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**07 January 2022**

Dear Simon,

### **Net Zero Market Reform**

I am writing on behalf of the UK Pumped Hydro Storage Working Group convened by Scottish Renewables and comprising of SSER, Drax Power, ILLI, Buccleuch, Dorothea Pumped Hydro, CCSQ and British Hydropower Association.

This letter is regarding the Net Zero Market Reform, particularly the document published in November 2021. We welcome that National Grid ESO is examining the changes that the current Great Britain (GB) electricity market design will require to achieve net-zero. We believe that the identification of these issues alongside the proposal of solutions will be essential to put GB on the path to net-zero.

The ESO report identifies that there is a need to manage dramatic energy imbalances with flexible and firm technologies across both demand and supply. It also identifies that there is limited bankable revenue associated with flexibility. We strongly agree with these findings, as a group we have found that the main issue hindering the deployment of large scale and long duration electricity storage (LLES), is the lack of a revenue support mechanism.

Scottish Renewables has commissioned a paper from Riverswan Energy Advisory illustrating the need for LLES, the barriers currently faced by investors and developers, and the alternative market mechanisms that could remove these barriers<sup>1</sup>. LLES are projects with high capital costs and long construction period, and current electricity market design does not offer sufficient confidence to investors.

We have analysed different market mechanisms that could help to overcome this revenue uncertainty and have concluded that a cap and floor mechanism is the best approach, as suggested in the paper from Riverswan Energy Advisory. We believe that our findings are aligned with the outcomes of the ESO report published in November 2021, and therefore, we would recommend that the assessment of a new market mechanism such as the cap and floor should be considered in phase 3 of this reform.

We note that another issue identified in the ESO report is the very limited competition between technologies delivering flexibility and limit to demand participation. On this point, we would highlight that

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<sup>1</sup> <https://www.scottishrenewables.com/publications/823-filling-the-flexibility-gap-realising-the-benefits-of-long-duration-electricity-storage>

a cap and floor mechanism introduced for multiple LLES technologies can promote competition and further avoid market distortions as multiple technologies could bid for support.

Below we explain further the need for LLES, the benefits of LLES and the benefits of introducing a new market mechanism.

### **The need for LLES**

Future FES and CCC scenarios for a net-zero energy system all forecast significant increases in variable wind and solar generation. This growth in renewable generation will have important effects upon the future electricity system and drive the need for LLES and the benefits it can provide.

The BEIS 2021 Smart Systems and Flexibility Plan<sup>2</sup> proposes that 30GW of flexible capacity will be required by 2030 to meet current net zero pathways. It suggests that some £10 billion per annum may be saved by 2050 by the introduction of flexible electricity technologies. The ESO's Future Energy Scenarios (FES)<sup>3</sup>, also forecasts vast increases in LLES deployment to enable the widescale rollout of intermittent renewables. By 2030 up to 13GW of new electricity storage could be required.

### **The benefits of LLES**

LLES can make a major contribution to a net zero electricity system, both enabling the rapid growth in variable wind and solar renewables and accelerating the displacement of fossil fuelled generation. It will enable the following benefits to be realised:

1. Meeting variable system demand: flexible low-carbon electricity capacity will be needed when variable renewables are not available. Currently, fossil-fuel generators mainly provide this flexibility, but they can be displaced by low-carbon dispatchable resources such as LLES to complement renewable generation.
2. Maintaining system stability: non-synchronous, variable renewables do not currently provide the dispatchable system ancillary services, such as inertia, voltage flexibility and restoration, all of which are essential to maintain security of supply. Again, these services are currently mainly provided by fossil fuel generators, but they can be replaced by low carbon dispatchable resources such as LLES.
3. Lower system costs: renewables located far from demand centres will drive an increase in network costs and balancing costs from curtailment of renewables to manage network constraints. These costs could be mitigated by LLES sited in appropriate locations on the electricity system.
4. Reducing renewable electricity curtailment: LLES can also provide additional flexible demand on the system at times of low consumer demand. If this demand was not added, then renewable generation may need to be curtailed, thus increasing the system carbon intensity.

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<sup>2</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1003778/smart-systems-and-flexibility-plan-2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1003778/smart-systems-and-flexibility-plan-2021.pdf)

<sup>3</sup> <https://www.nationalgrideso.com/document/202851/download>

### **The benefits of introducing a new market mechanism**

Today, the most significant barrier is the lack of revenue certainty in the markets where LLES technologies will compete, this includes wholesale market, balancing market, ancillary services markets, and the capacity market. In our view, the introduction of a cap and floor mechanism is necessary to overcome this revenue uncertainty and enable investment in LLES.

In summary, a cap and floor mechanism would give confidence to investors that revenues will underpin an efficient level of debt financing. The similar mechanism used for interconnector projects has successfully attracted investment into several projects, delivering significant benefits to consumers. Introducing a cap and floor regime for LLES would bring several benefits:

- It is relatively simple to introduce as the existing interconnector regime can be used as a blueprint.
- It will deliver services consistent with the system's needs as operators will be incentivised to participate in balancing services for the ESO and will be able to compete with other technologies.
- The cap and floor mechanism appropriately apportions risk by providing reasonable certainty of servicing debt without consumers underwriting all costs, while the cap provides protection to consumers.
- It incentivises efficiency as operators are exposed to market opportunity between the cap and the floor. This mitigates any market distortion by incentivising the provision of services in response to market price signals from multiple competitive markets (wholesale, balancing, ancillary and capacity markets).
- If the cap and floor is open to multiple LLES technologies, this can introduce competitive pressure and further avoid market distortions as multiple technologies could bid for support.
- The support for LLES technologies under a cap and floor would also advance the low-carbon economy, maintain security of supply, and deliver value for money.

We trust these comments are helpful and would be pleased to discuss further and engage as needed. We believe the need for LLES flexibility is becoming increasingly urgent and look forward to the next steps in bringing this to a reality.

Yours sincerely,



Angeles Sandoval  
**Policy Manager | Networks & Markets**