



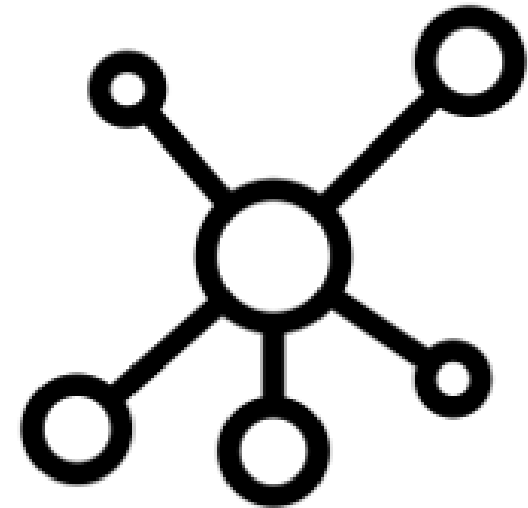
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# Hydrogen transport and storage infrastructure consultation

## Chapter 4: Hydrogen storage infrastructure

### Hydrogen storage business model team

- [Shabana.jamil@beis.gov.uk](mailto:Shabana.jamil@beis.gov.uk)
- [Rebecca.cavanagh2@beis.gov.uk](mailto:Rebecca.cavanagh2@beis.gov.uk)





**No planned fire alarms.** In the event of an emergency please follow the signs to nearest emergency exit and move away from the building.

**Those joining online please remain on mute during the breakout discussions and post any questions into the chat.** Please include your role and organisation.

**This meeting will be recorded** for BEIS internal use only.

If we do not have time to respond to your question, you are welcome to reach out to us via email:

[Shabana.jamil@beis.gov.uk](mailto:Shabana.jamil@beis.gov.uk).



## Agenda & aims

### Agenda

	Item	Approx time	Lead
1	Welcome, introductions, and plan for the workshop	14:00 – 14:10	Shabana Jamil
2	Overview of storage chapter	14:10 – 14:20	Rebecca Cavanagh
3	Reflections or questions on consultation chapter	14:20 – 14:30	Rebecca Cavanagh
4	Discussion groups	14:30 – 15:10	Group workshop members
5	Smaller groups to feedback as a larger group	15:10 – 15:25	Rebecca Cavanagh
6	Wrap up and close	15:25-15:30	Shabana Jamil

### Aims

- Work together with projects, investors and other interested parties to deliver a hydrogen storage business model
- Improve policy development by enabling us to garner initial views from stakeholders through workshops ahead of the consultation closing.
- Encourage participants to submit a formal response to the consultation – closing date 22 November 2022

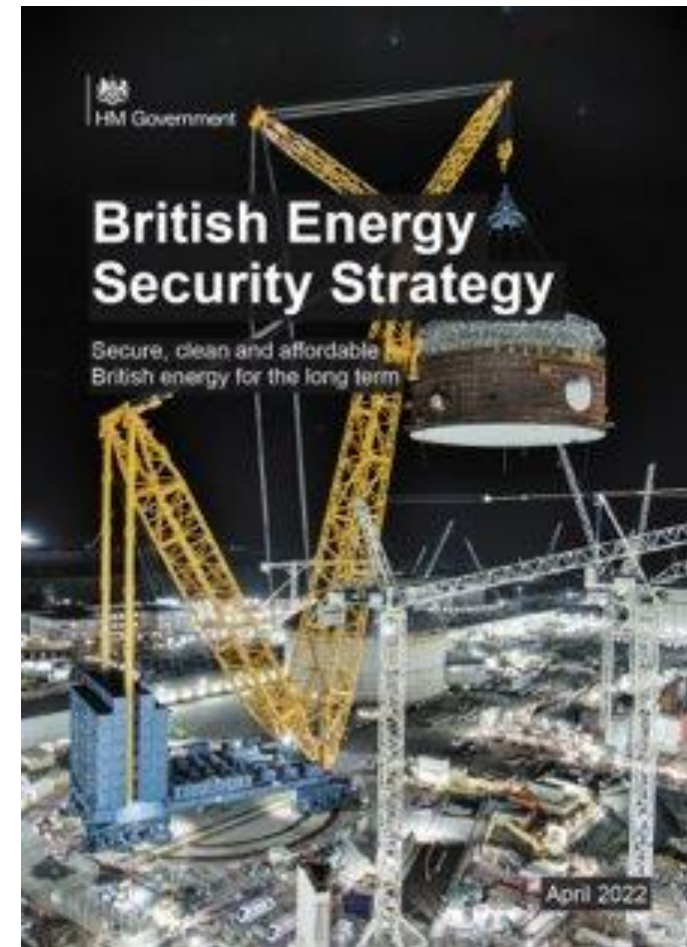
# There are five Deputy Director-led teams working on hydrogen in the directorate, led by Stef Murphy and Paro Konar

Hydrogen Economy	Hydrogen Production	Business Model	Analysis & Funding Strategy	Hydrogen Strategy & Portfolio
Katie Ostheimer	Alison Conboy	Will Lochhead	Simon Green	Iona Mylek
G6-led teams for:	G6-led teams for:	G6-led teams for:	G6-led teams for:	G6-led teams for:
<ul style="list-style-type: none"> <li>Hydrogen Markets and Networks (Jeremy Brutus)</li> <li>Hydrogen Demand (Thomas Mowle)</li> <li>Transport Business Model (Mohamed Khalif)</li> </ul>	<ul style="list-style-type: none"> <li>Hydrogen Production Strategy (Paul Henderson)</li> <li>Net Zero Hydrogen Fund x 2 (Ben Holley and Lisa Pearce)</li> <li>Sector Development (Richard Sargent)</li> <li>Hydrogen Standards and Certification (Beth Walmswell)</li> </ul>	<ul style="list-style-type: none"> <li>Hydrogen production business model (Carolyn Campbell)</li> <li>Hydrogen production business model allocation (Dharmesh Jadavji)</li> <li>Project assessment and negotiations on hydrogen and industrial carbon capture business models (Dimple Hargunani)</li> <li>Technical Assurance (Saqib Sultan)</li> <li>Hydrogen storage business model (Shabana Jamil)</li> <li>ICC business model (Carly Leighton)</li> </ul>	<ul style="list-style-type: none"> <li>Industrial Decarbonisation and Hydrogen Revenue Support (Aislinn)</li> <li>Hydrogen and ICC business models analysis (Julia Christodoulides)</li> <li>Hydrogen production and strategy analysis (Libby Collis)</li> <li>Cross-cutting analysis (Michael Cohen)</li> </ul>	<ul style="list-style-type: none"> <li>Hydrogen Strategy (Simone Cooper-Searle)</li> <li>Hydrogen Portfolio (vacant)</li> </ul>



## Context

- **Hydrogen Strategy** set out a 5GW hydrogen production capacity ambition by 2030.
- Hydrogen production capacity ambition was doubled to **10GW by 2030 in the British Energy Security Strategy**.
- Hydrogen transport and storage infrastructure is required to meet ambition.
- As such, in the BESS, there was a commitment to **design new business models for hydrogen transport and storage infrastructure**.
- Our consultation aims to seek views on **optimal design** of business models.
- This workshop is focussed on **business model design for hydrogen storage infrastructure**.





## Overview of storage chapter

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## Proposed storage business model design objectives

**Overcome the key market barrier of volume risk**

**Stand alone larger-scale storage projects to support multiple producers/users**

**One storage business model to support storage projects of varying sizes and technologies**





## Key design principles for assessing business model options

1	<b>Investable</b>	Provide sufficient predictability over revenue and return to investors and mitigate risks which investors are not placed to bear.
2	<b>Promotes market development</b>	Incentivise storage providers to optimise the use of their infrastructure.
3	<b>Compatible</b>	Compatible with other policies across the value chain (production and transport business model) and not result in double subsidisation.
4	<b>Avoids unnecessary complexity</b>	For both government to design implement and administrate and storage providers to understand and comply with.
5	<b>Reduces support overtime</b>	Be responsive to market conditions and the changing risks to reduce support.
6	<b>Suitable for future pipeline</b>	Fit for purpose for first of a kind (FOAK) projects as well as future projects.
7	<b>Value for money</b>	Achieve purpose at the lowest possible cost to government and prevent excessive returns to developers.





## Business model design options

**Private law contracts e.g., open book / cost plus; contracts for difference**

**End user subsidies / compulsory stock obligation**

**Regulated asset base (RAB) with allowed revenue**

**Cap and floor (via economic regulation /private law contract)**

**Availability payments, e.g., Government frontstop; capacity availability**

**Equity investment or grant (possibly including in combination with a revenue support model)**



## Discussion groups

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## Discussion questions for each group to consider in turn

1. **What does a merchant hydrogen storage model look like? What is needed for us to move from where we are today to a merchant model?**
2. **Where are storage providers getting market revenue from? Who are the users and payers of hydrogen storage facilities?**
3. **Before a liquid hydrogen market is established what do you need from government to invest and build in hydrogen storage? How does govt reduce this intervention and what are the conditions for which all support can be withdrawn?**
4. **Apart from volume risk, does the government have a role in taking on other risks?**

**Finish at 15:10 for  
feedback to larger  
group**



## Large group feedback

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6	Wrap up and close	15:25-15:30	Shabana Jamil



# Thank you for your time today

## Next steps

- Hydrogen transport and storage infrastructure consultation:
  - published 31 August 2022
  - closes on **Tuesday 22 November 2022.**
- Formal written responses to the consultation are still required to inform policy decisions so please do take the time to contribute
- Government response Q2 2023
- **Stakeholder engagement ideas:** Email [Shabana.jamil@beis.gov.uk](mailto:Shabana.jamil@beis.gov.uk) (or just talk to me today after the workshop!) if you have thoughts on storage BM specific-group.

