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Capacity Market Call for evidence on Hydrogen to Power and interconnectors
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About Uniper

Düsseldorf-based Uniper is a European energy company with global reach and activities in more than 40 countries. With approximately 7,400 employees, the company makes an important contribution to security of supply in Europe, particularly in its core markets of Germany, the UK, Sweden and the Netherlands.

Uniper's operations encompass power generation in Europe, global energy trading, and a broad gas portfolio. Uniper procures gas—including liquefied natural gas (LNG)—and other energy sources on global markets. The company owns and operates gas storage facilities with a total capacity of more than 7 billion cubic meters.

Uniper intends to be completely carbon-neutral by 2040. Uniper aims for its installed power generating capacity to be more than 80% zero-carbon by the early 2030s. To achieve this, the company is transforming its power plants and facilities and investing in flexible, dispatchable power generating units. Uniper is already one of Europe's largest operators of hydropower plants and is helping further expand solar and wind power, which are essential for a more sustainable and secure future. The company is progressively expanding its gas portfolio to include green gases like hydrogen and biomethane and aims to convert to these gases over the long term.

Uniper is a reliable partner for communities, municipal utilities, and industrial enterprises for planning and implementing innovative, lower-carbon solutions on their decarbonisation journey. Uniper is a hydrogen pioneer, is active worldwide along the entire hydrogen value chain, and is conducting projects to make hydrogen a mainstay of the energy supply.

In the UK, Uniper owns and operates a flexible generation portfolio of power stations and a fast-cycle gas storage facility and two high pressure gas pipelines, from Theddlethorpe to Killingholme and from Blyborough to Cottam. We also have significant long-term regasification capacity at the Grain LNG terminal in Kent, to convert LNG back to natural gas.

Consultation Response

We cover the questions of most relevance to us; our overall view is that:

- A business model and route to market for true hydrogen to power capacity is needed;

- The impact on emissions if the proposal described here were taken forward would be negligible for a material capital expenditure; and
- The participation of interconnectors in the Capacity Market should be reviewed more broadly.

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?

The plant as described in the consultation with 1-2% of hydrogen combusted with natural gas, may be feasible but their economic viability is questionable. The capacity taking this route is likely to be very limited and have negligible impact on emissions and the liquidity of the capacity market.

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?

Currently, the biggest barrier to hydrogen to power plant is fuel insecurity which the Capacity Market cannot address. A business model based on the Dispatchable Power Agreement but adapted for hydrogen to power will be needed to bring forward investment in early hydrogen to power projects, alongside early and significant investment in hydrogen production, transport and storage infrastructure. However, including participation of hydrogen fuelled power generation capacity in the Capacity Market is an important signal and necessary to provide the long term stability needed for these types of investment.

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.

DESNZ consulted earlier in the year on hydrogen blending into the gas transmission network, which is relevant here. Determining the appropriate maximum hydrogen blend level for generators and the impact on de-rating factors has to be conducted through comprehensive evaluation by the original equipment manufacturers (OEMs). Similarly, comprehensive assessments would need to be undertaken for hydrogen fuel cells.

Question 7: If you are an operator of an existing gas Capacity Market Unit, are you considering onsite blending of hydrogen and natural gas for power generation? Is the current Capacity Market framework sufficient to enable blending?

No, we are not considering onsite blending of hydrogen and natural gas. The costs of hydrogen fuel and additional plant are material and in our view unlikely to be competitive in the existing Capacity Market framework. Again, the DESNZ consultation of hydrogen blending into the gas transmission system is relevant; enabling blending up to 2% hydrogen by volume into the NTS presents a significant number of technical complexities and will result in significant costs.

Question 8: Would the opportunity to blend hydrogen as part of your fuel mix incentivise you to bring forward new or invest in the lifetime extension of existing unabated gas capacity?

No. The hydrogen fuel and blending plant costs are material and outweigh any benefits in terms of emission reduction. As we outlined in our response to the DESNZ consultation on hydrogen blending into the gas transmission system, enabling blending up to 2% hydrogen by volume into the NTS presents a significant number of technical complexities and will result in significant costs.

Question 13: Do you agree that the government should implement an updated technical adjustment methodology? Please provide the rationale behind your view.

Yes. Given that the methodology for derating interconnectors has not been reviewed for 10 years, there is an additional 10 years of operating data to use as the basis for the derating factor.

Question 16: Do you agree that the government should generally exclude high-impact low-probability events from the technical adjustment calculation? Please provide evidence to support your view.

No. The number of interconnector events listed, including availability reduced by System Operators; the fire at the IFA1 terminal in 2021; and undersea cable faults causing outages on BritNed in 2020/21, suggests that their probability has been underestimated.

Question 19: Do you agree that the government should publish a briefing note to detail the methodology behind the technical adjustment? If there are certain aspects of the technical de-rating process that you think would be helpful to include in this briefing note or in future stakeholder engagement please provide details of these.

Yes.

Question 20: If you have further comments on the wider interconnector de-rating factor process, please provide details.

It would be prudent to again assess the effectiveness of the role of interconnectors as a proxy for participation by cross-border capacity in the Capacity Market, and the impact on the effectiveness of the Capacity Market of having grid infrastructure competing with generating capacity.

Interconnectors play an important role in cross-border infrastructure integration, but their role in the decarbonisation challenge should not be overestimated. CO2 emission reductions will only occur when connected to countries with predominantly low-carbon grids, which is not currently the case for all GB interconnectors.

Additionally, while interconnectors are expected to mitigate power fluctuations by transmitting electricity from areas with favourable renewable conditions to neighbouring regions, their effectiveness in responding to that challenge is limited. Weather conditions are often similar across large areas, leading to comparable renewable output and potential stress events in countries GB is currently connected to. Given DESNZ's recognition of shifting system needs in alignment with our increasing reliance on reliable electricity supply and government decarbonisation goals, it is essential to consider these factors when revising technical derating factors for electricity interconnectors.

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