The countryside charity
Hertfordshire

CPRE HERTFORDSHIRE POLICY STATEMENT ON SOLAR ENERGY INSTALLATIONS IN THE COUNTRYSIDE

'Meeting our energy goals should not be used to justify the wrong development in the wrong location and this includes the use of high-quality land. Protecting the global environment is not an excuse to trash the local environment.' (Ministerial statement, 2015)
https://questions-statements.parliament.uk/written-statements/detail/2015-03-25/HCWS488

1. BACKGROUND AND PURPOSE

1.1 The need for a policy statement on large ground-level solar energy installations and associated battery energy storage systems (BESS) arises due to the increasing number of planning applications being made throughout Hertfordshire on open countryside, much of which is designated as Green Belt, Chilterns National Landscape (CNL) and within Local Plans as Rural Area Beyond the Green Belt. CPRE Hertfordshire makes representations on planning applications in line with its objectives to protect the countryside and rural life and increasingly rural communities are concerned about the potential damage caused by large-scale ground-level solar energy installations.

1.2 This paper identifies the nature and scope of the issues relating to solar energy installations in the countryside. It recommends reasoned policy positions with justification to assist individuals and communities in making representations to local planning authorities (LPAs) regarding planning applications for the inappropriate development of ground-level solar energy installations.

1.3 How solar energy development proposals are handled in the planning system depends on their installed capacity. Presently, those up to 100 Megawatts (MW) (typically up to approximately 100 hectares (250 acres) in area) are determined by LPAs, guided by the National Planning Policy Framework (NPPF), the Planning Practice Guidance (PPG) on Renewable and Low Carbon Energy, and Local Plans: those over 100MW are determined by the Secretary of State, through the Development Consent Order (DCO) process guided by national policy statements on energy infrastructure.

2. ISSUES

2.1 Relevant issues are identified and policy recommendations made under the following headings:

- National policy on sustainable energy
- Solar energy options
- Ground-mounted solar energy installations
- Agricultural land
- Landscape and visual impact
- Climate change
- Biodiversity and wildlife
- Manufacture and decommissioning
- Fire hazard
- Reinstatement
- Community provision
- Rooftop generation

3. NATIONAL PLANNING POLICY ON SUSTAINABLE ENERGY

3.1 The Government is committed to achieving net zero emissions by 2050 which requires a fundamental change in our sources of energy including the generation of electricity. Certain renewable energy sources, if not properly controlled, can have serious consequences for our natural environment, as alluded to in the Ministerial Statement above which is as relevant now as it was ten years ago.

3.2 National policy on renewable energy in the Green Belt is noted in Paragraph 160 of the NPPF:

> *"160. When located in the Green Belt, elements of many renewable energy projects will comprise inappropriate development. In such cases developers will need to demonstrate very special circumstances if projects are to proceed. Such very special circumstances may include the wider environmental benefits associated with increased production of energy from renewable sources."(NPPF Dec 2024)*

3.3 Paragraph 161 of the NPPF states:

> *"161. The planning system should support the transition to net zero by 2050 …It should help to:……support renewable and low carbon energy and associated infrastructure" (NPPF Dec 2024)*

3.4 Planning Practice Guidance (PPG) on "Renewable and low carbon energy" notes that:

"Planning has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environmental impact is acceptable." (Para: 01 Ref ID: 5-001-2014030).

3.5 PPG also notes that:

"The deployment of large-scale solar farms can have a negative impact on the rural environment, particularly in undulating landscapes."

Further guidance is provided by PPG paragraph: 013 Reference ID: 20150327 and for Battery Energy Storage Systems (BESS) in subsequent paragraphs.

4. SOLAR ENERGY OPTIONS

4.1 Cumulatively, photo-voltaic (PV) panels can make a significant contribution to our electricity supply but the priority for their provision should be roof-top rather than ground-mounted, to include existing and proposed large commercial and agricultural buildings, as well as on public and community buildings and housing (see Roof-top generation, Section 14 below). Large scale ground-level installations require careful consideration and have significantly greater impacts than roof mounted options.

4.2 The Government has estimated that there are currently 250,000 hectares (approx. 625,000 acres) of south-facing commercial roofs in the UK (Part 2 of the Government's UK Solar PV Strategy and several other sources including BRE Group). CPRE Hertfordshire recognises that PV for buildings is the area where the most rapid technological advances, such as thin-film PV and PV tiling, are being made which provide more efficient roof-top energy generation.

4.3 Roof-top PV associated with buildings has the added benefit of providing generation at the point of use, thereby reducing transmission and distribution losses, and the impact of associated infrastructure. Local authorities can support roof-top PV generation through planning conditions to mandate it on new build and major refurbishments, where practicable.

5. GROUND-LEVEL SOLAR ENERGY INSTALLATIONS

5.1 Solar 'farms' use ground-level solar PV panels to generate electricity. Sites are typically surrounded by high security fencing and CCTV. They will also include prominent overhead power line infrastructure to connect to the grid a proliferation of large metal container-like buildings housing transformers, inverters and similar technical equipment and battery storage.

5.2 They can cover large areas of land, usually in rural locations. Approximately five acres of land is required for every megawatt (MW) of installed capacity and increasingly, Battery Energy Storage Systems (BESS) are proposed, with or without accompanying ground-mounted installations. It is essential that the siting, design and landscaping of solar energy installations avoid adverse impacts on the countryside.

6. AGRICULTURAL LAND

6.1 The loss of agricultural land to large-scale ground mounted energy installations has implications for potential reduction in the security of food production. The Building

Research Establishment (BRE) "Planning Guidance for the Development of Large Scale Ground Mounted Solar PV Systems" (October 2013) notes that large projects should avoid the use of Best and Most Versatile cropland where possible.

6.2 National policy in the NPPF notes, in paragraph 187, that

"187. Planning policies and decisions should contribute to and enhance the natural and local environment by: ……

b) recognising the intrinsic character and beauty of the countryside……..including the economic and other benefits of the best and most versatile agricultural land….

6.3 Solar energy promoters regularly assert that land used for solar energy can also be used for agricultural production post installation, typically sheep grazing. This is clearly both insignificant and out of proportion with the magnitude and variety of agricultural production lost to ground mounted installations, especially when compared to the productivity of high-grade arable land.

7. LANDSCAPE AND VISUAL IMPACT

7.1 The loss of high-quality farmland is only one of many issues regarding damaging impacts, and of primary importance is the potential harm that these developments cause to the landscape. Fields containing continuous rows of metal and glass bring a dramatic industrial scar to an otherwise rural environment which is further damaged by perimeter security fencing, floodlighting, CCTV systems, overhead line infrastructure and metal container-like buildings housing associated apparatus including the battery storage units.

7.2 The scale and appearance of ground-mounted solar panels are inevitably obtrusive on the rural landscape, generally being metal and glass structures, geometric and industrial in character, and causing considerable sun glare from the panels. Together with the associated high fencing, buildings and other structures, including BESS, the impacts can be enormous in terms of visual intrusion

7.3 Local planning authorities have policies in place within Local Plans to ensure that important landscapes are not compromised, particularly with regard to 'designated' and 'valued' landscapes such as Green Belt, National Landscapes and Rural Area Beyond the Green Belt (RABGB). Traditional views, often framing the setting of historic buildings and other heritage sites, are destroyed and the character of footpaths is altered for ever with the most unsuitable sites being on sloping land highly visible from the surrounding landscapes.

8. CLIMATE CHANGE

8.1 Increasingly, the role of countryside and undeveloped land is recognised as contributing to the amelioration of the damaging effects of climate change. The earth is our biggest carbon store and the use of rural land, including open land, forest and woodlands, is increasingly considered as being key to the promotion of carbon sequestration.

8.2 A further concern is the potential impact on the quality of the soil when huge areas are covered with solar panels which will provide permanent shade and change the way that rainwater falls on the ground. It is unknown what impact these environmental changes will have on its ability to continue to store carbon and could potentially be a counter-productive feature in the battle to reverse climate change.

9. BIODIVERSITY AND WILDLIFE

9.1 It is recognised that agricultural land is frequently not biodiverse, with extensive monoculture. Taking land out of agricultural use can have benefits for wildlife in those cases where the monoculture of crops is removed, allowing an element of bio-diversity to re-establish.

9.2 The absence of ploughing increases the earth worm population and insects flourish where grass is left to grow but such advantages are also compromised by the damage to traditional habitats through development of the industrial plant and infrastructure associated with ground-mounted solar energy generation. The substitution of large areas of monoculture with an industrialised landscape of metal and glass panels is a retrograde step and in many cases agricultural landscapes are varied and include a range of habitats.

9.3 The loss of a varied agricultural landscape, and enclosure by fencing, for example, is particularly damaging for ground nesting birdlife, and nomadic species respectively. Security fencing surrounding large areas of land removes traditional pathways for transitory animals and bird deaths are a common occurrence as large areas of glazing are mistaken for water.

9.4 Grass within solar arrays has to be mown and the land is essentially changed from rural to industrial use. Chemicals are used to control weeds and pests and habitats and the nature of local wildlife is consequently altered.

9.5 Research undertaken by CPRE Hertfordshire indicates the wide-ranging impacts of large solar energy installations which destroy wildlife corridors and nesting and feeding habitats. Elizabeth Hamilton has compiled extensive academic and other research relating to the impacts of solar installations on bats, birds and other protected species.

9.10 It is clear that further research needs to provide more evidence of the effects of ground nesting birds such as the Stone Curlew and Lapwings as well as on the hunting grounds for Marsh Harriers, Buzzards and Barn Owls. Once gone such habitats cannot be easily

recovered and removing or attempting to relocate these established habitats has disastrous consequences for the species within them.

10. MANUFACTURING AND DECOMMISSIONING

10.1 Considerable amounts of energy and materials such as rare earths are required for the manufacture of photo-voltaic panels and batteries, predominantly in China. These issues, together with transport costs and environmental impacts should be considered as part of the wider environmental impact of solar energy installations.

10.2 Solar panels degrade slightly each year and so become inherently less efficient. After 30 to 40 years of operating life, they will produce a small fraction of the original output, and the scheme will become uneconomic well before the end of the proposed period. Similar issues relate to battery operation.

10.3 As solar energy companies usually lease their sites for periods of between 25 and 40 years it is highly likely that the PV panels will become redundant before the expiry of the lease term. It is probable that more efficient sources of electricity will make the panels obsolete and much of the land will no longer be required.

10.4 Decommissioning of solar energy sites at the end of their useful life (generally quoted as 35 to 40 years but likely to be much less as technology progresses) also poses several issues which should be taken into account. Applicants rarely provide information on how panels and batteries will be recycled or how numerous tonnes of toxic waste will be disposed of without being a legacy for future generations and this should be a requirement of any planning application.

11. FIRE HAZARD

11.1 A specific concern is the potential fire hazard caused by associated infrastructure facilities for solar energy generation. Battery Energy Storage Systems (BESS) are intrinsic elements of large solar installations and use lithium-ion batteries that require specialist treatment in the event of fire that are not available to Hertfordshire Fire and Rescue.

11.2 While BESS may offer significant advantages for energy storage in solar farms, they require meticulous design, adherence to safety standards, and proactive management to mitigate fire risks and ensure safe operation. Such fires do not need oxygen, are extremely difficult to extinguish, and generate highly noxious fumes. The rural locations of this infrastructure also present challenges for fire control which need to be taken into account.

11.3 In the event of a fire and water being used by the fire authorities to extinguish and reduce the heat levels the consequential water run-off will be contaminated and have

the potential to damage farmland and local water courses. There have also been recent regulatory actions being planned to deal with the acknowledged risks of the battery installations.

11.4 The Department for Environment, Food & Rural Affairs (DEFRA) plans to integrate grid-scale BESS into the Environmental Permitting Regulations, aiming to enhance oversight and ensure compliance with environmental and safety standards. This move underscores the importance of adhering to evolving regulations and implementing best practices in BESS deployment and operation.

12. REINSTATEMENT

12.1 Energy companies generally accept a reinstatement clause in the lease granted but there is concern that such a liability so far into the future may be worthless. Where PV panels have become obsolete it is likely that the operating company will have ceased to exist, and in that case, and where any bond is worthless or inadequate, there will be uncertainty as to whether the landowner will finance and undertake any reinstatement.

12.2 There is considerable uncertainty as to whether these sites will or can ever be returned to agriculture or to a natural state. The cost of de-commissioning and re-cycling will outweigh the value of what is created leaving an abandoned and derelict site. Such sites could then be classified as 'brownfield' with pressure to redevelop for housing despite their often-unsustainable location.

12.3 A related issue is the commercial basis of ground-mounted projects and the incentives offered to land-owners to make their land available. Initial lease offers are often generous and appear attractive but the continued financial terms are likely to reduce as more projects come online and the unit price for electricity falls.

13. COMMUNITY PROVISION

13.1 Solar energy generation should be an integral part of existing and all new house and commercial property construction as an alternative to ground-mounted installations. The Solar Trade Association states that there are 625,000 acres of south-facing commercial roof-tops that are not yet being utilised in the UK for solar power.

13.2 It is estimated by the UK Warehousing Association that warehousing alone has the capacity for 15GW of new solar. This could reduce business annual electricity costs by between 40 and 80% according to their latest research

13.3 This could provide 50% of the UK's electricity need and provision should be focussed (in line with Government guidelines) on brownfield sites or areas where it will have limited impact on communities and the natural environment. CPRE Hertfordshire encourages

community-led and owned projects, provided they adhere to the principles and approach set out in this statement.

13.2 CPRE Hertfordshire has concerns about developers offering "goodwill" payments to communities, which can bring the planning system into disrepute. Nor is it good public policy to secure the support of the immediate community through such one-off payments when developments potentially affect a landscape enjoyed by a much wider population, including future generations.

13.3 It is understood that the Government is committed to making certain that local communities benefit from the installation of energy technologies. Renewables UK, the trade association, has defined renewable energy community benefit as "a voluntary commitment on behalf of the developer to put money into a fund which is made available to any community project agreed locally".

13.4 Funds sit typically in a local trust fund and from available data the level of payments to communities seems to range from £500 to £3000 per MW year for the duration of the scheme. Community payments and shared ownership leading to cheaper fuel tariffs may be encouraged but such schemes should be negotiated with full participation of the local community.

14. ROOFTOP GENERATION

14.1 Nationally, CPRE has been engaged in a major campaign promoting the use of rooftops for solar energy generation which could reduce significantly the need to use open countryside. CPRE Hertfordshire supports fully this important campaign particularly in light of the increased numbers of large-scale commercial buildings in Hertfordshire such as warehouses, data centres and gigafactories which can provide suitable locations for solar panels.

14.2 Further details of the campaign and the national petition can be found on the national CPRE website (www.cpre.org.uk) and in the report: "A rooftop revolution: turning possibility into reality" (CPRE; May 2023).

16. POLICIES

16.1 The following policy statements and justifications reflect the concerns of CPRE Hertfordshire and should be used in making representations on planning applications, and in discussions with providers and other bodies involved in such developments.

Agricultural land

The use of 'best and most versatile' agricultural land (Grades 1, 2 and 3a) for large ground mounted solar installations should be avoided in all circumstances.

16.2 CPRE Hertfordshire believes that high-quality agricultural land (Grades 1, 2 and 3a), specifically protected in the National Planning Policy Framework (NPPF paragraph 187), should not be used for solar energy generation. This reflects the growing importance of food security and there may also be a case for protecting Grade 3b or other land that makes an important contribution to the local land-based economy, particularly in areas dominated by low grade agricultural land.

16.3 CPRE Hertfordshire recognises that solar energy installations may increase farm incomes in areas of marginal farming but higher grades of agricultural land are usually arable so the availability of land within a solar installation for grazing should not be used to justify the loss of such valuable land. CPRE Hertfordshire believes robust research and evidence on the effect of solar installations on the productivity of existing grazing land is needed.

Brownfield and rooftop use

The redevelopment of brownfield and previously developed sites for roof-top solar energy generation should be encouraged.

16.4 Where brownfield land is suitably located for housing, roof-top solar energy generation should be integrated. Planning conditions should require the inclusion of roof-top PV panels in the specification of new commercial developments and, where appropriate (not in Conservation Areas or similarly sensitive settings), new housing schemes.

The use of the roofs of large commercial warehouses, data centres and gigafactories for roof-top energy generation should be required.

16.5 The proliferation of large-scale buildings with extensive flat roofs provides ideal opportunities for roof-top energy generation. Building Regulations should require this provision in all new construction and the Government should consider assistance for retro-fitting of existing buildings.

Landscape

Applications relating to proposed large solar installations in the countryside should be accompanied by a comprehensive landscape impact appraisal, and development which results in the loss, or change in character, of landscapes or landscape setting and views should be refused.

16.6 Solar installations should not adversely affect the character of the landscape, nor should their siting necessitate the removal of characteristic landscape features such as

hedgerows, trees and copses. They should be located to ensure minimum visibility in the wider landscape, taking advantage of local topography and natural vegetation.

16.7 Visual impacts are likely to be greater in hilly and undulating areas and less so in flatter areas where overlooking is less easy. Screening by vegetation can be seasonal and may not be in place for the lifetime of the scheme; new planting should take this into account and should be effective from the outset of the scheme.

Cumulative impact

Planning decisions should take account of the cumulative impacts on landscape character and quality of multiple installations.

16.8 Landscape harm arises from the cumulative impact of multiple schemes that in combination can change the character of the countryside. CPRE Hertfordshire believes that assessment of cumulative impacts should take account of multiple solar energy installations, including smaller PV developments, associated BESS and additional increments on existing solar energy installations.

16.9 It should also consider other energy infrastructure such as wind turbines visible in the landscape, taking account of simultaneous visibility and sequential effects on visibility. CPRE Hertfordshire believes that a broader approach to cumulative impacts should be required by LPAs to ensure that cumulative effects are adequately taken into account.

Protected areas

Ground mounted solar energy installations should not be permitted in designated protected areas such as Green Belt, National Landscapes (formerly AONB) and Rural Areas Beyond the Green Belt.

16.10 Proposals will need to demonstrate that they will not compromise the special qualities of these designated areas. They should not harm the purposes of Green Belts or reduce their openness, nor should they be permitted on, or cause damage to Sites of Special Scientific Interest (SSSIs) or Special Areas of Conservation, or adversely impact on Scheduled Ancient Monuments, nationally or locally listed buildings, Conservation Areas, Registered Parks and Gardens, or locally valued landscapes and non-designated heritage assets defined in Local Plans and Neighbourhood Plans.

Public and residential amenity

Proposals should avoid harm to views from publicly accessible land and the surroundings of settlements, and applications that result in the significant change in character of footpaths or other public rights of way should be refused.

16.11. Security fencing around solar farms is visually intrusive, particularly at close quarters, especially where footpaths cross fields and it is proposed to provide security fencing to either side. Solar farms should not be sited where they are directly overlooked by housing or where they would detract from important views.

16.12. A full land management plan should accompany all applications providing detailed information on the way in which the land will be maintained (grass cutting regimes; any use of pesticides and insecticides; animal grazing proposals etc) and related conditions should be applied to any permissions granted.

Biodiversity and wildlife

Solar installations should avoid adverse effects on biodiversity and wildlife and deliver positive biodiversity gains.

16.13. Large-scale proposals including overhead power line infrastructure can impact detrimentally on biodiversity and wildlife, for example, covering bat foraging areas, preventing the movement of animals and restricting wildlife corridors. A wildlife impact assessment should be required and any loss or changes to habitats should be properly mitigated.

16.14. There may be opportunities to increase biodiversity through planting suitable hedgerows and increasing native wild flowers which, amongst other things, may increase habitat for pollinating insects. Any proposed new tree or hedgerow schemes should require native species plants to ensure effective screening at the earliest possible date.

Reinstatement

Full re-instatement proposals should be required, including as part of a legal obligation between the landowner and the local planning authority to cover the full cost of decommissioning and proper reinstatement, to be entered into prior to commencement of any works.

16.15. A reinstatement plan which identifies all of the key elements required to return the land to its original or approved alternative state should be prepared and form a part of any planning application. This should provide details (related to best current practice) of the work required, the opportunities for recycling and an estimate of current cost.

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