Volume and capacity provisions in the LCHA

Hydrogen business model stakeholder workshop

Thursday 28 July 2022

Department for
Business, Energy
& Industrial Strategy

Agenda

1. Volume and/or capacity in the LCHA

2. Volume cap design

3. Backward and forward banking design

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.
- This session will be recorded.

Using design principles to develop the hydrogen business model

- Team driving at delivering an investable and VfM HBM, enabling the first contracts to be allocated from 2023
- We are focused on managing the main risks: price and volume risk
- We are using these design principles to guide policy development

Principle	Description
Promotes market development	*Incentivise producers to develop hydrogen demand and promote its use*
Promotes market competition	*Not create barriers to market entry, enable abuse of market power, or provide enduring competitive advantage to first movers*
Investable	*Provide sufficient predictability over revenues and returns to investors and mitigate risks which investors are not best able to bear*
Value for money	*Be effective in achieving its intended purpose at the lowest possible cost to government and prevent excessive returns to developers*
Reduces support over time	*Allow support to reduce over time by responding to market conditions and encouraging learning, innovation, and cost reductions over time*
Suitable for future pipeline	*Work for FOAK projects and NOAK projects with minor adjustments*
Compatible	*Be compatible with other policies and not allow double subsidy*
Technology agnostic	*Be applicable to a range of production technologies*
Size agnostic	*Be applicable to a range of project sizes and not incentivise inefficient sizing of production plants*
Avoids unnecessary complexity	*Avoid unnecessary complexity in its design, implementation and administration, and be transparent for producers to comply with*

Deciding on the metric(s) to use in the LCHA

Why is this important?

- Primary contractual metric (PCM) needed for LCHA
- Used in renewable CfD (capacity, MW) and Hinkley Point C (volume, MWh)
- Option, like in Hinkley Point C, to have secondary contractual metric (SCM)
- Also important for future competitive allocation

Options we've considered

a. Capacity metric without volume metric

b. Volume metric with capacity metric ***Current thinking***

c. Volume metric without capacity metric

Example 1. Volume metric in Hinkley Point C contract

"**Contracted Generation Cap**" means nine hundred and ten million (910,000,000) MWh, as reduced by the aggregate number of MWhs:

(A) in respect of which compensation is paid by the CfD Counterparty under this Agreement, including Clause 30.4 (*QCiL Adjusted Revenues Payment*) and Part 13 (*Curtailment*) (being the relevant QC Volume as agreed or determined); and/or

(B) in respect of which the Generator has received Difference Amounts or in respect of which Difference Amounts are due and payable or have been paid by the Generator;

Example 2. Capacity metric in Renewable CfD

"**Maximum Contract Capacity**" means the Installed Capacity Estimate and, subject to and in accordance with the provisions of Condition 7 (*Final Installed Capacity; Maximum Contract Capacity*), the Final Installed Capacity;

Using volume and capacity metrics requires a volume cap

Definition

- Represents a contractual cap on volumes produced

Considerations *on top of design principles*

- Strike price and what it represents
- Operating pattern of electrolytic and CCUS-enabled projects
- Budgeting for programme

Options we've considered for setting the volume cap

a. Proposed by government and spread unevenly (*note, government could take various approaches to setting volume caps, whether unique to projects or standard for all)*

b. Proposed by projects and spread unevenly across contract term

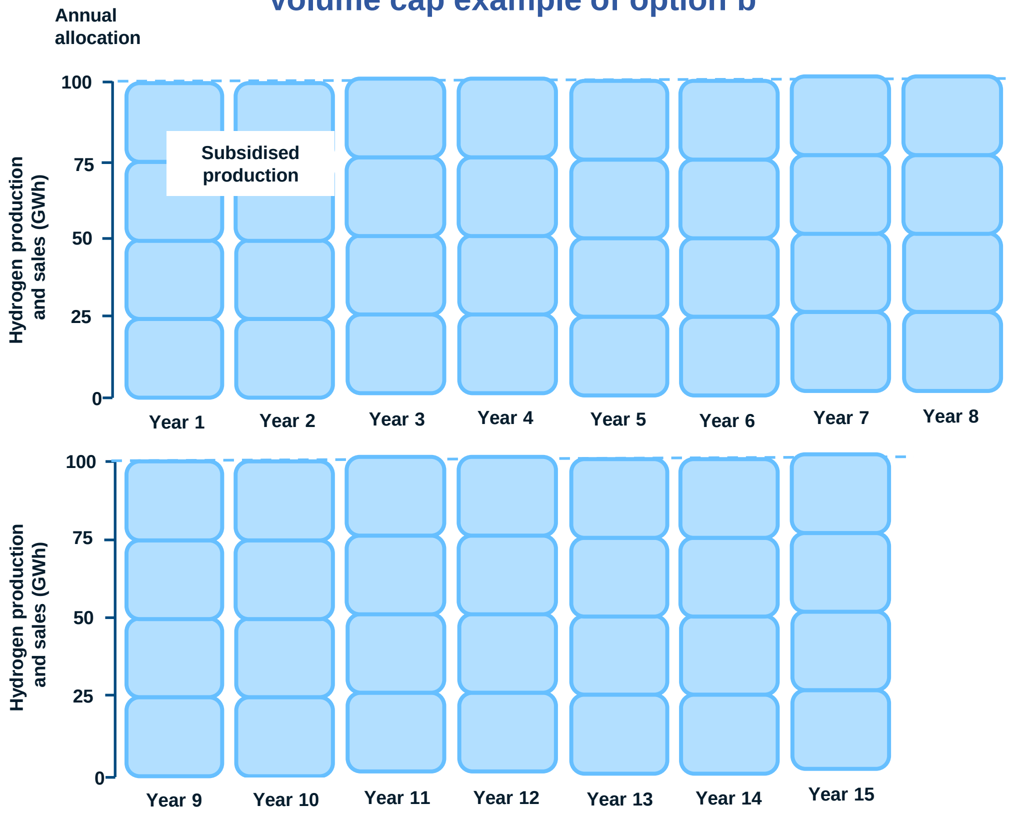
c. Proposed by government and even spread

d. Proposed by projects with even spread ***Current thinking***

Current thinking:

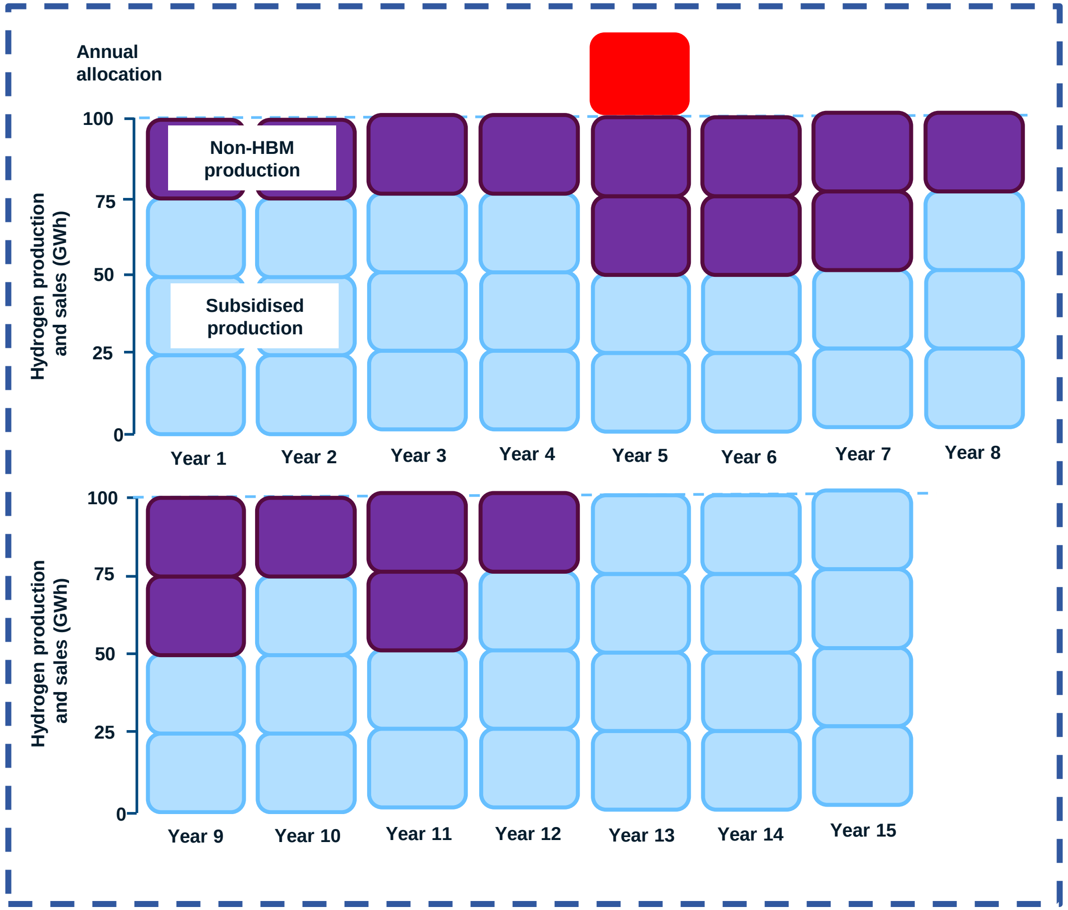
- Volume cap represents total production and sales, both HBM subsidised and non-HBM volumes to prevent oversubsidy from excess sales
- Not able to produce above volume cap to maintain strike price (risk/reward balance)
- Producers able to adjust monthly, between subsidised and non-subsidised, with volume cap applying annually, to provide flexibility to producers while providing VfM

Volume cap example of option b



An example: *volume cap with subsidised and unsubsidised volumes*

- The volume cap includes both HBM subsidised and non-HBM volumes, with projects choosing on a monthly basis the spread
- Projects are *prohibited* from producing above the cap agreed in negotiations, even if volumes are not put through HBM
- Project A has proposed and agreed a **contract volume cap** of **1500GWh**
- Therefore, Project A has an **annual volume allocation** of **100GWh**
- Project A varies the volumes put through the HBM (in **blue**) and those not put through the HBM (in **purple**)
- In Y5, Project A produces above their volume cap (in **red)** – as this is prohibited, Project A would face a penalty



Backward banking

Definition
- Borrowing volume allocation from future years to increase production over annual volume allocation up to a limit

Why is this important?
- Resilience for future years
- Opportunity costs of excess supply inputs / demand
- Failure of another hydrogen plant

Options we've considered for banking
a. Allow banking *up to* 15% above annual allocation

b. Allow banking *up to* 25% above annual allocation ***Current thinking***

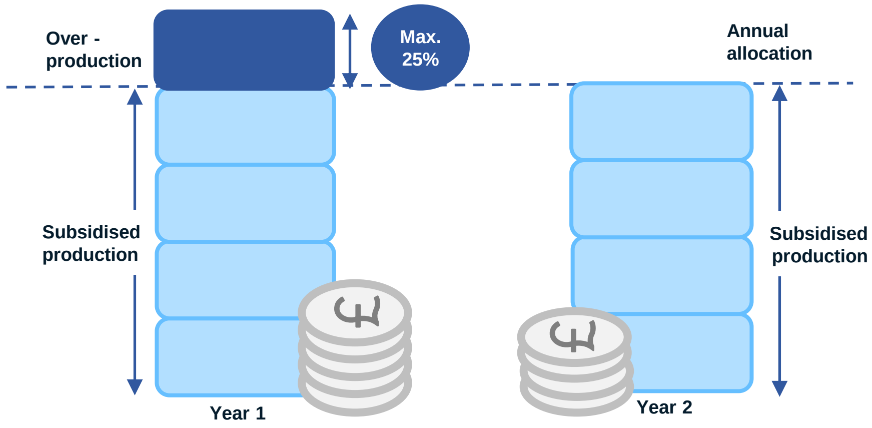
c. Allow banking *above* 25%, either [x]% or unlimited

Options we've considered for rollover limit
This refers to the time period within which you can bank, or move volumes around

a. Limit banking to [x] years, either from the start or within a range

b. No limit to banking, able to draw from contract volume allocation ***Current thinking***

Hypothetical backward banking example



Year	Yearly volume allocation w/o banking (GWh)	Contract volume allocation balance (GWh)	Max yearly volume allocation w. backward banking option b (GWh)	Remaining contract allocation, at the end of the year (GWh)
Y0	0	1500	0	1500
Y1	100	1400	125	1375
Y2	100	1300	110	1265
Y3	100	1200	100	1165
Y4	100	1100	125	1040
Y5	100	1000	100	940
Y6	100	900	105	835
Y7	100	800	100	735
Y8	100	700	100	635
Y9	100	600	125	510
Y10	100	500	100	410
Y11	100	400	125	285
Y12	100	300	125	160
Y13	100	200	125	35
Y14	100	100	35	0
Y15	100	0	0	0

Forward banking

Definition

- Carrying forward unused allocation of eligible annual hydrogen production volumes to later years

Why is this important?

- Supply and demand variation
- Recovery of target return
- Supply security

Options we've considered for banking

a. Allow banking *up to* 15% above annual allocation

b. Allow banking *up to* 25% above annual allocation ***Current thinking***

c. Allow banking *above* 25%, either [x]% or unlimited

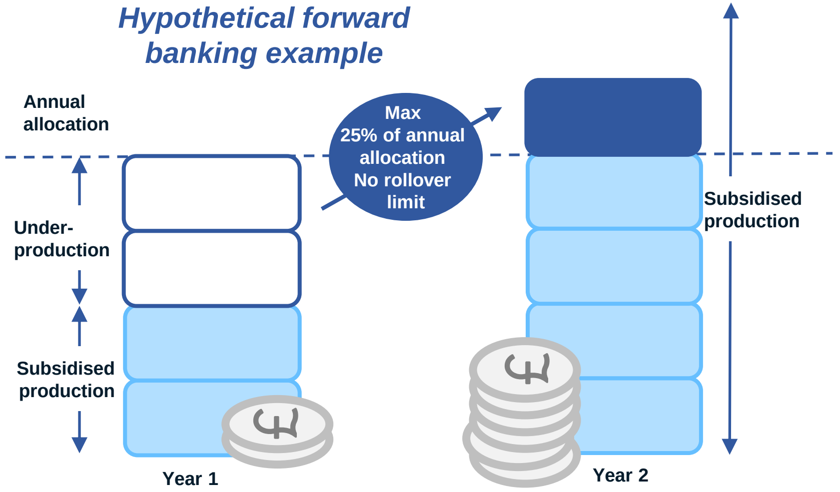
Options we've considered for rollover limit

This refers to the time period within which you can bank, or move volumes around

a. Limit banking to [x] years, either from the start or within a range

b. No limit to banking, able to carry forward for length of contract term ***Current thinking***

Hypothetical forward banking example



Year	Yearly volume allocation w/o banking (GWh)	Contract volume allocation balance (GWh)	Yearly volume allocation w. forward banking option b (GWh)	Remaining contract allocation, at the end of the year (GWh)
Y0	0	1500	0	1500
Y1	100	1400	75	1425
Y2	100	1300	75	1350
Y3	100	1200	70	1280
Y4	100	1100	75	1205
Y5	100	1000	55	1150
Y6	100	900	75	1075
Y7	100	800	125	950
Y8	100	700	115	835
Y9	100	600	110	725
Y10	100	500	125	600
Y11	100	400	120	480
Y12	100	300	125	355
Y13	100	200	125	230
Y14	100	100	100	130
Y15	100	0	115	15

An example: *bringing backward and forward banking together*

- Project A has proposed a **contract volume cap** of **1500GWh**
- Therefore, Project A has an **annual volume allocation** of **100GWh** and an ***effective* annual volume allocation** of **125GWh**
- Project A varies production across the hypothetical 15 year contract, making use of backward and forward banking
- In Y15, Project A's unused contract volume cap is **5GWh**, which is lost

Year	Annual volume allocation (GWh)	*Effective* annual volume allocation (GWh)	Annual production & sales volume (GWh)	Remaining contract allocation, at the end of the year (GWh)
Y0	0	0	**0**	1500
Y1	100	125	**80**	1420
Y2	100	125	**110**	1310
Y3	100	125	**115**	1195
Y4	100	125	**115**	1080
Y5	100	125	**115**	965
Y6	100	125	**60**	905
Y7	100	125	**95**	810
Y8	100	125	**75**	735
Y9	100	125	**105**	630
Y10	100	125	**120**	510
Y11	100	125	**115**	395
Y12	100	125	**85**	310
Y13	100	125	**105**	205
Y14	100	125	**100**	105
Y15	100	105	**100**	5

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 one of us directly or use the hydrogen business model inbox

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