REA Members Briefing – BEIS Response to LLES Call for Evidence

BEIS have published their response to the Call for Evidence on facilitating the deployment of large-scale, long duration electricity storage (LLES). The main commitment is that BEIS 'will ensure the deployment of sufficient LLES to balance the overall system by developing appropriate policy to enable investment by 2024'.

BEIS also commissioned external analysis from AFRY to understand the role that long-duration electricity storage could play in the system, how much may be required over periods of time, and the benefits of different technologies. Please see brief summaries of both the response and the AFRY report below.

Response to Call for Evidence

BEIS note that most respondents identified a Cap and Floor type mechanism as the most suitable for LLES. They have committed to:

- Carry out further analysis on the costs and benefits of intervention in the market for LLES, including its contribution to energy security and possible market distortions
- Consider options including a Cap and Floor, and an optimised Capacity Market in addition to wider flexibility operational signal sharpening being considered under the Review of Electricity Market Arrangements (REMA)
- Work with Ofgem to develop an appropriate policy to enable investment in LLES

In terms of the design of the support mechanism, BEIS anticipate that further consultation will be undertaken before introduction.

AFRY Report

The research undertaken by AFRY defines long-duration storage tech as, eg: hydrogen salt cavern storage, pumped hydro, compressed air, thermal energy storage.

Analysis is based on 3 scenarios:

1) Based on BEIS Net Zero High Demand modelling assumptions
2) Low Demand BEIS scenario,
3) Same scenario as 1 in most aspects, but policy support and lower capex for LDES technologies was included.

AFRY identify the following contextual issues:

- Increasingly volatile pattern of residual demand forecast due to greater reliance on intermittent/variable (renewable) generation
- Over time the amount of inertia available to the system will decrease as synchronous generation decreases
- New generation locating at high renewable resource locations may exacerbate network congestion issues

Key paper findings:

Longer duration energy storage solutions reduce net zero system costs by between £13 billion and £24 billion in the scenarios modelled. Savings primarily come through balancing requirements helped by medium duration and long duration storage (modelling suggests largest savings delivered through hydrogen storage and hydrogen CCGTs). This is increased to up to £36 billion in scenario one.

AFRY make the following conclusions:

- Longer duration storage solutions can deliver the required greater volumes of storage more cheaply than short duration alternatives. Reduction in costs comes from shifting towards medium duration and long duration storage.
- Regardless of scenario, between 2.5 and 3 GW is a low regrets level of additional power long duration storage by 2050. This refers to tech that does not involve hydrogen. Helps to mitigate deployment uncertainty
- Hydrogen comprises the majority of LDES – as has the durations required to support a wind-powered system. Storage volumes seen include a required amount of 12TWh to 17.4TWh
- Power MDES and LDES ranged from 0.1 to 0.6TWh across modelling
- Power LDES can help mitigate risks associated with emerging tech used for hydrogen
- Supporting power LDES tech to mitigate deployment barriers is low regrets. Net gain in storage is small in GW terms but important in GWh terms. Additionally hydrogen storage is no regret.

REA Initial View

It is disappointing not to see firmer progress towards the development of a support mechanism for LLES. While we recognise that it may be appropriate to identify a mechanism within the work on flexibility as part of REMA, we would have liked to see further consultation on the introduction of a Cap and Floor mechanism given that this was the overwhelming preference of respondents to the Call for Evidence.

The REA will set out our preference for a Cap and Floor mechanism as part of our response to the relevant section of the REMA consultation and will continue to work closely with the relevant team at BEIS.