

Energy UK response to the BEIS Call for Evidence on facilitating the deployment of large-scale and long-duration electricity storage

28 September 2021

About Energy UK

Energy UK is the trade association for the energy industry with over 100 members spanning every aspect of the energy sector – from established FTSE 100 companies right through to new, growing suppliers and generators, which now make up over half of our membership. We represent the diverse nature of the UK's energy industry with our members delivering almost all (90%) of both the UK's power generation and energy supply for over 27 million UK homes as well as businesses. The energy industry invests over £13.1bn annually, delivers around £85.6bn in economic activity through its supply chain and interaction with other sectors, and supports over 764,000 jobs in every corner of the country.

Executive Summary

Energy UK and our members thank BEIS for the opportunity to respond to this Call for Evidence and we can confirm that we are happy for our response to be published.

We welcome the fact that BEIS are looking into facilitating the deployment of Large-Scale Long-Duration Electricity Storage (LLES) via a Call for Evidence. However, we would like to emphasise that it is crucial Government communicate a long-term vision for the future UK energy market and a clear indication of what the needs of the future energy system operator will be going forward. Energy UK hold the view that BEIS should be looking to facilitate the deployment of a range of different technologies that can be considered LLES, subject to the needs of the future system operator. Consideration therefore needs to be given to how a support mechanism might evolve through time as some LLES technologies become more established and newer innovative LLES technologies come to light. The absence of long-term government vision presents a challenge for Energy UK and our members to clearly identify the barriers and opportunities of LLES investment and make recommendations accordingly.

We note that this Call for Evidence has been released alongside several other government Calls for Evidence and Strategies. It is important to consider that policy decisions made on LLES deployment facilitation as set out in this Call for Evidence may be subject to decisions coming out of other BEIS publications. In particular we are referring to the Capacity Market (CM) Call for Evidence on Improving delivery assurance and early action to align with Net Zero¹, the UK Government's Hydrogen Strategy², Decarbonisation Readiness Call for Evidence³ and the Proposals for an Energy Future System Operator⁴. We would also like to request a clear timeline from BEIS setting out when we can expect certain policy decisions to be made after evidence has been gathered from responses to the publications listed above.

¹ [Capacity Market: Improving delivery assurance and early action to align with net zero: call for evidence \(publishing.service.gov.uk\)](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1011283/UK-Capacity-Market-Call-for-Evidence.pdf)

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1011283/UK-Hydrogen-Strategy_web.pdf

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1001949/decarbonisation-readiness-call-for-evidence.pdf

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004044/energy-future-system-operator-condoc.pdf

Ultimately, Energy UK believes that the government should undertake further analysis, following this Call for Evidence to assess the specific system need and thereafter design parameters of how any support mechanism might work for LLES. and deliver best value for money for GB consumers Once this has been carried out the government should return to industry for consultation. There is a strong preference, particularly for pumped hydro storage, that the Cap and Floor mechanism is the most appropriate intervention to facilitate its deployment.

Please find the Energy UK response to the questions set out in the Call for Evidence on facilitating the deployment of LLES below, with the caveat that they are subject to other policy and regulatory changes currently being considered by BEIS and the long-term vision for the energy sector, as mentioned above.

Questions

- **Strategic Context: The role and value of LLES in a net zero energy system**

1. *Do you agree with our definition of LLES as storage technologies that can store and discharge energy for over 4 hours and have a power capacity of at least 100 MW? If not, what alternative definition would be more suitable? Please provide supporting evidence where possible*

There are differing views amongst Energy UK members with regards to the BEIS Definition of LLES. Many Energy UK members believe that 4 hours of storage is too short to be considered 'long duration', given the growing system need driven by increasing shares of variable renewables and the need to displace unabated gas-fired generation. However, others agree that 4 hours sounds like a reasonable assumption. To put this into context, by the end of 2020, there was 1.2GW or 1.1GWh of battery storage on the grid⁵. Currently, most batteries have a duration of around an hour. Although 4-hour batteries are possible, the current market does not incentivise them. We would welcome further explanation from BEIS as to why 4 hours and 100MW was chosen for the definition of LLES. More generally, we do not deem the capacity criteria to be as important as the storage discharge duration to the definition of LLES. If not already undertaken, we recommend that BEIS should complete in depth analysis of the benefits and risks of different duration and capacity combinations so as to ensure that the right definition is landed upon with the lowest risk of market distortions.

Energy UK suggests that the definition of LLES is informed by the analysis currently being undertaken for the government on the system needs and benefits of long-duration storage technologies in a net zero system. This should be in coordination with National Grid ESO and other industry stakeholders.

2. *Do you agree that the electricity system requires, and will benefit from, LLES delivering the services outlined above? Are there any other important services that LLES can provide that are not covered here? Please provide supporting evidence where possible.*

Yes, we do agree that the electricity system requires and will benefit from LLES delivering the services as outlined in the Call for Evidence, with the caveat that it will only prove valuable if those services can be provided cost effectively and are able to compete with other providers of flexibility. Whilst storage can provide inertia, frequency response and voltage support, other resources can perform some of these services (e.g., frequency response) much more quickly and at lower cost, as each service is valued by the ESO and treated in isolation. Existing LLES resources are not currently being utilized to their full potential due to the current 'slice and dice' approach to the procurement of balancing services.

We would like to point towards a recent study by Imperial College London which clearly sets out the benefits of pumped hydro storage as one key types of LLES technology to a net zero GB energy system.⁶ While this study focuses on pumped hydro, as noted by the authors of the study (see page 10), it is considered a proxy for other forms of LLES with similar characteristics. We would also like to highlight that while the benefits outlined in this Call for Evidence can be delivered on an individual basis

⁵ FES 2021 <https://www.nationalgrideso.com/document/199871/download>

⁶ <https://www.imperial.ac.uk/energy-futures-lab/reports/Whole-System-Value-of-Long-Duration-Energy-Storage-in-a-Net-Zero-Emission-Energy-System-for-Great-Britain/>

by a range of technologies, LLES technologies can deliver a range of these services *by individual projects* resulting in the services being delivered at a lower cost, and in a manner compatible with net zero.

A further benefit brought forward by LLES (and other forms of low carbon generation) is reducing the UK's growing reliance on electricity interconnectors with Europe. Energy UK consider this to be critically important in light of the UK no longer taking part in the European Union's Internal Energy Market (IEM). Not remaining part of the IEM potentially exposes the GB electricity system to security of supply concerns during periods of low wind output across Europe in winter months when power demand is high, therefore LLES would mitigate some of this risk.

3. *Do you think there will be a need for a range of different LLES technologies, alongside other technologies that may be able to deliver similar system benefits, such as hydrogen production and generation, and carbon capture, usage and storage?*

As mentioned above, Energy UK are supportive of a range of different LLES technologies. However, we would like to highlight that this needs to be contextualized with an understanding of future system needs and the future system operator. Since LLES technologies can provide a range of services to support the stability of the energy system, and the need for storage will increase as the rollout of intermittent renewables continues at pace. Further analysis and an understanding of the costs is needed to ascertain whether the initial deployment of LLES technologies needs support and if so, what that may look like.

Energy UK would also like to highlight that other (non-energy) sectors could be providing hydrogen storage with support. Signals need to be sent to these other sectors to encourage investment in large scale hydrogen storage, which at this point is unproven and very small scale.

- **Current Market: Understanding the storage landscape**

4. *Please provide details of specific LLES projects that could begin development in the next 5 years. These details should include technology type (including intended use of fuel generated through sector coupling), MW and MWh, the business model or route to market, efficiency and expected development, capital, operational costs and expected lifetime of projects.*

As a trade association, Energy UK are not in a position to provide details of specific LLES projects. However, we would like to signpost BEIS to the projects and planning applications our members companies will be including in their own individual consultation responses.

- **Current Market: Potential barriers to LLES deployment**

5. *Do you agree that the issues outlined above are barriers to the deployment of LLES? Please comment on any issues that are particularly significant in your view.*

We do agree that the issues outlined in the Call for Evidence document are barriers to the deployment of LLES. Energy UK consider the most important barriers to include high upfront capital cost, revenue uncertainty and a lack of long-term market signals.

However, we reiterate that further context of where BEIS expect the market to be in the future would help us more clearly identify the most significant barriers to the deployment of LLES.

6. *Are there any other barriers impacting the deployment of LLES?*

As mentioned above, a clear idea of future regulatory context (and indeed an understanding of future network constraints) from Government is needed before a full list of barriers impacting the deployment of LLES can be produced.

However, another barrier that has been identified is the current structure of Transmission Network Use of System (TNUoS). As noted on page 17 of the Call for Evidence, BEIS highlight that network charging

needs to be considered in terms of how demand and generation charges are applied to storage. We therefore acknowledge that currently there are proposals to reform the system which could recognise the net benefit that a dispatchable large transmission connected demand brings in heavily generation congested areas (reducing the need for constraint payments). This will be important for the deployment of LLES projects.

7. *What types of capital are available for LLES and from what types of investors?*

We believe there is little or no appetite for capital to come forward at the moment due there not being an appropriate market and regulatory framework in place. However, with the appropriate support mechanism in place, many of our members are confident that both equity and debt investors will finance these critical energy infrastructure assets which will enable the transition to a modern low carbon energy system.

8. *Do the financing challenges LLES projects face primarily concern raising debt, or also equity?*

Primarily the financing challenges LLES projects face concern raising debt. As experienced across the GB electricity market in recent years, highlighted by the success of the CfD scheme, debt investors are requiring increased levels of revenue certainty over the entire tenor of their debt. Such revenue stabilisation mechanisms provide confidence to investors while also enabling lower-cost debt financing for developers and lower costs for consumers.

- **Addressing barriers to the deployment of LLES**

9. *To what extent will the reforms outlined above support the ‘investability’ of LLES? Please comment on any specific reforms that, in your view, hold potential to support the ‘investability’ of LLES significantly*

We welcome the consideration of the reforms outlined in the Call for Evidence document. However, it is important that value for customers is carefully considered as well as ensuring that certain players are not in a position whereby, they are benefitting from two different market incentives.

As mentioned in Question 6, Network charging is currently a significant barrier for LLES development that should be considered when looking at the ‘investability’ of LLES.

To reiterate, Energy UK urge BEIS to ensure consistency in messaging with relation to other policy publications and decisions being taken at the same time – such as in the current CM Call for Evidence⁷ and the Hydrogen Strategy⁸. As mentioned at the start of our response, it would be useful to receive a timeline from BEIS setting out when these reforms are likely to be implemented. For example, we would welcome clarity on the proposed reforms to the CM to allow us to consider the impact these reforms will have on a long-term future route to market for some LLES technologies. Having said that, Energy UK hold the view that whilst we welcome reforms to the CM, they may not alone be a sufficient route to market for LLES technologies in the short term.

Some Energy UK members consider a revenue stabilisation mechanism such as a Cap and Floor regime (which would incorporate a reformed CM as one of the revenue streams alongside wholesale market revenues and ancillary service revenues) would be capable of bringing forward some LLES technologies in the short term. In their view, a Cap and Floor regime would be particularly suitable for pumped hydro technologies for example. However, it would require a redesign to make it suitable for pumped hydro storage. Some Energy UK members also do not agree that a Cap and Floor should be implemented to benefit only a handful of projects.

The differing views from members highlight the importance of conducting further analysis and system modelling such as what the government has already commissioned to identify if, and how LLES projects

⁷ [Capacity Market: Improving delivery assurance and early action to align with net zero: call for evidence \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/90112/capacity-market-call-for-evidence-2022.pdf)

⁸ [UK Hydrogen Strategy \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/90112/uk-hydrogen-strategy-2022.pdf)

might need support and what the impact of this support could be on existing providers of flexibility. Within this analysis BEIS should also give thought to whether the CM could provide a better route to market for some LLES technologies.

Whichever solution is implemented, the impact of such a support mechanism on other types of flexibility must be regularly reviewed to ensure there are no perverse incentives or impacts which prevent any particular type or technology being deployed. Both short- and long- duration storage is needed, and we must ensure that any new support for long duration does not negatively impact the opportunity for short duration as a result.

10. Do you have any views on further reforms that could take place in current markets to improve the investability of LLES?

Whilst we do not have specific view on further reforms to improve the investability of LLES, Energy UK members would like to highlight that currently the Balancing Mechanism (BM) does not value flexibility – the bulk of the revenues and volumes for energy balancing actions go to thermal generators with an FPN of zero. Energy UK members feel that intuitively this is wrong and that it should be the most flexible resources that benefit from the close to real time markets. We feel that a higher carbon price would not address this as that will simply make the cost of offers from thermal generators higher. We believe that a change of mindset or an incentive is needed for the ESO to move away from this.

BSC Mod 342 was introduced in November 2017. This allowed trading after gate closure and subsequently trading on the power exchanges immediately migrated here. Now around 65% of PX trades take place after gate closure. Transmission connected assets including LLES cannot change their FPN after gate closure, so whilst they can trade here, they can't change their output to match the trade at the same time. Distributed generators therefore have an advantage as they can change their output to match a post gate closure change in trading position. New build LLES will be in the same disadvantaged position.

Some Energy UK members suggest that the UK Government should also consider establishing energy storage targets (GW and GWh) for 2030, 2040 and 2050. These members consider that targets would both help to plan and cost-effectively support the rapid deployment of variable renewable energy as well as to give investors the confidence to finance these long-term assets. Such targets should be informed by rigorous analysis on the system need and benefits and be broken down by storage durations. Such analysis could include the Future Energy Scenarios (FES) produced by the National Grid Electricity System Operator (NGESO) and the modelling exercise recently commissioned by the government on the role of long-duration storage for net zero systems.

11. Are you aware of any proposed market changes (and/or system changes) that could make it more difficult to finance LLES within current markets?

No.

12. Considering your answers to questions 9, 10 and 11, do you think further intervention is needed to de-risk investment in LLES?

Yes, we consider that even in the context of ongoing market reforms, a market mechanism is vital to sufficiently de-risk investment of LLES. Energy UK is of the view that further intervention will mitigate the degree of revenue uncertainty resulting from regulatory uncertainty in the future energy market.

It is also worth highlighting that some members consider that the Cap and Floor support could help to develop the inter-day and inter-week markets due to the merchant exposure of this mechanism. This means that at some point the market signals may be strong enough that the support scheme will no longer be necessary.

Energy UK urge BEIS to consider the overarching revenue framework for the energy market and to assess whether this will succeed in supporting the technologies BEIS would like to see come forward in the near future. We would like to reiterate our earlier points, that without forward vision and a definition

of the service that LLES will provide to the system, it is difficult to comment exactly on what further intervention is needed to de-risk investment in all types of LLES technology in the long term.

- **Rationale for further intervention to de-risk LLES: Considering approaches**

13. Do you think that it is necessary to try to accelerate the deployment of LLES, even if stronger signals for longer duration storage may not develop until the late 2020s / 2030s?

Yes, we do believe it is necessary to try and accelerate the deployment of LLES.

Further to this, given the fact that many LLES projects have long lead times, it is crucial that the appropriate market signals are established in a timely manner to ensure that they are able to help provide the flexibility services needed by the late 2020s to the benefit of GB consumers. To provide an indication as to the timescales needed, LLES projects currently seeking development consent could expect to take a final investment decision in 2023-24, and following a construction timeline of 5-6 years, would be able to commission by 2030. Furthermore, our members have highlighted one of the best forms of storage – salt caverns – which are useful for storing high levels of hydrogen in a fast storage capacity, also have long lead times. It is therefore critical that if it is identified that a mechanism is needed to support LLES, it is in place by 2032 to enable projects to deploy by 2030.

14. Are other reforms needed to markets to ensure long-duration storage assets are providing the maximum value to the system? If yes, please provide detail of what reforms could be needed.

Please refer to points made in Question 10.

15. Which intervention, in your view, has the most potential to be appropriate for addressing barriers to help bring forward investment in LLES, including novel storage technologies? Are there any other mechanisms which might be appropriate to consider? Please provide evidence to support your response where possible.

Energy UK considers that the government should undertake further analysis and a consultation following this call for evidence to develop the specific design parameters of how a support mechanism could be applied to facilitate the deployment of LLES technologies.

The introduction of a Cap and Floor is the preferred mechanism by some Energy UK members for certain LLES technologies, in particular pumped hydro storage, for the following reasons:

- The precedent has already been set for interconnectors, although the mechanism would need to be suitably adapted to work for LLES.
- It facilitates system needs as operators are incentivised to seek out revenue streams such as those in the wholesale market and ancillary services market.
- It incentivises efficient operation for the same reason as operators are exposed to market opportunities between the cap and the floor. Operators are therefore forced to operate according to system efficiency needs (as directed by the ESO or Future System Operator).
- Apportions risk between operators (as exposed to risk between floor and cap), and consumers (who are protected from excessive returns by the cap).
Multiple LLES technologies could potentially be supported under the Cap and Floor, including those LLES technologies (meeting the definition) listed in the Call for Evidence document on page 10.

This mechanism has proven successful in encouraging greater investment in electricity interconnectors, who face similar challenges to LLES technologies such as pumped hydro storage including large upfront capital investment, long construction periods and revenue uncertainty.

If BEIS do decide to proceed with consulting on a Cap and Floor arrangement we believe a shared cap, where revenues above the cap are shared between operators and consumers would be the fairest option as this will incentivise operators to provide the greatest system benefits, even once the cap is exceeded. Under a 'hard' cap approach, there may be perverse outcomes once the cap has been

reached whereby the operator cannot receive any additional revenue so ceases to operate for the remainder of that cap period to the detriment of the wider energy system. This needs to be part of an overall package that is fair to both operator and consumers. The interconnector Cap and Floor has an availability incentive that could address this if this is not suitable. The introduction of a 'shared cap' would mitigate this, while retaining the consumer upside.

BEIS should also continue to look at potential reforms to the CM that could be used to support LLES in the long term without the need for additional support as well as better align it with the UK's net zero target. For instance, the current CM auction timings are not suitable for many LLES projects. We would also like to add that care will need to be taken to avoid over reward if a CMU is allowed to take part in the Cap and Floor and also receive multiyear agreements in the CM – interconnectors only get one-year agreements in the CM. This will be particularly important if there is a split auction in the CM for low carbon capacity. CMUs supported by a Cap and Floor should not also be allowed access to this split auction. We are therefore pleased to see in 2.4.2.1 of the live CM Call for Evidence that BEIS consider that if a Cap and Floor is introduced, they may introduce Rules to ensure that those in receipt of the Cap and Floor are limited to one year CM agreements.

Energy UK considers that in addition to looking into supporting new build LLES projects, the government should give further thought to how the Cap and Floor can incentivise operators of existing LLES projects to refurbish and modernise their operations which will be equally critical to supporting the net zero transition.

16. Please provide suggestions for how the most effective intervention, in your view, could be structured to ensure value for money and affordability.

As mentioned in our response to Question 15, some Energy UK members do consider a Cap and Floor Mechanism as the preferred intervention to assure value for money and affordability of LLES projects. At its simplest, the 'floor' could act as a mean to service debt obligations and the 'cap' with a profit-sharing mechanism in place to protect the customer. Again, as also noted in the response to Question 15 above, some energy UK members have highlighted that the Cap and Floor for interconnectors would need to be suitably adapted for LLES.

Beyond this, we reiterate that LLES participation in a Cap and Floor regime should be subject to a positive cost benefit analysis (CBA) as is currently under the existing regime for interconnectors⁹, should BEIS proceed with this option. This CBA should look to take into consideration costs to construct and impacts to consumers in absence of the LLES project, while seeking to incorporate the benefits of the LLES project delivered through multiple revenue streams e.g., wholesale market, and ancillary services. It will also need to consider how such a support scheme will impact on flexibility providers not in receipt of the Cap and Floor, and regularly review this impact so as to ensure there are no perverse incentives which prevent short-duration storage being deployed. The CBA should however avoid attempting to 'rank' projects on a 'cheapest price' framework such as £/MWh as some Energy UK members feel that this is a blunt instrument which could fail to take into account the multiple benefits an LLES project can provide to GB customers.

In the long term, we repeat our points from the previous questions and suggest that as part of the analysis BEIS should also explore whether the Capacity Market could provide a more suitable way of supporting certain LLES technologies.

17. Do you think that hydrogen storage that will provide flexibility could face the same financing barriers discussed in relation to LLES above? Please provide evidence where possible.

Energy UK are not in a position to say whether or not we think that hydrogen storage that will provide flexibility could face the same financing barriers as the LLES barriers laid out in this consultation. We would like to emphasise that we consider hydrogen to be a very practical means of storing energy in

⁹ https://www.ofgem.gov.uk/sites/default/files/docs/2016/05/cap_and_floor_brochure.pdf

the longer term and considerations around financing barriers should be considered alongside the Hydrogen Strategy.

In the view of some of our members who are developing hydrogen storage, given the similarities between LLES and hydrogen storage in terms of high upfront capital costs, long lead times for building and long lifetimes, we would welcome a swift approach to developing an appropriate revenue mechanism to allow hydrogen projects to not be delayed. This will allow the hydrogen economy to grow and contribute to governments 5GW hydrogen ambition by 2030.

18. Do you agree that it is not yet appropriate for a Cap & Floor mechanism to be considered for hydrogen storage? If so, what other approaches might be appropriate to consider?

Energy UK believe that it is too early to determine whether a Cap and Floor mechanism would be appropriate for hydrogen storage. We also note that the recently published Hydrogen Strategy also does not fully address the question of how to support hydrogen storage. This is an area that BEIS need to thoroughly consider.

- **Understanding Risks**

19. What are the key risks in intervening to support LLES, and what risks might arise from a Cap & Floor specifically?

The existing structure of the Cap and Floor regime already has several measures in place to reduce any risks to both the consumer and the wider market. Most notably, it ensures through a CBA exercise that only projects that deliver significant value to the system and consumers are in receipt of a Cap and Floor.

If the 'default' Cap and Floor for interconnectors is introduced for LLES it will be difficult to properly account for the variable controllable OPEX effectively under this regime, this is due to the inherent uncertainty around the costs of 'charging' the LLES asset given the vast fluctuations in wholesale prices even on a day-to-day basis. To mitigate this, it would be beneficial to exclude 'charging' costs from the Cap and Floor are instead simply netted off revenues before a comparison to the 'cap' and 'floor' in any particular period.

20. How might a Cap and Floor mechanism distort the market for short duration flexibility and nascent technologies? Please provide evidence where possible.

Firstly, Energy UK would welcome a definition of what is considered 'short duration' energy storage alongside the definition of 'long duration' energy storage. The focus of this question should also look to all types of storage not in receipt of the Cap and Floor if BEIS decide to go down this route, as they will all be competing to provide flexibility.

Some Energy UK members hold strong views that if BEIS go ahead with a Cap and Floor mechanism for LLES technologies, it should be targeted, time limited and designed so that only those projects which deliver significant value to the system and consumers are supported. By doing so, it will limit any potential impacts on other technologies whilst ensuring that the benefits of this targeted intervention outweigh any risks.

In addition, reaching net zero will require flexible storage technologies across all timescales as LLES technologies can complement short-duration flexibility providers such as battery energy storage systems (BESS). Due to their differing characteristics, they can provide different services to the system. For example, as fast-responding assets, BESS can help manage sudden imbalances between demand and generation through providing fast-acting frequency response services. While many LLES technologies such as pumped hydro storage cannot compete in such markets, they can provide bulk storage to reduce supply and demand imbalances over long periods whilst also helping to stabilise prices which benefit energy producers and consumers alike. Furthermore, pumped hydro storage can deliver services such as synchronous inertia which BESS cannot.

However, if BEIS do decide to go ahead with a Cap and Floor mechanism, we cannot rule out the risk that there is some detriment to other forms of flexibility, not least because LLES could be driving greater competition in certain markets whilst in receipt of an additional support.

Furthermore, there are three factors here Energy UK wish to highlight:

- Whilst some Energy UK members are of the view that a Cap and Floor mechanism would be suitable to bring forward of LLES, we do not yet have any details about what the Cap and Floor mechanism would look like or how it would work in practice in this context. Absence of concrete analysis, any other threshold would also be arbitrary and this will need to be addressed through a separate consultation.
- We reiterate that that the 4-hour, 100 MW threshold is quite arbitrary and needs to be defined by system need. It may also result in different outcomes for projects above or below the threshold. It may also create artificial incentives to set the size of project accordingly.
- There are a range of technologies that could be considered LLES, including pumped hydro storage, flow batteries, liquid air energy storage and other emerging innovative technologies. Energy UK suggests that detailed analysis is carried out on the potential impacts of all possible technologies.

This information above highlights the importance of thorough analysis and consultation. If BEIS proceed with developing a Cap and Floor Mechanism, a CBA process should be undertaken and the details of the proposed scheme should be consulted on. BEIS should also use that opportunity to take a further look at the risks of market distortion at that stage. In addition to this, and as with all support schemes, there should be plans for future reviews to ensure that the scheme is working as intended (i.e., reviewing the impact of initial projects before embarking on a further round of support).

However, to reiterate, a government vision for the future energy market and system requirements needs to be considered before this question can be properly addressed.

21. How could any intervention, such as a Cap & Floor mechanism, be designed and implemented to enable the benefits to outweigh risks?

Energy UK believe a Cap and Floor mechanism has the potential to bring benefits to both system operability and consumers. The level of benefit to consumers and the system should therefore be carefully considered when implementing a mechanism to enable the deployment of LLES. However, as mentioned throughout our consultation response, more context and foresight of the future regulatory landscape is crucial to allow a greater understanding of the potential risks a certain type of intervention will have. Defining LLES correctly so that the most optimal mix of flexibility technologies is deployed will be crucial. Therefore, BEIS must undertake detailed analysis to look at the benefits and risks of different definitions of LLES by varying the duration, and capacity (if determined to be an important factor).

At a minimum, and as highlighted earlier, the Cap and Floor award process should include a robust cost benefit analysis which would require the LLES project to demonstrate a positive CBA before being awarded an agreement under the scheme.

Next Steps

We would like to thank you in advance for considering our response and look forward to hearing further clarification of the next steps in due course. It is critically important that the next steps are set out as soon as possible to ensure LLES can be built and connected to the system in advance of 2030 to support the scale, speed, and complexity of the net zero transition. If you have any questions regarding our response in the meantime, please do not hesitate to contact me on the details below.

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