Solar Energy UK

Consultation Reponse

Long Duration Electricity Storage: Proposals To Enable Investment

March 2024

About us

Solar Energy UK represents more than 350 members in the UK solar and energy storage industry, including solar installers, manufacturers, distributors, developers, investors, technical, legal and professional advisors. Our goal is to enable the deployment of 70GW of solar energy capacity by 2035.

Respondent details :

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- Would you like this response to remain confidential? No
- Submission date: 04/03/2024

1. Do you agree with the policy objectives that have been identified? Please explain your reasoning.

Yes, Solar Energy UK agrees. Enabling investment in flexible technologies like LDES will be essential to deliver targets for net zero, save system and consumer costs, and increase security of the grid.

2. Are there other factors we should consider in our policy objectives?

It's important to highlight the significance of being technology agnostic, to incentivise across the industry and so that the most appropriate LDES technologies are used where they are most needed – there will be no one-size-fits-all LDES technology or approach.

3. Will these policy objectives help to bring forward LDES projects to help the electricity system reach net zero most effectively? If so, why?

DESNZ should ensure that policy enables the deployment of LDES at a pace without seeking unattainable perfection, which can result in conflicting policies that slow investment and deployment. Deployment is needed rapidly to meet targets and save costs.

4. Do you agree with our assessment that a cap and floor is the most appropriate policy option to enable investment and bring forward the required LDES? Please explain your reasoning.

Yes. This is the industry's preferred policy option, as it provides financial security and increases confidence in investors, who will receive revenue guarantees. This revenue certainty also serves to ease concerns and mitigate slightly for high upfront costs and long queue and build times, which are periods of high risk and barriers to deployment. Having certainty of revenue after the initial outlay and wait time makes investment much more worthwhile and less risky, thereby best addressing the main barriers faced by LDES technologies.

The existing cap and floor scheme for interconnectors has not only created a strong and stable regulatory framework that has brought forward timely investment but has done so whilst striking a fair balance between risk and rewards for both developers and consumers.

5. Do you agree with our approach to not set an overall scheme capacity?

An overall scheme capacity should be set out for Stream 1 and 2 technologies – not having one is a negative signal to industry and investors, indicating the government is not taking the need for deployment seriously enough. Setting a commitment is positive, increases awareness, and shows commitment to the industry.

6. Have we sufficiently identified wider risks and do you agree with the proposed mitigations? Please provide your reasoning.

Yes, we agree that the proposed design of the cap and floor, which is targeted to only support those projects which deliver significant value to the overall system and consumers, should mitigate the identified wider risks.
The identification of these risks is important for ensuring the success and effectiveness of the LDES scheme. Market distortion could occur if the scheme unfairly advantages certain technologies or providers, potentially hindering innovation and competition in the market. Additionally, increased costs to consumers could undermine public support for the scheme if not properly managed. Finally, the risk of stranded assets poses a financial risk to investors and could result in inefficient use of resources.

A wider risk not identified however, is the social acceptance of LDES technologies. We are already seeing Battery Energy Storage Systems (BESS) projects being refused on safety grounds by LPAs. The Public Perception and the associated social (and political) contract to operate is highly influenced by Government communication. Addressing concerns related to visual, noise and safety are issues that should be shared between Government, Developers and Operators. Furthermore, the public and communities will benefit from clear projections and guidance from Government on the scale of national LDES (and BESS) capacity required to enable Net Zero by 2050, and the nearer term Net Zero power sector by 2035. Both in terms of Net Zero and Energy Security.

7. Do you agree that only those technologies that meet the electricity storage definition should be eligible for an LDES scheme?

While we appreciate the rationale for limiting LDES eligibility to those that meet the definition of electricity storage, we are concerned that under the current definition, some existing technologies, such as lithium-based storage, become ineligible. We therefore recommend that this definition be expanded, or that a technology-agnostic stream be introduced, to enable the lowest costs to consumers and the earliest possible delivery of LDES assets.

8. Do you agree that it is appropriate to exclude technologies that can already be funded under existing market arrangements and/or those that would be eligible for multiple business model support?

We do agree. However, we encourage the government to clarify whether LDES technologies would be allowed to co-locate alongside supported renewable generation (e.g., RO or CfD).

9. Do you agree with our proposal for a minimum duration of 6 hours? If not, please provide a rationale.

The appropriateness of a 6-hour duration minimum depends on factors such as the variability of renewable energy generation, peak demand patterns, and the availability of alternative storage solutions. In some regions or under certain grid conditions, a longer duration might be more beneficial for providing grid stability and meeting energy demand during extended periods of low renewable generation or high demand.

Additionally, technological advancements and cost considerations may influence the feasibility of achieving longer-duration storage capabilities. If shorter-duration storage technologies can adequately address grid needs at a lower cost or with greater efficiency, it might be more practical to allow flexibility in duration requirements to accommodate a range of storage solutions.

Considering the evolving nature of energy systems and the potential for future changes in grid dynamics, setting rigid duration requirements could limit innovation and the adoption of emerging storage technologies with varying duration capabilities.

Therefore, while a minimum duration of 6 hours may be suitable in many cases, it is important to maintain flexibility in the policy framework to adapt to changing circumstances, technological advancements, and regional differences in grid requirements. Regular reviews and assessments of grid needs, technology advancements, and cost-effectiveness can help ensure that duration requirements remain appropriate and conducive to achieving the objectives of the LDES scheme. Those capable of LDES at 8 hours and above should not be penalised for providing storage over a longer duration than the minimum.

10. Do you believe we should be setting a minimum efficiency criterion? Please provide your reasoning.

We do not believe a minimum efficiency criterion should be used as part of the LDES cap and floor scheme. Efficiency is only one of multiple factors to consider when assessing the benefits of a project – a project may have low efficiency but have low CAPEX and/or OPEX and could thus serve a useful system role, as an example.

11. Do you agree with the proposed approach to splitting the streams by TRL level? Please provide your reasoning. If not, please suggest an alternative approach.

We broadly support splitting by TRL level; however, definitions of these levels must be made clearer – currently, there is confusion between what is a commercially proven technology and what is a commercially viable business case. The lead time to development of projects should also be considered in splitting streams, as there are clear differences between them, such as pump-hydro taking significantly longer to reach commercial operation.

12. Do you agree with the different capacity minima set out for the streams? Please provide your reasoning.

We agree with the 100MW minimum for Stream 1, as these are high-capacity technologies and high-capacity deployment of these should be encouraged.

DESNZ should consider whether the 50MW threshold for Stream 2 novel technology is not distorting. We note that the maximum level of capacity of any LDES technology successful in the LODES competition is 10MW.[1]

Similarly for hydrogen technologies participating in Hydrogen Allocation Round 1, the minimum capacity threshold level is 5MW.[2] Grid connection availability could also play a role in limiting project sizes. For Stream 2 novel technologies we recommend that DESNZ consider lowering the capacity minima.

13. Do you agree that the identified wider system benefits should be considered when assessing a project?

Projects should be assessed on a case-by-case basis on how much value they will provide for consumers, to protect against any potential risk. Benefits should be clear.

14. Would an approach similar to that of the interconnector scheme be appropriate? if not what alternative would you suggest?

There is not enough detail in information in the consultation on how similar an LDES cap and floor would be to the interconnector scheme.

1 Longer Duration Energy Storage Demonstration (LODES) competition (closed to applications) - GOV.UK (www.gov.uk)

2 Hydrogen Production Business Model / Net Zero Hydrogen Fund: HAR1 successful projects (published December 2023) - GOV.UK (www.gov.uk)

15. Are there any wider economic and societal benefits that have not been identified that LDES projects could provide that we should include in the criteria?

Decarbonisation needs to be included as a wider system benefit. LDES technologies and projects will significantly contribute to the decarbonisation of the UK's power sector by 2035 on the path to meeting the legislated target of net zero emissions by 2050. They will support the deployment and integration of renewables, such as solar power, by providing greater system flexibility that makes it easier to manage intermittency. In doing so LDES will reduce the need for renewable curtailment, which means making the most of existing assets and displacing carbon-intensive gas-fired generation.

Wider economic and societal benefits not included in section 4.6 include: job creation across the development, construction and operation of LDES projects, plus job creation and investment in technological innovation and R&D, and benefits associated with EV charging integration.

Also, the potential to enhance the resilience of the electricity grid against disruptions caused by extreme weather events, cyber-attacks, or other emergencies. Criteria could assess the resilience benefits of LDES projects, including their ability to provide backup power during outages or support critical infrastructure during emergencies.

16. Do you agree with allowing recovery of debt via the floor and recovery of equity via the cap? Please provide your reasoning.

We agree that the floor must ensure debt recovery; it should be noted that debt is not an absolute 'fixed' input, debt can be, and often is, index linked and interest rates have been volatile for a long period. Any floor price therefore set, must incorporate flexibility for this reality.

The interconnector scheme includes consideration of OPEX, tax, interest during construction and decommissioning costs under the floor. The current proposals in this consultation only consider the cost of debt, which makes it more primitive than the interconnector cap and floor. Not considering OPEX costs, for example, could result in the floor being lower than what's needed for developer confidence in getting a return on investment.

With regards to the cap, we understand the intent to address excessive returns, however how this is set and how this is quantified is unclear. Will this be a direct equity cap number or a range depending on the variability of equity returns requirements (for example for different technologies both in terms of type and/ or maturity)?

18. How do we design the thresholds to be at the appropriate level to balance investment certainty with potential consumer exposure to additional support costs?

The most robust way of providing investment certainty is either no cap at all or a sufficiently high cap.

Unclear what is meant by "potential consumer exposure to additional support costs" but assessing the potential impact of the cap and floor scheme on consumers, particularly in terms of energy prices and affordability, will be needed.

19. Should we require projects to outline how they intend to operationalise the asset to exceed the floor?

We are currently unable to give a view without more information. It is not clear why projects should have to do so, what information would be required and how this data would be shared. Developers will already be incentivised to exceed the floor price and optimise their charging/discharging operations in various markets to obtain a return on their equity investment.

20. Do you agree using annual gross margin is a suitable approach to setting the cap and floor thresholds? If not, what alternative would you suggest?

This is dependent on what costs are includable when calculating gross margin, i.e. if the costs previously described above in response to question 17 are allowable. Other options include EBITDA calculation, however we support gross margin conditionally on the inclusion of all associated costs in calculation of the same**.**

To further this – OPEX costs for running an LDES asset, tax, and efficiency should all be incorporated into gross margin calculations. Not considering OPEX costs could result in the floor being lower than what's needed for developer confidence in getting a return on investment. Asset efficiency should be considered and is done by assessing import costs relative to export revenue – whereas import vs export price does not take into account efficiency.

21. What performance incentive could be used to encourage the full operation of assets to prevent dispatch distortions around the cap?

Regular multi-year assessments of gross margin revenues, as with interconnector floor and cap implementation, is a good way of monitoring to avoid distortion around the cap.

We would need more information from DESNZ on how a soft cap would be implemented, but there is definitely a need for soft caps to be included to incentivise operation.

We strongly support the proposed ability to transfer revenues between years to smooth out revenues – this is what developers want for investor confidence, this encourages prudent operator practices. Note this is also used in the Netherlands successfully.

22.What performance incentive could be used to encourage full operation of assets to prevent dispatch distortions relating around the floor?

By setting the floor at the cost of debt, operators will naturally be incentivised for their assets to operate above the floor in order to make an equity return. The floor is there as a protection.

23.Do you agree with our proposed mitigations, or would you recommend others?

We agree with points '1' and '2'.

We are cautious around the utility of point '3'. Setting availability or performance requirements for operators to adhere to may give rise to perverse incentives where operators seek to manage around or specifically for said requirements, rather than seeking long term solutions in the best interest of the project.

24.Have we identified relevant operational risks associated with creating an LDES investment scheme?

Yes

25.Are our proposed mitigations sufficient for mitigating against the operational risks, like gaming? Please provide your reasoning.

Yes, but this should be an under frequent review to make sure gaming does not become an issue.

26.Do you agree that the cap and floor scheme should be allocated administratively?

We agree.

27. Do you agree that the length of a cap and floor contract should be based on the project length?

We would encourage flexibility on contract length, for example providing the opportunity for contracts to be based on project length or a fixed period – e.g. 25 years. Flexibility would enable projects with longer consents to be covered for their operational life, and to flex with differences between projects, or with consent periods over time – possibly including repowering.

On the other hand, contract lengths of 25 years and debt tenor have proven to be financeable and are well understood by the market, and therefore should also be considered.

28. Do you agree that cap and floor recipients should also be able to participate in other electricity markets, such as the CM? Please provide reasoning.

We agree. The Capacity Market, as well as a cap and floor mechanism, is essential to ensure LDES is deployed efficiently and to the scales needed.

29. To what extent could finance be needed from the UK Infrastructure Bank or elsewhere, alongside the cap and floor scheme, to help address barriers to investment in LDES?

Yes, additional liquidity from UKIB encourages greater liquidity competition in the market and reduces barriers to LDES deployment.

Finance from UKIB or other sources could be essential alongside the cap and floor scheme to ensure adequate funding for project development, technological innovation, and market deployment, thereby accelerating the transition to a more resilient and sustainable energy infrastructure.

It can also help mitigate the often substantial upfront capital costs. Financial support from institutions like UKIB could also support research and development into LDES technologies.

30. Do you agree that the proposed pre-qualification criteria are reasonable for both streams? Please provide your reasoning.

The time between pre-qualification reward should be kept as short as possible, as these are periods of risk for developers and can cause complications with planning and permissions.

31.Are there additional pre-qualification criteria that should be considered to establish the eligibility of a project?

Additional pre-qualification criteria that could be considered include the project's technical feasibility, scalability, track record of the project developers, local community engagement and support, alignment with regional energy strategies, and plans for end-of-life asset management and decommissioning.

32.If you have a LDES project in the pipeline, how would these eligibility parameters affect your project's application?

N/A

33.What time length would you recommend for conducting reviews of cap/floor threshold (e,g, annual or multi-year)?

As mentioned above, gross margin should be regularly checked to see if a project has hit the floor or cap. Frequency is dependent on mitigation policies. It is not necessary to review cap/floor mechanism after contract begins.

34.Do you agree that exceptional events should be considered as part of the review of cap/floor? Please provide your reasoning.

We agree.

35. What criteria could a proving period for LDES be based on?

A proving period for LDES could be based on criteria such as project milestones achieved, financial commitments made, progress in obtaining necessary permits and licenses, grid connection readiness, and demonstration of technological viability through testing or pilot projects.

36.Do you agree that target start dates should be set? If not, please explain why.

We agree.

37.Are there any other parameters that we should be considering in the design of the scheme?

There needs to be greater clarity about co-location – the scheme should not impede LDES co-locating with other renewable energy technologies.

Clarification is also needed on whether LDES projects can access the cap and floor scheme if they have already accessed other renewable generation support schemes (e.g., CfD).

38. What are the important factors for deciding who is the appropriate body to bring forward this scheme?

Important factors in determining the appropriate body to bring forward this scheme include the speed of delivery, experience in implementing and effectively managing similar schemes to instil industry confidence and having sufficient dedicated resources to ensure the assessment framework is carried out at pace.

39. Would either of the delivery routes set out affect the investment case for LDES projects?

Speed of delivery and delivery of similar schemes are of utmost importance. Given Ofgem's current role and experience in administering the interconnector cap and floor scheme, we strongly believe that they should bring forward this scheme for LDES. If adequately resourced, we believe that they'll be best able to do so at the pace required.

As such, we believe that the government should at the first opportunity in response to this consultation make clear that Ofgem will be the main delivery body of the scheme with sufficient resources to do so at pace.

40.Are there any additional benefits or risks to a delivery route that has not been identified?

Government-led delivery routes might involve more bureaucratic complexity and slower decision-making processes compared to a regulatory-led approach, potentially delaying implementation. Changes in government or policy priorities could introduce volatility and uncertainty into the scheme, affecting investor confidence and project viability.

41.Do you believe TNUoS charges should be used if the scheme is administered by Ofgem (option 1)? If not, please provide your reasoning and/or an alternate method.

The case for using Transmission Network use of System charges (TNUoS) for funding a LDES scheme is much less clear than for the existing interconnector scheme, and industry would need clarity on this. It is important to note that TNUoS charges are typically paid by all users of the transmission system, including consumers through their electricity bills.

Therefore, relying solely on TNUoS charges to fund the scheme may disproportionately burden consumers with the costs associated with supporting LDES projects. If TNUoS is used to help fund the scheme, then it should be alongside a combination of funding sources to ensure more equitable distribution of costs.

42.Do you believe a supplier obligation levy should be used if the scheme is administered using a CfD style approach (option 2)? If not, please provide your reasoning and/or an alternate method.

No comment.