SOLAR TRADE ASSOCIATION

Leading Lights

How local authorities are making solar and energy storage work today

Contents

Polly Billington,
Director, UK100

Solar energy is essential to power our nation. Local leaders from across the UK are becoming wise to the possibilities of harnessing the energy of the sun to help them transform their communities away from dependence on dirty and expensive fossil fuels.
It can generate income, help support fuel poverty programmes and combined with other technologies is one of the building blocks of a smart modern local and decentralised energy system. UK100's members will welcome this guide to help them deploy solar to meet their goal of shifting to 100% clean energy by 2050 across all of their functions, and enabling their residents and business to do the same.

"Our renewable energy ambitions are stronger than ever. There is a clear environmental and financial business case for the projects we deliver and, because we use Sussex-based installers, there is a direct local economic benefit in terms of investment and jobs.

– Cllr Louise Goldsmith,
Leader of West Sussex County Council

230kW(p) solar array on Southall Lane waste depot. Photo: © Hounslow Council.

Cover: Plymouth Life Centre. Photo: © CleanEarth.

Lead Sponsor:

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Mark Watts,
Executive Director,
C40 Cities

Extreme weather caused by climate change is already becoming a challenge for our towns, cities and regions and it's going to get much more serious unless we greatly accelerate the shift away from fossil fuels. That makes the decisions taken today by local leaders more important than ever. Research for C40 provides indicators of the climate action cities around the world are likely to need to prioritise, in order to deliver on the goals of the Paris Agreement. Our models suggest, for example, that by 2030 every city across the UK should be powered by at least 90% renewable energy, which makes solar a vital technology for cities and local authorities to embrace as quickly as possible. This bold action is necessary to help prevent catastrophic climate change, but it also promises huge economic, social and quality of life benefits. The low-carbon cities and regions of the future will be healthier, wealthier and more equal as a result of the climate action we are taking today. That is why this guide, 'Leading Lights', is such a valuable and timely resource for all those committed to a sustainable and prosperous way forward for our cities and regions.

Prof. Dr. Eckart Würzner,
Board member of the European Covenant of Mayors and Lord Mayor of Heidelberg, Germany

Cities leading on climate action are using a vast array of measures to tackle climate change. Investing in solar power is a key action that empowers cities to boost their economies, create clean growth and attractive jobs. The 9,200+ Covenant of Mayors signatories have already grasped the potential of local renewable energy. Since the launch of the Covenant 10 years ago, they have tripled their local renewable energy production, thereby making their territories more vibrant, sustainable and resilient.

As member of the European Covenant board and lord mayor of Heidelberg, investment in solar power is a key priority. Thanks to our Solardachkataster program, Heidelberg's citizens can determine the potential of their roofs for solar PV. Over 7,000 households have already used this program and almost 1,000 of them have equipped their roofs with solar power, thereby reducing their energy bills and cutting our CO_2 emissions. Our municipal energy company, Stadtwerke Heidelberg, operates 52 solar power installations with a capacity of 2.3 MWh.

We are ready to go further in our actions to accelerate the clean energy transition and tackle climate change. I encourage UK cities to join us, by boosting their use of local solar energy and thereby catalysing the clean energy transformation.

viridian solar
PPS PUBLIC POWER SOLUTIONS
solarcentury

Solar car-port by EvoEnergy in Nottingham.

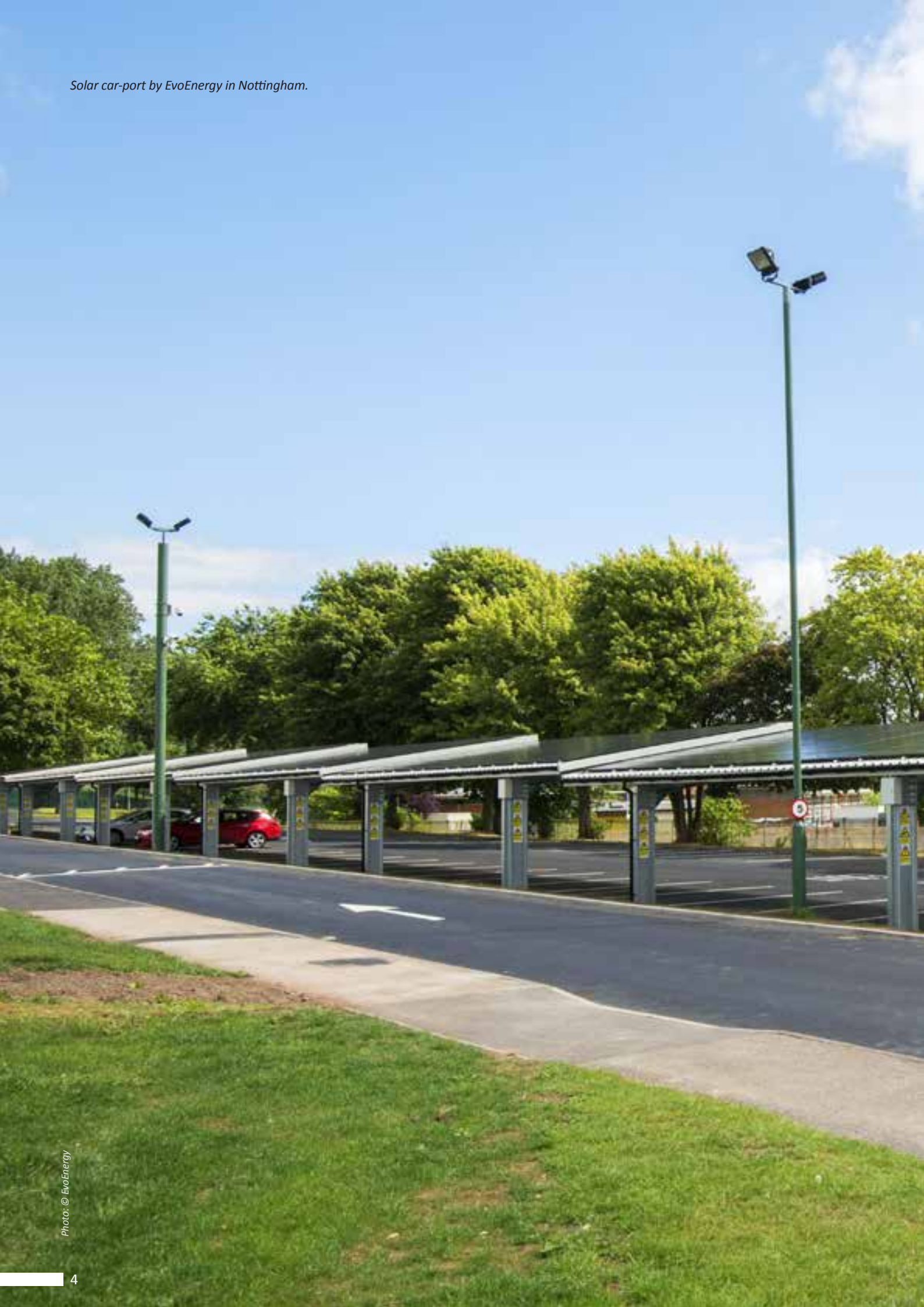


Photo: © EvoEnergy

Introduction

This guide explains the unique powers and tools local authorities have to boost local solar energy and energy storage. It showcases common sense solar initiatives by local authorities today, as well as some of the most pioneering. It demonstrates that solar can provide reliable revenue streams today.

What other technology empowers communities everywhere as effectively and as democratically as solar power? Savvy councils have been quick to recognise solar's potential for helping to meet their strategic objectives with nearly 100 local authorities incorporating solar within their environmental strategies, from Aberdeen City Council's Sustainable Energy Action Plan to Nottingham City Council's 20% renewable energy by 2020 target, to Worcestershire County Council's Energy and Carbon Management Plan.

Brexit, unambitious national housing standards and stop-start policies mean the solar industry is looking beyond Westminster towards local government for leadership. After all, it is everyday neighbourhoods and communities seeking lasting regeneration, clean air and climate action that grasp the tremendous value of solar.

We've been delighted by the success of the inspiring UK100 initiative, which brings together councils determined to lead on clean energy deployment. The Mayor of London, with his new Solar Action Plan, and the developing ambitions of the new Metro Mayors, are helping to restore confidence in our industry, and show why we need to work closely together to level the playing field for distributed power.

Deployment data suggests local authority action makes a big difference to solar uptake; proactive councils boast higher levels of solar capacity and a higher proportion of solar homes. This guide aims to accelerate dissemination of the best practice happening now, both proven and pioneering, so that every region can better realise its solar potential.

Embracing solar delivers many benefits; from cutting energy bills, to delivering modern housing developments and smart infrastructure, to boosting the local economy, and unlocking new sources of revenue. At their most ambitious, councils are transforming who owns and supplies energy and they are injecting smart infrastructure into new developments at the design stage.

Councils are asset-rich, owning over £170 billion of land and property. But council income has been cut drastically in recent years making commercial innovation a necessity to preserve essential services. Solar enables councils to turn unused land (even former landfill sites) and forgotten rooftops into valuable, revenue-earning assets. As the case studies in this guide illustrate, solar presents a low-risk investment option with wide social, economic and environmental benefits. However, it should be noted that some key initiatives require no upfront expenditure at all.

Since 2010 rooftop solar power has been supported nationally by the Feed-In Tariff (FIT)and ground-mounted solar mostly by the Renewables Obligation (RO). Over time, as the costs of solar have reduced sharply, so too has support. Councils are now particularly well placed to deliver many applications of solar today without subsidy. Their uniquely long-term perspective, together with exceptional terms of both finance and power purchase security, means that they are in the fortunate position of being able to make the economics work. And there are new opportunities; Salix funding rules have changed recently so that councils can pursue solar and storage as part of ambitious building retrofits. These 'sweet spots' for solar investment, highlighted in this report, will continue to expand rapidly and by building market volume councils can help to cut costs for everyone.

Solar, battery storage and electric vehicles sit at the heart of the emerging smart new energy system, empowering households and communities and, if it so chooses, local government itself. In this exciting new era of clean energy innovation, local councils have more opportunity than ever before to take a stake in the provision of energy and to reap potentially tremendous rewards. Fortune will favour the pioneering and the fleet of foot. We hope this guide helps to illuminate the exciting possibilities solar is opening up to every local authority in the country.

Chris Hewett
Chief Executive, Solar Trade Association

1. Delivering new-build low-carbon homes, commercial and public buildings

Since the Housing Standards Review and closure of the Government's Zero Carbon Homes programme there has been confusion about the powers local authorities retain to stipulate higher new build standards, both in new residential homes and in new build offices. The reality is that local government retains tremendous powers, confirmed recently by a Minister in the Lords[1]. Powers to stipulate a proportion of energy used on developments from renewables under the Planning and Energy Act were left untouched. Furthermore, legislation under the Deregulation Act 2015 that would have removed powers on efficiency standards has not been enacted.

Local authorities are therefore free to set higher standards for new build homes and offices, through either a stipulated proportion of energy or carbon saving from renewables, or higher buildings efficiency or carbon performance standards generally. Some local authorities take a more relaxed approach by indicating they will look more favourably on developments that incorporate solar. The STA favours stipulating the contribution from renewables, as this provides clarity for the solar and construction industries and better legal certainty, including alignment with EU legislation.

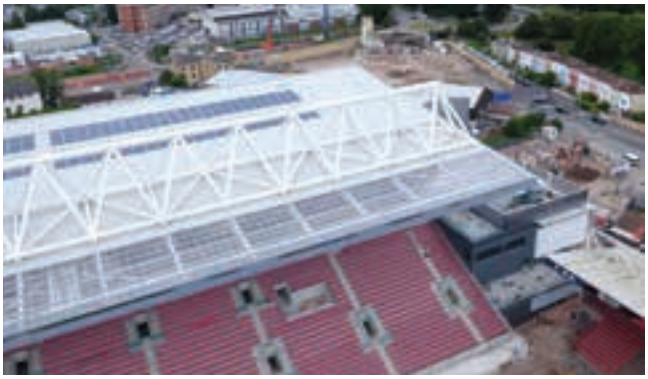
Solar PV is a low-maintenance, 'fit and forget' technology that benefits communities because if it is not in use in situ, the clean power simply spills to neighbouring homes. Combined with its exceptional reliability and performance, these factors give solar a strong advantage over many other technologies.

Both the London and Scottish Governments adopted higher new build standards for carbon performance with no dampening effect on build rates. STA Scotland estimates that two thirds of new build homes in Scotland now tender for solar as a cost-effective way to meet modest improvements in building standards. The STA's Guide for Home Builders sets out the surprisingly low cost today of installing solar roofs from the outset. STA members increasingly find home builders are enthusiastic about solar because it is cheap and easy to install and house builders know that solar technology is particularly attractive to home buyers.

PROVEN

Bristol City Council policies boost renewables

Bristol City Council planning policies are broadly supportive of all renewables, including free-standing large solar. Significant weight is given to the environmental impact of planning applications. All new developments at all scales are expected to incorporate sufficient renewables to reduce carbon emissions by at least 20% over current national buildings standards, once energy efficiency measures have been optimised.



In line with the city's planning policies, Bristol City FC's new Ashton Gate stadium incorporates enough solar PV to reduce carbon emissions by 20% whilst also reducing energy costs by £150,000 over 20 years.

PROVEN

Sheffield Council requires 10% clean energy contribution starting at five units

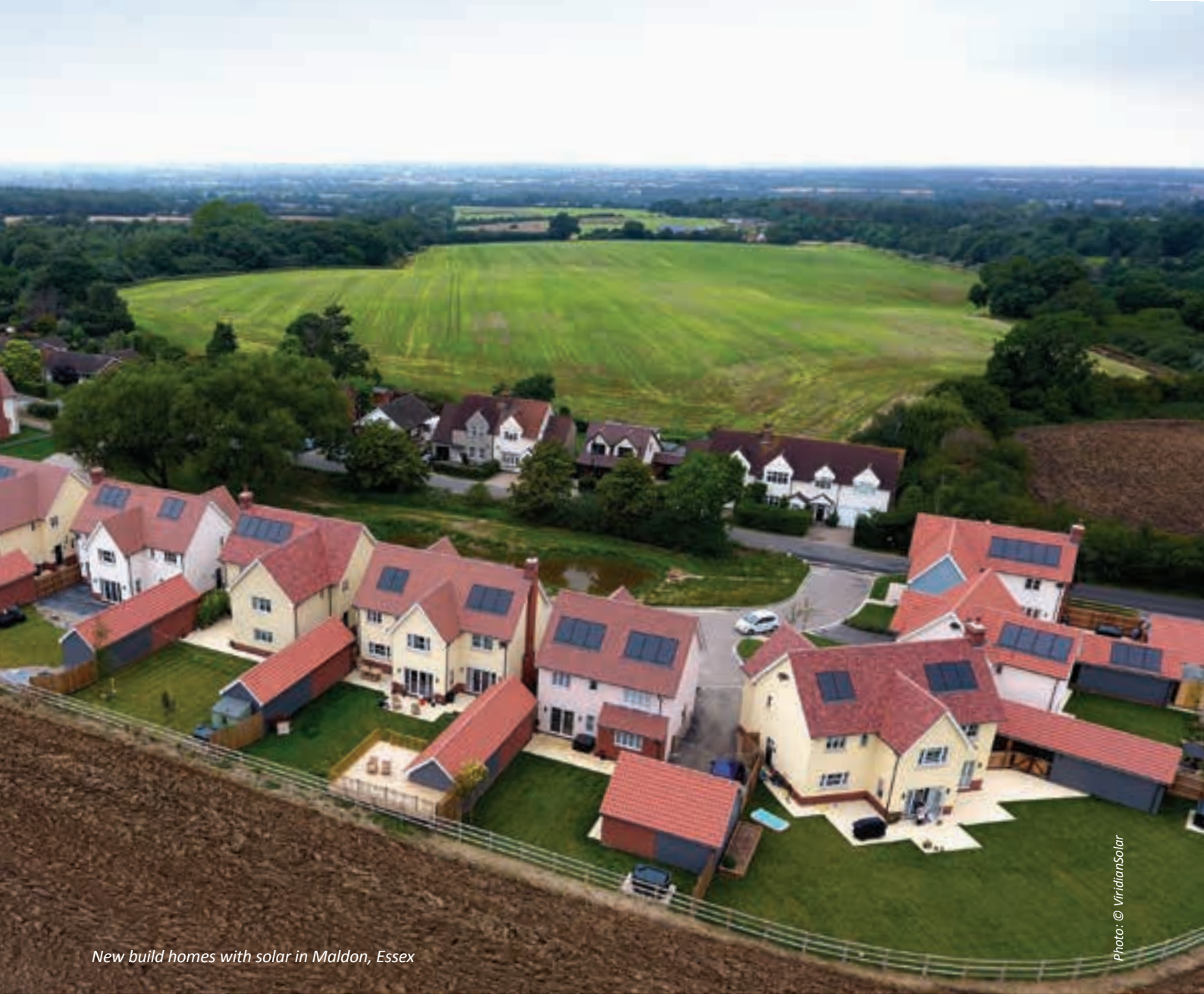
For eight years Sheffield Council has required all 'significant developments' (five or more dwellings, or more than 500m^2 floor space) to meet a minimum of 10% of the predicted energy needs of both new and converted buildings from renewable or low carbon energy. Solar PV is the preferred technology for achieving this, except in the town centre where developments commonly connect to Sheffield's extensive district heating network.

PROVEN

Major home builder delivers with ease on Milton Keynes onsite renewables policy

Barratt Homes, a leading home builder, has delivered 220 residential homes in accordance with Milton Keynes' Local Plan (adopted in 2005) following the principles

1 "The noble Baroness asked specifically whether local authorities are able to set higher standards than the national ones, and I can confirm that they are able to do just that." https://hansard.parliament.uk/lords/2017-02-06/debates/76AF5263-A938-4851-929D-8CAE765C56B8/NeighbourhoodPlanningBill



New build homes with solar in Maldon, Essex

Photo: © ViridianSolar

outlined in Policy D4 (Sustainable Construction), which requires carbon neutrality. As well as through a 10% carbon reduction from onsite renewables, this is achieved through the use of carbon offsetting contributions, which the council reinvests to insulate older homes. Eco2Solar is the official partner for Barratt Homes, delivering rooftop solar for their construction projects all over the UK. The Milton Keynes Council (MKC) policy has been successful and proved comfortable for developers.

MKC has recently strengthened its planning policies for delivering sustainable homes, which it hopes to implement later this year. This includes a requirement for developers to review opportunities for energy storage and, for non-domestic buildings over 1000m^2 or developments of 11 homes or more, to deliver carbon reductions of 19% over and above 2013 national Building Regulations, with a further 20% reduction in residual carbon emissions to be delivered by onsite renewables. Developments over 1000m^2 are exempted if they already achieve a BREEAM Outstanding rating, however, they are still required to meet 20% of carbon emissions from onsite renewables, to contribute to the carbon offset fund and to ensure performance 'as built'.

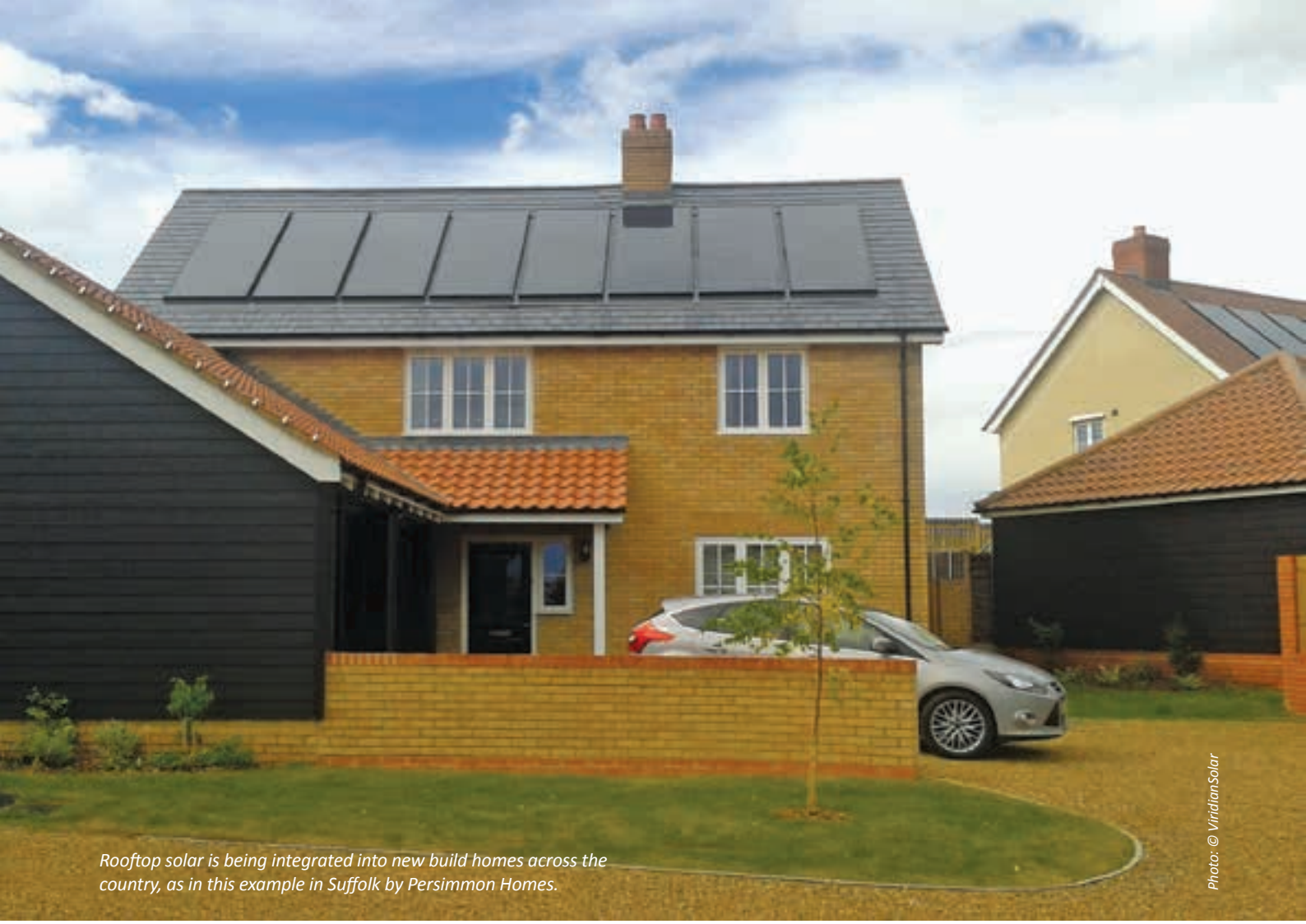
PIONEERING

Net Zero Carbon option for home buyers in new Eco Village development

Bickleigh Down Eco Village is a development of 91 new homes and apartments on the edge of Dartmoor National Park and six miles from the centre of Plymouth, that are built to an exceptionally high environmental standard. Plymouth City Council provided the seven-acre site with a planning requirement that the homes achieve net zero

Bickleigh Down net zero energy development

Photo: © ViridianSolar



Rooftop solar is being integrated into new build homes across the country, as in this example in Suffolk by Persimmon Homes.

Photo: © ViridianSolar

carbon dioxide emissions when considering 'regulated' energy (energy used for heating and hot water, lighting and pumps and fans). Also, as part of the planning consent, purchasers will be given the opportunity to upgrade to a higher performance level – net zero carbon dioxide emissions when also taking into account energy used by plug in electrical appliances. Solar is playing a significant role in helping the developer achieving these targets. Asymmetric roofing increases the roof area available for energy generation on southern aspects and low profile integrated solar panels from Viridian Solar, installed by Photon Energy, form an aesthetic element of the building design.

PROVEN

New social housing built with solar to reduce bills

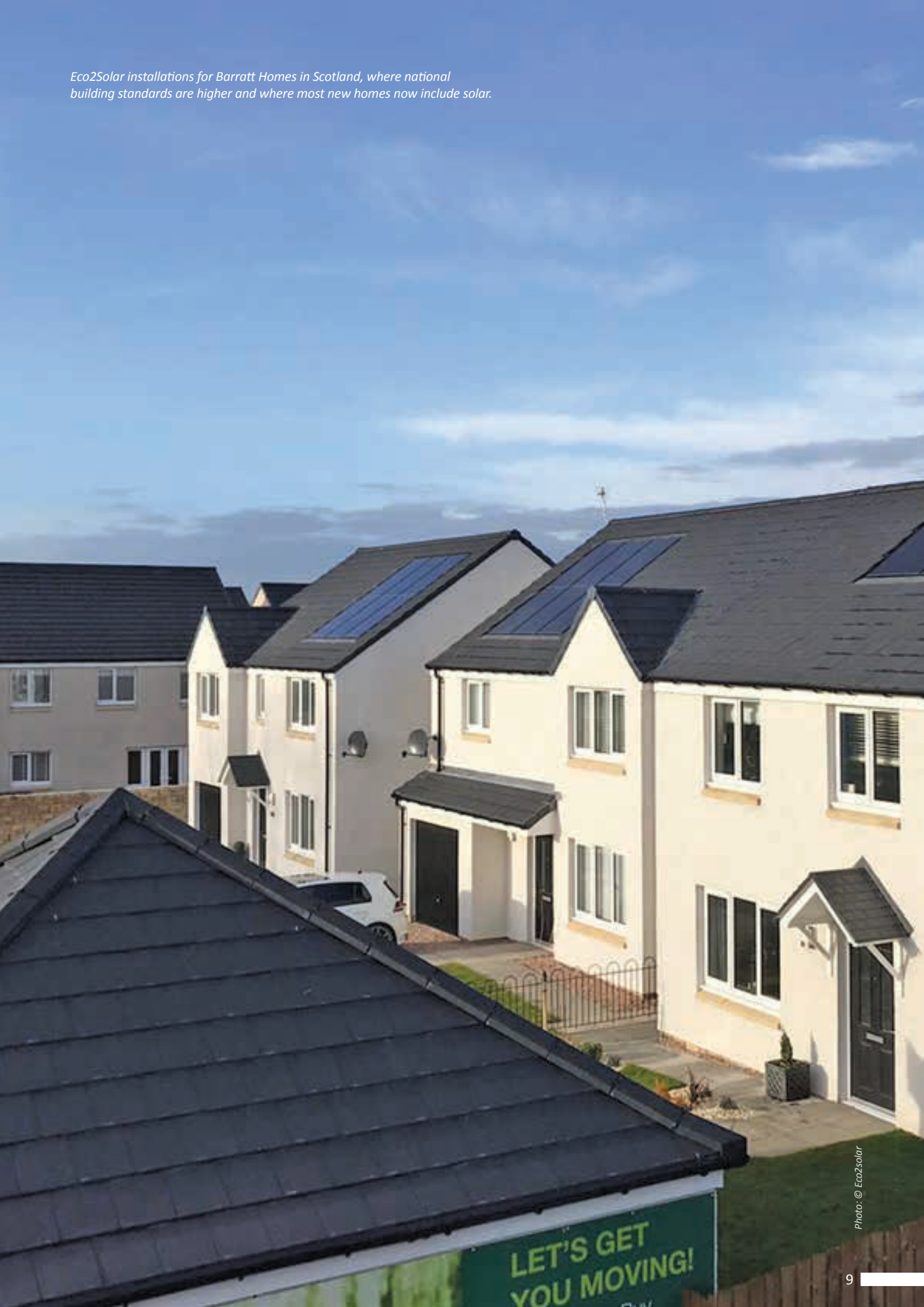
Cambridge City Council is building its first council homes in 20 years. These new homes have included solar power to reduce energy bills in an area of the UK where housing costs are generally very high. All of the council homes that the commercial team within the Estates and Facilities Department plan to build will include rooftop solar. The council has developed a Sustainable Housing Guide which it encourages social housing developers and those developing on council land to use. Tackling climate change and *'caring for the planet'* is key to Cambridge City Council's vision.

New social housing in Uphall Road, Cambridge, includes solar.

PROVEN

Wychavon Council 10% renewables contribution from one unit

South Worcestershire's Development Plan follows national timetables for carbon reductions for the construction of residential and non-residential buildings, but requires all new developments of 100m^2, or one or more dwellings to incorporate renewable or low-carbon sources of energy to meet 10% of predicted energy requirements.



Eco2Solar installations for Barratt Homes in Scotland, where national building standards are higher and where most new homes now include solar.

Photo: © Eco2solar

2. Developing new revenues for services

Today councils are investing billions to develop secure future revenue streams to safeguard essential services as they come under intense financial pressure. The revolution taking place in the clean energy sector, and in its increasingly competitive costs, is therefore very timely. The unique financial advantages councils enjoy mean they are in the enviable position of being able to deliver many types of solar scheme without the need for additional government subsidy today. Prime projects can generate revenue immediately, and profits potentially within ten years.

Many local authorities have invested in business parks, urban offices, warehouses and market spaces as a valuable source of future council income. Business parks and offices often provide an ideal site for retrofitting with solar, either on-roof or, even more cost-effectively, through private wire connection to a nearby site for ground-mounted solar. By retrofitting solar to supply power to offices, the council can also earn revenue on competitively priced electricity provision to occupants, as well as enhancing credentials for new tenants.

Local authorities have access to considerable project financing resources. Many hold significant reserves so they can invest directly in projects; for example, three different local authorities invested in the Wroughton Solar Park (below), which was developed by Public Power Solutions, owned by Swindon Borough Council. The Public Works Loan Board provides long-term financing at interest rates as low as 2.7% but typically at 3.5-4%, well below commercial lending rates. Solar projects can also be funded through unspent capital project funding and from the Housing Revenue Account.

There is growing, proven potential for innovative sources of financing, such as bond or share offers to the local community. The ability to roll peer-to-peer investments into tax-free Innovative Finance ISAs is proving hugely popular with communities and unlocking new sources of revenue (see page 23). Around 20 local authorities have joint-ventures with other local authorities or commercial companies for solar investment. In addition, local authorities have large pension funds that could divest from fossil fuels and invest instead in solar, which presents far lower future risks and which accords with the values of many councils.

These tremendous financial advantages combine with an ability to take long project time horizons, relatively easy access to council-owned land and roof space, and exceptionally secure local markets to consume the solar power generated. Hence, local authorities can already structure attractive solar projects today.

PIONEERING

West Sussex – subsidy-free solar farm with battery storage on a closed landfill site

West Sussex County Council (WSCC), which has committed to halving carbon emissions from the council's operations by 2025, is building a subsidy-free 7.4MW(p) solar farm on a closed landfill site at Westhampnett which will open in 2018. This is the second solar farm scheme to be developed by this pioneering County Council. A previous 5MW(p) solar farm, one of the first to be built in the UK by a local authority, was successfully developed with FITs in 2015 at the old RAF airfield Tangmere by Your Energy Sussex, a partnership between 12 local district and borough councils and a major construction firm. The new solar farm, also developed by Your Energy Sussex, further incorporates 4MW(h) of battery storage in order to maximise output and revenue. The system has been designed to current National Grid requirements for Enhanced Frequency Response – a service that the authority will offer through its current group energy supplier, Laser. Like Tangmere solar farm, some of the energy generated at Westhampnett will be 'sleeved' back to WSCC through a Power Purchase Agreement to offset energy costs and reduce the authority's exposure to energy market price volatility. The council estimates the scheme will pay back in 15 years and generate £7.9 million net income. With its own 'White Label' local energy tariff now available across Sussex, the authority also has plans to supply its residents with energy generated in the county.

Financing: PWLB with income from power supply to council premises at lower cost as well as grid services, including arbitrage.

PIONEERING

Consortium of local authorities invest directly in 61MW(p) Solar Park

At 61MW(p), Wroughton Airfield Solar Park is one of the largest ground-mounted solar projects in the UK. The

Wroughton Airfield Solar Park

project was a joint development between Public Power Solutions (PPS), a wholly-owned subsidiary of Swindon Borough Council, and the Science Museum Group, which owns the former World War II airfield and uses it to store much of its unique and historically important collection. Construction was completed in March 2016, and the project was acquired in September 2016 by Rockfire Capital, funded by a consortium of local authority investors including Warrington, Newham and Thurrock Borough Councils. Throughout the development process, the project attracted exemplary levels of public support as well as cross-party political support. The project also has a community benefit fund of £55,000 a year which is being managed by the Wiltshire Community Foundation, launched in June 2017. As well as smaller grants of up to £2,000 for local community organisations, the fund is also making available larger grants up to £20,000 for community projects that have a focus on science, technology, engineering, maths, environment, health, or play.

Financing: Initial construction finance was provided by a private investor. The project was then refinanced by a consortium of four different local authorities, who each raised the finance differently but most likely from capital reserves. Revenues are generated by ROCs and a PPA with HSBC under a sleeved arrangement.

Subsidy-free solar coming to Hounslow?

Hounslow Council is currently pursuing plans for two subsidy-free solar farms, 11MW(p) and 3MW(p), with possible battery storage. One, on a four and a half acre site, is ideally located next to a power substation. Power from both sites could be sleeved back to council buildings and schools. The ideal circumstances for this project mean an exceptionally high IRR is anticipated, with a short payback period. Financing options are being investigated should the project get the green light.

PIONEERING

Bristol Energy

Bristol Energy is a fully licensed national energy supplier wholly owned by Bristol Council but independently operated. In two years Bristol Energy has grown to supply around 100,000 customer meters, from the Shetlands to the Isles of Scilly. It also has 150 staff based in council offices. The company is expected to break even in five years and thereafter to deliver a profit to reinvest back into its founding city. Alleviating fuel poverty is a key focus, and it is working with key local charities and agencies to find the best ways to solve this growing problem. The organisation also offers face to face customer service from the Bristol Energy Hub, in the centre of the city, and holds regular community outreach events to encourage switching. In addition, Bristol Energy offers a 100% green electricity tariff which is taken up by approximately 5% of its customer base. Bristol Energy has more than 30 partnerships with renewable generators across the country, from community groups to businesses, landowners to charities. 11% of its renewable electricity comes from solar power.

As a fully licenced supplier, Bristol Energy can offer White Label or affiliate deals with other councils who want to facilitate the local supply of local, clean energy without taking out a full supply licence. Bristol Energy's approach has the potential to be expanded to put more emphasis on local renewable power procurement.

Financing: Not available.

PROVEN

Solar thermal cuts a third off energy bill for Cardiff leisure pool

The City of Cardiff Council included a 143kW(th) solar thermal system as part of its £5.5 million regeneration of a leisure centre, featuring a 25-metre swimming pool. The solar thermal array was included to enable the building to meet a BREEAM Excellent rating. The 155m^2 evacuated tube array, by Kingspan Environment Ltd, feeds two 1,000 litre hot water cylinders with hot water, and when the cylinders are satisfied the system automatically diverts to heat the pool, and to provide hot water for showering. It will save 375 tonnes of carbon over its lifetime and 30% on annual energy costs compared to gas heating.

With strong year-round heat demand, this project demonstrates that solar thermal is a 'no-brainer' for local authority leisure centres. While installations are always cheaper to install in the new build context, STA members estimate that even retrofit solar thermal schemes on leisure centres will offer paybacks of around ten years, with the technology guaranteed to perform for up to 20 years.

Financing: Offset energy costs and Renewable Heat Incentive (RHI). The system cost £110,000 when it was installed last year while yielding £220,000 from energy savings and RHI income over 20 years, representing an excellent payback.

PIONEERING

New council-owned business park with ground-mounted solar, using private wire

Perth Food and Drink Park, currently under development, offers serviced business units and development plots to support the food and drink sector. Perth and Kinross Council involved renewable energy specialists iPower Energy from the outset to masterplan the development. The first phase of construction features 75kW(p) of ground mounted solar and 50kW(p) of roof mounted solar to supply the businesses with clean power, and it is now open to tenants. The ground-mounted solar is connected via a private wire to the premises and the energy is sold by Perth and Kinross Council to the business tenants. The council invested in solar at the site to ensure cost-effective clean power provision and price certainty, while tenants benefit from competitively priced power and green work premises. The second building phase will progress once all the current units are occupied. This development reflects the council's strong commitment to action on climate change, as signatories of Scotland's Climate Change Declaration. Indeed, Perth and Kinross Council has the second highest renewable energy capacity in Scotland and the UK.

Financing: The business park is financed out of the council's capital expenditure budget with solar costs recovered mainly through Power Purchase Contracts with tenants. The IRR exceeds the hurdle rate for project investment.

This ground-mounted scheme is connected by a private wire to business premises.

Perth

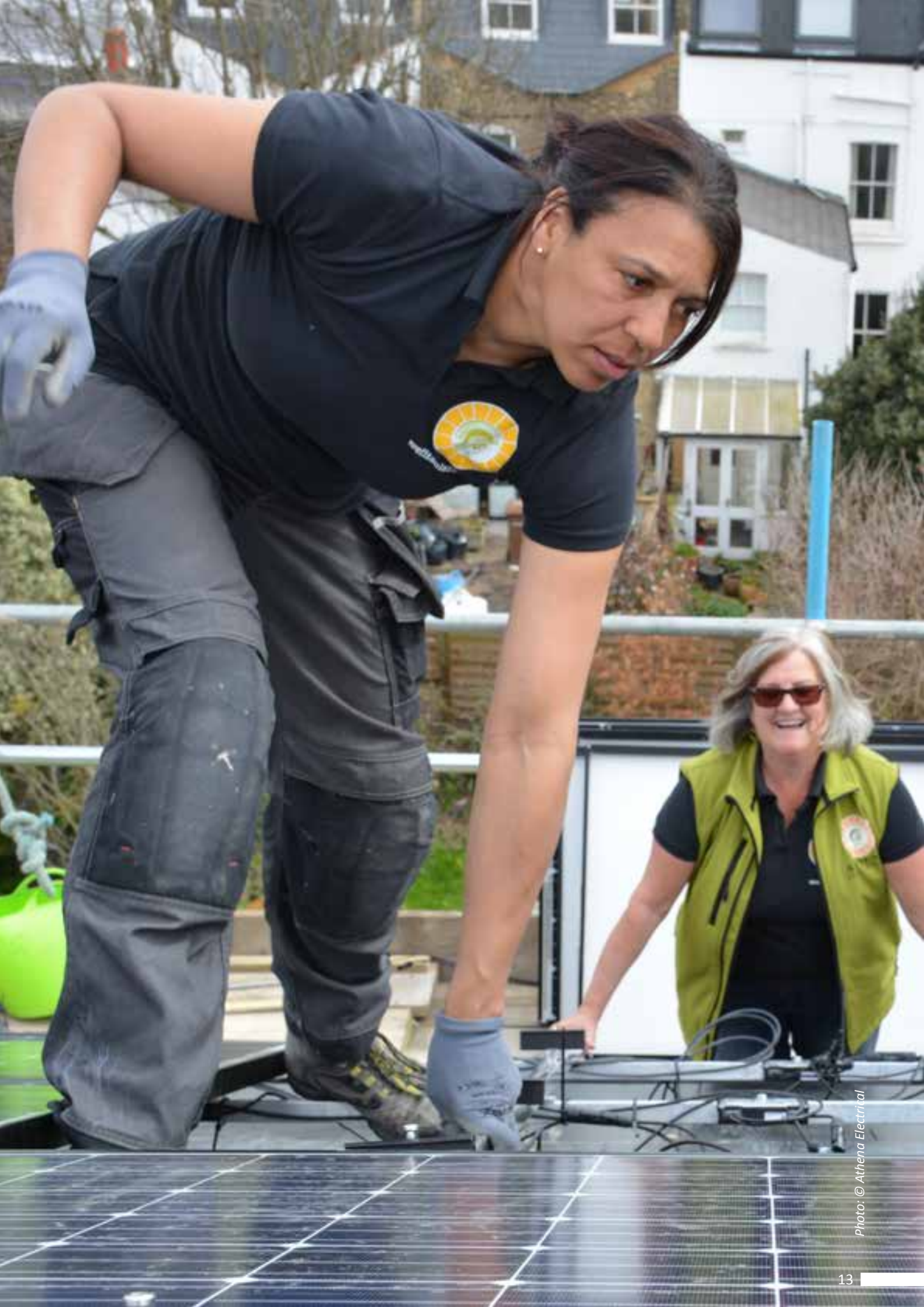


Photo: © Athena Electrical

3. Modernising the local authority estate

The obvious place for low-risk, cost-effective solar investment is across the council's own estate. This is particularly the case where upfront capital investments can be made. Despite cuts to FITs, it remains economic to develop rooftop schemes, particularly where there is a high level of onsite solar power consumption – this is the situation for nearly all council offices and services, which operate during daylight hours and often at weekends. Energy storage is further expanding the potential to maximise self-consumption of solar power. The FIT currently provides a 'sweet spot' for 10-50kW(p) schemes in particular.

The economic value is further enhanced when solar investment takes place as part of a holistic buildings modernisation programme. Many councils will have a rolling programme of roof repair and replacements. The additional cost of installing solar compared to a standard roof replacement is modest, making returns exceptionally good. When it comes to great investments, incorporating solar within a buildings roof modernisation programme is another 'no-brainer'.

This chapter also includes details on zero interest loans for solar available from Salix Finance, which is now funding solar PV projects as part of a holistic approach to public sector building upgrades. With Salix funding set to rise to around £385 million by 2020, there is ample opportunity for local authorities to apply.

PROVEN

Portsmouth City Council's smart procurement and commercial rooftop PPAs

Portsmouth City Council (PCC) is investing heavily in commercial scale solar PV on its own buildings portfolio as well as offering Power Purchase Agreements (PPAs) and project management for other authorities and clients. PCC uses borrowing from the Public Works Loans Board to fund its investment in PV, with competitive rates of return achieved. The council has now installed over 4.8MW(p) of solar capacity across 300 sites, with the vast majority of installs between 10 and 50kW(p). This FIT threshold offers a good return on investment, but the size of PV projects installed has been necessitated by serious local grid constraints that prevent any systems larger than 50kW(p) being connected in the north of the city. With the reduction in FIT rates in 2016, PCC adopted an approach of offering a PPA model to buildings in which they are not responsible for paying the energy bills. The PPAs reduce the electricity overheads of the sites by delivering green power, and although dependent on the size and baseload of the building, the clients usually save over £1,000 per year on their electricity bill. The client PPA sites include more than 20 schools, community centres and external authorities' buildings, with PCC planning to install a further 2MW(p) a year in 2017–18 and 2018–19.

In order to drive capital cost efficiencies whilst remaining compliant with public procurement processes, the authority has established a £10 million procurement framework for the design, supply and install of PV. The framework comprises of 12 contractors arranged in two tiers in order that mini-competitions can be run quickly and efficiently, and so that competition is stiff to encourage lower prices. Individual sites are typically wrapped up into larger contracts to deliver further project and contract management efficiencies, though contracts are kept small enough to allow smaller, local businesses to compete for the work. The success of PCC's approach has been noted by other councils, and as a result they are offering their services to other authorities; both as an agent to deliver the works where an authority has funding secured, or as a PPA offer with capital expenditure by PCC.

Financing: PWLB

Many schools across the country now have solar, including this one in East Grinstead, West Sussex.

Photo: © Tom Nicholson

PROVEN

Huge solar programme takes pressure off schools

West Sussex Council has secured £3 million of capital funding to finance solar across 50 schools following a successful pilot on eight schools. West Sussex is making use of Portsmouth's highly efficient solar tendering programme (see p14), to deliver a phased programme of solar installations with the first phase due to complete by March 2018. The schools will contract to purchase the solar electricity from the council-owned solar through a Power Purchase Agreement, at a lower price than retail, which avoids the need for upfront investment. Meanwhile, through a combination of power sales and FIT revenue, the council will recover its capital expenditure in 12 years.

Financing: PWLB with cost recovery via FITs and PPAs.

PROVEN

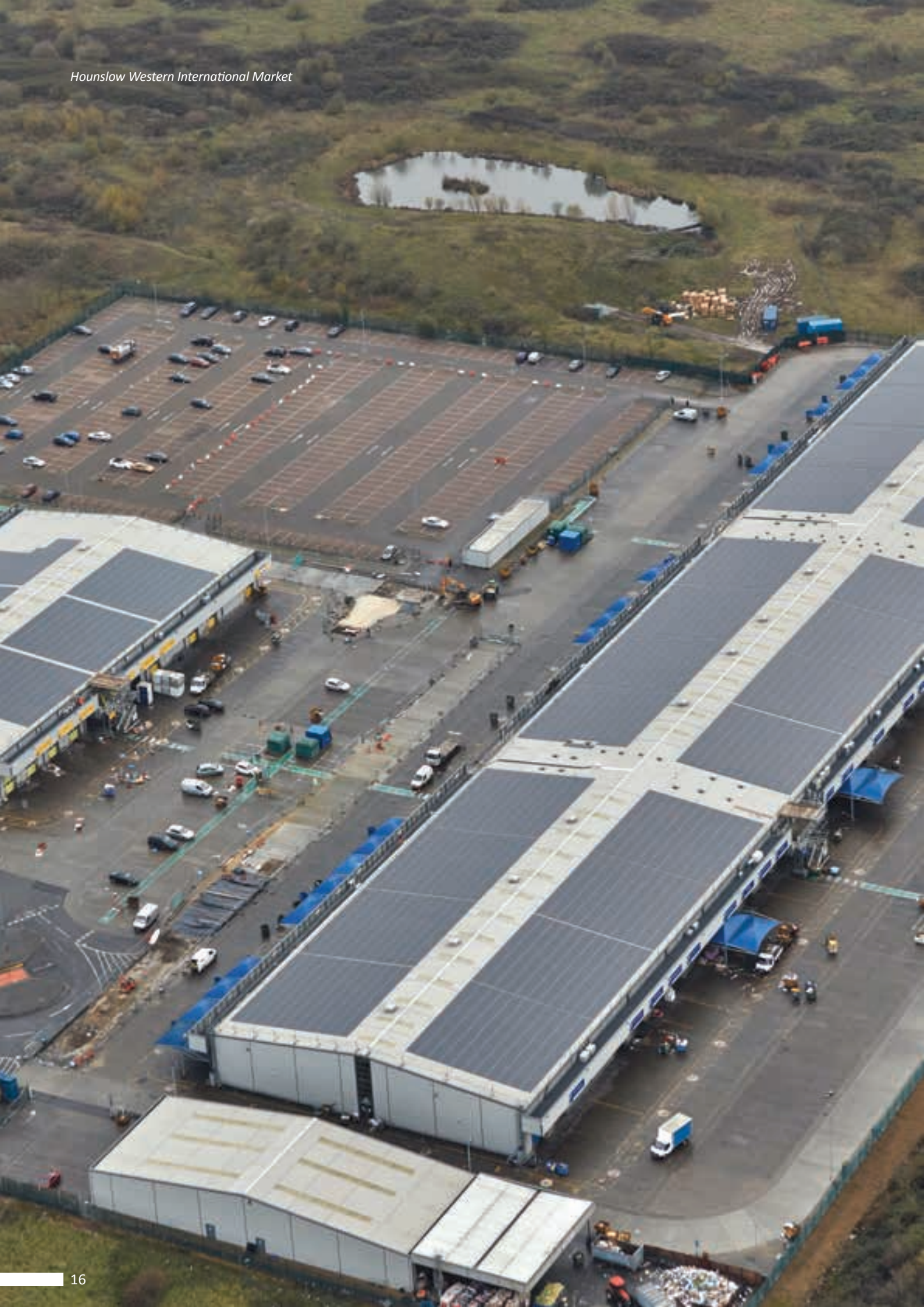
Hounslow Western International Market, and recent extensions, powered with solar

This impressive 1.7MW(p) rooftop solar scheme with equipment supplied by SolarEdge, combines with four 60kW(h) lithium batteries, to generate and supply half of the electricity requirements for West London's largest wholesale market for flowers and fresh produce. The site uses around 3.5MWh of power a year to provide climate controlled facilities to around 80 business tenants. The £2 million scheme, which falls under the GLA's RE:FIT programme, will provide a return on investment in around seven years, with £255,000 of value created in its first year of operation. This single scheme will also contribute 2% towards Hounslow's entire carbon reduction target.

The solar capacity on the site has recently been expanded with the development of two new buildings; the new Trading Unit incorporates a 110kW(p) solar array while the Southall Lane waste depot site adjacent to the market has a 230kW(p) solar array.

Financing: The original market installation was developed through the GLA's RE:FIT programme with costs recovered primarily through charging tenants for electricity consumption, as well as FIT payments. The more recent solar installations were also included within the new building developments and funded out of capital expenditure.

Battery storage at Western International Market



Hounslow Western International Market

PROVEN

Rooftop solar retrofits for Chelmsford City Council buildings

Chelmsford City Council installed solar PV across its main council buildings, including two leisure centres, the main council offices and its operational services depot. All four 50kW(p) schemes were funded out of the council's own capital funds and will pay for themselves within five years and offer a source of income for many years to come. It was the very attractive finances that led the council to install solar roofs. Confidence grew rapidly after the success of the first installation, which was installed by Eco2Solar in just one week, and a further three more schemes were put out to tender.

Chelmsford City Council is also now installing solar roofs as part of its modular housing project, which is using innovative methods of construction to develop 18 homes across two sites in the city to provide good quality accommodation to residents at risk of homelessness.

Financing: Capital funds.

This 50kW(p) solar array was installed on Chelmsford Council's main offices in just one week.

Birmingham City Councillors atop the solar installation at Moor Hall Primary School, Sutton Coldfield.

Photo: © Birmingham City Council

PROVEN

Calderdale Council & Salix Finance help school to go solar

Norland Church of England School in Sowerby Bridge, Halifax, has recently completed a 13kW(p) rooftop solar PV project to provide clean electricity for its school of 105 pupils. The project cost £13,627 and the school secured an interest-free Salix loan for £12,946 to finance 95% of the project. The Salix loan will be repaid over eight years from the expected savings to the school's energy bill. This project is estimated to provide the school with annual savings of £1,618 and to reduce its carbon footprint by 4 tonnes of CO_2e per annum. Calderdale Council helped the school with the development of the project and advised on installers for quotations.

Financing: 95% Salix loan, with balance from school, repaid predominantly through bill savings.

> *Once the project was underway, after the initial investigation, it was really simple and went very smoothly. The Salix loan aspect was really simple using their Solar Support Tool to quantify the savings and payback. The Tool made it easy to see what funds could be provided via an interest free loan within an eight year payback, and then we were able to fund the small balance ourselves. Installation was arranged over the holiday period so it caused no disruption to our school and went ahead without a hitch. We are now pleased to be using electricity generated by our own environmentally friendly solar panels.*
>
> – Margaret Crossley,
> Norland Church of England School

Upgrading buildings with Salix 0% loan finance – how does it work for solar & storage?

Local authorities can access 0% interest Salix loan finance for over 100 energy efficiency technologies, including solar PV, on a case by case basis. Salix can also assess other types of technologies on a case by case basis, such as solar thermal or battery storage.

Salix Finance Ltd is a non-profit, government-funded organisation providing interest-free finance for UK public sector energy efficiency measures, to cut energy bills and carbon emissions. Established in 2004, Salix has since loaned over £588 million of finance to over 16,000 projects across the UK, saving the public sector over £143 million and 720,000 tonnes of CO_2e annually[2]. Salix currently manages £210 million of funds and the Government's Clean Growth Strategy confirms this will rise to around £385 million by 2020, with loan funds continuing to recycle until at least 2025.

Salix approach and eligibility criteria

Salix encourages a holistic approach by optimising all reasonable building efficiency retrofit opportunities before, or alongside, introducing solar PV. Projects should include high levels of onsite solar consumption.

Local authorities can apply for finance for a variety of energy saving upgrades across their non-domestic estate. Applications for loan finance can be made for a combination of retrofit measures along with solar PV, and the loan can be awarded based on the overall payback of the combined measures. Salix can finance the loan amount that can be repaid from energy savings within five years for local authority buildings and eight years for school buildings. For projects with longer technical paybacks, Salix can finance up to the five or eight years, with the remainder of the project value being part-financed by another source of funding. Salix has made available a Solar PV Support Tool to help public sector bodies quantify the Salix loan value for their project, which is available on their website: www.salixfinance.co.uk/knowledge-share.

Application and support

Solar PV applications are assessed by Salix on a case by case basis. Local authorities and maintained schools can apply for Salix loans at any time. Schools and academies have blanket approval from the Secretary of State to take on a Salix loan. As an alternative application route, the award winning Salix Switching to Low Energy (SLE) Pilot is available for maintained schools to receive a comprehensive survey, with the survey cost built into the loan repayments.

Salix encourage public sector bodies to get in touch for support and guidance on Solar PV projects and to make use of the extensive resources on their website. Salix can also provide initial feedback on a draft application. Contact info@salixfinance.co.uk or visit www.salixfinance.co.uk for further information.

2. Data as of September 2017.

4. Building smart neighbourhoods

How we power our communities is changing rapidly. How we heat them isn't changing fast enough. Government intends to end diesel and petrol cars production by 2040, but many experts anticipate that car companies and markets will move faster. And it is not only the climate imperative that is encouraging local authorities to embrace cleaner vehicles and energy generation; the public health impact of poor air quality has become critical.

Both the system-wide transformation in our power sector and the necessary growth in electric vehicles enable a fundamental rethink of energy infrastructure provision. The most forward-thinking councils have recognised that expanding clean energy infrastructure locally not only secures future-proofed developments, but will mitigate the need for disruptive and inefficient future street works to reinforce grids as heat and transport electrify.

The case studies in this chapter are testament to the best capabilities in local government to think and act strategically and to deliver, bottom-up, the smart neighbourhood infrastructure we will all need in future.

PIONEERING

Smart community of 500 homes in Trent Basin, Nottingham

Specialist developer Blueprint, together with an impressive consortium of businesses, academia and local government, is developing low-carbon smart homes around an ESCO-owned and operated community-level micro-grid, including storage. Phase One of 45 homes has been constructed (and sold) with residents soon able to opt in to the scheme with solar, smart meters and live community energy data, as well as membership of the ESCO. A community-scale battery (the largest for community use in Europe) will store solar energy to meet peaks in use and draw cheap power from the grid at night. An urban solar farm will be developed alongside this new neighbourhood whilst under construction with four more phases of homes to come delivering 500 units overall. Nottingham City Council, which has a stake in Blueprint, has been supportive of the project from the very beginning.

Trent Basin, Nottingham

Financing: The work being carried out at Trent Basin is supported by £6 million of grant funding from Innovate UK via two Energy Programmes – The Energy Research Accelerator (ERA) and Project SCENe (Sustainable Community Energy Networks). A formidable consortium of expert partners has come together to deliver the scheme, including Blueprint, The University of Nottingham, AT Kearney, Smartklub, Siemens, URBED, Slam Jam, Stickyworld, Loughborough University, Solar Ready and supported by Nottingham City Council.

PROVEN

City centre car parks get a smart power upgrade

Exeter City Council has installed solar power canopies on the top decks of two city centre car parks, providing clean power, weather cover for customers and their vehicles, and free solar charging for electric vehicles. Both car parks feature 150kW(p) systems installed by SunGift, and a third solar car park canopy scheme is currently being explored. The PV arrays will provide an income of over £50,000 per annum over 25 years, generating 285MWh of renewable energy, and saving 150 tonnes of CO_2 per year. Solar PV arrays located on other Council buildings also support the expansion of EV charging infrastructure in the city. The Council's self-financed investment in renewables and other energy saving schemes, forms an essential cornerstone to achieving a 20% reduction in carbon emissions, whilst safeguarding essential public services through income generation.

Financing: The project was financed by the Council's Invest to Save capital fund (financed by the PWLB) as part of a £3 million Renewables and Energy Saving Programme to drive forward the Council's aspiration to be an Energy Neutral Authority. The Council's self-financed investment in renewables and other energy saving schemes, forms an essential cornerstone to achieving a 20% reduction in carbon emissions, whilst safeguarding public services through income generation.

Solar carports sit on the top decks of Exeter town centre car parks.

PIONEERING

Energiesprong retrofits for cosy homes

Nottingham City Council and Nottingham City Homes are the first outside the Netherlands to pioneer the Energiesprong ('energy leap') approach to retrofitting homes, with ten homes completed in early 2018. Over 2,000 Energiesprong home retrofits have been delivered in the Netherlands with 110,000 in the pipeline. However, different market and legal conditions in the UK mean innovation is still required to make the approach work here. Energiesprong uses innovative procurement and business models to stimulate the market for offsite manufactured retrofitting solutions for existing homes. The result is ultra-low energy, warm, homes, featuring an entire solar roof by Viridian Solar. The works complete very quickly, without the need for residents to move out.

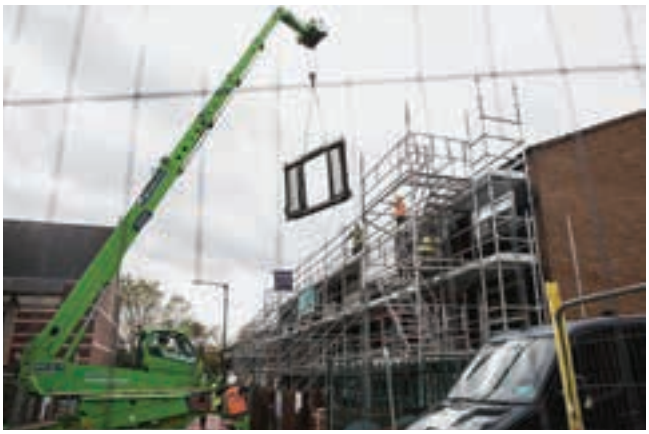


Photo: © EnergiespronglInternational

The energy performance is guaranteed for 30 years, with costs recovered through an ESCO model. The successful pilot, which delivered 'energy plan' costs of approximately £25 a month and a £25 month service fee to tenants, is being followed by others around the UK, including in Devon. The councils are bidding for European funding to enable the next phase of development on over 200 homes. Energiesprong UK is ensuring all the pilots learn from each other and work towards a "volume deal" with councils and housing associations around the UK to bring the cost down to a subsidy-free level, revolutionising the approach to retrofitting.

Financing: European Commission Interreg NWE programme, working towards self-sustaining market based approach.

Photo: © ViridianSolar

Completed Energiesprong pilot homes in Nottingham.

Aerial view of the anticipated 1MW(p) carport with guided busway.

Photo: © Bouygues Energie & Services

PIONEERING

Park & Ride scheme with mini grid, storage, solar & EV charging

Cambridgeshire County Council expects to secure funding to build a solar carport of nearly 1MW(p) – the largest in the UK – on one of their park and ride sites. Construction will take several months. The carports are part of a mini grid, including 200kW(h) of battery storage, which will provide charging for electric vehicles, CCTV and LED lighting. Surplus power will be sold locally via a Power Purchase Agreement. This smart energy grid scheme sits at the start of the largest guided busway in the UK. The council is looking to expand the site to further include electric bus charging infrastructure to help reduce air pollution. The £3.6 million scheme is close to securing support from EU Regional Development funds, with the rest of the funding provided by the council. Design, development, construction and O&M will be done in partnership with Bouygues Energies & Services under the GLA's RE:FIT Energy Performance Contracting framework.

Financing: EU Regional Development Fund, Cambridge County Council.

PIONEERING

Swindon Council boosts system flexibility with huge electricity storage facility

Swindon is set to be home to one of the largest battery storage facilities in the UK, with a capacity of up to 50MW(h). The scheme, which has planning consent, is on a brownfield site next to an electricity sub-station.

The project has been devised and taken through planning by Public Power Solutions, a wholly owned company of the Council, who will be working with developers on the funding and construction of the project. It is designed to have a 30-year lifespan and it will offer a long-term land rental income for Swindon Borough Council. Battery storage is key to improving flexibility in the electricity system by storing energy when it is abundant and cheap, and discharging it when demand is greater and costs are high. The unit will be able to deliver balancing services to the grid. Storage technology helps to reduce the need for expensive grid upgrades by smoothing demand peaks, helping to reduce energy costs for consumers in the long run.

> *"The fact this will be one of the largest battery storage schemes in the UK shows our willingness to look for innovative ways in which to utilise our assets, generating an income for the Council to protect vital services.*
> – Cllr Toby Elliott, Swindon Borough Council's Cabinet Member for Sustainability

Schools and communities benefit from solar in Hackney.

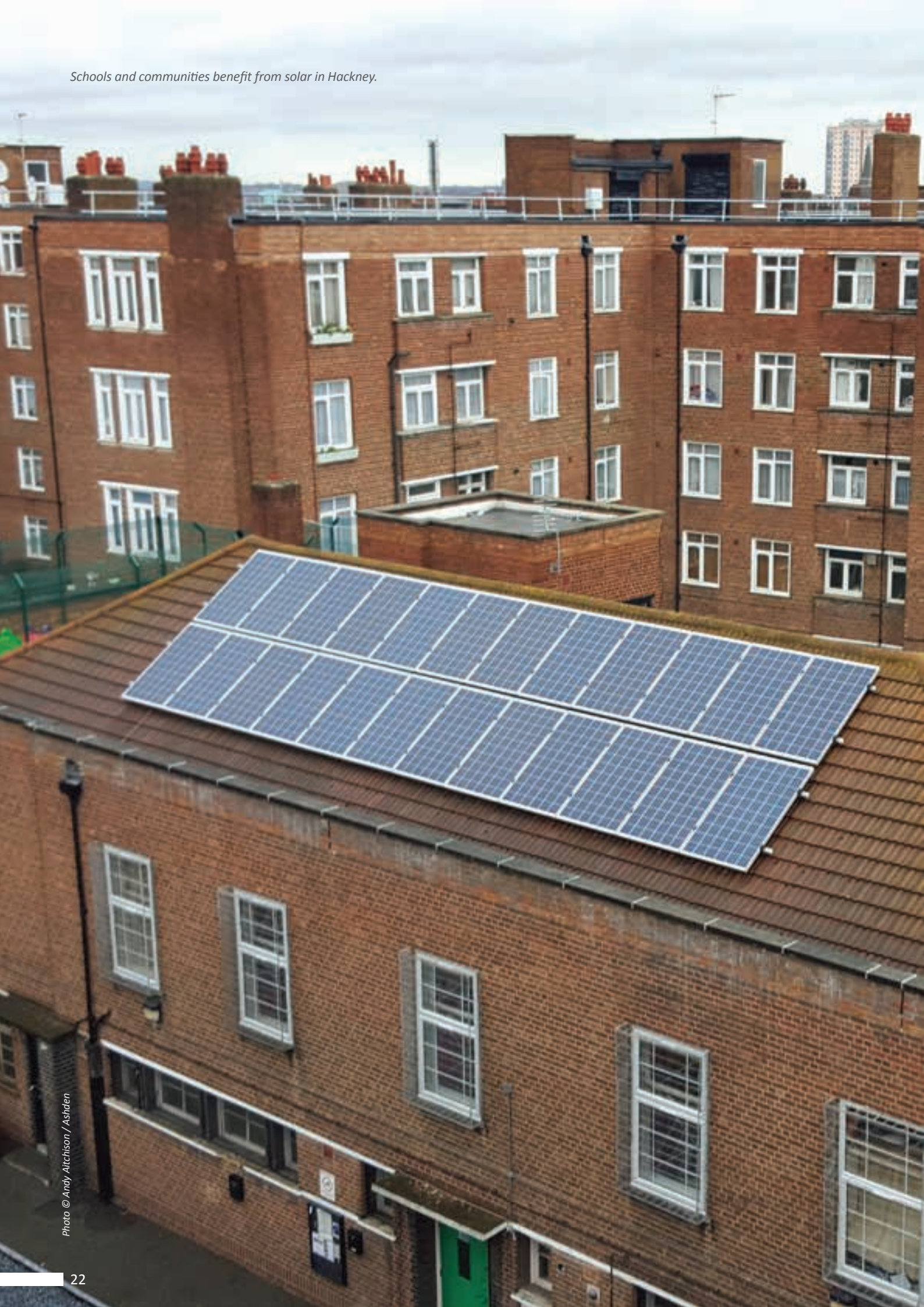


Photo © Andy Aitchison / Ashden

5. Empowering communities and tackling fuel poverty

Local authorities are an essential stakeholder in community energy – energy projects led by local people for local benefit. Recent research by Community Energy England highlights the importance of local authorities making council-owned assets, particularly roof spaces, available to communities. In addition, councils can help by offering financial support, officer skills and time, and facilitation of financing options, like bond offers. The credibility of local authorities standing behind community efforts helps them to achieve their objectives.

Swindon has demonstrated in spectacular fashion (see below) the huge appetite within local communities to invest in partnership with local authorities to finance even very ambitious projects. But there are many other ways that councils can empower their local communities, from simply providing accessible and trustable advice, to bulk purchasing solar PV for households that want to go solar, to providing solar business rate relief for schools, hospitals and community energy organisations.

Many councils made great efforts to use solar PV to reduce energy bills for social housing tenants. Battery storage is enabling a larger volume of solar to be consumed onsite, with the potential to cut energy bills more deeply. More support is needed from central government to fulfil these ambitions, although models of intervention are emerging.

Fuel poverty is more prevalent in rural areas, where homes are more likely to be off the gas networks. Here solar thermal can provide a particularly good payback compared to oil heating.

PIONEERING

Council and community jointly fund 5MW(p) solar farm with solar ISAs

Public Power Solutions developed Chapel Farm Solar Park on a former landfill site in Swindon owned by Swindon Borough Council. PPS devised the unique blend of public sector and community investment for the 5MW(p) scheme which was financed with a £3 million investment from Swindon Borough Council and the remaining £2.4 million from investors drawn from within the local community and across the UK. This was done through the first renewable energy bond eligible to be held tax-free in an Innovative Finance ISA, structured by Abundance Investment.

This innovative product allowed local residents to receive a healthy tax-free return on their investment of 6% for 20 years while funding a renewable energy project which will not only provide green energy, but will enable Swindon Borough Council to use part of its profit from the scheme to fund other much needed local projects. The ISA offer was so popular that it closed three weeks early.

The project was aided by Swindon's use of a Local Development Order (LDO) which accelerated the planning process for solar farms. The LDO involved a call for all sites with the potential to host large scale solar installations in the Borough. Thus Swindon Council had a basis for assessing the impacts of development strategically, whilst enabling meaningful conversations with the local Distribution Network Operator (SSE) on wider grid capacity in Swindon. Interestingly, the same LDO was also used to allow hydrogen refuelling stations on forecourts in Swindon to be installed without the need for planning permission.

> *This is an excellent example of a local council working with the private sector to provide local people with a means of investing in their local community and its infrastructure.*
> – Sajid Javid Rt Hon MP, Secretary of State for Communities and Local Government

Chapel Farm Solar Park

Financing: The council's investment came from capital reserves, and the council receives annual rent of 4.5% of revenue generated by the solar farm as well as the income from its bond investment and the RO subsidy.

Photo: © Solarcentury

Solar farms can be designed to be a biodiversity hotspot, with wildflower planting or sheep grazing between the panels, as this further example from Solarcentury shows. The opportunity to boost ecology on poor-quality land around the solar panels is another benefit for Local Authorities, especially in rural areas where agriculture is important, as it can help to combat the decline in pollinators.

PROVEN

Council supports community co-operative to deliver Lawrence Weston Solar Farm

Bristol City council helped the community-owned Bristol Energy Co-operative (BEC) to build a 4.2MW(p) solar farm, transforming an under-used site at the junction of the M5 and M49 motorways for the benefit of the local community. The scheme cost £4 million and was completed in seven weeks by Solarcentury, one of several major solar farm community schemes developed by the company. The solar farm will generate an income for BEC, allowing them to fund social projects across Greater Bristol and Somerset over the 25-year lifetime of the solar farm. The council owns the land which is being rented by BEC and helped by meeting the up-front costs of the grid connection which will be repaid by an annual fee from the solar farm. BEC raised money working with Mongoose Energy, with investment funds coming from Triodos bank and Social and Sustainable Capital. Local people also contributed through crowd funding, with crucial bridging finance provided by the local authority.

Financing: Bristol Energy Co-op have repaid a part of the Council's capital loan and the remainder has been transferred to an equity stake in the project.

PROVEN

Solar Together Norfolk inspires Mayor of London to help homeowners go solar with group buying

In 2015, this pioneering scheme enabled residents under Norwich City, Broadland, South Norfolk and North Norfolk Councils to go solar more cheaply. 3,540 homes and businesses registered their interest with Solar Together Norfolk, with potential orders then competitively auctioned with quality solar installation contractors to secure the best deal. Six bid rounds were run, with the discounts offered increasing with each round. In total 850 properties accepted their solar deal and enjoyed an average discount of 16% on the cost of their solar installation. Norwich City Council reports that the scheme also resulted in wider uptake of solar power in the local area as households that were unable to accept the original discount offer, followed through their interest with local solar companies outside of the scheme. Since the sharp FIT changes at the end of 2015, follow up schemes were paused. However, today group buying is being taken forward by the Greater London Authority in partnership with several London boroughs.

The participating homeowners are responsible for financing the purchase and installation should they choose to accept the scheme offer. The increased efficiency by volume, pays for the scheme, and creates not only a financial advantage for the consumer, but also a hassle-free customer journey. A much-appreciated feature by councils, is that the scheme does not require upfront expenditure or significant staff resources.

Financing: The GLA provided £50,000 to London boroughs to undertake marketing locally. The scheme administration costs, including website and helpdesk are being funded by iChoosr, which is operating the group buying scheme in partnership with the GLA. iChoosr has experience delivering over 25 similar schemes in the Netherlands and Belgium.

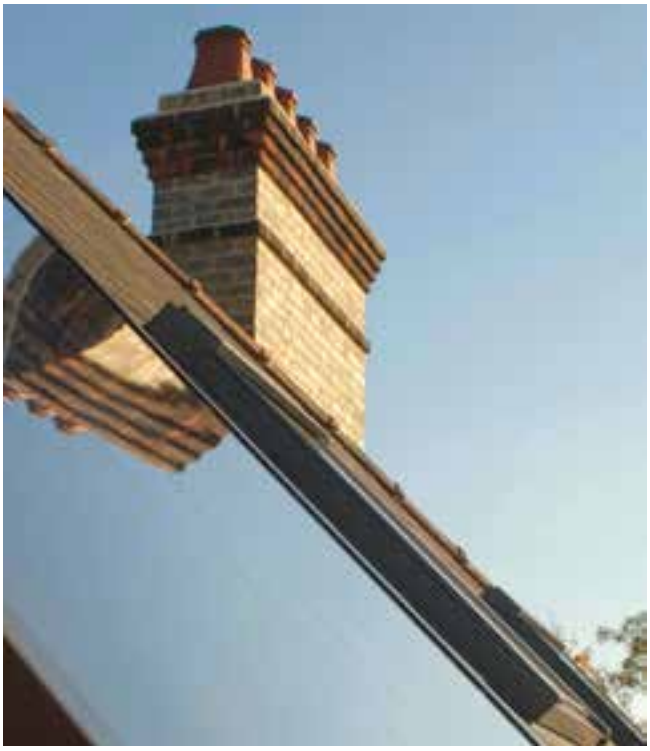
PIONEERING

Solar thermal retrofits target rural social housing off the gas grid

Mid Devon District Council has installed solar thermal on nearly 100 council homes off the gas grid. A third of all the council's social housing is not gas connected. For homes that can't connect to the gas supply cost-effectively, the council's in-house maintenance team seeks to reduce tenant energy bills through determining the most appropriate intervention on a house-by-house basis. Homes which already have solar PV can receive a solar immersion diverter, which deploys unused electricity to heat the hot water cylinder, providing further bill savings. For homes without PV, the council is taking care to share the benefits of renewable technologies including by installing flat plate solar thermal collectors to provide free

hot water to supplement their needs, helping to reduce fuel costs. During the summer, solar thermal provides close to 100% of the occupants' hot water requirements. In winter, the panels still raise the temperature significantly in the hot water cylinder. The council reports the technology has been simple to handle and very easy for householders to use.

Financing: Some installations were funded through the Renewable Heat Premium Payments. Most were funded through the income generated from the council's solar PV investments, with the council also receiving Domestic Renewable Heat Incentive payments. The total income from the solar thermal installations will be £114,000 and all income from renewables investments is recycled to fund further energy efficiency initiatives. Each solar thermal installation costs around £4,000.



Flat plate solar thermal collector

Emerging new models for solar on social housing

Many councils want to deploy solar on social housing to help reduce energy bills for vulnerable householders. Deployment of free rooftop schemes have been difficult to sustain since changes to Feed-In Tariff. More support is needed to assist councils who want to use solar and storage to help to directly address fuel poverty in existing homes. Nevertheless, projects based on new business models will shortly emerge that enable a meaningful difference to be made to household energy costs, without entailing any upfront expenditure.

Community Energy Scheme from Solarplicity

This innovative new model developed and funded by Solarplicity enables social housing solar retrofits at no cost to the householder or to the council. The model encourages people in social housing to switch electricity supply to Solarplicity, which provides a 100% renewable electricity tariff, and a dual fuel tariff. Solarplicity then install 2kW(p) of solar, LED lighting and potentially battery storage, into these customers' homes at no cost to the householder. Solarplicity guarantees to be cheaper than 'Big 6' electricity prices and takes care to ensure that everyone pays the same for each unit of power, even those opting for a pre-payment meter, with no standing charges. Typically, households switching under the scheme will save up to £300 per annum. Households remain free to switch electricity supplier in future, but are contracted to continue to buy the solar output from the solar panels on their roof, at a price guaranteed to match any price found in the market and always lower than 'Big 6' prices.

Typically around 60% of social housing stock will be suitable for solar panels. The Solarplicity model is inclusive, so that homes within a housing estate that are not suitable for installing solar can still share in the same benefits. Solarplicity is working on the terms of partnership with five local authorities currently.

Recommendations for Local Authorities to make solar work today

As a Local Authority you are able to develop many solar schemes at medium to larger scale without central Government support today, heralding a new era of sustainable clean energy investment. This means creating new routes for securing long-term income and boosting the local environment and economy. Targets can help to demonstrate your ambition and to galvanise council, community and industry action. They can also demonstrate one of the ways you can meet the Government's public sector target of 30% reductions in greenhouse gases by 2020/21, with more ambitious targets to come.

1 Make full use of planning powers to **stipulate higher energy performance in new developments** at all scales. A wealth of positive experience proves this approach. The STA recommends **stipulating a meaningful contribution from onsite renewables**. We also recommend encouraging battery storage and broader, smart energy infrastructure to further help future-proof new developments.

2 Make **wider use of planning powers** to support solar, including making use of Local Development Orders to identify and support the development of larger solar schemes, which helps to reduce costs. Neighbourhood Plans can also helpfully specify support for individual and community-scale solar.

3 Be ambitious. **High volumes and larger rooftop schemes mean lower unit cost**, improving project economics for rooftop solar. Efficient tender schemes, such that run by Portsmouth City Council, enable local solar companies to bid competitively.

4 Make full use of **Salix Finance interest-free loans to retrofit existing council buildings** and always go solar when replacing roofs as part of a buildings upgrade programme. The STA can demonstrate how to structure financing for payback within 8–10 years using a PPA model.

5 Help local people and SMEs to go solar by running **bulk purchase discount schemes**, as is currently happening in London, following the success of Solar Together in Norwich. The STA can advise on how to structure tenders to retain high installation standards.

6 At a minimum, **provide relief from business rates** for solar and storage for state schools, health centres and Community Benefit Societies, Community Interest Companies and Co-ops that have invested, or want to invest in, onsite solar power and storage for self-consumption. £300m of funding has been made available by central Government to support discretionary relief in local areas. The STA welcomes wider rate relief for onsite-self supply with solar, as this is the best way to secure the economic viability of rooftop solar and storage for local businesses and industry.

7 **Support community-led solar initiatives** by providing land or roof-space, expert advice, and by facilitating administration, including of financing options. Community energy will benefit from financial assistance or support in kind where possible. Create opportunities for local people to directly invest in local solar projects, and consider making use of finance products which are ISA-eligible, attracting tax relief.

8 **Don't forget solar thermal**. This highly reliable technology cuts bills and emissions in both dense, urban areas as well as rural areas off the gas grid, where fuel-poor households are often more prevalent. It's also a natural choice for leisure centres and will become increasingly important as a zero carbon heat source for local heat networks.

9 Plan for smart neighbourhoods. **Include solar and storage when developing strategies for electric vehicle charging infrastructure** to ensure EVs not only contribute to enhancing local air quality but also reduce carbon and the need for costly and disruptive grid works.

10 Engage with BEIS's new Local Energy Programme which funds all Local Enterprise Partnerships (LEPs) to develop a local energy strategy and is a good opportunity to set out each local authority's solar ambitions. The five new Local Energy Hubs can also provide some technical and legal capacity, or financial support to help develop solar and storage projects, if local authorities come together to identify this intention. LEPs also have an important broader role to play pushing for higher standards in development and encouraging greater local use of solar and smart infrastructure.

Join the STA's Local Authorities Leading Lights Network. We want to work with local authorities to spread best practice and knowledge on solar, storage and smart power and to secure an effective framework from Government to accelerate local authority action. Current STA work streams include creating local flexibility markets to monetise smart services, fair business rates for rooftop solar and storage, securing an effective post-FIT policy framework and fair access to clean power contracts for large-scale solar.

These young fans are certainly happy with the solar installation at their school in Islington, North London.

Photo: © 10:10 Climate Action

Glossary

BREEAM: An international methodology for rating the sustainability of developments undertaken by licensed assessors. This is primarily used in non-domestic buildings.

Energy Service Company (ESCO): Sells energy services such as electricity, light and heating. They can also assist with design and innovative financing which allows clients to pay for investment in technologies over time. Savings are guaranteed to exceed payments.

Feed-In Tariff (FIT): More accurately a generation tariff, the FIT rewards every unit of clean power generated and has been the major support scheme for rooftop solar.

Individual Savings Account (ISA): A tax-free way to save or invest. In 2016 the government introduced Innovative Finance ISAs to hold peer-to-peer loans which enables crowd-funding of solar projects using ISA-eligible investments.

Local Development Order (LDO): Enables local authorities to grant planning permission to specific types of development within a defined area, streamlining the planning process.

Local Enterprise Partnerships (LEPs): Joint local authority-business bodies set up by Government to promote local economic development.

Power Purchase Agreement (PPA): A contract between two parties for the supply and purchase of energy. These are typically sleeved, wholesale or private wire. The STA estimates two-thirds of the UK's solar capacity has been built using PPAs.

Private Wire: A privately owned electricity grid that is not owned or operated by a licensed distribution network. They can cost-effectively connect ground-mounted solar to local power loads, typically business or industrial premises.

Public Works Loan Board (PWLB): A statutory body of the UK Government transferred to the Treasury as an executive agency. It provides both fixed rate and variable rate loans to public bodies at low interest rates.

Renewables Obligation and Certificates (RO/ROCs): The major UK support scheme for large-scale renewables, now closed to new schemes. Certificates were issued by Ofgem to accredited generators and were used by energy suppliers to demonstrate compliance.

White Label: Where an organisation does not hold a supply licence but partners with a licensed supplier to provide its own labelled brand that may have specific objectives.

Leading Lights is researched and written by Léonie Greene with support from an expert steering group: Chris Hewett, Syed Ahmed, Paul Hutchens, Stuart Elmes, David Cockayne, James Owen, Sophy Fearnley-Whittingstall, Adrian Hewitt, Steve Cains, Sebastian Berry and Christelle Lawson.

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The STA is a not-for-profit industry association representing a diverse membership in solar power, solar thermal and storage. Since 1978 the STA has worked to promote solar energy and to make its adoption easy and profitable for domestic, commercial and utility users. Our mission is to empower the UK solar transformation. We are paving the way for solar to deliver the maximum possible share of UK energy by 2030 by enabling a bigger and better solar industry. We represent both solar heat and power, as well as storage, and have a proven track record of winning breakthroughs for solar PV, solar thermal and battery storage.

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