



**Call for input response**

# **LDES Cap and Floor Regime: Ofgem's role, plan, and response to the DESNZ publication**

Response from Regen and the Electricity Storage Network

January 2025

# Contents

---

1	Background and contacts .....	2
1.1.1	Electricity Storage Network .....	2
	Call for evidence response.....	2
	Report for the Government on Long Duration Energy Storage .....	2
	Consultation response .....	2
	Continuing engagement.....	3
2	Response to the call for input.....	4
2.1	Response to questions .....	4
2.1.1	LDES Programme .....	4
2.1.2	Deliverability.....	5
2.1.3	Planning consent .....	5
2.1.4	Capacity and duration limits .....	6
2.1.5	Technology readiness level requirement.....	8
2.1.6	Extension and refurbishment of existing LDES assets.....	9
2.1.7	Project assessment and cost assessment .....	9
2.1.8	Cost Assessment.....	10
2.1.9	Gaming risk and mitigation.....	11

# 1 Background and contacts

---

Regen is an independent centre of energy expertise with a mission to accelerate the transition to a zero carbon energy system. We have 20 years of experience delivering expert advice and market insight on the systemic challenges of decarbonising power, heat and transport. Regen has over 150 members who support our mission, including clean energy developers, businesses, local authorities, community energy groups, academic institutions, and research organisations across the energy sector.

## 1.1.1 Electricity Storage Network

Since 2018, Regen has managed the [Electricity Storage Network \(ESN\)](#), **the industry group and voice for grid-scale electricity storage in GB**. The ESN has over 100 members who have a shared mission to promote the use of 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 that have raised several billion pounds to invest in this new technology class. The [Electricity Storage Network](#) has been extensively engaging in Long-Duration Energy Storage, including one-to-one meetings and regularly via our Innovation and Technology working group.

## Call for evidence response

Regen and ESN responded to the call for evidence on Long Duration Energy Storage (LDES) launched by the Government in 2021. Many of the messages in that [response](#) are still relevant and fed into our thinking for our consultation response (see below).

## Report for the Government on Long Duration Energy Storage

DESNZ commissioned Regen and LCP Delta to assess the optimal level of LDES deployment and the role LDES could play in delivering flexibility requirements in a range of electricity market and system scenarios. A crucial part of this work was to seek stakeholder feedback to inform a modelling study looking at the role of LDES in the future energy system. Using our ESN contacts, Regen engaged with leading UK storage technology and project developers, with 25 storage technology developers covering 11 storage technologies, including several ESN members.

The full report is available at [Scenario Deployment Analysis for Long-Duration Electricity Storage](#). We also created a [short summary blog](#) explaining some key findings.

## Consultation response

Regen and ESN responded to the consultation on a cap and floor scheme for Long Duration Energy Storage (LDES) launched by the Government in 2024. This consultation was informed by the LDES scenario deployment analysis report we completed for the Government with LCP Delta alongside the consultation. Our complete response is available at: [Consultation response - Long Duration Energy Storage cap and floor scheme](#).

## Continuing engagement

### Key contacts:

#### Electricity Storage Network Lead – Olly Frankland

T: 07465 201596

E: [ofrankland@regen.co.uk](mailto:ofrankland@regen.co.uk)

#### Associate Director, Regen – Ray Arrell

T: 07584 484189

E: [rarrell@regen.co.uk](mailto:rarrell@regen.co.uk)

## 2 Response to the call for input

We have set out our response to the questions below and look forward to working with Ofgem and the DESNZ policy team on the detailed design of the LDES cap and floor scheme over the coming months.

We hold a quarterly Innovation & Technology working group meeting to discuss LDES policy developments and we would welcome the opportunity to host the Ofgem LDES team to share/obtain views on any developments around the cap & floor scheme at an upcoming working group meeting.

### 2.1 Response to questions

#### 2.1.1 LDES Programme

**Q1. We have outlined an ambitious timeline for Window 1. Do you have any comments or suggestions on how we can streamline application submissions by developers and our project assessment process to make it more efficient?**

A key message from our members is the importance of pace in delivering this new cap and floor scheme. While we understand that there is a balance between getting the scheme design right versus the pace of delivery, we do feel that getting this scheme up and running as soon as practically possible is in the best interest of consumers and the industry.

#### Alignment with NESO grid connection reforms

NESO has published its proposed grid connection reforms, under which it is estimated that the Gate 2 evidence submission window will close at the end of May 2025. Project developers will then find out if they have a firm Gate 2 offer 'as soon as possible in 2025'. This means that NESO's 'Gate 2 to Whole Queue' process will take place during the first LDES cap and floor application period. As such, no projects will have firm grid connection agreements in place at the time of submission.

**Recommendation:** We recommend that Window 1 projects provide evidence of a pre-TMO4+ Grid Connection Agreement, as that will show that the physical substation capacity and connection point exists (or will exist) to deliver the project by the relevant date.

**Recommendation:** We further recommend that LDES projects winning a cap and floor contract are 'designated' in NESO's Project Designation Methodology, so that they are ensured of receiving a firm Gate 2 offer.

## **Q2. Do you have any comments on our proposed approach to split Window 1 into two distinct delivery tracks?**

We agree with the process of splitting into two delivery tracks, as the pace of deployment is critical to meeting our Clean Power 2030 mission. However, there needs to be more clarity and guidance on how these two tracks are managed and prioritised, to provide more clarity to the industry. This will help projects to make informed decisions on what track they should pursue. This includes any differences in the requirements to demonstrate planning and grid connection status.

**Recommendation:** Proceed with the twin-track approach, to support projects that can build-out later into the early 2030s, but provide clarity on how the two tranches of projects will be assessed and managed differently through the allocation windows and follow-on assessments.

### **2.1.2 Deliverability**

#### **Q3. Do you have any comments on our proposed approach to assessing deliverability?**

The criteria for deliverability seem to include a sensible set of areas to determine the validity and quality of the applications. The economic viability will need to reference opex and capex costs ‘at the time’ of application. As was outlined in the [scenario analysis](#) completed by LCP Delta and Regen, there is potential for variation in capex and opex costs across technologies and projects over time. Therefore, any estimates of costs should be treated as such, and the potential to re-assess capex and opex costs at the point of construction would be important.

Overall, more details around the specific nature of the evidence required for each criterion is important information that will need to be included in the Technical Decision Document (TDD).

### **2.1.3 Planning consent**

#### **Q5. Do you agree with our approach of requiring planning consent before starting project assessment and asking for evidence of submitted planning applications and expected decision dates to avoid speculative projects?**

We agree on the need to provide evidence of progress in planning. The need for planning consent to be in place or that a planning decision on a submitted application will be approved before the eligibility assessment starts for the first allocation window would effectively mean that planning applications would need to be prepared and submitted by Q3 2025. This provides a relatively short window for our members to prepare and then engage with the relevant planning application process for their respective projects at a time when there is a well-documented lack of resources within the planning sector, causing significant delays.

In addition to the lack of resources, planners are not experienced in dealing with projects involving pumped hydro, Liquid Air Energy Storage (LAES), Compressed Air Energy Storage (CAES), and other longer-duration storage technology types and may also have limited experience with battery storage

projects. This means that timeframes are likely to be longer than, say, a solar or wind farm, where considerable experience and guidance have been built up within the planning sector over decades.

**Recommendation:** Relax the planning entry requirements to be alongside the application eligibility assessment period instead of before it, so that applicants and planning authorities have more time to review LDES applications. The requirement of planning consent can still be included as a stipulation of the award criteria. This also relates to grid connection approvals.

## 2.1.4 Capacity and duration limits

**Q5. For stream 1 only, if your project would be affected by an increase in the minimum duration requirement to 10 hours, would you re-scope the project to meet the new requirement or discontinue it?**

See answer to Q6.

**Q6. Do you have views on the potential differences in system and consumer benefits between longer and shorter minimum duration requirements, including how these differences might affect LDES asset operation?**

We agreed with the decision to upgrade the definition of LDES from four hours to six hours as previously defined in the Government's call for evidence in 2021. However, we do not think this has gone far enough and welcome that increasing the discharge duration limit to 8 hours for stream 1 projects in Window 1 is now being considered.

We suggest a minimum duration of eight would be appropriate. The analysis completed in our report with LCP Delta found the longer the duration of assets installed, the more system and carbon benefits to the system, "The modelling shows that adding LDES to the system can have a positive impact on both emissions and the system costs, with the duration of deployed LDES being the biggest factor in the size of that impact"<sup>1</sup>.

In our previous consultation response in March 2024, we suggested an overall LDES target of a minimum of 5 GW and up to 12 GW by 2035 is appropriate and that an overall scheme capacity should be outlined. The NESO CP30 analysis for the Government has been published and recommended 5-8 GW of power capacity and 81-99 GWh of energy storage capacity by 2030, with the range of duration required 12-16 hours. There is also a spatial element to that analysis focused on the pipeline of projects, which includes approximately 2 GW in North and South Scotland and smaller amounts of capacity in other areas. It is unclear whether this aligns with current and future systems needs. We also have a

---

<sup>1</sup> DESNZ, 2024 <https://www.gov.uk/government/publications/long-duration-electricity-storage-scenariodeployment-analysis>

slightly different number from Government in the Clean Power Action plan, suggesting a 4-6 GW of LDES capacity required by 2030.

We very much welcome the additional information provided to the market on the range of capacity needed to 2030 and 2035 from NESO and DESNZ. We recommended in our consultation response that DESNZ and Ofgem, with advice from NESO, should develop a set of system need 'pots' alongside an overall target for LDES. This would include GW capacity and duration requirements in separate pots, aligned to a range of system needs (providing an approximate GWh storage capacity range). We understand that this might be part of the allocation window 1 process, and we would like to see this delivered to provide more clarity to the market. NESO has been asked to advise on this matter, and we would like to see this information provided to the market as soon as possible. This will help LDES projects being developed at an appropriate scale and duration, and in the right location, to help maximise system value and reduce the costs to the consumer.

**Recommendation:** Set an 8 hours duration eligibility criteria for the LDES cap and floor scheme, an overall target and pots of requirements that align with system needs. This could ensure some alignment between Clean Power 2030 requirements and the capacities and durations being procured through the allocation windows of the LDES cap and floor scheme.

### Technology eligibility

A key message in our previous consultation response was that revenue support mechanisms such as the cap and floor scheme should be technology-agnostic and not exclude specific technology types. A competitive and technology-agnostic approach, focused on system needs, has reduced costs for consumers and has led to the development of a world-class market for low-carbon flexibility providers in GB. In addition, there is a lack of understanding of the potential for shorter-duration assets to provide services over longer durations. For example, in principle, a one-hour duration 100 MW (100 MWh) battery storage site can be operated as a 100-hour battery if split into 1 MW segments. The right signal needs to be sent to an asset to operate in a way that reflects the system's needs, but is just a function of power (MW) and energy capacity (MWh). An example of this was provided in the NESO Thermal Constraints Collaboration project – the Big Friendly Battery from Flexitricity<sup>2</sup>.

Whilst Li-ion projects to address short term flexibility requirements are investable in the current market, designing these systems to address longer term storage needs is not. If we design the right support system to signal the system needs and the appropriate market signals to deliver at the right times then the market can be left to respond with the most effective technology mix to deliver those needs. Government should not be picking between technologies. Therefore, we would like to see Ofgem provide more clarity on the definition of 'novel' iterations of Lithium-Ion battery storage projects as soon as possible. We expect clarification in the TDD, as it has not been outlined in this Open Letter.

---

<sup>2</sup> NESO Thermal constraints collaboration project, 2024 <https://www.neso.energy/document/308796/download>



**Recommendation:** Ofgem to confirm that the cap and floor scheme is technology agnostic and to clarify definitions of novel iterations of Li-Ion battery storage in the Stream 1 applications.

### LDES dispatch market signal

There is a risk that, without further market signals, the intended flexibility from supported LDES assets will not be available to the system when required. There is currently no market signal to dispatch operational assets that will be supported by the cap and floor to support the system in the longer-duration stress events that we will likely see in the 2030s. For example, ahead of a shortfall of energy in an extended low wind event, LDES would need to import energy to be full and ready to dispatch for the required duration, particularly at times of peak demand. Therefore, we believe the LDES cap and floor needs to be linked to wider market reform (e.g. Capacity Market) or a new system service from NESO. Ongoing reforms and future Capacity Market-specific consultations are opportunities to develop this thinking. Another solution could be a bespoke service from NESO that pays assets to import ahead of a tight period, alongside an availability payment. This design would need to be worked on by Government, industry and NESO. The NESO Thermal Constraints Collaboration project is a model for how this could work and be developed. A shift to specific constraint markets, with long-term contracts and short-term markets, is included as one of the options being assessed further in this NESO project, which could become a useful market signal for LDES operation.

**Recommendation:** Ofgem will need to work with NESO to develop a clear market signal, alongside the investment support, to ensure LDES is available when the system needs it in longer duration stress events.

## 2.1.5 Technology readiness level requirement

### **Q7. Do you agree with our initial view to not require detailed evidence for TRL9 projects?**

We agree with this approach, given that relatively mature technologies are the focus of stream 1. We would refer back to our response to question 6 regarding clarity on novel iterations of Lithium-Ion.

### **Q8. If you are a potential stream 2 applicant, what information do you think you would need to provide to demonstrate TRL 8 status?**

One comment we have had from our members is that providing clear evidence on the TRL level can be challenging. And that any assessment may risk being subjective. However, we believe this risk can be mitigated with the appropriate methodology, and we would be keen to engage with Ofgem in the development of an agreed-upon approach to evidencing TRL status.

## 2.1.6 Extension and refurbishment of existing LDES assets

**Q9. How might we include significant refurbishments that expand the capacity or change the purpose of existing LDES assets? What criteria and processes would ensure these refurbishments provide comparable benefits to new projects?**

We do not have a specific view on the refurbishment of assets. However, we would like to raise the issue of co-location. It is crucial that the design of the cap and floor scheme and allocation windows does not create any barriers to co-location with renewables or other forms of energy storage.

We have welcomed the further guidance for co-location provided on the Contracts for Difference (CfD) scheme and believe there are clear opportunities for the co-location of LDES under the proposed cap and floor. For this to occur, the Government/Ofgem will need to provide guidance on LDES co-location, including but not limited to the following:

- Co-location definition and grid connection arrangements (transmission Grid Connection Agreements can currently only be assigned to one SPV)
- Details of any impacts on co-located renewable energy with CfD and Renewables Obligations supported assets
- Impacts on any ancillary service and other market participation.

**Recommendation:** Ensure LDES co-location with renewables and other types of demand and storage is enabled/permitted in the detailed design process with clear guidance and definitions.

## 2.1.7 Project assessment and cost assessment

**Q10. What are your views on the proposed CBA approach for the LDES cap and floor regime? Are there additional factors or impacts that you believe should be considered in the CBA?**

We can see the value in prioritising the assessment of applications that will meet the 2030 track.

We support the proposed criteria for the CBA process outlined. However, more clarity on how these criteria will be assessed would be valuable. For example:

- Under the “balancing market” criteria, will this be an assessment of a project’s ability to support the balancing market or an assessment of the inter-market impact of a project?
- How will the “decarbonisation” criteria be assessed? Will this be an assessment of the embodied carbon of the project infrastructure and construction, as well as the operational emissions of the LDES asset when energised or a different metric?
- How will an LDES asset be assessed against “security of supply” if a discrete LDES dispatch function or market is yet to be defined? Will the CBA determine the viability of a project contributing to the existing range of system balancing and restoration services, or will this be

based on an assessment of the capacity and duration specifications and operational measurements such as ramping speed and cyclability?

- How will the CBA account for a given project's level of renewable energy integration? Will this be a viability assessment of co-location via cooperation/co-connection?

**Recommendation:** Ofgem should ensure that a detailed summary of the CBA assessment method for each chosen criteria is outlined in the TDD.

## 2.1.8 Cost Assessment

### **Q11. Do you have any views on the proposed approach to project cost assessment?**

The approach to assess project costs, including three quotes for contracted services, will ensure a high level of scrutiny on individual applications. How will Ofgem determine if some applicants are unable to secure three quotes due to some contracting sectors potentially being over-subscribed, with some LDES technologies requiring fairly bespoke contractors?

The performance-based incentives seem sensible but must fall within the controls set out in the mitigation of gaming risks and unintended consequences. Equivalently, the penalties for missing timelines or budget cost limits will need to be clearly defined, including what would be deemed as “justifiable reasons”, as well as “uncontrollable operational expenses” or other issues out of the control of the applicant/developer. The defined 2-year back-stop date is a sensible buffer, but this would have a material effect on any 2030 projects and thus Clean Power 2030 targets, so wider system impacts would need to be fed back to NESO.

The use of Reference Class Forecasting to inform cost modelling could be challenging due to some projects being fairly unique and pumped hydro not being delivered for 40 years in the UK.

### **Q12. What are your views on the calibration of the cap and floor levels? Do you consider setting the floor at, for example, 80% of projects' costs as a viable model for LDES assets, potentially alongside a higher cap?**

For more mature technologies, we agree with using the cost of debt as the floor. However, one of the points made by our members is that setting the floor at the cost of debt could incentivise projects into overleveraging their projects. We think this risk can be managed in the next phase of detailed design. There could be a role for the UKIB/National Wealth Fund in benchmarking debt levels in existing deals outside of the cap and floor.

For Stream 2 and lower TRL technologies, the risk associated with investment is considerably higher and, therefore, requires a greater ROI than mature technologies to be attractive to project investors. We would like to see a more generous scheme design for the lower TRL stream to motivate project finance players to provide funding for TRL 8 projects. Perhaps with a higher floor through a separate

assessment/criterion. Given that Stream 2 should fund no more than 2-3 projects per technology type before increasing to TRL 9 (Stream 1), we do not think this change will considerably increase the costs.

We believe a soft cap would be the best design, allowing the project owner to keep a reasonable share of the revenues above a cap. This could be implemented in various ways, e.g., an attenuating gross margin split above a revenue threshold.

**Recommendation:** We support a different floor assessment methodology in stream 2 to take into account the additional investment risk.

**Recommendation:** We support the option of applying a soft cap, subject to reviewing the detailed design.

**Q13. Do you support exploring methods to lower consumer costs, including more use of competitive mechanisms when setting cap and floor rates? If you have any suggestions on how we can improve the cap and floor setting using a competitive process, please share them with us.**

We have no specific views on this. But would echo feedback from the wider industry that introducing competitive mechanisms for this as a first iteration of an LDES cap and floor scheme might be ambitious and that perhaps a simpler design might be more appropriate initially. This could be revisited.

## 2.1.9 Gaming risk and mitigation

**Q14. Do the potential benefits of allowing LDES assets to be managed by in-house trading teams outweigh the potential risks? How can we effectively mitigate any potential risks of gaming, such as manipulating trade bookings or market manipulation?**

The majority of pumped hydro developers have some form of in-house trading capability. Some other technology developers, such as battery storage, also retain some aspects of in-house trading, but generally, the sector relies on third-party optimisers.

Overall, we believe that there is already sufficient legislation in this space to prevent mishandling – from competition law, requirements around financial reporting REMIT, anti-competitive behaviour and market manipulation, as well as Transmission Constraint Licence Conditions. However, if mitigations progress, we think that some form of ringfencing or mandating a third-party optimisation could be reasonable options to manage the gaming risks.

**Recommendation:** sufficient legislation exists to manage the gaming risks of those with in-house trading teams, so we do not think further mitigation is necessary.