Making a positive difference
for energy consumers

David Boyer
Director, Electricity Systems
Energy Networks Association
4 More London Riverside
London SE1 2AU

Email: jack.presleyabbott@ofgem.gov.uk

Date: 15 August 2023

Dear David,

Strategic Connections Group: Electricity Storage Connections

I am writing in response to your letter to Ofgem on 12th May, asking us to express our support to the DNOs for four solutions, proposed by the Strategic Connections Group (SCG), to address certain challenges presented by the increasing number of industrial energy storage projects seeking connections to the distribution networks. The solutions have been developed by a sub-group of the ENA's Strategic Connections Group, representing all DNOs (the licensees). Ofgem's support, where it is provided under this letter, is based on the proposals as set out in your letter dated 12th May and subsequent supplementary information provided on 23rd June. We continue to expect all licence obligations are adhered to and this letter in no way limits our ability to take any action. No formal derogations have been requested by the DNOs.

The challenges created by an unprecedented number of energy storage projects seeking to connect to the distribution network in Great Britain (GB) in recent years, are significant. Despite the relatively small amount of storage that is connected to distribution today (<2GW)[1], the combined capacity of all storage projects that are holding connection agreements has grown very significantly over the last 3 years, to c. 53GW, with 30GW signed in the regulatory year 2022/23[2] alone.

Storage projects exhibit unique characteristics, behaving as both demand and generation, potentially unpredictably, and often at a scale that means significant reinforcement works

[1] Includes energy storage assets ≥1MW. SCG Battery Connections – Supplementary Data (June 2023).
[2] Connections data provided by DNOs (June 2023).

are required to provide firm access. These works result in lengthy connection timescales, not only for these projects but also for those that follow, whether seeking new connections or increased capacity. Some of these works may also end up being very lightly utilised, meaning they risk being uneconomical if made.

It is right therefore that the DNOs consider the impact of increasing energy storage on the system and on other customers, and where they identify issues, suggest solutions that industry should take forward. Thank you for your letter dated 12th May, asking for our support for four such solutions; this letter provides our response to the specific points raised.

Solution 1: Access Rights for new Electricity Storage customers

We note the problem that has been identified – that in the absence of common definitions of 'firm' and 'non-firm' access rights for energy storage, a range of interpretations by DNOs have arisen. One DNO provides energy storage with the same network access rights as generation, whereas other DNOs may provide the same level of access right 'firmness' to an energy storage project as would be afforded to a demand only customer. Inappropriate access rights could also result in less efficient network investment as it could trigger unnecessary reinforcements and be a barrier to higher network utilisation.

We therefore do support the principle of a common definition of 'firm' access for electricity storage across the DNOs and agree that this definition should align with the access rights typically afforded to other forms of generation. This means that a firm energy storage customer's capacity (import or export) could be curtailed during abnormal system conditions (ie in N-1 or N-2[3]), but should not ordinarily be curtailed when the system is in an intact condition (ie with no outages). Electricity storage customers will still be able to connect with lower access rights (eg a 'non-firm' connection) on an interim or enduring basis, as per currently.

Adopting this approach for new energy storage connection applications and modification applications from 31st August 2023, will ensure consistency across DNOs and align the treatment of energy storage much more closely with other forms of generation, something that Ofgem has signalled previously, for example as part of our Access SCR Final Decision (Paragraphs 3.43 – 3.49)[4], which resulted in energy storage being included in the definition of Generation Connection[5] in Schedule 22 of DCUSA (Common Connection Charging

[3] N-1 refers to a first circuit outage; N-2 refers to a second circuit outage (a fault outage following an arranged outage). Outages can be due to faults or planned works (eg maintenance).
[4] Access and Forward-Looking Charges Significant Code Review: Decision and Direction | Ofgem
[5] DCUSA v15.1 (dcusa-cdn-1.s3.eu-west-2.amazonaws.com)

Methodology). This alignment with generation is also now reflected in the electricity generation licence, which was amended in October 2020 to clarify that electricity storage is subject to the same rules and regulations as other forms of generation[6]. A recent amendment to the Energy Security Bill[7] also serves to clarify energy storage as a subset of generation.

In the absence of specific references to this point in the current framework, we also support the proposed approach to develop guidance to clarify these points, with no change to DCUSA or other associated licence documents at this stage. If changes to regulatory documents are proposed in due course these would follow the normal industry process for such modifications and would be considered by stakeholders, including ultimately by Ofgem.

Solution 2: EREC P2/8 Distribution Storage Diversity Assumptions

We note the problem that has been identified – that the DNOs use EREC P2/8[8] to determine the capacity and security of supply of the distribution network, considering imported power, without applying as much diversity as might reasonably and safely be possible (ie a factor applied as an allowance of load not likely to be used at the same time). Continuing this approach could result in less efficient network development as it could trigger unnecessary reinforcements and be a barrier to higher network utilisation.

EREC P2/8 allows DNOs to make an 'appropriate allowance for diversity', and DNOs already apply diversity to some demand customer types. We therefore support in principle the use of appropriate diversity factors (for different use cases) when considering the impact of energy storage under P2/8 and would encourage the DNOs to work together to develop specific guidance in this regard to ensure consistency across GB. We recognise that DNOs may need to use connection management tools, such as Active Network Management (ANM), to manage network risks resulting from these diversity factors.

In the absence of specific references to this point in the current framework, we also support the proposed approach that the DNOs develop guidance to clarify these points, with no change to EREC P2/8 or other associated licence documents at this stage. If changes to EREC P2/8 or other regulatory documents are proposed in due course, these would follow

[6] Decision on clarifying the regulatory framework for electricity storage: changes to the electricity generation licence | Ofgem
[7] The Bill amends the Electricity Act 1989 to, in effect, clarify that electricity storage is a distinct subset of generation, and defines the storage as energy that was converted from electricity and is stored for the purpose of its future reconversion into electricity.
[8] ENA EREC P2 Issue 8 (dcode.org.uk)

the normal industry process for such modifications and would be considered by stakeholders, including ultimately by Ofgem.

Solution 3: Use of Low Voltage (LV) Growth Forecasts in Connection Assessments

We note the problem that has been identified – that the use of low voltage (LV)[9] network growth forecast data, including the growth of low carbon technologies (LCTs), is not consistently applied by DNOs in their assessment of new connections, including in the development of Minimum Scheme solutions; not sufficiently accounting for future LV growth when assessing network capacity for customer connection applications could delay the transition to LCTs and inhibit legislated decarbonisation targets. This inconsistency applies across all distribution connection assessments and is not limited to energy storage. Four of the six DNOs currently include such forecasts in their assessments of connections, but the period of these forecasts and the net zero pathway that they assume are inconsistent across regions.

The DNOs already use growth forecasts for network planning and strategic investment as part of the wider regulatory process and, at transmission, such forecasts are included in connection impact assessments, at the customer's energisation date (ie date of connection). We note the DNOs' suggestion to include up to 10 years of LV growth forecasts in their large connection assessments, rather than exactly mirror the approach at transmission. The rationale provided for this difference is that the lead-times for distribution connections are usually considerably shorter than those typical of larger scale projects at transmission. This means using the same method of linking to the energisation date may lead to very different outcomes at distribution versus transmission in terms of the number of years of forecast growth included. It also means that linking the forecast to the energisation date might not be sufficient to identify and deliver the necessary reinforcement interventions in the timescales required.

We believe that consistency across DNOs and coordination with transmission is important, especially given the interactivity which is common for such projects. Therefore, in parallel with this solution being developed and implemented by DNOs, we recommend further work be undertaken by the DNOs, the ESO, and the TOs to ensure alignment of growth forecasting used in the connection assessment process. Inclusion of forecast growth in connection assessments should strike the right balance between enabling strategic network planning through the connections process, and allow the timescales required to reinforce the network, whilst not reserving forecast future capacity longer than is necessary.

[9] Low voltage (LV) is all voltages up to and including 1kV.

In summary, in the absence of specific references to this point in the current framework, we support the principle of including network growth forecast data in connection assessments for large[10] distribution connections and that these forecasts should be consistent with achieving net zero targets for 2035 and 2050. However, we also strongly support the need for coordination and transparency in approach, across DNO regions and with transmission, and encourage the ENA to work with all parties to achieve this.

We support the approach suggested, to develop guidance, with no change to DCUSA or other associated licence documents at this stage. If changes to regulatory documents are proposed in due course these would follow the normal industry process for such modifications and would be considered by stakeholders, including ultimately by Ofgem.

Solution 4: Increasing Curtailment Limits for New Storage Customers

In your letter you note that in many parts of GB, reinforcement works will be required in order to provide firm access for new energy storage. This means that the number of storage customers that may decide to connect on a non-firm basis, on an interim or enduring measure, may increase. Where these non-firm storage customers meet the Access SCR eligibility criteria, DNOs may need to take operational measures (such as procuring flexibility services), or pay compensation for curtailment above customer Curtailment Limits, until such time as Minimum Scheme reinforcements are completed. You propose changing the methodology used to set Curtailment Limits for energy storage projects, such that these Curtailment Limits are increased.

At this stage there is insufficient information on the likely number of energy storage projects that might seek to connect on a non-firm basis, the likelihood of Curtailment Limits being exceeded and the balance of risk between the networks, consumers and energy storage operators, in this situation, as well as a clear justification for adopting a different approach to other forms of generation. There is also insufficient information on the methodology that the DNOs consider should be used in the future and any assessment of alternative solutions that might achieve a similar outcome.

Ofgem is therefore unable to provide support or comment on whether such a change might be appropriate. We recognise that non-firm connections could be a route for some customers to connect sooner and would be happy to consider this point further, as well as a broader discussion around the merits and potential risks of increased capacity connecting

[10] All customers who are not (a) domestic and non-domestic customers that are billed on an aggregated and non-site-specific basis or who are metered directly using whole current meters; or (b) unmetered supplies.

on a non-firm basis. If ENA seeks to progress with this solution, we would expect a more detailed option appraisal and impact assessment.

Thank you again for your letter. We look forward to continuing to work with you to ensure a more consistent and appropriate approach to the treatment of distribution connected energy storage, a fundamental building block of our net zero energy system.

Yours sincerely,

Jack Presley Abbott
Deputy Director, Market Design
Energy Systems Management & Security (ESMS)