirements.

Each of the above Lots has multiple categories available for various specialist area and is very much able to help deliver solar projects including rooftop and ground-mount builds.

Zero Carbon | Laser Energy<sup>19</sup>

## Case Study: Greater South East Energy Hub Trades DPS

The Greater South East Energy Hub is building a regional supply chain of installers certified to PAS 2030:2019 and/or MCS standards, to provide energy-efficiency measures, renewable energy and low carbon heating for the Green Homes Grant LAD2 scheme and other future Government-funded retrofit programmes. This includes both solar PV and solar thermal and it is open until the end of March 2026.

An opportunity opens every month for installers that are PAS 2030:2019 and MCS accredited to register on the Dynamic Purchasing System. This is the procurement process being used by Local Authority's and social housing providers in the region to buy retrofit works. Installers that meet the registration criteria are added to the System. Local authorities can then invite suppliers on the System to bid for a specific contract that is relevant to their area of work.

Installers that meet the registration criteria are added to the System. Local Authorities can then invite suppliers on the System to bid for a specific contract that is relevant to their area of work.

Advice and support for installers to gain the appropriate industry accreditations is also on offer.

The other four regional Energy Hubs in England are developing their own solar retrofit procurement approaches, links to which can be found via the GSE Energy Hub webpage.<sup>20</sup>



Community Energy owned PV rooftop installation on Plymouth Life Centre © Clean Earth

# Chapter 2 – Power Purchase Agreements

Chapter led by Levent Gurdenli, with contributions from Richard Sansom and Kane Stockwell.

## Introduction

Power Purchase Agreements (PPAs) are a new way of buying power. Instead of purchasing their electricity from a licensed electricity energy supplier, Local Authorities can contract directly with renewable generators. This can deliver a range of benefits. It allows Local Authorities to lower their overall carbon emissions by procuring power directly from renewable energy sources. The structure of a PPA allows a Local Authorities to fix prices over the term of the agreement, shielding it from volatile fluctuations in energy costs. In a world where political and public attention is increasingly focused on fighting climate change, PPAs are a tool which should not be overlooked for implementing a Local Authority's decarbonisation strategy.

They may also allow Local Authorities to demonstrate that they are responsible for putting renewable Megawatts (MW) onto the grid, as the long-term revenue stream which a PPA provides can be the difference between a renewable energy project being funded or not.

There are various forms of PPA, ranging from smaller scale rooftop projects all the way through to purchasing the output of a new-build 50 MW solar plant located in a different part of the country. There is also the opportunity for Local Authorities to invest in and own the renewable generation facility itself and supply the power back into its own operations. Despite this variation, all PPA fundamentally share the following key features (Fig. 2).

1. A direct contract between a generator and an offtaker for the sale of renewable power without the need to be physically connected (but could be).
2. Long term - for 'new build' generation facilities this is usually 10-15 years.
3. Fixed/floor/ceiling pricing structures to provide certainty to both parties.
4. Acts as hedge against volatile energy prices.

Figure 2: Key features of PPAs

There is a tremendous opportunity for Local Authorities to utilise these structures to take advantage of these cost saving benefits and to make a positive environmental impact. While this may be a novel concept for many Local Authorities, several public bodies have already entered into PPAs and demonstrated that it is a workable model.

With the right guidance and preparation, a PPA is within the reach of all Local Authorities. In this chapter we look at the different types of PPAs which are available to Local Authorities, the key legal and commercial risks associated with them (as tabled in Appendix 1) and provide a step-by-step analysis of how to procure a PPA.

# Types of PPA

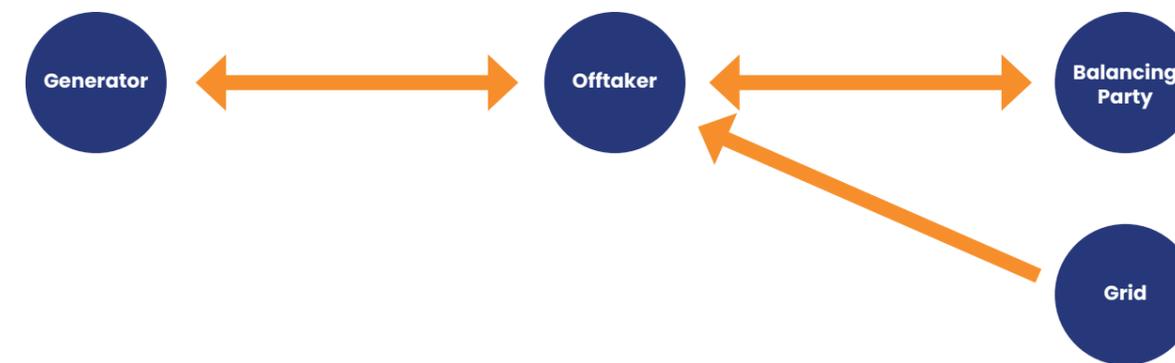
## Sleeved PPA

A "sleeved" or "physical" PPA enables a Local Authority to purchase the output of a large, off-site solar PV plant directly from the generator. A licensed supplier is required to be party to the arrangements to "sleeve" the power generated back to the Local Authority (Fig. 3).

### Key Features

- The generator sells power generated to the Authority under the sleeved PPA for an agreed price.
- A licensed supplier takes possession of the power and "sleeves" it across the grid.

- The renewable power is supplied back to the Authority by the licensed supplier who also provides balancing services by managing any imbalances between the generator's supply and the Authority's demand
- The licensed supplier charges a fee for its balancing and sleeving services.
- The physical tracing of electricity from the generation facility is not possible as it passes through the grid. Certificates of guaranteed origin (REGOs) can be transferred directly from the generator to the Authority under the sleeved PPA.



- 1 **Generator sells power at the meter to the offtaker under PPA2**
- 2 **Offtaker immediately sells all power to a balancing party at the meter point under back-to-back PPA2**
- 3 **Balancing Party "sleeves" power through the grid to supply the offtaker. Performs balancing service to provide top-up power**
- 4 **Balancing party sells the renewable power to offtaker together with top-up power under electricity supply agreement**

Figure 3: Contract structure of sleeved PPA (diagram structure created by Weightmans)

## Virtual PPA

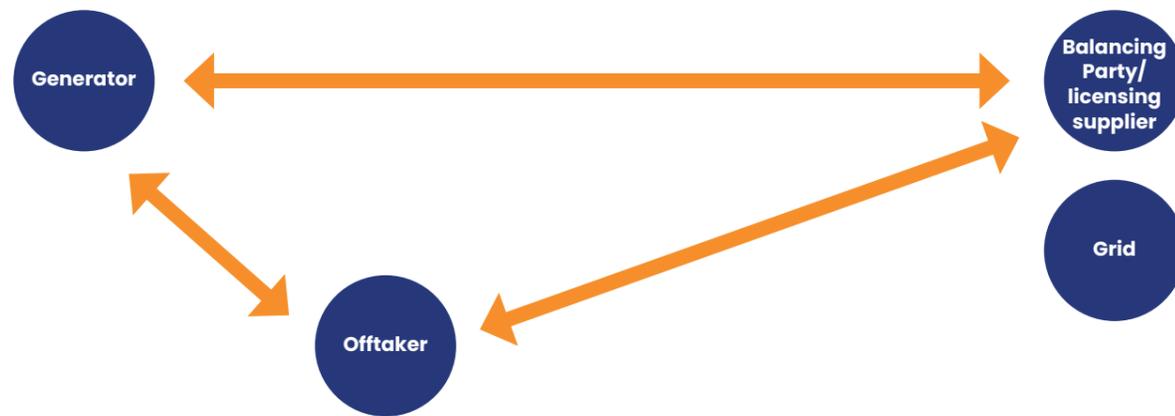
A “virtual” PPA or “financial” PPA does not involve the physical settlement or delivery of electricity. Instead, it provides a financial hedge by acting as a contract for difference between the generator and Local Authority based on an agreed “strike price”. The strike price acts effectively as a minimum price for the generator and a maximum price for the Local Authority (Fig.4).

### Key Features

- The generator sells power to a licensed supplier under typical PPA at wholesale price.
- The Authority buys power from a licensed

supplier under its own electricity supply arrangements.

- In parallel, the generator and the Authority enter into the “virtual PPA” to agree a “strike price” for electricity generated by solar plant.
- The Generator and the Authority settle the difference between the agreed “strike price” and a variable reference price which is typically based on a price index or basket of indices.
- REGOs can be transferred directly from the generator to the Authority under the virtual PPA.



- 1** Generator sells powers to balancing party at market price under typical PPA
- 2** Offtaker purchases power from licenses supplier at market price under electricity supply agreement
- 3** Generator and offtaker settle difference between strike price and reference under synthetic PPA

Figure 4: Contract structure of virtual PPA (diagram structure created by Weightmans)

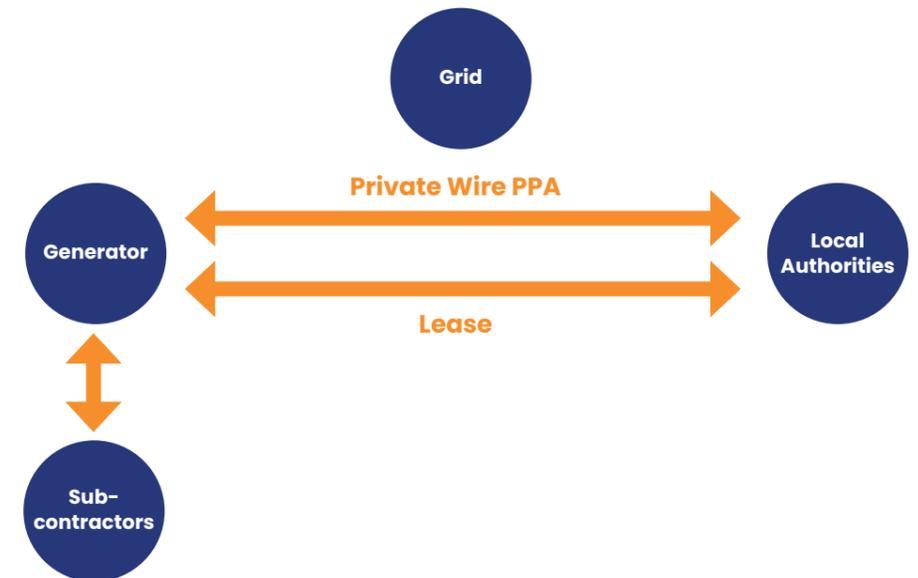
## Private wire PPA

A “private-wire” PPA allows a Local Authority to purchase the output of a solar PV plant owned and operated by a third party which is directly connected to the Authority’s premises by a “private-wire”. This is the model typically deployed for rooftop projects (Fig. 5).

### Key Features

- The generator is granted a lease or licence of the area where the PV plant is located and is responsible for its design, installation, operation, and maintenance.
- The generator sells the power generated to the Local Authority under the private wire PPA.

- REGOs can be transferred directly from the generator to the Authority under the private wire PPA.
- Generator may be able to export any excess power not consumed by Authority’s to the grid using a shared grid connection.
- Generator is “behind-the-meter” (i.e., downstream of the Authority’s grid connection) meaning it is not exposed to grid charges and may offer more advantageous pricing.



- 1** Generator is granted lease or licence of relevant area at local Authority’s premises
- 2** Generator is responsible for funding, design, installation, and maintenance of PV plant
- 3** Generator sells power generated to Local Authorities under private wire PPA
- 4** Generator may be able to export excess power to the grid using shared grid connection

Figure 5: Contract structure of private wire PPA (diagram structure created by Weightmans)

## Local Authority owned assets

Rather than enter into a PPA with a generator, a Local Authority may choose to invest in the renewable generation facility itself and sleeve the power back into its own operations. This would typically be done by the Authorities establishing a wholly owned subsidiary which would be the owner of the renewable generation facility and who would be the generator for the purposes of the PPA models set out above.

While more complicated, this effectively allows a Local Authority to control a degree of its own electricity supply, offsetting a significant level of its own demand with additional renewable power. As with other PPA arrangements, a Local Authority can achieve a level of long-term price certainty to guard itself from volatile wholesale electricity costs and demonstrate a genuine carbon offset. By making a direct investment in the development, a Local Authority is arguably making a greater carbon impact than just as off-taker for the power. The capital investment should also be re-couped well within the asset life (typically 30-40 years) so the Local Authority should benefit from greatly reduced power bill for a significant period of the renewable installation's lifetime. In terms of funding the investment, Local Authorities may also benefit from a relatively low cost of the Public Works Loan Board compared to other market rates and deliver an economic benefit to the local community through use of these funds.

There may also be advantages to following this approach from a procurement law perspective. Under the so-called "Teckal" exemption, a contract falls outside the ambit of the PCR if it is between a Local Authorities and an entity which:

**a)** is controlled by that Local Authorities (or jointly controlled by the Local Authorities along with another public Authorities);

**b)** conducts 80% of its business with that Local Authorities; and

**c)** does not have any direct private sector investment.

Where a Local Authority is considering setting up its own subsidiary to effectively supply power back to itself under a PPA, it may be able to do so without having to undertake a competitive procurement. However, care is needed. The Teckal exemption is subject to various conditions and caveats, so legal advice should always be sought if you're planning to rely upon it.

Development of a solar farm can be a complex exercise, so it is vital that Local Authorities looking to follow this model ensure that they engage expert technical, legal and finance advice (Appendix 1). In the absence of subsidies, the economics of solar farms with a capacity of <20 MW, have become more challenging so site selection with the right conditions such as a low-cost and viable grid connection and good planning permission prospects are more important than ever.

### How to procure a PPA

The section below sets out a high-level step-by-step process of how to procure a PPA. In many ways, procuring a PPA is very similar to the procurement of any other project. As such, the most important part of this process is the preparatory phase to establish your needs, identify your objectives, gain a deeper understanding of the PPA market, and determine which type of PPA is the best solution for your Authority (further details of the considerations are tabled in Appendix 2). This early groundwork will ensure that any future procurement is a success.

The process of procurement is outlined on the next page (Fig. 6)



Solar farms can be owned and managed by Local Authorities. Saxley Solar Farm © Twig Trading Ltd



Figure 6: PPA procurement model, outlining the steps to procurement.

# Timings

The timescale for running a procurement depends on a number of factors. The three key factors are:

- Stakeholder engagement – prior engagement of (a) internal stakeholders (e.g., getting decision makers on board); (b) external stakeholders (e.g. prior market testing to ensure viability and interest). There is no standard timescale for this as it will depend on the level of engagement from those stakeholders to get the necessary comfort to proceed.
- The selected procurement method – the different procurement methods all have varying requirements and associated timescales. Managing a competitive dialogue can be particularly time consuming. Please seek advice regarding this process it could take up to a year depending on the complexity of the project.
- The type of facility which will supply the renewable power and its construction status. Once the Local Authority has awarded the contract it may be a year or more before the facility is ready to generate electricity.
- This can look daunting. However, preparation and guidance from experts can help expedite the process by using their knowledge and experience to answer some of the questions here.

## Case study: Electricity North West, Community Owned PPA

Electricity North West (ENWL) are in the development stages of installing solar PV on their depot in Carlisle, Cumbria. The project will be funded, owned, and operated by a community energy group via a PPA where ENWL will enter into an agreement to purchase as much of the solar energy as the site requires for the lifetime of the panels.

The community energy group and surrounding local areas will benefit from the profits generated by the installation which can be invested in social, economic or environmental benefits for the local community.

This pioneering project aims to show how community owned solar can help contribute to reducing a company's carbon footprint, and is an approach that a Local Authority could take for PV on their own buildings or other forms of generation on sites they own. It also an approach that if taken by any business or organisation within a local authority area will of course contribute to the wider emission reduction targets of that area. Local Authorities could also use their relationships with local businesses to encourage partnerships with community energy groups to facilitate community owned generation at no capital cost to the business.

The next stages for the project will be for ENWL to identify a community energy group to partner with.

## Case study: Swindon Borough Council, Private wire PPA

Barnfield Solar Farm, a 2.5MW project was developed by Public Power Solutions, a subsidiary of Swindon Borough Council on a former landfill site in Swindon.

The Council invested directly in the project through a PPA, which allows the project to operate profitably without the need for large subsidies. The solar farm is connected by 'private-wire' to Swindon Household Waste Recycling Centres solid recovered fuel plant and depot, providing clean green source.

It is estimated that the council saves approximately £185,000 a year in energy costs and 1000 tonnes of carbon savings per annum.



# Chapter 3 – Collective Purchase Schemes

Chapter led by Marie-Louise Arbretti.

## Introduction

Collective Purchase Schemes are a way for a group of homeowners to come together to procure generating equipment for renewable energy, for example solar panels and battery storage. Instead of each household procuring and installing a system individually, Local Authorities can facilitate group-buying schemes. In the majority of cases, supporting the delivery of high-quality projects which are more accessible and affordable for the homeowner. Local Authorities can also benefit from this type of procurement method through a reduction of carbon emissions from housing stock, supporting the council's total climate targets.

In this chapter we look at 'Solar Together', which is the primary collective purchase scheme within the UK. Solar together is deliverable through Local Authorities to promote the installation of rooftop solar PV systems, battery storage and EV charge points. The chapter will provide an overview and step by step guidance on how to procure solar through this method.

## Solar Together

Solar Together is a unique collective purchase scheme, offering councils a straightforward way to reduce carbon emissions through private resident investment in renewable energy generation in their region.

To date, iChoosr has delivered 22 Solar Together schemes with Local Authorities and Combined Authorities across the UK, resulting in over 100,000 tonnes of lifetime carbon reduction.

Solar Together supports Local Authorities in the promotion of solar and battery storage within their jurisdiction. Promotion of the scheme is aimed at residents who either own

their property or have permission to install a PV system. Solar Together is also available to non-domestic small and medium sized companies. Resident registration for the group-buying scheme is free and without obligation.

Solar Together enables high quality, roof mounted solar systems at a competitive price from a vetted installer. The scheme also allows residents to fit a domestic battery system to store and use surplus electricity generated by the solar installation when needed. Scheme participants can also add an EV charge point to their installation.

## Key Features

- The intermediary partner (iChoosr) covers the costs for the scheme administration, including website, helpdesk and installer vetting - reducing the need for additional staff resources.
- As well as vetting installers, the Solar Together team works with industry experts to set product and workmanship standards, and enlists independent inspectors to ensure quality at all stages of the process.
- Homeowners who install solar and storage on their properties can do so at an affordable price and with peace of mind regarding installer selection and quality of installation.
- Contributes to wider carbon reduction targets of the Local Authority.

## How to procure

The following section outlines the procurement steps of delivering 'Solar Together'. Once the Local Authority has decided to deliver a collective purchase

scheme for residents, the next step is to determine an intermediary service. In order to deliver a Solar Together scheme an installer must contract with iChoosr Ltd.

iChoosr currently runs 3 Solar Together scheme windows per year in spring, summer and autumn.

The process of procurement is summarised in Fig. 7.



Figure 7: Solar Together method of procurement

# Case Studies

## Case study: Solar Together Norfolk

In 2015, Norwich City, Broadland, South Norfolk and North Norfolk councils came together to deliver the first installation of the pioneering scheme allowing residents to install solar at a more affordable price. Through this scheme over 3,500 householders and businesses registered their interest. Of the original 3,500 almost a quarter accepted the offer, with each homeowner receiving a discount of 16% of costs of their solar installation.



Norwich City Council also reported a wider interest in the uptake of solar power within the local area following the scheme, with those who did not register or accept the original discount offer, expressing an interest with local solar companies outside of the scheme.

Since the 2015 pilot, Solar Together Norfolk has run a further four times, resulting in over 13,000 tonnes of lifetime carbon reduction in the county, the equivalent of more than 7,000 cars off the road .

*“I liked the fact it was a group buying scheme so that they were shopping around for the best value deal for everybody within the Norfolk area. And so I knew that I’d get the best price that they could possibly offer. It’s been a very easy experience. We’ve had no problems. And yeah, I feel we’ve got a very good system.”*

*Ian Bailey, Solar Together Norfolk Participant*



## Case study: Solar Together London

The first Solar Together London Scheme was run with five boroughs in early 2018. More than 3,850 households registered their interest and 1,100 accepted the winning offer, which was 35% below market prices.

The second scheme then ran a year later, involving 13 boroughs, 5,240 registered households, a winning offer of 20% below market prices, and 1,260 people accepting.

Solar Together London has installed solar in over 1,000 households in London to date. The group-buying scheme has been so successful, that it is currently in its fourth scheme promoting solar and storage in all 32 London boroughs and is on track to deliver an additional 1,500 installations in London.

To date Solar Together London schemes have delivered over 10,000 tonnes of lifetime carbon reduction (Fig. 8).

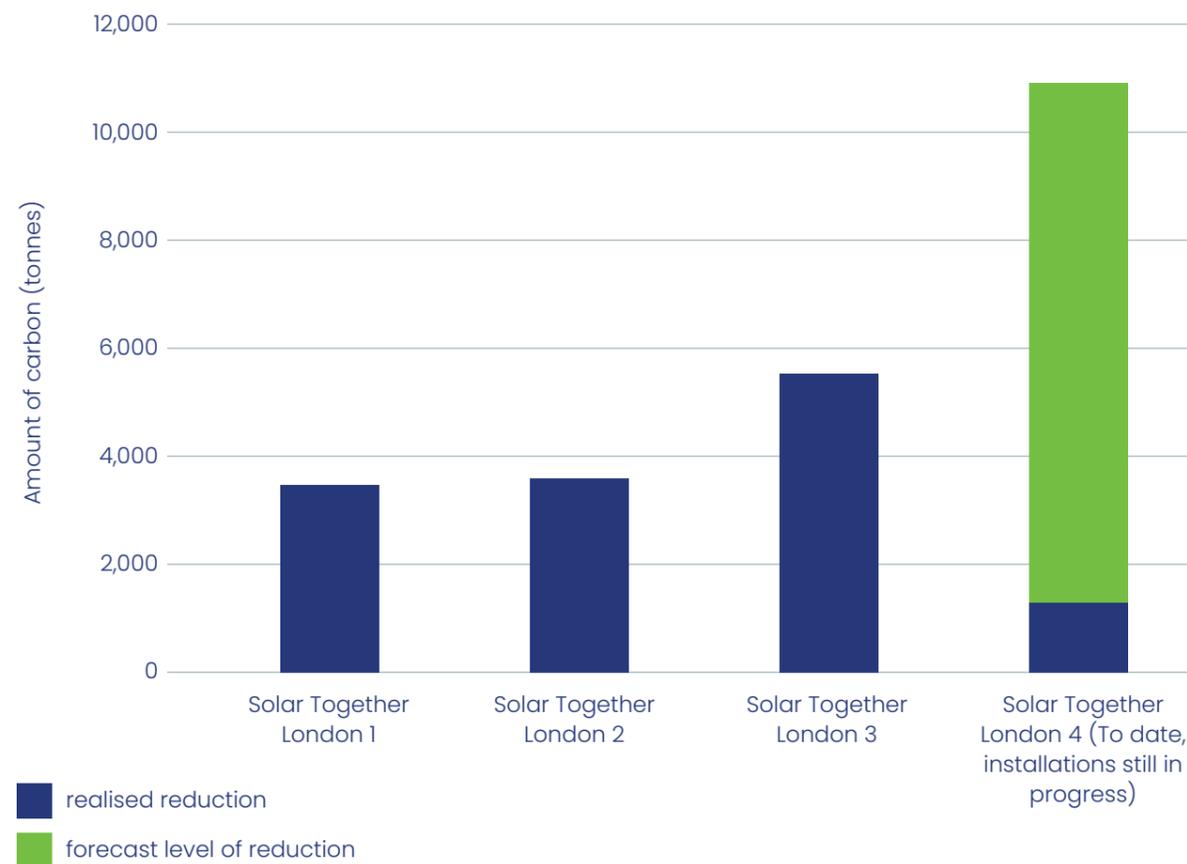


Figure 8: Forecast 25 year carbon reduction from each Solar Together London scheme (data from IChoosr)

# Chapter 4- Social Housing

Chapter led by Jon Cape

## Introduction

By installing solar PV for social housing, social housing providers can deliver a range of benefits for themselves and tenants. Social housing providers include both Local Authorities and housing associations and may be referred to as Registered Providers (RPs) in England and Wales and Registered Social Landlords (RSLs) in Scotland.

The installation of solar PV for tenants is likely to reduce energy bills, providing affordable electricity to those who need it most. As solar PV is a form of onsite generation, tenants also benefit from using the electricity directly from source, reducing the need to import electricity from the grid. The remaining energy demand can be met from low-cost overnight electricity via battery storage.

Local Authorities can also benefit by providing affordable energy to tenants helping to reduce fuel poverty within their area and lower carbon emissions through decarbonisation of their housing stock, contributing to the Local Authority's overall climate targets.

Until the closure of the Feed in Tariff scheme in March 2019, FIT provided a long-term predictable revenue stream against which social housing solar PV schemes could be funded. The closure of the scheme has resulted in alternative methods for procuring solar being needed e.g., grants and funding.

This chapter explains the potential for solar PV to contribute to meeting the twin challenges of addressing fuel poverty and meeting Local Authorities climate goals. Whilst also presenting opportunities for both tenants and housing landlords to procure clean, affordable energy.

## Different types of procurement for social housing

**1. Mainstream capital funding.** Some social landlords have taken the approach that solar PV should be treated like kitchen and bathroom improvements and funded as part of the social landlord's capital programme, with no revenue linked to the solar PV installation. The solar PV may be justified by its benefit in lowering tenant bills and carbon emissions or helping to meet regulatory targets.

**2. Funding with grant support.** Solar PV can form a part of a project which is eligible for grant support. This may be for example from the Social Housing Decarbonisation Fund in England<sup>16</sup>, the Social Housing Net Zero Heat Fund in Scotland<sup>17</sup> or the Energy Company Obligation scheme run by Ofgem<sup>18</sup>. Typically, such grant support programmes will provide match funding or part-funding and the solar PV installation will need to form part of a wider set of eligible measures in eligible properties.

**3. Public or private funding with support from project revenues.** Project revenues may be established by charging tenants for electricity provided or by increasing rents (within regulatory limits) or service charges and from export of electricity generated but not used onsite. When solar PV is combined with battery storage, project revenues may also be obtained from provision of grid services (services to National Grid or the Distribution Network Operator) and export can be optimised. This approach has generally been on a pilot or demonstration project basis to date, often with an element of grant support.

The following case studies highlight two different procurement methods for social housing.

### Case study: Brighton and Hove Council – Buckley Close New Build Flats

In May 2020, Brighton & Hove City Council, incorporated solar PV onto the roofs of a brand-new development, consisting of 12 social housing flats, within three blocks. The three solar systems total 28kW capacity. A private wire network was also fitted, where the council supplies electricity to its tenants via a private sub meter. This allows solar PV generated electricity to be consumed by tenants before it is exported to the electricity grid.



In many other cases, solar PV on blocks of flats only serve the landlord supply (which may be very low) and export (which has low economic value). Initial analysis of Buckley Close shows that from September 2020 to July 2021, 42% of the tenant's electricity had been from the solar installation. The development thus supports tenants of flats by providing more affordable energy. Tenants have saved approximately 35% on their unit cost of electricity compared to a standard variable tariff, and 27% compared to standard pre-pay charging meters. With recent energy price hikes, savings will now be greater.

The project was procured with funding support from the EU Interreg 2 Seas project SOLARISE. Organisations and companies involved: Brighton & Hove City Council (client); Emergent Energy Systems Ltd (smart electricity system designer and operator) AJTaylor Electrical Contractors Ltd. (electrical works and solar PV installation); Morgan Sindall (main contractor).



### Case study: Aberdeenshire Council – Smart Solar and Storage

Aberdeenshire council is currently undertaking an energy efficiency project 'Smart Solar and Storage' to deliver solar PV, battery storage and smart technologies (smart box) to 500 council tenant homes as part of an initial pilot project.

The smart box automatically manages the system, and it measures generation and the use of the solar panels and the battery. It can send information over the mobile phone network, in the same way a Smart Meter can. The Smart Box will automatically move small amounts of electricity to and from the national electricity grid, when this is needed to balance the energy flow. This is a service that National Grid ESO pays for and Aberdeenshire Council benefits because it has partnered with a grid services company SMS PLC who 'aggregate' these movements to derive an income.



The project is being funded by the Scottish Government's Low Carbon Infrastructure Transition Programme (LCITP) following a successful bid by the Council and specialist consultant company iPower. The Council is match funding the amount of the grant. Emtec is the main contractor, following an open tender, and project management is handled by consultants Faithful + Gould and the Council's in house Electrical Services team.

This project is unique as it will not only will reduce energy costs for tenants and help to meet the Energy Efficiency Standard for Social Housing (EESH) but is also planned to generate an income for the council. Modelling suggests that tenants will benefit by saving up to £300 on their annual electricity bills.

## Maintenance of Assets

### Maintenance of solar assets

Whilst this guidance focuses on the procurement of solar, the maintenance of assets is an important consideration to ensure solar systems are run as safely and efficiently as possible. When maintained correctly, solar PV installations can last between 25-40 years, with the upper end of the bracket continuing to increase with advancements in solar technologies.

To promote, high quality, efficient assets, we recommend the following operations and maintenance best practise guides:

#### For rooftop installations:

Solar Energy UK - Industry Best Practise Manual - Guidelines for the operation and maintenance of rooftop solar photovoltaic systems

#### For utility scale installations:

Solar Power Europe - Asset Management Best Practice Guidelines 2.0<sup>22</sup>



# Appendix 1

## Key legal and commercial risks under a PPA (acknowledgements to Weightmans)

Risk	Summary	Typical risk allocation	Possible Mitigation?
<b>Development</b>	Delivery of the solar PV plant is delayed or it is not delivered at all.	Shared	Tightly defined milestone process and provision of information to keep the Authority updated.  Payment of liquidated damages if the project is delayed beyond a target commissioning date.  Termination rights if delayed beyond a longstop date
<b>Demand</b>	The Authority's demand for power is not consistent or reduces during the term of the PPA.	Buyer	The Authority needs to be satisfied of its likely demand levels over 15 years and the likelihood of these remaining consistent.
<b>Volume</b>	The solar plant does not produce volume expected for non-performance related reasons – e.g. weather related issues	Buyer	Volume guarantees within the PPA.
<b>Profile</b>	Even though overall volume may be sufficient, the hourly production from the solar plant may not correspond to Authority's demand profile	Buyer	Appointing a third party to deal with the balancing risk – e.g. the licensed supplier under a sleeved PPA.

<b>Performance</b>	The solar plant does not perform as expected – e.g. failure to achieve a minimum availability level	Shared	Availability guarantees within the PPA.  Rely on the generator's commercial incentive to maximise availability  Rights to terminate if plant falls below minimum capacity
<b>Price</b>	Buyer or seller may be locked into costs which are above or below market prices for sustained period of time	Shared	Carry out internal assessment of forward power curves and obtain expert advice on the likely movement of future power prices.
<b>Wholesale market</b>	Losses occurring from adverse movements in market price of electricity where the volume or profile of electricity generated is not as expected	Buyer	Appointing a third party to deal with this balancing risk – e.g. the licensed supplier under a sleeved PPA
<b>Early termination</b>	The risk of early termination for buyer or seller default and losses incurred as a result of such early termination	Shared	Include appropriate remedies for early termination within the PPA.
<b>Change in law</b>	Changes in law affecting the balance of risk and reward between the parties.	Shared	Appropriate change in law provisions within the PPA which regulates the impact of any change in law.



## Appendix 2

### Considerations when identifying needs for PPA procurement (acknowledgments to Weightmans)

<b>Establishing your aims and objectives</b>	<p>Why are your drivers for considering a power purchase agreement and which ones are most important to you? This could include:</p> <ul style="list-style-type: none"> <li>• Reducing your carbon emissions</li> <li>• Delivering financial savings</li> <li>• Making better use of existing land/assets</li> <li>• Promoting investment and economic growth in your local Authorities</li> <li>• “Additionality” – i.e. being responsible for putting new MWs of renewable power onto the grid by entering into a PPA</li> <li>• The desire / requirement to use a particular type of technology</li> <li>• Local political factors which need to be taken into account including any requirements for the electricity to be generated within, or as close as possible, to your Authority’s jurisdiction</li> </ul> <p>Your priorities will determine which type of PPA (if any) is most suited to meet your requirements. For example, a sleeved PPA from a new-build asset may help to demonstrate additionality but may not be located particularly closely to your jurisdiction.</p>
<b>Duration</b>	<p>How long are you prepared to enter into a contract for?</p> <p>Expectations would need to be set here – depending on the type of PPA and generation facility you were after this may need to be ten or more years to seriously attract offers (though this could change).</p>
<b>Volume / Demand</b>	<p>How much volume are you looking to procure and are you confident that your demand will be consistent for the duration of the contract?</p> <p>You will need to have a good understanding of your forecasted volume for the duration in question. Understandably, having a contract of 10 or more years may decrease the percentage of your portfolio you are confident you can contract for</p>
<b>Market Research</b>	<p>Do you understand the marketplace? For example:</p> <p>Typical contract lengths, prices and commercial arrangements</p> <p>What is the number and scope of the potential generators?</p> <p>Who is likely to respond to your procurement? This will depend on the size of the opportunity as you may have small, community-owned assets up to large multi-national developers.</p> <p><i>What are the different types of PPAs on the market and what are their relative advantages and disadvantages?</i></p>
<b>Reporting Requirements</b>	<p>What are your Authority’s environmental reporting requirements?</p> <p><i>There is (currently) no standardized reporting approach to carbon emissions – though the GHG Protocol Scope 2 Guidelines is currently a popular method (2021)</i></p>

<b>Accounting Treatment</b>	<p>Is accounting treatment a relevant factor for you and does the proposed solution need to sit off balance sheet?</p> <p>Balance sheet treatment will be determined on a case by case basis depending on the extent to which a local Authorities or a third party (i) has control over the relevant generation assets; and (ii) derives the economic benefit from such assets.</p> <p><i>The contract structure may need to be adapted depending on the Authority’s requirements</i></p>
<b>Budget Requirements</b>	<p>What is necessary to satisfy your budgetary requirements?</p> <p><i>Understanding the potential price of a PPA and what the counterfactual would be of you took another route will help put the decision in to context.</i></p>
<b>Stakeholder engagement</b>	<p>Who are your stakeholders that you need to engage with to:</p> <ol style="list-style-type: none"> <li>a) establish answers to some of the questions listed here,</li> <li>b) ensure the procurement delivers what is required and desired, and;</li> <li>c) ensure decision makers are on board for a swift decision making process.</li> </ol>
<b>Type of PPA</b>	<p>Which type of PPA product would you prefer?</p> <p>The section above sets out the different types of PPAs which are available. Do you understand how they work and what the key advantageous and challenges are for each of them, including:</p> <ul style="list-style-type: none"> <li>• balancing party involvement</li> <li>• price certainty</li> <li>• shape matching</li> <li>• perception/accessibility</li> <li>• flexibility with price setting</li> </ul>
<b>Generation facility attributes</b>	<p>What type of generation facility do you want backing the PPA?</p> <p><i>There are several considerations here – generation type, emissions factor, planning/construction status, location etc. You will need to ensure that any specifications set are within the subject matter of the procurement.</i></p>
<b>Internal Governance</b>	<p>What are your internal governance requirements? Who do you need to get approval from and at what stage? This needs to be fed into the process and your timelines.</p>
<b>External consultants / guidance</b>	<p>Many of the considerations and questions above cover many complex questions – particularly when it comes to assessing the risks and balancing the pros and cons of options. Additionally, when it comes to setting terms and conditions there will be very specialist knowledge and experience required in the commercial and legal elements. It is worth considering the use of external assistance in ensuring a robust procurement.</p>

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