



Consultation response

Grid Scale Energy Storage System Planning Guidance – National Fire Chiefs Council

Consultation response from the Electricity Storage
Network

August 2024

1 Background and contacts

Electricity Storage Network

The **Electricity Storage Network (ESN)** is the industry group and voice for grid-scale electricity storage in GB. The ESN has 100 members with a shared mission to promote energy storage and flexibility to support the net-zero transition. The ESN membership includes clean energy developers, owners, investors, optimisers, and academic institutions. This includes representation from publicly listed specialist funds focusing on storage and independent developers who have raised several billion pounds to invest in this new technology class.

This response is based on input from our members involved in developing grid-scale electricity storage projects in GB and in other markets.

About Regen

Regen manages the Electricity Storage Network (ESN). Regen is a not-for-profit centre of energy expertise with a mission to support and accelerate the transformation of the UK's energy system to net zero.

Fire safety

Fire safety is a key topic for ESN members and is regularly on the agenda of ESN's Sustainability, Safety and Supply Chain working group. In April 2024, Phil Clarke, Emerging Energy Technologies Lead at National Fire Chiefs Council (NFCC), presented to our working group for the second time regarding draft new guidance for battery storage projects. ESN also sits on the national Energy Storage H&S governance group, which discusses fire safety.

The industry takes fire risk very seriously and is integrating battery chemistry improvements and better fire mitigation measures all the time. The rate of fire incidents affecting battery storage projects has fallen rapidly in recent years: according to a recent global study, the failure rate of grid-scale Battery Energy Storage System (BESS) projects decreased by 97% from 2018 – 2023, as lessons from early failure incidents were implemented.¹

The interpretation of the existing NFCC guidance by planning authorities has created significant challenges for obtaining planning permission for grid-scale battery storage projects (e.g. [initial decision](#) before successful appeal at Cleve Hill, Swale Borough Council). This challenge is exacerbated as planning authorities have a high staff turnover, are under-resourced, and lack experience in these technologies. Regen has called for updates to the NFCC guidance and

¹ EPRI (2024), "Insights from EPRI's battery energy storage systems (BESS) failure incident database: analysis of failure root cause".

https://www.epri.com/research/products/000000003002030360?utm_source=pocket_saves

discussed recent planning decisions. In a recent paper to the new Labour government – [Accelerating Clean British Power – our call to Labour for its first 100 days in government](#) – we asked for an updated NFCC guidance document to be published (Planning Action 5). We, therefore, very much welcome this consultation.

This response is based on input from ESN member companies engaged in the development and installation of battery energy storage sites.

Continuing engagement

Electricity Storage Network Lead – Olly Frankland

T: 07465 201596

E: ofrankland@regen.co.uk

Background

Regen and the Electricity Storage Network have responded to the following recent consultations/calls for input:

- [Electricity Storage Network response to second REMA consultation](#) – May 2024
- [Regen & ESN response to Long Duration Energy Storage cap and floor scheme consultation](#) – March 2024
- [Regen & ESN's response to Transmission Constraint Licence Condition call for input](#) – February 2024
- [Regen & ESN response to Ofgem 10-year review of the Capacity Market](#) – February 2024.

These provide background information on our broader thinking regarding flexibility markets and services.

1 Response to questions

Question 7 – Feedback on introduction and scope

Disagree

- NFCC’s Emerging Energy Technologies Lead, Phil Clark, informed Electricity Storage Network members in April 2024 that the new guidance is not intended to be applied retrospectively to projects with planning permission already in development or those already operational. It should be made explicit in the scope of the guidance that retrospective application is an improper use of the guidance.

Recommendation: NFCC should amend the scope of guidance to rule out retrospective application.

- Battery chemistry, fire mitigation measures and site design are advancing rapidly as technological innovation continues to progress at pace. The Electricity Storage Network and its members welcome this update to the NFCC’s existing guidance, and we would like to encourage the NFCC to commit to regular updates. Frequent revisions to the guidance would offer much-needed clarity to the sector and help remove barriers to development following design and technological improvements.

Recommendation: NFCC to commit to updating its guidance regularly, ideally at least every two years.

- The draft NFCC guidance does not currently set out where this guidance applies - UK-wide, England or otherwise.

Recommendation: NFCC to clarify the geographic area to which this guidance applies.

See the answer to question 15.

Question 13 – Planning approval process

Disagree

- The industry has experienced the inappropriate use of the existing NFCC guidance in planning decisions from local planning authorities (e.g. [initial decision](#) before successful appeal at Cleve Hill, Swale Borough Council). We, therefore, welcome the explicit statement at the start of this new draft NFCC guidance document, “*Local authority planning departments should, therefore, not use the guidance as a mandatory set of recommendations*”. However, we feel that the description of the expected and recommended use of this guidance could be strengthened, with particular attention drawn to whether local authority planners should use it and in what way. The current draft also states, “*Instead, discussions with the local [Fire and Rescue Service] FRS should take precedence.*” This creates uncertainty as to how this guidance should be used and what role and weight discussions with the local fire and rescue service should be given in the planning approval process.

- The Planning Practice Guidance Document and the BESS planning note, published in 2023, includes a link to the existing NFCC guidance document. We expect this link to be updated with the new version of the NFCC guidance once confirmed, to ensure that the industry and wider stakeholders are aware of the update. In addition, we would like to see further details in this new guidance document on the role that the NFCC guidance has in planning decisions. This requires further work to develop new guidance following the publication of this new version of the NFCC guidance, with the Ministry of Housing, Communities & Local Government, DESNZ and NFCC representatives.

Recommendation: Update the NFCC guidance document with more details on how it interacts with the planning approval process, without delaying publication.

Recommendation: Consider the need for further work to develop new guidance with wider government departments on the interactions with this guidance and the planning system.

- We greatly appreciate the engagement the fire services provide our members across the country and recognise the [planning note](#) added to the planning practice guidance in 2023. However, our members have highlighted that when engaging with fire services ahead of a planning application, there is variability in the response from fire services and there can also be challenges in identifying who to contact. This can cause challenges in getting the relevant stakeholders involved.

Recommendation: NFCC to work with fire services across the country to ensure greater consistency and positive engagement from fire services on new battery storage sites, including a clear point of contact for BESS.

- Our members have highlighted that at the pre-planning stage, there will be fewer details available on the specifics of the site design, which is when engagement with fire and rescue services is now recommended in the planning note in the planning practice guidance. Information provided at this stage is likely to be superseded by the time construction starts due to changes in the design of sites to reflect the latest technology and manufacturer requirements. More information and clarity can be provided to fire and rescue services on the design and fire safety of a BESS site after planning is consented to and once equipment has been defined and procured. At this stage, relevant information can be provided on areas such as stand-off distances, monitoring, deflagration, fire safety and alert systems. Fire and rescue services and this new NFCC guidance should consider this difference in site details availability at the different stages of project development. The guidance also states that “FRSs should seek to obtain as much information as possible at the earliest opportunity”. This lacks clarity, and most of the clarification questions suggested for the pre-application/engagement phase will not have answers, as equipment will not have been defined or procured at that time.

Recommendation: NFCC guidance should reflect the different availability of site details at the different stages of project development.

Question 15 – System design, construction, testing and decommissioning

Disagree

- There is a lack of clarity surrounding the relationship between developers, local planning authorities and engagement with the Fire and Rescue Service (Fire and Rescue Service). In Section 7 (Planning Approval Process), NFCC’s guidance states, “*both planners and developers are encouraged to engage with the local FRS and, as such, each FRS should encourage early dialogue regarding BESS proposals*”. In section 9 (System Design, Construction, Testing and Decommissioning), it states that it is the responsibility of developers to “*provide... information to the FRS (via the local authority planners in the first instance)*”. Given that the FRS are not a statutory consultee, this is impractical and will create significant delays. Instead, the applicant/developer should be able to provide information directly to the FRS.

Recommendation: Section 9 of NFCC guidance to echo Section 7 in allowing the applicant/developer to provide information directly to the FRS to prevent delays.

- There is uncertainty as to whether Fire Prevention Plans apply to BESS projects at present. We understand Defra is preparing a new environmental permitting process and consultation to change this policy environment. The current link to Fire Prevention Plans also refers to a 1 km radius stated in the guidance for receptor identification, which provides further uncertainty to the industry as to the requirements.

Recommendation: NFCC to clarify if Fire Prevention Plans are mandated for BESS projects.

Question 19 – Feedback on detection and monitoring

Disagree

- Section 11 of the draft NFCC guidance refers to active ventilation only – “*Gas detectors should alarm at the presence of flammable gas, shut down the ESS, and cause the switch over to full exhaust of the ventilation system*”. In contrast, Section 14 considers the use of deflagration panels as an alternative to active ventilation.
- NFCC guidance should allow for either of these solutions. Whilst the majority of BESS manufacturers now appear to be using active ventilation, National Fire Protection Association (NFPA) 855 Standard for the Installation of Stationary Energy Storage Systems allows for either solution and given NFCC guidance relies on NFPA 855 in Section 17, it should align with NFPA in Section 11 - allowing for deflagration panels.

Recommendation: NFCC guidance to follow NFPA 855 in including deflagration panels in Section 11 as a viable alternative to active ventilation.

Question 21 – Suppression and Suppression Systems

Disagree

- Section 12 (Suppression) states, “*It is becoming increasingly common for BESS to be designed and manufactured without any suppression system and maybe specifically designed so that a fire can be contained within the BESS cabinet or enclosure*”. Section 13 (Suppression Systems) does not make this clear. NFCC guidance should merge these sections so that it is clear that suppression systems, particularly water-based systems, are not required by NFCC.

Recommendation: NFCC guidance to merge sections on Suppression and Suppression Systems to clarify that suppression systems, particularly water-based systems, are not required.

Question 25 – Feedback on site location and access

Disagree

- The new guidance continues to prefer alternative access routes to sites, taking account of likely wind direction, to avoid firefighters having to drive through a vapour cloud. It should be noted that since most manufacturers now recommend letting BESS unit fires self-extinguish, fire and rescue services may be able to remain at the site perimeter. Despite a softening of language from ‘should include’ to ‘preferable’, a second access point remains a serious barrier to BESS projects since planning authorities often insist on a second access road from a different direction. Given constraints around BESS sites, which are frequently located close to distribution and transmission substations, providing additional access roads can be extremely challenging. A loop of track access around BESS units with an alternative external access point is an alternative for fire and rescue service vehicles.

Recommendation: NFCC to add a loop of track around sites, with an alternative external access point, as an alternative for fire and rescue service vehicle access.

Question 27 – Feedback on the spacing between BESS and spacing to other buildings beyond the perimeter of the site

Agree

- A reduction in required spacing between BESS, when tests such as UL 9540A show propagation does not occur, is welcomed. The Electricity Storage Network and its members agree with the new approach, which refers to separation distances within NFPA 855. Future technology development is likely to result in higher density units, which will help reduce space constraints on BESS sites. We encourage NFCC to consider that spacing requirements should change as battery technology evolves.

Question 31 – Feedback on water supplies

Disagree

- Manufacturers advise that fire prevention and passive measures (letting fires self-extinguish) are usually better approaches to a BESS fire event than fire suppression using water, which is not recommended for several reasons. Thermal runaway in a lithium-ion battery cell is self-sustaining and will continue until the electrolyte is exhausted.² For this reason, water will prolong a fire event but not stop it – as soon as water is removed, a cell will return to its ambient temperature and continue through its thermal runaway. Water will neither inhibit propagation of cell thermal runaway nor eliminate deflagration potential; since cells are enclosed into modules and these into racks and enclosures, it is difficult for a fire suppression agent (water) to reach affected areas. Attempted fire suppression using water can also lead to potentially toxic run-off and, thus environmental damage, and may lead to unaffected components having to be decommissioned.
- Since a fire event may be prolonged by using water, NFCC’s guidance of approximately 180,000 litres of static water supply when a flow rate of 25 litres/second cannot be achieved sends the wrong message about the recommended response to fire events. NFCC’s guidance should explicitly make clear that this volume of static water supply can be reduced when the manufacturer’s instructions and emergency response plan do not recommend water.
- In cases where this figure can be reduced (since the manufacturer’s instruction and emergency response plan do not recommend water), it should made clear who is responsible for defining a sufficient water supply and using which criteria.

Recommendation: NFCC to add that, even when a flow rate of 25 litres/second cannot be achieved, static water supply can be lower than 180,000 litres when the manufacturer’s instructions and emergency response plan do not recommend using water for fire suppression.

Recommendation: NFCC to clarify when static water supply can be lower than 180,000 litres, and who is responsible for defining a sufficient water supply using which criteria.

Recommendation: Section 17 (Spacing Between BESS) states, “Fire and rescue operations should be limited to boundary cooling of surrounding BESS and monitoring the BESS involved in the thermal event”. This should be explicitly re-stated in Section 19 on water supplies.

² AEGIS (2023), AEGIS Loss Control Updated Lithium-ion (Li-ion) Battery Energy Storage Systems (BESS) White Paper. [https://www.aegislink.com/content/dam/aegislink/resources/publications/public/LossControl/Lithium-Ion_Battery_Energy_Storage_Systems_\(Li-ion_BESS\)_112023.pdf](https://www.aegislink.com/content/dam/aegislink/resources/publications/public/LossControl/Lithium-Ion_Battery_Energy_Storage_Systems_(Li-ion_BESS)_112023.pdf)

Question 36 – feedback on the Emergency Response Plan

- It is unclear from NFCC’s draft guidance when the Emergency Response Plan should first be produced, to what level of detail and when it should be finalised. Not all pertinent information will be known at the planning application stage to provide a final Emergency Response Plan.
- It is also unclear when the Risk Management Plan, as mentioned in Section 1 – “*a robust Risk Management Plan and Emergency Response Plan should be developed in conjunction with the local FRS*” – is required and to what level of detail.

Recommendation: NFCC to clarify at what stage of the development process the Emergency Response Plan needs to be provided and to what level of detail.

Recommendation: NFCC to add another section – or incorporate into Section 21 (Emergency Response Plan) – information clarifying what is required for the Risk Management Plans, and when.

Question 43 – other feedback on the guidance

We have identified several key areas where we disagree with the current draft of the NFCC guidance, which we believe should be addressed to align with industry needs and best practice.

1. Scope of Guidance (Q7):

We disagree with the potential for retrospective application of the guidance to projects already in development or operational. Such an approach could create significant challenges and uncertainty for ongoing projects. We recommend that NFCC explicitly rule out retrospective application in the scope of the guidance. We advocate for regular updates to the guidance, at least every two years, to ensure it reflects the latest technology and industry practices. The guidance should be clear about where it applies.

2. Planning Approval Process (Q15):

There is a need for greater clarity on how the guidance should be used by local planning authorities. The current draft also creates uncertainty regarding the role of discussions with local fire and rescue services during the planning process. We recommend that NFCC provide more detailed guidance on the interaction between its guidance and the planning process, to avoid inappropriate use in planning decisions. Inconsistent engagement from fire services during the planning stage creates challenges for developers, highlighting the need for standardised practices. The guidance does not account for the differing availability of site details during stages of project development.

3. System Design, Construction, Testing, and Decommissioning (Q17):

The current guidance suggests providing information to the FRS via local planners, which could cause delays. Direct communication between developers and FRS is preferred. There is uncertainty about the applicability of Fire Prevention Plans to

BESS projects, which needs clarification. The guidance should more accurately reflect the appropriate timing for requesting detailed information from developers.

4. Site Location and Access (Q25):

The continued emphasis on a second access point to BESS sites poses a significant barrier to development, especially given the challenges of site constraints near electricity substations. We recommend that NFCC consider alternative access solutions, such as a loop of track around sites joining a single external access road with two access points.

5. Water Supplies for Fire Suppression (Q31):

We disagree with the recommendation for large static water supplies for fire suppression, given that water is generally not effective in addressing BESS fires. We recommend that the guidance be amended to reflect that lower water supply volumes may be appropriate when manufacturers do not recommend water-based suppression. Clarity is needed on criteria for determining lower volumes of static water.

6. Emergency Response Plan (Q36):

The draft guidance is unclear about when Emergency Response Plans and Risk Management Plans should be produced and to what level of detail, which can result in uncertainty about expectations during different stages of development.

These areas of disagreement reflect our concerns that the guidance should align with the needs of fire and rescue services as well as the battery storage sector. We appreciate the opportunity to provide feedback and hope our recommendations can improve the final guidance.

Electricity Storage Network

Bradninch Court, Castle Street, Exeter, EX4 3PL
01392 494399