**Botley West Solar Farm**

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I am responding to the Secretary of State's request in his letter dated 11th June 2026 for comments by Interested parties on the Application by PhotoVolt Development Partners (PVDP) on behalf of SolarFive Limited ("the Applicant") for an Order granting Development Consent for the proposed Botley West Solar Farm ("the Botley West Solar Farm").

The questions and comments below refer mainly to the applicant's responses to the SoS's requests for more information in **C1-087.**

In what follows, MWp refers to the installed capacity of BWSF (the number of solar panels multiplied by the peak possible output from each – a fixed number determined by the panel manufacturer) and MWe refers to the amount of electricity produced by BWSF that feeds into the national transmission grid. MWp is determined at installation time and stays constant, but MWe will vary on a daily and seasonal basis, as the sun rises and sets. The applicant's 'MW' is retained if it is not clear whether MWp or MWe is being referred to.

**Summary of this contribution**

- The original installation capacity (MWp) for Botley West Solar Farm (BWSF) was never defined precisely. The value should be specified exactly in any DCO granted.
- BWSF with a capacity of 1307MWp would produce an output of 840MWe for less than 3% of the time. Its output would be less than 35MWe for more than half the time and less than 490MWe for 90% of the time. BWSF with a reduced capacity of 935MWp would never produce an output of 840MWe, in any hour of any day of the year, and would produce enough electricity to supply the annual needs of the equivalent of 239,000 houses, a 28% reduction in the 330,000 houses that would be provided for by a 1307MWp installation.
- Despite the applicant's claims, BWSF will not contribute to Oxfordshire's Net Zero targets because it would be connected to the national Transmission Network, not to the local Distribution Network.
- The other 80 NSIP-scale ground-mounted solar installations proposed for the UK will have installation capacities of less than 935MWp, the figure claimed by the applicant to be the minimum economically viable size for BWSF.

1) **What is the current proposed installation capacity of BWSF?**

This is a question about the capacity of the installed solar panels, MWp, not about the electrical output from BWSF, MWe.

All twelve versions of **The Guide to the Application** state that the installed capacity (sometimes inaccurately called the delivered power) is approximately 1307MWp; that it will deliver power to approximately 330,000 homes; and that it will occupy approximately 1,418ha of land, approximately 839ha of which will be covered by solar panels (**APP-004** November 2024; **AS-002** – Rev.1, January 2025; **CR1-001** – Rev.2, March 2025; **PDB-002** – Rev.3, May 2025; **REP1-002** – Rev.4, June 2025; **REP2-002** – Rev.5, July 2025; **REP3-002** – Rev.6, July 2025; **REP4-002** – Rev.7, August 2025; **REP5-002** – Rev.8, September 2025; **CR-002** – Rev.9, September 2025; **REP6-002** – Rev.10, October 2025; and **REP7-002** – Rev.11, November 2025).

In contrast to the above, the applicant elsewhere claims the original DCO stated the installed capacity would be 1422MWp (the various dDCOs have never stated the proposed installation capacity of BWSF). This IP has been unable to find the 1422MWp figure in any of the applicant's documents, one of the first of which, the Non-Technical Summary (**APP-037,** November 2024), gives a range of values, 1200 - 1375MWp. Various other capacity figures occur throughout the application, for example a specific 1375MWp in response to **REP1-131**; a 'total installed capacity of 936,000kVA' in response to **REP1-081**; and 'AC output – total installed capacity approximately 936,000kVA' (Project Description Chapter 6, 6.1.1, November 2024, **APP-043**) (the kVA figure appears to assume the 'contracted' 840MW divided by a power factor which is always less than 1.0 ). Figures of 1307MWp (e.g. Guide to the Application, November 2024, **APP-004**, and March 2025, **CR1-001**) and 1350MWp (e.g. 15.1.2 in Vol. 1 Chapter 15 Socio-Economics, **APP-052**) occur in various documents.

Thus, it is not clear what even the 'starting position' was for the installed capacity of BWSF.

In response to the Secretary of State's questions, the applicant (in the Change Process Table in **C1-087**) appears now to be offering a reduced installed capacity, perhaps as low as 935MWp, although again it is not clear if this is the proposed capacity to be accepted in the DCO or simply the 'minimum economically viable' capacity, as explained in response in para. 68 of **C1-087**, such that the actual installed capacity will be somewhere above this figure.

In this IP's opinion it must be made very clear in any DCO exactly what the allowed installed capacity will be. Since the proposal appears to keep the redline boundary of Rev. 2 of the Land Maps, the possibility exists of 'panel creep' after any DCO approval, with installed capacity increasing beyond the permitted DCO figure (as appears to have happened in several smaller solar installations.)

## 2) The output of a 1307MWp BWSF will rarely be the claimed 840MWe of electricity

In many documents the applicant claims the output of BWSF will be '840MW of electricity' (occasionally, correctly, 840MWe). Sometimes this number is qualified as the 'contracted supply of 840MW to the national grid', i.e. a target output rather than an actual output. Regardless of a number of proposed changes to MWp values an output of 840MWe is still claimed in the very last column – headed **'AC Output at POI'** – of the Change Process Table in **C1-087**, even though this is associated with a dramatic fall in the **'Installed capacity remaining**' (same Table) from 1422MWp originally to 935.31MWp (in the '**Result'** row right at the bottom of the Table).

It is, of course, impossible for a certain output to be maintained when the installed capacity drops by 34% (1422MWp to 935.31MWp).

The problem throughout the application is the false suggestion that BWSF will consistently produce 840MWe of electricity. It will not.

The European PhotoVoltaic GIS system (EUPVGIS) is designed to calculate the predicted output of solar installations across Europe. Putting into the EUPVGIS the various characteristics of BWSF and using a 16-year series (2005 to 2020) of hourly recorded irradiance data (a total of 140,160 observations), gives the predictions shown here in Fig. 1 as a frequency distribution of the output per hour of electricity from a 1307MWp capacity system at BWSF's location in Oxfordshire. Figure 1 shows, on the vertical y-axis, the number of hours (out of that total of 140,610 hours) the output is equal to the values on the horizontal x-axis. Note that the output is less than or equal to 35MWe for almost 80,000 hours (i.e. the tallest column in Figure 1).

It is important to stress that the total annual output from BWSF in kWh per year predicted by the EUPVGIS is within 1% of the applicant's own figure of 1,256,539,474kWh/yr. The IP is in agreement with the applicant about the total annual yield from BWSF. Fig. 1 shows, however, that far from an 840MWe output of electricity being the usual or even a common value from BWSF, the commonest output – occurring for more than half the time (56.6%) - is less than 35MWe. BWSF will reach or exceed an 840MWe output for only 2.2% of the time (to the right of the vertical red line in Fig. 1). 90% of the time BWSF will produce less than 490MWe.

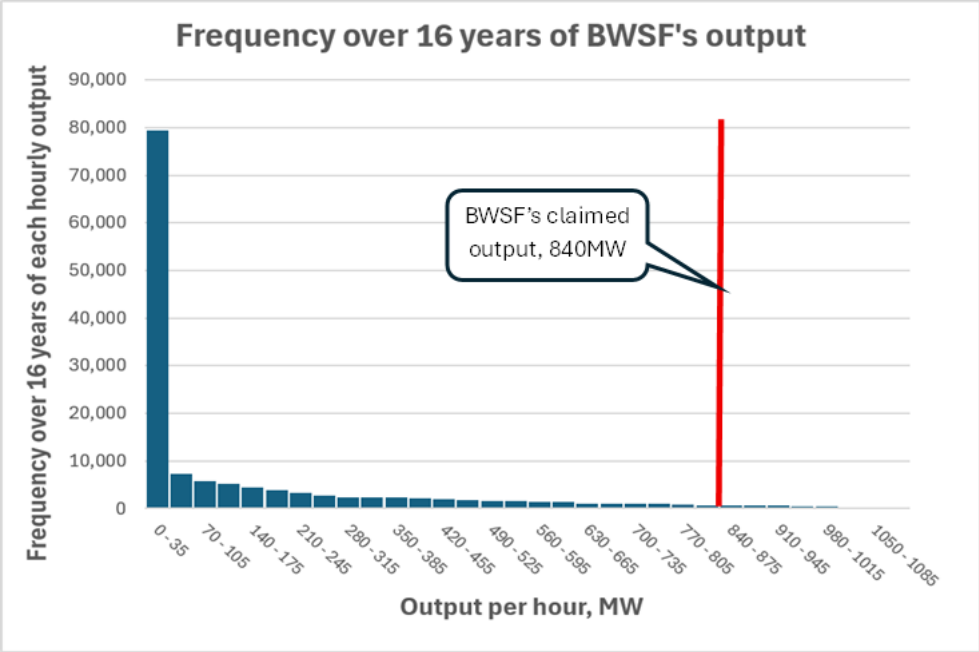


**Figure 1.** The frequency distribution of predicted output from BWSF (total installed capacity of 1307MWp) over a 16-year period, 2005-2020, using hourly recorded irradiance data. For the vast majority of hours, BWSF produces less than 35MWe of actual power (i.e. <=35MWh of electricity). BWSF's output exceeds its 840MWe target (the vertical red line on the graph) only 2.18% of the time. Even allowing for the fact that half of each 24hr period is night-time, this >840MWe figure is unlikely to rise above 5% of daytime hours.

The applicant must stop claiming that BWSF will in any way reliably produce the 840MWe levels of electricity it frequently claims.

In an attempt to contradict this IP's statement (in **REP1-169**, from OFH2) that <u>on average</u> BWSF will never produce more than about 600MWe at mid-day in July and no more than about 220MWe at mid-day in December, the applicant produced the following table in **REP1-018**, calculated by the *"trusted solar industry software (PVsyst)"* (applicant's words) and claims it shows "that the 840MW AC was reached in 8 months over one year".

| | 0H | 1H | 2H | 3H | 4H | 5H | 6H | 7H | 8H | 9H | 10H | 11H | 12H | 13H | 14H | 15H | 16H | 17H | 18H | 19H | 20H | 21H | 22H | 23H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| January | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 144 | 289 | 347 | 376 | 347 | 274 | 87 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| February | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 202 | 376 | 578 | 679 | 693 | 520 | 390 | 260 | 101 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| March | 0 | 0 | 0 | 0 | 0 | 0 | 58 | 289 | 534 | 751 | 852 | 852 | 852 | 852 | 823 | 636 | 390 | 130 | 0 | 0 | 0 | 0 | 0 | 0 |
| April | 0 | 0 | 0 | 0 | 0 | 58 | 274 | 549 | 737 | 852 | 852 | 852 | 852 | 852 | 852 | 751 | 520 | 274 | 58 | 0 | 0 | 0 | 0 | 0 |
| May | 0 | 0 | 0 | 0 | 29 | 130 | 361 | 607 | 823 | 852 | 852 | 852 | 852 | 852 | 852 | 809 | 607 | 361 | 130 | 29 | 0 | 0 | 0 | 0 |
| June | 0 | 0 | 0 | 0 | 29 | 159 | 376 | 621 | 838 | 852 | 852 | 852 | 852 | 852 | 852 | 823 | 621 | 390 | 173 | 43 | 0 | 0 | 0 | 0 |
| July | 0 | 0 | 0 | 0 | 29 | 130 | 347 | 563 | 780 | 852 | 852 | 852 | 852 | 852 | 852 | 823 | 621 | 404 | 173 | 43 | 0 | 0 | 0 | 0 |
| August | 0 | 0 | 0 | 0 | 0 | 58 | 231 | 491 | 708 | 852 | 852 | 852 | 852 | 852 | 852 | 737 | 506 | 303 | 101 | 14 | 0 | 0 | 0 | 0 |
| September | 0 | 0 | 0 | 0 | 0 | 14 | 130 | 347 | 578 | 780 | 852 | 852 | 852 | 852 | 794 | 636 | 404 | 159 | 14 | 0 | 0 | 0 | 0 | 0 |
| October | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 246 | 506 | 708 | 823 | 852 | 823 | 650 | 491 | 303 | 116 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| November | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 130 | 274 | 361 | 390 | 361 | 303 | 231 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| December | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 72 | 188 | 274 | 260 | 144 | 72 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Year | 0 | 0 | 0 | 0 | 29 | 159 | 376 | 621 | 838 | 852 | 852 | 852 | 852 | 852 | 852 | 823 | 621 | 404 | 173 | 43 | 0 | 0 | 0 | 0 |

*Hourly maximum values for Energy injected to the grid [MW]*

**Table 1.** From **REP1-169**, p. 7 reporting the <u>maximum</u> output from BWSF as predicted by the PVsyst software.

As the Table legend states, these figures are maximum values, not usual or even average values. In fact, if the above were the average values for each hour/month, the total annual output from BWSF would be 2,213,495,000kWh/yr, more than 76% higher than the applicant's own figure for BWSF's output of 1,256,539,474kWh/yr. Once again, the applicant is stressing the maximum value for something that on average will be very much lower. Often, a maximum value is shown once or only a very few times over numerous possible occasions, as is the case here. By definition, maximum values are less than average values and any public benefit arising from BWSF, or any corporate profits arising from it, will depend on average not maximum values.

The applicant is being at best disingenuous and at worst dishonest in suggesting that BWSF can routinely deliver 840MWe of electricity to any new substation near the southern site.

When the reduced capacity of 935MWp for BWSF (from the Change Process Table of **C1-087**) is used in the EUPVGIS system, the prediction is that over the 140,160 values of hourly irradiance data (2005-2020) BWSF would never produce 840MWe of electricity in any hour of any day of any month. A 935MWp system would generate enough electricity to provide the annual household needs of approximately 239,000 houses, a reduction of 28% on the applicant's figure of approximately 330,000 houses supplied by a 1307MWp installation.

In determining the balance between the harm and benefits of BWSF, the SoS is asked to remember that the footprint of BWSF (the total area within the redline boundary) has changed very little since ver. 2 of the Land Maps. Thus, the impacts on the landscape remain about the same, but the benefits would be reduced by about 28% with a 935MWp installation.

### 3) Contribution of BWSF to Oxfordshire's Net Zero objectives

All Oxfordshire local authorities are signed up to the recommendations for renewable energy contained in the *'Pathways to a Zero Carbon Oxfordshire (PAZCO)'* Report (by the Environmental Change Institute in the University of Oxford) in which the solar targets for the County are 728-868MWp by 2030 and 2.3GWp (2,300MWp) by 2050. In **REP1-020** (June 2025, pp8-9), the applicant comments on these Net Zero aims of the County as follows: *"Just maintaining the current ratios of installed capacity to meet local energy demand in Oxfordshire would require 2.3GW of solar. There is no clear or obvious prospect that other forms of renewable energy could step up to meet this demand"* and concludes *"Botley West solar would materially help to address that local demand but, even then, there would still be a shortfall in capacity. Botley West would meet about one third of that demand (840MW of the 2300MW demand – 37%)."*

In the above the applicant is suggesting that BWSF will contribute to Oxfordshire's demand for electricity. But any solar installation connected to the Transmission Network, as BWSF would be, cannot supply 'local demand', because its electricity is distributed nationally.

Secondly, the figure in the quote above, of 2.3GW, is the long-term 2050 target not the shorter term 2030 one. The citizen science group of SolarQ has found that already in operation or in the solar pipeline in Oxfordshire is a total of 1469.3MWp of ground-mounted solar (and an uncertain amount of rooftop solar), far in excess of Oxfordshire's 2030 needs (and more than half-way to meeting its 2050 target). These installations connect to the Distribution Networks that distribute electricity locally not nationally; hence they really will contribute to the County's net zero targets. Even if it were able somehow to restrict its output to Oxfordshire, there no need for BWSF at all to meet the County's 2030 target for solar.

Technologies are likely to change between 2030 and 2050 and something much more energy intensive is likely to replace solar installations that already take up far too much valuable farmland that is needed for growing the nation's food. In any case, by 2050 a BWSF installation constructed now would be near the end of its operational life, closer to decommissioning than to meeting the County's demands beyond 2050.

**4) The minimum economically viable size for BWSF**

The applicant's response to para. 69 – a request from the SoS to justify the economic constraints that are claimed to limit the minimum size of BWSF – includes a series of estimates of the Levelised Costs of Electricity (LCOE) which suggests that the minimum economically viable size for BWSF is *c.* 935MWp. At this size, the LCOE is barely below the predicted strike price for electricity on the assumed commissioning date. Only when the LCOE is below any open market (or Contract for Difference-supported) price for electricity will any solar installation be profitable.

The applicant therefore claims that the minimum economically viable size for BWSF is 935MWp. As pointed out above, it is not clear if this is the capacity to which the applicant now commits BWSF, or if it is simply a minimum value such that the installed capacity of BWSF will be larger than this but cannot possibly be smaller.

BWSF is one of 81 proposed NSIP-scale ground-mounted solar installations in the UK of which this IP is aware; each has a recorded installed capacity, as shown in Figure 2.

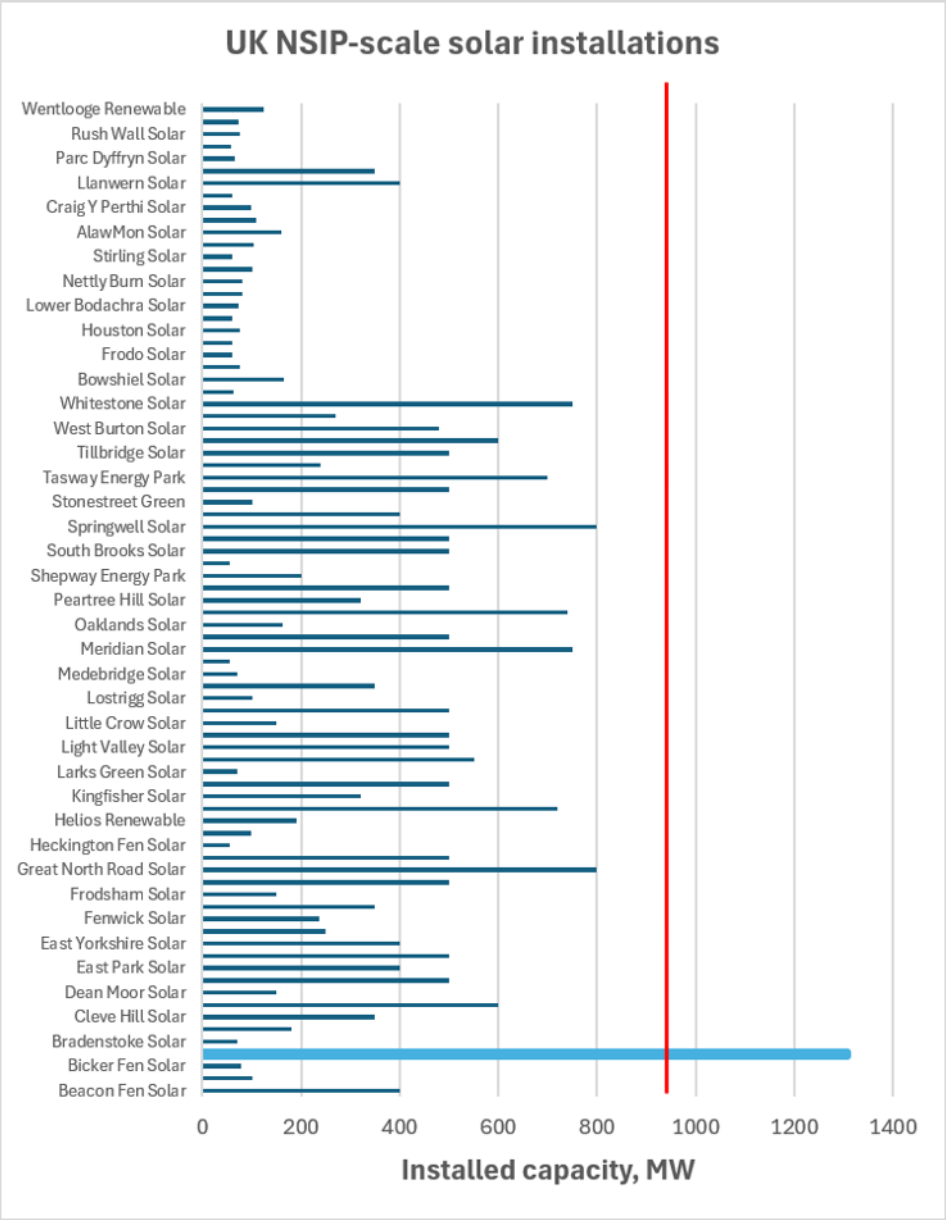


**Figure 2.** The names and sizes (MWp) of 81 NSIP-scale solar installations in the UK at various stages of development. Each bar represents the installed capacity of a single installation (x-axis scale). Botley West is shown as the thick blue bar near the bottom. The red line is set at a capacity of 935MWp, claimed by the applicant to be the minimum economically viable size of BWSF. (NB all NSIP-scale solars are indicated by the bars on the graph but not all names could be accommodated on the y-axis legend.)

Figure 2 shows Botley West, installed capacity of 1307MWp, as the thick blue line near the bottom of the Figure. The vertical redline shows a capacity of 935MWp, the claimed minimum possible size for BWSF. ALL of the other 80 NSIP-scale solars are below the supposed 'minimum size' for BWSF (i.e. are to the left of the red line in Fig. 2). If they can be economically viable at those much smaller sizes, why cannot BWSF?

The IP is not aware of any special circumstances inflating the costs of BWSF. Thus, the claimed minimum size of 935MWp should be rejected by the SoS. The applicant should be instructed to explore more of the options suggested by the Oxfordshire Host Authorities (OHA) to reduce the size and therefore the social, environmental, landscape and other impacts of BWSF.

David Rogers

15.07.26