

Cherwell District Council commissioned one of the UK's largest local authority-owned carports at Bicester Leisure Centre as part of its initiative to reduce carbon emissions.

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Powering a Sustainable Future

A Public Sector Guide to Solar and Battery Storage

5 things to know

1. Solar energy is providing public sector organisations with significant cost savings, greater energy security, and resilience: **Page 3**
2. Solar power comes in all shapes and sizes and can be installed in a wide range of applications to turn your unused land or roof space into an asset: **Page 4-6**
3. Solar thermal technology can be used to heat water sustainably, bringing huge savings to swimming pools, schools and leisure centres: **Page 7**
4. There are a wide range of options available to help with the financing and deployment of solar and storage projects: **Page 8**
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A Brighter Future with Solar

Public sector organisations in the UK, including councils, schools, healthcare facilities, leisure centres and other government entities, are increasingly prioritising sustainability to reduce their operating costs, whilst simultaneously improving their carbon footprint.

Renewable technologies such as solar PV panels, solar carports and battery storage offer innovative solutions for reducing energy costs, creating financial stability and contributing to the UK's net-zero emissions target. This guide outlines the key considerations, benefits, challenges and financial options for adopting clean energy technologies in the public sector.

Why the Public Sector should be looking to the sun

The public sector is a major contributor to the nation's emissions and the UK government aims to reduce direct emissions from public sector buildings by 50% and 75% by 2032 and 2037 respectively. Through new and continued investment in the deployment of solar energy the sector stands to deliver significant environmental and cost benefits – and the timing has arguably never been more important.

Hospitals and the wider healthcare industry, for instance, are amongst the highest consumers of electricity due in no small part to the need to maintain temperature controlled environments, power life-saving equipment and ensure the continuous operation of critical facilities. The NHS alone is responsible for around 4% of England's total carbon footprint and 40% of the public sector's emissions.

The NHS is also facing a profound financial crisis, with pressures from rising healthcare costs forcing tough decisions over which services to cut or reduce. The ongoing financial strain is also contributing to the £20 billion funding gap identified by the new government. As hospitals look for ways to balance budgets without compromising patient care, renewable energy solutions such as solar power offer a viable path forward. They also align with NHS ambitions to become the world's first net-zero national health service.

Some hospitals have already embraced the clean energy solution, such as East Yorkshire's Castle Hill Hospital, which is the first in the UK to run solely from renewable energy provided by its own solar panel field – known as the field of dreams.

Local authorities are also major energy consumers, including public buildings, schools, leisure centres and other community facilities. This heavy usage drives up operating costs and contributes to their carbon emissions.

With energy prices once again set to rise, the introduction of mandatory half-hour metering just around the corner, a £20 million government funding blackhole which will have major implications for the wider public sector and the cost of solar tech being more affordable than ever-before, there has never been a better time to invest in and expand on solar energy projects.

Key Benefits of Solar for the Public Sector:

- **Greater Energy Security and Resilience:** Solar power and energy storage enhances energy security, reducing dependence on the grid and safeguarding against outages – especially important for maintaining life-saving equipment in hospitals and critical services provided or overseen by local authorities.
- **Cost Savings and Financial Security:** Solar energy can help public sector organisations offset their energy costs. You can effectively forward-buy your electricity at around 5p per unit – a figure that includes estimated operations and maintenance costs.
- **Future-Proofing Facilities:** Solar installations can ensure public buildings are fit for the future from a sustainability standpoint, particularly when the bulk of the Private Finance Initiatives (PFIs) begin to expire from 2025.
- **Carbon Footprint Reduction:** Investing in solar energy helps reduce the carbon footprint of the public sector, supporting the NHS, local authorities, and other public bodies in achieving their climate and sustainability goals.
- **Climate Action Stewardship:** The public sector has an opportunity to demonstrate climate leadership in their respective communities, practicing what they're preaching in terms of net zero targets, by investing in renewable energy solutions, including solar.

The Wide-Ranging Solar Opportunity

Solar panels can be installed in a variety of locations, turning unused land or roof space into an asset. Solar panels come in a variety of shapes and sizes, making them one of the most versatile renewable energy sources available. Some of the ways solar panels can be installed include:

1. Roof-Mounted Solar PV – The most common installation type for solar PV panels, particularly in public sector buildings. These spaces are usually underutilised and offer ample daylight exposure. Bath and North East Somerset Council previously commissioned the installation of solar panels on the roof of Keynsham Town Hall – this was one of the largest local authority owned single-site PV installations in the UK and was predicted to save almost £30,000 per year in energy bills.



2. Ground-Mounted Solar PV – Ideal for properties and sites with open land and can be installed in unused or underutilised spaces. Ground-mounted panels can be adjusted for optimal pitch and orientation, ensuring maximum daylight capture. They are commonly used in large-scale solar farms and community solar projects. A recent report from the Local Government Association highlights that a growing number of authorities are considering owning larger renewable energy generation assets – such as solar farms – and says ‘getting involved in these projects offers potential reductions in greenhouse gas emissions, and more certain energy pricing’.



Ham Lane Solar Park is owned by Low Carbon Gordano (LCG) a Community Benefit Society and was funded through an innovative community share offer. The 1MWp solar park, comprising 3,600 solar panels, was constructed by Solarsense and produces enough energy to power 250 homes annually.



Sir Ed Davey opens Ham Lane Solar Park with Stephen Barrett, Managing Director of Solarsense

3. Solar Carports – A multi-purpose structure that provides shelter for vehicles whilst generating renewable energy to be used on-site and (or) used to charge electric vehicles. Solar carports are rapidly gaining popularity with organisations that have already filled their roofs with solar PV and want to visibly promote their dedication to sustainability. They can be customised and equipped with gutters to harvest rainwater and have branding applied. Solar carports can increase land value and create revenue opportunities for site operators from EV charge-points and advertising opportunities.

Cherwell District Council commissioned one of the UK’s largest local authority-owned carports as part of its efforts to reduce its carbon footprint. The installation covers around 60 parking spaces and is expected to generate approximately 150,000kWh of clean electricity per year – about 18% of the total energy demand of the leisure centre.



4. Building Integrated Photovoltaics (BIPV) – BIPV refers to the integration of solar PV technology directly into the building’s structure, such as the roof, walls, or windows. This can include in-roof PV systems, solar tiles, brise soleil, canopies, photovoltaic glass and more. BIPV systems are often chosen for their aesthetic appeal and can be designed to match or complement the building’s design. BIPV is an effective way of demonstrating your commitment to innovation and sustainability, helping to improve your public image.

The Brunel Centre at South Gloucestershire and Stroud College incorporates a solar photovoltaic (PV) system integrated into the building’s window shutter which are visible from ground level. The building also features a live monitoring panel in the foyer where students can see exactly how much energy, water and other services the building is using. The project was funded by the West of England Local Enterprise Partnership (LEP) through the Local Growth Fund and administered by the West of England Combined Authority (WECA).



5. Battery Storage – Integrating your solar panels with a battery storage solution allows you to increase the efficiency of your solar PV system and maximise the potential benefits. This is because you gain greater control over your energy consumption and can store excess solar energy to be used when you need it most, or when it is most cost effective. Even without on-site solar energy generation, organisations may choose to charge up a battery at a time when energy prices are low (e.g. at night) for use during peak times (e.g. 4pm - 7pm).

Battery storage can also enable businesses to supply extra power (above their DNO connection capacity) if they are constrained by grid capacity, or provide back-up power for emergencies. Effective battery storage for solar will become increasingly critical with the introduction of mandatory half-hour metering from April 2025.

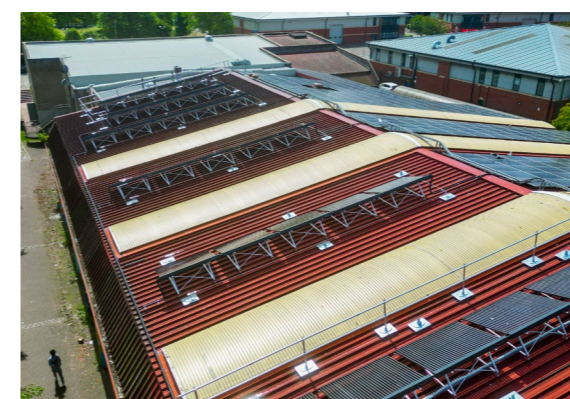


Combining a range of integrated clean energy technologies, including solar panels, battery storage, solar thermal and heat pumps across five sites in the Southwest, the Avon Fire and Rescue Service clean energy scheme mitigates 127,117kg of carbon emissions annually and was awarded Clean Energy Project of the Year at the Regen National Energy Awards.

6. Solar Thermal – A solar thermal or solar hot water system consists of solar collectors (evacuated tubes or flat plates), a pump, and a twin coil hot water cylinder which acts as a thermal store. As daylight heats the fluid, the energy is transferred to a heat exchanger, which then heats the water in a storage tank. This hot water can be used for various purposes, such as heating swimming pools, showers, or even space heating. The system is highly efficient and uses renewable energy, reducing reliance on fossil fuels.



The Easton Leisure Centre solar thermal project was commissioned by Bristol City Council and, the leisure group, Everyone Active, as a pilot project for their partnership, in preparation for additional planned installations across the city.



The council’s investment was designed to reduce the centre’s carbon footprint, but it was unveiled at a time when the leisure sector was hit hard by the energy crisis. Within six weeks of the solar thermal technology being installed, Easton Leisure Centre reported that its swimming pool’s heating bill was reduced to zero.

Financial Support for Solar Investment

The Public Sector Decarbonisation Scheme was rolled out by the former Conservative Government and now continues under the new Labour Government. It supports the ‘aim of reducing emissions from public sector buildings by 75% by 2037’.

The first three phases of the scheme have already closed. The Department for Energy Security and Net Zero previously confirmed that the fourth phase is to be delivered by Salix Finance. As part of the scheme, a funding pot of £1.17 billion was confirmed at the end of 2023 – with £670 million available in 2025 to 2026 (some of which was allocated for phase three), £300 million for 2026 to 2027 and £200 million for 2027 to 2028.

The government advises that, while applications for the first three phases were awarded based on the ‘order in which they were received’, applications under phase 4 would be awarded in a more ‘targeted way’. It says: “Projects delivering the best value for money based on the most direct carbon emission reductions will be prioritised.”

Some of those to receive funding in the earlier stages of this scheme include local authorities, NHS Trusts, schools, academies, and higher education institutions and emergency services.

Finance Options for Solar Deployment

There are a wide-range of options to help with the funding and deployment of solar power. Some of the solar financing schemes in place include:

- Self-Financing
- Asset Finance
- Smart Ease Payment Plan
- Power Purchase Agreement (PPA)
- Community Funding

More information on finance options and which are best suited for your sector is available at: www.solarsense-uk.com

The Solar Checklist

There are a number of key considerations that any public sector organisation should be taking into account when investing in solar and battery storage to ensure they end up with a solution that is bespoke to their needs and fit for the future. When discussing your needs with a solar energy specialist, here are a list of questions that will help you make the right choice.

- ✓ What are my main goals in introducing solar – for example, are they to reduce energy costs or are they environmentally driven? Your goals will determine the final cost of the project.
- ✓ What challenges do I need to be aware of so they can be dealt with upfront and avoid any hidden surprises down the line of the project?
- ✓ How many solar panels do I actually need?
- ✓ How can I best maximise the solar energy generation on my buildings and wider estate?
- ✓ What solar energy systems are best for my specifications?
- ✓ What financial support options do I have and what’s best for my organisation?
- ✓ Do I want the fastest payback or the biggest offset from installing solar energy?
- ✓ What do I need to consider when half hour metering is introduced from April 2025?
- ✓ Why could battery storage be good for my organisation and do I have the space for batteries to store my energy?
- ✓ What legislation and regulation do I need to comply with?
- ✓ How often should I maintain the systems when installed?
- ✓ What insurance do I need to take out to cover my solar panels?

Calculating your savings

Our design engineers use industry leading software to accurately predict how much solar energy can be generated, stored and used at your specific premises, and provide detailed economic efficiency calculations to ensure you understand exactly when you can expect to break even, the structure of repayments and the overall profitability for your organisation in the long-term.

Next Steps

If you would like any further information or to find out how much your organisation could save by switching to clean energy, please get in touch with our team. Here is a list of what is needed to help speed up your process.

- ✓ Google earth image or marked image of the building roof and surrounding area
- ✓ Type of roof (e.g. flat, tiled or trapezoidal)
- ✓ Type of power supply (e.g. single or three phase)
- ✓ Annual half hourly data (or as much data as possible)
- ✓ Current unit price of energy
- ✓ Finance in place or needed (e.g. asset finance, Smart Ease payment plan)
- ✓ Any future expansion plans (e.g. fleet of electric vehicles)



Solar in Action – Bristol City Council

Solarsense worked closely with Bristol City Council to help deliver what was, at the time, the largest solar for schools programme in the UK. In total 35 schools throughout Bristol received a solar PV installation, combining to produce 550kWp. The combined installations are predicted to save the local authority more than £60,000 per year.

Each project differed in size depending on the available roof space and orientation. Solarsense worked collaboratively with all the schools to identify the most disruptive elements of the works and put in place a schedule which minimised impact on the school working day. The installations were completed quickly and with little or no impact on the children's learning.

Due to the number of individual parties involved with the installations, Solarsense developed a unique 'Illustrated Method Statement' which would demonstrate exactly what the installation would entail. This was then made available to personnel at the school, its teachers, boards and governors, shared within the council and used as a precise instruction to engineers and installers. As part of the scheme, Solarsense included a data logger and weather station on each installation, so that the schools could collect and monitor the solar data as part of their curriculum.



About the Guide's Publisher

This guide has been published by Solarsense, the UK's leading consulting, design and installation business in the commercial solar energy marketplace. Headquartered near Bristol, the business, which operates nationwide, is an employee-owned B Corporation and provides a range of complementary clean energy solutions that deliver financial savings, carbon reductions and energy independence for clients in all industry sectors – for the public sector this includes the likes of Bristol City Council, Portsmouth and Wiltshire Council, South Bristol Community Hospital and Montpellier Health Centre.

Established in 1995, Solarsense has completed more than 20,000 renewable energy installations and is responsible for powering some of the UK's leading organisations. It places great emphasis on the quality of its renewable energy installations and has won more than 20 national awards in recognition of its unparalleled expertise, excellent customer service, and pioneering renewable energy projects.



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