



Department for  
Business, Energy  
& Industrial Strategy

# Government response to Hydrogen Business Model and Net Zero Hydrogen Fund: Market Engagement on Electrolytic Allocation

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# Section 1: Introduction

## 1.1 Background

The UK has set a world-leading net zero target by 2050, the first major economy to do so, and confirmed that hydrogen will play a vital role in delivering on this commitment. In November 2020, government published the Prime Minister's *Ten Point Plan for a Green Industrial Revolution*<sup>1</sup>, with commitments focused on driving innovation, boosting export opportunities, and generating green jobs and growth across the country to level up regions of the UK. The Plan announced that, working alongside industry partners, the UK is aiming to develop 5GW of low carbon hydrogen generation by 2030, and set out a range of measures to support this, including:

- the Hydrogen Business Model (HBM) – a contractual business model for hydrogen producers to incentivise the production and use of low carbon hydrogen through the provision of ongoing revenue support.<sup>2</sup>
- the Net Zero Hydrogen Fund (NZHF) – up to £240m of grant funding agreed to 2025 to support the upfront costs of developing and building low carbon hydrogen production projects.<sup>3</sup>

In April 2022, in line with the package of measures announced by the Prime Minister to support greater UK energy independence in the British Energy Security Strategy<sup>4</sup>, the Government announced that we have doubled our ambition to up to 10GW of low carbon hydrogen production capacity by 2030, subject to affordability and Value for Money (VfM). At least half of this will come from electrolytic hydrogen, drawing on the scale up of UK offshore wind and other renewables and new nuclear.

The announcement commits to awarding up to 1GW of HBM contracts to electrolytic projects via two allocation rounds in 2023 (opening in 2022) and 2024, (opening in 2023). This means we will have up to 1GW of electrolytic hydrogen production projects in construction or operational by 2025, with up to 2GW of production capacity overall (including CCUS-enabled hydrogen) in construction or operational by this date. We hope to support at least 250MW via the first allocation round, although we retain the right to allocate less if we do not see sufficient projects coming forward that meet our eligibility criteria and present VfM to government.

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<sup>1</sup> <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution>

<sup>2</sup> <https://www.gov.uk/government/consultations/design-of-a-business-model-for-low-carbon-hydrogen>

<sup>3</sup> <https://www.gov.uk/government/consultations/designing-the-net-zero-hydrogen-fund>

<sup>4</sup> <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

Our increased ambition under the British Energy Security Strategy has also set out that we are aiming to run annual HBM allocation rounds for electrolytic hydrogen, moving to price competitive allocation by 2025 as soon as legislation and market conditions allow.

The Government published consultations on the design of the HBM and NZHF in August 2021, alongside the publication of the UK's first ever Hydrogen Strategy<sup>5</sup>. We published our response to these on Friday 8 April 2022 as part of the Hydrogen Investment Package.

Feedback gathered via these consultations and stakeholder engagement sessions indicated that a significant number of electrolytic projects wish to apply for both revenue support via the HBM and capital support through the NZHF. In response, we have designed a joint HBM and NZHF electrolytic allocation process that is streamlined for applicants and delivers best VfM for government. We have split the delivery of the NZHF into four distinct strands<sup>6</sup>:

- Strand 1: DEVEX (development expenditure) for Front End Engineering Design (FEED) studies and post FEED costs. Strand 1 offers up to 50% co-funding support.
- Strand 2: CAPEX (capital expenditure) for projects that do not require revenue support through the HBM. These are likely to be smaller electrolytic projects that are able to access revenue support through the Department for Transport's Renewable Transport Fuel Obligation (RTFO). Strand 2 offers up to 30% co-funding support.
- Strand 3: CAPEX for projects that require revenue support through the HBM and sit outside of the Phase 2 cluster sequencing process. The first allocation round will be limited to electrolytic projects.
- Strand 4: CAPEX for CCUS-enabled projects that require revenue support through the HBM and are part of the Phase 2 cluster sequencing process.

For the 2022 HBM/ NZHF Electrolytic Allocation Round, we are proposing that projects can apply for HBM revenue support only, or they can apply for joint HBM revenue support and CAPEX support through the NZHF.

Eligible projects will have the opportunity to be considered to receive necessary support:

- HBM funding for projects operational before March 2025 will be provided by up to £100m of taxpayer funding that was committed through the Industrial Decarbonisation and Hydrogen Revenue Support (IDHRS) scheme in the Net Zero Strategy. It is intended that all HBM support will be levy funded from 2025 onwards, subject to consultation and Parliamentary approval of any legislation required. This may include revenue support for limited hydrogen transport and storage infrastructure. More specifically, and as set out in the HBM indicative Heads of Terms, this could include:
  - the CAPEX, but not OPEX, costs associated with small-scale hydrogen transport infrastructure, and

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<sup>5</sup> <https://www.gov.uk/government/publications/uk-hydrogen-strategy>

<sup>6</sup> Set out in our response to the Net Zero Hydrogen Fund consultation, published on Friday 8 April 2022 as part of the Hydrogen Investment Package.

- the CAPEX and/or OPEX costs associated with small-scale storage infrastructure.

Any support will be negotiated on a project-by-project basis by taking several factors into account, including necessity, affordability and VfM for government.

- The NZHF's up to £240m of funding until 2025, a proportion of which will be delivered to projects also seeking HBM support via the 2022 HBM/ NZHF Electrolytic Allocation Round. The maximum grant funding intensity level (CAPEX %) for this allocation round is set at 20%. Projects will be able to apply for a CAPEX % below 20% of the CAPEX that falls within the NZHF Scope. CAPEX costs for storage and transport are not included within scope of this NZHF funding.

Our Market Engagement document<sup>7</sup> was published as part of the April 2022 Hydrogen Investment Package. It sought views on a proposed approach to a joint HBM/ NZHF allocation process for electrolytic hydrogen projects. This included an indicative timeline, proposed eligibility and evaluation criteria, and proposed approach to selecting successful applicants and agreeing an offer of support with shortlisted projects. Our aim for this process is to support projects to deploy at scale at the earliest opportunity, advancing government's aspiration to deploy up to 10GW of low carbon hydrogen production capacity by 2030, subject to affordability and VfM, with the intention that at least half of this will be from electrolytic hydrogen.

This document summarises responses received to the Market Engagement exercise and government's response, organised under each Market Engagement question. Alongside this we have published an [Application Guidance Document](#) which launches the first 2022 HBM/ NZHF Electrolytic Allocation Round, kickstarting the electrolytic hydrogen market in the UK.

## 1.2 Summary of responses and industry input

Engagement with industry on our proposed allocation round took place over four weeks from 8 April 2022 to 6 May 2022. Stakeholders submitted views by attending a workshop or online.

We held two workshops which were attended by over 100 stakeholders and received 39 written responses online via Citizen Space and email. Where respondents duplicated responses via both Citizen Space and email, this has been counted once.

The majority of respondents were developers and investors in potential electrolytic projects, or trade associations representing them. There was one response from a member of the general public.

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<sup>7</sup> <https://www.gov.uk/government/consultations/hydrogen-business-model-and-net-zero-hydrogen-fund-market-engagement-on-electrolytic-allocation>

## 1.3 Analysis of responses

### Written responses

We have thematically analysed written responses to each question based on the themes set out in the Market Engagement document and identified via stakeholder engagement. In presenting the results, we have included the percentage of respondents that have answered 'Yes', 'No' or 'Don't Know' to relevant questions. We have also aimed to provide a broad picture of the views and comments made. Therefore, a range of qualitative terms is used:

- Majority: more than half of respondents to that question.
- Many: a significant amount, but less than half of respondents to that question.
- A small number of respondents / a few / several / some / others/ an alternative view: a small number of respondents, or a limited subgroup.
- Mixed/ range of views: a lack of clear consensus, or expressive of a wide diversity of views.

Where information provided by a respondent related to a different question, we have summarised it under that other question.

### Workshop feedback

We have separately provided a summary of the key themes and comments made during the workshops relevant to each question.

## 1.4 Next steps

Government has considered the responses to the Market Engagement exercise and this has informed our approach to the HBM/ NZHF electrolytic allocation process. [The Application Guidance Document](#), published alongside this government response, sets out the finalised details of the 2022 HBM/ NZHF Electrolytic Allocation Round, providing guidance and supporting information for projects seeking to participate.

## Section 2: Proposed eligibility criteria

Q1. Do you agree with the proposed eligibility criteria for the first 2022 HBM/ NZHF Electrolytic Allocation Round? Yes/ No/ Don't know. If not, please explain why

Written response summary (%)	
Yes	51.3%
No	41%
Don't know	7.7%

### Summary of written responses

Over half of respondents agreed with the proposed eligibility criteria for the first 2022 HBM/ NZHF Electrolytic Allocation Round.

Many respondents however, expressed concerns that the proposed 'Commercial Operational Date (COD) of end of 2025' criterion could be a barrier to projects, particularly those of a larger size. These respondents explained that larger projects need at least 24 months from Final Investment Decision (FID) to COD, with a small number noting that they would need three years. To mitigate against this, a few respondents suggested that the COD is linked to the size and complexity of the project, with larger projects having a later COD to ensure that they are not excluded. Several respondents suggested amending the criterion to 'under construction by end of 2025' in line with the British Energy Security Strategy's ambition to support up to 1GW of electrolytic hydrogen being in construction or operational by 2025.<sup>8</sup>

Some respondents said that while they could meet the 'COD of end of 2025' criterion, there should be flexibility in case of delays, with a grace period that permits extensions under certain conditions during which project funding is not at risk and a long-stop date during which project funding reduces. Respondents flagged numerous risks of delay outside of a project's control, including lead in times for compressors and electrolysers which can be 18 to 24 months, grid connection, renewable generation, planning permission and BEIS negotiations.

Many respondents disagreed with the 5MW minimum capacity threshold, reasoning that it should be lowered to aid market development and learning and increase competition. A few suggested that an aggregation of small projects totalling 5MW or more should be eligible to enable projects to be developed quickly using existing sites and infrastructure. Alongside this, several respondents called for certainty on the 5MW threshold so that projects which will not

<sup>8</sup> <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

be eligible do not waste time and resources. Some also suggested that the threshold is not increased to 10MW at this stage for that reason.

Many respondents noted that the proposed eligibility criterion requiring hydrogen producers looking to apply for support to have identified at least one offtake for their hydrogen would be challenging at eligibility stage. They explained that offtakers would likely only make a non-committal expression of interest at this early stage. Several respondents similarly said that demonstrating access to finance would be challenging at eligibility, especially for smaller projects, and that it would be too early for financiers to make the required commitments.

Some respondents felt that gas blending should be considered as a viable offtaker. Reasons provided for this included that allowing gas blending would support the transitional process of moving towards a decarbonised gas system by increasing hydrogen demand, and so helping to ensure that projects are investable.

A few respondents expressed concerns about meeting the Low Carbon Hydrogen Standard (LCHS), mostly calling for more clarity on how it is defined, while a small number called for the allocation round to be open to other low carbon hydrogen pathways which fall outside the allocation process for CCUS-enabled projects but are compliant with the LCHS.

## Summary of workshop feedback

Feedback gathered from the workshops on the proposed eligibility criteria was similar to written responses. This included many participants noting that the COD would pose a major challenge for larger projects who need a longer period than two years between COD and FID. There was a further call for clarity on whether 5MW to 10MW projects would be eligible with some participants noting that 5MW is too high as a minimum capacity threshold as it would mean excluding numerous sites which could be brought forward quickly by expanding existing sites, rather than having to develop completely new ones at a larger scale. As well as aggregating smaller projects, there was another suggestion to have a phasing approach to build capacity gradually to 5MW as a target for 2025, rather than a fixed threshold, using smaller modular electrolysers which can be scaled up.

Participants noted that agreements with electrolyser suppliers, funding sources and offtakers would be difficult before FID. They asked for more details on the offtaker and LCHS requirements and how they would comply. There was a suggestion that a financial assessment could be used to check credible offtakers or a standard expression of interest form with offtakers could be created by BEIS which all projects could use to ensure they are submitting the correct information.

## Government Response

We have considered the feedback provided by respondents when finalising the eligibility criteria for the 2022 HBM/ NZHF Electrolytic Allocation Round, which can be found in the [Application Guidance Document](#).

We recognise the concerns expressed by respondents on meeting the ‘COD of end of 2025’ criterion due to risk of delay. We have kept this as an eligibility criterion to align with government’s aims around hydrogen deployment by 2025 and to kickstart the market. Under this criterion, we will require projects to demonstrate they are able to be operational no later than the end of December 2025. However, we have added in the [Application Guidance Document](#) that meeting the ‘COD by end of 2025’ criterion is dependent on the signing of contracts from July 2023. The actual operational date of each project will be dependent on many factors, some of which may be outside of the parties’ control. For example, if signing of contracts is delayed beyond July 2023 due to reasons outside of the applicant’s control, due to delays to the agreeing an offer process, BEIS reserves the right to allow the COD to be extended upon receiving the Applicant’s request. We will further test the projects’ deliverability at evaluation stage.

We have confirmed that projects will need to have a minimum hydrogen production capacity of 5MW to ensure we are not using limited resources to assess smaller projects which do not meet our strategic aims, and instead focus on bringing forward projects larger than 5MW which will achieve scale up. This will also ensure assessment remains on track to meet our ambitious timelines.

We have updated the wording of our criterion on offtaker to state projects must have identified at least one **qualifying** offtaker. This is in light of the fact that, as stated in [the Application Guidance Document](#), volumes sold to some hydrogen offtakers may not be eligible for Hydrogen Business Model support. This includes, for example, offtake seeking to blend into the gas grid, or export offtakes. Requiring Projects to identify at least one qualifying offtaker provides some assurance that the Project will require and be eligible for HBM support on at least some volumes of hydrogen produced. While respondents have noted that the criterion to identify at least one qualifying offtaker could be challenging to meet, we consider this a reasonable requirement for projects looking to take FID and deploy within our timelines. More details on how projects can meet this criterion, as well as demonstrate access to finance and comply with the LCHS, have been provided in the [Application Guidance Document](#). This includes confirming the position that volumes blended into the natural gas grid will not be eligible for HBM support through the 2022 HBM/ NZHF Electrolytic Allocation Round while BEIS is in the process of deciding whether to allow blending up to 20% hydrogen (by volume) into GB gas networks<sup>9</sup>, and assessing different market arrangements and commercial support options for its delivery.

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<sup>9</sup> We are targeting a policy decision in 2023, subject to the outcomes from ongoing economic and safety assessments and wider strategic considerations. We are working closely with Ofgem, the Health and Safety Executive (HSE), the Devolved Administrations, GB natural gas network operators and wider industry to understand the case for hydrogen blending.

## Section 3: Proposed evaluation criteria

Q2. Do you agree with the proposed evaluation criteria for the first 2022 HBM/ NZHF Electrolytic Allocation Round? Yes/ No/ Don't know. If not, please explain why.

Written response summary (%)	
Yes	59%
No	31%
Don't know	10%

### Summary of written responses

The majority of respondents agreed with the proposed evaluation criteria for the first 2022 HBM/ NZHF Electrolytic Allocation Round.

Many respondents expressed strong support for increasing the weighting of the Deliverability criterion, acknowledging its important role in kickstarting the electrolytic hydrogen economy by mitigating the risk of projects failing to deploy. Several respondents additionally flagged that there should be a greater explanation of how deliverability pace (ability to be operational before end of 2025) and delivery assurance (likelihood that a project can deliver) will respectively be scored.

The proposal of a 5% weighting for the Additionality criterion was met with a range of views among respondents. Many were in favour of removing the criterion for this first allocation round. They highlighted the nascent stage of the market and that additionality would add complexities and constraints to project development. However, others were content with its inclusion, with several in favour of increasing its weighting, highlighting that this would be an incentive for projects to be powered by new, additional renewables.

There was some support among those who expressed a view on the Emissions criterion for reducing its proposed weighting of 15%. These respondents noted that all projects will have to meet the LCHS as part of eligibility and so will have low or zero emissions. Others felt that the 2022 HBM/ NZHF Electrolytic Allocation Round should focus on the development of the electrolytic hydrogen market, with emissions reduction being a longer-term focus once the market has developed.

There were mixed views on the proposed Cost Considerations criterion. Many respondents highlighted that the Levelised Cost of Hydrogen (LCOH) should be inclusive of transport and storage costs, rather than solely at the point of production. Several respondents also noted the

importance of a standardised LCOH model with shared assumptions so that assessors can compare projects on a like for like basis. A small number of respondents were in favour of increasing the criterion's weighting.

Of those who expressed an opinion on the Economic Benefits criterion, the majority were in favour of reducing its proposed 20% weighting. Respondents highlighted that economic benefits are often outside of a project's control and that the criterion's definition seems too subjective. A small number suggested that this reduction could work in tandem with increasing the proposed weighting of the Market Development and Learning criterion.

## Summary of workshop feedback

Feedback gathered from the workshops on the proposed evaluation criteria was similar to the written responses.

Participants generally agreed that Deliverability is the most important criterion, with some calling for its weighting to be higher. There were also calls for BEIS to consider Deliverability as both delivering at pace and delivery assurance, with early projects not gaining a major advantage over those that are operational later. Within Deliverability, it was noted that a credible financing plan should be required and that more detail is needed on offtaker arrangement requirements, including whether projects should aim to match production capacity with secure offtake agreements or take risks and rely on future demand growth.

Participants called for a standardised LCOH model to account for the different costs each project faces, as well as clarity on whether it accounts for LCOH point of production rather than LCOH delivered. They also highlighted problems with assessing LCOH, with reference to theoretical costs for first movers and customer willingness to pay higher prices.

Participants highlighted that the Emissions criterion weighting could be lower as projects will already be covered by the LCHS. It was also noted that projects may have difficulty providing data on emissions reductions. Attendees were pleased to see BEIS' consideration towards Safety and Environmental impacts but flagged that more detail is required on how this will be measured.

Participants also expressed mixed views on the Additionality criterion. Some called for it to be removed as they felt it would be difficult to meet by 2025, with suggestions to make this a portfolio factor instead. Others noted that if it needed to be included as an evaluation criterion, a low percentage such as 5% would be sufficient. However, some attendees said that 5% would be too low to incentivise additionality.

A suggestion was made to switch the weightings for Market Development and Learning and Economic Benefits, as if jobs, skills and knowledge are a priority, the former's weighting should be higher.

## Government Response

We have considered the feedback provided by respondents when developing the evaluation criteria for the 2022 HBM/ NZHF Electrolytic Allocation Round.

Projects will be evaluated against six evaluation criteria, which are set out below and in more detail in the [Application Guidance Document](#).

**Table 2: Headline Evaluation Criteria for the 2022 HBM/ NZHF Electrolytic Allocation Round**

Criteria	Weighting	Definition
Deliverability	35%	The level of confidence government has in the delivery plan put forward by the project and the date at which the Project can, credibly, be operational by.
Carbon Emissions and Environmental Factors	10%	The extent to which the Project uses the lowest carbon and most efficient production pathways and considers and mitigates wider environmental impacts resulting from the production of hydrogen.
Cost Considerations	20%	Whether the Project will deliver cost-effective hydrogen.
Economic Benefits	20%	The contribution the hydrogen plant will make to the economy.
Market Development and Learning	10%	The extent to which the Project offers growth and learning opportunities in the production and usage of hydrogen.
Additionality of Electricity Source	5%	Whether a Project's low carbon electricity source is met by new low carbon generation and does not divert low carbon electricity from other users to avoid negative impacts on wider decarbonation.

In particular, we have amended the criteria weightings and the proposed emissions criterion set out in the Market Engagement document.

We have increased the weighting for Deliverability from 30% to 35% to reflect that our central objective is to kickstart the market by supporting projects capable and able to successfully deliver a commercially and technically viable hydrogen production plant by 2025. We have also reduced the Emissions criterion by 5% to 10%.

For Emissions, this is because projects will be required to meet the LCHS at eligibility in order to apply for this allocation round, ensuring that all hydrogen production receiving HBM and NZHF support is sufficiently low carbon in line with our aim to support the lowest carbon and most efficient production pathways to contribute to the Government's emission reduction targets. In addition, we are no longer planning to consider total emissions reduction under Emissions. In part, this is because we agree with respondents that the first Electrolytic

Allocation Round should focus on the development of the electrolytic hydrogen market, with emissions reduction being a longer-term focus once the market has developed. Instead, we have included Environmental Factors as a sub-criteria within the emissions criterion, which we have re-named Carbon Emissions and Environmental Factors. This is to ensure that wider safety and environmental impacts associated with a hydrogen production plant are seriously considered by projects and factored into assessment. It should be noted that we will require projects to submit some information on their emissions reduction potential at assessment to be used at the Agreeing an Offer stage, when BEIS will conduct a Value for Money assessment of Projects. We expect that emissions reduction will form part of the assessed evaluation criteria in future allocation rounds.

We have kept the weighting for the Additionality criterion at 5% to ensure that hydrogen production avoids negative impacts on wider decarbonisation. This also upholds the additionality principles set out in the consultation response to the LCHS, which sought to incentivise, but does not mandate, an additionality requirement around electricity source for electrolytic projects. However, we understand that demonstrating additionality of electricity sources may not be achievable for some projects, and therefore we have not made this a mandatory requirement to apply to this allocation round or applied a minimum score to this criterion. Furthermore, we will allow projects to provide information on any plans to meet additionality principles beyond 2025.

We have also kept the weighting for the economic benefits criterion at 20% as it is important for this joint allocation round to ensure we realise the opportunities for the supply chain, businesses, technologies, and people to benefit from the growth of the hydrogen economy.

Alongside [the Application Guidance Document](#), we have published a standardised LCOH model which applicants are required to complete and submit. We will assess projects on the basis of their LCOH delivered, which will include the costs of production, compression, purification, storage, and transport of hydrogen to an offtaker. We will also ask projects to provide their LCOH produced at application.

### Q3. Do you agree with the proposed portfolio factors? Yes/ No/ Don't know. If not, please explain why.

Written response summary (%)	
Yes	53.8%
No	10.3%
Don't know	35.9%

#### Summary of written responses

The majority of written responses indicated support for the use of portfolio factors in the 2022 HBM/ NZHF electrolytic allocation round, with several commenting on their important role in ensuring the Government supports strategically important projects that meet the round's objectives. However, many respondents underlined the importance of further transparency around the portfolio factor process to ensure this is done in a fair and consistent manner.

While the majority of respondents agreed with the proposed inclusion of a location-based portfolio factor, many were clear that in the early stage of the market there may be value in projects clustering in areas that have shared transport and storage infrastructure and where there has been significant engagement with offtakers. Some projects suggested the location-based portfolio factor should be expanded to consider wider energy system implications and the benefits of an electrolyser being located in a certain region.

Several respondents expressed support for using portfolio factors to ensure some diversity of project archetypes being supported and, particularly, types of offtakers.

Further portfolio factors were suggested on the following themes: environmental impacts; access to natural gas and hydrogen transportation networks to maintain optionality for the future cost-effective blending of hydrogen into the natural gas network; scalability of projects; hard to abate sectors.

#### Summary of workshop feedback

Feedback gathered from the workshops generally reflected written responses. There was general support for the suggestion of using portfolio factors if the allocation round is oversubscribed, however attendees called for BEIS to be more transparent about how factors align with objectives, how they will be applied and how they will impact the success of bids.

In relation to the location-based portfolio factor, participants highlighted the potential benefits of clustering in the early stages of the hydrogen market.

While some highlighted the importance of supporting a diversity of offtakers, others noted that different offtake sectors are likely to come online at different times and so a diversity of offtakers may be realised over a longer period.

Additional portfolio factors on the following themes were suggested: water availability; hard to abate sectors; diversity of usage; technologies' scalability; ability to stimulate market growth.

## Government Response

We will only use portfolio factors in limited circumstances if the allocation round is oversubscribed to address an imbalance in the portfolio of projects being taken forward to the Agreeing an Offer stage. Portfolio factors may also be considered towards the end of the agreeing an offer process to ensure that the final portfolio of projects selected for funding meet our strategic aims.

We understand that there may be value in having some clusters of projects in the early stages of the hydrogen market and government does not intend to prevent this. However, in the event of oversubscription, we may use a location-based portfolio factor to help ensure all projects are not located in a single country or region, to ensure electrolytic hydrogen production and associated economic benefits are spread across the UK. We have extended the list of portfolio factors we consulted on, confirming that we may consider the size (MW output) of projects and diversity of end use at the portfolio stage, and outlining an additional portfolio factor around diversity of electricity source/operating model<sup>10</sup>. We may apply the project size portfolio factor to ensure some larger scale projects are taken through to the Agreeing an Offer stage, in support of our strategic objective for this allocation round to support projects to deploy *at scale* at the earliest opportunity.

The diversity of end use and electricity source/operating model is included to ensure the shortlist of projects is sufficiently diverse and resilient and to avoid excessive risk concentration that may result from a homogeneous portfolio where, for example, all projects are wholly dependent on wind generation assets. This builds on feedback from some respondents who expressed support for using portfolio factors to ensure some diversity of project archetypes being supported to build some resilience into the hydrogen market. We noted the feedback about considering the wider energy system implications of electrolyser projects under the location portfolio factor, and may also consider including this in future allocation rounds.

BEIS will also conduct integration checks at the shortlisting stage, to ensure the portfolio of projects are additional to one another. These checks may include consideration of offtake, electricity and "sanity checks".

Further information on this portfolio approach is included in the [Application Guidance Document](#).

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<sup>10</sup> In this context, the term operating model is used to describe a projects' power supply arrangements. For example, a distinction in operating model would be between projects combining intermittent production with constant supply, or intermittent production with intermittent supply.

## Section 4: Agreeing an offer

Q4. Do you agree with our high-level approach to agreeing a HBM and CAPEX offer? Yes/ No/ Don't know. If not, please explain why.

Written response summary (%)	
Yes	53.9%
No	12.8%
Don't know	33.3%

### Summary of written responses

The majority of respondents agreed with our proposed high-level approach to agreeing a HBM and CAPEX offer.

Many favoured bilateral negotiations for the first allocation round due to the hydrogen market being in the price discovery phase. Several respondents were of the view that all first of a kind (FOAK) projects should undergo some level of bespoke bilateral negotiation to ensure that the specific circumstances of an individual project or subset of projects were addressed within the HBM contract.

Those that disagreed with the proposed high-level approach, questioned how a sealed bid process would operate. They raised concerns around how transparent it is and whether it delivers VfM. However, other respondents recognised that a sealed bid process provides benefits such as speeding up contract allocation. They said that it could be a viable option for smaller projects, but they would need additional information on how the process would be managed, the split between pots and how bids would be assessed.

Indeed, of those respondents that answered 'Don't know' to this question, many stated that they would require further information on what the approach would look like to make an informed decision.

### Summary of Workshop feedback

Many workshop participants generally agreed with the proposed approach to combining HBM and CAPEX support in a single process, noting that they are interdependent and this approach offers best VfM.

The majority of participants were in favour of bilateral negotiations with several stating that this would provide BEIS with greater visibility and certainty regarding the credibility of a project, as well as allowing projects to better understand the process through sharing of information and lessons learned with others. There was general agreement that a sealed bid process should be considered for later rounds when the market is better developed. A few participants also suggested there should be some flexibility within the process given that this is a new industry where FOAK projects are being developed.

Some participants asked for further clarity on the approach, raising concerns around how it would work if there were a large number of applicants, or the same organisation submitted multiple bids. They also asked for additional information on the split between pots, a breakdown of eligible costs and further information on the interaction with non-NZHF CAPEX funding for HBM only applications.

Several participants suggested that BEIS should advise projects on what they should be bidding for, with a clear steer on whether projects should maximise the CAPEX % or ask for less CAPEX and more revenue support through the HBM. They noted that at this stage projects might prefer more CAPEX than unknown revenue support and this may skew behaviour.

## Government Response

Government will consider the feedback provided as it continues to develop the processes applicable to the agreeing an offer stage. Further details will be communicated to selected projects in the invitation to participate in this stage after the evaluation of submissions and shortlisting.

The Agreeing an Offer stage will include due diligence and engagement with BEIS with the aim to agree an offer of strike price for the Low Carbon Hydrogen Agreement (LCHA) and CAPEX grant through the NZHF. A significant amount of collaboration and coordination is expected during this period from all Projects. The Government will seek additional information on the projects, including on technical, legal, financial, and commercial aspects. The objectives of the Agreeing an Offer stage are:

- this stage is an opportunity for government to seek improvements from its perspective to the technical and commercial terms of submissions. This may include requesting additional information from the Project where required;
- as part of an ongoing due diligence process, this stage is also an opportunity for government to confirm and verify any aspect of submissions and to seek updated information from Projects as Projects achieve important milestones;
- to choose a portfolio of projects meeting the Government's strategic objectives to accelerate the deployment of electrolytic hydrogen production; and
- to ensure that the financial support provided to a project meets the minimum VfM requirements of government spending.

Having considered both the size and composition of the projects in the pipeline information gathered during the Market Engagement exercise, we believe that it is proportionate and

sensible to subdivide the shortlist of projects into two or more groups to ensure that we are using time and resources in a manner that allows both the prudential management of risk and expeditious delivery. This would mean that where projects possess risks and uncertainties that present a greater risk to their delivery and thus to the delivery of the programme, such projects would enter a pathway to agreeing an offer involving an enhanced level of due diligence and interaction to ensure that these risks and uncertainties are properly assessed and understood. Such a pathway would by its nature be iterative and resource intensive, and so to avoid unnecessary delay to delivery, for projects where the risks are assessed as being insufficiently probable and/or impactful to require this enhanced scrutiny, they would enter a pathway to agreeing an offer more appropriate to their risk, which may enable awards of funding to such projects to be made sooner than if all projects were in the same pathway. This will meet the Government's strategic objective of enabling projects to deploy at scale at the earliest opportunity. [For the avoidance of doubt, where our understanding of the risk of a project changes, we reserve the right to move projects between pathways to ensure that the level of scrutiny and interaction remains proportionate. This may result in projects moving to pathways that represent a higher or lower level of scrutiny and interaction to that which they originally entered].

We are likely to invite a number of Projects to participate in this stage representing a total subsidy spending in excess of the funding envelope, in order to maintain a competitive tension throughout the process. This means that some shortlisted projects may not be awarded an offer of CAPEX grant and HBM support.

HBM policy updates should be regularly provided, and we aim to finalise the business model in 2022, enabling the first contracts to be allocated from 2023. This means that, following the assessment stage, shortlisted projects will enter in the Agreeing an Offer stage, as we expect the majority of terms in the Low Carbon Hydrogen Agreement to be publicly available at this time, allowing projects to assess the remaining risks of the projects and request an appropriate level of support. We acknowledge that applicants will bid for a level of strike price and CAPEX grant that will depend on the risks embedded in the project, and the HBM support terms that will be de-risking many aspects of the project.

Any decision to award support will be subject to government first satisfying itself as to compliance with relevant technical, legal, financial, commercial or policy requirements, including:

- compliance with applicable subsidy control requirements;
- any balance sheet requirements;
- value for money requirements;
- verification of compliance with the applicable eligibility requirements; and
- a further Integration Check and application of portfolio factors.

More information is included in the [Application Guidance Document](#). This includes noting that the process to agree an offer will include due diligence, and engagement with BEIS.

## Q5. Do you think up to 20% CAPEX co-funding alongside HBM support is sufficient to enable electrolytic projects to take FID? Yes/ No/ Don't know. Please explain your answer.

Written response summary (%)	
Yes	15.4%
No	25.7%
Don't know	58.9%

### Summary of written responses

The majority of respondents answered 'Don't know' to this question, with many stating that more clarity on the rationale behind the 20% limit would be needed before they could make a decision and be confident that this level of CAPEX co-funding alongside HBM support is sufficient to take FID.

Many of the respondents that answered 'No' suggested that a CAPEX limit closer to 50% would be in line with EU funding levels and would help to overcome the significant risks projects will be taking. This includes the uncertainty around OPEX and electricity costs and the ability of offtakers to take long-term hydrogen supply contracts. Several respondents also stated that a larger CAPEX grant would enable lower hydrogen prices to be bid under the HBM, adding that government should consider what level of CAPEX support provides the best VfM overall.

Some respondents suggested that there should be no cap on CAPEX co-funding, but that the CAPEX and HBM strike price should be negotiated together, as this would optimise the funding available and help support the early growth of a hydrogen economy. Several others suggested that it may be better to adopt a flexible approach, allowing projects to submit the CAPEX % levels that they require, and for the allocation process to determine the best overall outcome within government's affordability envelope and wider objectives.

Of those that agreed with a 20% CAPEX limit, some added that each project will be different and that it also depends on the level of HBM support and investor views of the risks associated with the variable premium. They noted that investors will look at the total package and what it does for their investment case.

A small number of respondents stated they did not have a strong view on what the appropriate CAPEX level is, stating that although NZHF CAPEX support is a welcomed incentive, it is not sufficient to unlock electrolytic projects, particularly those of a larger size, by itself, and this will instead be enabled by HBM revenue support.

## Summary of workshop feedback

Workshop participants stated that further clarity was needed before they could make an informed decision regarding whether 20% CAPEX alongside HBM support is sufficient to enable projects to take FID. Several attendees highlighted that this would be dependent on the impact it would have on the HBM strike price, affordability score, delivery model and whether there will be adjustments for projects that have or haven't received CAPEX.

Several attendees stated that up to 20% CAPEX is not sufficient and should be more closely aligned to the 50% levels provided by some countries in the EU. They noted that while first projects will be expensive, higher levels of funding are required to achieve learnings.

Some attendees agreed that there should be some flexibility to agree an optimum mix of CAPEX and HBM as it will vary by project depending on size and application.

An alternative view offered was that all projects take 20% CAPEX and only the HBM strike price is negotiated. Participants noted that negotiations on CAPEX make it hard for projects to know what their situation will be with suppliers and offtakers and it could lead to projects receiving less CAPEX than they need, which could lead to project delays or failures.

## Government Response

The maximum grant funding intensity level (CAPEX %) will be set at up to 20% with projects able to apply for a CAPEX % below 20% of the CAPEX that falls within the NZHF Scope (in particular excluding CAPEX costs for storage and transport). We believe this 20% maximum CAPEX % alongside HBM support will enable electrolytic projects to take FID, whilst remaining within the NZHF's affordability envelope.

The offer to applicants will include both a CAPEX grant amount and a LCHA strike price. We noted that some participants thought higher funding intensity was available elsewhere (e.g. in EU Schemes). Whilst DEVEX funding in the EU did reach 50% and higher, CAPEX funding through the Connecting Europe Facility and European Regional Development Fund were capped at 30%. Some CAPEX funding from the EU did reach higher intensities, however these Funds were specifically targeted at less developed member states. As such the 20% funding intensity does not significantly deviate from EU schemes, and should be considered within the context of the UK funding being a package, with both CAPEX funding and long-term revenue support. Taken together, we consider this has the potential to make a competitive offer and support projects in reaching FID.

CAPEX support lowers lifetime project costs through lower financing costs. Projects should note that providing CAPEX support through the NZHF to projects also receiving support through the HBM may therefore lower the amount of ongoing revenue support required, achieving better VfM for government and/or consumers.

As previously mentioned, when entering the Agreeing an Offer stage, Projects shall have the necessary information to assess the residual risks of the project, and determine with greater confidence the appropriate level of CAPEX grant and strike price required. As the HBM will

only allow the inclusion of CAPEX which has not been funded by the CAPEX grant, Projects which have received a CAPEX grant will necessarily have lower Strike Prices than if they had not received a CAPEX grant. The VfM assessment of submissions will take into consideration the subsidy amounts from both the NZHF and the HBM support schemes. The applicable subsidy control requirements must be met before any support is confirmed.

Finally, we are still considering whether to use the CAPEX % as a parameter of the negotiations and bidding process, and whether to follow different approaches for the different pathways, by taking into consideration the NZHF envelope and the total size of the grant requested by shortlisted projects, and with a view to optimise VfM for the taxpayer, while ensuring the additionality of public funding.

Further information will be included in the [Application Guidance Document](#).

**Q6. For agreeing the HBM offer, would you be in favour of having different pathways or negotiation approaches for projects? Yes/ No/ Don't know. If so, do you have any suggestions on how those pathways or approaches might look?**

Written response summary (%)	
Yes	49%
No	25.5%
Don't know	25.5%

### Summary of written responses

Many respondents agreed with proposals to have different pathways or negotiation approaches for projects. They suggested that a sealed bid approach would suit smaller projects with less resource that might be slowed down by bilateral negotiations, expediting contract agreements and allowing them to deploy more quickly, as well as helping with the administrative burden and associated costs. In contrast, they noted that larger projects would benefit from bilateral negotiations where there is more complexity and higher risk. A small number of respondents also flagged that different negotiation approaches would be the most effective use of BEIS resource.

Some of the respondents who answered 'No' or 'Don't know' raised concerns around the need for a level playing field and the potential complexity that having multiple pathways might add to the process.

Several respondents also highlighted the need for clarity on any sealed bid process to improve understanding, including how funding would be split between the different pathways. One respondent flagged the need to have more robust due diligence for sealed bid projects to ensure they deliver.

There were differing views on how the different pathways should be implemented. Some respondents were of the view that thresholds should be applied, with larger projects being prioritised for negotiations to enable them to reach FID in time to be operational by 2025. Others said that projects should have the option to choose which pathway they are in, as some smaller projects may want to negotiate.

### Summary of workshop feedback

In the Market Engagement workshops, there was some agreement among participants that there is rationale for having different pathways for different projects as delivery timescales will

vary depending on size. Some attendees considered bilateral negotiations important for larger projects, whereas a sealed bid approach might be favorable for smaller projects which have less resource for negotiating complex contract terms. However, others disagreed, suggesting that all projects would benefit from bilateral negotiations. There were also some who did not see the need to differentiate by size given the relatively modular nature of production projects and the 5MW eligibility threshold.

Mirroring the written responses, participants said that more detail and transparency was needed on what the different pathways might look like before application. In particular, participants wanted to know how funding might be split between the different pathways, how the pots might be structured and if there would be competition between the pots. They flagged that this approach could potentially add complexity to the process and enable gaming. One developer of several small projects also asked whether it would be possible to go through to negotiations as a portfolio of projects to streamline discussions.

**Q7. Do you have any suggestions on what approaches could be used to differentiate projects and determine which pathway a shortlisted project goes into? What criteria would you use (e.g. MW)? What threshold would you use (e.g. 40MW)?**

### Summary of written responses

A wide range of views were given about how we might differentiate between projects and determine which pathway a shortlisted projects goes into.

Some respondents were in favour of differentiating by size (MW hydrogen capacity) with recommendations ranging from 20-50MW as a threshold. Several respondents supported a 40MW threshold, whereas some considered 50MW to be appropriate. It was also suggested that larger projects over 100MW or projects who are proposing to add new renewables could be prioritised for bilateral negotiations.

Respondents in support of a size threshold said we could consider further differentiating projects by end use, amount of hydrogen produced, and total investment required. A threshold based on electrolyser capacity or total project cost was also suggested.

Some respondents were not in favour of a threshold and considered it too prescriptive when defining pathways.

Several were of the view that a number of factors should be taken into consideration when deciding a project's pathway using a scorecard approach which looks at size, hydrogen end use and technology cost reduction potential. It was also suggested that projects should have the option to choose their own pathway.

### Summary of workshop feedback

In the Market Engagement workshops, participants highlighted that projects may not know their size until they know how much funding is available, making it hard to differentiate this way.

Others noted that how BEIS differentiates between the different pathways is dependent on the types of projects we want to bring forward. There were also concerns that introducing pathways or thresholds this early in the market would create distortions when it is still in the learning phase. It was suggested that BEIS could allow projects to choose which route they prefer. Beyond size, other suggestions provided on how to differentiate projects included deliverability, energy source, end use and complexity.

## Government Response (for Q6 and Q7)

Government will consider the feedback provided as it continues to develop the processes applicable to the Agreeing an Offer stage. Further detail will be communicated to selected projects in the invitation to participate in this stage after the evaluation of submissions and shortlisting.

We consider that we lack the required evidence and information on the Projects to provide a size threshold or a framework for allocating a project to a specific pathway at this stage. However, the decision on whether a project is allocated to a particular pathway is anticipated to be taken by BEIS by reference to factors including, but not limited to, the size (capacity or hydrogen production volume) of the Projects, their FID and COD, the LCOH, the deliverability score, the project's ranking at the evaluation stage and the operating and business models (including the electricity supply and the end user).

Our approach to the Agreeing an Offer stage, and to engaging in bilateral negotiations with specific Projects, is motivated by the fact that we are looking to have a proportionate and consistent approach to the mitigation of the risks to this programme, and specifically this allocation round. For example, very large Projects will have a proportionately large impact on the success of the programme. Entering into bilateral negotiations, with the increased level of engagement and oversight that this would entail, ensures a greater level of confidence as to the probability and impact of risks to the project (and by extension the programme), and the appropriateness of any mitigations put in place by the project.

The pathways to agreeing an offer will all include engagement with BEIS, and due diligence, but they would differ according to:

- The timing and intensity of engagement with BEIS;
- the bidding process, including the path to the Best And Final Offer (BAFO) submissions; and
- the split between CAPEX% and Strike Price.

The negotiable areas of the Low Carbon Hydrogen Agreement are not expected to differ between the two pathways.

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This publication is available from: <https://www.gov.uk/government/consultations/hydrogen-business-model-and-net-zero-hydrogen-fund-market-engagement-on-electrolytic-allocation>

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