The Hydrogen Energy Association's response to the Department for Energy Security and Net Zero: 'Capacity Market: Call for evidence on Hydrogen to Power and interconnectors'

November 2025

The Hydrogen Energy Association (HEA) is the leading pan-UK trade body in the hydrogen energy sector, with a mission to support the growth of our members and the sector, and to ensure that the right policy framework is in place. Our ~100 member companies represent over 200,000 employees globally, with combined revenues over £400 billion, and cover the entire value chain from raw material sourcing, to supply chain and components, financing, professional services, B2B and consumer facing solutions.

Opening remarks

The HEA welcomes the opportunity to respond to this consultation. We strongly support the Government's efforts to provide clean power by 2030 and ensure security of energy and electricity supply in the process. HEA supports that hydrogen will have a key role to play in this aim, with clean hydrogen offering decarbonised energy, versatile applications and flexibility in system operability.

It is encouraging to see Government consultations on Hydrogen to Power progress following the previous consultation on 'Innovative hydrogen-to-power projects' in Spring earlier this year, which looked to support the roll out of dispatchable power technologies.

In response to the questions set out in this consultation on the Capacity Market and the role of Hydrogen to Power (H2P), the HEA notes firstly that there is a lack of explicit reference to the potential role of ammonia in the materials provided. As either a low carbon fuel for power generation, or as an energy dense carrier of hydrogen, ammonia holds great value across sectors. The HEA and its members see that the including ammonia in this consultation and therefore leaving doors open for its use in the future energy system will provide several benefits, such as:

- Ammonia's higher hydrogen density by volume allows for more efficient transfers, allowing greater amounts of hydrogen atoms to be transported per molecule;
- Ammonia can be liquified at manageable temperatures and pressures, allowing for leverage of existing transportation and storage infrastructure;
- Ammonia transport methods are mature and well-established and so limit commercial risk for adopters.

Keeping the technology eligibility for inclusion in the capacity market broad acts in support of security of supply, which is a key overarching aim set out in this consultation. We would therefore encourage inclusion of ammonia in this policy development, even if it doesn't fit neatly in existing models for the Capacity Market.

Secondly, greater clarification on the acceptable level of cost to the Department of Energy Security and Net Zero in achieving decarbonised energy would provide greater certainty to developers of hydrogen and the supply chain. Given that the function of DESNZ is to support both the interest of Net Zero and the interest of Energy Security, HEA members would benefit from clearer guidance as to the relative prioritisation of these parallel interests, perhaps via comparative metrics of £/ton$CO_{2eq\ saved}$ and £/$kWh_{produced}$. By outlining the mechanism and cap to subsidies with which DESNZ plans to invest in energy technologies, companies and investors will have greater clarity about available support and funding for their projects. This will increase confidence in the hydrogen sector, enabling short, medium and long term views to assess where support is best-placed, thus facilitating projects to progress to Final Investment Decisions (FID) and beyond. This would also provide a minimum standard for new technology developers to aim for and help Government to encourage technologies that represent value for money.

This would be particularly helpful in the context of the Capacity Market, as it allows for insight into prioritisation of varying energy sources and production methods that may be adopted according to their relative flexibilities. The flexibility of the plant to provide dispatchable energy will therefore hold a value, as it will enable greater investment in renewable power [1]. The value of dispatchable energy supply is already recognised in supply contracts issued by National Grid; the price of power in short term, short notice, supply contracts is often higher than for longer term contracts covering baseload. The Government's support of Small Modular Reactors is also evidence that reliable power generation is valuable.

Thirdly, the HEA would like to emphasise the strong industry enthusiasm for the inclusion of hydrogen and its derivatives to support in both the energy security and decarbonisation aims of DESNZ. We see that Hydrogen to Power (H2P) must play a critical role in the future capacity market as a versatile, flexible, low-carbon fuel with ability to modulate intermittency of supply of renewables. We concur that H2P holds value in its ability to replicate the role of unabated gas in providing reliable baseload power. Given that the main factor in assessing the factor of de-rating is its expected reliability, hydrogen should be assessed favourably in measure. The ability for hydrogen to be stored locally or regionally is a major advantage of the technology; the HEA and its members support the idea of a wider hydrogen network as referred to in this consultation. Currently though, in the absence of a wider hydrogen network, its availability depends heavily on local storage and infrastructure, so standard, nationalised derating factors which are at this time used for natural gas systems may not be appropriate at the current stage of development. HEA's members suggest that a

negotiated, project-level approach to derating and availability would better reflect operational realities and inform average factors over time. Connecting up with NESO's RESPs consultation on this subject could prove useful.

In summary, the HEA supports a broad inclusion of eligible technologies to be considered for the capacity market and that an acknowledgment of costs DESNZ anticipates to achieve its decarbonisation goals would support market confidence and guide decision-making. Specific derating factors for specific projects could then be determined based on the project at hand.

We look forward to continuing engagement with DESNZ as thinking and policy on H2P in the Capacity Market progresses.

[1] Frontier Economics: Efficient integration of mixed connection concepts for offshore wind and hydrogen production, November 2025

Questions 1-6 are related to enabling the participation of H2P in the CM.

Question 1: What are your views on Hydrogen to Power combustion plants connected to the wider hydrogen network and with natural gas connections participating in the Capacity Market under the existing gas Generating Technology Classes with the associated de-rating factors?

Question 2: What are your views on Hydrogen to Power combustion plants connected to the wider hydrogen network and without natural gas connections participating in the Capacity Market under the existing gas Generating Technology Classes with the associated de-rating factors?

Question 3: What are your views on Hydrogen to Power combustion plants without access to natural gas, but with onsite storage, being categorised as duration limited and therefore participating in the Capacity Market under a Storage Generating Technology Class with the associated de-rating factors?

In response to Questions 1-3, HEA members suggest that framing of the 'wider hydrogen network' could be further clarified in its similarities and differences to the National Gas Grid for distribution, given that at the time of writing there is a lack of such a hydrogen network in maturity, but HEA recognises the value in modelling this network before its fruition.

The HEA supports the notion that the presence of onsite storage and its connectivity to specific projects is an important consideration, as implied in the subtleties between Questions 1&2 with Question 3. It would be beneficial to model a limited number of real-world potential scenarios when considering feasible technologies in existing and near-future contexts, keeping a technology-agnostic approach to prevent limiting specific projects that could have potential in particular contexts. This approach is preferable to the alternative: no

limit to scenarios and limited views on which technology will work. Studies on place-based solutions are growing in prominence and have great value. Further to this, HEA notes that Questions 1-3 only address combustion plants rather than both combustion plants and fuel cells. Our view is that there is a key role to play for both fuel cells and combustion plants, as well as other developing production technologies, and so limiting to only combustion plants in the wording of these initial questions could be unnecessarily restrictive to the hydrogen market.

More closely related to the Questions posed by DESNZ here, volume of supply differences between current gas projects and future hydrogen projects will be a key factor to address in the context of the Capacity Market. Government support to investment in national and regional networks and storage for hydrogen will provide the scale necessary to fuel dispatchable power plants. Further to this, a wider hydrogen transportation and storage network will also: drive economies of scale; increase the reliability of hydrogen supply; bring down the cost of decarbonisation projects (i.e. local hydrogen production plant may be replaced by a connection to a hydrogen network); and enable the connection of hydrogen production in locations remote from the point of use. Since gas pipes are considerably (by at least x10) cheaper to install than power cables, investment in a hydrogen grid network could also reduce the amount of work and cost necessary to reinforce and increase the capacity of the power grid in response to increasing power demand.

Question 4: If the government was to implement bespoke Generating Technology Class(es) for Hydrogen to Power plants, what factors would need to be considered when developing the de-rating factor? Please consider both combustion plants and fuel cells.

Question 5: What wider factors (beyond Generating Technology Class(es) and de-rating factors) need to be considered to enable Hydrogen to Power to participate in the Capacity Market?

Question 6: Are there any unintended consequences that could occur from enabling Hydrogen to Power to participate in the Capacity Market?

In response to Questions 4-6, the HEA reflects the view of its members that given the contrast in availability of natural gas and hydrogen in the current system, there is a case for flexible or project-specific de-rating factors for hydrogen in the CM. Hydrogen availability depends strongly on local storage and infrastructure, as opposed to the existing gas network. Given this difference, standard de-rating factors may unfairly penalise Hydrogen facilities who may have ample hydrogen for their project due to their own production or storage capabilities.

The HEA recognises that this thinking is referenced in the consultation brief: “A plant’s ability to generate hydrogen on site as part of a closed loop system, their connection to a wider

hydrogen network, as well as any connections to the natural gas network, should be considered as part of the different potential categorisations of H2P." This is an important point for our members and fundamentally shifts the way in which GTCs operate due to localised and decentralised systems. The recently launched consultation by NESO on Regional Energy Strategic Planning consultation could be well-aligned and timely for knowledge sharing.

There is strong support for inclusion of both fuel cells and hydrogen combustion plants in the Generating Technology Class classifications and an acknowledgement that these technologies have differing operational characteristics. Members largely agree with the point in the consultation brief: "The government therefore expects that a new GTC would be required for hydrogen fuel cells." It is notable that H_2 fuel cells are more efficient than H_2 combustion plants, but are likely to be limited to locally-produced, high quality hydrogen, whereas combustion plants could be connected to a wider hydrogen network without the need for local clean-up of the gas before use. These practical considerations are likely to influence technology selection for H2P projects, depending on their size.

Members also noted that technical complexity around GTCs is largely out of the remit of their businesses and so without further education (HEA acknowledges the material in the consultation brief) there is a barrier to detailed feedback.

Finally, DESNZ should consider the mechanisms for incentivising decarbonised energy within the Capacity Market. HEA members noted a lack of reference to emission targets or bonus mechanisms in this consultation and see that clearer guidance as to the relative prioritisation of Net Zero goals and Energy Security within DESNZ, perhaps via comparative metrics of £/ton$CO_{2eq\ saved}$ and £/$kWh_{produced}$, would help to give confidence to investors and therefore enable projects to FID.