National Grid response to the Department for Transport Low Carbon Fuel Strategy Call for Ideas

April 2022

National Grid sits at the heart of Britain's energy system, connecting millions of people and businesses to the energy they use every day. We are committed to developing innovative solutions to enable the transition to a clean environment and economy, in which nobody is left behind. As the transport, energy and digital sectors converge on the journey to net zero, our networks will play an essential role in supporting the decarbonisation of transport. These energy motorways will ensure road vehicles, trains, ships and planes are able to connect to clean sources of energy required for the transport sector to fully decarbonise.

We welcome the opportunity to respond to Department for Transport's (DfT) call for ideas on the proposed Low Carbon Fuels Strategy. In responding to the call for ideas, we wish to we set out how National Grid can support the UK Government in achieving its ambitions set out in the Transport Decarbonisation Plan (TDP) set out last year. We are technology agnostic, and are ready and able to support the transition to low carbon fuels regardless of the technology of the vehicles themselves.

Electricity Network Infrastructure

Over the last two years, National Grid has been engaging extensively with industry through meetings, roundtables and workshops to understand and develop electricity network solutions. We have found that regardless of technology choice electricity infrastructure and particularly electricity transmission networks will play a critical role in powering catenary lines, charging batteries or producing transitional low carbon fuels. To avoid becoming a barrier to this transition, it is critical that there is sufficient electricity network infrastructure where it is required, ahead of need. We welcome the governments commitments in the recent EV Infrastructure Strategy to invest in the electricity network infrastructure ahead of the demand for charge points.

Heavy Goods Vehicles

Heavy Goods Vehicles (HGVs) account for 16% of the UK's transport emissions. Industry has highlighted that potential routes to decarbonising HGVs include; batteries; overhead catenary; and hydrogen fuel cells. Trials to test and prove these technologies are welcome and should also consider wider implications on infrastructure requirements such as electricity network capacity. National Grid have been forecasting future HGV charging demand and researching what it would take to deploy a network of high-power on-route chargers suitable for electric HGVs across the Strategic Road Network (SRN) in England. Our research suggests that whilst the majority of HGVs return to their operating centre overnight, and as such most HGVs will be recharged by overnight 'trickle' charging (using 50-100kW chargers), a significant minority of HGVs, will have a requirement for on-route charging. On-route charging facilities additionally provides confidence to all battery electric HGV drivers that they have an ability to recharge their vehicle at Motorway Service Areas (MSA) along the SRN. Our analysis shows that there is a strong synergy between EV and HGV on-route energy provision infrastructure connections to MSAs. The synergy also exists (to a lesser extent) for equivalent amount of hydrogen fuel cell HGV via green hydrogen electrolysis provision at MSAs. We look forward to engaging with government further on this to share what we have learnt. We would welcome further engagement on this analysis with DfT.

Charging Hubs

Beyond MSAs, the TDP highlighted the need for multi-modal, place-based infrastructure solutions to contribute towards emission reductions, particularly for freight. We agree and believe that bringing multiple transport types together at strategic shared interface locations would make more efficient use of energy infrastructure, as power is brought to key places to meet the demand for the hub. In principle, we welcome the hub approach and believe this can be broadened beyond meeting the needs of the freight sector to include other vehicle groups that will require charging around urban areas. This could include buses, taxis, blue light vehicle hubs and even rail, airports and ports at certain locations.

Therefore, co-ordination, the planning for and delivery of such hubs will be critical in meeting local and regional decarbonisation ambitions. The key to ensuring charging hubs can be successfully developed, will be planning for the underlying electricity infrastructure that will be needed to power them. Economies of scales are important, the larger the hub with numerous diverse market participants, the more economically efficient the addition of capacity through

connections will be. However, with larger hubs that bring together multiple organisations across different transport sectors, from both the private and public sectors, the need for a coordinating body is clear, Government could act as the coordinator or identify which organisations should coordinate.

Hydrogen

We support that the call for ideas discusses the role hydrogen can play in the decarbonisation of transport, however we believe that blue hydrogen should also be included in any low carbon fuel strategy. Blue hydrogen (derived from methane) when combined with CCUS technology is potentially able provide a significant reduction in CO2 emissions and is currently the only economical viable method of creating hydrogen at a large enough scale to facilitate the potential demand from various transport modes. The omission of blue hydrogen from a low carbon fuel strategy would be inconsistent with other government policies on low carbon energy.

One way of rolling out a network of hydrogen refuelling stations is to have piped hydrogen that can supply the refuelling stations directly throughout the UK, as with the electricity network development this would require investment upfront ahead of need in order to create a viable system and as such generate confidence with hydrogen vehicle users. At National Grid we have been investigating the purification of hydrogen so that can be used in hydrogen fuel cells. We would welcome the opportunity to share our thinking in this space as the low carbon fuel strategy is developed.

We are committed to working closely with Government, regulators and industry to enable delivery of this ambition and we would welcome contributing further as the development of a strategy continues.