Hub Guide 17 – Solar Photovoltaic Development Opportunities

Introduction

This Hub Guide is an introduction to assist anyone who wants to develop Solar Photovoltaics (Solar PV) either as a rent-a-roof service or using ground-mounted solar PV, with a focus on non-residential property.

The Hub has also developed a series of Hub Guides which are available on our website. This includes our Hub Guide 5 about the Power Network, which is available to download on our website.

If you have any further enquiries following the brief please see the Greater South East Net Zero Hub website www.gsenetzerohub.org.uk or contact info@gsenetzerohub.org.uk.

Foreword

The Greater South East Net Zero Hub is a collaboration of eleven local enterprise partnerships, funded by the Department for Business, Energy and Industrial Strategy. The Net Zero Hub is working towards a sustainable future for the region by supporting local authorities, other public sector organisations and communities in their efforts towards decarbonisation and clean growth. We aim to increase the number of local net zero projects, and their quality and scale, to minimise carbon emissions and maximise economic and social benefit.

We work alongside four other regional Net Zero Hubs across England. Each Hub has the technical, legal, and financial expertise to enable net zero projects, and we work in partnership to deliver best practice.

If you would like more information about the Greater South East Net Zero Hub or to submit an Expression of Interest for support, please contact us via info@gsenetzerohub.org.uk.

Glossary

Further explanation of the terminology used in this Guide is provided in the glossary on our website.

Background

As part of their net zero commitments and to support the energy transition, many local authorities are exploring opportunities to increase the amount of renewable energy generated in their localities. This guide sets out the delivery and investment options to secure renewable energy deployment, with a focus on solar Photovoltaics (Solar PV) on third-party buildings and land. The guide also provides some wider commentary on the role that local authorities could play to increase the amount of renewable energy generation in their areas.

Drivers for Local Authorities to Invest in Renewable Energy

There are three principal reasons why local authorities are investing in renewable energy technologies:

- **To develop a long term, sustainable source of revenue for public services**

  Local authorities are having to become less reliant on the central government Revenue Support Grant and other traditional sources of public sector income. At the same time, councils have experienced downward pressure on equity-based investment and commercial income due to factors such as stagnant and low interest rates and the impact on the local tax base due to the COVID-19 pandemic.

- **To reduce reliance on fossil-based energy to achieve net zero commitments**

  Over 75% of local authorities have made Climate Emergency declarations and are taking steps to move away from fossil fuels to achieve net zero targets. Renewable energy technologies provide one pathway to decarbonise property estates or utilise land as part of area-based carbon reduction.

- **To develop locally-owned renewable energy generation to the benefit of the local taxpayer and economy**

  Solar PV has seen a significant expansion through government-supported financial instruments and can now achieve rates of investment return without tariff support. This is because installation prices have dramatically reduced, and energy prices have increased. Local authorities can use local energy generation as a way to reduce the carbon footprint of their own business operations, create local value through new shared-ownership models with their communities and stimulate local supply markets.

The deployment of solar through local authority participation, whether as an investor or enabler, can form part of a successful strategy that satisfies these drivers.

The Energy Market and Role of Renewable Energy Technologies

The Energy Market

Electricity fed onto the power grid is bought and sold through a wholesale market. It is traded as a commodity, with prices affected by factors such as the amount being traded in the market, future availability, regulatory requirements such as the volume of renewable energy, and the impact of geopolitics on the cost of oil and gas.

Electricity tariffs are composed of two main costs: 1) the wholesale cost of the energy as a commodity, and 2) the non-commodity cost, which includes the cost of delivering the electricity to the consumer, the costs of balancing and administering the network, and tax components to cover legal obligations. Wholesale power prices are volatile and heavily influenced by oil, coal, carbon, and gas prices. It is also notable that the non-commodity component of electricity tariffs has risen considerably in the last 5-10 years which strengthens the investment case for onsite generation as a cost avoidance measure.

As a technology that can be deployed on buildings or land, Solar Photovoltaics (Solar PV) can create revenue options:

- **Self-consumption 'behind the meter'** – this option is proposed for roof-mounted solar PV using a private power purchase agreement. Power is generated onsite at a cost lower than buying power from the public networks, with behind-the-meter supply currently offering cost-savings on network charges and green levies.

- **To a third-party offtaker via a private wire using a private power purchase agreement -** this option is proposed for land-based solar. Private wire systems are localised electricity grids that are connected to the local distribution networks and have a privately-owned central plant, which produces electricity that connects to a local user of the power, rather than exporting power to the wider network.

- **To the wholesale market using a commercial power purchase agreement (PPA)** - with a licensed supplier or energy trading business - this option is proposed for land-based solar where a local user or offtaker is unable to take any/all the power.

- ***'*Sleeved'** – a contractual arrangement where power generated at a specific installation, for example a solar or wind farm, is allocated to a consumer connected at another location on the power network. This arrangement is relatively new and currently does not appear to deliver cost savings compared to typical energy supply arrangements. However, it can establish arrangements to stabilise future energy prices compared to the market and ensure that the carbon savings are directly retained.

Larger solar PV generators, which are typically confined to installations greater than 5MW, can sell directly into the wholesale market, or bid for national sales contracts through the Contracts for Difference auction scheme. If bidding is successful, they can sell their power to the Low Carbon Contracts Company (LCCC). The reasoning behind the Contracts for Difference scheme is to guarantee revenue for renewable and low carbon electricity generators and protect them from price uncertainty and fluctuations of the UK energy market. By doing this, it should assist generators and investors in making the investment in the UK energy market.

Smaller solar PV generators, which are typically installations under 5MW, can sell their power to the market using a PPA, or to licensed electricity supply companies under an export tariff called the Smart Export Guarantee. PPA sale price can be negotiated in various ways, with contracts structured according to mutually agreed terms, depending on the type of generation, its generation profile and the duration or term of the agreement. Specialist advice should be sought to establish the appropriate way of selling to the market. In addition, information about market pricing can be obtained from individual energy brokers and specialist analysts. Independent performance reports of the E-Power auctions are publicly available at http://www.epowerauctions.co.uk/

The costs of constructing a private wire can be substantial, especially if the network is lengthy and if laying the cable involves digging up roads or pavements. Other significant costs could include access across the highway and network connection to the point of connection on the Distribution network. Ongoing maintenance costs of the private wire are negligible.

Renewable Energy Technologies

There are many types and sizes of energy technologies suitable for distributed generation. These are predominantly energy efficient or low carbon technologies and include solar photovoltaics (solar PV), wind, biomass and hydroelectric. One of the challenges of solar and wind technologies is that they depend on the right weather conditions to produce their full output. This means that they are not always able to match consumer demand.

Power storage can be introduced, thorough the installation of batteries, which may allow access to additional savings and revenue streams, although these can be highly volatile both in terms of their value and duration of contract.

Storage can help to smooth out imbalances between generation and demand. Storage can help to solve the problem of fluctuations in power generation from sources like wind and solar. Storage can give consumers, whose activities are susceptible to power fluctuations, whether through temporary power losses or variations in the quality of the power that they receive, the confidence that their power supply

can be maintained locally. Batteries provide a more responsive back-up supply than traditional diesel generators and have been shown to improve efficiency and reduce supply costs. This is achieved by shifting consumer demand away from more expensive tariff periods towards using cheaper, stored power at other times of the day.

However, storage currently comes at a cost, although it is widely recognised that storage will be needed to create a truly smart grid.

The Large-scale Solar PV Model

Land can be used to host larger, multiple-Megawatt-scale solar PV generation which generally cannot be accommodated on buildings. The advantages of land-based solar include ease of installation, and the opportunity of scale, which opens more revenue streams and lower build-out costs.

The key components of large-scale solar include:

- Access to land with appropriate physical conditions
- Planning permission
- Ease of access on site and transport links, especially when installing large assets or in built-up areas
- Connection to the power network either locally on the distribution network or at higher voltage on the transmission network
- Power sales arrangements whether to the market or via private wire to a local consumer

Where a local authority is unable to identify any suitable land on its own estate there are three further options to consider:

- Find a suitable site on third party land to develop
- Acquire project rights from a third party
- Acquire a completed project from a third party.

Local authorities can take a range of roles in the development of renewable energy based on a hierarchy of risk:

- **As a Developer** – this position carries the highest level of risk given that the Council will be putting up some or all the risk capital and taking on project liabilities including technical development and procurement. The return on value will be the highest.
- **As an Operator either following participation in the development phase or by buying out an operational site** – this position carries an intermediate level of risk since the project will have experienced some de-risking of the solar asset and depending on venture arrangements some of the key risks can be shared or borne by others. The return on value will be lower consequently
- **As a Landlord** – this carries the lowest level of risk with the value generated being a land rental with no direct involvement in the development or operation of the asset.

The use of ground-mounted solar in a development model where the power is fed by a private wire to a consumer can increase the value of the revenue and reduce exposure to energy market price volatility. Examples of local authority-led solar farms are presented in Appendix 1.

The Solar PV Rent-A-Roof Model

Rooftops are leased from a host by a developer-operator for a rent, to allow the installation of solar PV panels on the building. The panels generate electricity which is consumed 'behind the meter'. Any excess is exported to the local power network. Value is generated by use of the electricity in several ways depending on when the power is generated and consumed:

- **Onsite consumption** - Generated power directly offsets any import of grid power which the host buys at a tariff agreed with the developer; this may be lower than the grid tariff. The sale of power to the host/consumer is accompanied by any carbon credits or benefits that arise through offsetting grid power.

- **Export of excess electricity** – Export to the grid, to a third-party licensed energy company, with the price either set by negotiation or according to a published Smart Export Guarantee tariff.

This model is predicated on revenues generated for the local authority as the developer-operator through the sale of power to the host behind the meter, with the scheme designed to minimise the export of power to the grid, given that this component of the generation will command a lower unit-sales price in the energy market.

The benefits from the project can be shared between the host and developer. The host can receive cheaper site-generated electricity and carbon savings by avoiding the import of grid electricity generated by a mixture of fossil fuel-based, renewable, and other non-carbon-based sources. The developer would be paid by the host for the electricity that the building consumes. Payment can be in several forms, although for metering purposes, the simplest is a cost per kWh of generated solar power consumption tariff. This can be calculated by netting off the amount of solar power generated in a period generation and the amount exported to the grid, leaving the amount consumed by the host building.

Two legal arrangements are generally required to manage the relationship between the solar developer as tenant and the building host as landlord:

- **A property lease -** The legal arrangement to rent the roof, or more accurately, including the 'airspace' above the roof, is a property lease for a term agreed between solar developer and building host which is subject to break/review clauses. A "peppercorn" (i.e., nominal) rent is usually included as a condition of the lease. The solar developer will undertake all the key project deliverables from design, through installation to commissioning and operation, including long-term maintenance and, if necessary, decommissioning. In practice, with good maintenance, solar schemes tend to continue operating quite effectively beyond the warranted life of the equipment although the performance will decline. Any scheme will be expected to meet all legal and technical requirements prior to development and during its operation.

- **An agreement to transact generated electricity** - A contract is established between the developer and the host building operator (or the party paying the electricity bills) called a Power Purchase Agreement (PPA). The revenue flowing from the power sales to the developer aims to pay off their capital requirements to fund the installation as well as any operational costs during the contract term.

In this model, the local authority could take the developer-operator role using its own resources, routes to investment and procuring suppliers to carry out installation and ongoing maintenance. Alternatively, the Council could joint venture the installation with the building host; this would reduce the risk to the project although it could reduce the revenue taken by the Council.

Examples of rent-a-roof schemes currently being operated by local authorities are presented in Appendix 2.

Delivery and Investment Options

Funding and finance

Options for financing the projects discussed in this study include the following:

- Self-finance – using own capital
- Third-party finance - delivered and operated under a leasing arrangement
- Equity or debt finance - provided by third parties
- Private sector venture capital, typically in exchange for a large stake in the operating project
- 'Sweat equity' - this can be provided by a third party and can take the form of money or the donation of effort as part of the development process.

The overall value of an investment should consider the cost of borrowing the capital and the Minimum Revenue Provision.

Delivery options

There are a range of project delivery options available to a local authority (see Table 1 below). How a project is delivered will go hand in hand with how it is financed and will depend on the local authority's risk appetite, capacity, and capability to undertake the project.

Table 1: Delivery options and their Strengths and Weaknesses
Extract from our Hub Guide: Business Model Options for developing Renewable Energy Infrastructure and Supplies, by Pinsent Masons LLP.

Delivery Option	Strengths	Weaknesses
DELIVERY BY THE LOCAL AUTHORITY	High level of control and governance over energy functions Allows agility for the public sector to respond well to changing economic climate e.g., Net-Zero, Covid-19 etc. Retention of all profits from energy functions Tailored to local authority's objectives Flexibility to change scope of energy service provision More favourable tax position	Does not take advantage of private sector expertise Limited access to funding (other than PWLB/relevant central Government grant funding) In essence maintains the status quo Limited examples of local authorities successfully delivering energy functions in house Potential for slower decision-making if solutions go into the political arena
DELIVERY VIA A SEPARATE LEGAL STRUCTURE OR IN CONJUNCTION WITH THE PRIVATE SECTOR	Alignment with local authority/stakeholder objectives. Positions Council well to intervene in low carbon and Net-Zero projects	Ensure that the ESCO has strong governance and business planning Resourcing and skills sets of the public sector (depending upon activities)

Delivery Option	Strengths	Weaknesses
	Delivery of range of energy services/projects Ability to structure project level entities differently Access to different funding/financing solutions Allows for investment and delivery of energy infrastructure and generation assets Potential stakeholder/ community involvement in specific projects Board of directors with appropriate expertise Risk transfer to ESCO	Consider carefully how the community is involved and broader stakeholders Certain activities may be regulated/ licensed activities and local authority may need to consider how to deal with these Potentially large financial outlay
JOINT VENTURE	Lower capital commitment – private sector may fund and local authority commitment could be land. Profits shared on a risk/reward basis. Sharing of risk (subject to capital committed and value). Balance of control and governance retained through JV agreement.	Future proofing may be reduced by JV agreement Potential for dilution if not managed. Longer delivery, given negotiation and agreeing risk sharing
CONCESSION	Low risk (financially) to the local authority (although majority of upside sits with partners given that they bear most of the risk) High level of control and governance maintained over the partner (mainly negative control via concession agreement) Encourages private sector involvement and funding.	Majority of upside and income is retained by private sector operator/partner. Longer delivery, given negotiation and agreeing risk sharing. Council cannot take an active role in decision making and limited flexibility in decision making once the concession agreement is signed. Potential for non-delivery. Limited future-proofing. Dependent on approach in the Concession Agreement. Potential for partner to dictate standards if specifications etc. are not fully agreed prior to signing.

Delivery Option	Strengths	Weaknesses
PUBLIC – COMMUNITY BENEFIT SOCIETY/COOPERATIVE/COMMUNITY INTEREST COMPANIES/SECTOR PARTNERSHIPS/UNINCORPORATED ASSOCIATION	Easy to establish and involves minimal cost Governance could involve the community either directly or via a management committee A constitution could be adopted to set out the organisation's purpose in relation to neighbourhood management and a terms of reference, to set out its governance and activities. These could be used by community associations within the area rather than the organisation which is responsible for overall neighbourhood management.	If unincorporated, this may be unsuitable for its scope as this form of organisation does not generally have any formal status (unless registered as a charity).

Whether or not a local authority decides to establish a separate legal entity and/or involve the private sector is largely a question of the local authority's objectives for the project.

Government Rules

Existing local authority powers generally allow a local authority to deliver many energy functions in fulfilment of its objectives, without the need to establish a separate legal or corporate entity.

The local authority will also need to structure its delivery approach with regard to the following provisions, including, but not limited to:

- General Power of Competence under Section 1 of the Localism Act 2003
- Commercial activities under Section 3 of the Localism Act 2003
- Powers to invest for any purpose relevant to its functions in accordance with Section 12 of the Local Government Act 2003
- Procurement compliance under the Public Contracts Regulations 2015
- The implications of Subsidy Control both for the delivery model and for individual host organisations
- The Sale of Electricity by Local Authorities (England and Wales) Regulations 2010 which establishes that local authorities can sell electricity generated from renewable sources
- The local authority's own corporate strategies for provision of its services and how it invests.

Projects such as those covered by this Guide will encounter a range of investment-related risks. These will require a level of management commonly addressed through an evaluation of the technical, commercial, and legal aspects, to ensure that all reasonable steps have been taken to manage the project in such a way that ensures its viability.

In this context, this process is called Due Diligence. Hub Guide 4[1] sets out a checklist of issues for consideration as part a due diligence approach, which may be appropriate to both the project models considered in this Guide.

It is strongly advised that prior to incurring significant cost or time, local authorities seek legal and commercial advice so that any key issues are identified and managed accordingly. For further guidance, please refer to our Hub Guide written by Pinsent Masons LLP[2].

Considerations (Opportunities and Risks) for Each Model

Table 2 (below) sets out some of the key considerations for the Rent-a-Roof model. Table 3 (below) sets out some of the considerations for the large-scale solar PV model assuming that the local authority is the sole or lead developer.

For easy reference, each consideration is referenced according to who is affected, the developer or the host or both, and colour-coded RED for risk, AMBER for consideration and GREEN for opportunity. For either project type, the nature of risk changes throughout the development process, which can be broken down into three main phases:

- Development risks – which occur up until the site has planning consent
- Construction risks – which occur from the point planning consent is granted until the facility is fully commissioned
- Operational risks – risks during the lifetime of the facility.

[1] Hub Guide 4 - Due Diligence in Large-Scale Renewable Energy Projects
[2] Report on Energy Procurement and Investment Models: Business Model Options for Developing Renewable Energy Infrastructure and Supplies

Table 2: Key considerations for the rent-a-roof model

Consideration	For the building host	For the developer
Project complexity The complexities of project development and maintenance will be dealt with by the developer. The disadvantage is that many of the financial benefits will be claimed by the developer. Some of the project risks that the council could face may be minimised by procuring expertise from the market or partnering with a public sector partner who has experience of running a Rent-a-Roof programme e.g., West Suffolk Council.		
Stable long term revenue returns Although the rates of return may not compare with high risk 'commercial' projects, the Hub's experience shows that well-designed and maintained Solar PV projects based on maximising consumption 'behind the meter', deliver positive Net Present Values (i.e., project revenues exceed project costs) and minimum Internal Rates of Return in the region of 3-5% after capital provision. This should also give confidence to the host that they will be able to the benefits of cheaper power and carbon savings.		
Energy price cost certainty Energy markets are notoriously volatile and subject to external factors which can cause price shocks. By using onsite generation with a predictable generation output, alongside indexed-linked tariffs, typically using the Consumer Prices Index (CPI), both the developer and host can have more certainty about forward energy pricing.		
Matching the building electricity consumption to the generation In this way the project can maximise its financial value, given that the agreed PPA tariff will be significantly higher than the tariff that may be achieved when exporting power to the grid. Considering how power can be used and stored when the consumption exceeds generation as a further investment opportunity, is a potential opportunity although subject to separate cost-benefit analysis.	To note	To note
Carbon savings by offsetting imported grid electricity Although the power network nationally is decarbonising rapidly, and consumers can buy 'green' tariffs, there can be issues about verifying that the power they are buying is from a renewable source. However, the purchase of certificates which verify that the electricity is from a renewable source (termed REGOs) do not lead to additional renewable energy coming onto the system, and there are different opinions regarding their value in carbon emission accounting. By using onsite generation, the host can have confidence that the electricity they consume is decarbonised.		To note
Planning permission Targeting the non-domestic sector means that generally the solar PV installations, with conditions, may classify as Permitted Development under Class J1 of the Town and Country Planning (General Permitted Development) (England) Order 2015.	To note	

Consideration	For the building host	For the developer
Mature technology with minimal running cost Solar PV has seen considerable deployment across the UK with over a million installations[3]. For a developer, the technology requires minimal ongoing maintenance, and performance can be monitored remotely to aid administration of billing and upkeep. For the host, the technology does not generally impose significant business disruption during installation, nor require their ongoing intervention.		
The host business's stability and creditworthiness The business model is based around a 25-40 year contract term with revenue flowing from power sales back to the developer to pay off capital debt and interest or, in the case of local authorities, its Minimum Revenue Provision (MRP). Business failure is a risk; it is important therefore that appropriate credit health checks (e.g., Dun and Bradstock) are undertaken before entering a contract.	N/a	
Securing a network connection Any solar scheme will need to connect to the wider power network, usually through the host building's point of connection. This may be a straightforward application process to the Distribution Network Operator (DNO). However, this may require more detailed and costly activities, depending on the size of the solar installation that is proposed and the state of the network. An unconstrained grid connection would allow the project opportunity to generate to its maximum capacity and export any surplus energy. However, many areas of the network are constrained, and developers will have to pay high fees to connect to the network or accept strict restrictions on when power can be exported. Knowing this early in development will avoid wasted effort and cost, either by halting the project or finding viable ways to manage the constraint. Early engagement with the DNO's Distributed Energy Resources Connections team is strongly advised at the feasibility stage once you have sufficient information to discuss the project.	To note	
Risks at installation Most installations will be retrofitted into existing buildings. The integrity and loading capacity of the roof will need to be assessed during the project design stage to ensure that the building envelope is not compromised either at the time of installation or during the contract life. Electrical equipment will need to be accommodated, including inverters that convert the generated electricity from DC to AC, to be compatible with the UK power network. Appropriate arrangements to cover liabilities and warranties for the installation and the roof will need to be in place, with the lease setting out arrangements in the event of problems being encountered.		

[3] Provisionally, as of the end of December 2021 there is a total of 13,654 MW installed UK solar capacity across 1,121,819 installations. This is an increase of 1.6% (216 MW) since December 2020. Source: Solar Photovoltaics deployment in the UK - December 2021. BEIS https://www.gov.uk/government/statistics/solar-photovoltaics-deployment

Consideration	For the building host	For the developer
Changes to the Electricity Regulations It should be noted that this business model may come under threat from reforms to network charges. If proposals to bring some renewable subsidy costs out of the energy bill and into general taxation come to fruition, then this could reduce the value of behind-the-meter generation of this type. However, this may be offset by inflationary pressures on the energy commodity component of the grid electricity bill.		

Table 3: Key considerations for the large-scale solar model

Consideration	For the landowner as host	For the developer
Development risk Much of the risk of large-scale solar PV projects occurs in the development phase when land that is suitable has yet to be identified, grid connection and planning permission have yet to be secured and irrespective of the site, a high level of legal, technical, and commercial due diligence will need to be carried out with no guarantee of success. The risk reduces either as the project proceeds along the development path or a developed site can be acquired from a third party. In the latter case, the rate of investment return will be lower.	N/a	
Stable long-term revenue returns Although the rates of return may not compare with high risk 'commercial' projects, the Hub's experience shows that well designed and maintained Solar PV projects based on a private wire power-sales model can deliver positive Net Present Values and Internal Rates of Return (i.e., project revenues exceed project costs) that may be attractive to local authorities.		
Energy price cost certainty Energy markets are notoriously volatile and subject to external factors which can cause price shocks. By using local, Council-owned generation with a predictable generation output alongside indexed-linked tariffs, the Council can explore opportunities to 'sleeve'[4] its own generation back to its portfolio of consumption.		

[4] A contractual arrangement where power generated at a specific installation, for example a solar or wind farm, is allocated to a consumer connected at another location on the power network.

Consideration	For the landowner as host	For the developer
Changes to National and Local Policies and Regulations There are various areas of policy and regulation which will affect the successful delivery of large-scale solar, for example, planning reforms, changes to Electricity Regulations and codes, and Energy Market policy. Specialist advice should always be sought prior to the Council committing to spending resources on project development.	To note	
Planning permission Large scale solar PV will require a change of land use designation, furthermore, there is likely to be a need to undertake an Environmental Impact Assessment. Both the cost and time required to undertake the EIA process can be significant without guarantee of permission being granted.	To note	
Mature technology with minimal running cost Solar PV has seen considerable deployment across the UK with over a million installations[5]. For a developer, the technology requires minimal ongoing maintenance, and performance can be monitored remotely to aid administration of billing and upkeep.		
Capital provision and servicing The capital cost of developing large solar PV is likely to require several millions of pounds. Access to capital at an interest rate that is affordable to the project and acceptable to the local authority will in part determine whether the project can proceed. The business model is based around a 25-40 year term with revenue flowing from power sales back to the developer to pay off capital debt and interest, or in the case of local authorities, its Minimum Revenue Provision (MRP). The financial risk of developing individual large value infrastructure can be a key concern.	N/a	
Securing a network connection Any solar scheme will need to connect to the wider power network. This will require detailed and potentially costly feasibility activities depending on the size of the solar installation that is proposed and the state of the network. An unconstrained grid connection would allow the project opportunity to generate to its maximum capacity. However, many areas of the network are constrained, and developers will have to pay high fees to connect to the network or accept strict restrictions on when power can be exported, known as curtailment. Knowing this early in development will avoid wasted effort and cost either by halting the project or finding viable ways to manage the constraint. Early engagement with the DNO's Distributed Energy Resources Connections team is strongly advised once you have sufficient information at the feasibility stage to discuss the project.	N/a	

[5] Provisionally, as of the end of December 2021 there is a total of 13,654 MW installed UK solar capacity across 1,121,819 installations. This is an increase of 1.6% (216 MW) since December 2020. Source: Solar Photovoltaics deployment in the UK - December 2021. BEIS https://www.gov.uk/government/statistics/solar-photovoltaics-deployment

Consideration	For the landowner as host	For the developer
Operational and performance risk It is crucial to ensure that a scheme is well designed and constructed according to industry-recognised standards and specifications. Appropriate arrangements to cover performance issues following development will incur operational costs. Some of the key issues relating to setting and managing solar farms to meet performance standards are set out in Hub Guide 15 - Commissioning, Operation and Maintenance Requirements of Solar Farms. The Council will need to put in place internal resource to manage contracts covering operation and maintenance as well as revenue administration.	N/a	
Taxation A local authority's chosen delivery option may alter its exposure to a range of tax regimes that do not usually apply to local authorities for example Corporation Tax, Stamp Duty Land Tax and VAT. Rules in the Business Rates regime have allowed the tax body, usually the local authority, to fully retain the National Non-Domestic Rates (NNDR) levied on large-scale Solar PV. The HM Treasury Business Rates Review[6] has recommended 100% tax relief for plant and machinery used in onsite renewable energy generation and storage, such as rooftop solar panels and battery storage used with renewables and electric vehicle charging points, from 2023 until 2035. The situation for ground-mounted solar will require clarification. It is strongly recommended that specialist tax advice is sought based on the delivery approach you plan to use.	To note	

[6] HM Treasury, October 2021. Business Rates Review: Final Report. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1028478/BRR_final.pdf

Wider Role of Local Authorities in Developing Renewable Energy

The project models covered in this Guide can form part of a local authority's wider strategy to achieve net zero in its locality. In achieving net zero, local authorities can take on a range of complementary roles in addition to that of investor in its own renewable energy projects[7]:

- Funder/investor – investing/loaning money to support external organisations to develop renewable energy
- Signposter – directing enquiries about renewable energy to appropriate sources of support and funding/finance
- Convenor/matchmaker - bringing different actors together to collectively enable them to bring forward renewable energy projects
- Incentiviser – providing enabling activities and support to interested stakeholders in the Council area allowing them to bring forward solutions to local energy
- Place-shaper - taking responsibility for strategic thinking about renewable energy deployment using the tools and functions held by the local authority
- Market maker – the council can commit in advance to purchasing locally generated electricity, giving developers, especially community energy projects, the confidence to proceed with their projects.

The Greater South East Net Zero Hub can provide you with advice and support to understand and develop your approaches.

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[7] based on guidance developed by NESTA https://www.nesta.org.uk/blog/new-operating-models-local-government/

Appendix 1: Examples of large-scale solar investment by local authorities

Monmouthshire County Council

https://localpartnerships.org.uk/news/monmouthshire-county-Council-solar-farm/#:~:text=Local%20Partnerships%20helped%20to%20bring%20the%20project%20to,grid%20before%20the%20end%20of%20the%20tariff%20regime.

Telford & Wrekin Council

https://www.telford.gov.uk/info/20427/environmental_protection_and_policies/3477/solar_farm

West Suffolk Council

https://carboncopy.eco/initiatives/west-suffolk-solar-farm

West Sussex Council

https://www.westsussex.gov.uk/planning/local-environmental-projects/west-sussex-renewable-energy-projects/

Appendix 2: Examples of local authority Rent-a-Roof Solar PV schemes

Warrington Council[8]

Warrington is an area with a high volume of commercial and industrial premises, such as warehousing and distribution centres clustered around the M62 corridor, with the OMEGA developments being a good example.

These areas form an important part of the economic vitality of the Borough. Accordingly, the Council has offered to fit solar PV installations on premises owned by third parties, on the basis that it will fund the installations and retain income derivable from them, whether from Government financial incentives and/or from the sale of the electricity to the occupants of the buildings. This is a highly innovative scheme for local government but is mainstream in the private sector.

Considerable hurdles have had to be addressed to develop a workable model for this operation.
The OMEGA development site has seen the first deals done, with 1 MW of solar PV installed on the roof of the Plastic Omnium site by the Council in 2019. 735,000 kWh of electricity is generated being sold to the occupants. The panels are generating 735,000kWh of electricity per year, equal to the electricity used by 200 average households. Crucially, the use of the solar panels at the site will save around 208 tonnes of carbon every year.

A second two-part scheme at the Hermes Distribution Centres in Warrington and Rugby have now been agreed, with 1 MW capacity of solar PV again being installed on each roof and wired into the building. Further projects in this series are planned.

West Suffolk Council – Solar for Business[9]

This scheme installed solar panels on the roofs of commercial buildings in the West Suffolk Council area. The Council acted as a developer, leasing rooftops from business to install panels for 25-year terms, with power sold to the host organisation at reduced rates. The scheme has since been supplemented by the Greener Suffolk Business Service which also provides energy efficiency, renewable heat and renewable generation services.

While this example does not result in a reduction in carbon emissions from the local authority's own portfolio, it does support a reduction in emissions from the wider economy in the local authority's area of responsibility.

[8] Extract from WARRINGTON BC – GREEN ENERGY STRATEGY
https://www.warrington.gov.uk/sites/default/files/2020-02/green_energy_strategy.pdf
[9] https://www.westsuffolk.gov.uk/protecting-our-environment/solar-for-business.cfm