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Response to: Decarbonisation Readiness Joint call for evidence on the expansion of the 2009 Carbon Capture Readiness requirements
September 21, 2021

Uniper

Uniper is an international energy company with around 12,000 employees in more than 40 countries. The company plans to make its power generation CO2-neutral in Europe by 2035. With about 35 GW of installed generation capacity, Uniper is among the largest global power generators. Its main activities include power generation in Europe and Russia as well as global energy trading, including a diversified gas portfolio that makes Uniper one of Europe's leading gas companies. In 2020, Uniper had a gas turnover of more than 220 bcm. Uniper is also a reliable partner for municipalities, public utilities, and industrial companies for developing and implementing innovative, CO2-reducing solutions on their way to decarbonizing their activities. As a pioneer in the field of hydrogen, Uniper has set itself the target of operating worldwide along the entire value chain in the future and implementing projects that will make hydrogen the mainstay of the future energy supply.

The company is headquartered in Düsseldorf and currently the third-largest listed German utility. Together with its main shareholder Fortum, Uniper is also the third-largest producer of CO2-free energy in Europe.

In the UK, Uniper operates a flexible generation portfolio of seven power stations capable of powering around six million homes, and a fast-cycle gas storage facility. A broad range of commercial activities is offered through the Engineering Services division, while the Uniper Engineering Academy delivers high-quality technical training and government-accredited apprenticeship programmes for the utility, manufacturing and heavy industry sectors.

Consultation Response

We have set out our answers to the questions below; our views in summary:

- Uniper supports the removal of the 300 MW threshold from the Decarbonisation Readiness (DR) requirements as this has created a market distortion.
- Our view is that DR should be implemented through the planning system.

- Uniper agrees with the design principles set out for DR assessments, but does not support the proposal that a developer should set aside space for the decarbonisation technology that requires most space.

Question 1 (Background)

What type of organisation are you answering on behalf of? (e.g., generation, interconnector, demand side response, storage, investor, developer, trade association, consultant, individual, other)

Uniper is a generator and in the UK operates a flexible generation portfolio of seven power stations and a fast-cycle gas storage facility.

Question 2 (Background)

Which technologies is your organisation mainly involved with? (e.g. gas turbines, combined heat and power, reciprocating engines, nuclear, interconnector, coal plant, demand side response, storage, wind, solar, energy from waste, hydropower, batteries, other)

In the UK Uniper has a coal plant and six gas turbine power stations. Uniper is investigating the feasibility of CCUS, hydrogen fuel switching, and other decarbonisation options for the UK fleet. In addition, Uniper is developing options for low carbon hydrogen production both by electrolysis and gas reformation with CCS, at our Killingholme site, utilising the Zero Carbon Humber infrastructure, and at our Connah's Quay site in North Wales, to connect to the Hynet North West infrastructure

Question 3

What are your views on the 300 MW threshold, and what challenges might the removal of the threshold present to developers?

Uniper supports appropriate application of requirements to all technology types and sizes. Therefore, we support removal of the 300 MW threshold, to address the market distortion it introduced. The new DR requirements should recognise that measures applied to large plant, such as CCS, may not be suitable for much smaller plant, where fuelling with hydrogen or biofuels might be more appropriate.

Exemptions should be granted to plant installed for emergency back up and Electricity System Restoration (formerly Black Start) until such time that lower carbon alternatives can be economically deployed for these critical functions.

Question 4

What are your views on the inclusion of refurbishing plant in DR? how could we best define refurbishing plant in this context?

The inclusion of refurbishing plant should not negatively impact decisions to invest in improvements across the plant's lifetime in terms of maintenance as well as efficiency and which deliver benefits for the environment and reliability of electricity production. In order to avoid disincentivising investments to improve a plant's performance, we support the suggested 50% of equivalent cost of new plant as the threshold triggering DR requirements, maintaining consistency with the Environmental Permitting (England and Wales) Regulations 2016.

Question 5

What are your views on the potential inclusion of technologies such as heat, energy from waste, biomass and CHP in DR? Are there are any additional technologies to these which could be included?

Uniper supports appropriate application of decarbonisation requirements to all technology types and sizes, and therefore heat, energy from waste, biomass and CHP should be included in scope for DR.

Question 6

What are your views on potential exemptions from DR? Would it be suitable to exclude plant which operate below a certain level of annual carbon emissions and/or running hours?

As the Capacity Market Call for Evidence[1] recognises, there is a need for new build capacity which can be relied upon to generate when needed. The call for evidence sets out the need to continue to support investment in new build higher carbon generation to ensure security of supply in the short to medium term, whilst avoiding locking in high carbon capacity for the long term. The DR should complement the CM in ensuring continued security of supply during the transition to net zero. It may be that annual carbon emissions is a way to achieve this, or exemptions from the DR requirements for limited length CM agreements or where hydrogen blending is used.

Emergency backup, where used for safety critical functions, and Electricity System Restoration (formerly Black Start) plant or those with limited remaining life should be exempt.

Question 7

Beyond grandfathering of Capacity Markets agreements, is there anything more that we could do to ensure that the DR requirements do not affect the Capacity Market?

We are responding separately to the CM Call for Evidence, and as set out in answer to Question 7, it is essential that the two policies align to ensure investment in high carbon capacity where it is critical to secure supply during the transition whilst avoiding long term lock in of new fossil plant.

Question 8

What are your views on implementing DR through environmental permitting rather than the planning consent process?

Uniper recognises that implementing DR through environmental permitting captures plant which is already consented and is a more flexible regime than planning and therefore easier to update. However this also introduces uncertainty. There is more room for interpretation in permitting decisions than planning. Land, often a key factor in demonstrating decarbonisation readiness, is dealt with in planning. Practically, if DR is implemented through environmental permitting, a developer would most likely seek an

[1] https://www.gov.uk/government/consultations/capacity-market-2021-call-for-evidence-on-early-action-to-align-with-net-zero

environmental permit ahead of or in parallel with planning consent, adding further complexity to the existing process. The environmental permits can be varied by EA and NRW at relatively short timescales, introducing additional uncertainty for developers. This presents risk for investors.

For these reasons, our view is that DR is better implemented through the planning consent process; the planning authority needs to be adequately resourced to process applications to avoid introducing delays.

Question 9

If we were to implement DR through environmental permitting, how can developers be given confidence that their site will be compliant with DR prior to construction?

In our view developers can only have that confidence if the environmental permit is granted before construction starts. Implementing DR through the planning consent process would provide that confidence.

Question 10

What are your views on the two-yearly review of DR requirements? Should this be retained and is the frequency suitable?

A four yearly review period seems more appropriate, as it would align with the permit reviews, and the lead time for new build assumed by the four year ahead CM auctions. If, as expected, the decarbonisation infrastructure deployment required to achieve net zero quickens over time this period can be reviewed.

Question 11

How frequently should the DR requirements be reviewed? Should this be made a legislative requirement?

A review of the DR guidance notes every 5 years, as a minimum, would draw a balance between stability and technical progress in the development of decarbonisation solutions. This should be a legislative requirement.

Question 12

How can we future proof DR again further technological development, e.g. new decarbonisation technologies and/or simplify the process for adding new techs to DR?

A five yearly review of DR guidance notes offers the opportunity to capture technical advances in a timely way. Developers should also have the ability to offer alternative decarbonisation pathways as a means to demonstrate DR so long as these can be demonstrated in the application phase to be credible.

Question 13

Are there any alternative decarbonisation options, beyond low-carbon hydrogen and CCS which are already developed enough to be included in Decarbonisation

Readiness? If so, then please include details on how their readiness could be assessed for a combustion power plant.

DR requirements should allow developers to propose other decarbonisation options, which could include the use of biogas / biofuels, providing they provide sufficiently robust justification, meeting the same criteria required for CCS / H2 (i.e. demonstrate sufficient space, access to relevant fuel, disposal routes and techno-economic assessment). This would promote innovation, ensure novel technologies are not delayed, and offer alternative options for plant where CCS and H2 are not a practical option due to geographic or other site-specific factors.

Question 14

What are your views on our suggested design principles?

The design principles recognise the uncertainty surrounding decarbonisation solutions, such as access to CO2 transport networks and hydrogen fuel supply, and are appropriate in our view.

Question 15

What are your views regarding the four proposed assessments for demonstrating hydrogen readiness? Are there additional assessments which would be beneficial?

The four assessments proposed are a sensible approach. It should be noted that there remains technical uncertainty as to plant performance with hydrogen blending (up to 100%) and that the assessment will be heavily reliant on the OEM guarantee. It is also likely that a pipeline will be required to supply sufficient hydrogen for all but the smallest plant.

Question 16

What are your views on the suggested requirements for hydrogen ready plants to demonstrate hydrogen blend capability from the point of construction, including the example of 2030 as a cut-off for 100% hydrogen?

The requirements to demonstrate hydrogen blend capability and to use 100% hydrogen need to be carefully considered. There remains some technical uncertainty about the trade off between increasing hydrogen blending (up to 100%) and increased levels of NOx emissions. Plant operators will be reliant on the OEM to guarantee the plant's capability to run on blended hydrogen as well as 100% hydrogen. In the absence of more mature technical solutions it may be premature to set a cut-off date for 100% hydrogen operation. For these reasons and to maintain security of supply it is important the plant is capable of and permitted to operate on 100% natural gas.

Question 17

We would welcome views on if there are any additional and/or necessary items for hydrogen combustion that might have space requirements (e.g. NOx abatement equipment) and what their specific requirements might be?

Hydrogen combustion may increase NOx levels and it is possible that space will be required to install Selective Catalytic Reduction or other NOx abatement equipment.

Question 18

Would it be suitable to require plants that have a choice between hydrogen and CCS to set-aside enough space for whichever technology requires the most space, even if they are planning to meet the DR requirements through hydrogen? How could we ensure that this would only apply to sites which are likely to be able to retrofit CCS as well as to convert to hydrogen?

We do not support this proposal as there will be sites that are clearly not suitable for CCS due to their geographical location or space constraints. Given the footprint required for CCS, such a constraint could also limit the availability of space for the development of other decarbonisation projects at power generation sites, including the production of hydrogen. It is for developers to manage the potential risks of their chosen decarbonisation option.

Question 19

We would appreciate your views on these issues, including whether there are any we have overlooked, and how we can best assure/assess that developers have considered all the relevant technical issues.

The parameters listed in section 6.4 of the call for evidence are appropriate to assess the technical feasibility of hydrogen as a decarbonisation route. BEIS should consider the work of other parties, such as TUV SUD, who are developing guidelines on the hydrogen readiness of combined cycle power plants.

Question 20

We welcome your views on how to design a meaningful assessment for hydrogen fuel access.

An important consideration in the design of an assessment of a development's ability to access hydrogen will be its proximity to planned production and transportation facilities. In the short term, plans through the cluster sequencing process and agreements in place with prospective hydrogen producers could be considered as evidential.

Question 21

We welcome your views on our likely position to make the hydrogen fuel access assessment non-compulsory in the short-term, with a view to making "passing" it mandatory in future to reflect the anticipated development hydrogen economy.

In view of the early state of development of the hydrogen economy we agree with this position.

Question 22

We appreciate your views on the viability of on-site hydrogen supply and/or storage for hydrogen-fuelled peaking plants.

The fuel demand profile of peaking plant will entail high consumption, but for relatively short periods. This is hard to manage given the low energy density (by volume) of hydrogen, and as such on site hydrogen storage may not be credible for developments

other than those of small capacity, due to the cost of the store, and the additional land area required. However, developers should be free to propose such solutions where they see a means to deliver them.

Question 23

What factors are viewed as critical in determining whether conversion to hydrogen is economically feasible? What would be your economic considerations?

This call for evidence lists the relevant factors. As the work on hydrogen and CCUS business models progresses it will be possible to refine these economic factors.

Question 24

What are your views on our proposed updates to the CCR requirements?

The update proposed for CCR requirements is sensible in view of the ongoing work to develop CCUS clusters. We welcome the intent to have consistency between the carbon capture and hydrogen readiness assessment to avoid skewing the route taken by developers. However, this should not be delivered by requiring developers proposing to be hydrogen ready to set-aside or demonstrate control over sufficient land area for a carbon capture plant.

Question 25

What are your views on how the transport and storage test for CCR should be updated?

As plans for the CCUS clusters are further developed the detail of the transport and storage test can be improved. We propose that where a developer is reviewing their potential T&S solution, and a more economic, or more practical solution manifests (for example a nearer cluster pipeline connection becomes apparent), there should not be a requirement to update or renew their DR assessment. A previous assessment of CCR remains appropriate unless it becomes impossible for some reason (such as storage capacity being fully committed to other emitters).

Furthermore, the hurdle this test presents to developers will depend on the nature of the requirements imposed on the T&S operator(s). For example, if T&S operators are obliged to connect point sources as part of their remit, then they will have to provide connections to emitters. Therefore this test would then become easier to demonstrate by developers.

Question 26

Are there additional areas for change we have not identified? Please provide justifications.

The current carbon capture readiness guidance published by BEIS in 2009 sets out the consenting routes for the deployment of decarbonisation technology. Under the current planning process an operator of an existing power station could obtain planning permission via a Section 36C variation application under the Electricity Act 1989, a Development Consent order or via the Town and Country Planning process. Removal of the 300MW threshold and the application of decarbonisation readiness to a wider

range of power plant necessitates the need to review and update this guidance to take into account these proposed changes. However any update should ensure flexibility for operators and not negatively impact the deployment of decarbonisation technology.

Question 27

What impact could the changes discussed in this call for evidence have on your business's administrative costs for planning permission and environmental permitting? Please specify which of the proposed changes will have the most impact.

It is hard to quantify the cost impact of the changes discussed in this call for evidence . Costs would be minimised if any changes were incorporated into existing processes e.g. planning consent, and aligned with other review cycles e.g. permit/BREF reviews.

Question 28

We anticipate developers are already considering future decarbonisation options following the EWP. What impact are the changes discussed in this call for evidence likely to have on your investment decisions for new build plant? Please specify which of the proposed changes will have the most impact.
Uniper plans to make its power generation CO2-neutral in Europe by 2035, and any new build plant would be in line with our strategy.

Question 29

How do you currently manage the long-term risks of decarbonisation in your investment decisions? What additional work will the proposed changes cause?

Our own decarbonisation strategy is incorporated into our investment decisions. However, those decisions are also very much dependent on government policy and development of appropriate market frameworks. It is important that the proposed changes are applied consistently across technology types and sizes so as not to distort the market, and that requirements allow for innovation in decarbonisation routes, with adequate review periods and grandfathering to provide a level of predictability and to avoid introducing unnecessary risks.

Question 30

Are there any specific impacts on small and micro businesses that are not covered above? If so, please provide details of the anticipated one-off and on-going costs.

We have no view on this question.

Question 31

Please tell us if you think there are any other impacts not covered above, in particular wider impacts on the energy system and security of supply

Other impacts will very much depend on the wide range of policies and business models currently under development. The business models and future market framework will determine investors' ability to bring forward decarbonised flexible, schedulable plant.

Yours sincerely,

Uniper UK Limited