Proposals for eligibility and counterparty regulations

Hydrogen business model stakeholder workshops

Thursday 5 January 2023

Agenda

1. Overview of proposals for eligibility and counterparty regulations
2. Questions, discussion and feedback

Aims

- Work together with projects, investors and other interested parties to deliver an investable and value for money hydrogen business model
- Stakeholder workshops aim to improve policy development by enabling us to test initial policy thinking with projects and potential investors
- Today we'll go through each agenda item and briefly outline what the issue is, what we're thinking and why
- We'll then invite views from you to understand the issue more as projects and investors

Note: The content in the following slides does not represent BEIS policy, but provides ideas for discussion. The session will be recorded for BEIS internal use only.

Scope and purpose of discussion

Scope for the discussion today:

1. Proposed approach to determine the meaning of ‘eligible’ in relation to a ‘low carbon hydrogen producer’. Projects would, as a minimum, need to meet this to be considered for support through the Hydrogen Production Business Model (HPBM).
2. Proposals for requirements on the counterparty to publish project information.

Why secondary legislation is required?

- The Secretary of State can only direct a counterparty to offer to contract with an eligible low carbon hydrogen producer. Although ‘low carbon hydrogen producer’ is defined in the Energy Bill (introduced into Parliament on 6 July 2022), regulations are required to determine the meaning of ‘eligible’.
- Subject to consultation, regulations are expected to set out, amongst other provisions:
  - Eligibility requirements for projects to be potentially considered for revenue support through a low carbon hydrogen agreement (LCHA), subject to any further criteria set out in the guidance for each allocation round.
  - Information publication requirements to provide transparency on projects supported through the HBPM.
- This follows a similar legislative framework as the low carbon electricity generation Contracts for Difference.
- We intend to consult on the draft regulations later this year.

Proposals for information publication regulations

To support transparency on government funded projects we propose to follow CfD precedent to:

- Publish the signed full length contract and any subsequent versions if a material amendment is made, excluding any information considered confidential (e.g. trade secret, commercial sensitive) and personal data.
- Establish and maintain a Contract Register that will ensure key project information is readily accessible. We propose to include the following information in this register:

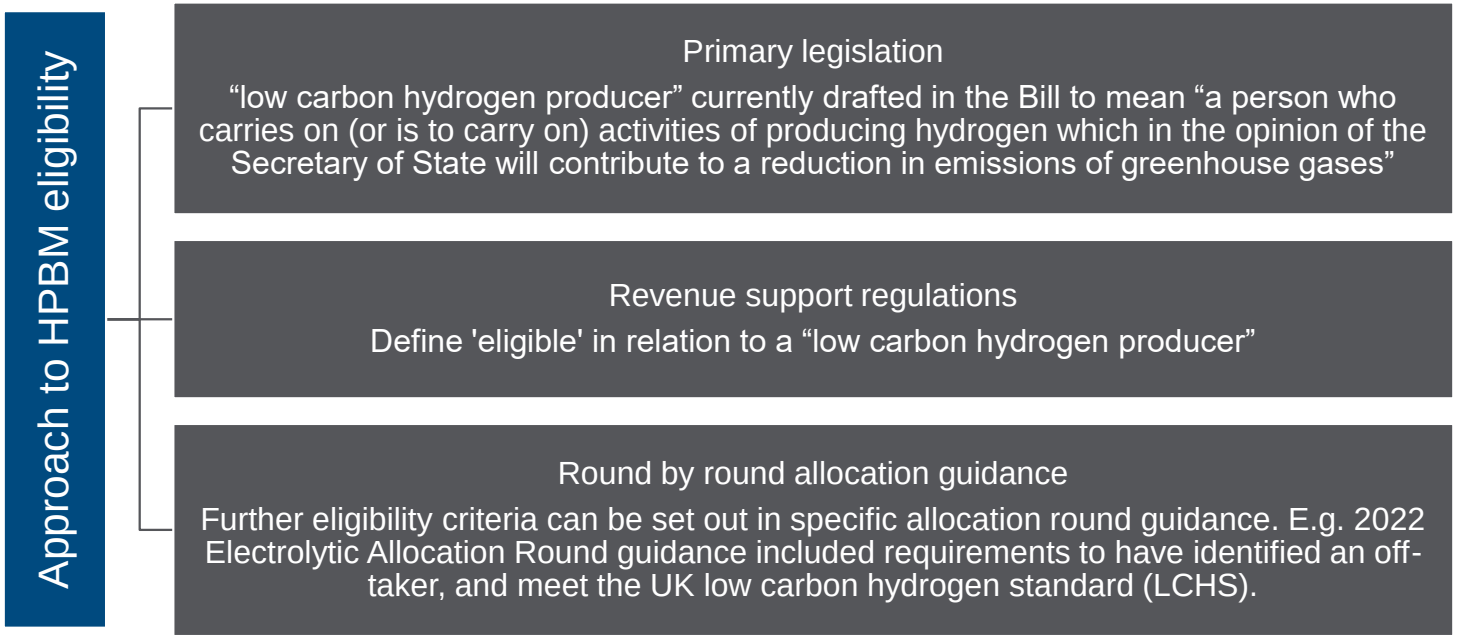
Contract Register information to include:	
Company and general details	• Unique identifier of the contract, to be assigned by the counterparty • Description of the facility, including the geographical coordinates • Registered company details to include the name, address, and registration number
Key contract milestones	• Target Commissioning Date • Target Commissioning Window Start and End Date • Start Date (Expected and Actual) • Longstop Date
Strike Price	• Initial Strike Price, Current Strike Price, and Change to Strike Price
Project Information	• Type of technology • CO2 T&S Company or Provider • Installed Capacity (Estimate and Actual) • Contracted production cap and change to the production cap (if relevant)

Approach to define an “eligible” low carbon hydrogen producer

We propose to follow a similar framework to Contracts for Difference.

To receive an LCHA, a hydrogen producer must as a minimum meet:

1. the definition of ‘low carbon hydrogen producer’ in the Bill,
2. the eligibility requirements in revenue support regulations, and
3. any further criteria set out in each allocation round guidance.



Eligibility requirements are intended to align with the April 2022 government response to the HPBM consultation:

1. UK based project
2. New build: the establishment of a new facility, or extension of an existing facility to add new production capacity.
3. Technology neutral but pathway should be able to produce low carbon hydrogen

How to determine eligible low carbon hydrogen pathways

Options considered:

A. List specific production pathways that are currently considered low carbon (i.e. those that meet the UK Low Carbon Hydrogen Standard requirements)

B. Refer directly to the UK Low Carbon Hydrogen Standard

C. Broadly define the type of low carbon hydrogen production pathways **(preferred option)**

Option	Pros	Cons
A	• Certainty for producers about which pathways are eligible	• Would require regulations to list all production pathways – many of which may be unknown at this time • Regulations may therefore require regular updates to reflect new technologies
B	• Ensures projects meet the LCHS	• The LCHS does not cover all pathways which may lead to ambiguity around eligibility for future allocation rounds or impact the development of emerging technologies • Introduces uncertainty to the legislation as the LCHS is expected to evolve over time – the legislation is intended to provide investor confidence • Potential for complications, e.g. grandfathering for existing projects, which might affect the mechanics of the legislation • Deviates from the tried and tested approach taken by CfDs
C ***(preferred option)***	• Similar to the approach taken in the CfD regulations, this provides sufficient certainty on type of projects that could potentially apply to current and future allocation rounds, thereby indicating a possible direction of travel • Futureproof regulations to allow for evolving technologies; reducing the need for frequent updates to regulations	

Proposed eligibility regulations

Propose to define eligible low carbon hydrogen pathways based on the type of feedstock used.
(Note: definition wording is subject to change pending final legal drafting.)

Proposals	Precedent/Rationale
Use feedstock to determine eligible production pathways Feedstock means "the source from which the hydrogen molecule is produced through processing, excluding the energy input to the process".	Technology neutral approach to support a range of pathways.
Permitted Feedstocks types are water, biomass, waste and fossil fuel. Proposed definitions: • **Biomass** means a "material which is, or is derived directly or indirectly from, algae, animal or plant matter, bacteria or fungi, including where such material is contained in waste; but does not mean fossil fuel or peat." • **Waste** means "any substance or object which the holder discards or intends or is required to discard, but excluding any substance intentionally modified or contaminated to fall within this definition." • **Fossil fuel** means "(a) coal, (b) crude liquid petroleum or petroleum products, (c) lignite or (d) natural gas, including substances produced directly or indirectly from (a), (b), (c) or (d)."	Biomass and fossil fuel definitions based on CfDs. Waste definition based on CfDs and the RTFO.
Where the feedstock is a fossil fuel, the production facility must use CCS.*	Ensure eligible pathways can be low carbon and contribute to GHG reductions.

* We expect projects proposing to use refinery off gas to be required to install CCS

Discussion

Q: Do you have any comments on the proposed approach to defining eligibility?
E.g. Are you aware of any current or near term projects (next 3 years) that would not meet the proposed feedstock eligibility requirements?

Discussion

Q: Do you have any comments on the proposed approach to contract/information publication?

Thank you and questions

Thank you for joining today's stakeholder workshop

We appreciate that you continue to provide invaluable insight and feedback on the hydrogen business model

Any further questions, please contact us directly or use the hydrogen business model inbox

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Analysis of production pathways and eligibility under these proposals

Process type	Process Summary	Feedstock examples	Process energy	Able to meet LCHS?	Meet proposed eligibility regs
Electrolysis	Chemical process using electrolysers to split water into oxygen and hydrogen. Several types of electrolysers available.	Water	Electricity and heat	Yes	Yes
Steam (methane) reforming (SMR)	High-temperature steam (700°C–1,000°C) reacts with methane source to produce hydrogen.	Natural gas	Heat	Yes - with CCS	Yes
Auto-thermal reformer (ATR)	As SMR but partially combusts gas feedstock to generate heat for the reaction - largely eliminates the need for any external heating.	Natural gas	Heat	Yes - with CCS	Yes
Gasification	Converts organic or fossil-based materials at high temperatures into carbon monoxide, hydrogen, and carbon dioxide.	Coal, biomass, waste	Heat	Yes – with CCS for fossil fuels and waste; with/without CCS for biomass	Yes
Plasma driven pyrolysis	Thermal decomposition of methane (or other hydrocarbons) into hydrogen and solid carbon using a plasma reactor.	Natural gas	Heat	Not currently considered - may be included in next iteration	Yes
Methane pyrolysis	High temperature process that separates natural gas into hydrogen and solid carbon.	Natural gas	Heat and electricity	Not currently considered	Yes
Plasmolysis	Water splitting driven by plasma.	Water	Heat and electricity	Not currently considered – Feasibility stage	Yes
Plasma gasification	Extreme thermal process using plasma which converts organic matter into a syngas which is primarily made up of hydrogen and carbon monoxide.	Natural gas, biomass, waste	Heat and electricity	Not currently considered	Yes
Direct Solar Water Splitting (photolytic) Processes	Uses light energy to split water into hydrogen and oxygen	Water	Light	Not currently considered - R&D phase	Yes
Biological Processes	Produces hydrogen through biological reactions, using sunlight or organic matter.	Biomass (specifically organic matter e.g., bacteria)	Light	Not currently considered - R&D phase	Yes
Thermochemical water splitting	Direct splitting of water using very high temperature heat.	Water	Heat	Not currently considered – early development	Yes
Waste-driven water splitting	Waste is used to chemically reduce an intermediate compound that then reacts with water to produce hydrogen.	Water	Heat and chemical	Not currently considered - R&D phase	Yes