Department for
Business, Energy
& Industrial Strategy

Hydrogen Business Model: Expert Group meeting

Hydrogen Business Model Team

12th April 2022

Department for Business, Energy & Industrial Strategy

Meeting etiquette

Please can you:

- ✓ Turn off your video when not speaking
- ✓ Mute your microphone when not speaking
- ✓ Raise questions via the chat function or put your hand up

This meeting will be recorded for BEIS internal use only.

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Agenda

	Item	Time	Lead
1	**Introduction**	10:30 – 10:40	Will Lochhead
2	**Overview of government response to consultation on hydrogen business model**	10:40 – 11:25	Carolyn Campbell and HBM team
3	**Overview of indicative Heads of Terms**	11:25 – 12:10	Ashurst
4	**Future ways of working**	12:10 – 12:20	Carolyn Campbell
5	**AOB and close**	12:20 – 12:30	Will Lochhead

Introduction

Will Lochhead

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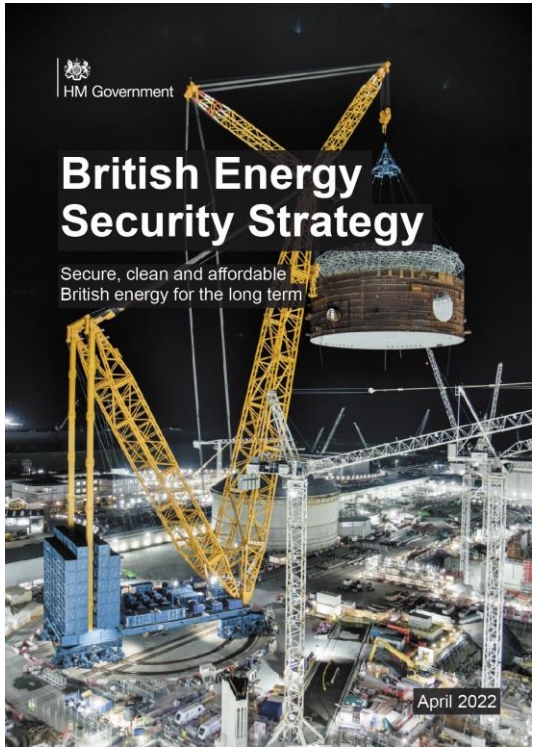
UK Energy Security Strategy

- Published 7 April 2022
- Part of a package to support greater UK energy independence, UK Government set out significant increase in UK's hydrogen ambition.
- Double our ambition to up to 10GW of low carbon hydrogen production capacity by 2030, subject to affordability and value for money. This increased our target set just last year with at least half of our new 10GW target coming from electrolytic hydrogen. This will provide cleaner energy for vital British industries to move away from expensive fossil fuels, and could also be used for cleaner power, transport and potentially heat.
- Aiming to hold annual allocation rounds for electrolytic hydrogen, first will be launched in 2022. We will aim to run annual allocation rounds for electrolytic hydrogen moving to price competitive allocation by 2025 as soon as legislation and market conditions allow.
- Expect up to 2GW of low carbon hydrogen capacity to be operational or in construction by 2025 (1GW electrolytic / 1GW CCUS-enabled).
- Designing, by 2025, new business models for hydrogen transport and storage infrastructure. It will be essential to design these new business models in order to grown the hydrogen economy.
- Setting up a hydrogen certification scheme by 2025 to demonstrate high-grade British hydrogen for export and ensure any imported hydrogen meets the same high standards that UK companies expect.



Overview of government response to hydrogen business model consultation

Carolyn Campbell, Shabana Jamil,
Ben Marsh, Neil Atterbury

Aims:

- Convey high level summary of published policy
- Summarise key components of payment mechanism
- Provide initial opportunity to ask questions
- Enable members to consider the areas on which they would like to offer input for next stage design

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Hydrogen Business Model Government Response – state of play

- **Consultation:**
  - We received 121 responses to the consultation
  - We held a number of engagement events (28 stakeholder meetings, three roundtables, Q&A event, six trade body events)
  - There has been ongoing engagement since the consultation closed

- **Summary of views:**
  - Respondents broadly agreed with our proposed design and minded-to positions
  - Wide support for a contractual, producer-focused approach

- **Hydrogen business model publications on 8 April:**
  - Government response to the consultation
  - Indicative Heads of Terms for the hydrogen business model contract

- **Part of the Hydrogen Investment Package**, which also included:
  - Government responses for the Low Carbon Hydrogen Standard and the Net Zero Hydrogen Fund
  - Market engagement document seeking views on a proposed approach to allocating business model and NZHF support to electrolytic hydrogen projects
  - Hydrogen Investor Roadmap

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Hydrogen Business Model Government Response – confirmed minded-to positions

- **Scope and delivery mechanism**
  - Applicable on a UK-wide basis
  - Producer-focused (ie revenue support directed to producers) and applicable to a range of production pathways
  - Supporting new production capacity that meets the proposed UK Low Carbon Hydrogen Standard
  - Facilitating hydrogen use in a broad range of sectors
  - Delivered through a private law contract

- **Price support via a variable premium**, where the subsidy is the difference between a strike price reflecting the cost of producing hydrogen and a reference price reflecting the market value of hydrogen.
  - Reference price based on the producer's achieved sales price, with a floor at the natural gas price, combined with a price discovery mechanism to incentivise the producer to increase the sales price
  - Intention to integrate a hydrogen market benchmark price into the reference price at the earliest opportunity for future projects

- **Volume support via a sliding scale** in which the strike price (and therefore subsidy) is higher on a per unit basis if hydrogen offtake falls, with no support provided where sales volumes fall to zero.

- **Developing proposed model to work across different technologies** with no separate scheme for small-scale projects.

- **Risk allocation** reflecting that producer is best placed to manage risks relating to construction, hydrogen transport and storage, decommissioning, technology, and input fuel supply, while the contract will set out appropriate provisions on change in law.

- **Allowing small-scale hydrogen transport and storage costs** to be supported through the business model for initial projects where necessary, taking into account affordability and value for money.

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Hydrogen Business Model Government Response – additional information on key model design aspects

- **Production pathways in scope of business model:**
  - Technologies eligible for each allocation round will be guided by the UK Hydrogen Strategy.
  - Not intended to support existing hydrogen producers retrofitting CCUS or new build industrial facilities generating hydrogen as by-product.

- **Qualifying end users,** subject to compliance with subsidy control:
  - ***Feedstock users and own consumption***: proposing to allow subsidy for sales of hydrogen to these users; considering whether additional measures are needed to address any risk of overcompensation and market distortion.
  - ***Intermediaries***: considering whether and how to address potential challenges to the business model created by sales to intermediaries.
  - ***Blending***: anticipate that support payments for blending hydrogen into gas grid will not be included in initial contracts (given timescales for decisions on blending); will consider a contractual re-opener, which could enable support for blended volumes in future.
  - ***Exports***: volumes exported not eligible for support payments.

- **Contract length** proposed to be between 10 and 15 years with no variation by technology.

- **Scaling up future production volumes:**
  - Proposing that subsidy for any new plant or module/unit would require application to a new allocation process.
  - Considering the case for producers to increase the volume at initial plant above any level defined in the contract.

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Hydrogen Business Model Government Response – additional information on allocation and funding

- **Allocation process:**
  - *CCUS-enabled:* phase 2 evaluation process is ongoing. Future allocation linked to Track 2 of CCUS cluster sequencing.
  - *Electrolytic:*
    - market engagement exercise for joint NZHF and business model allocation; aiming to run annual allocation rounds.
    - ambition to move to price competitive allocation by 2025 as soon as legislation and market conditions allow.
    - eligibility confirmed at the start of each allocation round.
- **Introducing a levy to fund the business model** from 2025 at the latest, subject to consultation and legislation, with the first electrolytic projects being funded through general taxation if they are operational before the levy is in force.

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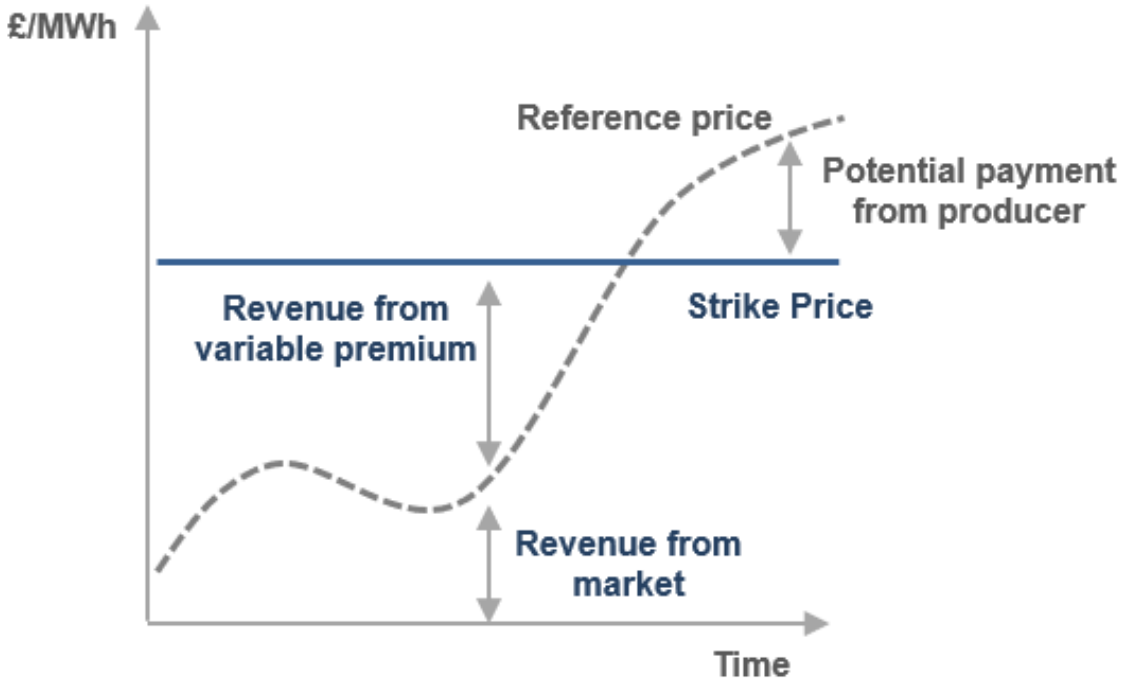
Hydrogen business model payment mechanism
– delivering price support via variable premium

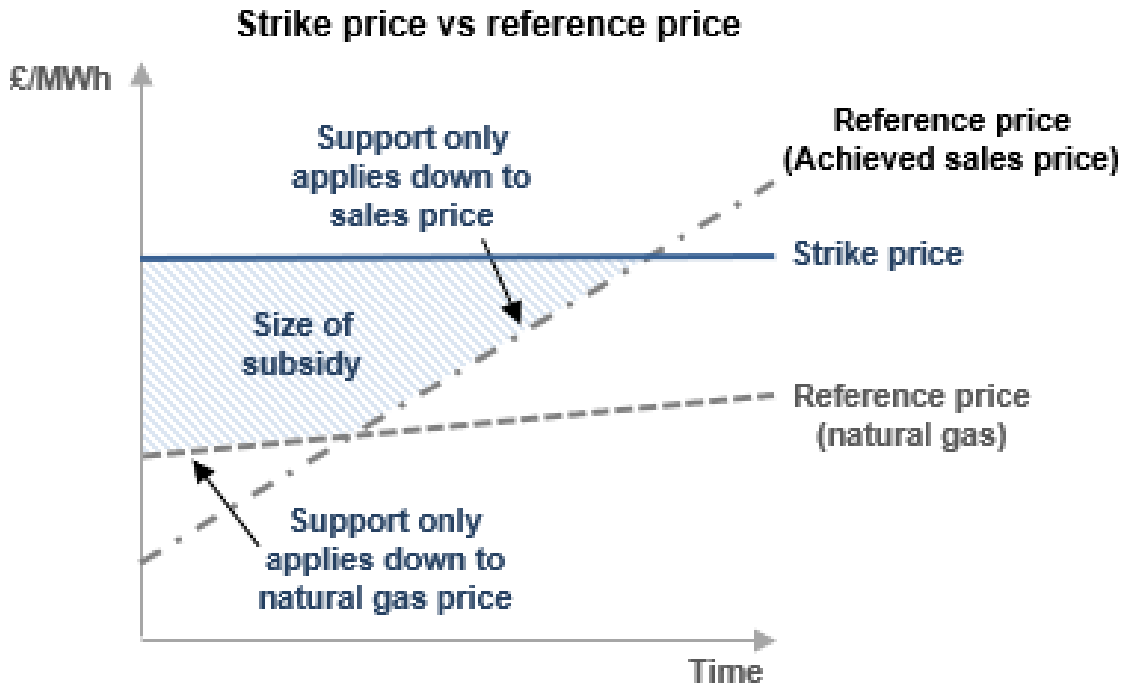
Variable premium manages price risk

- Producer is paid a premium for low carbon hydrogen produced – calculated as the difference between the strike price and the reference price



Reference price is intended to reflect the market price received by the producer for each unit of hydrogen sold

- In the absence of a market benchmark, the reference price is made up of the higher of the natural gas price floor, the achieved sales price with a price discovery mechanism
- Intention to integrate market benchmark as soon as possible



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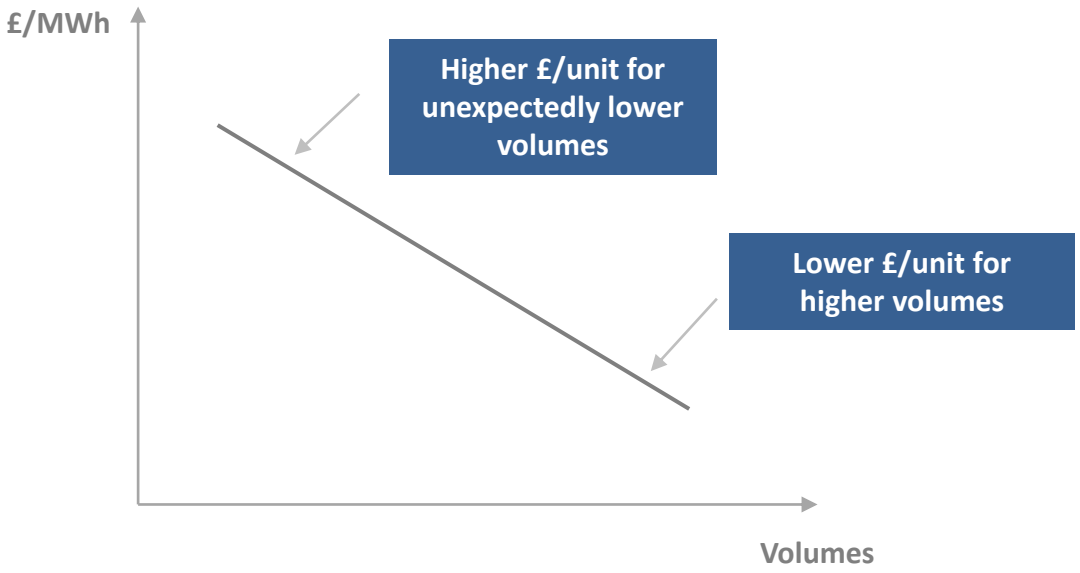
Hydrogen business model payment mechanism
– delivering volume support via sliding scale

Sliding scale mitigates volume risk through reprofiling of the strike price

- Provides greater protection at certain points of production in comparison to a flat strike price
- The scale of losses under a sliding scale would be lower in the event that offtake volumes are unexpectedly lower
- This gives investors certainty of the level of revenue they. receive from investing in hydrogen
- No volume support for not producing hydrogen

Figure: Illustrative reprofiling of the sliding scale strike price



To note:
- The figure above shows one such profile but we have yet to finalise the profile

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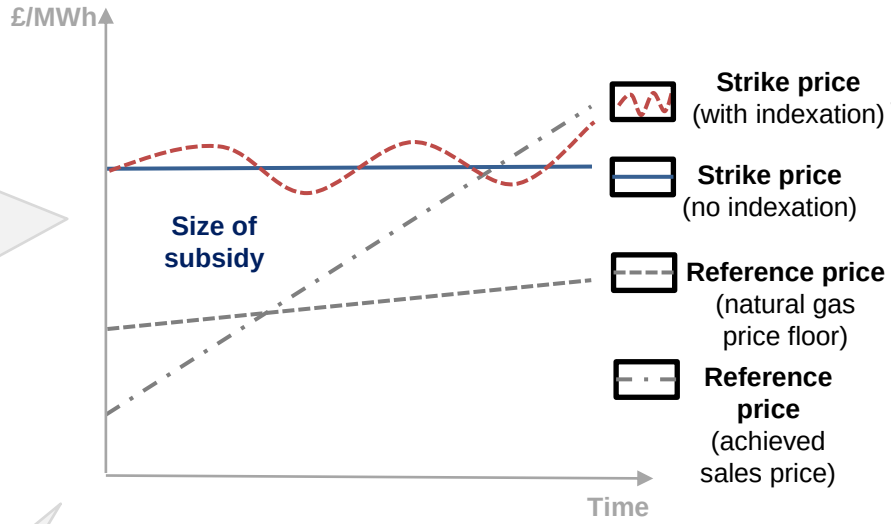
Hydrogen business model payment mechanism – key components

CORE COMPONENTS

STRIKE PRICE: reflects the price the producer needs to achieve to cover their costs of production and return on investment; strike price level and cost components to vary for different production technologies

REFERENCE PRICE: intended to represent the market price received by the producer. For initial projects, reference price is the higher of the producer's achieved sales price and the price floor, which is the lower of the Natural Gas price (NBP Month Ahead) and the Strike Price.

PRICE DISCOVERY: reward for sales above the natural gas price floor to promote price discovery, with potential cap of reward if sales price exceeds a certain threshold (to be determined)



ADJUSTMENTS

SLIDING SCALE OF STRIKE PRICE: higher strike price in response to lower offtake volumes in order to help manage volume risk

INDEXATION OF STRIKE PRICE: intended to provide security of supply to end users, protect producers where production cost change is unmanageable, and HMG from excessive risks and costs.

- Electrolytic – CPI indexation for all cost components, including electricity
- CCUS-enabled – natural gas indexation for natural gas cost with CPI indexation for all cost components, including electricity

QUALIFYING END USER VOLUMES: consider if adjustments to payment mechanism are needed to accommodate sales to feedstock users, own consumption, and intermediaries

Heads of Terms

Ashurst

Future ways of working

Karina Sidenius

Department for Business, Energy & Industrial Strategy

Future ways of working

April 2020
- First meeting of the Hydrogen Business Model Expert Group
- Draft Terms of Reference shared

April 2022
- Government response to hydrogen business model consultation published
- Indicative Heads of Terms for business model contract published

In the interim:
- 80+ organisations become members of the expert group
- 14 meetings of the group are held
- Track-1 clusters announced through the Cluster Sequencing process and applications are made for Phase 2
- Separate allocation process announced for electrolytic hydrogen projects
- Ambition for hydrogen increased in the Energy Security Strategy

We want to hear your thoughts

As we move into the next stage of business model development we are reviewing the Terms of Reference set out at the start of the expert group's journey. As part of this, we are also looking at the format and timing of these sessions to ensure they are most useful to you and to policy colleagues.

We are committed to continuing to engage with industry and stakeholders in an open manner and welcome feedback before moving forward. You will receive a short survey on the expert group in the coming days.

Any questions?