Hydrogen Energy Association's response to DESNZ: **'Accelerating electricity network connections for strategic demand'**

April 2026

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 Hydrogen Energy Association (HEA) welcomes the opportunity to respond to this consultation on accelerating electricity network connections for strategic demand. We recognise the urgency of addressing oversubscription in the grid connection queue and support the government's objective to create a more strategic and efficient connection process as this will unlock critical projects.

However, in the way the consultation is presented, the HEA and its members see that the current proposals do not sufficiently account for hydrogen's critical and multifaceted role in the UK's energy system. Hydrogen is referenced in the consultation's introduction, but this is exclusively in relation to the electricity intensity of hydrogen production. This framing risks treating hydrogen as a demand burden on the grid, rather than recognising its strategic value as a flexible, grid-balancing energy vector capable of actively reducing pressure on the very connection queue these proposals are looking to manage more effectively.

We recommend that all hydrogen projects, irrespective of size, must be expressively eligible for strategic prioritisation. In many regions and situations, green hydrogen production <100MW is one of few viable decarbonisation routes, such as for dispersed industrial sites, ports and freight transport hubs. The system value of such hydrogen projects is not proportional to the project size: a 20–80 MW electrolyser can unlock hundreds of MW of avoided fossil fuel use in the local economy.

This response draws on member engagement conducted by the HEA in March 2026. We focus our submission on areas where the current proposals risk creating unintended consequences for the

hydrogen sector and on recommendations that would ensure a fairer, more holistic outcome that is aligned with objectives set out in the consultation.

A holistic whole-systems approach is needed

Members note that there is cause for concern in the way that this consultation addresses electricity grid connections in isolation from the wider energy system. This approach focuses on the queue, rather than considering ways to alleviate the pressure by implementing and simultaneously backing other technologies. Clearly, reducing grid connection times is paramount for the UK's economic growth and decarbonisation goals, but by this narrow focus risks embedding structural problems rather than resolving them by any available means.

The consultation is set against a backdrop of a circa 125GW demand connections queue (June 2025), an almost threefold increase on the demand queue in 2024. HEA members support reforms to address this oversubscription but caution that any framework that does not account for hydrogen's role as a flexible energy storage and grid management tool will miss a significant opportunity to expediate the process and support wider energy security.

Additionally, hydrogen's key ability to be used as a flexible energy storage mechanism should be considered as a strategic asset in electricity grid management. For example, hydrogen production through electrolysis can absorb surplus renewable electricity that is currently being curtailed due to grid constraints. In 2025, this curtailment cost the UK £1.47 billion [Octopus Energy / Robin Hawkes wasted wind methodology]. Rather than adding to the connection queue, hydrogen can actively reduce the need for costly curtailment; hydrogen storage offers a means of capturing that energy and using it productively, supporting both decarbonisation and energy security goals.

The HEA urges DESNZ to adopt a whole-systems lens for this consultation and in its wider policy thinking and to recognise hydrogen not merely as an electricity consumer, but as a critical enabler of the wider energy system that sits at the intersection of power, industry, transport and storage.

In light of this perspective, we see that it is appropriate for our response to be structured around the key objectives of this policy intervention rather than to specifically respond to the questions, though we aim to cover the relevant points addressed in the questions and to offer practical recommendations to achieve the Objectives.

Objective A: Safeguard fairness and efficiency of the demand connections process by minimising speculative activity and oversubscription

The HEA supports the consultation's objective of securing fairness and efficiency in the demand connections process. However, members raised concerns about what "fairness" means in practice under the current proposals.

Members commented that fairness cannot be defined solely in terms of commercial readiness or financial scale. A framework that disproportionately benefits data centres and AI infrastructure at the expense of projects that will deliver wider societal benefit is not fair from the perspective of national decarbonisation goals or UK business retention and growth. The government's own net zero commitments require a broad portfolio of clean technologies; grid connection policy must reflect this long-term perspective.

There is a risk that the proposals, by focusing too heavily on data centres and applying financial readiness requirements mainly to that sector, create a two-tier system in which commercially powerful demand projects obtain priority access at the expense of strategically important but more capital-constrained projects, such as hydrogen projects. Members were clear that fairness must be grounded in alignment with long-term national energy goals, not short-term commercial interest.

The HEA recommends that the government defines fairness explicitly to include balance across technology types and timescales, recognising that some strategically important projects create long-term system value that is not captured in near-term financial metrics alone.

Objective B: Equip the connections regime to accelerate access to available network capacity for Government-identified strategic demand projects, including facilitating pre-2030 connections for critical sites such as AIGZs, where possible.

Lack of clear criteria for strategic demand projects

The second objective is central to this consultation and raises the most significant concerns for the hydrogen sector.

Members noted that defining what constitutes a "strategically important" project was out of scope for this consultation. The HEA sees this as a fundamental aspect of the consultation and that without clear criteria, there is a substantial risk that strategic designation will default to commercially

prominent sectors at the expense of decarbonisation technologies that deliver broader system benefits such as hydrogen.

Strategic demand designation must consider decarbonisation impact, regional industrial strategy, and flexibility potential. Project size alone should not determine its strategic value. We recommend introducing a multi-criteria scoring framework for strategic demand determination, based on factors such as:

a) decarbonisation value (£/tCO_2eq avoided),

b) regional economic benefit (jobs, productivity uplift),

c) system value (flexibility, peak-shaving potential),

d) alignment to local industrial strategy or cluster need,

e) readiness and credibility.

The scores across these metrics could result in a tiered ranking system which provides clearer direction for markets, particularly where there are competing priorities in a given location.

Members commented that hydrogen production and storage projects are strategically important by multiple measures:

- They support renewable energy deployment by absorbing curtailed generation, reducing system costs;
- They provide long-duration seasonal energy storage that no other technology can currently match at scale;
- They supply hard-to-abate sectors such as heavy industry, steel, ceramics, and heavy goods transport, where electrification is often not viable;
- They underpin energy security by reducing dependence on imported fossil fuels and providing resilience against global energy shocks;
- They are integral to the decarbonisation of data centre backup power, creating direct interdependency with the data centre connection proposals.

The HEA recommends that the government:

- Publish clear, transparent, and objective criteria for strategic designation that explicitly include hydrogen production, storage, and associated infrastructure;

- Ensure that the prioritisation mechanism under Proposal 2 of the consultation considers long-term system value alongside immediate commercial demand;
- Require that any project designated as strategically important demonstrates alignment with the government's clean energy objectives, including net zero, as well as long term economic growth potential and UK energy sovereignty;
- Clearly state that all hydrogen projects, irrespective of size, will be expressively eligible for strategic prioritisation for grid connections. In many regions and situations, green hydrogen production <100MW is one of few viable decarbonisation routes, such as for dispersed industrial sites, ports and freight transport hubs. The system value of such hydrogen projects is not proportional to the project size: a 20–80 MW electrolyser can unlock hundreds of MW of avoided fossil fuel use in the local economy.

The HEA supports that hydrogen projects connected to the transmission or distribution networks should be eligible for strategic prioritisation. At this time, we do not believe there is any electrical or voltage threshold that should apply.

Members emphasised that the phased implementation approach outlined in this consultation must be synchronised with the highly anticipated UK Hydrogen Strategy. Proceeding with grid connection reforms in isolation risks creating policy misalignment that disadvantages hydrogen projects in the near term, before the strategy has provided the certainty needed to properly position hydrogen within the prioritisation framework.

Members were particularly concerned that Phase 1 could entrench data centre dominance of the queue before the Hydrogen Strategy has established a framework within which hydrogen can compete fairly. The HEA recommends that explicit timelines linking grid connection reform phases to Hydrogen Strategy milestones be included in the government's implementation plan.

Hydrogen as a tool for reducing grid connection pressure

One of the most significant contributions that hydrogen can make to the Objectives of this consultation is noticeably absent from the scope: hydrogen's ability to reduce demand on the grid connection queue through off-grid and microgrid solutions.

Members noted that hydrogen production is possible without a grid connection by using off-grid, standalone, or direct-wire renewable energy, particularly in geographies with high solar and wind potential. This allows for the harnessing of energy that would otherwise be wasted when electrical

grid capacity is full. Off-grid hydrogen solutions are an important piece to acknowledge in wider system thinking as hydrogen can support as a zero-carbon energy vector without adding to the connection queue.

Additionally, microgrids are localised energy systems that can support interconnected buildings and developments, providing an independent energy source which can reduce queue pressure and improve energy security. Hydrogen integrated into microgrids as an energy storage solution can alleviate demand on the main grid while delivering local energy resilience, adding a second energy vector to the system and improving temporal flexibility. The HEA recommends that the government consider how planning and permitting frameworks, alongside the connection reforms proposed here, can actively encourage this complementary approach to alleviating grid pressure.

Members were clear, however, that this does not mean hydrogen should be excluded from grid connection frameworks. Many hydrogen projects, particularly large-scale storage facilities, grid-connected electrolysis sites, and hydrogen infrastructure serving industrial clusters, will require grid connections and must not be disadvantaged within the prioritisation process. A nuanced approach recognising the diversity of hydrogen project types is essential.

Objective C: Balance Government's ambitions to accelerate demand connections with the effective management of system costs and maintenance of energy security.

Members raised substantive concerns about the risks of disproportionately prioritising AI data centre connections without adequate consideration of energy security and system resilience.

Members commented that if grid capacity is disproportionately allocated to data centre demand, there is a risk of reducing energy security for other users, including households, industrial users, and critical public services. A cost-benefit analysis of the Proposals should include the costs of curtailment that would otherwise have been avoidable through using hydrogen as an energy vector, the costs of grid reinforcement necessitated by concentrated data centre demand, and the risks to wider energy security of over-reliance on a single demand category.

Members recommended that the government include a worst-case scenario analysis in its assessment such as considering what would happen if concentrated data centre demand caused wider energy supply disruption. The HEA advocates for whole system resilience to be considered in the early design

stages of in any prioritisation framework for allocating 'strategic' projects, rather than as an afterthought.

The interdependency between data centres and hydrogen

Members highlighted that data centres require uninterruptible power supply, and many are increasingly moving away from diesel backup generators towards hydrogen fuel cell systems. Some data centre projects are planning to rely on hydrogen exclusively for backup power. This means that data centre connections and hydrogen availability are not competing priorities but complementary ones: a data centre that secures a grid connection but cannot access local hydrogen for backup power has not achieved the energy security it requires.

The HEA recommends that the data centre strategy referenced in this consultation explicitly consider the role of hydrogen in decarbonising data centre backup power, and that planning for data centre connections be integrated with planning for local hydrogen supply infrastructure.

Market mechanisms and transparency

Members expressed concern about proposals to use market mechanisms, including auctions, for capacity reservation or reallocation. While market-based approaches can improve efficiency in some contexts, there is a risk that they favour organisations with greater financial resources and market influence, typically large commercial electricity consumers, over smaller or emerging players.

The HEA recommends that any market mechanisms introduced include appropriate safeguards to prevent the exclusion of smaller developers and emerging technologies, and that the consultation process itself be structured to ensure that the voices of the hydrogen sector and other clean technology industries are heard alongside those of larger commercial interests.

Objective D: Establish aligned processes for strategic demand connections across transmission and distribution networks, as far as practicable

The HEA supports the objective of aligning processes for strategic demand connections across transmission and distribution networks. Many hydrogen projects, particularly smaller-scale distributed production and storage facilities, will connect at distribution level. It is essential that strategic designation and prioritisation mechanisms apply consistently across both transmission and distribution, and that the phasing of distribution-level reforms does not leave hydrogen projects in a

prolonged period of uncertainty. Hydrogen developers need consistent signals across policy domains to make the long-term investment decisions that this sector requires; the HEA supports the proposal in this consultation for Government to work closely with relevant parties to develop appropriately aligned processes and underpin regulatory changes.

Summary of recommendations

The HEA makes the following recommendations in response to this consultation:

- Adopt a whole-systems approach, recognising hydrogen's ability to enhance energy security and resilience, reduce demand and queue congestion, and balance the grid fluctuations via storage, not merely viewing hydrogen in the electricity-intensive demand category.
- Synchronise the phased implementation of grid connection reforms with the publication of the Hydrogen Strategy, to ensure policy coherence and avoid disadvantaging hydrogen projects in the interim.
- Define 'strategic importance' explicitly, with criteria that include hydrogen production, storage, and infrastructure facilities, assessed on the basis of long-term system value and alignment with net zero and UK industry and business growth ambitions.
- Promote microgrids and off-grid hydrogen production as deliberate policy responses to grid congestion, enabling hydrogen to reduce queue pressure rather than add to it.
- Expand the cost-benefit analysis to include curtailment costs, energy security risks from concentrated data centre demand, and the system benefits of hydrogen as a storage and grid balancing technology.
- Recognise the interdependency between data centre connections and hydrogen backup infrastructure. Ensure planning for these is integrated.
- Introduce safeguards in any market mechanisms to prevent the exclusion of smaller developers and to ensure fairness across technology types and timescales via an equitable approach.
- Establish cross-government coordination across DESNZ, NESO, OFGEM, the Department for Transport, and Great British Energy to ensure grid connection reforms and hydrogen policy are mutually reinforcing.

The HEA welcomes further engagement with DESNZ on these issues. We would be happy to provide additional evidence, participate in further consultation activities, and work with government to develop the whole-systems approach that the UK's energy transition demands.