

The UK's energy security is important, however the countries food security, job security and local communities should be considered just as important.

The Gate Burton Energy Park in question is just one of four Solar, Nationally Significant Infrastructure Projects (NSIPs) located within close proximity of one another. Rather than four separate examinations, these projects should be considered as one, due to the combined and correlating impact on the community.

Together this 'one project' would be the largest solar farm complex in Europe and would amount to 10,000 acres in total. The four schemes proposed are each bigger than the largest scheme currently operating in Europe (in southern Spain, where each panel produces twice the power of a panel in Lincolnshire).

The combined with the other three proposals will mean that over 10,000 acres of farmland is lost. This reduction will have a significant impact on food security and job security not only within Lincolnshire but the UK.

Lincolnshire is responsible for growing 30% of the nation's vegetables, representing 12% of England's total production. In total the food chain and food production provide 24% of jobs throughout Greater Lincolnshire and 21% of its economic output. The future of the food production is therefore vital to Lincolnshire. The 10,000+ acres of land that will be industrialised by the installation of the four solar projects instead of for food production will significantly impact the county on a local and national scale with the potential of increased food prices, increased reliance on imported food, and decreased job opportunity.

Instead of productive farmland other locations such as brownfield sites, and commercial warehouse should be considered as viable alternatives. According to the BRE National Solar Centre, in 2016 there was an estimated 250,000 hectares (617,764 Acres) of south facing commercial roof space in the UK. If utilised this could provide approximately 50% of the UK's electricity demand. These figures can only have increased from 2016 to 2023.

Countries like France have now made it compulsory for all large car parks to be covered by solar panels. All large car parks in France will be covered by solar panels under new legislation. Multifunctional solar carports can add value to car parks by improving economic and environmental performance, especially where the car park is not suitable for building mounted PV. Such added value is derived from:

• Generation of renewable energy

• Availability of covered parking spaces

• Availability of electric vehicle (EV) charging facilities

• Provision of renewable energy to adjacent developments • Onsite energy storage

As well as the significant economic, there is many social and environmental impacts that also need to be considered. Natural habitats will be lost for a generation, or more. Lincolnshire is home to a diverse range of species including emperor moths, nightingales, green-winged orchids, bitterns, and buzzards. But, if the solar panel projects are built, they could pose a threat to many different species, Deer will no longer be able to run freely as they be faced with miles of security fencing blocking their natural routes. Faced with a reduced grazing area, the deer will cause additional damage to ancient woodland, impacting other species, as well as inflicting more concentrated damage to crops.

The Energy Storage Systems (BESS) near Willingham by Stow will be one of the world's largest

BESS which pose potential fire and chemical risk to life and property. When these systems fail, they can pose a major safety risk as well as having the potential to cause significant harm to the environment. Lithium-ion batteries have a known weakness of thermal overload (‘battery fire’) and when this occurs at a Battery Energy Storage Systems it can result in fire, explosions, toxic run off, and a toxic vapour cloud which, if it reaches an ignition point, will explode (as happened at a BESS fire in Arizona). BESS fires have resulted in deaths and critical injury to first responders and others.

The everyday lives of thousands of people will be severely impacted. During the construction phase which could take between 24 to 36 months numerous HGVs, abnormal loads and construction traffic will pass through local villages. It is predicted that up to 64 HGVs per day will be running to and from the proposed sites. This will create noise, pollution, and damage to roads and verges, as well as extra risk for pedestrians, cyclists, and horse-riders. It is also likely to disturb the biodiversity on more rural lanes. Not to mention the construction of solar facilities on vast areas of land imposes clearing and grading, resulting in soil compaction, alteration of drainage channels and increased erosion.

As well as the construction on each specific site, there is a distance of 12 miles (20km) from the Grid connection, which will be spread over ten separate parcels of land, which will cause further disruption by the unnecessary civil works involved in the cable connections.

There may be significant upfront costs associated with installing large-scale solar farms that could outweigh any potential savings realized over time. Furthermore, access to sunlight (which is necessary for optimal performance) may not always be available due to geographic location or other factors outside one's control. Despite the headline ‘power ratings’ of 500MW to 600MW for these solar schemes, in the UK the average output from solar is around 11% of these figures, (according to UK Government statistics), so the four proposed schemes potentially have a total headline power output of around 2000MW, but they would only provide 220MW over a year. For comparison, that is less than half one of the 8 generating units at the closing Cottam and West Burton Power Station sites, where the proposed schemes would connect to the National Grid ‘yet the solar schemes would use around 20 times the land of the old power stations.

Many of the component parts for the Solar Farms will be sourced from other countries. The production and transportation of these parts will add to the carbon footprint of the project. The solar farm apparatus is likely to be manufactured abroad (China) and the construction labour sourced from outside the area. Labour practices and quality of products are also issues to cause concern. Much of the investment in these projects will be made offshore. The local economy will not benefit from these developments.

Large-scale solar farms offer both advantages and disadvantages. They have the potential to provide some clean energy generation and contribute to the overall improvement of energy security. However, the significant drawbacks that must be taken into consideration as well as potential disruption to wildlife habitats and local economies.