



Department for
Business & Trade



HM Treasury

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Dear Baroness Brown,

Thank you for moving the recent take note debate on Long-duration energy storage in which I was able to make my maiden remarks. I very much enjoyed the debate on this important issue and look forward to engaging further with the House as we make the UK the greatest place in the world to invest.

During the debate, several technical points were raised which I promised to follow up with in writing,

Net Zero Objectives

As set out in the Clean Power 2030 Action Plan, long duration storage will play a critical role in decarbonising our energy grid. It is why we are continuing to progress our bespoke long duration electricity storage cap and floor scheme and Hydrogen Storage Business Model (HSBM) as I detailed in my speech. At present our primary long duration flexible electricity generation technology is unabated gas.

Unabated gas generation ensures our electricity system remains stable and secure as renewables need to be complemented by flexible technologies which can provide power when the wind is not blowing, or the sun does not shine.

Ahead of hydrogen and carbon storage infrastructure being available, we expect new and substantially refurbishing combustion plants to be built ready for net zero.

We are introducing Decarbonisation Readiness legislation that will ensure that almost all new build and substantially refurbishing combustion power plants are built in such a way that they can convert to either hydrogen-firing or retrofit carbon capture equipment within the plant's lifetime. As you will be aware this will shortly be debated in the House.

In December 2024, the government announced its intention to introduce a hydrogen to power (H2P) business model which marks a key step in paving the way for H2P to support delivery of a clean power system and longer-term net zero commitments.

When connected to grid-scale hydrogen storage, H2P could provide inter-seasonal storage and extended duration operation to complement shorter duration technologies and ensure the system remains balanced during longer periods of low renewables output.

Scale of the need for LDES

The exact level of flexible capacity and storage needed on the system is highly dependent on peak and annual demand, the future nature of system stress events and the deployment of renewables and nuclear capacity. Our bespoke electricity and energy storage support schemes will set their own capacity requirements.

Our Clean Power 2030 Action Plan outlines an ambition of between 4-6 GW of long duration electricity storage by 2030 (inclusive of 2.9 GW of Pumped Hydro Storage already installed). The National Energy System Operator (NESO) has also estimated 11.5 to 15.3 GW of long duration electricity storage will be required by 2050 to achieve net zero.

The government is committed to designing a business model storage (HSBM) this year. Government intends the design of the first HSBM procurement to contribute towards an ambition to support up to two storage projects at scale to be in operation or construction by 2030.

Hydrogen Strategy

We have made rapid progress on hydrogen production and are now firmly in delivery mode, supporting projects to move us closer to our hydrogen ambitions. This progress has been possible due to the UK's strong policy framework for growing hydrogen production – including our Hydrogen Production Business Model, Low Carbon Hydrogen Agreement and our Low Carbon Hydrogen Standard. Together this has proved an investable model which has leveraged private investment to kick start the UK's hydrogen economy.

The creation of the National Wealth Fund and Great British Energy will enable the Government to support clean energy supply chains, including electrolyser production, as we ensure this country grows sustainably and that the British public have a stake in that green growth. The latest Hydrogen Market Outlook report (BNEF, 2023) showed that green hydrogen equipment suppliers were expected to deliver 1.7 – 2.1 GW of electrolyzers globally in 2023, double the 2022 number.

UK hydrogen companies have world-leading fuel cell, hydrogen production and material technologies. For example, ITM Power's Gigafactory, opened in August 2021, is one of the world's largest electrolyser factories, with a 1GW per annum capacity to manufacture the electrolyzers needed to produce low carbon hydrogen for use across the economy.

In Spring 2025, we will publish our Industrial Strategy that will include sector plans for each of the key growth sectors and will be aligned with the multi-year Spending Review.

Grid connection and electricity transfer

The clean energy superpower and growth missions are highly dependent on new grid infrastructure and the network needs to be transformed at a scale and pace we have not seen since the last major upgrade in the 1960s to enable connection of new generation and demand.

This critical new network is being delivered strategically and sensitivity, upgrading existing lines first, and building a mix of new offshore, onshore and, in some cases where landscapes are protected, underground cables.

We are also working to ensure that the local distribution network infrastructure is built strategically and ahead of need to be ready for increased demand from transport, heat and industrial electrification.

Accelerating network build will involve reforming the planning and consenting process, as well as reducing community impacts through the strategic approach to network design and providing benefits for communities hosting infrastructure, support to overcome supply chain barriers, and streamlining Ofgem's regulatory approval process.

The Planning and Infrastructure Bill (PIB) will introduce new measures to prioritise and streamline critical infrastructure delivery through the planning process, including accelerating upgrades to the electricity network and boosting renewable energy which will benefit local communities, unlock delivery of our 2030 clean energy mission and net zero obligations and secure domestic energy security.

Maintaining a secure energy supply

This is a key priority for the UK Government. The Department for Energy Security and Net Zero works closely with subsea and offshore owners, operators, regulators, and other stakeholders to ensure subsea and offshore energy infrastructure is proportionately protected against a range of threats. This includes working with industry to enhance the design of newbuild infrastructure, maintain the resilience of old infrastructure, and continue to develop the UK's monitoring and detection capabilities. DESNZ has been working with the Joint Maritime Security Centre (JMSC) to enhance the security of subsea energy infrastructure.

R&D into other LDES technologies

The Longer Duration Energy Storage (LODES) programme is funding eight energy storage projects to build first-of-a-kind demonstrators. Some of these projects involve newer battery chemistries like flow batteries.

As these points develop, my colleagues from DESNZ or I will return to the House to give a full update.

In the meantime, if you require more information from our officials, please let me know,

With best wishes,

A handwritten signature in dark ink, appearing to read 'Baroness Gustafsson'.

Baroness Gustafsson of Chesterton CBE
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Department for Business and Trade and His Majesty's Treasury