APPENDIX II

Department for Energy Security & Net Zero

Case studies on wider benefits of solar to groups across society, including for students and community organisations

Case Study: Educational Site Visit Programme

Projects: Different regions of England and Wales, including Berwick (Sussex), Emberton (Milton Keynes), Glebe Farm (Bedfordshire), Pick Hill (Wrexham), Wyld Meadow (Devon), and Bilsham (Sussex). **Developer:** Various **Asset Manager:** NextEnergy Capital **Owner**: NextEnergy Solar Fund

In 2023, NextEnergy developed an educational programme to offer first-hand learning experiences for students. The programme was designed with a dual purpose: to inspire the next generation and educate them on the multiple benefits of renewable energy.

The programme encompassed site visits where students were introduced to the concepts of solar photovoltaics, renewable energy, climate change, and biodiversity. These visits served as a platform for students to gain hands-on experience and understand these concepts in a real-world context.

To reinforce the learning, follow-up classroom sessions were also arranged, where students applied their newfound knowledge to create electric powered vehicles. The programme was implemented across various regions of England and Wales, with a total of 23 site visits conducted. This resulted in more than 1000 pupils being given the opportunity to visit and learn about solar.

Case Study: Biodiversity

Project: Wilburton Solar Farm, Cambridgeshire, 5MW, commissioned 2011. **Developer**: Abbey Renewables **Asset Manager**: Lightsource bp

Lightsource bp developed a tailored planting plan and various wildlife habitat enhancement measures for the 31-acre solar farm which is now home to a wide range of different species. Banks of wildflowers behind each row of panels harbour an abundance of insect activity, including several species of butterfly. Notable sightings

include brown hares, whose population has decreased by more than 80% in the last century, and English partridges, thriving in the solar farm's habitat with plenty of shelter, insects to eat and protection from predators.

Case Study: Community Energy Projects: Rooftop Solar

Project: The North Kensington Community Energy (NKCE) Project, 2018 onwards.

Established in 2018, NKCE is a community-led initiative to install solar panels on the roofs of local community spaces. In March 2019, it installed 306 solar panels on Avondale Park Primary School, the Dalgarno Trust Community Centre and Thomas Jones Primary School. In October 2020, they installed a further 485 solar panels on Westway Sports Centre. The energy generated is sold to the sites at a discounted rate with any surplus exported to the grid. The NKCE Community Benefit Fund is anticipated to raise £70,000 to support local projects. They have also provided free workshops teaching children and adults in the borough how to make their own solar powered mobile phone chargers.[1]

Case Study: Community Energy Project: Rooftop Solar

Project: Harris Lowe (formerly Capital City) Academy, Willesden, North-west London, 300kWp, 2022. **Developer**: Brent Pure Energy

Brent Pure Energy is a community benefit society delivering renewable energy schemes in the London Borough of Brent. Harris Lowe Academy was their third and most ambitious project to date. Brent Pure Energy raised £195,000 to supply and fit 659 solar panels, expected to save the school in excess of £10,000 per year. The academy's foyer is home to a screen which broadcasts live data on the renewable energy generation statistics and carbon savings, educating pupils on the benefits of solar.[2]

[1] https://www.repowering.org.uk/north-kensington-community-energy/
[2] https://brentpureenergy.org.uk/

Solar Misconceptions

General Misconceptions

Solar doesn't work well in the UK	Solar is very effective in the UK as solar panels can operate efficiently even without direct sunlight. Whilst they are most effective on clear, sunny days, recent technological advancements mean they perform well on cloudy days too.[3] Annually, solar power generation is extremely reliable as the number of daylight hours can be predicted. Advances in machine learning[4] make it possible to forecast energy generation (or yield) from a solar system.
Solar isn't cost effective	Solar is a versatile technology. The costs of solar have plummeted in the past decade, helping it to become one of the cheapest technologies for new electricity generation in the UK[5] and globally. In parallel, the efficiency of solar panels and other system components continues to improve.[6] The combination of these factors make solar a great choice for households and businesses looking to reduce their electricity bills.
Solar panels are not ethically sourced	UK businesses and solar developers are expected to do everything in their power to remove any instances of forced labour from their supply chains Legislation and guidance are already in place to help businesses take action against modern slavery, however, the UK Government are working collaboratively across Whitehall on this important issue to see where we can go further. While the supply chains for solar panels are complex and difficult to audit, the UK and European industry have worked together to establish the Solar Stewardship Initiative[7]. Its mission is to work collaboratively with manufacturers, developers, installers and purchasers across the global solar value chain to foster responsible production, sourcing and stewardship of materials. The UK Government will assess and monitor closely the effectiveness of the SSI as the scheme is rolled out, alongside other relevant standards, existing measures and other policy tools, and will take further action if

[3] https://www.sungoldsolar.com/best-solar-panels-for-cloudy-days/
[4] https://doi.org/10.1016/j.rser.2019.02.006
[5] https://www.gov.uk/government/publications/electricity-generation-costs-2023
[6] https://www.iea.org/reports/solar-pv-global-supply-chains
[7] https://www.solarstewardshipinitiative.org

	necessary .
Solar panels aren't recyclable and will end up in landfill	Solar panels can be reused and recycled. The typical lifespan of a new silicon-based solar panel will be around 40 years. Earlier panels are expected to last at least 25 years. This means that some of the first solar systems to be installed in the UK are around halfway through their intended lifespan. There are already organisations in the UK which specialise in solar reuse and recycling, and as the volume of solar panels ready to be recycled increases, more are expected to begin providing such 'end-of-life' services. Second-life markets may also develop for older models which still work well.
Solar panels produce more carbon in manufacturing than they save	As with all manufactured products, some greenhouse gas emissions, such as carbon dioxide, are emitted during the manufacturing of solar equipment. These include the panels themselves, as well as the cables, mounting systems, and batteries installed alongside them. However, producing energy with solar panels emits no pollution or greenhouse gases. We can estimate how long it will take for the clean energy produced by the solar panels and auxiliary equipment to offset the fossil-fuel derived energy used in their manufacturing. This amount of time is called the 'energy payback time'. In the UK, the energy payback time is estimated to be currently around 1.5 years for an unshaded, south-facing roof using typical silicon solar panels produced in China.[8] Solar panels typically come with a 25-30 year power warranty,[9] and can produce power for many years beyond this. This means that over their lifetime, each panel will generate zero-carbon and zero-pollution electricity for more than 20 years after any polluting energy used in its production has been paid back.

Domestic Rooftop Misconceptions

Solar PV will only work for me if I've got a south-facing roof	While an unshaded, south facing roof is ideal for maximum electrical output, solar panels can still provide a similar return on investment in different orientations than due south. Firstly, if your roof has the typical pitch between 30-50 degrees, a south-west or south-east facing roof could receive over 90% of the light energy each year.[10] This can also be beneficial if you consume most in the

[8] https://www.ise.fraunhofer.de/en/publications/studies/photovoltaics-report.html (p35-37)
[9] https://www.cell.com/joule/pdf/S2542-4351(21)00496-7.pdf
[10] https://www.viridiansolar.co.uk/resources-1-3-tilt-and-orientation.html

	morning (south-east) or evening (south-west), as these orientations could generate more energy at these times as opposed to midday (south).[11] This can result in you using more of the energy you produce, rather than exporting it. This concept also extends to splitting your solar panels between the east and west facing roofs. The light energy received can drop to between 75-80%, but the energy will be generated in the morning and evening when you are most likely to use it. Additionally, if you have a smaller roof, splitting panels between two surfaces could offer you more space for panels, which could enable greater bill savings over the system's lifetime.
A solar PV installation will negatively affect the value of my property	Research published in 2022 highlighted that installing a solar energy system could increase a typical home's sale price by at least £1,800.[12]
My home is at an increased risk of fire with a solar PV installation	When installed correctly, solar panels are very safe and pose a minimal fire risk. In fact, solar panels are less of a fire risk than common household appliances, such as the toaster, washing machine, dryer and dishwasher.[13]
Installing solar PV isn't worth it	The average domestic solar PV system is 4kW and costs around £6,000 with costs dependent on factors such as the size of the system, accessibility and the type of solar product chosen. Whilst the upfront cost of installing solar is not insignificant, costs have dropped significantly over the past decade. The Smart Export Guarantee (SEG) enables households with solar panels to receive payment from electricity suppliers for excess electricity exported to the National Grid.
I need planning permission to install solar PV	Solar panels are considered 'permitted development'. This means that in many cases building works can be carried out without having to submit a planning application (for rooftop solar). However, exceptions apply and it's best to check with your local planning office for guidance. If you live in a listed building, conservation area or national park, additional restrictions may apply.
Solar panels will damage my roof	When solar panels are retrofitted to your roof, they are mounted on a frame which is attached to the rafters, so the array doesn't weigh on the

[11] https://energyeducation.ca/encyclopedia/Solar_panel_orientation
[12] https://solarenergyuk.org/resource/the-value-of-solar-property-report/
[13] https://www.gov.uk/government/publications/fire-incidents-involving-solar-panels

	roof surface.
Having solar panels installed will be disruptive	Most domestic solar installations are completed within 1-2 days, with scaffolding erected around the property for a short time around this. During installation, most of the work happens on the rooftop, with some wiring work, usually in the loft.

Commercial Rooftop, Ground Mount / Utility Scale Misconceptions

Solar is a threat to food security	The biggest threat to food security is crop failure due to climate change[14] and solar farms are helping to tackle this directly. Solar and farming can be complementary, supporting each other financially, environmentally and through shared use of land'. Supported by the National Farmers' Union[15], solar farms provide a valuable source of diversification income for farmers. This can improve the economic viability of farming businesses and make them more resilient to climate change impacts. Many solar projects are designed to enable continued livestock grazing. Additionally, the industry of agrivoltaics is developing, in which solar is integrated with arable farming in innovative ways. In some cases, solar panels can even be placed strategically to protect crops from harsh weather patterns, promote water retention and minimise evaporation and extend growing seasons. National planning guidance and policy for England is clear that wherever possible, developers should utilise brownfield, industrial, contaminated, or previously developed land. Where the development of agricultural land is shown to be necessary, lower-quality land should be preferred to higher-quality land Recent UK Government analysis shows that even under the most ambitious deployment scenarios set out in the Solar Roadmap, and in the unlikely case that all new capacity coming forward is ground mount, it would only occupy up to around 0.6% of UK Utilised Agricultural Land by 2030 (less than that used by golf courses in Great Britain). Solar farms are a temporary and completely reversible land use with restoration of land at the end of the solar farm's life usually guaranteed by a planning condition.
Solar is industrialising	Solar farms are carefully designed to have a minimal visual impact. They can usually be easily screened by hedges and other vegetation, and

[14] https://www.gov.uk/government/statistics/united-kingdom-food-security-report-2021/united-kingdom-food-security-report-2021-theme-2-uk-food-supply-sources
[15] https://www.nfuonline.com/updates-and-information/solar-farms-and-the-british-landscape/

the countryside	visual impact is carefully considered during the planning process. They operate almost silently, without pollution, and once operational generate very little maintenance traffic.
Panels create high levels of glint and glare	Solar panels are designed to absorb light, not reflect it and they are considered safe to install next to airports and major roads.[16] Glint and glare is carefully considered in the planning process and can usually be easily mitigated with considered design and good screening.
There are no benefits for local communities	Local communities have a vital role to play in helping us to deliver our net zero and energy security ambitions and it is important that they can benefit from, and participate in, the deployment of new low carbon energy technologies in their local areas Solar farms are developed in consultation with members of the communities in which they're proposed, helping to ensure the project brings benefits to the local area. Most solar farm developers include community benefit packages which can include a fund to support local social and environmental projects or educational initiatives. They may also include benefits-in-kind such as new footpaths and bridleways or the installation of communal EV charging points. Through the Clean Power Action Plan, the UK Government has made it clear that where communities host clean energy infrastructure, Government will ensure they benefit from it. Government published a working paper on 21 May 2025[17] seeking views on introducing a mandatory community benefit fund scheme for low carbon energy infrastructure including solar. The working paper is also a call for evidence seeking views on facilitating shared ownership of renewable generation infrastructure. In the meantime, SEUK will publish later this year, a voluntary community benefits protocol and guidance for solar. Large-scale solar developments can also bring wider socio-economic benefits to local people and businesses, including increasing local employment and creating regional supply chains. Like all businesses, solar farms pay business rates to local authorities, funding local services. Community solar farms allow local people to own a share of the solar farm, greatly increasing the revenues that are retained locally, while some commercial solar farms offer community shared ownership.
Solar does not contribute to the UK economy	Solar power plays a significant role in the UK economy. Beyond electricity generation, the deployment of both ground-mount and rooftop solar creates a variety of local job opportunities, spanning installation,

[16] https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3
[17] https://www.gov.uk/government/publications/community-benefits-and-shared-ownership-for-low-carbon-energy-infrastructure

	maintenance and manufacturing. Ground mount developers pay business rates to local authorities, providing them with additional income, whilst rooftop solar lowers electricity bills for homeowners and businesses.
Solar farms are bad for wildlife	Ground-mounted solar projects can deliver benefits to the environment and make significant contributions to addressing biodiversity loss in the UK.[18] In addition to providing clean, affordable energy, they can improve local biodiversity by supporting new and existing plant and animal life. Biodiversity net gain (BNG) is a legal requirement under the Environment Act 2021 and associated regulations. This means that, to acquire planning permission, biodiversity must increase by 10% compared to what was on the site previously.[19] Well-designed and well managed solar farms can support a range of ecosystem services including agriculture (sheep grazing, supporting pollinators species), regulate air quality, mitigate flood risk, create new habitats and reduce carbon emissions.[20] This is why organisations such as RSPB have expressed their support for solar farms.[21]
Solar farms are bad for local property prices	Whilst we are not aware of any specific reports examining the influence of UK solar farms on local property prices, there is no reason to anticipate a negative impact. Once operational, solar farms are well screened, and operate quietly, without emitting odours, pollution or causing traffic disruption.
Large batteries on solar farms pose an unacceptable fire risk	Battery Energy Storage Systems (BESS) in the UK must comply with strict health and safety regulations, both for installation and operation. These systems, housed in units around the size of a shipping container, incorporate safety features like temperate control, fire detection, and continuous monitoring so that if any problems arise they are tackled quickly and the system can be isolated. It is a priority of the UK Government to ensure that an appropriate, robust, and future-proofed health and safety framework is sustained as the industry develops and storage deployment increases. This framework is kept under review to respond to changing circumstances.

[18] https://nbn.org.uk/news/state-of-nature-2023/
[19] BNG is a legal requirement under the Environment Act 2021 and associated regulations. This means that, to acquire planning permission, biodiversity must increase by 10% compared to what was on the site previously. This is currently only the case for projects under 50MW capacity but will be extended to the NSIP regime in due course.
[20] https://solarenergyuk.org/resource/natural-capital-best-practice-guidance/
[21] https://community.rspb.org.uk/ourwork/b/actionfornature/posts/working-with-solar-developments-to-tackle-the-climate-and-ecological-emergencies

	Recent reviews have considered both the planning system and environmental permitting regulations. Fire risk is taken into account in the design of a solar farm and is now assessed in the planning process, with the input of local fire and rescue services. The Department for Levelling Up and Housing Communities (MHCLG) recently updated Planning Practice Guidance, which encourages battery storage developers to engage with local fire and rescue services, and local planning authorities to refer to the guidance published by the National Fire Chiefs Council. The Department for Environment, Food & Rural Affairs (Defra) intends to consult on including battery storage systems in the environmental permitting regulations at the earliest opportunity. Grid-scale lithium-ion BESS are also covered by stringent regulatory requirements to ensure safety from production to installation. The UK Government is currently working with the industry-led Storage Health and Safety Governance Group to take steps including supporting the development of a product and installation Publicly Available Specification for domestic/small-scale battery storage and developing guidance for grid-scale storage.
Most people wouldn't want a solar farm in their community	The level of support for solar is consistently high, with UK Government's own polling showing that 88% of the public indicated they support solar.[22] When asked if they would be happy for a solar farm to be developed in their local area, 54% indicated they would be happy, 27% wouldn't mind and 8% would be unhappy.[23] Note, the remaining 11% answered as not applicable. Research carried out by Copper Consultancy also shows that support for solar farms is greater among people who live near them – and rises after they are built.[24]

[22] https://www.gov.uk/government/statistics/desnz-public-attitudes-tracker-spring-2024/desnz-public-attitudes-tracker-renewable-energy-spring-2024-uk#support-for-different-types-of-renewables

[23] https://assets.publishing.service.gov.uk/media/65fc5d4d65ca2f00117da828/DESNZ_Public_Attitudes_Tracker_Winter_2023_Energy_Infrastructure_and_Energy_Sources__Revised_.pdf

[24] https://copperconsultancy.com/wp-content/uploads/2025/03/Solar-Energy-Report-2025.pdf