

Consultation on proposals regarding the planning system for electricity storage

Response from the Electricity Storage Network

Introduction

Assessing the planning impacts of electricity storage is not an easy task. 'Storage' encompasses a wide range of technologies which all have very different planning impacts. A pumped hydro scheme, a liquid air facility or a grid-scale lithium-ion battery will all have vastly different considerations for planning. Storage is also still a relatively new technology for planners to consider (with the exception of pumped hydro) and there is little precedent or experience to draw on.

We welcome the decision by the Department for Business, Energy and Industrial Strategy (BEIS) to begin the conversation about reforming the planning regime for storage.

The Electricity Storage Network (ESN), established in 2008 as the UK industry group for electricity storage, has been concerned with the planning regime for storage for some time, holding an event discussing the key issues in June 2018. This response represents the views of the ESN as informed by our members including electricity storage manufacturers and suppliers, developers of projects, users, electricity network operators, consultants, academic institutions, and research organisations. The ESN is managed by Regen, a not for profit organisation with a mission to transform our whole energy system, which is currently working on [a project with the Royal Town Planning Institute](#) to understand the potential for the planning system to support the UK's transition to a smart energy future. The outcomes from this work have fed into this consultation and will be published in Summer 2019.

National vs local planning regime

Many in the storage industry have concerns about the Nationally Significant Infrastructure Project (NSIP) regime and the amount of additional time and cost it entails – feedback from our members is that the anticipated costs and time of NSIP cause them to avoid projects over the current threshold of 50 MW where possible. The connection data from National Grid ESO illustrates this aversion of projects over 50 MW - 35 out of 41 battery storage projects at various stages of connection are at 49.9 MW¹. There is little experience in the industry of NSIP and consequently, a lack of understanding and apprehension of the process.

Cost and time are major factors in any storage project and the speed at which the industry moves means that any delay can significantly affect a business case for storage. A two-year wait for planning approval through the NSIP process could mean a project misses out on important contracts, or that the business model set out at the start of the process is no longer viable.

Capping capacity at 50 MW

The 50 MW threshold is an arbitrary measure which has been applied retrospectively to storage, having originally been designed for renewable energy generation projects which have very different planning impacts to storage. We understand that one measure or threshold is convenient, but it's also very difficult to generalise across so many different types of storage technology. At the time of the introduction of the Planning Act in 2008 and the National Policy Statement for Energy in 2011², storage technologies beyond pumped hydro were not at a stage of maturity to warrant particular

¹ TEC Register Report as on 07/03/2019. National Grid ESO

<https://www.nationalgrideso.com/document/139701/download>

²https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

planning consideration. Now that the need for storage to provide flexibility is well recognised and storage technologies have become a viable commercial prospect and a quickly growing industry, the government must initiate a broader conversation about the planning consideration for storage and the suitability of the 50 MW threshold.

This will not be a question with a straightforward solution however – simply raising the capacity threshold is unlikely to solve the problem, and duration is also a difficult measure as it varies so significantly between technology type. The industry will need to take a step back and look at the various planning impacts across the technologies and decide upon a measure which works specifically for storage, not a threshold that has been borrowed from generation.

Improving understanding and knowledge of storage

At the local level, under the Town and Country Planning Act (TCPA), the treatment by planning officials and committees varies quite significantly and there is a lack of understanding of storage and the energy system in general. Improved guidance that is clearly signposted and endorsed by the government would help local planning authorities make informed decisions.

As an industry we must think carefully about planning impacts and learn from other technologies that have suffered as a result of public opinion, for example, onshore wind. The planning regime must truly reflect the impacts of a storage project – if we set the wrong threshold and do not give planners the information required to properly assess a project, we could find either that not enough storage projects are given approval, or that projects with large impacts are pushed through without proper scrutiny, resulting in a poor public opinion of storage in the future.

Recommendations

- 1. Conduct further consultation and investigation into the need for storage to be included in the NSIP regime.**
- 2. BEIS should work to understand the level of additional guidance needed by planning officials on storage and the energy system more generally, and either commission new guidance or endorse and publicise existing guidance.**

Consultation question responses

- 1. The analytical assessment in Annex A that supports this consultation explores the costs and benefits of the preferred policy option. Do you agree with the analytical assessment and the assumptions that underpin it? Please provide evidence and analysis to support your answer where appropriate.***

We do not agree with the analytical assessment.

“Planning costs make up a small proportion of upfront costs”

The analysis makes the assumption that planning costs make up a small proportion of upfront costs regardless of the planning regime. There are several problems with this assumption, not least that no standalone storage projects (other than pumped hydro) have been put through the NSIP process, therefore assessing the costs can be difficult. Our members estimate that costs to put a project through the TCPA regime are in the tens of thousands, whereas NSIP is likely to incur costs of hundreds of thousands and in one case that has been through NSIP, over £1m.

Direct costs for the planning process are not the only expense incurred – time is also a major factor which increases costs and viability of a project. Our members estimate that NSIP adds years onto the timeline of a project; from 18 months to 3 years. Storage markets are volatile and in waiting 1.5 years to 3 years for planning approval, a business case could change significantly. The frequency markets and Capacity Market are good examples of this – waiting two years between 2016 and 2018 would have resulted in very different prices won at auction.

The term ‘upfront costs’ also needs unpicking. If the capital expenditure is considered, then the planning costs may only be a small percentage, but they may be a larger proportion of development expenditure – a more realistic measure at the early stages of a project.

“Existing NSIP threshold does not seem to be a significant factor in developers’ investment and sizing decisions”

Evidence from the majority of our members contradicts this hypothesis; they are highly likely to reduce their project size due to the unwillingness to participate in the NSIP regime. At least 4 major storage developers have told us this and a legal firm with several clients in a similar position.

The evidence from current transmission connection applications from National Grid also shows this to be true - 35 out of 41 battery storage projects at various stages of connection are at 49.9 MW.

National Grid ESO TEC Register

Connection Site	MW Total	Project Status	Plant Type
West Burton 400kV Substation	0.00	Under Construction/Commissioning	Battery Storage
Burwell GSP	0.00		Battery Storage
Burwell GSP	0.00		Battery Storage
Burwell GSP	0.00		Battery Storage
Abernethy 132/33kV Substation	19.00	Scoping	Battery Storage
Abernethy 132/33kV Substation	30.00	Scoping	Battery Storage
Inverkeithing GSP	37.00	Scoping	Battery Storage
Bustleholm 132kV	41.00	Built	Battery Storage
Roosecote 132kV	49.00	Under Construction/Commissioning	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
Burwell 400kV Substation	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
Exeter 400kV Substation	49.90	Awaiting Consents	Battery Storage
Hutton	49.90	Awaiting Consents	Battery Storage
Indian Queens 400kV	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage

Mannington	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
Taunton	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Awaiting Consents	Battery Storage
	49.90	Consents Approved	Battery Storage
Norwich 400kV Substation	49.90	Consents Approved	Battery Storage
	49.90	Consents Approved	Battery Storage
Alverdiscott	49.90	Scoping	Battery Storage
Axminster 400kV Substation	49.90	Scoping	Battery Storage
	49.90	Scoping	Battery Storage
	49.90	Scoping	Battery Storage
Iver 275kV Substation	49.90	Scoping	Battery Storage
	49.90	Scoping	Battery Storage
	49.90	Scoping	Battery Storage
Landulph 400kV Substation	49.90	Scoping	Battery Storage
Whitson 275kV Substation	49.90	Scoping	Battery Storage
	49.90	Scoping	Battery Storage
Glenniston 132kV Substation	50.00	Under Construction/Commissioning	Battery Storage
Burwell GSP	500.00	Awaiting Consents	Battery Storage

2. Do you agree with our conclusion that it would be disproportionate to amend the threshold for triggering the NSIP regime? If not please provide evidence to support your argument, including to support what an alternative threshold should be in terms of level and/or unit.

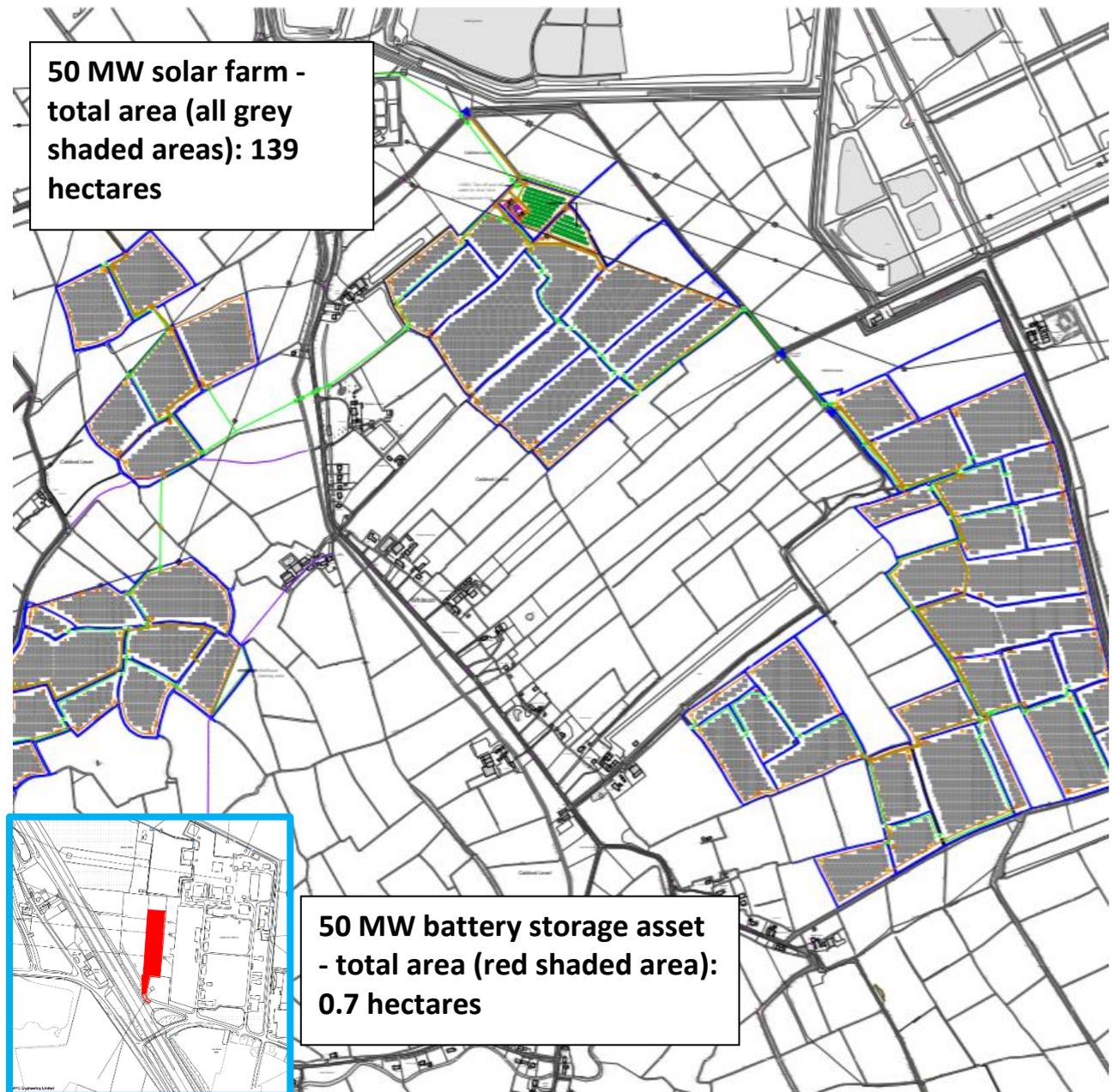
We disagree with this conclusion and the evidence on which it is based. The planning threshold of 50 MW is a significant factor in the sizing and investment decision of projects, as can be seen from the evidence provided in question 1. It's clear from examples across the world that the industry is ready to take forward larger projects; Australia (100 MW), South Korea (150 MW) and China (200 MW). It should not be for the planning system to hold back the development of the storage industry in the UK – the type of storage the system needs should be influenced by the system operators and the markets.

The current threshold was not designed with storage in mind

The threshold is an arbitrary measure which was not designed for storage specifically. When the threshold was assigned for renewable generation in the National Policy Statement for Energy³, storage technologies beyond pumped hydro were not at a stage of maturity to warrant particular planning consideration. Storage is an inherently different technology to generation in many fundamental ways, but with regards to planning, the difference in impacts is significant, even between the technologies under the umbrella term of storage. For example, lithium-ion batteries are likely to have a more similar impact to power engineering infrastructure such as transformers and would share more characteristics with a data centre than a wind or solar farm. Figure 1 below shows the difference in footprint between a 50 MW solar farm and a 50 MW lithium-ion storage facility – the solar farm is spread over 139 hectares, whereas the storage unit takes up 0.7 hectares. Footprint is of course not the only consideration, but this highlights the significant difference between the two and why applying the same threshold to both sites is inappropriate.

³https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

Fig 1. Size comparison between Gwent Farmers' Community Solar Scheme, 50 MW, South Wales⁴ and Pivot Power, 50 MW battery storage, Carlisle⁵



Using capacity as a threshold does not take into account the full impact of a project

Capacity is only one measure of a storage asset. Its duration is also an important factor and, depending on the technology, could change the planning impact of a storage unit. For example, a 55 MW battery with 30 minute duration is likely to have a smaller footprint and environmental impact

⁴ Gwent Farmers' Community Solar Scheme planning application.

<http://www.llanwerncommunityenergy.com/#renewablehub>

⁵ Carlisle City Council Planning applications. Documents: Design and Access Statement 15082018 and 08 har001 site location plan a3 15082018. <https://publicaccess.carlisle.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal= CARLI DCAPR 73556>

than a 50 MW battery with 1 hour duration, but the former would be considered nationally significant, the latter would not. We are not seeing a significant number of projects coming through with long duration, but improvements in technology and cost are putting the industry on that trajectory. Not taking this into consideration is short-sighted and could affect future planning decisions.

What is the alternative?

There is no easy answer to this question – storage is an umbrella term for many types of technology with widely differing impacts and there is no one measure that will adequately reflect the planning impacts of each technology. In order to create an appropriate threshold, or even understand if a threshold is needed, we must go back and consider why the NSIP regime was implemented in the first place and what purpose it would serve for storage to be included.

Neither raising the MW threshold nor changing the measure to duration will result in the outcome the industry needs. Raising the capacity threshold may result in projects clustering around a higher threshold as industry progresses. Changing the threshold measure to duration will also entail complexities as the impact of increased duration will vary significantly by storage technology.

Any review of the threshold would need to consider the major factors that make a project ‘nationally significant’ and what specific impacts – e.g. footprint size – would require the additional scrutiny of the national regime. Only 104 projects have been through the NSIP regime since 2010 and given that onshore wind is now no longer considered nationally significant at any size, it begs the question of how appropriate the NSIP regime really is for all energy projects.

At this stage, we do not see a good reason for including storage in the NSIP regime, but there would need to be a broader inquiry across the industry and the planning bodies to reach a conclusion on the issue.

Recommendation: conduct further consultation and investigation into the need for storage to be included in the NSIP regime

- 3. Do you agree with our approach to amending the Planning Act 2008 to allow a more appropriate approach to the NSIP threshold for composite projects involving electricity storage and another form of onshore non-wind generation? Please provide evidence and analysis to support your answer where appropriate.**

Yes, we agree this is a positive step and we welcome the proposal.

There are relatively few storage projects that are co-located with renewables, so it’s uncertain whether this change will have a significant effect on the industry. However, it’s possible that such a change will encourage more co-located projects.

- 4. Do you agree that the current carve out from the NSIP regime for onshore wind generating stations is sufficiently clear to cover composite projects involving storage and onshore wind? Please provide reasons to support your answer including, where relevant, details of any particular projects which are expected to come forward in future.**

We have mentioned the suitability for a 50 MW threshold in previous questions and this carve out for onshore wind reinforces the inconsistent approach to planning for both renewables and storage. If an onshore wind farm of any size does not need to be considered under NSIP, it begs the question why a storage project above 50 MW would need to be considered under this regime. However, clearly an upper limit would need to be decided on.

This carve out makes it possible for a storage project of any size to avoid the NSIP regime if co-located with wind. We think such a scenario is very unlikely at this stage, but the logic behind such a

principle is at odds with the current approach the government is taking on planning for storage. We would therefore suggest that the planning regime for storage is looked at in greater detail, as recommended throughout this response.

- 5. Are there any other areas of the planning system that you consider treat storage inappropriately relative to other forms of generation and therefore impact on its deployment? Please provide evidence to support your answer where appropriate.**

At the local planning level, there is often inconsistent treatment of storage by planning officials, even within one county according to some members. With no guidance and very little precedent to refer to, planning officials, local authorities and committees are often making decisions contrary to the expert evidence and reports provided by the developers. Noise is the most frequent example of inconsistent treatment, with decisions often being made that go against the expert evidence due to a lack of other evidence and guidance available to the committee.

Many local planners have very little knowledge of the energy system itself, for example, understanding the difference between the transmission and distribution networks and how storage might impact their local capacity.

Guidance is being developed by some in the industry, for example the Energy Institute's 'Battery Storage briefing' (not yet published). Documents such as these will give officials much needed information beyond what is provided to them by the applicant.

Recommendation: BEIS should work to understand the level of additional guidance needed by planning officials on storage and the energy system more generally, and either commission new guidance or endorse and publicise existing guidance.

Annex

Case studies

Enso Energy, energy developer specialising in back-up power generation and onsite solutions

Enso Energy have experience taking several Lithium-ion battery storage projects at grid scale through the TCPA planning regime. Enso have encountered several delays and misunderstandings with local planning officials, including a refusal from a local authority, despite being successful in another area of the county with very different treatment in each case. The main issues that cause delays and are misunderstood tend to be noise, lighting and fire risk and the need/justification for the development, and the constraints and requirements considered when finalising the location of a proposed site. Enso are actively avoiding putting through 50 MW projects because of NSIP, despite having higher capacity connection agreements.

Example schemes include:

- [50 MW scheme accepted by Wiltshire CC](#)
- [50 MW scheme refused by Wiltshire CC](#)

TLT LLP, a law firm specialising in clean energy with particular expertise in storage projects

TLT have worked with several clients on storage projects and have been requested to give advice on how to avoid the NSIP regime, with almost all clients preferring to go through the TCPA regime instead by reducing the size of the project or by not proceeding at all. The client's objective has always been to maximise the size of power without incurring costs of NSIP.

Quarry Battery Company (QBC), an energy company developing, building and operating storage, including pumped hydro facilities

QBC have worked with both the NSIP and TCPA regimes, putting a 700MWh pumped hydro scheme through both. The cost significantly increased in the NSIP regime and the time more than doubled to 3 years. Costs included examination fees, covering council costs, environmental studies, surveys, legal advice, land referencing, planning process costs and public exhibitions. The cost as a proportion of their development expenditure was more significant for QBC than the proportion of the overall capital expenditure. The NSIP process was onerous (about 400 questions from the examination team), despite having already been through the TCPA process for the same project. In the time taken to complete the planning consent, the market has changed to a point where the original business case is no longer optimal and this has significantly affected investment.

Pivot Power, develop, fund and operate large battery storage projects

Due to expected costs and time frames, it is obvious that companies such as Pivot Power have actively avoided the NSIP regime by putting in applications for batteries at 49.9 MW – all 34 of their National Grid connection applications are at this size for this reason. The estimated minimum timeframe for NSIP is 2 years with costs in the hundreds of thousands. By contrast, the costs under TCPA are in the tens of thousands (as the BEIS analysis has shown but given no allowance for time spent) and they have managed to get five 50 MW projects through in 5 months. This is a clear sign that the policy is affecting the market.

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