

## **SOLAR FARM FREQUENTLY ASKED QUESTIONS & INFORMATION SHEET**



### **Do we need solar?**

A major international report, published by the Intergovernmental Panel on Climate Change (IPCC) on 27 September 2013, found with 95% certainty that humans have caused global warming. Since the turn of the century the effects of global warming in the form of extreme weather events have become increasingly familiar and this trend is set to continue.

Furthermore, leaving aside our moral and ethical duties to take responsibility for the damage done, the United Kingdom is bound by law to install significant amounts of renewable energy. It is legally committed to generate 15% of its energy from renewable sources by 2020. Under the Kyoto Protocol, we are also committed to reducing economy-wide carbon emissions by 80% by the year 2030 (relative to 1990 levels), and the Department of Energy and Climate Change has calculated that if we are actually going to achieve this, we need to generate 30% of our energy, not 15%, from renewable sources by 2020.

The UK is also facing serious energy supply shortages. Ofgem has warned that we will face power shortages from 2015 if we do not start getting more power generation online very quickly. There are four reasons for this predicament:

- 1) Most of the coal and nuclear plants that were built in the '50s and '60s are at the end of their useful life and are set to be decommissioned.
- 2) Planning permission for new nuclear facilities is extremely difficult to obtain and the few that have been permitted will not be operational for many years.
- 3) Our electricity demand is still going up. We need to keep the lights on AND meet our climate change targets.
- 4) The UK is almost wholly reliant on overseas energy suppliers and this is the primary reason behind the annual price rises in our gas, oil and electricity costs. As overseas suppliers put their prices up, the UK is left with little choice but to import the inflation.

### **Why solar power?**

The energy mix is important. The Government has made it clear that we cannot be too reliant on one technology. Wind and Solar energy are well established technologies that have been tried and tested for decades. Solar is globally recognised as one of the most important and successful energy generating technologies available. The UK Government has recognised it as such and acted to promote solar across the country. It is low impact, great for local wildlife, has limited impact on local communities and it performs well in the British climate. Whilst some technologies still in their infancy such as Tidal Energy are showing great potential, they are not yet efficient enough to be economically viable.

### **Who pays for it?**

The Government makes subsidies available for solar energy generators, just as they do for coal, gas, nuclear, wind... all energy generation technologies. For solar, these subsidies have fallen fast, in line with the fall in the price of solar panels. These subsidies go a small way towards paying for the cost of a solar farm, while the rest of the money comes from selling the renewable electricity generated by the farm to the National Grid at a discounted rate (currently less than half the price that you or I pay to buy electricity from the grid).

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### **So what exactly is a Solar Farm?**

Under current planning guidelines, Solar farms are dual use fields that retain their agricultural use while also homing solar panels used to generate clean, green electricity. The solar panels convert sunlight into electricity and feed it into the local electricity grid. They generate electricity on bright cloudy days as well as in direct sunlight.

### **Do solar farms compete with food production?**

Solar farms generally installed on lower grade land. Whilst crops may have been grown on the land, it is not classified as high grade arable land and usually requires high levels of input, such as nitrates and irrigation. This has an adverse effect on wildlife and the associated costs make growing profitable crops is challenging. Exceptions may be made in areas where no low grade land is available.

A solar installation allows dual use of the land, so, in addition to being used to harvest clean green energy, the land can also be used to graze sheep or keep bees for example. If sheep are to be grazed, there needs to be a 1 metre gap between the ground and the bottom of the solar panels to allow the sheep to pass underneath and to take shelter. Sheep may also form part of a land management plan.

The solar panels only take up around one third of the proposed site; the majority of the land will be open meadow planted with grasses and wildflowers to encourage flora and enable fauna to use the site as a year round habitat free from pesticides and ploughing.

The energy minister Greg Barker recently reaffirmed his ambition that the UK should install 22 gigawatts of solar by 2020. According to recent research undertaken by Lightsource Renewable Energy, even if all 22 gigawatts were installed as solar farms, only 0.29% of the UK's 17 million hectares of agricultural land would be required. In fact, to date, the vast majority of solar capacity installed in the UK has been installed on roof tops and therefore the actual amount of land required is likely to be a lot less. In food production terms, 22 gigawatts of solar farms would reduce UK-grown and consumed food by 0.2%. Overall the research confirmed that the impact on food production would be incredibly small even if all the land used was arable.

### **What impact do solar farms have on the UK landscape?**

A good solar farm is designed to have limited visual impact and a positive environmental impact. The rest from intensive agriculture combined with sowing crops such as clover can improve the fertility of the soil. A solar farm is normally granted planning permission for 25 years, after which it is required to be dismantled (even a large solar farm could be dismantled and removed within a matter of weeks). A solar farm does not change the zoning classification of the land.

A solar farm creates no noise or waste and requires little maintenance. A well designed solar farm will take advantage of screening caused by natural barriers such as contours in the land, hedge rows and tree belts. Furthermore, screening can be enhanced by new planting as part of a land management plan. REthink Energy works with local ecologists and planning consultants to ensure this natural cover is enhanced in a manner that benefits the wildlife, the environment and the local community.

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### **Are REthink solar farms built to match 'Best Practice'?**

The Solar Trade Association (STA) recently issued 10 Commitments for Best Practice and REthink Energy aims to not only meet but to exceed each commitment. Solar farms developed to match the STA's 10 Commitments are strongly backed by The National Trust, RSPB, Greenpeace, Friends of the Earth, Forum for the Future, Plantlife, Co-Operatives UK, Pure Leapfrog and The Bumblebee Trust. In a recent YouGov poll commissioned by the STA only 5% of people said they would oppose solar farms when good quality solar farms were described.

### **Are solar farms safe?**

Solar technology is tried and tested. Solar cells have been manufactured and used for power generation since the 1950s. There are now more than 130 Gigawatts of solar panels producing clean electricity across the world and that number is rocketing month by month.

Solar cells are made from silicon, which is essentially beach sand. Solar panels have no moving parts and create no emissions at all, neither toxic or otherwise. Solar panels do not emit energy radiation and therefore cannot interfere with equipment such as mobile phones, heart monitors, pace makers, hearing aids or TV reception. They are simple pieces of technology and there have been no peer reviewed studies that suggest that solar farms are in any way harmful to human health.

Solar farms are made up of solar panels mounted on temporary metal poles screwed into the ground to avoid the use of concrete. The panels connect to inverters that switch the electricity generated from direct current (DC) to alternating current (AC) so that it can be used in our homes.

Solar PV systems have now been installed on nearly half a million UK homes and on thousands of commercial properties as well. Projections are that 4 million UK households will have a solar system installed by 2020. All of these installations have an inverter or, in the case of commercial properties, a series of inverters that convert electricity from DC to AC. In homes and commercial premises, inverters are installed wherever there is space; in entrance ways, attics, laundry rooms and garages. This means that householders and employees spend many more hours in close proximity to solar PV inverters and panels than will the residents of a neighbouring village to a solar farm.

Inverters have a small electromagnetic field, as do all items of electrical equipment from dishwashers, washing machines and toasters to the wiring behind skirting boards. The levels within this field fall safely within EU regulations and as the inverters are cased in metal boxes to protect them from the weather, the electromagnetic field is largely contained and of no danger to human, animal or plant health.

### **What does a solar farm look like?**

First of all, solar farms are typically well screened from view. Existing hedge rows can be thickened and gaps filled with new planting. Larger established trees that suit the character of the local region will be planted where necessary. An independent visual impact assessor will verify, in detail, the extent to which the site will be screened from roads, designated footpaths and local houses and implementing the same high standard of screening will be a condition of any planning consent that is granted.

The solar panels are mounted one metre above the ground to allow sheep to graze underneath. This also allows sunlight to reach the ground under the panels so that grasses and flowers can grow. The height from the bottom of the solar panel to the top is around 1.7 metres (5 ½ feet).

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The solar panels are laid out in rows and there is a gap of approximately 5 metres of clear ground between each row of panels. This spacing ensures that the front row of panel does not cast a shadow on the row behind it which would reduce the amount of electricity the solar farm produces. As a result, in any solar farm only about one third of the land is covered by solar panels and all of it will be grass covered and open for use.

Although security fences are necessary to protect the solar farm; fence construction, design, colour and height are all stipulated by the local planning authority. Deer fences are most often used so that they blend in well with the surrounding countryside.

### **Do solar farms affect wildlife?**

Absolutely and for the better! In essence, a solar farm is a nature reserve that is left largely untouched for 25 years. As already mentioned, the role of solar farms in promoting and aiding local biodiversity has been welcomed by a diverse range of stakeholders including The National Trust, RSPB, Greenpeace, Friends of the Earth, Forum for the Future, Plantlife, Co-operatives UK, Pure Leapfrog & The Bumblebee Trust. In the words of the RSPB, *"Solar farms could be a real asset in our countryside by giving declining wildlife like bees and farmland birds a home."*

This support is rooted in the fact that solar farms allow land to rest without constant ploughing, fertilizing and spraying with pesticides and herbicides. In Britain, wildflower meadows have decreased by 97% in the UK since the 1930s thanks to intensive farming practices. Our solar farms are seeded with specific wild grasses and wildflowers as advised by local ecology specialists and will increase the acreage of wildflower meadows.

We aim to encourage a full range of biodiversity by, for example, managing the grasses and wild flowers with sheep grazing. These wild flowers, along with increased hedge planting, will encourage greater numbers of invertebrate species, including honeybees, bumblebees and butterflies. As so much of the UK's food production is reliant upon bee pollination, this will provide an urgent benefit to local farmers since honey bee populations in Britain have dropped by 34% in the last 18 months! The insects and invertebrates that find refuge here are, in turn, preyed upon by all kinds of bats, birds, small mammals, owls and other predators.

REthink Energy always works closely with bodies like Natural England to ensure wildlife is protected and in the past we have taken a wide range of measures to ensure this. For example, we have designed solar farms with single leg supports to allow ground nesting birds more space, we have installed badger gates in our fences, we have made funds available for conservation research and we have created new separate wild spaces to further encourage biodiversity and provide refuge.

### **Will there be an increase in traffic to the neighbourhood?**

During the short construction phase there is usually an increase in the number of vehicles delivering materials to the site. We work closely with the local Highways department to prevent damage and minimise disruption. We also work to ensure that large vehicles do NOT enter local villages. Details of the vehicle access route are always submitted along with the planning application and available for public view and comment.

Once the site is built (usually between 4 to 10 weeks depending on size) traffic will cease almost entirely for the 25 year project lifespan. Once every few months an engineer will visit the site to conduct routine maintenance. The overall effect of a solar farm on traffic is often a reduction in volume due to the fact that a solar farm generates significantly less traffic than agricultural activity.

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### **What is the impact of a solar farm on property prices?**

There is no evidence that solar farms affect property prices either positively or negatively. The latest polling (*YouGov, August 2013*) shows that more than 70% of the population support local solar farms. With the appropriate screening provided, the visual impact of a solar farm is negligible, they operate silently and safely, they provide energy security for the local area in the face of impending power outages and they foster flora and fauna.

### **Are there any increased flood risks?**

Flood risk does not increase with the installation of solar farms and solar farm design will take account of any existing flood risks. Only approximately 0.5% of the solar farm will be in direct contact with the ground, the entire footprint of the solar panels will only cover around one third of the site and the land underneath the panels will be managed meadow.

### **Will solar farms cause any glint or glare?**

Solar panels are designed to absorb light and not to reflect it. They pose little risk of glint or glare, and solar panels have been installed on Gatwick Airport, alongside major roads and beside sports car raceways such as the 'Top Gear' test track.

### **Do solar farms emit any noise?**

There are a number of inverters on solar farms which contain cooling fans, however, they are housed in sound-proofed containers and are sited to ensure they cannot be heard from the boundaries of the site. Solar PV technology does not use any moving parts.

### **Are CCTV cameras often used?**

While low level passive infra-red CCTV cameras are often used to secure solar farm projects, the cameras in solar farms are always fixed-mounted to face inwards into the solar farm and not outwards.

### **Do solar farms emit any light?**

There are no visible lights on solar farms.