

Issue

1.

Context

3. Main interests for Defra regarding solar PV deployment relate to:
 - Effects on food production
 - Landscape and visual impacts
 - Biodiversity
 - Rural employment
 - Farm diversification
 - Links to CAP payments
4. A summary of the scale of expected impacts on each of those interests is given in the attached submission, dated 20 March 2014.
5. DECC published the [Solar PV Strategy Part 2](#) in April 2014, which sets out the Government's vision for Solar PV in the UK. The strategy aims for a seven fold increase in solar PV by the early 2020s. As well as contributing to greenhouse gas and renewable energy targets, DECC sees benefits for jobs and cushioning consumers from rising fuel costs. In public attitudes surveys, solar receives the highest approval rating of all renewables at 85 per cent.

Consideration

7. Potential concerns have arisen regarding a recent rapid increase in ground-based solar PV deployment. For Defra, these relate to disruption to food production, agricultural productivity, impacts on biodiversity and effects on landscape and visual amenity.
8. These concerns are currently being addressed through the following channels:
9. **Emphasis on roof-based deployment in the DECC Solar PV Strategy**

The strategy emphasises a move away from large greenfield development towards greater deployment on medium sized commercial and industrial buildings, owing to their advantages in terms of economies of scale, the ability to use the power generated on site and reduce energy bills, and potentially lower impacts on landscape and visual amenity.

10. CLG consultation on permitted development rights for solar on commercial roof-tops

The solar strategy states that CLG is working with DECC on proposals to introduce permitted development rights for the installation of solar PV roof-top systems up to 1MW on commercial buildings without the need for a full planning application. CLG will hold a public consultation on these proposals this summer.

11. CLG revised planning guidance for renewable energy and particular guidance for solar farm planning applications

CLG published [revised planning practice guidance](#) for renewable energy in March 2014 that makes clear that the need for renewable energy does not automatically override local concerns and that any impacts on visual amenity, cultural and heritage landscapes must be acceptable. While there are notable numbers of applications in and around protected landscapes, planning guidance states that permission should be refused for major developments in such areas except in exceptional circumstances.

At the same time, CLG also set out [particular factors](#) that a local council should consider when assessing planning applications for solar farms. These include making effective use of brownfield land, minimal use of agricultural land and clear emphasis on the consideration of visual impacts of solar farms.

12. DECC proposals on changes to subsidy rates for solar PV

Government financial support for solar is provided via the Renewables Obligation for larger installations and feed in tariffs (FiTs) at small scale.

DECC recently [consulted](#) on proposals to limit the subsidies paid to large solar farms (bigger than 5MW) from April 2015, two years earlier than projected. This may curb the number of planning applications submitted. The consultation also proposed splitting the stand-alone and greater than 50kw feed in tariffs (FiTs) degression band to encourage more deployment of building-mounted solar PV. A decision is pending.

14. Solar strategy action plan commitment on biodiversity

DECC's solar strategy and action plan include the commitment that "DECC and Defra will work with industry to understand better the effects (both positive and negative) of solar farms on biodiversity."

15. National Solar Centre guidance

The solar industry's own [best practice guidance](#) emphasises the need for screening with hedges, developing in predominantly flat areas and using land out of sight of roads, footpaths and properties. If followed, this should avoid significant adverse effects but cannot mitigate all impacts, which means there will always be some local opposition to solar farms.

16. CAP Basic Payment Scheme (BPS) 2015

Under the current SPS scheme, farmers may claim CAP direct payments on land being used for solar farms if the primary purpose of the land parcel is for agriculture and the land under the panel is capable of being grazed.

NFU pressed earlier for solar farms to qualify towards the 5% of land which arable farmers must designate as Ecological Focus Areas (EFAs). This option was not allowed under the European rules on EFAs.



Cc: [REDACTED]

Subject: RE: Submission on DECC solar pv strategy

[REDACTED]
Cc: [REDACTED]

I prepared the attached summary on the SPS eligibility of solar panels a couple of months ago, which you may find useful.

In real-life, I imagine most ground-based solar arrays (i.e. as opposed to those mounted on poles/masts) will be found to be ineligible currently since there will be no agricultural activity taking place on the parcel.

Regards,

[REDACTED]
rpa.gsi.gov.uk
[REDACTED]



Department
for Environment
Food & Rural Affairs

Land eligibility under the Basic Payment Scheme

Presented by:



Land eligibility under the Basic Payment Scheme

- Section G of the SPS Handbook 2013 sets out what land is eligible for the Single Payment Scheme. We are proposing to roll over this list to the Basic Payment Scheme where possible.
- This presentation covers three areas where changes are proposed:
 - I: Ground-based solar arrays
 - II: Trees
 - III: Landscape features





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I: Ground-based solar arrays

Solar arrays: under SPS

- Currently, land on which there are solar arrays can be eligible for SPS only if the land is predominantly used for agricultural activity.
- If the predominant use of the land parcel is for the housing and operation of solar panels, rather than an agricultural activity, we consider this as non-agricultural land and the whole land parcel is ineligible.
- In practice this means the land must be actively grazed or harvested.
- Any areas taken up by the solar panels themselves, and that do not allow the areas underneath to be grazed or used for agricultural activity, are not eligible.
- If the solar panels are off the ground, for example, on a mast or a number of poles, the area of the masts, poles and any hard standing is not eligible.



Solar arrays: current extent

- Defra holds no data on the current extent of solar arrays on land in England. What follows is extrapolated from DECC's **UK Solar PV Strategy Part 2: Delivering a Brighter Future**
- Assuming power per unit area of 40W/m² leads to the following estimates of total land use:

	Total			
	No. of projects	Capacity [MWp]	Areal extent [hectares]	% of UK agricultural area (18 million hectares)
Total operational up to end Feb 2014	184	850	2125	0.01
Projects expected to commission before the end of 2013-14	48	538	1345	0.01
Projects with planning permission awaiting construction	194	1656	4140	0.02

Solar arrays: under BPS

We want to make sure CAP is going to those people who primarily use the land for agriculture. We also wish to avoid double funding. Therefore, under BPS we are proposing to restrict BPS subsidy on land on which solar arrays are sited.

Article 32(2)(a) of 1307/2013 defines an “eligible hectare” for basic payment scheme purposes: ***any agricultural area of the holding...that is used for an agricultural activity or, where the area is also used for non-agricultural activities, is predominantly used for agricultural activities;***

Our view is that if an area is used incidentally for grazing but is predominantly used for a non-agricultural activity then the area is not an “eligible hectare”. If the area is not an eligible hectare, entitlements may not be activated against that area of land.



Solar arrays: BPS

- Article 32(3) of 1307/2013 states that: **where an agricultural area of a holding is also used for non-agricultural activities, that area shall be considered to be used predominantly for agricultural activities provided that those agricultural activities can be exercised without being significantly hampered by the intensity, nature, duration and timing of the non-agricultural activities;**
- In our view solar farms by their very nature do significantly hamper agricultural activity, even if that activity is just grazing, as there will be limitations on how the animals may graze in a field covered by solar panels.

We are seeking your views on our proposal that land on which there are ground-based solar arrays will not be eligible for basic payments.



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II: Trees

Trees under SPS

- SPS can be claimed on woodland with fewer than 50 trees per hectare as long as it is grazeable.
- SPS can be claimed on woodland with more than 50 trees per hectare if it is actually grazed and meets the following rules:
 - It has a history of grazing eg if you have declared this on previous applications, or if there are trees that animals have been browsing, eg trees have swelling at the base.
 - With new planting, you can claim if you have protected the trees from grazing.
 - Grazing must not be damaging the land ecologically. For example, the grazing must not reduce the number of existing tree seedlings and saplings, and must not reduce plants that are sensitive to grazing, such as bramble.

Trees under BPS

- Under BPS there is no longer an exemption to allow grazed woodland over a maximum tree density to be considered eligible area.
- Article 9(3) of 640/2014 allows Member States to consider scattered trees as eligible area provided that:
 - (a) agricultural activities can be carried out in a similar way as on parcels without trees in the same area; and
 - (b) the number of trees per hectare does not exceed a maximum density [up to 100].
- We are raising the maximum tree density to 100 trees per hectare to mitigate the loss of woodland grazing over a maximum tree density. Agricultural activities need to be able to be carried out in a similar way as on parcels without trees in the same area.
- The whole area will either eligible or ineligible based on the above. If it is above the maximum chosen density the land would then be classed as woodland and ineligible.



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III: Landscape features

Landscape features under BPS

- The rules for what features can be included as part of the eligible area of an agricultural parcel for BPS purposes are complicated and we are still working through the detail. However, we wanted to share thinking to date.
- Key questions which arise from Article 9 of 640/2014:
 - What features are **traditionally part of good agriculture cropping or utilisation practices on agricultural area in certain regions** (a maximum of 2 metres in width). Those features form part of the eligible area.
 - What landscape features which **form part of the total agricultural area are covered by the new GAEC and SMR standards**. Those features form part of the eligible area.
- The table comparing SPS and BPS eligible landscape features seeks to address those questions.
- From a customer perspective, there is also the question of how BPS features align with EFA features under greening. However, this presentation compares SPS and BPS features only.

Cross-compliance: new GAECs from 2015

GAEC number	What it's about	Important things you need to know
GAEC 1	Establishment of buffer strips along water courses	This includes watercourse rules from the current GAEC 14, and rules from the current 19.
GAEC 2	Water abstraction	This used to be GAEC 18.
GAEC 3	Groundwater	This used to be GAEC 20.
GAEC 4	Minimum soil cover	More information will be sent in a later factsheet.
GAEC 5	Minimum land management reflecting site specific conditions to limit erosion	More information will be sent in a later factsheet.
GAEC 6	Maintenance of soil organic matter level	More information will be sent in a later factsheet.
GAEC 7A	Boundaries	Boundaries include: hedgerows; stone walls; earth banks; stone banks This also includes an extension to hedgerow no-trimming dates. Now 01 st March until 31 st August inclusive.
GAEC 7B	Public rights of way	This used to be GAEC 8.
GAEC 7C	Trees	This includes rules from the current GAECs 16 and 17. This also includes a ban on cutting trees from 01 st March until 31 st August inclusive.
GAEC 7D	Sites of special scientific interest (SSSIs)	This used to be GAEC 6.
GAEC 7E	Historic monuments	This used to be GAEC 7.

Landscape features under BPS

Feature	SPS currently	BPS proposal
Boundaries: hedgerows (GAEC 7A)	Exceptionally hedges up to 6 metres wide are eligible for SPS if they are characteristic of the regional landscape and being managed in line with good agricultural cropping and utilisation practice.	No width restriction, but RPA would advise applicants to reflect carefully whether a hedge in excess of 10 metres is actually a hedge for BPS purposes. Also green cover on land within 2 metres of the centre of a hedgerow.
Boundaries: Stone walls (GAEC 7A)	Yes, if within an eligible land parcel.	Yes, if within an eligible land parcel.
Boundaries: Earth banks (GAEC 7A)	In a cropped field, you can claim for grass margins and banks, as long as they are maintained in accordance with cross compliance, for example, keeping it in Good Agricultural and Environmental Condition.	Yes, if within an eligible land parcel.
Boundaries: Stone banks (GAEC 7A)	Ineligible.	Yes, if within an eligible land parcel.
Visible public rights of way (GAEC 7B) (footpaths, bridleways, restricted byways and byways open to all traffic)	Ineligible where manmade or hardstanding, metalled or surfaced (eg concrete, tarmac, gravel). Eligible where natural unsurfaced roads, tracks, paths and bridleways.	Same rules as for SPS.

Landscape features under BPS

Feature	SPS currently	BPS proposal
Trees (GAEC 7C)	<p>Grazed woodland is eligible. Woodland with fewer than 50 trees per hectare is eligible as long as it is grazeable. Large areas of trees are mapped as SPS permanent ineligible features. A number of separate trees adding up to 0.01ha or more within a land parcel we may map these as a single rectangular permanent ineligible feature area equal to the area taken up by tree trunks and any cover that prevents growth of vegetation underneath.</p>	<p>Eligible, subject to maximum tree density which Ministers have set at the maximum 100 trees per hectare. Agricultural activities need to be able to be carried out in a similar way as on parcels without trees in the same area.</p>
SSSIs (GAEC 7D)	<p>Assessed under SPS eligibility rules.</p>	<p>Same rules as for SPS.</p>
Historic monuments (GAEC 7E) (scheduled monuments)	<p>Assessed under SPS eligibility rules.</p>	<p>Same rules as for SPS.</p>
Buffer strips along water courses (GAEC 1) ‘Watercourses’ are defined within the Code of Good Agricultural Practice as all surface waters, including coastal water, estuaries, lakes, ponds, rivers, streams, canals and field ditches. Temporarily dry watercourses are included.	<p>In a cropped field, you can claim for grass margins and banks, as long as they are maintained in accordance with cross compliance, for example, keeping it in Good Agricultural and Environmental Condition.</p>	<p>Green cover within 2 metres of the centre of a watercourse.</p> <p>Green cover on land between the edge of the watercourse and 1 metre on the landward side of the top of the bank.</p>

Landscape features under BPS

Feature	SPS currently	BPS proposal
Field margins (GAEC 7A for margins by hedgerows otherwise not covered by 2015 GAECs)	In a cropped field, you can claim for grass margins and banks, as long as they are maintained in accordance with cross compliance, for example, keeping it in Good Agricultural and Environmental Condition.	Yes. We are exploring whether there needs to be a maximum width.
Ditches / drains / dykes (not covered by 2015 GAECs)	These water features are eligible for SPS when they form part of a boundary. This is as long as the total width of the water feature is 4 metres or less and the boundary is the centre of the feature. If the water feature falls entirely within the field boundary, the width of the whole feature is deducted as a permanent ineligible feature if its area exceeds 0.01ha.	Same rules as for SPS.
Ponds (not covered by 2015 GAECs)	Ineligible	Ineligible
Scree, boulders, rocky outcrop, bracken and scrub (not covered by 2015 GAECs)	Ineligible	Ineligible

We are seeking views on our proposals for landscape features under BPS



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Land for non agricultural purposes

Land for non agricultural purposes

- The SPS Handbook 2013 sets out the non-agricultural activities permitted when claiming for SPS:
 - **Category A** – activities that will not affect SPS applications.
 - **Category B** – activities which are allowed up to a 28 day limit over a calendar year
- It also sets out:
 - **Category C** – activities on land on which SPS cannot be claimed
- The Handbook goes on to give examples of activities in each category; normally land that is considered recreational or primarily of amenity use is not eligible for SPS.
- We propose to roll forward the current list to BPS with a few tweaks indicated in red.

Land for non agricultural purposes

- **Category A** – activities that will not affect BPS applications and are allowed without restriction:
 - walking;
 - bird watching;
 - school or college nature or farm visits;
 - casual horse riding (e.g. along paths or margins);
 - bicycle riding (e.g. along paths or margins);
 - fishing;
 - hedge laying competitions, local ploughing competitions or other demonstrations of farming that do not affect the land being in GAEC. This will exclude events that use trade stands. These are covered by Category B;
 - shooting game;
 - deerstalking;
 - drag hunting; and
 - paragliding and hang gliding.



Land for non agricultural purposes

- **Category B** – activities allowed up to a 28 day limit:
 - clay shooting;
 - car boot sales;
 - car parking (whether it is for any of the listed activities or not);
 - country fairs and shows;
 - farm auctions and shows;
 - horse riding activities other than those described in Category A, **such as schooling or cross-country jumping**;
 - **bicycle riding activities other than those described in Category A, such as BMX course**;
 - ballooning;
 - festivals and events;
 - scout or guide camps, or similar;
 - TV and film locations;
 - caravan sites (if you do have a caravan site that is used for longer than 28 days, exclude this land from your application. This need not affect a whole land parcel;
 - motor sports; and
 - grass airstrips.



Land for non agricultural purposes

- **Category C** – activities on the land that mean BPS cannot be claimed:
 - a golf course;
 - any other permanent sports facility;
 - gallops;
 - airstrip; and
 - community recreational land, for example, rural land used primarily for public recreation and/or dog walking.

We are seeking your views on this proposal.



SOLAR ARRAYS AND THE BASIC PAYMENT SCHEME

OVERVIEW

Ministers expressed a desire to exclude ground based solar from receiving agricultural subsidies under BPS. [REDACTED]

[REDACTED] Stakeholders at the Direct Payments Consultative Group did not oppose the policy, but some did seek clarity on the practical implementation. We are discussing this detail with RPA with a general principle to exclude land where reasonable.

POLICY ANALYSIS

[REDACTED]

[REDACTED]

- | [REDACTED]
- | [REDACTED]
- | [REDACTED]
- | [REDACTED]
- | [REDACTED]

There is limited data available on the extent of ground-based solar. RPA does not code agricultural land in such a way as to distinguish solar arrays, and therefore cannot tell us how many farmers are claiming both agriculture and energy subsidies. We cannot therefore estimate how much CAP funds will be freed up by implementing this policy.

What follows is extrapolated from DECC's *UK Solar PV Strategy Part 2: Delivering a Brighter Future*, and characterises the current extent of ground based solar (but provides no data on how many claim SPS).

Assuming power per unit area of 40W/m² leads to the following estimates of total land use:

	Total			
	No. of projects	Capacity [MWp]	Areal extent [hectares]	% of UK agricultural area (18 million hectares)
Total operational up to end Feb 2014	184	850	2125	0.01
Projects expected to commission before the end of 2013-14	48	538	1345	0.01
Projects with planning permission awaiting construction	194	1656	4140	0.02

Consultation

At the August meeting of the Direct Payment Consultative Group stakeholders were content with the overall proposition, though some wanted further detail on the practical application of the policy. So, for example, they wanted clarity on what land is ineligible in a situation where solar arrays are scattered.

DCLG and DECC officials have confirmed that our proposal does not cause issues for them

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CAP DIRECT PAYMENTS TEAM

AUGUST 2014

SOLAR ARRAYS AND THE BASIC PAYMENT SCHEME

1. OVERVIEW

We have established:

- 
- NFU has recently expressed concern about the policy change. Others have sought clarity on the practical implementation.
- RPA will be able to find a way to implement the change.

2. CURRENT SITUATION

There is limited data available about the extent of ground-based solar. RPA does not collect information about solar arrays, as currently the information does not affect CAP payments.

However, data from DECC (see Annex B), suggests that 7,610 hectares of UK land are currently or planned (as at April 2014) to be taken up by ground-based solar. This is 0.02% of UK agricultural land. The total number of UK projects operating or awaiting construction is 426.

Given the small areas of land covered currently, it is not possible to argue that, at the national level, there is yet a serious impact on agricultural output.

DECC note however the fast pace of change. Solar panel developments can move from conception, through planning and to commissioning within 12 months. Actual construction of a large-scale solar array can be completed in eight weeks. DECC acknowledges that data, therefore, can be out of date.

NFU view

Anecdotal evidence from NFU suggests that farmers receive somewhere between £600-1200 per acre (£1,500-£3,000 per hectare) per annum in ground rents to host solar arrays on their land. The operator gains the energy subsidy and bears the costs and risk, rather than the farmer. Depending on the contractual arrangements (lease) made, the farmer may not be able to claim SPS/BPS as the land will no longer be at his disposal. NFU estimate that there are c250-300 in England solar ground based units up and running currently, and expect around 1,000 ground-based solar farms by end of the decade across the UK, on a range of scales, much of which will respond to government policy. Currently 15-30MW farms are being

built and at the smaller end some farmers have a few panels to power their own farms. NFU envisage some smaller farmer owned developments in the future.

In terms of land taken up by ground based solar:

- Biggest are 50MW – 250 acres (100 hectares)
- 5-10MW take up 25-50 acres (10-20 hectares)
- Smallest are half a MW – 2.5 acres (1 hectare)

At the August meeting of the Direct Payment Consultative Group stakeholders appeared to accept the policy. However, since then NFU has firmed up its line:

The NFU believes that where the farmer has not rented out the solar panel site, we do not see the presence of solar panels as being an out and out reason for land to be ineligible under BPS – there is a wide range of installations both via type and scale that exist. It has been shown that agricultural activity (livestock grazing) can and does coexist with solar panel installations with little disruption, even arable strip cropping could take place. There are a number of ways that are currently used by DEFRA / RPA to allow areas adjacent to solar panels remain eligible and these should continue under BPS. Equally it should be pointed out that due to the work of the industry there is a high level of awareness and acceptance that such sites bring considerable benefits for the environment.

This is not just an issue about how much land would be impacted if areas were not eligible, equally there should be no undue bearing on the decision as a result of other support that may be available to such land use.

3. IMPACT OF PROPOSALS

Extrapolating from DECC's figures, the average amount of land taken up per ground based solar development:

7,610 total hectares ÷ 426 installations = **18 hectares**.

Average agricultural subsidy at stake:

18 hectares x £271 (rate per hectare for Single Payment Scheme in 2013 for Non Severely Disadvantaged Areas ie lowland) = **£4,878 per year**

This figure needs to be treated with caution as it:

- is an average figure across the UK

- assumes that the farmer is claiming agricultural subsidy and at the top rate (upland and moorland rates are lower)
- assumes that none of the solar array has been mapped out as ineligible land (RPA require this for areas of the solar array that do not allow the areas underneath to be grazed or used for agricultural activity).

Based on NFU anecdotal estimates, farmers receive £1,500-£3,000 per hectare in ground rents for hosting solar arrays, they do not receive the energy subsidy direct. On 18 hectares this would equate to **£27,000-54,000 per year**. Please note, these figures are NFU rough estimates based on their solar policy lead talking to farmers with solar arrays on their land. We have no hard evidence to back these figures up.



ANNEX B: DATA

Data has been extrapolated from DECC's *UK Solar PV Strategy Part 2: Delivering a Brighter Future*, and characterises the current extent of ground based solar (but provides no data on how many claim SPS).

Assuming power per unit area of 40W/m² leads to the following estimates of total land use in the UK:

	No. of projects	Capacity [MWp]	Areal extent [hectares]	% of UK agricultural area (18 million hectares)
Total operational up to end Feb 2014	184	850	2125	0.01
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MINUTES

Direct Payments Consultative Group meeting

LONDON NOBEL HOUSE

Conference Rooms A&B

21 August 2014

14:00 – 17:00

Attendees

Defra

John Roberts (Chairman)

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

RPA

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Stakeholders

[REDACTED] (RSPB)

[REDACTED] (RSPB)

[REDACTED] (NT)

[REDACTED] (CAAV)

[REDACTED] (NT)

[REDACTED] (WT)

[REDACTED] (AHDB)

[REDACTED] (CLA)

[REDACTED] (TFA)

[REDACTED] (NFU)

[REDACTED] (NFU)

[REDACTED] (FCL)

(Teleconference)

(Teleconference)

[REDACTED] (BIAC)

(Teleconference)

3. Land eligibility under the Basic Payment Scheme (DPCG 59).

3.1 [REDACTED] presented the paper on Land eligibility, **DPCG 59**. [REDACTED] covered the three areas where changes are proposed namely; Ground-based solar arrays, trees and Landscape features.

3.2 **Ground based solar arrays:** ██████ said that she was seeking the views from the group on the possibility that land on which there were ground-based solar arrays would not be eligible for basic payments. ██████ said it was the Department's view that solar farms by their very nature do significantly hamper agricultural activity, even if that activity was just grazing as there would be limitations on how the animals may graze in a field covered by solar panels.

3.3 The Stakeholders made a number of observations, but their main concern was with the practicality and approach of implementing such a decision. Clarification was sought on the basis for determining whether the land was used for predominantly agriculture activities where the solar panels did not cover the whole area of the field. The way in which the solar panels were to be adjudged to be a permanently ineligible feature and the rest of the land eligible was also asked to be made clear.

3.4 Stakeholders on the whole expressed the view that the guidance emanating from a decision on solar panels should be clear particularly in light of the increasing deployment of panels on agriculture land.

[REDACTED]

From: [REDACTED]@decc.gsi.gov.uk>
Sent: 17 September 2014 12:40
To: [REDACTED]
Cc: [REDACTED]

Subject: FW: Ground-based solar - restricting agricultural subsidies

Importance: High

[REDACTED] – would you be able to give [REDACTED] over at Defra some data on the sorts of returns we are seeing on, for example, a 10MW solar farm?

[REDACTED] – please note that solar farms are currently providing good rates of return, although that will normally go to the investor and / or the developer, rather than to the farmer. There are different models for funding solar farms, including in which solar developers simply rent the farmland from the farmer. Given the complex range of alternative funding options, it might be better to say: that a typical 10MW solar farm will give a rate of return of x% on investment over y years ([REDACTED] can help with the data), but that this will typically not accrue to the farmers themselves; and that rents typically paid to solar farms will be high compared than typically paid for agricultural use.

The NFU ([REDACTED]) will be able to give you some typical ground rents paid to farmers for solar farms, but I am told that they are very significantly higher than rentals for agricultural use.

[REDACTED]



[REDACTED] [decc.gsi.gov.uk](mailto:[REDACTED]@decc.gsi.gov.uk) [REDACTED]
[REDACTED]

[Redacted]

[Redacted]

From: [Redacted] [@DEFRA.GSI.GOV.UK](mailto:[Redacted]@DEFRA.GSI.GOV.UK)
Sent: 26 August 2014 13:13
To: [Redacted]
Cc: [Redacted] [@defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk); Roberts, John (Defra)
Subject: RE: Ground-based solar - restricting agricultural subsidies

[Redacted],

In answer to your questions, policy intent is that CAP funds go to those who primarily use the land for agriculture.

[Redacted]

[Redacted]

[Redacted]

So, whilst we are uncomfortable about double funding, the rationale for the change in policy is around focussing shrinking CAP funds to support farmers who want to farm.

And yes, operation of the policy relates to the land, not the sheep. If the policy comes into effect, a farmer would be welcome to graze the land with solar panels on it, but s/he wouldn't be able to claim agricultural subsidy on that land.

In relation to your PS, we envisage mapping out land with solar arrays on. Land outside those panels but within the same land parcel would still be eligible, subject to other direct payment rules. Inspectors might need to make decisions on a case by case basis, but generally land between panels would not be eligible.

[Redacted] | [\[Redacted\]@defra.gsi.gov.uk](mailto: [Redacted]@defra.gsi.gov.uk) | Address: [Redacted]

From: [REDACTED] [REDACTED]@caav.org.uk]

Sent: 22 September 2014 16:07

To: [REDACTED]

Subject: FW: BRE NFU guidance

[REDACTED]

Thanks for your updates today. In relation to solar, you may already be aware of this BRE guidance that has been published but in case not I would draw your attention to page 2 in particular.

[http://www.bre.co.uk/filelibrary/nsc/Documents%20Library/NSC%20Publications/NSC -Guid Agricultural-good-practice-for-SFs_0914.pdf](http://www.bre.co.uk/filelibrary/nsc/Documents%20Library/NSC%20Publications/NSC%20-Guid%20Agricultural-good-practice-for-SFs_0914.pdf)

Regards,

[REDACTED]

[REDACTED]

[REDACTED]

From: [REDACTED]@farm-line.co.uk>
Sent: 07 October 2014 09:33
To: [REDACTED] (Defra)
Subject: RE: Solar Panels under the Basic Payment Scheme - Implementation

Dear [REDACTED],

Thank you for forwarding the RPA proposals on the treatment of solar panels for BPS. These are entirely in keeping with what I would expect to see because a) a solar array development removes the land it sits upon from agricultural land and b) where the solar array is a very defined and fenced off area (they are all fenced for security reasons) of only part of a much larger field parcel that means the field parcel can be legitimately sub-divided leaving the agricultural area to be eligible for BPS.

Kind regards,

[REDACTED]

[REDACTED]

[REDACTED]

From: [REDACTED] DEFRA.GSI.GOV.UK]
Sent: 06 October 2014 12:09
To: [REDACTED]@ahdb.org.uk; [REDACTED]@farm-line.co.uk; [REDACTED]@cla.org.uk; [REDACTED]@caav.org.uk; [REDACTED]@laurencegould.com; [REDACTED]@nfu.org.uk; [REDACTED]@plantlife.org.uk; [REDACTED]@andersonpr.co.uk; [REDACTED]@caav.org.uk; [REDACTED]@cla.org.uk; [REDACTED]@cla.org.uk; [REDACTED]@rspb.org.uk; [REDACTED]@erminelodge.co.uk; [REDACTED]@tfa.org.uk; [REDACTED]@surreywt.org.uk; [REDACTED]@glos.ac.uk; [REDACTED]@tfa.org.uk; [REDACTED]@nfu.org.uk; [REDACTED]@peakdistrict.gov.uk; [REDACTED]@nationaltrust.org.uk; [REDACTED]@foundationforcommonland.org.uk; [REDACTED]@tfa.org.uk; [REDACTED]@peakdistrict.gov.uk; [REDACTED]@nationaltrust.org.uk; [REDACTED]@rspb.org.uk; [REDACTED]@dorsetwildlifetrust.org.uk
Cc: Roberts, John (Defra); [REDACTED] (Defra); [REDACTED] (RPA); [REDACTED] (RPA); [REDACTED] (NE); [REDACTED]@rpa.gsi.gov.uk; [REDACTED]; [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (RPA); [REDACTED] (NE); [REDACTED] (Defra); [REDACTED]@capdelivery.gsi.gov.uk; [REDACTED] (DEFRA); Jonathan Scurlock
Subject: FW: Solar Panels under the Basic Payment Scheme - Implementation

Dear DPCG,
At the August meeting of DPCG, we discussed our proposals to restrict BPS subsidy on land on which solar arrays are sited. Stakeholders raised questions around how these proposals would be implemented and we committed to come back to you on the detail.

I am forwarding you RPA's proposals which we plan to include in the next CAP leaflet.

Please note that these arrangements await sign off and an announcement by Ministers on the eligibility of land covered by solar arrays.

[REDACTED]
defra.gsi.gov.uk| Address: [REDACTED]

Dear [REDACTED],

In response to your request for detail on how RPA might expect to handle the issue of solar arrays in practical terms, I have prepared the information below.

Background / Issue

The Secretary of State and Ministers have indicated their preference that land which contains arrays of ground-based solar panels should not attract payment under the Basic Payment Scheme from 2015. [REDACTED]

How it will work in practice

As a general principle, **land parcels which contain arrays of solar panels are to be considered ineligible for BPS**. In practice, RPA would propose to handle this as follows:

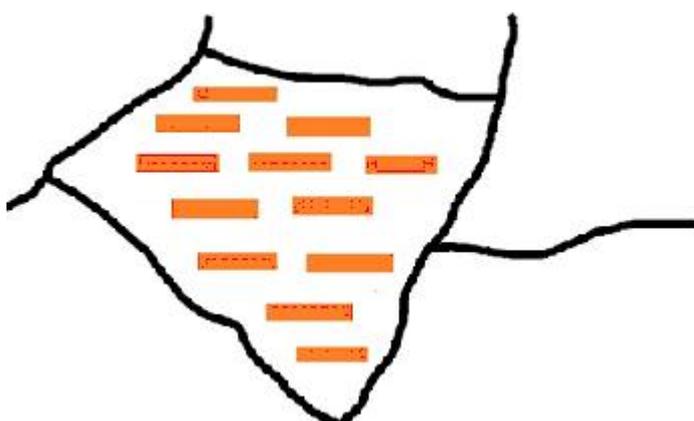
- The panels themselves will not be treated as an 'ineligible feature' within the parcels. Instead, it is the operation of the panels that is to be classed an ineligible non-agricultural activity, the predominance of which makes the parcel itself ineligible. As such, it is therefore a similar approach to that which is taken for caravan sites (where we class the land as ineligible for being a caravan site, rather than deduct the individual areas of caravans as ineligible features).
- Due to the above, it is also not appropriate to apply the rules relating to 'scattered features' to land containing solar arrays.
- The ineligible status extends to the land between rows of panels, as well as the land directly underneath and around the panels. Although these areas may be *capable* of being (or even may *actually* be) grazed or cropped, these activities are not considered to represent the predominant/primary use of the area and so are ineligible.
- As the land is to be treated as ineligible, this also means that EFA features will not be able to be sited on land being used for the operation of solar panels. This would include buffer strips/margins. EFA features can only be placed on agricultural land that is eligible for the scheme.
- In 'real life', we do not expect to see individual rows of panels separately spaced-out or scattered across the area of a parcel. This would be an inefficient use of them and wouldn't be practical in terms of cabling etc. We are therefore confident that we are talking about either entire parcels of panels, or specific, defined areas in which the panels have been concentrated within a larger parcel.

- Where panels are placed across the **extent of a parcel**, that entire parcel is treated as having a non-agricultural land-use and is ineligible. Again, as above, this includes the areas of land between, under and around the actual panels themselves.
- Where the positioning of solar panels is **concentrated in one particular defined area** of a larger parcel, for example one corner or one end of a field, then the rest of the parcel *may* continue to be classed as eligible so long as it continues to meet all necessary eligibility criteria. In order for this to apply there must be a clear definition between the two areas of the parcel: the part with the panels (ineligible) and the part without (eligible). There are two ways that this can be handled:
 - It is understood that the new CAP system can show multiple land covers within a single parcel (for example, to distinguish between different crops) in a similar way that farmers were able to have ‘split fields’ (i.e. Part A, Part B, Part C etc.) within parcels for SPS. The farmer would be required to identify the ‘split’ on their map and mark the split used for solar panels as having the appropriate ineligible land cover. This must be a specific area of the parcel that is obviously where the panels are concentrated – a farmer would not be allowed to create a ‘split’ around panels which are actually placed over a greater area of the field (or a ‘split’ around each individual solar panel). The examples below illustrate this.
 - In cases where the farmer actually fences-off the area of solar panels from the rest of the parcel, this can be classed as a permanent boundary in the LPIS and the area containing the solar panels would be identified as a separate parcel (with its own field number). Each of these two new parcels would have their own land cover and eligibility status i.e. fenced-off parcel with panels would be entirely ineligible; other parcel entirely eligible (if all other conditions are met).

Examples

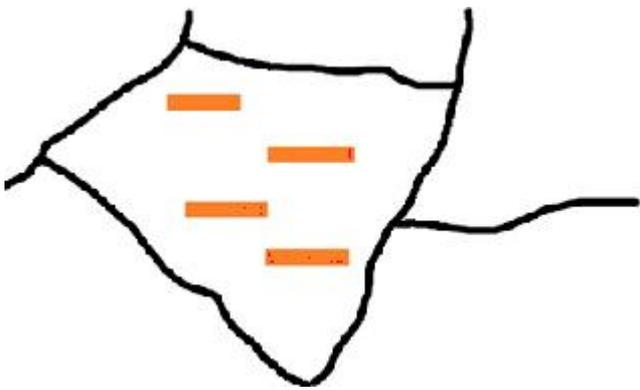
With apologies for the crude nature of the illustrations (the publishing team would no doubt be able to produce something more refined for the purposes of customer guidance), the following may aid understanding of the above:

Example 1 – Solar arrays placed across extent of parcel



The entire parcel is ineligible, including areas between panels which may or may not have agricultural activity taking place on them. The predominant use of the parcel is non-agricultural.

Example 2 – Fewer solar panels spread over a greater area of the parcel



The entire parcel is again ineligible. Though there are fewer panels, they have still been placed across the extent of the parcel and their operation cannot be said to be clearly restricted to a specific area within the field.

Example 3 – Solar panels clearly concentrated in certain area of larger parcel



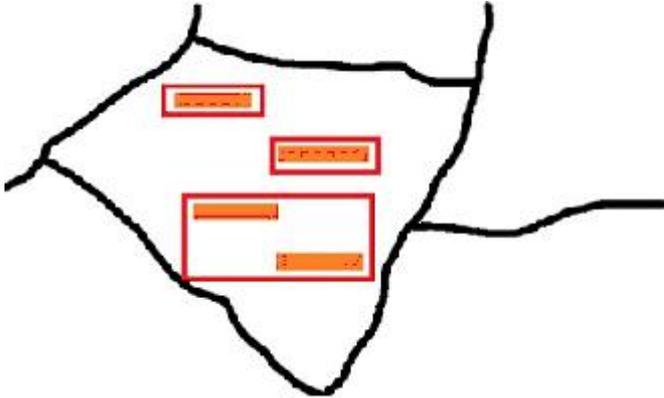
There are two distinct and separate land covers that can clearly be defined within the parcel, separated by the red line (which is not necessarily a physical boundary like a fence). The area with the solar panels is entirely ineligible, including the ground between, below and around the panels themselves. The other part of the parcel can still be considered eligible, subject to it meeting all usual conditions.

Example 4 – Solar panels clearly concentrated in certain fenced-off area of larger parcel



There are two distinct areas as with Example 3. However, the presence of the fence between the two areas constitutes a permanent physical boundary and means that the area with the panels can actually be mapped as a separate, ineligible land parcel.

Example 5 – Customer attempting to define different land covers/'splits' around individual areas



The entire parcel is ineligible. The customer cannot be allowed to define a different land cover/'split' around each of the individual panel areas as the solar panels are placed across the extent of the parcel. It cannot be said that there is a clear, distinct area in which they have been concentrated.

Kind regards,

[Redacted signature block]
rpa.gsi.gov.uk
[Redacted signature block]

SOLAR ARRAYS AND THE BASIC PAYMENT SCHEME

What's changing

- From 2015, farmers will not be able to claim basic payments on land on which solar arrays are sited. Currently farmers can claim agricultural subsidy if they can prove the land is predominantly for agricultural use.

Why it's important

- We want to make sure CAP is going to those people who primarily use the land for agriculture.
- Solar photovoltaic (PV) technology plays an important part of England's diverse energy mix. We want to see this clean energy sector grow in the right way.
- Solar PV needs to be appropriately sited, give proper weight to landscape and visual impact, heritage and local amenity, and provide opportunities for local communities to influence decisions that affect them and gain community benefit – as set out in the Solar PV Roadmap.
- Large scale solar farms should be focused on previously developed and non-agricultural land. Agricultural land should only be used where it is shown to be necessary.

The justification

- The UK solar PV sector has undergone a huge transformation since the Coalition Government came to office in 2010. From almost zero, PV has now been deployed on over half a million buildings, with total installed capacity in 2014 set to exceed 4GWp.
- Take-up of ground-based solar has been stronger than anticipated, though hard data remains very limited; NFU estimate that c250-300 solar ground based units are up and running in England currently, and expect around 1,000 ground-based solar farms by end of the decade across the UK.
- CAP funds are shrinking. We need to allocate funds to support people who primarily use the land for agriculture.

Subsidies still available to those with solar arrays on farmland

- In practice, farmers with solar arrays on their land receive ground rents for hosting the arrays and the rent is considerably more lucrative than a BPS payment. The operator gains the energy subsidy and bears the costs and risk.
- DECC announced last week that subsidy for new large-scale solar farms (above 5MW) under the existing "renewables obligation" will end next April,

two years before other technologies. Four companies have sought permission to Judicially Review DECC's consultation which led to this decision.

- Scaling back was necessary as large-scale solar developments were growing faster than expected and would exceed the budget for subsidies by £40 million in the next two years.
- Subsidy is still available for smaller solar developments under the Renewables Obligation and feed in tariffs.

DIRECT PAYMENTS POLICY TEAM

10 OCTOBER 2014

MINUTES

Direct Payments Consultative Group meeting

LONDON NOBEL HOUSE

Room 806

22 September 2014

14:00 – 16:30

Attendees:

Defra:

████████████████████	██████████	████████████████
██████████	██████████████	██████████
██████████	██████████████████	
██████████████		

Rural Payments Agency:

██████████	██████████
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Natural England:

██████████

Stakeholders:

██████████ (BIAC)	██████████ (WT)	██████████ (RSPB)
██████████ (NFU)	██████████ (CAAV)	██████████ (NT)
██████████ (CLA)	██████████ (MA) Dialled-in.	
██████████ (IAgSA) Dialled-in.	██████████ (TFA) Dialled-in.	

Apologies

12.2 Solar arrays

Stakeholders asked for further details on proposals to restrict basic payments to land on which solar arrays are sited. ██████ responded that we were working up practical detail with RPA for inclusion in leaflet three, subject to agreement from Secretary of State. ██████ would share thinking when it was developed.

Finally, it is also worth noting that RPA researched a small number of solar farms from publicly available sources, and found that only one of seven was actually claiming SPS on land covered by an array. It's a 5MW installation in two parcels amounting to c19 hectares of land. In 2013, these two parcels were worth a total of £5,048.83 in SPS payment to the farmer, at the flat rate of £270.86 per ha (Note: this is the gross value before reductions for Financial Discipline and Modulation, which are applied to the claim as a whole).

[REDACTED]

[REDACTED] | [REDACTED] @defra.gsi.gov.uk | [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[Redacted]

Sent: [Redacted] (Defra)
15 October 2014 18:55
To: [Redacted] (Defra)
Subject: RE: Solar panels announcement

Hi [Redacted]
I did get my answer on modulation, for what it's worth...

The total modulation (EU & voluntary) for SPS 2013 was 19%. But for the first €5,000 of a farmer's payment, only EU modulation applied.

[Redacted]
: [Redacted] @defra.gsi.gov.uk [Redacted]

From: [Redacted] (Defra)
Sent: 14 October 2014 15:08
To: [Redacted] (Defra)
Subject: RE: Solar panels announcement

Looks good.

A minor comment to add in 'pre-modulation' – ie before money is transferred from Pillar 1 to Pillar 2. I'm no expert on modulation, but in 2012 19% was transferred from P1 to P2. I'll try and find out what it was for 2013 (which is the figure quoted).

But that could also affect the £2m quoted.

Cheers,

How much money do farmers receive from CAP payments that they will be denied following the change?

Farmers can claim CAP subsidy from the Single Payment Scheme. Based on last year's **pre-modulation** rates, a farmer could have claimed a subsidy of £38 - £271 per hectare, per year, depending on the regional rate applied and if no deductions of land were applied for the installations themselves.

[Redacted]
: [Redacted] @defra.gsi.gov.uk [Redacted]

MINUTES

Direct Payments Consultative Group meeting

LONDON NOBEL HOUSE

Room 806

16th October 2014

14:00 – 15:45

Attendees:

Defra:

John Roberts (Chairman)

████████████████████

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Rural Payments Agency:

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████████████████████

Stakeholders:

████████████████████ (NFU)

████████████████████ (CAAV)

████████████████████ (RSPB)

████████████████████ (RSPB)

████████████████████ (AHDB)

Attended by Teleconference

████████████████████ (CLA)

████████████████████ (MA)

████████████████████ (NT)

████████████████████ (TFA)

████████████████████ (BIAC)

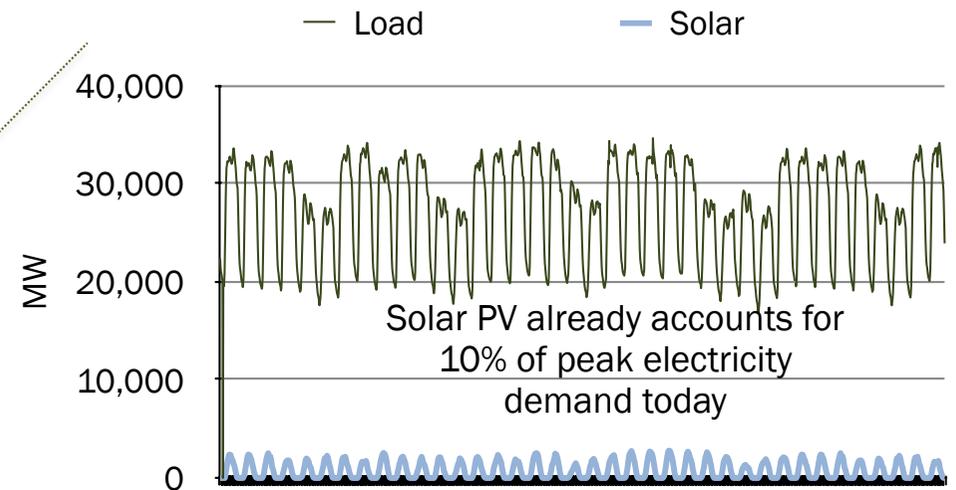
Apologies

2.3 Solar Arrays

The Chairman said the Secretary of State was planning to make an announcement on solar arrays prior to the publication of leaflet three. The announcement was unlikely to provide the level of detail stakeholders might be anticipating, because it was to be at the broad principle level.

2.4 Stakeholders explained that should a parcel of land with solar panels require fencing it would be a burden on farmers. They advised the Department not to adopt burdensome requirements on demarcation because the position of the panel would have been clearly marked and secured through the planning permission process.

It's a myth that solar PV encroaches on valuable land: 0.5% of our land surface could provide 10% of our electricity



Half-hourly data from June 1st to July 27th, 2014

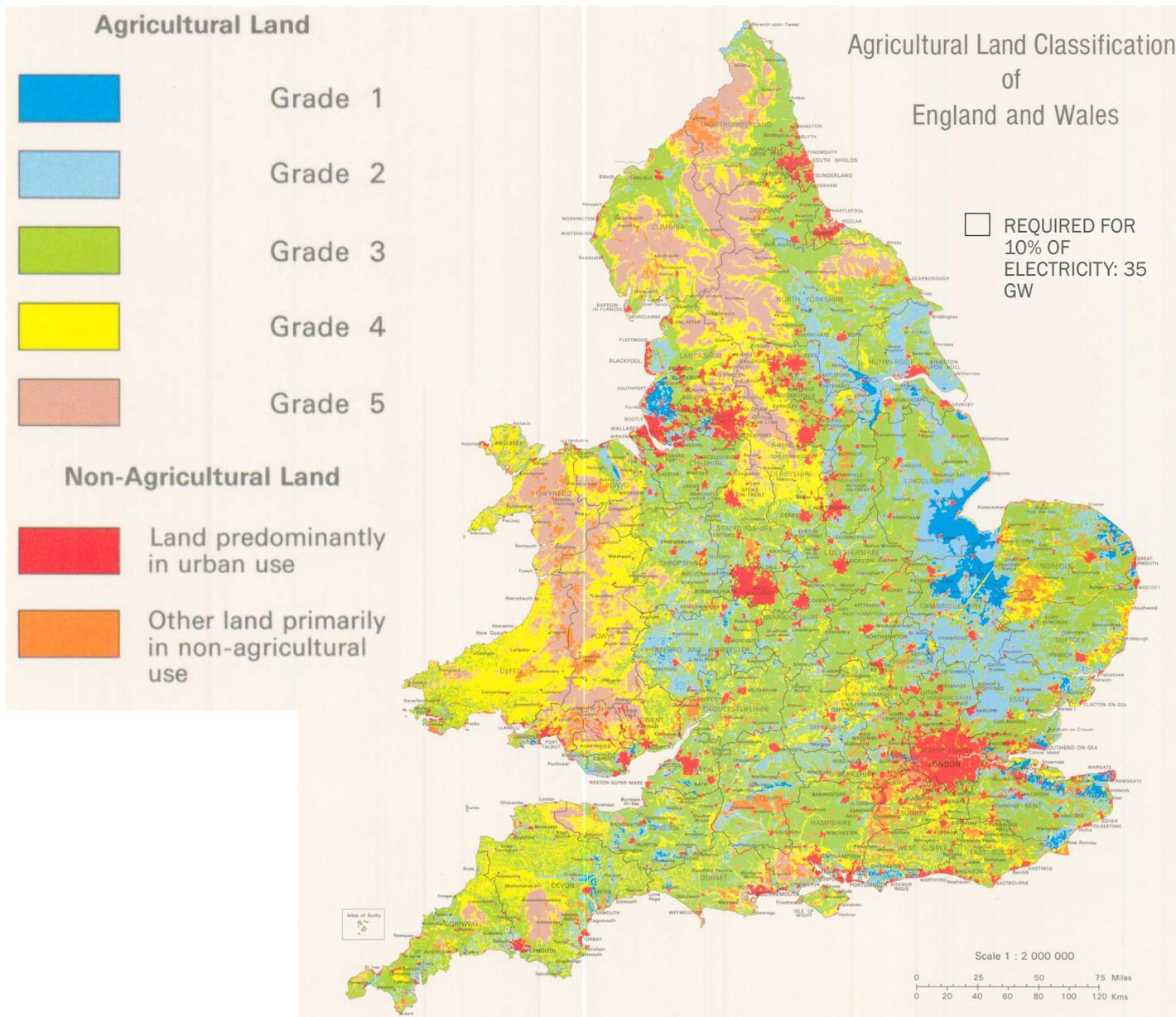
Calculation:

- Land mass England and Wales: 151,174 square kilometres = 15,117,400 hectares
- Space requirements for solar farms: 2 hectares (5 acres) per megawatt; 900 kWh/kWp average specific yield
- 2011 total UK electricity consumption: 318 TWh
- 0.5% of land surface, or 70,750 hectares, could host 35 GW of solar PV installations, which would produce 31.8 TWh of electricity per year, or 10% of total consumption
- Germany has already installed this capacity of solar PV in October 2013 (latest cumulative installations as of April 2014: 36.9 GW)

Source: Defra, National Grid

Solar farms complement, rather than compete with, agriculture

Example land grades England and Wales



Comments

- Farm land is not scarce: 71% of the UK's land surface is agricultural land (this does not even include woodlands, national parks, etc.)
- 40% of the UK's land surface is permanent grass land, used for grazing, amongst others, the UK's 32.9 million sheep and lambs (the UK accounts for nearly half the sheep in Europe)
- 35 GW of solar farms generating 10% of the UK's electricity demand could be built on less than 1% of permanent pasture land without displacing any grazing sheep



Source: Natural England, Defra "Agriculture in the United Kingdom 2013"

AEE solar farms respect agricultural and ecological best practice



Lease Option and Grazing Agreement provisions

- Solar farm has to be built to be compatible with sheep grazing (e.g., minimum panel height, water supply, fencing)
- Reinstatement of land drains (if damaged) after construction
- Full removal of equipment above and below the ground, full reinstatement to agricultural land after 25 years (incl. farm tracks, land drains, soil structure)
- Escrow account to hold sufficient funds to pay for decommissioning and reinstatement
- Grazing Agreement pays landowner to keep sheep on site (can be sublet to third party) and keep site tidy
- Protection of landowner against crop loss and loss of subsidy payments, stewardship payments etc. up to year of construction



Solar farm design by AEE and planning application

- Planning application is temporary (25-30 year) and does not constitute a change of use. It includes full reinstatement conditions
- Solar farm design to respect field boundaries and hedges, keeping a minimum 5m distance; land is seeded to a grass/wildflower mix
- Less than 1% of area is built on, less than 40% is built over, allowing good grass growth under and between rows of panels and avoiding impact on normal drainage
- Deer fencing (rather than industrial fences) to keep rural appearance, with small gaps at base to allow small animals to pass through (creating a wildlife habitat for small mammals and ground-nesting birds)
- Screening plantings to reduce visual impact
- All cables are underground



Genuine dual use of solar farm for electricity generation and continued agriculture

Multiple safeguards that land will be fully reinstated after 25 years

Ecological improvements during solar farm operation

Agricultural look and feel of AEE solar farms (compared to more industrial solar farms by other developers)

[REDACTED]

From: Jonathan Scurlock [REDACTED]@nfu.org.uk>
Sent: 08 October 2014 17:57
To: [REDACTED] (Defra); [REDACTED] (Defra)
Subject: APPGs on beef and lamb / science and technology in agriculture - solar farms, 20-Oct-2014

[REDACTED]

Would either of you or a Defra colleague be interested in attending or speaking at this event? I am struggling to get a government representative – DECC or Defra – to speak for just 5 minutes, updating attendees on how the Agricultural Good Practice Guidance potentially contributes to DECC objectives and Defra desired outcomes.

<http://www.nfuonline.com/science-environment/energy-and-renewables/solar-lamb-or-pv-chicken/>
http://www.solarpowerportal.co.uk/news/nfu_partners_with_solar_sector_to_launch_agricultural_guide_for_solar_farms

Best regards - Jonathan

Dr. Jonathan Scurlock
Chief Adviser, Renewable Energy and Climate Change

[REDACTED]

[REDACTED]

[REDACTED]

=====
From: [REDACTED]@frontfoot.uk.com>
Sent: Wednesday, 8 October 2014 16:42
To: [REDACTED]
Subject: INVITATION - APPG SCIENCE & TECHNOLOGY IN AGRICULTURE - MTG - 20 OCTOBER 2014



MEETING INVITATION

The solar harvest – new opportunities for UK agriculture

Monday 20 October, 5.00 – 6.30pm, Room S, Portcullis House

Guest Speakers:
Guy Smith, NFU Vice President

Solar farm developer (tbc)
Government representative (tbc)

Co-chairs:

Mark Spencer MP, APPG Science & Technology in Agriculture
Neil Parish MP, APPG Beef & Lamb

Can solar grazed lamb and free-range solar chicken help meet our future food and clean energy needs?

The next meeting of the APPG on Science and Technology in Agriculture will be a joint meeting with the APPG on Beef and Lamb to discuss innovative new opportunities emerging within the UK solar energy sector.

The meeting will include the Parliamentary launch of a new guidance document compiled by the NFU and the BRE National Solar Centre, showing how ground-mounted solar farms can be combined with continued agricultural land use for small livestock such as sheep, chickens and geese. *'Agricultural Good Practice Guidance for Solar Farms'* explains for the first time how coupling conventional agriculture and field-scale solar power offers new opportunities to optimise land use for both food and energy production.

Indeed solar power is already providing a lifeline for many farmers, underpinning traditional agricultural production with additional returns that make businesses more resilient.

The guidance document describes experience from on-farm case studies as well as general principles of good practice to integrate solar installations into the rural economy, complementing existing advice on the management of biodiversity in solar farms. It has been developed and endorsed by a number of leading UK solar farm developers and organisations concerned with agriculture and land management.

This Westminster launch and discussion meeting is a key opportunity to hear about the latest developments in on-farm solar energy, to engage in a debate about the multi-purpose use of land, and to discuss how solar grazed lamb and free-range solar chicken can help meet our future food and clean energy needs.

The meeting will take place from 5.00 to 6.30pm on Monday 20 October in Room S, Portcullis House.

From: [REDACTED]
To: [Roberts, John \(Defra\)](#); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra)
Cc: [REDACTED]
Subject: BPS Eligibility and Active Farmer
Date: 22 September 2014 13:38:32

Dear All

Following an email from Phil Bicknell a couple of weeks ago I want to follow up this with the following views from the NFU on the following

1 Solar Panels & BPS land eligibility

The NFU believes that where the farmer has not rented out the solar panel site, we do not see the presence of solar panels as being an out and out reason for land to be ineligible under BPS – there is a wide range of installations both via type and scale that exist. It has been shown that agricultural activity (livestock grazing) can and does coexist with solar panel installations with little disruption, even arable strip cropping could take place. There are a number of ways that are currently used by DEFRA / RPA to allow areas adjacent to solar panels remain eligible and these should continue under BPS. Equally it should be pointed out that due to the work of the industry there is a high level of awareness and acceptance that such sites bring considerable benefits for the environment.

This is not just an issue about how much land would be impacted if areas were not eligible, equally there should be no undue bearing on the decision as a result of other support that may be available to such land use.

I gather [REDACTED] you have spoken to my colleague Dr Jonathan Scurlock on this issue and we are more than happy to sit down with you to go through this issue in detail to discuss all the factors around this subject.

From: Jonathan Scurlock [REDACTED]@nfu.org.uk>
Sent: 08 July 2014 21:48
To: [REDACTED] (Defra)
Cc: [REDACTED]@decc.gsi.gov.uk); Paul Barwell ([REDACTED]@solar-trade.org.uk); [REDACTED]@bpva.org.uk
Subject: DECC/Defra Ministerial Roundtable on agricultural rooftop solar

Follow Up Flag: Follow up
Flag Status: Flagged



Dear [REDACTED],

1. As we discussed today, the NFU welcomes the proposed joint Ministerial roundtable in September/October between Environment Secretary Owen Paterson and Energy Minister Greg Barker. I understand that Defra is interested in evidence for there being already significant uptake of solar PV roofs by farmers. Based upon solar industry and DECC statistics, the NFU estimates that there is 300-400 MW of farm rooftop PV installed so far (up to 10,000 rooftops, average size 30-40 kW). For comparison, total UK commercial medium-sized roof-mounted capacity (10kW-250 kW) is about 700 MW presently (DECC statistics lag a little behind industry data due to delays in updating the register).

One of my present NFU tasks is to work with our in-house market research team on a quantitative survey of the present level, diversity and scale of NFU member uptake of renewable energy in all its forms. There does indeed seem to be a mis-match between (a) the results of Defra's Farm Practices Survey and Farm Business Survey, which find relatively modest uptake of renewables; and (b) independent market research by banks like Barclays and RBS as well as the Forum for the Future/Nottingham Trent University "Farm Power Station" project, and the NFU's own estimates.

For example, 30% of 400 farmers surveyed across England and Wales in 2011 by NFU and RBS-NatWest expected to be involved in some form of renewable energy production, use or supply by summer 2012:

<http://www.guardian.co.uk/environment/2012/jun/04/renewable-energy-boosts-farmer-profits>

Barclays carried out their own survey in 2012 involving 383 dairy and cereal farmers - they found a third of respondents planning to invest in some form of renewables over the next two years:

<http://www.fwi.co.uk/Articles/04/09/2012/134913/Livestock-2012-Survey-shows-interest-in-renewables.htm>

The latest Farmers Weekly survey (Autumn 2013) found a "surprisingly high number - 38%" had invested in renewable energy:

<http://www.fwi.co.uk/articles/22/11/2013/142042/farm-energy-research-the-power-to-cut-your-energy-bills.htm>

2. The most common solar product advertised in the agricultural trade press is a ~50 kW (usually 49.5 kW) roof system costing about £50,000 - this is covered by a fairly streamlined process under the Microgeneration Certification Scheme. There may be a market 'gap' worth addressing for bigger rooftop systems (50 kilowatts to 500 kilowatts, 400-4000 m2, costing £50-400,000), which are more complex to implement. Of the possible measures already forwarded to [REDACTED], the NFU considers that "(i) removing or amending/easing the need to have (or be exempted from) an Energy Performance Certificate for a linked building" would be particularly effective and could be implemented specifically for the farming sector, following similar concessions

granted to schools and community groups.

As we also discussed, there may be a significant number of farmers who are unable to implement roof-mounted solar PV due to not having a suitable roof (buildings too old, or unsuitably oriented or shaded). While the NFU realises the Secretary of State would not condone the easing of planning consent for ground mounted solar on agricultural land, perhaps it would be possible for the government to limit any such concession to deployment within farmyards or areas within the curtilage of farm buildings and other non-agricultural land? The proposal would be for DCLG to consult on amending the present permitted development limit of 9.5m² (1.3kW) for ground mounted solar - the suggested new limit would be a ten-fold increase to 95m²/100m² or around 13-15kW, strictly limited to land unsuitable for cultivation or grazing.

Best regards - Jonathan

Dr. Jonathan Scurlock
Chief Adviser, Renewable Energy and Climate Change

[Redacted signature]

[Redacted contact information]

[Redacted contact information]

[Redacted]

From: [Redacted]@rpa.gsi.gov.uk
Sent: 15 July 2014 09:35
To: [Redacted] (Defra)
Cc: [Redacted]
Subject: RE: Submission on DECC solar pv strategy

As I understand it the majority are placed on the ground. The mast/pole variety are usually for a single panel/set of panels, typically used for private supplementary power generation or to power a particular single building.

[Redacted]
[Redacted]
[Redacted]@rpa.gsi.gov.uk
[Redacted]

From: [Redacted]@DEFRA.GSI.GOV.UK]
Sent: 14 July 2014 16:32
To: [Redacted]
Cc: [Redacted]
Subject: RE: Submission on DECC solar pv strategy

Thanks, I thought as much!

I've passed on your email to [Redacted] consider again, as in SoS letter to DECC, he means any solar panels in a field as opposed to those on a roof.

Will let you know what comes back. Out of interest, are there many solar panels on masts/poles? Or are they mostly ground-based as you understand the term?

Thanks.

[Redacted]
[Redacted]
[Redacted]@defra.gsi.gov.uk
[Redacted]

From: [Redacted]@rpa.gsi.gov.uk
Sent: 14 July 2014 15:11

To: [REDACTED] (Defra)
Cc: [REDACTED]
Subject: RE: Submission on DECC solar pv strategy

H [REDACTED]

This type of thing, where the panels are placed in arrays close to the ground, is what I would describe as 'ground-based':



The alternative could be where panels are actually elevated somewhat from the ground on single poles or masts, where the agricultural activity may not be hampered and could continue in the same way as with, say, telegraph poles. Of course, the land itself would still need to meet the standard eligibility criteria.



[Redacted]
[Redacted]
[Redacted] [@rpa.gsi.gov.uk](mailto:[Redacted]@rpa.gsi.gov.uk)
[Redacted]
[Redacted]

From: [Redacted] [@DEFRA.GSI.GOV.UK](mailto:[Redacted]@DEFRA.GSI.GOV.UK)
Sent: 14 July 2014 14:52
To: [Redacted]
Cc: [Redacted]
Subject: RE: Submission on DECC solar pv strategy

Hi [Redacted]

[Redacted]
[Redacted] And my plan is to put together a slide or two to discuss with DPCG either in July or August. Can you clarify for me your 'in real life' point below. What you mean by ground-based? In our minds it is anything in a field (as opposed to being on the roof of a building), but from looking at images via Google, I see there is a range of solar parks some of which could easily allow grazing, and others which would not.

Can you clarify for me?

Thanks,

[Redacted]
[Redacted]
[Redacted] [defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk) Address: [Redacted]
[Redacted]

From: [Redacted] (RPA)

Sent: 01 July 2014 15:08
To: [REDACTED] (Defra)
Cc: [REDACTED]
Subject: RE: Submission on DECC solar pv strategy

[REDACTED],
Cc: [REDACTED]

I prepared the attached summary on the SPS eligibility of solar panels a couple of months ago, which you may find useful.

In real-life, I imagine most ground-based solar arrays (i.e. as opposed to those mounted on poles/masts) will be found to be ineligible currently since there will be no agricultural activity taking place on the parcel.

Regards,

[REDACTED]
[REDACTED]
[REDACTED] [@rpa.gsi.gov.uk](mailto:[REDACTED]@rpa.gsi.gov.uk)
[REDACTED]
[REDACTED]

From: [REDACTED]
Sent: 01 July 2014 14:57
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: Submission on DECC solar pv strategy

Hi [REDACTED]

[REDACTED] (cc:d) can advise on our current policy under SPS, which I think is that we only allow them in limited circumstances where the land underneath/surrounding can still be grazed.

Thanks,

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] [@rpa.gsi.gov.uk](mailto:[REDACTED]@rpa.gsi.gov.uk)

From: [REDACTED] [@DEFRA.GSI.GOV.UK](mailto:[REDACTED]@DEFRA.GSI.GOV.UK)
Sent: 01 July 2014 11:58
To: [REDACTED]
Subject: FW: Submission on DECC solar pv strategy
Importance: Low

[REDACTED]

From: [REDACTED] (RPA)
Sent: 06 March 2014 12:51
To: [REDACTED] (RPA)
Cc: [REDACTED] (RPA); [REDACTED] (RPA); [REDACTED] (RPA)
Subject: Eligibility of Solar Panels for SPS

Dear [REDACTED]

Background

As requested, a summary of the position with solar panels. [Recent press coverage](#) seems to have indicated at least one expression of dissatisfaction with the current guidance as available in the SPS Handbook. The issue is seemingly being raised at this time due to the approaching deadline for entitlement transfers to be valid for the 2014 claim round (2 April 2014), with the inference being that farmers need to know if they will be unable to use their entitlements since they can then transfer them. In actual fact, the eligibility stance has not changed and the guidance available to customers in this scheme year is the same we have stated previously.

Scheme Rules/Legislation

Under SPS, entitlements can only be activated against eligible agricultural land that is being used for agricultural activities (which includes maintaining the land in Good Agricultural & Environmental Condition). There are then rules which cover the level of non-agricultural activities that can take place on the land before it becomes ineligible.

Article 9 of Commission Regulation (EC) No 1120/2009 states “...where an agricultural area of a holding is used as well for non-agricultural activities that area shall be considered as being used predominantly for agricultural activities, if the agricultural activity can be exercised without being significantly hampered by the intensity, nature, duration and timing of the non-agricultural activity. Member States shall establish criteria for the implementation of [this] on their territory”. As such, any activity of such a level that diverts the primary purpose of the land from being ‘agricultural’ makes that parcel ineligible for SPS. This includes land which is considered recreational, industrial, etc.

Implementation

The operation of solar panels is considered to be a non-agricultural activity so, in line with the above rules, parcels housing solar panels can only be considered eligible for SPS if the claimant is able to demonstrate that the land is still predominantly used for agricultural activities (i.e. as opposed to predominantly being used for the operation of solar panels).

When looking to assess this, we would normally expect that the land under the panels was actually being grazed (or, in a more unlikely scenario, a crop harvested) in order to demonstrate a predominance of agriculture. If the land is only ‘capable’ of being grazed or simply being maintained in GAEC as the only ‘agricultural activity’, then this would be unlikely to be sufficient to show that the land was anything other than predominantly being used for solar panel operation.

If the land was actually being grazed by livestock in the same way as if the solar panels were not present, then this would be when we may still consider the land to be eligible. However, even if the customer is able to show that the land is still ‘agricultural’, they must still ensure that they deduct any ineligible areas from their claim. This would include masts that the panels may be mounted on, areas of bare ground around the panels, areas which have been fenced-off around the panels and any tracks/roads/storage/etc. that may be in place for the installation and maintenance of the panels.

Customer Guidance

The position outlined above is reflected in the guidance available to customers on the subject.

The 2013 Handbook (page 32, table of features) shows panels as being ‘Ineligible’ for SPS but states “*The area taken up by the solar panels is ineligible, unless the area under it is capable of being grazed. If the primary purpose of the land is for agriculture, the rest of the land parcel will be eligible. If the primary purpose of the land parcel is for operating solar panels, the whole land parcel is ineligible*”.

This is expanded upon at Paragraph G20 of the Handbook (‘*Is land with solar panels on it eligible for SPS?*’). It states “*To be eligible for SPS, the land must be predominantly used for agricultural activity. It will be easier for you to show this if the land is being grazed or harvested than just being kept in GAEC. Any areas that are taken up by the solar panels themselves, and that do not allow the areas underneath to be grazed or used for agricultural activity, are not eligible. These areas must be shown on the*

RLR as permanent ineligible features and you must not include them in column C9 of the Field data sheet on your SPS application.

If the solar panels are off the ground, for example on a mast or number of poles, the area of the masts, poles and any hard standing is not eligible. The area surrounding the mast or poles, under the panels, may be eligible if you can still use it for agricultural activity, for example, it is grazeable.

If the predominant use of the land parcel is for the housing and operation of solar panels, rather than an agricultural activity, we consider this as non-agricultural land and the whole land parcel is ineligible for SPS.

You will also need to consider the eligibility of the land during the initial installation of the solar panels. Depending on how much of the land parcel is affected by the work, and the extent it is affected, the land parcel is likely to be ineligible while the work is being done. If so, you should exclude this area from your SPS application in the year the solar panels are being set up”.

Natural England also produced a guidance booklet on solar panels, which included a section (drafted by Defra) on the impact on SPS eligibility. This follows the same line as that in our own SPS guidance books:

Kind Regards,

[Redacted signature block]
rpa.gsi.gov.uk

From: [REDACTED] [@rpa.gsi.gov.uk](mailto:[REDACTED]@rpa.gsi.gov.uk)

Sent: 15 October 2014 11:02

To: Undisclosed recipients

Subject: RPA media summary: Wednesday 15 October

Media summary: Wednesday 15 October

The printed edition of Farming Monthly carries an article on dual use which is based on an RPA press release issued last month. It includes our key messages and quotes from Arik Dondi.

Both the Darlington & Stockton Times and the Lincolnshire Free Press carry reminders about the entitlements transfer deadline next week. The articles are based on an RPA press release which was issued last week.

Entitlements are also mentioned in Andrew Jamieson's column in the Northern Farmer. He says: "The RPA has written to all of the farmers who fall foul of the 5ha minimum claim area and it had caused an influx of enquiries into the office. There are options available and all is not lost, you don't simply have to sit back and let your entitlements drift off for free into the national reserve." He also goes on to discuss greening saying: "Many of the farmers I have dealt with so far have an element of spring cropping in the rotation, and have taken the view that if needs be they will deal with Ecological Focus Areas (EFAs) in the spring when more information is available as to what can and can't be included, and the likelihood of delayed payments if hedge rows are used for EFAs. It appears that this element of the CAP reform is causing the most stress to farmers across the board."

A similar view is provided by Mike Taylor in his Farming Talk column in the Shropshire Star. He writes: "The biggest headache is that farmers are having to make cropping decisions now for a scheme which has only the vaguest of rules published to date. We have been promised more detail this month, but nothing more has been released at the time of writing." On Ecological Focus Areas he says: "This requires all but the smallest arable farmers to provide environmental benefits in the form of five per cent fallow or an equivalent. It is this part that has had many farmers in a spin as they get to grips with the various 'equivalents' . He also talks about the 'quirky qualification requirements' of the scheme saying: "Some genuine farmers will come into difficulty just because they happen to have a cricket pitch of football pitch on their farm or because they supply water from a borehole to a number of adjoining properties."

The Darlington & Stockton Times carries a report on the exchange rate being set for SPS 2014 payments, which it says is the lowest for six years. The article includes our messages urging applicants to ensure they have told the Agency of any changes to their bank account details.

Northern Farmer carries a report on a recent guide from the NFU and Solar Trade Association which said that solar farms could be easily combined with free-range chickens and grazing sheep. It finishes by saying that Defra has not yet made a decision on the eligibility of grazed solar farms for the Basic Payment Scheme.

[REDACTED]
[REDACTED]
[REDACTED]
[@rpa.gsi.gov.uk](mailto:[REDACTED]@rpa.gsi.gov.uk)
[REDACTED]

[REDACTED]

From: [REDACTED] <[REDACTED]@decc.gsi.gov.uk>
Sent: 03 July 2014 08:41
To: [REDACTED] (DECC) [REDACTED] (Defra)
Subject: FW: Solar Independence Day 4th July - NFU in attendance at Wymeswold
Follow Up Flag: Follow up
Flag Status: Completed

For info

From: Jonathan Scurlock [REDACTED] <[REDACTED]@nfu.org.uk>
Sent: 30 June 2014 17:34
To: [REDACTED] <[REDACTED]@tgcrenewables.com>; [REDACTED] <[REDACTED]@ortasolar.com>; [REDACTED] <[REDACTED]@trinasolar.com>; [REDACTED] <[REDACTED]@BritishRenewables.com>; [REDACTED] <[REDACTED]inazin.com>; [REDACTED] <[REDACTED]wolfeware.com>; [REDACTED] <[REDACTED]@bpva.org.uk>; [REDACTED]
Cc: [REDACTED] <[REDACTED]@nationaltrust.org.uk>; [REDACTED] <[REDACTED]@larkenergy.co.uk>; [REDACTED] <[REDACTED]@juwi.co.uk>; [REDACTED] <[REDACTED]@empowercommunity.co.uk>; [REDACTED] <[REDACTED]@rr-ltd.com>; [REDACTED] <[REDACTED]@goodenergy.co.uk>; [REDACTED] <[REDACTED]@tgcrenewables.com>; [REDACTED] <[REDACTED]@photonenergy.co.uk>; [REDACTED] <[REDACTED]@ennovigasolar.com>; [REDACTED] <[REDACTED]@wiltshirewildlife.org>; [REDACTED] (zenexsolar)
Subject: Solar Independence Day 4th July - NFU in attendance at Wymeswold

From: Jonathan Scurlock
Sent: 30 June 2014 17:05
To: [REDACTED] <[REDACTED]@hiveenergy.co.uk>; [REDACTED] <[REDACTED]@solar-trade.org.uk>
Cc: [REDACTED] <[REDACTED]@belectric.co.uk>; [REDACTED] <[REDACTED]@larkenergy.co.uk>; [REDACTED]
Subject: RE: Solar Independence Day - visiting a farm

Here is our NFU web news story (also running as 'Latest News' on our front page):

<http://www.nfuonline.com/science-environment/energy-and-renewables/solar-independence-day/>

Best regards - Jonathan

Dr. Jonathan Scurlock
Chief Adviser, Renewable Energy and Climate Change

[REDACTED]

[REDACTED]

[REDACTED]

From: [REDACTED] (Defra)
To: [REDACTED] (Defra)
Subject: FW: Eligibility of Solar Panels for SPS
Date: 19 August 2014 13:55:11
Attachments: [Natural England TIN101.pdf](#)

[REDACTED]
[REDACTED]
[REDACTED] defra.gsi.gov.uk [REDACTED]
[REDACTED]

From: [REDACTED] (RPA)
Sent: 06 March 2014 12:51
To: [REDACTED] (RPA)
Cc: [REDACTED] (RPA); [REDACTED] (RPA); [REDACTED] (RPA)
Subject: Eligibility of Solar Panels for SPS

Dear [REDACTED]

[REDACTED]
[REDACTED] of the position with solar panels.

Scheme Rules/Legislation

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Kind Regards,

[Redacted]
[Redacted]
[Redacted] corrigan@rpa.gsi.gov.uk
[Redacted]
[Redacted]

Solar parks: maximising environmental benefits

Solar energy, in common with other forms of renewable and low carbon energy sources is a valuable part of the UK's energy future. This information note pulls together a summary of advice relating to solar parks, their siting, their potential impacts and mitigation requirements for the safeguarding of the natural environment and the opportunities there may be for financial support through environmental stewardship. The aim is to help developers and landowners consider how they might maximise the environmental benefits of a solar park whilst avoiding or minimising the risk of damaging environmental features. If you would like to discuss any issues please see the *Further information* section below for contact details.

Definition

Solar parks are installations of multiple solar photovoltaic (PV) modules, usually mounted 1.5-2.5 metres above either greenfield or brownfield land occupying between 2 and 15 hectares. These figures are based on current installations and technology and this note will be updated as the technology and circumstances develop. Other notes also may be written as and when required and information becomes available.

Background

Like any type of development, solar parks have the potential to affect the landscape, natural habitats, soils and geological and archaeological features. Damage may be caused during operation or when panels are being erected or decommissioned. Cumulative impacts might also occur when parks are sited close to one another. Well located and designed solar parks may not only avoid negative environmental impacts, but may also deliver additional benefits to the environment beyond low carbon energy.

Some solar farms will need planning permission from the planning authority, for more information contact your local council. If you are considering developing a solar park you can avoid any unnecessary delays and costs by discussing

your proposals with Natural England at the earliest opportunity.



German solar farm with sheep grazing below panels

Our specialists should be able to advise you from the outset on what to do to safeguard the environment. To date (June 2011) Natural England has recommended consent to 90% of all onshore energy schemes (of all types) and 100% of those offshore. Schemes which progress smoothly share some common characteristics, including engagement with Natural England well before the formal consultation phase required by legislation.

Solar Parks: maximising environmental benefits

Key points

A range of technical considerations inform site selection and the detailed design of solar park developments. These include:

- solar resource;
- topography; and
- proximity to existing grid infrastructure.

Environmental considerations that also need to take into account include:

- soils and soil structure;
- wildlife habitats and designated sites;
- effects on specific wildlife species;
- damage to designated landscapes;
- effects on the character of the landscape;
- damage to geological and archaeological features; and
- implications of water run-off.

The importance of vegetation

Vegetation is vital for wildlife, and steps should be taken to reduce the risk of reducing vegetation, for example, through excess shade or lack of rainwater. Good vegetation cover is also needed to protect soil and water, as well as provide grazing for livestock. Therefore the need to retain, encourage and manage appropriate vegetation cover needs to be considered early in the design of any solar farm.

Soil protection and husbandry

The long term capability of agricultural land, in particular the *Best and Most Versatile* agricultural land, needs to be safeguarded during the construction, operation and decommissioning of solar panels. To maintain good soil structure and water infiltration:

- soil organic matter levels should be retained or enhanced;
- compact areas of soil should be loosened; and
- existing land drainage maintained.

Excessive run-off may need to be diverted to grassed soak-aways so as to avoid soil erosion.

Good soil husbandry includes avoiding unnecessary soil disturbance and avoiding trafficking on soils when they are wet as this will cause compaction. Trackways and other sealed areas should have carefully designed drainage to avoid creating a pathway for erosion.

Reversibility and permanence also need to be considered. How easy would it be to convert and decommission these areas and put them to other use?

Any development should leave the land capable of supporting agriculture, especially if it is *Best and Most Versatile*, and/or semi-natural habitats in the future.

For information on identifying best and most versatile agricultural land see TIN049 *Agricultural Land Classification: protecting the best and most versatile agricultural land* and for guidance on soil protection see the Defra publication *Construction Code of Practice for the Sustainable Use of Soil on Construction Sites*. Details are available in *Further information* below.

Protecting watercourses

The key to avoiding increased run-off and soil into watercourses is to maintain soil permeability and vegetative cover. Permeable land surfaces underneath and between panels should be able to absorb rainfall as long as they are not compacted and there is some vegetation to bind the soil surface. Spraying off vegetation to prevent it growing between the panels would increase the risks of erosion, carbon emissions, run-off and pollution to watercourses.

Any associated infrastructure such as concrete surfaces and tracks should be designed so as to avoid direct run-off into watercourses and other sensitive areas.

The risks of run-off and soil erosion are lowest on low gradient land and cohesive soils and highest on dry, sandy and steeply sloping soil surfaces.

Solar Parks: maximising environmental benefits

Biodiversity

Protecting wildlife

The location of solar parks should avoid sites of high wildlife value, in particular, designated sites such as Sites of Special Scientific Interest (SSSIs), Special Protection Areas and Special Areas of Conservation. Any development proposed on land within or adjacent to designated sites is likely to have an adverse effect on the environmental features for which they were designated, in particular during the construction phase.

Solar parks can affect wildlife where they are near sites of high wildlife value. For example, near a bat roost where the land may be used for foraging or to navigate to foraging sites, thereby reducing the foraging area available to them. There are some indications that very large, unbroken expanses of uniform solar panels may mimic water surfaces on which insects may attempt to settle and breed. If this proves to be a problem, then mitigation measures will be sought and publicised.

Very little research has been conducted to date, but one laboratory study undertaken by Bjoern Siemers and Stefan Grief (2010) showed that bats attempted to drink from the panels and occasionally collided with them. If the plates were vertically aligned they often crashed into them when attempting to fly through them. Juvenile bats are expected to be more prone to this behaviour. Some birds and invertebrates are also likely to be affected by solar parks developed close to areas of high wildlife value.

Where a solar park is proposed within or close to such sensitive sites, the planning application should include a detailed assessment of the likely impacts on the ecological interest of the sites and contain practical measures which avoid or minimise any adverse effects on their features of interest. Any solar park close to a designated site will need to demonstrate that it would not compromise the objectives of the designation.

Biodiversity: mitigation

With specialist ecological advice there may be opportunities to mitigate potential impacts on species and habitats through measures such as:

- Precise layout and spacing of PV modules.
- Habitat creation and enhancement on adjacent land to offset habitat loss.
- Timing of construction activity.
- Careful use of lighting.

Sites with low wildlife value, for example, intensive arable or grassland fields are likely to offer greatest opportunity for wildlife. Not only will they avoid adverse impacts, but they are also more likely to deliver environmental benefits.

Biodiversity enhancement

Solar park sites, especially on sites of lower existing biodiversity value may offer opportunities to deliver enhancement measures.

These should be considered on a site by site basis and are likely to be most effective when they contribute to local biodiversity priorities identified through your local Biodiversity Action Plan. These should be available on the web.

Creating grasslands and hedgerows on the areas around the panels is likely to offer most benefits for plant and animal communities. You can also consider creating ponds where the conditions are appropriate and planting wild bird seed mixtures for birds and nectar and pollen rich margins for bees and butterflies.

You need to consider what ongoing management will be required to maintain the habitat and who and how this will be done. You can get advice from a variety of sources, including consultants and voluntary groups, as well as Natural England.

Some habitats require more management than others. For example if you want to establish flower-rich grassland around panels you will need to graze or cut and remove the herbage. Grazing is best and sheep or goose grazing is likely to be more suitable than cattle grazing, which is unlikely to be practical.

Establishing native trees and hedgerows will provide nesting, roosting and foraging opportunities for birds and invertebrates. They can also help screen the panels where they may be intrusive in the landscape.

Solar Parks: maximising environmental benefits

When planning and creating habitats consider long term management issues, such as:

- Is the management sustainable while the park is operating?
- Will the habitat survive and continue to be managed once the park has been decommissioned?

A management plan should help establish clear objectives and responsibilities for management and maintenance of any habitats created. The plan should also consider the budget needed to cover regular maintenance. If you are not the landowner, then local farmers may be best able to do this flexibly in response to need.

Landscape

It is recognised that solar parks can change the character and visual experience of a given area or landscape, and that they may become an element of the future UK landscape as part of our response to climate change. Careful site selection and design is the best way to avoid or minimise potential adverse landscape and visual impacts.

The location and design can be informed by existing Landscape Character Assessments and by responding to any landscape and visual assessments that are undertaken.

Designated landscapes

The presence of a designated landscape for example a National Park or an Area of Outstanding Natural Beauty is likely to reduce the degree to which a solar park can be successfully accommodated, and a proposal within, or close to, one of these sites will need to demonstrate that it would not compromise the objectives of designation.

Landscape character considerations

Table 1 on page 6 identifies landscape character factors that can aid site selection and design. It provides a general guide, but is not a rigid checklist as most landscapes will display a mixture of factors indicating both greater and lesser degree to which solar PV parks can be accommodated, these should be considered ‘in the round’.

Visual considerations

Generally impacts are likely to be greater in hilly areas and more easily avoided or mitigated against in flatter areas. Solar parks are also likely to be more acceptable where there are simple landscape patterns, such as those associated with later phases of agricultural enclosure.

Where the land form is flatter existing and new natural features (for example, trees, hedgerows, ridges) as well as buildings, roads and railways are more likely to screen solar parks.

Historic environment

The historic environment is linked to wider landscape considerations and in some locations can also be an important feature in its own right. Solar parks should not be located on Scheduled Ancient Monuments. Other archaeological sites should also be avoided as they could easily be damaged, even where they are not visible above soil level.

Geology and geomorphology

Geological and geomorphological features may be designated as SSSIs or Local Geological Sites or may be an important part of the local landscape character. The siting of solar parks should take full account of designated geological and geomorphological features and in particular ensure they do not impact of the integrity and visual appreciation of geomorphological landforms and processes.

Landscape enhancement

Where enhancement measures (these may also be biodiversity measures) will contribute to a local landscape strategy or enhancement plan, solar park developments may be able to leave a positive landscape legacy.

Single Payment Scheme

If you have land which is being developed as a solar park, you will need to consider whether it needs to be deducted from any claim for payments under the Single Payment Scheme (SPS). This section explains how the SPS eligibility rules relate to solar park land.

Solar Parks: maximising environmental benefits

To be eligible for SPS, the land must be predominantly used for agricultural activity and, with limited exceptions, this requirement applies throughout the whole calendar year. For further information about the SPS eligibility rules please read the latest version of the SPS Handbook for England which is available on the Rural Payments Agency website (see link in *Further information* below).

SPS eligibility: land use

For a land parcel to be eligible for SPS, you must be able to demonstrate that the land is predominantly used for agricultural activity. This is easier to do if the land is being grazed or harvested rather than if it is just being kept in Good Agricultural and Environmental Condition (GAEC).

In a land parcel which is predominantly used for agricultural activity, any areas which are taken up by the solar panels themselves, in a way that does not allow the areas underneath to be grazed or used for agricultural activity, will not be eligible for SPS. These areas must therefore be shown on the Rural Land Register (RLR) as SPS ineligible features, and must be deducted from any SPS application.

Where the solar panels are elevated from the ground, such as on a mast or framework of multiple poles, the area of the mast itself (or of the poles), and any associated hard-standing, is not eligible but the land surrounding it (ie under the panels) may be eligible, provided it can still be used for agricultural activity, for example if it is capable of being grazed. Such eligible land may be claimed for SPS, and should be shown on the RLR as part of the maximum eligible area for SPS.

If the predominant use of the land parcel is for solar panels, ie non-agricultural activity, the whole land parcel will be ineligible for SPS.

SPS eligibility: land availability

The farmer must be carrying out an agricultural activity on the land (at least maintaining it in good agricultural and environmental condition) and have it at their disposal on the date of the application deadline (usually 15 May) of the scheme year. The land must also remain eligible for SPS for the full calendar year.

SPS eligibility during the installation

Depending on how much of the land parcel is affected by the work, and the extent to which it is affected, it is unlikely that the land parcel will be eligible while this is being done. Therefore the land parcel should probably be excluded from the claimed area for the scheme year in which the solar park is being set up.

Agri-environment schemes

Developers and land managers have sought clarification on the extent to which solar PV affects, or is compatible with, Environmental Stewardship agreements. There is some potential for solar PV parks to coexist with agricultural land use and/or land managed for nature conservation benefit. The extent to which this occurs will depend on the existing land use and, where agri-environment agreements are in place, the requirements of those schemes. The criteria used to identify eligible land under SPS also applies to agri-environment schemes.

Entry Level Stewardship

Based on Section 1.3 (the eligibility section) of the 3rd edition of the Entry Level Stewardship Handbook, where the land can be grazed or used for any agricultural purpose then it can count towards the points target for the agreement. However, management options must not be placed directly on this land. Part parcel or boundary options can be located on the specific land parcel as long as they are not directly located on the actual area covered by solar arrays.

Higher Level Stewardship

Your local Natural England Adviser should be contacted for advice when considering Higher Level Stewardship and the impact of solar PV parks. They will be able to interpret the proposals and determine the potential impact from the installation of the solar panels. The issues raised within this guidance should be considered in the round by the adviser before a decision is made regarding an application or agreement.

Cross compliance

If you claim SPS, Uplands Transitional Payment and/or Environmental Stewardship, all your

Solar Parks: maximising environmental benefits

agricultural land must also meet the cross compliance requirements, including keeping the land in Good Agricultural and Environmental Condition (GAEC), for the whole of the calendar year.

If you have concerns about complying with any cross compliance rules during the installation of the solar park, it may be possible to get a derogation by requesting one from the Rural Payments Agency in advance of the work taking place and explaining what standards may not be met. See below for a link to the cross compliance advice website.

Further information

Natural England Technical Information Notes are available to download from the Natural England website: www.naturalengland.org.uk. In particular see:

- TIN049 *Agricultural Land Classification: protecting the best and most versatile agricultural land*

See also:

Construction Code of Practice for the Sustainable Use of Soils on Construction Sites
www.defra.gov.uk/publications/2011/03/27/construction-cop-soil-pb13298/

Rural Payments Agency rpa.defra.gov.uk

Cross compliance
www.defra.gov.uk/crosscompliance/

For further information and details of your local Natural England Adviser contact the Natural England Enquiry Service on 0300 060 0863 or e-mail enquiries@naturalengland.org.uk.

Prepared by Natural England in consultation with NFU and FWAG. Editor Susie Smith. Photograph courtesy of Low Carbon Solar Partners.

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Table 1 Landscape character factors

Factor	Increased chance that solar parks can be accommodated in the landscape	Reduced chance that solar parks can be accommodated in the landscape
Landform (also related to visual factors such as elevation and viewing angle)	Absence of strong topographical variety. Featureless, convex or flat.	Presence of strong topographical variety or distinctive landform features
Landscape pattern and complexity	Simple, regular or uniform	Complex, rugged and irregular
Settlement and man-made influence	Presence of contemporary structures, for example, utility, infrastructure or industrial elements. Presence of roads and tracks in the landscape	Absence of modern development, presence of small scale, historic or vernacular settlement, roads and tracks
Inter-visibility with adjacent landscapes	Little inter-visibility with adjacent sensitive landscapes or viewpoints	Strong inter-visibility with sensitive landscapes. Forms an important part of a view from sensitive viewpoints
Perceptual aspects (sense of remoteness, tranquillity)	Close to visible signs of human activity and development	Physically or perceptually remote, peaceful or tranquil

BRE National Solar Centre Biodiversity Guidance for Solar Developments



Image: G Parker, 2013



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BRE
NATIONAL
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CENTRE

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1. Context

This document provides guidance to planners and the solar industry on how they can support biodiversity on solar farms. The guidance provided herein has been developed with, and endorsed by, a number of leading UK conservation organisations.

Biodiversity is in decline in the UK. The ground-breaking 'State of Nature Report' illustrates the severity of the threat facing British wildlife, with 60% of the 3,146 species monitored being recorded as declining over the past 50 years. A 60% decline is recorded for 1,064 farmland species, with agricultural intensification being identified as one of the primary causes.

However, recent studies of agri-environment schemes indicate that appropriate land management can bring about significant increases in wildlife populations on agricultural land. In the same way, with appropriate land management, solar farms have the potential to support wildlife and contribute to national biodiversity targets. Indeed, solar farms may have several additional advantages in that they are secure sites with little disturbance from humans and machinery once construction is complete. Recent research suggests biodiversity gains on solar farms can be significant.

The approach to managing biodiversity will be different for every solar farm, and it is recommended that a site-specific plan be devised in each case. The purpose of this document is to support the development of a plan by presenting a broad range of options for biodiversity enhancement and management, and illustrating best practice through a series of case studies. The guidance provided here draws upon good practice from a number of sources, as detailed in the bibliography at the end of this document.

Best practice in solar farm development seeks to optimise biodiversity enhancements, but it is recognised that a number of wider constraints exist, including legal or lease conditions, or planning considerations such as visual or heritage issues. Alternatively, solar farms may seek to support agricultural production, guidance for which goes beyond the scope of this document. Nevertheless, opportunities for biodiversity enhancement exist in most cases and solar farms should seek to maximise benefits for wildlife wherever possible.

2. Introduction

Solar farms present an excellent opportunity for biodiversity. In most solar farms panels are set on piles and there is minimal disturbance to the ground. The panels generally have no moving parts and the infrastructure typically disturbs less than 5% of the ground. The posts upon which the panels are mounted take up less than 1% of the land area. Normally only 25-40% of the surface is over-shaded by panels. Because panels are raised above the ground on posts greater than 95% of a field utilised for solar farm development is still accessible for plant growth and potentially for wildlife enhancements and complementary agricultural activities such as conservation grazing. Following construction, there is little human activity apart from occasional maintenance visits. Most sites have a lifespan of at least 20 years which is sufficient time for appropriate land management to yield real wildlife benefits.

A number of options exist for enhancing biodiversity on solar farms, from hedgerows to field margins to wild flower meadows to bird boxes and ponds. Each site is unique and there is no 'one size fits all' solution. Ultimately the best plans will be those developed through engagement with the local community, the landowner and local and national conservation organisations.

Biodiversity enhancements should be selected to fit the physical attributes of the site and should tie in with existing habitats and species of value on and around the site. Furthermore they should be compatible with the primary purpose of the site – to generate solar power. If agricultural production is also planned for the site, biodiversity enhancements should aim to dovetail with these goals.

The following document provides high level guidance on solar farms and biodiversity, with specific reference to the planning process. The guidance centres on the development of a biodiversity management plan for each site which identifies appropriate biodiversity objectives and defines the establishment, management and monitoring activities required to achieve them. A number of biodiversity enhancements are presented in this document as examples but it should be noted that a much wider range of options exists.

In the following sections, several general points in relation to site selection are initially considered, before moving on to consider specific habitat enhancements.

3. Site considerations

Solar farms can enhance local biodiversity, particularly when located within an intensive agricultural landscape, yet it is important that developments avoid ecologically sensitive sites. Sites within or functionally linked to Special Protected Areas (SPA), for example, are very unlikely to be appropriate, depending on the designated feature(s). Other designated areas that are unlikely to be suitable include Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Natura 2000, Ramsar sites and other sites internationally recognised as having ecological importance such as Key Biodiversity Areas including Important Plant Areas (IPAs) and Important Bird Areas and Important Biodiversity Areas (both IBA). The compatibility of all proposed solar farms with sites of local nature importance and important areas of semi-natural grassland (which are often undesignated areas of wet grassland or scrub) should be assessed by an ecologist to avoid damage to such sites. The Natural Environment and Rural Communities Act 2006¹ provides a list of priority habitats and species of principle importance for conservation in England, which should guide the appropriateness of potential solar sites, to avoid harm to these interests.

Reversion to original land use

Where a solar farm is developed on agricultural land there is usually a condition that it should be reverted to its original land use at the end of the project. Reversion of land use should be considered when planning habitat enhancements and care should be taken to ensure they do not alter the land use, for example by planting woodland in the middle of a field.

Good Agricultural and Environmental Condition

The land should be maintained in Good Agricultural and Environmental Condition, where soils, water, habitats and landscape features are properly maintained. Soil health is essential for the sustainability of farming in the longer-term and solar farms could play an important role by resting soils through the life of the solar farm. Resting would especially benefit soils that have been exhausted of their nutrients and compacted by farm machinery. Thus, solar farms can provide a means for soil to improve while maintaining production from solar harvesting, and possibly grazing.

Carbon storage

It should be recognised that good land management complements the sustainability objectives of solar power and can lead to additional benefits including enhanced carbon storage. For example, establishing permanent grasslands with few or no agricultural inputs on post-arable land should lead to a significant reduction in carbon release from the land. On degraded peat soils, solar farms may provide an opportunity for peatland restoration, conserving the soil and its carbon store.

Community engagement

Biodiversity enhancements are likely to increase community interest in solar farm developments. It is vital to engage communities throughout the life of a solar project. Engaging the local community, including local conservation groups, will increase awareness of both solar technology and the local environment. On-going community engagement, for example, through open days, local school trips, or the provision of nature trails is recommended.

¹ Natural Environment and Rural Communities Act 2006, Section 41 NB this legislation has competency in England only.

² The Weeds Act 1959 The legislation specifies five injurious weeds: Common Ragwort, Spear Thistle, Creeping or Field Thistle, Broad Leaved Dock and Curled Dock. Under this Act the Secretary of State may serve a notice on the occupier of land on which injurious weeds are growing, requiring the occupier to take action to prevent their spread.

4. Biodiversity Management Plan

Each solar farm requires a biodiversity management plan (BMP). The purpose of the BMP is to lay out the specific objectives for biodiversity and the means by which these objectives will be achieved, including the protection of existing species and habitats, the establishment of specific enhancements, their maintenance and monitoring. The BMP should also cover the decommissioning of the site. Developers should include all elements of the BMP in their consideration of project finance for the life of the scheme, from planning to site closure. This should include all aspects of land and species management, including the appropriate control of injurious weeds². Where legally practical in terms of the options of the lease, a whole-field approach should be taken to the land-management plan, including the boundary features of the site.

The BMP should:

- identify key elements of biodiversity on site, including legally protected species, species and habitats of high conservation value such as those listed on Section 41 of NERC Act 2006, and designated areas in close proximity to the proposed site;
- identify any potential impacts arising from the site's development, and outline mitigations to address these;
- detail specific objectives for the site to benefit key elements of biodiversity and the habitat enhancements that are planned to achieve these;
- contribute to biodiversity in the wider landscape and local ecological network by improving connectivity between existing habitats;
- identify species for planting and suitable sources for seed and plants;
- consider wider enhancements such as nesting and roosting boxes;
- summarise a management regime for habitats for the entire life of the site;
- provide a plan for monitoring the site; and adapting management as appropriate to the findings of this monitoring; and,
- set out how the site will be decommissioned.

The BMP should be written by a qualified ecologist and should incorporate recommendations from the Phase 1 Habitat Survey/ Extended Phase 1, Environmental Impact Assessment, tree survey or other ecological study, as appropriate. Where specific impacts have been identified and mitigations proposed, these should be detailed in the BMP.

Advice should be sought from conservation stakeholders on how the site could contribute to local and national targets for biodiversity conservation. Landowners should be consulted for their views on the BMP. In addition, biodiversity objectives should be presented to the community for their comment as part of the public consultation process.

The BMP should be concise and well written such that land managers, community members, developers and conservation professionals alike can make use of it. The BMP, at least in a preliminary form, should be prepared and submitted as part of the planning application for the proposed solar farm. A final version should then be agreed with all stakeholders and the local planning authority prior to consent or alternatively afterwards as part of a planning condition. The BMP should be readily accessible to the public.

5. Site construction best practice

Construction of a solar farm usually takes 6-15 weeks. The construction should take account of sensitive times for protected species which have been identified through the Phase 1 Habitat Survey or EIA. Activities likely to result in disturbance or removal of habitat should be avoided during key periods for protected species, e.g. the bird breeding season (March 1st-July 31st). Good tidy site practice is recommended to avoid negative impacts on wildlife such as covering excavations, keeping tools locked up and reducing soil compaction by minimising vehicle movements and using low ground pressure vehicles, particularly during wet weather. Lighting needed during construction should be directional wherever possible to minimise light pollution to the wider environment. It should be noted that during the operational phase there should be no need for visible lighting of any kind on a solar farm.



Image: G Parker, 2013

6. Habitat enhancement options

Various options exist to enhance the biodiversity value of a site and it should be noted that while some enhancements may have broad suitability, there is no 'one size fits all' approach. Value for biodiversity can be gained through creating different habitats within a solar farm, including hedgerows, field margins, wild flower meadows, nectar-rich areas, winter bird crops and many others. In many cases comprehensive enhancements across wide areas are possible, if properly maintained through the lifetime of the project. Opportunities are likely to be more limited where the land is also being used for agricultural production.

Whatever habitat enhancement is selected it is generally desirable that the species used are native to the UK. Where possible, species selected should tie in with local and national biodiversity targets. Seed and plants should be sought from a supplier who can guarantee appropriate provenance. Ground disturbance may be an option for encouraging naturally occurring species in the soil's seed bank. Consideration may need to be given to future climate conditions in the provenance and choice for establishing longer lived species.

Each site is unique in terms of environment, location, existing biodiversity and land use, and these factors all influence which habitat enhancements will be most appropriate. Several of the more common options are presented as examples below. Some guidance documents for the establishment and maintenance of these habitats are included in the bibliography at the end of this document.

Boundary features

These are key features for biodiversity, not only as nesting and foraging areas but also as a means for wildlife to move between habitats. Boundary features include hedgerows, ditches, stone walls, hedgebanks, field margins and scrub. Usually boundary features can be enhanced with little or no impact upon the solar array. The greatest value is gained when boundary features contribute to a network of connecting features in the wider landscape.

Hedgerows

Hedgerows can support a wide variety of wildlife, including plants, invertebrates, birds, reptiles and mammals. In solar farms existing hedges can be strengthened by planting gaps, and sections of new hedge may be planted. It's important that only suitable species are selected for the planting (e.g. native, found within hedgerows locally). Existing hedges should remain intact where possible and good practice should be observed to protect hedges during construction, e.g. with root protection zones.

If removal of a section of hedge is essential, e.g. for improving access, permission may be required from the Local Authority, and this work should be conducted outside the bird breeding season (March 1st -31st July). Any loss of hedges should be mitigated elsewhere on the site, wherever possible through new planting or strengthening of existing hedges. Hedge maintenance should be carried out to favour birds and other wildlife in accordance with Natural England guidance.

Field margins

Field margins, or buffer strips, are ideal locations for biodiversity enhancements which might benefit plants, invertebrates and ground nesting birds as well as reptiles and small mammals. Solar farms often have an access route between the security fencing and the site boundary which presents an ideal opportunity for establishing habitat within the field margins. Margins should aim to be around 7-10 metres wide.



Uncropped tussocky grassland can be established as habitat for nesting bumblebees and ground nesting birds through the summer and invertebrate habitat through the winter. Such habitat is usually left uncut for 2-3 years to allow tussocks and tufts to develop.

A mix of perennial fine grasses and wildflowers such as knapweed, yarrow, scabious and bird's-foot trefoil can be established within the tussocky grassland to create habitat for pollen- and nectar-feeding insects. On light chalky or sandy soils, the seed bank of field margins can include a wide array of broad-leaved arable plants, some of which are threatened in the UK. For these species, annual cultivation to allow germination and then lack of disturbance to allow flowering and seeding is the most beneficial management. This approach requires careful management to prevent colonisation by injurious weeds.

Security fencing

Security fencing at the perimeter of the solar array provides an ideal surface for growing climbers such as honeysuckle or clematis, both of which are good nectar sources as well as providing additional screening for the site. A 20-30cm gap between the base of the fence and the ground enables movement of badgers and other wildlife without compromising the security of the site. A native hedge could be planted on the outer side of the security fencing which would add to the security value in future years and provide a visual shield as well as increasing the area of valuable habitat. However, a site-specific approach is required. For example allowing large mammal access may not be appropriate on a site designed to protect ground-nesting birds. In areas where species vulnerable to collision, e.g. grouse can be found, attention should be paid to fence design to ensure it is visible.

Grassland habitat

This can be established at the boundary of the site, under part or all of the solar arrays or some combination of both. It's important to establish some form of grassland cover quite quickly after construction, as bare soil will be prone to colonisation by non-desirable plants such as injurious weeds. There are a number of different grassland options to consider.

Usually the greatest biodiversity value is gained from a variety of grassland habitats. The best results will come from sites that contain both wild flower meadows and areas of tussocky uncut grassland.

Wild flower meadows

A wild flower meadow is species-rich grassland composed of wild flowers and fine grasses which can support a wide range of invertebrates, small mammals, reptiles and birds. A broad spectrum of wild flower meadows exist, from a few species of fine grasses and wild flowers in their simplest form, through to complex, species rich habitats such as lowland chalk grassland, a BAP priority habitat.

The seed mix selected must be suitable for the soil type and should be composed of species that are both sun and shade tolerant, and native to the UK. A qualified ecologist should recommend a suitable seed mix, including provenance. Conditions within the site must be considered: ex-arable sites may not be suitable for immediate conversion to wild flower meadow where higher nutrient values still exist. A soil test to evaluate the nutrient levels is essential, as wildflower meadow establishment is rarely successful on land with a Phosphate index above 1. Advice should be sought from an experienced ecologist during the establishment phase.

A wild flower meadow could be sown beneath the array (successfully implemented at a number of solar farms) or in strips around the edge of the site. Where a meadow is established beneath the array, care should be taken to ensure the vegetation will not over-grow and shade the panels.

Establishing a wild flower meadow can take several years and its important good practice is followed. Once established, meadows tend to be quite stable and with suitable management can remain in perpetuity without the need for fertilizers or herbicides. A meadow requires only cutting or grazing at intervals through the year, with the timing of these activities being dependent upon management goals. As a general rule a hay cut in July or August followed by grazing until Christmas is recommended. It is advisable to stop or reduce grazing through the summer to allow wild flowers to flower and set seed. A maintenance plan should be specified in the BMP, including the timing of cutting or grazing.

Pasture

Pasture is grassland established primarily for grazing by livestock which can be established beneath the solar array or around the margins of the site. Greater benefits for wildlife can be gained from sowing a mix of fine grasses. Native wildflower species can be added to the mix to provide nectar over a longer period each year if the soil is not too nutrient-rich. Native red clover should be included in the mix as this species is particularly attractive to bumblebees.

Pasture is a common agricultural option so is a less expensive option to establish, but it does require re-sowing at regular (3-4 year) intervals and does require some agricultural inputs. This option is lower in biodiversity value than the above grassland options but can still provide a nectar source through mid-summer. Reducing or stopping livestock grazing through the summer will maximise flowering to the benefit of bees.

Pollen and nectar strips

Pollen and nectar strips are designed to provide food for pollinating insects through the summer period. Such mixes are relatively cheap, being composed of more common and agricultural species such as sainfoin, red clover and bird's foot trefoil. Pollen and nectar seeds can be sown in strips, either along rows within the solar farm, or at its edge. Such mixes usually require re-sowing every 3-4 years.

Wild bird seed mixes

Wild bird seed mixes are established to provide food for wild birds. These mixes are sown in the spring and left standing as a seed crop for birds through the winter. These mixes are usually grown in strips and are ideal for boundaries or wayleaves. Such crops usually contain a mix of cereal and oil-rich crop such as quinoa or oilseed rape and need to be re-sown annually. Allowing arable wild flowers to grow, or including additional species such as flax, will add further value.

Bare uncultivated strips

Strips of bare ground could be left uncultivated for the maintenance and propagation of rare arable plants, where appropriate. Small areas of bare ground with undulating profile may also benefit ground active and warmth loving invertebrates. The location of bare strips should be advised by an ecologist and such interventions should be monitored periodically for injurious weeds.

Woodland habitat

Woodland may not be suitable within the solar array due to shading, but can provide screening on the northern boundary or in areas bordering the solar park. Any planting should be composed of native species and where possible should tie in with local and national biodiversity targets. The planting pattern should include open glades and rides to provide a variety of structure within the woodland. Alternatively, wood pasture or parkland may be appropriate.

Ponds and water courses

All wet areas on a solar farm, be they ponds or ditches, will be beneficial to invertebrates, amphibians, birds and reptiles as long as high water quality is maintained. New ponds should be created on habitat of low wildlife value and an ecologist should advise on their siting, design and management. Ditches will usually attract the most wildlife if a variety of conditions are provided, including shady and sunlit areas, shallow water and deeper sections. It will be necessary to get a license from the Environment Agency if substantial changes are planned to an existing water course. All ponds and water courses will benefit from a wide buffer of uncropped grassland along their edge.

Artificial structures

A variety of structures can be built to provide suitable habitat for nesting, roosting and hibernation.

Hibernacula

Hibernacula are log, rock and stone piles designed to create suitable conditions for reptiles and amphibians to hibernate. Advice on design should be sought from an ecologist.

Habitat for invertebrates

Log piles should consist of a mixture of hard wood and soft wood and left undisturbed to rot down. Log piles should be placed in both sunny and shady habitats to benefit the widest variety of invertebrates. Butterflies and solitary bees prefer sunny areas while stag beetles prefer shade. Log piles can also provide suitable conditions for reptiles, amphibians, lichens and fungi.

Roosting and nesting

Birds, bats and small mammals can benefit from the provision of artificial nesting and roosting structures. The type of box and its location should be specified by an ecologist to increase the chances of success. Usually nesting and roosting boxes would be located within hedgerows and woodland but suitable habitat can also be created within the solar array itself: planks have been affixed to frames as nesting habitats for blackbirds and other farmland birds. Built structures such as control buildings can be designed or adapted to promote and enhance access for roosting, nesting and/or hibernating. A number of more specialist structures can be built for invertebrates including 'bug hotels' with small holes for solitary bees and wasps, and beetle buckets for stag beetles to lay their eggs. In some cases small areas of bare ground may benefit certain invertebrates.

It should be noted the habitat enhancements listed here are a selection of the more common options known to be successful within solar farms. Many other options exist (e.g. scrub, heath, wetland, coppice..) and well-conceived new approaches, endorsed by conservation organisations, should be encouraged on solar farms.

7. Managing the site for biodiversity

Appropriate management is vital to ensuring habitat enhancements deliver benefits to biodiversity. If management is not suitable, or is discontinuous, then any benefit may be lost. For example, if a wild flower meadow is seeded but then cut or grazed at the wrong time of year, or if fertilizer is applied, many of the wild flowers will be lost. Conversely, where management is appropriate, wildflowers may appear spontaneously from the natural seed bank.

Generally management for biodiversity is less intensive than typical agricultural land management, which means costs are also lower. For example, hedges would be cut every 3 years instead of annually; tussocky grass field margins would be cut every 2-5 years. This reduces disturbance to the habitat, enhances structure and promotes flowering and fruiting.

The greatest benefits for biodiversity will be gained on sites where fertilizer and pesticide use is minimised. Such an approach will significantly reduce management costs and enable floral and invertebrate diversity to increase over time. Consideration must be given to ecologically appropriate control of weeds, especially those injurious weeds which must be controlled by law. Seeding or planting any bare areas of site is usually the best means of preventing weed colonisation. Regular monitoring should be undertaken and if weeds become a problem rapid action should be taken. A variety of guidance exists on this topic – see bibliography for further details.

The BMP should outline management activities with prescriptions on methodology, timing and frequency. Site management and contractors should be made fully aware of the biodiversity objectives for the site and specifically any protected species that occur. Management activities should follow established good practice such as that provided by Natural England and non-Government conservation organisations – see bibliography for further details.



8. Grazing



Low intensity grazing can provide a low cost means of managing grassland as well as increasing its conservation value. Grazing also enables the land to remain agriculturally productive, although it should be noted that higher intensity grazing is unlikely to be beneficial to wildlife.

Sheep are the usual choice for solar farms, being generally small enough to pass beneath the rows of panels. They are usually available and also easy to handle. Sheep have been successfully used at multiple solar farms for several years. Hardy breeds are usually best suited to autumn and winter grazing where the grazing is less nutritious. Larger stock such as horses and cattle are not considered suitable due to their ability to damage the arrays.

A qualified ecologist should assist with the development of a conservation grazing regime that is suited to the site's characteristics and management objectives, and this regime should be incorporated into the BMP. If grazing is being conducted with biodiversity in mind, then a lower stocking density should be maintained so that the grassland retains some structural diversity. Maintaining grassland structure through the winter is good for invertebrates.

Grazing should be stopped for periods of the spring and summer. Stopping grazing in the spring (April – June) will favour early flowering plants, whereas summer (July-September) will favour summer flowering herbs. Ceasing grazing April-September will return the greatest biodiversity benefits but it is appreciated this may not always be possible. A combination of low stocking density and breaks in grazing should lead to a high diversity of wild flowers and invertebrates as well as benefiting ground nesting birds and mammals.

Where grassland is being managed for ground-nesting birds light grazing is usually acceptable but topping or mowing must be avoided through the spring and summer months.

If grazing is being conducted with agricultural production as the primary goal then the landowner may choose to graze livestock at higher stocking densities through much of the year. While the biodiversity value of the pasture would be minimal, this approach does not preclude the use of other habitat enhancements, such as hedgerows and field margins which can still provide benefits to biodiversity from the wider site.

9. Monitoring biodiversity

Monitoring is a fundamental component of biodiversity management and requires thorough planning to identify key indicators, establish baseline conditions prior to development and assess biodiversity changes through the life of the project. The monitoring section of a BMP should provide details of key elements of biodiversity to be monitored, the method of monitoring and frequency and time of year the activity should be carried out.

Key elements of biodiversity, including protected species and BAP priority habitats, should be measured at regular intervals. If a protected species is found on site and specific enhancements have been made, this species should be surveyed at least annually at a suitable time of year to check its status (providing this doesn't result in disturbance to the species). Likewise, a specialist habitat such as a wild flower meadow should be carefully monitored to ensure it develops to its full potential. For habitat monitoring it's usually advisable to identify a small number of indicator species. Monitoring should be undertaken by a qualified ecologist with training in the species or habitat of interest.

All habitat enhancements should be checked regularly to ensure they are working properly and nothing has gone wrong. For example, any plantings should be assessed in spring and autumn to ensure the plants have taken and remain healthy. The entire site should be checked regularly for injurious weeds. Nesting and roosting boxes should be cleaned and checked for structural integrity outside of the breeding season.

An adaptive management approach should be adopted whereby the results of monitoring feed back into the management of the site. This means that if problems are identified during monitoring, e.g. a flush of injurious weeds on part of the site, then appropriate management action should be rapidly taken. Likewise, if positive results are returned, e.g. an increase in a particular bird species nesting on site, then consideration should be given as to how to maintain and maximise this success. Such management revisions are likely to require specialist

ecological knowledge and discussion with appropriate conservation organisations.

Monitoring activities should be described in full within the BMP, but can be summarised in table form, as below.

The cost of monitoring must be factored into the land management of the site and becomes a significant expense where professional ecologists are used. It may be possible to engage amateur naturalists to take on key elements of monitoring, e.g. birds, but it is the responsibility of site management to ensure such surveys are undertaken to the standards required to provide the evidence necessary to inform the BMP.

There is an opportunity for the solar industry to invite members of the conservation community to periodically audit solar farms and gauge the progress made in implementing the various elements of the BMP. Such an approach would provide an independent assessment of developments at a site level and would enable the sharing of management experience – both successful and unsuccessful – among members of the industry.

Biodiversity element	Monitoring activity	Key indicators	Target	Frequency	Time of year
Hedgerows	Walk full length of hedgerows	Check for browse damage, dead whips, weeds, gaps	Species mix and density of original planting is maintained	Annually	Summer
Woodland	Inspect all new plantings	Check for browse damage, dead whips, weeds	Species mix and density of original planting is maintained	Annually	Summer
Wild flower meadow	Walk full length of grassland habitat	Count herbs flowering – check against seed mix species list Check for injurious weeds in high density	ID indicator species for year 1 Species richness should approach seed mix by year 5	3 times during first year of establishment, then annually	3 times between March and July in 1st year, then July
Nest boxes	Inspect each box	Check boxes are intact, secured, previously used for nesting, clean	25-50% of boxes occupied by target species in year 2	Annually	Winter
Birds	Walk-through of entire site plus point surveys in early morning	Record all birds, especially arable priority species. Check against target bird species list in BMP	Bird species increase by year 5	Annually; repeat 2-3 times per session	Summer (March – August).
Reptiles	Check reptile suntraps	Record all species	Reptile species maintained or increased by year 5	Annually; repeat 2-3 times per session	Summer

10. Case Studies

Wiltshire Wildlife Trust developing Chelworth solar farm for the local community and biodiversity



Concern about the long term impact of climate change on wildlife led Wiltshire Wildlife Trust to engage with the renewable energy sector. Solar PV was identified as a the most appropriate technology that could both contribute successfully to renewable energy targets and, at the same time, provide a net biodiversity gain if implemented at the right site.

Part of the Trust's land adjacent to an industrial estate was identified as a suitable site. A new community benefit society, Wiltshire Wildlife Community Energy, was formed with the support of Bath and West Community Energy to develop the site. A share offer issued to Trust members and local people was launched in July 2013. It was hoped the share offer would contribute to the estimated cost of £1.2million, but in just 2 months the entire cost of the scheme was met, reflecting strong local support.

The site is a brownfield site which hosted a small population of great crested newts. It was fully surveyed and has now been temporarily cleared of newts under a European Protected Species licence from Natural England (eight newts were found in 30 days, in the grassland habitat). Construction started in February this year and, when it is completed, the newts and many other species will be free to return to an improved and economically secure nature reserve, that includes a new pond.

Grassland on-site will be restored to wildflower meadow, combining shade tolerant species with plants favouring more open sunlight. Grassland planting has been chosen to reflect the mixed shade and light conditions that will exist under the solar array, and it will subsequently be grazed by Trust-owned sheep. As well as newts, it is expected that the site will support other local populations of protected species, such as reptiles and brown hairstreak butterfly in surrounding hedgerows.

RSPB using solar farm planting to nourish farmland birds

Farmland birds require insect rich habitat in the breeding season, seed rich habitat in winter and in-field nesting habitat. Provision of these measures also benefits a range of other wildlife including insects, arachnids and small mammals. The RSPB advocates achieving meeting these three seasonal needs to support birdlife through careful zoning on the ground.

Insect rich habitat (nectar flowers) should be sown and managed every first and second row. In-field nesting habitat (fine grasses) should be sown and managed every third row for priority species such as skylark. This also provides habitat for small mammals and larvae of pollinating insects, including butterflies and moths. Seed rich habitat (wild bird

seed mixture) should be sown around the installation, where access dictates, and should be managed on an annual basis. This provides vital food for farmland birds and small mammals.

The fine grasses in nesting areas should include common bent, creeping red fescue, hard fescue and smooth stalked meadow grass. Good nectar producing plants include clovers, birdsfoot trefoil, black medick, common vetch, Phacelia, sainfoin and lucerne. Seed food over the winter months can be provided through a mix of mustard, spring wheat, millet, triticale and barley.

The RSPB has applied these measures to Uphouse Farm's new solar pv installation, which powers indoor chicken production, in Fakenham. Nectar rich areas were created in autumn, which will yield food sources for a range of insects including butterflies, moths, beetles and hoverflies. Areas of fine grass areas for mammals and insects were also established. These areas are followed in spring with establishing wild bird seed mix areas, to which unharvested seed bearing plants such as wheat, barley and oats will be added, providing a huge boost for seed eating farmland birds, such as yellowhammers, in the winter.

More information on recommended mixes and sowing rates is available in the RSPB's solar farm guidance information at www.rspb.org.uk/solarfarmadvice

Solarcentury and Bumblebee Conservation Trust partner to boost bumblebees

Solarcentury and Bumblebee Conservation Trust (BBCT) have partnered to promote the use of solar farms in alleviating the plight of the bumblebee, which has declined dramatically. The partnership will promote the development of bee-friendly environments by creating biodiverse spaces in and around the solar farms Solarcentury has developed.

In the last 100 years bumblebee populations have crashed, with two species becoming extinct in the UK. Solar farms are ideal environments for bee habitats because they can support a range of attractive micro-habitats. The variety of dry and wet and shaded and sunny areas, if properly planted and managed, can encourage a much wider variety of fauna than improved grassland alone.

When Solarcentury develop a solar farm, they plant acres of wildflower meadows with native seed mixes that are specifically designed to attract a diversity of wildlife. Solarcentury farms are fenced off, and are frequently situated in remote areas, which creates a safe haven for wildlife. So in addition to generating clean, carbon-free energy, solar parks are also helping to reinvigorate the British bumblebee.

Solarcentury and BBCT plan to engage communities local to solar parks to highlight how people can grow particular plant species in their gardens and public spaces to support bees. It is hoped that this 'positive loop' between solar farms and local green spaces will further encourage the establishment of healthy bumblebee populations, as well as Britain's rarer bumblebees.

BBCT in working with Solarcentury hope to enhance the prospects of Britain's bumblebees, including the rarest Shrill carder and the Brown-banded carder species. Together, there is the prospect of improving the quantity and diversity of wildlife both within the solar farms and in nearby communities. Solar farms have the potential to breathe life into the bumblebee population and contribute to a vision of communities and countryside rich in bumblebees and colourful flowers.

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continue under BPS. Equally it should be pointed out that due to the work of the industry there is a high level of awareness and acceptance that such sites bring considerable benefits for the environment.

This is not just an issue about how much land would be impacted if areas were not eligible, equally there should be no undue bearing on the decision as a result of other support that may be available to such land use.

I gather [REDACTED] you have spoken to my colleague Dr Jonathan Scurlock on this issue and we are more than happy to sit down with you to go through this issue in detail to discuss all the factors around this subject.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

==

Meeting summary - solar farm eligibility for CAP payments

Single Payments Scheme/Basic Payments Scheme eligibility

- [REDACTED] will look at clarifying the definition of land that is eligible for the Basic Payments Scheme (BPS), to make it more explicit that if ~~some proportion (e.g. > 50%) of~~ the land on which there are solar panels is used for grazing (or other agricultural purpose, such as free-range hens), then that land would be eligible to be considered for BPS.

Ecological Focus Area eligibility

- Such land that is eligible for BPS may be eligible to be considered as an Ecological Focus Area (EFA).
- Buffer zones around the margins of a field or rows within a field containing solar panels may be eligible as EFAs, particularly where they help to preserve EFA-eligible features, such as hedgerows or watercourses, but only if the land is or was arable within the past five years and remains capable of cultivation. This needs further clarification.

- ~~It is not yet clear whether land in between rows of panels might be eligible as EFAs, since EFA is primarily intended to preserve features within arable land.~~
- [REDACTED] will investigate these issues further.

Biodiversity impacts

- There is not currently robust evidence to demonstrate the strong claim that solar farms bring about additional biodiversity benefits. This is partly due to the relative infancy of the industry and hence lack of peer-reviewed published studies so far.
- There is scope for research in this area. [REDACTED] will investigate research possibilities and consider necessity. One question for the research could be whether EFAs on solar farms provide at least equal benefit to EFAs on conventional arable land. Would it be worth trying to get DECC on board, and potentially contribute funding?

Thanks again,

[REDACTED]

[REDACTED] | [\[REDACTED\]@defra.gsi.gov.uk](mailto:[REDACTED]@defra.gsi.gov.uk) | [REDACTED]

[Redacted]

From: [Redacted] (Defra)
Sent: 19 August 2014 16:02
To: [Redacted] (Defra)
Subject: RE: CAP Decisions

If you do use it, it's important to emphasise that this is just a back-of-the-envelope calculation to estimate how much land would be required to site 10GW of installed capacity. We are not making any prediction/projection of how much ground-based solar there would actually be by 2020.

[Redacted]

[Redacted] | [\[Redacted\]@defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk) | [Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

From: [Redacted] (Defra)
Sent: 19 August 2014 14:25
To: [Redacted] (Defra)
Subject: RE: CAP Decisions

No problem at all. Jonathan Scurlock at the NFU responded to my query about his calculation and has pointed out that David MacKay's power per unit area of 4-5 W/m² is an estimate of the average power density. This takes into account the annual load factor, which for solar in Britain is about 10%.

Solar farms are generally described by their “capacity” in MW, which is shorthand for their peak installed capacity. If we want to estimate how much land is required by e.g. a 5MW solar farm, we should ignore this annual load factor correction. In other word we we should multiply the average power density (of 4-5W/m2) by 10 to give the peak installed power capacity, which is 40 to 50 W/m2.

That leads instead to the following table (assuming 40 W/m2):

	No. of projects	Capacity [MWp]	Total Areal extent [m2]	Areal extent [hectares]	% of UK agricultural area
Total operational up to end Feb 2014	184	850	21250000	2125	0.01
Projects expected to commission before the end of 2013-14	48	538	13450000	1345	0.01
Projects with planning permission awaiting construction	194	1656	41400000	4140	0.02
Possible future installation: 10GW solar farms installed by 2020		10000	250000000	25000	0.14

This is the table that should be used to estimate the amount of land that would be required by projects of a certain capacity or to fulfil a certain projected installed capacity (e.g. last line of table shows – DECC have an aspiration of 20GW installed capacity of solar panels by 2020. If half of that were to be produced by solar farms (10GW installed capacity), that would require 25,000 hectares or 0.14% of UK agricultural land.)

[Redacted]

[Redacted] [@defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk) [Redacted]

[Redacted]

From: [Redacted] (Defra)
Sent: 19 August 2014 12:59
To: [Redacted] (Defra)
Subject: RE: CAP Decisions

Hi [Redacted],

Apologies for not getting back to you sooner on this. I have just had a quick look and I think the best reference would be an estimate produced by DECC’s outgoing CSA, Prof David MacKay. He published a paper in the Philosophical Transactions of the Royal Society in July 2013 with the following relevant line in the [abstract](#):

“Solar photovoltaic farms in Bavaria, Germany, and Vermont, USA, deliver 4 watts per square metre; in sunnier locations, solar photovoltaic farms can deliver 10 watts per square metre; concentrating solar power stations in deserts might deliver 20 watts per square metre.”

Unfortunately I don't have access to the [full paper](#), but MacKay has published the graphs from this paper on [his own website](#). [Figure 8](#) and [Figure 14](#) are particularly useful. From these I think you would be safe to estimate a typical power per unit area of 4W/m² for solar farms in the UK, which have a typical capacity of 5MW, i.e. a typical UK solar farm requires 1250m² of land to have the capacity to produce energy at a rate of 5MW.

In March 2014 DECC published their [Solar Strategy part 2](#), which states: “By the end of February this year [2014], that number [projects larger than 1 MWp operational] had grown to 184 projects (850 MWp) with a further 48 projects (538 MWp) expected to commission before the end of 2013-14. In addition, another 194 projects (1656 MWp) have planning permission and are awaiting construction.

Assuming power per unit area of 4W/m² leads to the following estimates of total land use (calcs attached):

	Total				% of UK agricultural area (18 million ha)
	No. of projects	Capacity [MWp]	Areal extent [m ²]	Areal extent [hectares]	
Total operational up to end Feb 2014	184	850	212500000	21250	0.12
Projects expected to commission before the end of 2013-14	48	538	134500000	13450	0.07
Projects with planning permission awaiting construction	194	1656	414000000	41400	0.23

This [NFU briefing](#) is quite useful, but not sure the calculations are quite right. I've just emailed Jonathan Scurlock to check the assumptions he used.

Please let me know if this is useful and if you need any more information in a similar vein.

Thanks!

[Redacted]

[Redacted] | [\[Redacted\]@defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk) | [Redacted]

[Redacted]

From: [Redacted] (Defra)
Sent: 28 August 2014 23:34
To: Roberts, John (Defra); [Redacted] (Defra)
Cc: [Redacted] (Defra)
Subject: RE: CAP direct payments

John, [Redacted]
In answer to [Redacted] question below, there is no data on how much land with solar panels is currently claimed on as RPA don't capture that data. See evidence para below for what we do know. The number of projects (cited by DECC in April 2014) suggest there are fewer than 500 farmers at issue. And only half of those would be in a position to claim SPS subsidy by this point (based on 194 awaiting construction). The areal extent hectare figure is an extrapolation made by [Redacted] in Defra's Climate Change Mitigation.

Evidence

- There is limited data available on the extent of ground-based solar. RPA does not code agricultural land in such a way as to distinguish solar arrays, and therefore cannot tell us how many farmers are claiming both agriculture and energy subsidies. We cannot therefore estimate how much CAP funds will be freed up by implementing this policy. What follows is extrapolated from DECC's *UK Solar PV Strategy Part 2: Delivering a Brighter Future*, and characterises the current extent of ground based solar (but provides no data on how many claim SPS).
- Assuming power per unit area of 40W/m2 leads to the following estimates of total land use:

	Total			
	No. of projects	Capacity [MWp]	Areal extent [hectares]	% of UK agricultural hectares)
Total operational up to end Feb 2014	184	850	2125	0.01
Projects expected to commission before the end of 2013-14	48	538	1345	0.01
Projects with planning permission awaiting construction	194	1656	4140	0.02

[Redacted]

From: [REDACTED] (Defra)
Sent: 15 September 2014 14:48
To: [REDACTED] (Defra)
Cc: [REDACTED] (Defra)
Subject: FW: Commission: Short Note on Solar Arrays and Proposed Exclusion under the BPS **BY MIDDAY MONDAY 15TH**

Hi [REDACTED]

Thanks for phoning. I'll do a back-of-the-envelope calculation for you now to give a very rough estimate of the amount of subsidy received for ground-based solar arrays, based on the previous assumptions.

Having said that, here's some information on subsidies for solar:

Solar arrays under 5MW capacity can receive government subsidy via Feed-in Tariffs. This is probably the most common subsidy route used by farmers. However, DECC has recently [consulted](#) on reductions to the amount of FiTs subsidy available to ground-based arrays in favour of roof-top arrays. DECC are yet to finalise this decision.

Solar arrays greater than 5MW are subsidised via a different route, which is changing under Electricity Market Reform (EMR). The existing subsidy path is via the Renewables Obligation. This requires energy suppliers to purchase a specified amount of renewable energy from generators, the cost being passed on to bill payers. In the same consultation mentioned above, DECC have proposed closing the RO to new solar > 5MW from 1 April 2015. Under the Electricity Market Reform, the whole subsidy regime has been revised, such that suppliers of low carbon electricity will now compete for "Contracts for Difference" which provide a guaranteed price for each unit of low carbon electricity generated by topping up the difference between the market price and the "Strike Price" set by DECC each year. The first contracts will be issued next month.

I'll get back to you with some numbers as soon as I can this afternoon.

[REDACTED]

[REDACTED] | [\[REDACTED\]@defra.gsi.gov.uk](mailto:[REDACTED]@defra.gsi.gov.uk) | [REDACTED]

[REDACTED]

From: [REDACTED] (Defra)
Sent: 15 September 2014 18:11
To: [REDACTED] (Defra)
Subject: RE: Commission: Short Note on Solar Arrays and Proposed Exclusion under the BPS
BY MIDDAY MONDAY 15TH

Thanks, and in case it's of use to you, here's the case study I was using: <http://www.westmillsolar.coop/projects.asp>

[REDACTED]
[REDACTED] | [@defra.gsi.gov.uk](mailto:[REDACTED]@defra.gsi.gov.uk) | [REDACTED]

[REDACTED]

From: [REDACTED] [REDACTED]@solar-trade.org.uk>
Sent: 08 July 2014 22:12
To: Jonathan Scurlock
Cc: [REDACTED] Defra); [REDACTED]
[REDACTED]@decc.gsi.gov.uk); [REDACTED]@bpva.org.uk
Subject: Re: DECC/Defra Ministerial Roundtable on agricultural rooftop solar

Hi Jonathan and [REDACTED]

Note Jonathan's ref to the 9.5m2 on land. This is the same issue we amused for households, but the argument is much much stronger for farms who have the land available but not the rooftop. This is part of our request on permitted development which formed the non-financial barriers. It would be good if DCLG could consult in both at the same time. Remember we need a rocket boost for the market!

[REDACTED]

On 8 Jul 2014, at 21:48, "Jonathan Scurlock" [REDACTED]@nfu.org.uk> wrote:

[REDACTED]

Dear [REDACTED]

1. As we discussed today, the NFU welcomes the proposed joint Ministerial roundtable in September/October between Environment Secretary Owen Paterson and Energy Minister Greg Barker. I understand that Defra is interested in evidence for there being already significant uptake of solar PV roofs by farmers. Based upon solar industry and DECC statistics, the NFU estimates that there is 300-400 MW of farm rooftop PV installed so far (up to 10,000 rooftops, average size 30-40 kW). For comparison, total UK commercial medium-sized roof-mounted capacity (10kW-250 kW) is about 700 MW presently (DECC statistics lag a little behind industry data due to delays in updating the register).

One of my present NFU tasks is to work with our in-house market research team on a quantitative survey of the present level, diversity and scale of NFU member uptake of renewable energy in all its forms. There does indeed seem to be a mis-match between (a) the results of Defra's Farm Practices Survey and Farm Business Survey, which find relatively modest uptake of renewables; and (b) independent market research by banks like Barclays and RBS as well as the Forum for the Future/Nottingham Trent University "Farm Power Station" project, and the NFU's own estimates.

For example, 30% of 400 farmers surveyed across England and Wales in 2011 by NFU and RBS-NatWest expected to be involved in some form of renewable energy production, use or supply by summer 2012:

<http://www.guardian.co.uk/environment/2012/jun/04/renewable-energy-boosts-farmer-profits>

Barclays carried out their own survey in 2012 involving 383 dairy and cereal farmers - they found a third of respondents planning to invest in some form of renewables over the next two years:

<http://www.fwi.co.uk/Articles/04/09/2012/134913/Livestock-2012-Survey-shows-interest-in-renewables.htm>

The latest Farmers Weekly survey (Autumn 2013) found a "surprisingly high number - 38%" had invested in renewable energy:

<http://www.fwi.co.uk/articles/22/11/2013/142042/farm-energy-research-the-power-to-cut-your-energy-bills.htm>

2. The most common solar product advertised in the agricultural trade press is a ~50 kW (usually 49.5 kW) roof system costing about £50,000 - this is covered by a fairly streamlined process under the Microgeneration Certification Scheme. There may be a market 'gap' worth addressing for bigger rooftop systems (50 kilowatts to 500 kilowatts, 400-4000 m², costing £50-400,000), which are more complex to implement. Of the possible measures already forwarded to [REDACTED] the NFU considers that "(i) removing or amending/easing the need to have (or be exempted from) an Energy Performance Certificate for a linked building" would be particularly effective and could be implemented specifically for the farming sector, following similar concessions granted to schools and community groups.

As we also discussed, there may be a significant number of farmers who are unable to implement roof-mounted solar PV due to not having a suitable roof (buildings too old, or unsuitably oriented or shaded). While the NFU realises the Secretary of State would not condone the easing of planning consent for ground mounted solar on agricultural land, perhaps it would be possible for the government to limit any such concession to deployment within farmyards or areas within the curtilage of farm buildings and other non-agricultural land? The proposal would be for DCLG to consult on amending the present permitted development limit of 9.5m² (1.3kW) for ground mounted solar - the suggested new limit would be a ten-fold increase to 95m²/100m² or around 13-15kW, strictly limited to land unsuitable for cultivation or grazing.

Best regards - Jonathan

Dr. Jonathan Scurlock
Chief Adviser, Renewable Energy and Climate Change

[REDACTED]

[REDACTED]

Visiting Research Fellow, The Open University, UK

From: [REDACTED] (Defra)
Sent: 24 July 2014 17:57
To: [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra)
Cc: [REDACTED] (Defra)
Subject: For action: NFU seeking clarity on solar farms in the 2015 CAP implementation

[REDACTED]

I've just had a 'phone call from Jonathan Scurlock of the NFU, who would like to know the current position on the eligibility of solar farms for CAP payments through the BPS. Specifically, whether solar farms with grazing livestock present for part of the year are deemed to be eligible agricultural land for BPS or not? Has there been any progress on this?

Also some clarity on whether any eligible land could count as an Ecological Focus Area?

(I've copied below his understanding of what was agreed at our meeting back in March.)

Jonathan is currently working with the National Solar Centre on some guidance to be launched in September, for which he needs to finalise text in the next ten days. He would like to ensure this guidance reflects the latest position.

[REDACTED]

[REDACTED]

[REDACTED] [@defra.gsi.gov.uk](mailto:[REDACTED]@defra.gsi.gov.uk) | [REDACTED]

From: Jonathan Scurlock [REDACTED] [@nfu.org.uk](mailto:[REDACTED]@nfu.org.uk)
Sent: 08 July 2014 22:17
To: [REDACTED] (Defra)
Cc: [REDACTED]
Subject: Solar farms in the 2015 CAP implementation

[REDACTED]

Dear [REDACTED]

Further to our telephone discussion today, I am forwarding the NFU's summary of the main points agreed at our meeting on 18th March 2014, attended by [REDACTED] and me, [REDACTED] and you, with [REDACTED] joining us by phone. Please do share this with Defra colleagues.

- It should be clarified in the 2015 BPS/RPA Handbook that solar farms with grazing livestock present for part of the year are deemed to be eligible agricultural land. In the majority of cases this means grazing by sheep, but free-ranging chickens, geese and other poultry are also used to maintain grass under solar farms, and in a few cases young cattle may be grazed. Only those solar farms managed exclusively for biodiversity with no grazing will be considered ineligible land (e.g. where grazing animals are excluded all year round to avoid disturbing ground-nesting wild birds or trampling rare plants). The ground area of upright mountings and any hard standing is to be deducted from eligible area.

- Ecological Focus Area (EFA) measures such as grazed or ungrazed buffer strips must be located on arable land, temporary grassland or strips of fields adjacent to such land, and may include eligible land within solar farms. Such EFA measures may be on field margins or between rows of solar modules, but not under the solar modules.

Best regards - Jonathan

Dr. Jonathan Scurlock
Chief Adviser, Renewable Energy and Climate Change

[Redacted signature block]

[Redacted signature block]

[Redacted signature block]

[Redacted]

From: [Redacted] (DECC) [Redacted]
Sent: 28 May 2014 10:33
To: [Redacted] (Defra); [Redacted]
[Redacted]
(Defra); Tillson, Jonathan (Defra); Church, Colin (Defra); [Redacted]
Subject: RE: Ground based solar farms
Follow Up Flag: Follow up
Flag Status: Flagged

[Redacted],

I presume that you are also aware of the recently launched consultations on closing the RO to farms above 5MW from April 2015 and requiring large solar above 5MW to compete directly with onshore wind for CfDs under the new Electricity Market Reform process?

<https://www.gov.uk/government/consultations/consultation-on-changes-to-financial-support-for-solar-pv>

[Redacted]

[Redacted]

[Redacted]

[REDACTED]

From: Jonathan Scurlock [REDACTED]@nfu.org.uk>
Sent: 19 August 2014 13:14
To: [REDACTED] (Defra)
Subject: RE: Quick query on solar calc

[REDACTED]

I think this is a common error which often arises from David MacKay's publications (it gets me confused sometimes!). He uses AVERAGE power density of 4-5W/m² for solar farms in N Europe, and not the peak installed power capacity, which is about 40-50 W/m². Average power density takes into account the annual load factor, which for solar in Britain is about 10% - hence the error of a factor of ten!

Here are a few more words of explanation:

One megawatt (MW) of installed capacity entails about 0.6-0.9 hectares of solar modules, depending upon type – this is the area occupied if the modules were wall-to-wall on a large commercial rooftop. When ground-mounted, solar farms in N Europe commonly have row spacing so that about 2.0-2.5 ha of land area is occupied per MW (40-50W/m²).

Cheers - Jonathan

From: [REDACTED] [REDACTED]@defra.gsi.gov.uk]
Sent: 19 August 2014 12:54
To: Jonathan Scurlock
Subject: Quick query on solar calc

Jonathan,

Can I just quickly check something with you?

It's a back-of-the-envelope calculation on p3 of your December 2013 NFU briefing on solar (http://www.nfuonline.com/solarpv_nfubriefing4/)

"If 10 GW of solar power were ground-mounted (half the national ambition for 2020 set by DECC), this would occupy at most 25,000 hectares - just 0.14% of total UK agricultural area (18 million ha) with a negligible impact on national food security."

Are you using 40 W/m² as your assumption for the power per unit area? I've been using 4W/m² as a typical power per unit area (e.g. <http://rsta.royalsocietypublishing.org/content/371/1996/20110431.abstract>), which gives me 1.4% in the attached calcs, but I may have made an error elsewhere...

Thanks,

[REDACTED]

[REDACTED] | [\[REDACTED\]@defra.gsi.gov.uk](mailto:[REDACTED]@defra.gsi.gov.uk) | [REDACTED]

[REDACTED]

From: [REDACTED] (Defra)
Sent: 17 September 2014 18:20
To: 'Jonathan Scurlock'
Subject: RE: Solar farms in the 2015 CAP implementation

Dear Jonathan,

I work on BPS and solar arrays policy within Defra. We are considering removing BPS subsidy from land on which solar arrays are based, and discussed the proposition at the recent Direct Payments Consultative Group with stakeholders (including [REDACTED])

I am struggling to find data on the current extent of farmers who host solar farms, and in particular how many of them claim SPS subsidy – as I am sure you know RPA do not record this data. I am also interested in any data on typical ground rents paid to farmers for solar farms. I was discussing the same with [REDACTED] and he suggested that you might be a useful point of call. I got your details from [REDACTED]

[REDACTED]

[REDACTED]@defra.gsi.gov.uk [REDACTED]

From: Jonathan Scurlock [[mailto:\[REDACTED\]@nfu.org.uk](mailto:[REDACTED]@nfu.org.uk)]
Sent: 08 July 2014 22:17
To: [REDACTED] (Defra)
Cc: [REDACTED]; [REDACTED]
Subject: Solar farms in the 2015 CAP implementation

[REDACTED]

Dear [REDACTED]

Further to our telephone discussion today, I am forwarding the NFU's summary of the main points agreed at our meeting on 18th March 2014, attended by [REDACTED] and me, [REDACTED] and you, with [REDACTED] joining us by phone. Please do share this with Defra colleagues.

- It should be clarified in the 2015 BPS/RPA Handbook that solar farms with grazing livestock present for part of the year are deemed to be eligible agricultural land. In the majority of cases this means grazing by sheep, but free-ranging chickens, geese and other poultry are also used to maintain grass under solar farms, and in a few cases young cattle may be grazed. Only those solar farms managed exclusively for biodiversity with no grazing will be considered ineligible land (e.g. where grazing animals are excluded all year round to avoid disturbing ground-nesting wild birds or trampling rare plants). The ground area of upright mountings and any hard standing is to be deducted from eligible area.
- Ecological Focus Area (EFA) measures such as grazed or ungrazed buffer strips must be located on arable land, temporary grassland or strips of fields adjacent to such land, and may include eligible land within solar farms. Such EFA measures may be on field margins or between rows of solar modules, but not under the solar modules.

Best regards - Jonathan

Dr. Jonathan Scurlock
Chief Adviser, Renewable Energy and Climate Change

[Redacted signature]

[Redacted signature]

[Redacted signature]

From: [REDACTED] (Defra)
Sent: 03 October 2014 16:23
To: [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra)
Subject: RE: Solar on the Defra Estate

[REDACTED]

I just had a call from Jonathan Scurlock who provided the figures below that I believe you were looking for. He said that he would be happy for you to call him if you would like to discuss them. He also said that he had been speaking with [REDACTED] and [REDACTED] at the Cabinet Office about plans to produce renewable energy on the government estate, including possible solar farms. I assume that you are already in touch with them about this.

Energy Yield from Farm Land

Jonathan Scurlock gave the following estimates for the amount of farm land required to produce enough energy for a community of 50,000 (assuming each uses 4MWh/yr giving an annual energy demand of 20GWh).

- Biomass thermal power: 1,300-1,800 hectares (depending on the crop used)
- Anaerobic digestion: 1,200 hectares if fuelled entirely by energy crops. This area can obviously be reduced if waste forms part of the feedstock.
- Wind farm: 250 hectares (assuming 4-8 large turbines). This is the size of the site for the turbines. However, agricultural activity can continue on the site.
- Solar farm: 60 hectares. Again, agricultural activity can continue on the site.

I should add that, as [REDACTED] points out, any use of agricultural land for renewable energy production is currently politically sensitive.

From: [REDACTED] (Defra)
Sent: 2 October 2014 8:47 am
To: [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra)
Subject: RE: Solar on the Defra Estate

[REDACTED]

Biomass from a policy perspective are not really considered a better option either if they cause land use change away from more typical crops... however in this case there are biodiversity, water availability and quality and sustainable drainage benefits from miscanthus or short rotation coppice – flip side both of which take time to grow leaving

uncertainty about feedstock in the mean time. We have research we can sure with you on the multiple benefits of biocrops.

[Redacted]

[Redacted]

[Redacted]

[Redacted] [@defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk) [Redacted]

[Redacted]

From: [Redacted] (Defra)
Sent: 01 October 2014 17:19
To: [Redacted] (Defra); [Redacted] (Defra); [Redacted] (Defra)
Subject: FW: Solar on the Defra Estate

Hello [Redacted]

Thank you for your support in identifying the approaches for [Redacted] to make on comparative benefits of different renewable use of land.

[Redacted] [defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk)

[Redacted]

From: [redacted] [redacted] [@decc.gsi.gov.uk](mailto:[redacted]@decc.gsi.gov.uk)
Sent: 1 October 2014 1:24 pm
To: [redacted] (DEFRA)
Cc: [redacted] (Defra); Hurst, Martin (Defra); [redacted] (DECC) - [redacted]
Subject: RE: Solar on the Defra Estate

[redacted]

I have since spoken to Jonathan Scurlock, and he would be happy to discuss his analysis with you. Please note that the analysis was conducted personally by him, and is not the formal NFU position.

[redacted]



[redacted]
[redacted] [@decc.gsi.gov.uk](mailto:[redacted]@decc.gsi.gov.uk) [redacted]
[redacted]

From: [redacted] (Office for Renewable Energy Deployment)
Sent: 29 September 2014 16:09
To: [redacted] (DEFRA)
Cc: [redacted] (Defra); [redacted] (Defra); [redacted] (Office for Renewable Energy Deployment)
Subject: RE: Solar on the Defra Estate

[redacted]

My understanding is that solar shows the highest energy generation per unit land area of any of the renewable technologies, although my understanding is based on work that was conducted by the National Farmers' Union (Jonathan Scurlock).

[redacted]



Department
of Energy &
Climate Change

[Redacted]
[Redacted] [@decc.gsi.gov.uk](mailto:[Redacted]@decc.gsi.gov.uk) [Redacted]
[Redacted]

From: [Redacted] [@defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk)

Sent: 23 September 2014 11:19

To: [Redacted] [Redacted]

Cc: [Redacted] (Defra); Hurst, Martin (Defra)

Subject: FW: Solar on the Defra Estate

Hi [Redacted]

I'm based in the commercial directorate working on a project as part of the Solar PV at scale on the government estate programme. We are currently looking at a site for possible solar installation, as part of the assessment for whether it would be suitable I need to compare possible alternative uses of the land to demonstrate how solar compares. I was wondering if you had access to any research and analysis that covered that area. (as you can see from the below thread, the most interesting comparison is for Solar V biofuels.)

[Redacted]



Department
for Environment
Food & Rural Affairs

[Redacted]
[Redacted]
[Redacted] [@defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk)
[Redacted]

[REDACTED]

From: [REDACTED] rpa.gsi.gov.uk>
Sent: 10 October 2014 16:09
To: [REDACTED] (Defra)
Cc: [REDACTED] (RPA); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (RPA); [REDACTED] (Defra); [REDACTED] (DEFRA)
Subject: RE: Solar panels announcement

[REDACTED]

For the example customer that is claiming SPS on the solar panels:

- The sizes involved are shown **in my email below**. The fields total 21.32 hectares (9.92ha & 11.40ha), of which they actually claim 18.64 hectares. We cannot be certain of the exact area within this specifically covered by the actual solar panels, since this detail is not captured.
- It *appears* from the detail presented by the author of the case study that this farmer does still graze sheep on the land ("*the site has been grazed by sheep since its inception in 2011*", plus a picture of sheep next to the panels), but this cannot be officially confirmed from our SPS data since that detail is not required as part of an SPS application (SPS is a subsidy based on having agricultural land, rather than producing agricultural products. For example, we would know the land was 'grassland', but not whether or not animals were specifically grazing it).
- Before installation of the solar panels, the farmer was declaring these two fields mainly as 'arable' land on their annual SPS claim (exact crop not known/required), including some areas of set-aside between 2005 and 2008.

For those not claiming, we can only assume that they consider themselves to no longer meet the requirements of the scheme on those fields. As mentioned in my email below, two of the main reasons for not/stopping claiming could be:

- 1) Under SPS, we told farmers that they could only claim fields with solar panels on them if the 'primary purpose' of the land was still agricultural. They could still be carrying out *some* agricultural activities on the land (and the case studies linked below do mention grazing of sheep etc.), but if the grazing is secondary in importance to the operation of the panels then the fields are not eligible. It is the customers that make this assessment when deciding to claim.
- 2) In addition, farmers can only claim SPS against land if it is fully under their control ('at their disposal'). If these farmers have actually rented out their fields to a solar energy company, they have relinquished the required level of control and are not eligible to claim (even if they have an agreement with the solar operator to continue grazing their animals).

A further reason could be that they just do not hold (or are simply unwilling to acquire from the open market) any 'entitlements'. Entitlements are the units on which the SPS scheme is based – a farmer can only claim SPS to a level equivalent to the entitlement they hold (for instance, in order to claim 10 hectares a customer would require 10 entitlements).

We wouldn't be aware of the exact reasons why each farmer is not claiming.

I hope this helps.

Kind regards,

[Redacted]
[Redacted] [@rpa.gsi.gov.uk](mailto:[Redacted]@rpa.gsi.gov.uk)
Tel. [Redacted]
[Redacted]

From: [Redacted] defra.gsi.gov.uk]
Sent: 10 October 2014 14:49
To: [Redacted]
Cc: [Redacted]; [Redacted] (LSD); [Redacted] (SAS); [Redacted]; [Redacted]; [Redacted] (Defra); [Redacted] (DEFRA)
Subject: RE: Solar panels announcement

Thanks [Redacted]

For the one farmer that does claim subsidy for land containing solar panels, are we able to find out how big the land area is, whether any crops are still grown/animals grazed on the same land as the solar panels stand, and what the land use was before he invested in the solar panels?

For all the others, do you have any idea why they are not claiming CAP payments for the land on which solar panels stand?

[Redacted]

[Redacted]
[Redacted] [defra.gsi.gov.uk](mailto:[Redacted]@defra.gsi.gov.uk) [Redacted]

From: [Redacted] [Redacted] [@rpa.gsi.gov.uk](mailto:[Redacted]@rpa.gsi.gov.uk)
Sent: 10 October 2014 12:05
To: [Redacted] (Defra)
Cc: [Redacted] (RPA); [Redacted] (Defra); [Redacted] (Defra); [Redacted]; [Redacted] (RPA)
Subject: RE: Solar panels announcement

Dear [Redacted],

Further to [Redacted]'s email below.

I don't think we can say with any degree of confidence how many farmers/hectares we are talking about in terms of SPS claimants, since we don't currently identify land with solar panels under a specific land-use code (the land will be identified as with any other grassland) and we don't identify the panels themselves as a particular kind of 'feature' on within the SPS mapping since there is no requirement to do so for the purposes of the scheme. As such, we cannot immediately point to all fields that contain parcels.

Using the specific given examples from the case studies provided by [Redacted] below, then some interrogation/comparison of various available mapping and claim databases, we have been able to ascertain the following, which gives an insight into how farmers are treating their land under solar arrays. Some do not claim the parcels at all, some used to claim the parcels but stopped when the panels were installed, and only one appears to be claiming on the parcels that contain the panels.

For those that either do not or have given up claiming, we cannot confirm whether this is because they have rented out the land to a solar operator (thus giving up the full control of the land required to qualify for SPS) or if they have

Subject: FW: Solar panels announcement
Importance: High

Hi both,

Can either of you help with identifying some large scale solar farms in receipt of SPS subsidy? I don't know where to begin with this!

There are some identified in the attached doc. The biggest of which is Wymeswold Solar Farm, Leicestershire. Do they claim subsidy?

[http://www.bre.co.uk/filelibrary/nsc/Documents%20Library/NSC%20Publications/NSC - Guid Agricultural-good-practice-for-SFs_0914.pdf](http://www.bre.co.uk/filelibrary/nsc/Documents%20Library/NSC%20Publications/NSC_Guid_Agricultural-good-practice-for-SFs_0914.pdf)

[REDACTED] | Rural Development, Sustainable Communities &
Crops Directorate | **Department for Environment, Food and Rural Affairs**
Direct line: [REDACTED] | Email: [REDACTED]@defra.gsi.gov.uk | Address: [REDACTED]
[REDACTED]

[REDACTED]

From: [REDACTED]@rpa.gsi.gov.uk>
Sent: 01 July 2014 15:08
To: [REDACTED] (Defra)
Cc: [REDACTED]
Subject: RE: Submission on DECC solar pv strategy

[REDACTED]

I prepared the attached summary on the SPS eligibility of solar panels a couple of months ago, which you may find useful.

In real-life, I imagine most ground-based solar arrays (i.e. as opposed to those mounted on poles/masts) will be found to be ineligible currently since there will be no agricultural activity taking place on the parcel.

Regards,

[REDACTED]

[REDACTED]
[\[REDACTED\]@rpa.gsi.gov.uk](mailto:[REDACTED]@rpa.gsi.gov.uk)
[REDACTED]

Cc: Roberts, John (Defra); Fitzpatrick1, John (Defra); [REDACTED] (Defra); Roberts, John (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra)

Subject: RE: Update on solar arrays - restricting BPS subsidy

Dear [REDACTED]

We spoke and here are the revised figures. NFU estimate anecdotally that ground rents for farmers are around £1,500-£3,000 per hectare for hosting solar arrays (compared with receiving an agricultural subsidy of £271 per hectare for non SDA areas). Apologies for my dismal maths.

[REDACTED]
[REDACTED] @defra.gsi.gov.uk | [REDACTED] Ar [REDACTED]

[REDACTED] (Defra)

Sent: 23 September 2014 13:28

To: [REDACTED] (DEFRA); [REDACTED] (Defra); [REDACTED] (DEFRA); [REDACTED] (DEFRA)

Cc: Roberts, John (Defra); Fitzpatrick1, John (Defra); [REDACTED] (Defra); Roberts, John (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra) defra.gsi.gov.uk

Subject: RE: Update on solar arrays - restricting BPS subsidy

[REDACTED]

I am attaching an updated note to flag up two new developments:

- First is some anecdotal information from NFU on typical revenues for farmers who host solar arrays. Apparently they receive ground rents per hectare (£1,500-£3,000) and the operator/developer will bear the risk and costs and will gain the ensuing energy subsidies, rather than the farmer.
- Secondly, yesterday NFU firmed up their line on solar arrays and now oppose our proposition:

The NFU believes that where the farmer has not rented out the solar panel site, we do not see the presence of solar panels as being an out and out reason for land to be ineligible under BPS – there is a wide range of installations both via type and scale that exist. It has been shown that agricultural activity (livestock grazing) can and does coexist with solar panel installations with little disruption, even arable strip cropping could take place. There are a number of ways that are currently used by DEFRA / RPA to allow areas adjacent to solar panels remain eligible and these should continue under BPS. Equally it should be pointed out that due to the work of the industry there is a high level of awareness and acceptance that such sites bring considerable benefits for the environment.

This is not just an issue about how much land would be impacted if areas were not eligible, equally there should be no undue bearing on the decision as a result of other support that may be available to such land use.

From: [REDACTED] (Defra)

Sent: 23 September 2014 15:58

To: [REDACTED] (DEFRA); [REDACTED] (Defra); [REDACTED] (DEFRA); [REDACTED] (DEFRA)

Cc: Roberts, John (Defra); Fitzpatrick1, John (Defra); [REDACTED] (Defra); Roberts, John (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra); [REDACTED] (Defra)

Subject: RE: Update on solar arrays - restricting BPS subsidy

Dear [REDACTED]

We spoke and here are the revised figures. NFU estimate anecdotally that ground rents for farmers are around £1,500-£3,000 per hectare for hosting solar arrays (compared with receiving an agricultural subsidy of £271 per hectare for non SDA areas).

[REDACTED]
[REDACTED]
[REDACTED] defra.gsi.gov.uk [REDACTED]
[REDACTED]

[REDACTED]

From: [REDACTED] (Defra)
Sent: 10 October 2014 11:04
To: [REDACTED] (Defra); [REDACTED] (Defra)
Subject: RE: Update on solar arrays - restricting BPS subsidy

Mr James Gray (North Wiltshire) (Con): The people of north and west Wiltshire strongly support renewable energy, but we are besieged by hundreds of planning applications from London-based commercial operations for solar farms, not on roofs of factories or brownfield sites, but on greenfield sites across the county. Will my right hon. Friend reiterate the strong message that our right hon. Friend the Member for Bexhill and Battle (Gregory Barker) previously sent out, which is a strong presumption against the use of agricultural land and a strong presumption in favour of industrial roofs and other places?

Matthew Hancock: There are opportunities for solar, where appropriately sited, in many different places on roofs and on land. In fact, land can be combined with agricultural use and solar. One other advantage of solar is that it can effectively be masked from being seen from elsewhere because it is low-rise rather than high-rise. This has to be done sensitively. There is no point in destroying our green and pleasant land in order to save the global environment. We have to tackle security of supply and climate change in a way that also protects the local environment.

4 Sep 2014 : Column 416

BRE guidance also points to its use...on lower grade agricultural land in situations like Weybridge...

KN5524 Planning guidance for the development of large scale ground mounted solar PV systems

Ground Mounted Solar PV projects over 50kWp should ideally utilise previously developed land, brownfield land, contaminated land, industrial land or agricultural land preferably of classification 3b, 4 and 5 (avoiding the use of "Best and Most Versatile" cropland where possible).

Land selected should aim to avoid affecting the visual aspect of landscapes, maintain the natural beauty and should be predominantly

flat, well screened by hedges, tree lines, etc and not cause undue impact to nearby domestic properties or roads.

Regards

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]@defra.gsi.gov.uk

From: [REDACTED] defra.gsi.gov.uk
Sent: 17 September 2014 16:11
To: [REDACTED]
Cc: [REDACTED] (Defra)
Subject: Solar Farms on Agricultural Land

[REDACTED]

From: Jonathan Scurlock <[REDACTED]@nfu.org.uk>
Sent: 03 October 2014 16:31
To: [REDACTED] (Defra)
Subject: Solar farms - NGO-approved biodiversity guidance

Dear [REDACTED]

As discussed, please find attached a copy of "Biodiversity Guidance for Solar Developments", which is also available to download from the National Solar Centre web site below. This outlines best practice to achieve many NGO and Defra-backed environmental objectives in solar farms. We are pleased at the strong support this has received from leading NGOs such as the RSPB and National Trust:

<http://www.bre.co.uk/nsc>

Having been instrumental in its gestation under the government's Solar PV Strategy, I attended the launch of this document at the end of April:

<http://www.nfuonline.com/science-environment/energy-and-renewables/solar-farms-backed-by-conservation-groups/>

The NFU believes that solar farms have significant potential to provide wildlife refuges within farmland, as well as offering benefits for pollinators in the context of the National Pollinator Strategy. We hoped that this document would help to inform Defra decision-making on whether some instances of enhanced solar farms will count as "Ecological Focus Areas" in the new Common Agricultural Policy from 2015.

This guide has been drawn up by the solar PV industry for independent publication by the BRE National Solar Centre, in collaboration with a wide range of NGO stakeholders including RSPB, the National Trust, Friends of the Earth, Buglife, Plantlife, the BumbleBee Conservation Trust and others, environmental consultants (Wychwood Biodiversity, Wildlife Matters) as well as solar farm developers (Lightsource Renewables, SolarCentury, Lark Energy and juwi). As the chair of the Land Use and Sustainability taskforce for the government's Solar Power Strategy, I had a minor role in bringing this group together and directing some of the content, but the production of the text has been entirely the work of others.

Best regards - Jonathan

Dr. Jonathan Scurlock
Chief Adviser, Renewable Energy and Climate Change

[REDACTED]

[REDACTED]

[REDACTED]

[Redacted]

From: Jonathan Scurlock [Redacted]@nfu.org.uk>
Sent: 07 May 2014 09:59
To: [Redacted] (Defra); [Redacted] (Defra); [Redacted] (Defra)
Subject: Solar Farms and Ecological Focus Areas

Dear [Redacted], [Redacted] and [Redacted]:

FYI - I attended the launch last week of the 'Biodiversity Guidance for Solar Developments', which outlines best practice to achieve many NGO and Defra-backed environmental objectives in solar farms:

<http://www.nfuonline.com/science-environment/energy-and-renewables/solar-farms-backed-by-conservation-groups/>

We look forward eagerly to clarification on future eligibility of land and Ecological Focus Areas.

Best regards - Jonathan

Dr. Jonathan Scurlock
Chief Adviser, Renewable Energy and Climate Change

[Redacted]

[Redacted]

[Redacted]

[REDACTED]

From: [REDACTED] (Defra)
Sent: 10 October 2014 17:25
To: [REDACTED] (Defra); [REDACTED] (Defra)
Subject: Solar v other land influences

Hello [REDACTED]

I've not checked these potential issues that might be raised...

- Biomass crops may still receive BPS as on cultivatable land and they require ten times (?) the land area of solar for equivalent energy.
- Planning policy pressure for housing is leading to permanent rather than temporary loss of high grade farmland.

Might these be seen as more significant to food production and future food security than Solar?

Regards

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] [@defra.gsi.gov.uk](mailto:[REDACTED]@defra.gsi.gov.uk)

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Solar photovoltaics deployment

25 September 2014

Latest month

Overall UK solar PV capacity at the end of August 2014 stood at 4,201 MW, across 594,487 installations, an increase of 0.9 per cent in capacity and 1.7 per cent in installations compared to the end of July 2014.

Capacity accredited under the Renewables Obligation stood at 1,420 MW at the end of August 2014, across 6,081 installations. In terms of both capacity and installations there was no change from July 2014. Renewables Obligation capacity represents 34 per cent of total solar deployment.

At the end of July 2014, capacity eligible for Feed in Tariffs (FiTs) (MCS, ROO-FIT and RO to FiT transfers) stood at 2,513 MW, across 584,988 installations. This is a 1.4 per cent increase on the July 2014 figure for capacity and a 1.6 per cent increase in installations. Capacity from FiT installations represents 60 per cent of total solar deployment.

Other solar capacity represented 6 per cent of total solar deployment.

Latest quarter (based on 'Quarter' worksheet)

Overall solar PV capacity at the end of 2014 Q2 stood at 3,823 MW, an increase of 4.6 per cent (168 MW) on that at the end of 2014 Q1. This represented 571,960 installations in 2014 Q2, an increase of 5.3 per cent on that at the end of 2014 Q1.

Capacity commissioned and accredited under the Renewables Obligation stood at 1,318 MW, which is a rise of 2.8 per cent (36 MW) from 2014 Q1. Capacity accredited under the Renewables Obligation represents 34 per cent of total solar deployment.

Capacity commissioned and accredited under the GB Feed in Tariff stood at 2,248 MW, an increase of 2.7 per cent (59 MW) on that at the end of 2014 Q2. Capacity confirmed on GB Feed in Tariffs represents 59 per cent of total solar deployment.

Unaccredited capacity represented 6.7 per cent of total solar deployment.

Latest year (based on 'Quarter' worksheet)

Overall solar PV capacity at the end of 2013 stood at 2,805 MW, an increase of 59 per cent (1,041 MW) on that at the end of 2012. This represented 508,222 installations in 2013, which is an increase of 26 per cent (105,547 installations) on that at the end of 2012.

Capacity commissioned and accredited under the Renewables Obligation stood at 213 MW. Capacity accredited under the Renewables Obligation represented 18 per cent of total solar deployment at the end of 2013.

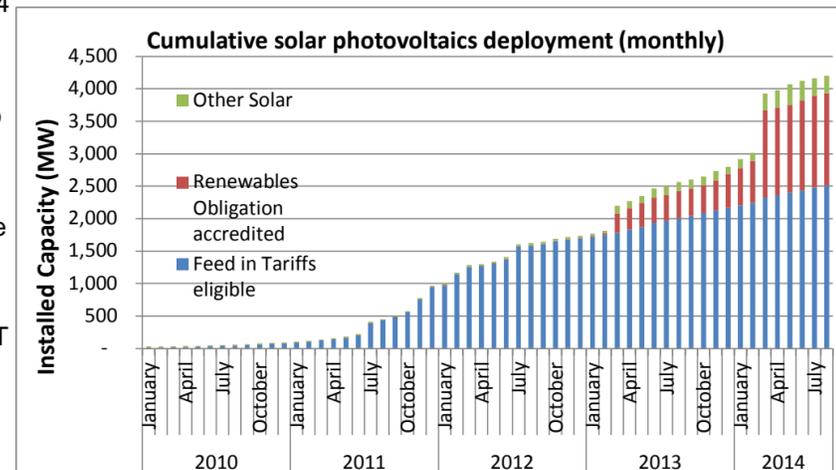
Capacity commissioned and accredited under the GB Feed in Tariff stood at 2,075 MW, an increase of 26 per cent (425 MW) on that at the end of 2012. Capacity confirmed on GB Feed in Tariffs represented 74 per cent of total solar deployment at the end of 2013.

Unaccredited capacity represented 7.6 per cent of total solar deployment.

An article detailing the sources and methods used in this table can be found in the September 2013 edition of Energy Trends, at:

<https://www.gov.uk/government/collections/renewables-statistics>

NOTE: These figures are produced according to when a site was commissioned. This can be several months before a site has gained accreditation under the Renewables Obligation or confirmation on the Feed in Tariff (FiT) scheme - therefore these figures will differ from other statistics (e.g. the monthly Central Feed in Tariff register statistics) published on the DECC website.



Key assumption:

Typical power per unit area of large-scale ground-based solar array in UK [W/m ²]	40
To convert from m ² to hectares, multiply by	0.0001
UK agricultural area [hectares]	1.80E+07

Total

	No. of projects	Capacity [MWp]	Areal extent [m ²]	Areal extent [hectares]
Total operational up to end Feb	184	850	21250000	2125
Projects expected to commission before the end of 2013-14	48	538	13450000	1345
Projects with planning permission awaiting construction	194	1656	41400000	4140
Projection: 10GW solar farms by 2020		10000	250000000	25000

ha per MW	2
ha per W	0.000002
m ² per W	0.02
W per m ²	50

% of UK
agricultural
area

0.01

0.01

0.02

0.14