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FAO: Case Officer, National Infrastructure Planning
Ref: Cleve Hill Solar Park

16th April 2019

Dear Madam/Sir

Answering the Statement of Need for Cleve Hill Solar Park

This letter is written in anticipation of the Inspectorate setting a timetable for evidence, hearings and the determination of the application (“the Application”) by Cleve Hill Solar Park Limited for a Development Consent Order in relation to Cleve Hill Solar Park (“the Proposed Development”).

I am writing on behalf of GREAT, who represent a diverse group of local people, voluntary groups, community interests and others who have registered as Interested Parties and made our Relevant Representations to the Proposed Development.

It is clear that, at its heart, the Inspector’s decision on the Application will be a balancing act between the unacceptable adverse impacts of the Proposed Development and the Inspector’s view on the Applicant’s statement that the development is needed.

The Applicant articulates its position on need in a 59 page Statement of Need (“SoN”) document and a 14 page Addendum. The SoN is, by its nature, fundamentally an argument in favour of the Proposed Development. It does not claim to be independent, nor does it include, anticipate or address any counter-arguments. It does not include evidence of, or demonstrate, that the Applicant has held any discussions with or submissions from third parties relevant to the proposal. Such third parties might include National Grid (“NG”), district network operators, regulators, local authorities and industry bodies.

The Inspector will, of course, need to consider the SoN and challenge the arguments made. We expect that we will, to the best of our abilities, also challenge these arguments. We are not experts in the issues that have been discussed in the SoN, nor do we have significant resources with which to finance our own representation or expert evidence in order to rebut it. However, the subject matter covered in the SoN involves some of the most complex economic, regulatory, technical and legal issues that arise in the UK and in the wider European and global context. The energy sector has always been an area requiring participants to have profound expertise; and it has become more challenging in recent years with the emergence of

- new business models,
- new regulations at the European and national levels,
- new technologies,
- new operational concepts in particular in grid balancing, and
- new planning laws.

The Inspector will need expert assistance on all of these matters.

In our submission, the SoN is deficient in the following aspects:

1. It does not properly explore the wider context of the Application. The Proposed Development is apparently going to address some of the UK's needs in decarbonisation and system adequacy (among other things). But how material can its contribution to meeting these demands be?
2. What is happening elsewhere in the UK energy market to address the needs that the Proposed Development is seeking to meet? This requires evidence of activity and then qualitative analysis of that activity to determine whether other agents in the market can meet the need without the Proposed Development going ahead.
3. How efficient is the Proposed Development as a solution in dealing with the needs identified in the SoN? The SoN fails to acknowledge an accepted fact that solar power is highly inefficient when compared with other technologies, and requires huge amounts of scarce land resource. In simple terms, is it not the case that the benefits of the Proposed Development could be achieved with one 40MW plant delivering baseload electricity and using a small fraction of the land area required by the Proposed Development?
4. Solar power is at its most effective as a source of power generation during summer months and daytime. It can be enhanced by co-location with storage batteries; but the SoN does not provide a model, demonstrate any real understanding on the part of the Applicant, or even make a case, as to what this benefit will be.
5. There is no evidence that there has been any specific discussion with NG as to the need for the Proposed Development. The SoN quotes from NG's "future energy scenarios" in order to make very general claims about the utility of the Proposed Development. It raises certain engineering concepts around power system operation but fails to show, with engineering support, why the Proposed Development is suitable for purpose.
6. "Need" has been assessed in relation to many previous applications and the Inspector will require reference examples to guide its decision. The SoN avoids discussion on a matter which will be at the heart of the decision-making process. What level of need is sufficient to outweigh the environmental and other damage schemes such as the Proposed Development will cause?

This letter is intended to "surface" the issues now that we say will need to be explored in detail during the hearing and determination process. There may be further deficiencies in the SoN that we have not yet identified. We invite the Inspector to require the Applicant to fund the production, in good time, of a truly independent expert report, which may include findings from independent communications with the relevant third parties (such as NG, other electricity

market participants, economists and regulators). This expert report should, if the Inspector so deems it, challenge the SoN and also explore the core points that we have listed above.

In order to guide the Inspector in defining the scope of this report, we have included as an Appendix to this letter, commentary that develops each of our 6 core points. We have also included some high-level comments on the content of the SoN.

It is our firmly held view is that the Application cannot be properly determined without the expert input and evidence that we have outlined in this letter. We do not consider it equitable to have to fund the production of the same ourselves although we reserve the right to do so, should we consider it necessary. We remain available at all times to meet in order to assist with this process, including, if required, to discuss the scope of the proposed report.

Yours sincerely,

Michael Wilcox
Chair GREAT

Appendix 1

1. The SoN does not properly explore the wider context

- What are current forecasts regarding the required **output (as opposed to installed capacity)** from low carbon generators over the relevant periods (to 2030, to 2050 etc) in order to meet national and international targets?
- What will the contribution of solar generators be within these targets?
- How will the solar contribution compare to other technologies in particular, wind¹; and emerging industries such as waste-to-energy, wave and tidal and demand-side response?
- What is the contribution (in terms of output) of the Proposed Development when compared to the low carbon nuclear generators about which the Applicant is concerned in its Addendum?
- Within the context of an expected wave of unsubsidised solar deployment in coming years, what can be achieved using installations with lower environmental impact (in domestic, commercial and industrial, and smaller scale greenfield settings)? Would the Proposed Development displace or otherwise negatively impact on the prospect of other installations being completed?
- What is the opportunity for re-powering of old sites installed with inefficient technology?
- Will interconnectors ultimately fill the “need” in the system? And to the extent that the real issue in the UK energy system is “margin” (between available capacity and demand), how will large solar farms such as the Proposed Development contribute?
- How great is the risk that large scale solar deployments such as the Proposed Development will be “stranded assets”?
- Is the actual need in the UK energy mix not, in fact, for flexible assets such as gas-peaking engines or stand-alone storage battery systems?
- Is it not the case the “system adequacy” issues (if they exist) are not traditionally addressed with technologies such as solar; but instead require capital investment and other measures on the part of network operators

2. What is happening elsewhere in the UK energy market to address the needs that the Proposed Development is seeking to deal with?

- What “pipelines” are being developed using solar panels and other renewable technologies, what is their prospect of being installed and in what timeframe²?

¹ See Aurora Energy Research report, June 2018 entitled “The new investment landscape for renewables” which anticipates that GB could see as much as 18GW of subsidy-free renewables on the system by 2030 of which 9 GW will be subsidy-free solar

² See Solar Power Portal

https://www.solarpowerportal.co.uk/news/uk_large_scale_post_subsidy_pipeline_soars_67_in_just_six_months_topping_4 which states that, at 1 April 2019, the “pipeline of active large-scale pre-build large-scale solar farms (>250kWp) has seen significant growth during the past six months, and now stands at more than 4.2GW of total capacity. This growth has been driven by the return of established greenfield developers, experienced with the UK solar planning process”

- Are any political interventions expected that will accelerate other deployment in order to meet need?
3. How efficient is the Proposed Development as a solution in dealing with the needs identified in the SoN?
- Aurora Energy Research consider that current installed solar fleet in the UK has a load factor of just under 10% across the year; whereas the onshore wind fleet has 28% and offshore wind fleet has 43%³ load factors. Is solar not an inefficient way of delivering output (KWh units of electricity) from capacity (installed KWp capital assets)?
 - How does the output of the Proposed Development compare to other technologies that deliver base load? Is it not the case that, in simple terms, 350MW of solar x 10% load factor delivers the equivalent of 35MW from a base load generator operating with 100% load factor? Hinkley Point C will be a 3,260MW base load generator: does this not mean that Hinkley Point C will therefore deliver nearly 100 x the power output of the Proposed Development? And is the contribution of the Proposed Development to meeting national need not, therefore, negligible?
 - What land area would be required in order to deliver the proposed output of the Proposed Development using other technologies? Analysis should be produced to compare, at minimum, onshore wind, open cycle gas turbines, reciprocating gas engines and waste-to-energy plant.
 - How likely is it, and when will, the Proposed Development be operated to discharge electricity directly to the grid, rather than use the electricity to charge batteries for time-shifting? What is the additional value of the battery storage component of the scheme?
4. Solar power is at its most effective as a source of power generation during summer months and daytime.
- Aurora Energy Research GB Wholesale Market Summary, January 2019⁴ indicates that load factor for the existing solar fleet in the UK in January 2019, a period of peak demand, was less than 3%.
 - Is it not the case, as a general proposition, that solar (even if enhanced with storage capacity for time-shifting) does not make a material difference in delivering electricity at times of high demand? And that it only performs at times when demand across the national system is lower and can (and will) be met from other generation sources?
 - Should the Applicant model the expected performance of the Proposed Development in this context and compare the output against projected national demand?
 - As the installed solar fleet in the UK (and in Europe via interconnectors) increases in size with new build, what is the risk that the power price may be

³ See Aurora Energy Research, GB Wholesale Power Market Summary, January 2019

⁴ As footnote 3 above

“cannibalized” (ie there will be an over-supply of solar power, meaning low or even negative pricing)? Given that many commentators consider this risk is highly likely, is the Proposed Development well-conceived?

- As operator of the Capacity Market, NG has previously analysed the contribution of solar schemes to system adequacy and their “equivalent firm capacity” and has set a de-rating factor of 1.17% to 1.76% to reflect solar’s negligible utility value. The storage battery de-rating factor (depending on design) is in the region of 36% for a one hour duration plant. By way of comparison, offshore wind has a de-rating factor of 14.6%⁵. Is this not a relevant factor and why does the SoN not make mention of it when it is clearly contrary to the Applicant’s case?
5. There is no evidence of any specific discussion with NG as to the need for the Proposed Development.
- Has the Applicant had correspondence with NG in order to understand the specific and local impact of the Proposed Development on the transmission network? To what extent are the Applicant’s statements in Chapter 5 based on conjecture?
 - NG’s “future energy scenarios” change on a regular basis. What weight do they really have as encouragement for this particular scheme, in the context of the questions raised in our section 1 (above)?
 - Simply because a wind farm extension that had intended to connect to the national transmission network at the Cleve Hill substation was not granted planning permission, does that mean that other more suitable generation or transmission plant (including interconnectors) will not come forward? Will such alternative schemes not ultimately prove a far more efficient and worthwhile use of any capacity within NG’s assets in the area?
 - There have been a number of recent changes in the regulatory provisions governing network charging and network income, most importantly in OFGEM’s Targeted Network Charging Review⁶. These changes follow extended periods of consultation and policy-making. A key focus of OFGEM has been to encourage de-centralised generation, as opposed to centralized (ie transmission-connected generators, such as Cleve Hill). One outcome is the withdrawal of the “transmission-connected generation residual”, which is an income stream that historically favoured plants such as the Proposed Development; but which OFGEM now considers is inappropriate. Why does the SoN make no mention of this aspect of the policy background? Expert input is required in order to explain.
 - The SoN makes high-level statements regarding “adequacy”, the benefits of “diversification”, the value of “ancillary services” available from storage systems (such as frequency and voltage services). These must be quantified

⁵ <https://www.current-news.co.uk/news/national-grid-unveils-proposed-terms-de-rating-factors-for-renewables-in-the-capacity-market>

⁶ <https://www.ofgem.gov.uk/electricity/transmission-networks/charging/targeted-charging-review-significant-code-review>

and explained in the context of other possible and existing schemes; and also in the context of changes to the way that NG procures these services (it is clear that NG has massively downgraded its estimates of the amount of battery capacity required in the UK to meet its need for frequency services. A 29MW storage scheme was connected to the distribution network at Aylesford, some 25 miles from the Proposed Development, in 2018. What can be learnt from this experience and other comparable developments in the region and beyond? Anecdotally, the Aylesford scheme is bankrupt.

- What are the “operability” benefits for NG? Is it not the case that the most effective way of achieving “operability” for network operators is for them to install their own plant to deal with issues and can we anticipate a change in the market or regulations so that is what happens? If it does, will the storage component of the Proposed Development become a stranded asset?
6. “Need” has been assessed in relation to many previous applications and the Inspector will require reference examples to guide its decision.
- What are the precedents?
 - The Secretary of State has previously been required to determine in relation to far smaller solar schemes. The Proposed Development is of a different order and scale to the precedents: the absence of any discussion on comparable decisions (other than large nuclear developments) suggests that the Applicant is unable to support its case with examples.
 - Where “need” has been a factor in other decisions using other technologies (such as wind or nuclear), how was it balanced against adverse impact?

High-level comments on the content of the SoN (and the Addendum)

In relation to the specific arguments advanced in the SoN, we would invite an expert to comment on the following points:

1. Explanation of the National Policy
 - Need and urgency: how does the Proposed Development contribute to need, and how immediate is the “urgency”, in light of the other initiatives taking place in the wider energy market?
2. Discussion on Decarbonisation
 - No specific comment at this stage
3. Factual summary of the progress of decarbonisation in the UK to date
 - An expert will be better placed to assess the factual statements that the Applicant makes in this section.
4. Discussion of future demand and related uncertainties
 - The SoN is pitched at a very “high level” and fails to go into the important issues around time of day/time of year that would be expected in a “needs” argument.
5. Explanation of security of supply issues within the UK electricity system and how the Proposed Development will contribute to the same
 - It appears that the Applicant does not have a detailed or functioning financial model and is therefore unable to provide actual scenarios to demonstrate the contribution that the Proposed Development could (or could not) make in achieving the various benefits claimed.
6. Discussion of the economic viability of the Proposed Development.
 - At the core of the Applicant’s thesis are the claims that (a) the scheme is financially viable; and (b) that larger schemes produce electricity at a lower cost of energy than smaller schemes and therefore the Proposed Development will have a downward impact on energy prices into the future.

Claim (a) depends very much on a funder’s view on the future energy price⁷; and on the cost of capital to finance the scheme. It may be that investors consider that the scheme is not financially viable, due to the concentration risk

⁷ See Aurora Energy Research report “GB Renewables: how low can capture prices go? Understanding risks in an increasingly merchant future”. 9th May 2018

of proceeding with such a large scheme when compared with alternative investments (for example in a portfolio of smaller schemes).

Claim (b) is a very simplistic and ignores two obvious facts. First, solar generators have no input costs and will always export; they are expected to be price takers, not price makers (even with co-located storage schemes in the ratio proposed for this development). Second, the power price in the UK is dependent upon numerous additional factors, not least the carbon price, gas price, wind conditions, time of day and year, and price of power available from international sources via interconnectors.

The Applicant's argument on viability is a distraction. Unsubsidised solar schemes and "solar plus battery" schemes will come forward⁸ and be installed; in all cases, they can be expected to be far smaller than the Proposed Development.

In relation to the Addendum

1. Security of supply, affordability and low-carbon needs
 - No specific comments at this stage
2. Timeframes for projected deployment of nuclear plant
 - A report should explain the possible contribution that the Proposed Development could make to electricity targets when compared against possible delays or shortfalls resulting from the concerns raised in the Addendum.
3. Specific information in relation to the EDF Hinkley Point C scheme
 - See comment on 2 above
4. Analysis of the progress of other nuclear schemes
 - See comment on 2 above
5. A synthesis of projections for nuclear capacity
 - See comment on 2 above.

⁸ See <https://www.businessgreen.com/bg/news/3071926/warrington-council-inks-pioneering-solar-deal-with-gridserve> This reports the completion of agreements between Gridserve (a solar and battery developer) and Warrington Council enabling the construction of a 30MW battery / 35MWp solar project near York and another solar scheme of 26MWp near Hull.