Comments on Applicant's ExQ2 Answers

Decommissioning: August Update (ExQ2.1.17)

In place of the disposal method for PV panels described in the ES – transportation to [non-existent] panel-recycling facilities – the Applicant has presented its revised strategy [REP4-037, page 15]. The PV panels will be sold as second-hand units; the proceeds of the sale will cover the cost of decommissioning.

Applicant's analysis

The panels will have 6 years of usable life remaining and a resale value of 12.6% of the initial cost (£108m). From this, the Applicant calculates a second-hand value of $0.02 per per [*sic*] watt.
The Applicant notes that this is half the typical value for second-hand PV in the US ($0.05 per per watt), according to analysis by its US source, Nerdwallet.

The calculated decommissioning cost is based on data published on another US website, Solarrecycling: $30,000 to $56,300 per megawatt. These values are first converted to 'per watt' values by dividing by a million: $0.03 per watt [correct] and $0.20 per watt [obviously incorrect].
The lower of these two values is selected [why?] and reduced further by dividing by 2 (the 'utility scale effect' [?]) to obtain the final value, $0.015 per watt. This is below the second-hand PV resale rate calculated above ($0.02), thus confirming a fully costed Decommissioning Plan.

Strategy shortcomings

1) Arithmetic. The PV sale will raise £13.6m (108 × 12.6%). For an installed capacity of 1300 MW, this works out at £0.010 per watt (13.6 ÷ 1300), which is $0.014 (not $0.02). This is, in fact, *less* than the decommissioning rate.
2) If the Applicant scrolls down one paragraph on the Solarrecycling website, it will discover that the typical decommissioning cost for ground-mounted PV (which is what BWSF is) is $368,000 per megawatt, largely due to the cost of ground restoration. This is $0.37 per watt, which is 25 times the Applicant's estimate.
3) Where is the market for two million panels of 40-year-old PV technology with a 6-year projected lifespan? Ebay? Who would even want one for free?
4) It is concerning that the Applicant believes that BWSF decommissioning will cost $19.5m (1300 × $0.015) when its expert website estimates $478m.

BESS configuration and GHG emissions (ExQ2.3.7)

The Applicant declined the ExA's request to consider the greenhouse gas (GHG) implications of its BESS decision. (PVDP observes, correctly, that the guidelines do not require a BESS [Ans to ExQ2.1.3].)

PVDP's estimate of BWSF's GHG figure is essentially the emissions associated with construction minus the emissions saved by exporting GHG-free electricity [APP-051, Table 14.16]. It assumes that all the produced energy will be successfully exported. The GHG 'break-even' point comes at year six.

The GHG consequences of the BESS configuration arise principally from the effects on export, and thus depend on the provision to store surplus electricity [REP2-122]:

1) **Baseline: BWSF with nearby BESS**.

2) **Distant BESS**. The length of the NGET connection to the BESS contributes to the GHG figure, both from the additional construction GHG (higher required capacity of the relevant NGET circuits) and export losses along the transmission system (both directions, proportional to the connection length). BESS projects are predominantly targeting Scotland.

3) **Co-located BESS**. The shared connection to the grid results in an impressive 70% saving in transformer/switchgear construction [REP2-122, page 3], with immediate GHG savings. Further GHG savings arise from the reduced NGET capacity requirement and the absence of an additional connection to a BESS. Export yield also improves because of elimination of the up/down-conversion needed to transfer excess solar energy to the BESS.[1]

4) **No BESS**. Solar farms currently export 100% of their production without the need for a BESS, because gas-powered generation is turned down in the daytime to accommodate them.
When fossil fuel is no longer in the mix (2030?) the yield from non-BESS solar will inevitably decline, as the peaks around midday will have to be curtailed. This will push the GHG break-even point out – to ten years?
But the remainer is also at risk: on days when sufficient wind power is available 24h, why would NESO curtail wind power to allow non-BESS solar to jump in for a few hours? Non-BESS solar is likely to become commercially unsustainable.

If SolarFive Ltd files for bankruptcy by year ten, BWSF will turn out to have been a *net contributor* to Britain's greenhouse gas emissions.

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[1] For example, three transformer stages to convert up to 400kV followed a further three to get back down to LV for the BESS input. Transformers have typically 1.5% loss (total 9% energy loss).

Overplanting, and Acres per MW (ExQ2.9.1)

Unfortunately, PVDP does not disclose its plotted installed capacity or projected performance data, so the ExA will not be able to address EN-3 2.10.17 or 2.10.55 in the SoS report. The only electrical 'specifications' are that the installed capacity will not exceed 1300 MWp and the output will not exceed 840 MW. The BWSF website indicates an overplanting ratio of 1.5, but the website is not part of the ES.

Appendix - BESS partnership negotiations (REP4-038, page 98)

Progress in finding BESS partners is reported in the Applicant's companion D4 submission.

> The Applicant is in discussions with a number of potential PPA counterparties. It is aware of the Ethos Green 250MW BESS at Farmoor and has discussed the TELIS proposal with the developer. It should be noted that the description "awaiting consents" on the TEC register does not mean that an application has been submitted, only that consent has not yet been obtained.

By coincidence, the Applicant is interested in the two BESS 'counterparties' that were brought to the ExA's attention recently [REP3-108].

If it reads REP3-108 or the TEC Register a little more carefully, the Applicant will discover that it is aware of the (highly speculative) Ethos Green 800MW BESS.

TELIS has no interest in discussing anything with PVDP. TELIS is another EU entrepreneur seeking to turn a quick profit by obtaining and selling UK planning permission.[2] The last thing a prospective BESS purchaser wants is planning permission shackled to an obligation to purchase a particular producer's electricity.

Power Purchase Agreements (PPAs) are negotiated with BESS operators. Given the number of consented non-BESS solar NSIPs, it will be overwhelmingly a buyer's market.

The Applicant may wish to note the five TEC Register classifications:

Scoping	Grid connection agreed
Awaiting Consents	Planning application submitted
Consents Approved	Planning consented
Under Construction	Construction in progress
Built	Operational

[2] From TELIS filings at Companies House:

> The Company is in the business of developing renewable energy projects … and ultimately disposing of them to third parties prior to construction.