UK Government

Hydrogen Infrastructure Strategic Planning Policy Statement

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Purpose of this policy statement

As the National Energy System Operator (NESO) continues to develop the first iterations of its strategic energy planning (SEP) documents, this policy statement sets out the Department for Energy Security and Net Zero's (DESNZ) policy view on how we envisage NESO will carry out strategic planning for hydrogen infrastructure for Great Britain (GB). Hydrogen is a gas covered by NESO's Gas System Planner (GSP) licence and therefore NESO can consider hydrogen in some cases when undertaking its strategic planning and other licensed functions. The statement also details how DESNZ will consider NESO's hydrogen strategic planning when developing policy in relation to our hydrogen business models. Whilst NESO will deliver the first tangible outputs of its hydrogen strategic planning role in 2026, DESNZ will continue to play a role in hydrogen strategic planning as it will remain the decision maker for awarding business model support to hydrogen infrastructure projects.

Introduction

Low carbon hydrogen can support the decarbonisation of long duration dispatchable generation and hard-to-electrify parts of the UK industrial sector and heavy transport, such as aviation and shipping. Within the hydrogen value chain, hydrogen transport and storage (T&S) is vital to enabling hydrogen production to service demand across different end use sectors, supporting delivery of the UK's decarbonisation commitments. Hydrogen T&S infrastructure could play a role in meeting our 2030 Clean Energy Superpower Mission,[1] being a key facilitator in delivering hydrogen-fuelled power generation, providing long term energy storage solutions to support electrification, and delivering whole system benefits by helping to manage the costs of electricity system constraints. Hydrogen T&S can support the growth of a competitive hydrogen market, delivering value for money and reducing costs to consumers. To realise these aims, infrastructure could eventually include an integrated and resilient network with multiple entry and exit points, connected to several hydrogen storage facilities at various scales. In the nearer term, a developing network should look to support demand expected from hard-to-decarbonise industrial and power users in or near large industrial cluster sites. This will likely entail the need for regional networks which connect large-scale geological storage with hydrogen producers, and sources of demand which are most likely to come forward within these timescales, though development will be affected by wider market developments and policy decisions.

The 2023 Hydrogen T&S Networks Pathway, published under the previous government, and our Clean Energy Superpower Mission underline our position that there is a need for a degree of centrally driven strategic planning, combined with elements of a market-led development, to

[1] Prime Minister's Office, Make Britain a Clean Energy Superpower (2024).

enable efficient, cost-effective and timely roll-out of hydrogen T&S infrastructure.[2] Strategic planning refers to the assessment of T&S network needs in the short and long term to inform the subsequent allocation of funding to enable infrastructure which best meets our ambitions for decarbonisation, energy security, economic growth and value for money. It can offer clarity and confidence to consumers, producers and infrastructure projects, supporting the growth of the hydrogen economy.

In our role as interim strategic planner for hydrogen T&S infrastructure, we have continued to consider the growing evidence of emerging hydrogen T&S network needs to determine what, where and when infrastructure is needed. This work has included reviewing the strategic case and optimal approach for core network development, the ongoing assessment of infrastructure needs to inform future approaches for the Hydrogen Transport Business Model (HTBM) and Hydrogen Storage Business Model (HSBM), and the role of development expenditure and innovation funding in enabling a mature pipeline of projects. However, predicting T&S network needs is a challenge, involving the assessment of limited data representing many potential scenarios, and evaluating complex interactions and dependencies. In the Hydrogen T&S Networks Pathway, we indicated an ambition for NESO to be the strategic planner of hydrogen T&S infrastructure from 2026. This ambition aligns the hydrogen system with the electricity and gas systems, which NESO is also responsible for strategically planning, supporting NESO to take a whole energy system approach to energy infrastructure planning across GB. We have continued to work with NESO since publication of the Hydrogen T&S Networks Pathway to help ensure it has the necessary expertise and capabilities to deliver hydrogen strategic planning. We also requested NESO consider the generation and storage of hydrogen, alongside electricity, when commissioning the first iteration of the Strategic Spatial Energy Plan (SSEP).[3]

Government is committed to designing hydrogen transport and storage business models to remove market barriers and stimulate private investment in the necessary supporting infrastructure. We intend for the UK's first regional hydrogen network to become operational from 2031.[4] NESO's independent, impartial approach to whole energy system strategic planning could be valuable to inform any future allocations of the HTBM and HSBM launched after publication of the first SSEP, which is expected in 2026.

National Energy System Operator

From its launch in October 2024, NESO has held strategic planning roles for the electricity and gas networks, conveyed by it holding the Electricity System Operator licence and GSP licence.[5] These licences are legislated for by the Electricity Act 1989[6] and Gas Act 1986[7]

[2] DESNZ, Hydrogen Transport and Storage Networks Pathway (December 2023).
[3] UK, Scottish and Welsh Governments, Strategic Spatial Energy Plan: Commission to NESO (October 2024).
[4] DESNZ, Hydrogen update to the market: July 2025 (July 2025).
[5] DESNZ and Ofgem, National Energy System Operator (NESO) licences and other impacted licences (August 2024).
[6] Electricity Act 1989
[7] Gas Act 1986

respectively. Hydrogen is a gas covered by the GSP licence and therefore in some cases it will be appropriate for NESO to consider hydrogen when undertaking its strategic planning and other licensed functions. Due to the need to differentiate hydrogen for the purposes of this document, beyond this point we define 'gas' as the other types of gas included within the definition of "gas" in the Gas Act 1986 that are currently transported through the existing National Transmission System (NTS) and gas distribution networks, primarily methane.

Consistent with NESO's overarching objectives,[8] NESO's aims and responsibilities include: strategically planning an economically efficient and flexible energy system when considering hydrogen; to be cognisant of whole system impacts on and due to hydrogen infrastructure deployment; and to supporting energy security and resilience when including hydrogen alongside electricity and gas when conducting strategic planning.

This policy statement

We previously set an aim that NESO would take on roles for hydrogen T&S strategic planning from DESNZ from 2026, subject to progress being made on determining the scope of these activities, guiding funding arrangements and any legislative and/or regulatory changes needed to enable these. This ambition has been taken forward in NESO's development of its strategic energy planning products, such as hydrogen's inclusion in the SSEP Commission. NESO's role as strategic planner for hydrogen T&S infrastructure is reflected in NESO's GSP licence, and since December 2023 it has continued to build its hydrogen strategic planning capabilities ahead of its first tangible hydrogen output, which will be the first SSEP. This will be followed by the first Centralised Strategic Network Plan (CSNP) and Regional Energy Strategic Plans (RESPs) in 2027.[9] We, alongside Ofgem and NESO, are therefore on track to deliver on the aim set out by DESNZ in December 2023.

As NESO continues to build its capability to plan hydrogen T&S infrastructure as part of its wider energy system planning role, this statement provides clarity on government's policy aims for NESO in its role as hydrogen strategic planner. On the basis of the current GSP licence and through collaboration with Ofgem and NESO, this policy statement focuses on DESNZ's policy views on the roles necessary for NESO to deliver hydrogen strategic planning, what hydrogen infrastructure should be in scope of strategic planning, how DESNZ will consider the outputs of NESO's strategic planning, and development of other relevant products.

Although this policy statement focuses primarily on hydrogen T&S infrastructure, the SSEP will also indicate the optimal quantities and types of hydrogen production and electricity generation (including hydrogen-fuelled power) across GB. Given the close linkages between hydrogen production, T&S and hydrogen-to-power (H2P), this policy statement will therefore also consider how hydrogen production and H2P feature in NESO's outputs and how these could

[8] Set out in Part 5 of the Energy Act 2023.
[9] NESO, Centralised Strategic Network Plan (CSNP); Regional Energy Strategic Planning (RESP).

interact with the Hydrogen Production Business Model (HPBM) and Hydrogen to Power Business Model (H2PBM).

Chapter 1 of this policy statement sets out our view for how NESO will consider hydrogen infrastructure within the strategic planning functions detailed in the GSP licence, such as the SSEP, the CSNP, as well as the RESPs. It also discusses the approach to determining the types of hydrogen infrastructure to be included within scope of these SEP documents.

Chapter 2 discusses how DESNZ will account for NESO's strategic planning when undertaking future design for the HPBM (for both Hydrogen Allocation Round [HARs] and Carbon Capture, Usage and Storage [CCUS]-enabled hydrogen production projects), the HTBM, HSBM and H2PBM. It sets out that DESNZ intends to have due regard to NESO's strategic planning and signals our approach regarding how we intend to take forward NESO's hydrogen outputs in future business model allocations.

Chapter 3 outlines our views regarding some other NESO functions which are provided for in the GSP licence. These other functions include responsibilities in relation to Critical National Infrastructure (CNI), the Gas Supply Security Assessment (GSSA), energy resilience and reporting, market strategy, and innovation.

Separately we continue to conduct policy development on an economic regulatory framework for hydrogen pipeline systems, publishing a consultation in July 2025[10]. In the consultation, we outlined our strategic vision for 100% hydrogen pipeline networks, the activities a system operator would need to undertake for these 100% hydrogen pipeline networks, and the regulation of balancing within the economic regulatory framework. We will provide further detail on our thinking in our response to the consultation, to be published in due course.

We are cognisant that there are other factors that will affect the strategic planning and deployment of hydrogen infrastructure in the UK. These include interactions across the hydrogen system value chain including, but not limited to, end user demand, hydrogen market developments, the role of hydrogen imports and exports, innovation, and wider policy decisions such as around energy security. DESNZ will work closely with NESO to ensure their modelling of the hydrogen system takes account of government's latest policy positions. DESNZ will also seek to collaborate with NESO in developing wider hydrogen policy, drawing on NESO's unique expertise and place within the energy system. Beyond hydrogen, NESO is obligated to remain aware of energy sector developments that could be relevant to its system planning role; this includes systems, such as CCUS networks, the strategic planning of which NESO is not currently responsible for. Therefore, whilst this policy statement reflects our current view on how NESO should take on these hydrogen roles, it may be subject to change in future as policy develops further.

[10] DESNZ, Hydrogen Economic Regulatory Framework: developing an effective framework for pipeline networks (July 2025).

Chapter 1: NESO's strategic planning of hydrogen infrastructure

NESO's hydrogen strategic planning functions are set out in Section C of the GSP licence. Among NESO's functions is the requirement to produce a SSEP and a CSNP. As set out in Ofgem's RESP decision, published in April 2025, the RESPs will also be formally implemented in NESO's licences through an additional condition.[11] Ofgem launched a consultation on the RESP licence condition in July 2025, with the new condition expected to be in place by the end of 2025.[12]

We consider that the SSEP, CSNP and RESPs are the principal documents through which NESO will carry out its role as the strategic planner for hydrogen infrastructure. These three strategic plans are designed to interact coherently with one another to set out a coordinated vision for energy strategic planning across the whole energy system. Collectively, this publication refers to these documents as NESO's SEP documents. We consider that NESO's strategic planning of the hydrogen system can be carried out effectively through these SEP publications which provide a holistic approach, considering hydrogen and supporting infrastructure alongside other vectors within the context of the wider energy system from the national to the local level.

NESO is also required to produce Future Energy Scenarios (FES; referred to as Future Energy Pathways in the GSP licence).[13] In recognition of the expansive industry transformation required to GB's energy network planning, the 2024 FES framework evolved from 'scenarios' to 'pathways' to explore narrower ranges and strategic, credible choices for decarbonisation. The additional analysis for future changes in the demand and supply of energy provided by the FES framework will be used to support CSNP analysis.[14] NESO set out in its July 2025 pathways publication how it sees the role of FES developing once the SSEP and RESPs are in place.[15]

Table 1 provides an overview of NESO's SEP documents, each of which will be produced on an iterative basis. We expect that hydrogen will be considered in each of these documents from the first iteration as part of NESO's whole-system approach to strategic planning, though we anticipate hydrogen could be considered differently from other vectors due to the nascency of the hydrogen system. We expect the hydrogen components of these plans may evolve over time as the sector develops. We are already working closely with NESO and Ofgem as NESO continues to build its hydrogen strategic planning capability, including to deliver the SSEP, CSNP and RESPs.

[11] Ofgem, Regional Energy Strategic Plan Policy Framework Decision (April 2025).
[12] Ofgem, RESP Consultation on Licence Modifications and Guidance Document (July 2025).
[13] NESO, Future Energy Scenarios.
[14] Ofgem, Future Energy Pathways Guidance (February 2025).
[15] NESO, Future Energy Scenarios 2025: Pathways to Net Zero (July 2025).

Table 1: Summary of NESO's SEP documents

Document	Overview	Timelines for first iterations
SSEP	A spatial energy plan, covering the period 2030 to 2050, which will assess the optimal locations, quantities and types of energy infrastructure required to meet forecast energy supply and demand across GB.	• Commissioned by the UK, Scottish and Welsh governments on 22 October 2024. • NESO's SSEP Methodology was published in May 2025.[16] • First SSEP to be published by 31 December 2026. • Further iterations to be published every third year thereafter.
CSNP	A strategic assessment of network needs across a 25-year horizon, which will identify and evaluate network options. The CSNP's process for selecting optimal projects for delivery may vary between the different energy vectors (electricity, gas and hydrogen).	• NESO launched their CSNP methodology consultation in June 2025;[17] the final methodology must be published by 31 December 2025. • First CSNP to be published by 31 December 2027.[18] • Further iterations to be published by 31 December every third year thereafter. • Annual CSNP updates to be published in interim years.
RESPs	Regional energy strategic plans to be developed in collaboration with local stakeholders, which will model supply and demand and identify system needs and areas for strategic network investment.	• In July 2025 Ofgem launched a consultation on timelines and licence conditions, including timing of the RESP Methodology.[19] • Ofgem's proposed licence conditions state that RESPs must be produced for each RESP region by 31 December 2027.[20]

[16] NESO, Strategic Spatial Energy Plan: Methodology (May 2025).
[17] NESO, Centralised Strategic Network Plan: Draft methodology for consultation (June 2025).
[18] As per Condition C12.18 in the GSP Licence.
[19] Ofgem, RESP Consultation on Licence Modifications and Guidance Document (July 2025).
[20] The 2027 RESP output is separate to the transitional RESP, due to be published by January 2026, which is not expected to include hydrogen. Detail can be found in Ofgem's April 2025 RESP Policy Framework Decision.

Given the nascency of the hydrogen network and uncertainty around its future development we do not consider that existing definitions for electricity and gas infrastructure, such as transmission and distribution, are currently suitable for hydrogen infrastructure. There will however likely be a need to categorise hydrogen infrastructure, which could be carried out using measures such as scale, pressure and number of connections. We consider that NESO is best placed to define the scope of hydrogen infrastructure included in its SEP documents through these documents' respective methodologies as they evolve during the course of the plans' development. NESO can iterate its infrastructure scope via the methodologies of its SEP documents over time, allowing it to adapt its scope as new technologies are developed, more data becomes available and strategic approaches are honed. This approach is consistent with Ofgem's decision that NESO sets out its approach to CSNP high-level design options as part of its CSNP Methodology.[21]

Hydrogen's role in the first SSEP

The SSEP Commission states that the first SSEP will focus on the generation and storage of electricity and hydrogen. To produce the SSEP NESO will conduct economic and geospatial modelling to co-optimise electricity generation, storage and transmission, and hydrogen production, storage and transportation to ensure outputs are compatible with the wider energy system. As indicated in NESO's SSEP Methodology, DESNZ has shared modelling assumptions with NESO covering the full hydrogen value chain. These include costs, technical parameters and limitations for different technologies related to hydrogen production, transport and storage, as well as national-level demand assumptions for industry, transport and potentially heat. The SSEP will also model optimal H2P quantities required across the different GB regions. DESNZ will continue to provide NESO with updated assumptions as long as NESO deems it useful.

Using these assumptions the SSEP will map the optimal quantities and technologies of hydrogen production and storage, as well as electricity generation and storage, in different GB regions up to 2050. It will also indicate the hydrogen transport capacity requirements between these regions (but not within them) and will form starting points for the development of the subsequent CSNP and RESPs. The joint commission for NESO to develop the SSEP affirmed our expectation that NESO works with DESNZ, Scottish and Welsh governments, and Ofgem during the development of the SSEP, with the SSEP's spatial energy pathway informed by UK, Scottish and Welsh government policy as well as existing spatial plans and data from relevant stakeholders. We expect NESO to consider the importance of energy security when planning hydrogen infrastructure through the SSEP and the hydrogen aspects of its other strategic planning deliverables.

[21] Ofgem, Decision on the Framework for the CSNP (December 2023).

For future iterations of the SSEP (2029 onwards), DESNZ could request via SSEP Commissions that NESO model different criteria or infrastructure types to meet our strategic objectives. In the future the SSEP could also include other energy vectors, such as CCUS.

Hydrogen's role in the first CSNP

The CSNP is intended to provide an independent, coordinated and longer-term approach to wider network planning in GB, delivering on the energy supply and demand requirements set out in the SSEP. The first CSNP, due by the end of 2027, will consist of a single plan with a whole energy system approach covering the electricity transmission system (onshore and offshore), the onshore gas transmission system (the NTS), and emergent hydrogen transportation and storage systems.

In the CSNP methodology consultation, launched in June 2025, NESO consulted on proposals for how the hydrogen network will be strategically planned in the CSNP. There are some differences between how the CSNP will identify optimal network solutions for hydrogen, gas and electricity, partly reflecting the much greater level of uncertainty and immaturity associated with hydrogen network planning. As there is no clear distinction between transmission and distribution in hydrogen as there is in electricity and gas networks, NESO have proposed splitting the CSNP's hydrogen network planning into three tiers:

- National strategic view models: national-level hydraulic models to determine hydrogen network statement of needs. These should be informed by the hydrogen flows between zones from the SSEP outputs.
- Industrial cluster systems models considering initial hydrogen supply and demand projects. These will assess physical and performance characteristics of the proposed system and test against various usage scenarios.
- Broader industrial view models: these will be informed by both of the previous two approaches and will consider the buildout of hydrogen networks beyond initial supply and demand connections within clusters, and how they can be connected together with storage sites and a wider strategic national network.

NESO's CSNP methodology consultation proposed that the hydrogen component of the CSNP will consider a range of options for meeting identified hydrogen network capability needs, which can be put forward by licensed parties (such as gas network owners), third parties and NESO themselves. Options could include both new-build hydrogen assets or the repurposing of existing gas network assets.

Whereas for electricity, and we expect for gas, improvements identified in the CSNP will be taken forward through the RIIO (Revenue = Incentives + Innovation + Outputs) price control,[22] hydrogen projects are currently mostly ineligible for funding via RIIO.[23] We anticipate that in

[22] Ofgem, Network Price Controls: 2021-2028 (RIIO-2).
[23] Hydrogen projects can be included in RIIO-2 (until 2026) through the Re-opener mechanism, and will not be included at all in RIIO-3 (2026-31). Ofgem, RIIO-3 Sector Specific Methodology Decision (July 2024).

the early years of the hydrogen economy most hydrogen infrastructure projects will be supported through the government's hydrogen business models. NESO's consultation therefore proposed that hydrogen network planning within the CSNP should focus primarily on infrastructure that is of sufficient capacity and significance to be considered for support under current or potential future rounds of the HTBM or HSBM. As decisions on HTBM and HSBM support must be taken by the Secretary of State, NESO also proposed that the hydrogen component of the CSNP should provide analysis of hydrogen network options to identify optimal network solutions, but should not set out a formal delivery pipeline for hydrogen projects. Chapter 2 sets out how DESNZ intends to consider NESO's strategic planning outputs in designing and setting policy for the hydrogen business models.

Storage is expected to play a vital role in the hydrogen system due to its anticipated importance in managing network imbalances and providing flexibility for low-carbon electricity generation. The CSNP methodology consultation sets out proposals for how storage will be considered across the three network tiers included in the hydrogen component of the CSNP.

NESO will continue to engage with industry and DESNZ on the strategic planning of hydrogen infrastructure through the CSNP, and intends to continue developing its detailed CSNP methodology for hydrogen network planning and engaging relevant stakeholders. NESO will engage across England, Scotland and Wales as it develops the SSEP. We also look forward to NESO further developing its economic modelling approach for the CSNP, noting the important role cost-benefit analysis will have in NESO's hydrogen deliverables.

Hydrogen's role in the first RESPs

The RESPs are intended as 'distribution-level' (in electricity and gas terms) plans to deliver accountability and coordination of strategic network planning at a local level. Using the SSEP pathway as a starting point, and complementing the SSEP and CSNP, the RESPs will consist of five outputs: a long-term view of regional conditions and priorities; short- and long-term pathways of future supply and demand; a geospatial view of pathways against network capacity data; identification of areas of regionally significant investment need; and common planning assumptions for consistent network planning. RESPs will convene regional stakeholders around a common view of how the energy system will develop to support local priorities and deliver national goals. By enabling coordinated development across multiple vectors, RESPs will support confident and efficient investment toward net zero.

We anticipate that RESPs from 2027 will consider hydrogen networks within regions based on anticipated hydrogen supply and demand. We therefore expect that the extent to which hydrogen infrastructure features in each RESP could vary significantly depending on local circumstances, such as regional network developments. RESPs will also be responsive to national policy, such as the potential role of hydrogen in home heating. Since 'distribution' is not currently a defined term in licence for hydrogen, we believe that NESO is best placed to determine, via the RESP methodology, the appropriate level of granularity for hydrogen

infrastructure in the RESPs and how they should account for hydrogen more broadly.[24] We expect NESO to consult on the RESP methodology in Q4 2025.

Ofgem's RESP Decision sets out that the RESPs will have a "direction-setting" role in the network planning process, with electricity distribution network operators and gas distribution networks required to align their investment plans with the strategic direction set by the RESPs. However, as with the CSNP, we anticipate that in the early years of the hydrogen economy most hydrogen infrastructure projects will be supported through the government's hydrogen business models. Chapter 2 sets out how we intend to consider NESO's strategic planning outputs in designing and setting policy for the hydrogen business models.

Future iterations of NESO's SEP documents

As the hydrogen economy develops and sequential versions of NESO's strategic energy plans are produced, we anticipate that the way in which hydrogen is considered in these strategic energy plans may evolve. We will continue to work closely with NESO and Ofgem to ensure that these plans are designed to meet the strategic needs of the growing hydrogen economy.

[24] As per the Ofgem RESP Decision, 1.13, which states that "the detail of which vectors and sectors will compromise a "whole-system" view is… a matter for NESO's methodology development".

Chapter 2: Interactions between NESO's outputs and DESNZ's hydrogen business models

In Chapter 1, we outlined the roles of NESO's SEP documents in relation to the hydrogen system. This chapter sets our position on how these publications will interact with DESNZ's hydrogen business models.

Having launched the first and second HARs (HAR1 and HAR2) in July 2022 and December 2023 respectively to support low-carbon hydrogen production,[25] the government is developing other business models to incentivise the development of a resilient, low-carbon hydrogen economy - the HTBM, the HSBM, and the H2PBM. We want to ensure these business models support projects with the maximum decarbonisation, security of supply and wider energy system benefits at the lowest sustained cost.

Strategic planning will help inform our approaches to the allocation of support across the different hydrogen business models to ensure that projects supported meet our overarching objectives to promote net zero, enable whole energy system benefits and unlock the development of an economic and efficient hydrogen market, as well as lowering the risk of stranded assets.[26] In its role as interim strategic planner for hydrogen T&S, the government intends to design the allocation rounds for the UK's first regional hydrogen network to be operational from 2031.[27] Government recently confirmed over £500 million support for hydrogen infrastructure, which will support this ambition.[28] NESO's whole system expertise makes its future strategic planning well-suited to informing DESNZ's hydrogen policy development including the use of business model support.

Whereas improvements to electricity and gas networks will be taken forward primarily through the RIIO framework, hydrogen projects are currently mostly ineligible under RIIO.[29] We therefore anticipate that the hydrogen business models will play a key role in supporting most hydrogen production, T&S and H2P projects in the early years of the hydrogen economy. As such it is important to consider the interactions and interdependencies between NESO's outputs and the hydrogen business models. The hydrogen component of the CSNP may impact on RIIO determinations for gas infrastructure where there are implications for the potential repurposing of gas pipelines. Policy decisions on the potential transfer of assets from

[25] DESNZ, Hydrogen Allocation Rounds (HARs) (2024).
[26] These objectives were laid out in the Hydrogen Transport and Storage Networks Pathway (December 2023).
[27] Government set out its understanding of factors that may influence T&S infrastructure requirements in the Hydrogen Transport and Storage Networks Pathway (December 2023).
[28] HM Treasury, UK Infrastructure: A 10 Year Strategy (June 2025).
[29] Hydrogen projects can be included in RIIO-2 (until 2026) through the Re-opener mechanism, and will not be included at all in RIIO-3 (2026-31). Ofgem, RIIO-3 Sector Specific Methodology Decision (July 2024).

the RIIO framework to the HTBM will be taken as part of future HTBM design. Ofgem published a consultation on the valuation methodology for such assets in May 2025.[30]

This policy statement focuses primarily on hydrogen T&S infrastructure. Nonetheless we have already set out that the SSEP will indicate optimal quantities and types of electricity generation and hydrogen production across different GB zones. Given the close linkages between hydrogen production, H2P and T&S, as well as the electricity and gas networks, it is important to also consider the interactions between NESO's outputs, and the HPBM and H2PBM.

Consideration of NESO's outputs in future allocations of the hydrogen business models

We intend to have due regard to the outputs of NESO's strategic energy plans when developing our overall strategy for the hydrogen economy and when designing future allocations of the HTBM, HSBM, HPBM and H2PBM, beginning with any allocations launched after publication of the first SSEP. For the HPBM, this position will apply both to the HARs and to hydrogen production projects included in the CCUS programme.[31] We may also have regard to NESO's outputs, where appropriate, as relevant evidence when assessing applications through the business models.

This approach is consistent with our previous position that some form of strategic planning, combined with elements of market-led development, is necessary to enable the efficient, cost-effective and timely roll-out of T&S infrastructure. When designing future hydrogen business model allocations we will weigh NESO's outputs against the need to maintain open competition and value-for-money and affordability considerations.

As NESO is yet to publish the first iterations of its SEP documents, there remains some uncertainty about how hydrogen will feature in these plans, and consequently about how we will consider NESO's outputs for the hydrogen business models. We will consider how best to implement our approach for each business model when designing any future business model allocations due to launch after publication of the first SSEP. For instance, we could use NESO's hydrogen outputs to inform the setting of ambitions, eligibility criteria and evaluation criteria, as well as other factors in future hydrogen business model allocation design. DESNZ will continue to assess a range of information beyond NESO's outputs when objectively formulating its evaluation criteria, and will continue to assess projects applying to the business models against a range of criteria, including deliverability, affordability and value-for-money.[32] When drawing on NESO's advice we will give due consideration to differences in the structure, objectives and commercial approach of each business model – including wider CCUS-related

[30] Ofgem, Ofgem's proposed asset valuation methodology for repurposing of natural gas assets: consultation (May 2025).
[31] DESNZ, Cluster sequencing for carbon capture, usage and storage (CCUS) deployment: Phase 1; Cluster sequencing for carbon capture, usage and storage (CCUS): Track-2.
[32] DESNZ, Hydrogen Transport Business Model: market engagement on the first allocation round (December 2023); Hydrogen Storage Business Model: market engagement on the first allocation round (December 2023); DESNZ, Hydrogen Allocation Rounds (2024).

decisions in relation to CCUS-enabled hydrogen production – as well as to the differing outputs and objectives of NESO's SEP documents.

As the timing of the launch of future hydrogen business model allocations may not always align neatly with NESO's strategic planning publications, there could be a gap between an output being put forward by NESO and it being considered for the design of the relevant business model. If this is the case, we will carefully review NESO's outputs to determine whether they are in line with updated evidence and expectations for the hydrogen economy and may adjust our approach to business model allocation design accordingly. We will continue to review and update our position on the relationship between NESO's strategic planning outputs and the hydrogen business models in line with any wider developments in business model strategy or how hydrogen is considered in their outputs.

CCUS-Enabled Hydrogen Production

We are adopting the same overarching approach to considering NESO's outputs for CCUS-enabled hydrogen production supported through the CCUS programme as for the other parts of the hydrogen value chain. In addition to the full hydrogen value chain, the treatment of CCUS-enabled hydrogen production in NESO's strategic planning will also have to consider the location and capability of CCUS networks. We have provided NESO with modelling assumptions to ensure that the build-out of CCUS-enabled hydrogen production in the SSEP is consistent with the CCUS programme, and will continue to provide updated assumptions as long as NESO deems these useful.

The CCUS Vision, published in December 2023 under the previous government, stated that further consideration is needed for the degree of strategic coordination in the CCUS sector as it evolves into the 2030s, including any potential role for NESO.[33] In principle DESNZ believes that NESO, which will account for the whole energy system in its strategic planning, could have an important role to play advising on the future strategic direction for CCUS networks. NESO's exact role in coordinating future CCUS development is however subject to future DESNZ policy decisions on the development of the CCUS market and has not been defined at this stage.

Updating stakeholders on how we are considering NESO's outputs

At future points, for instance following the publication of a strategic energy plan or at the launch of a business model allocation, we realise stakeholders may be interested to know more about how we are considering NESO's outputs. Consequently, in future we will look to set out in greater detail how we are considering NESO's hydrogen deliverables in future business model strategy and allocation design. We will decide nearer the time how best to provide this information - this could take the form of a standalone document or be included within another

[33] DESNZ, CCUS Vision to Establish a Competitive Market (December 2023).

publication, such as the market engagement documents for an upcoming allocation. As we progress with business model design we will continue to assess what information to provide to stakeholders, being mindful of any commercially sensitive information.

The potential for differences between infrastructure delivered through the hydrogen business models and NESO's strategic planning outputs

As stated above, we intend to have due regard to NESO's hydrogen outputs when designing future allocations of the HTBM, HSBM, HPBM (via the HARs and CCUS-enabled hydrogen production supported through the CCUS programme) and H2PBM, beginning with any allocations launched after publication of the first SSEP. We consider that the SSEP's strategic view of the whole energy system, which will form the basis of the CSNP and RESPs, and its assessment of the potential trade-offs and interactions between electricity, hydrogen and gas infrastructure will have an important role to play in shaping the strategic direction for the hydrogen economy.

We place an emphasis on the value of NESO's strategic planning but remain mindful that DESNZ must conduct an independent and objective allocation process when taking decisions about the allocation of business model contracts. This will involve consideration of other factors beyond NESO's strategic planning including, but not limited to, the deliverability, affordability and value-for-money of particular projects, and our policy and strategic aims for particular allocation rounds. This means there could be differences between the hydrogen infrastructure delivered through the business models and that included in NESO's SEP publications. Other factors, such as a lack of projects applying that align with NESO's outputs or our understanding of the roles of different parts of the hydrogen system evolving more quickly than the timelines required for NESO's modelling, could also have an impact. In some cases, DESNZ might also choose to support projects that are not included in NESO's strategic planning in support of wider objectives.

As hydrogen is an emerging technology in a nascent market, there is likely to be far greater uncertainty around hydrogen infrastructure needs than for electricity and gas, which could increase the chance of differences arising between NESO's strategic planning outputs and infrastructure delivered through the hydrogen business models.

Sharing information between DESNZ and NESO

Noting the value of NESO's strategic planning to DESNZ and development of GB's energy system, we will continue to work closely and share information with NESO as it develops its SEP documents, including sharing modelling assumptions where NESO finds these useful. We have already shared modelling assumptions with NESO covering the full hydrogen value chain to support in the development of the first SSEP. We would also expect NESO to consider the results of our hydrogen business model allocations so these can be accounted for in NESO's

subsequent strategic planning. NESO's CSNP methodology consultation, published in June 2025, proposed that future iterations of the CSNP would include updates on the progress of hydrogen network proposals based on updates from the developer, DESNZ and Ofgem.

Potential future changes to approach

The above discussion is predicated on the assumption that, in the nearer-term, most new hydrogen projects will be supported through the hydrogen business models. In the longer-term, we anticipate that this may cease to be the case if there is no longer a need for the same scale or type of government funding support in a mature, competitive and resilient hydrogen market.

In this scenario, alternative arrangements would be needed to fund any improvements or extensions to the hydrogen network which, in principle, should also be informed by NESO's strategic energy plans. How NESO's strategic planning informs funding decisions in such a scenario will depend on various factors, including future decisions on licensing and market framework, and so cannot be determined at this time. We have begun considering the principles of a future hydrogen economic regulatory framework, consulting in July 2025. We will seek further input from stakeholders when making future decisions about post-business model arrangements.

Chapter 3: Additional NESO responsibilities for hydrogen beyond its SEP documents

This chapter considers other strategic and operational functions NESO already possesses (conveyed via Section C of the GSP licence) and states our policy view as to whether we would favour NESO also actioning these responsibilities in relation to hydrogen as well.

Critical National Infrastructure

NESO also has responsibilities to support the identification of CNI across electricity and gas infrastructure. Hydrogen infrastructure could in the future be deemed CNI, defined as national assets that are essential to the functioning of society. Our view is that NESO should consider the potential role of future hydrogen infrastructure as CNI by including hydrogen within scope of CNI assessment methodology.

Other strategic and operational functions

NESO should consider hydrogen to the extent it deems appropriate when discharging its other existing strategic and operational functions. This includes the functions covering the GSSA, energy resilience and reporting, market strategy coordination and innovation. In relation to the GSSA, depending on the development of GB's hydrogen system and our policy development, we may in future request NESO conducts a hydrogen supply security assessment as a counterpart to the GSSA. However, more information and future decisions in relation to hydrogen production, offtakers and network development, are required before we can assess how and when a hydrogen-equivalent GSSA should be first conducted. We consider that energy system resilience, gas market decarbonisation and innovation are all critical to the development of reliable and efficient hydrogen networks.

Conclusion

In its role as hydrogen strategic planner, NESO will provide increased insight and analysis to support the delivery of the hydrogen infrastructure needed to contribute to the decarbonisation of key sectors, including the power system. NESO will also facilitate the hydrogen system's resilience and integration across the energy system, ensuring alignment between hydrogen supply and demand, and supporting greater volumes of hydrogen-to-power, strategically contributing to the GB power network. NESO's whole system planning and market development roles will aim at optimising the UK's energy system, contributing to the government's ambition for Clean Power 2030, and its legal obligations to reach net zero by 2050.

NESO is best placed to take on the hydrogen strategic planner role, taking an independent, impartial approach to whole system energy system planning, and prioritising holistic thinking, cost-efficiency and sustainability. This document has set out our policy aims for NESO with regards to hydrogen strategic planning, as well as some other strategic and operational functions NESO is licensed to undertake through the GSP licence. NESO's strategic energy plans, the SSEP, CSNP and RESPs, will or are envisaged to incorporate hydrogen from the outset, interacting coherently with one another to set out a coordinated vision for strategic planning across the whole energy system. NESO's SEP documents will consider hydrogen in relation to other energy vectors so that cross-system benefits and efficiencies can be realised. We intend to have due regard to NESO's strategic planning outputs in designing future allocations of the hydrogen business models (the HPBM via the HARs and CCUS-enabled hydrogen production supported through CCUS programme, HTBM, HSBM and H2PBM).

NESO will continue to build its hydrogen strategic planning capability ahead of its first tangible output for hydrogen strategic planning, which will be the SSEP due by late 2026. DESNZ will still however maintain a strategic planning role since it will remain responsible for awarding business model support to hydrogen projects across the value chain.

NESO's role in hydrogen strategic planning is pivotal for the robust development and integration of hydrogen infrastructure, facilitating government's broader aims for a sustainable, low-carbon hydrogen economy that decarbonises hard-to-abate industries, generates low carbon power and promotes economic growth. As the UK pursues its economic growth and clean energy missions, NESO's strategic planning will help provide a solid foundation to ensure efficient and timely deployment of hydrogen infrastructure, contributing to an energy system that is more secure, delivers better value for money, and meets our net zero goals.

This publication is available from: www.gov.uk/government/publications/hydrogen-infrastructure-strategic-planning-policy-statement

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