Decision

Decision on the framework for the Future System Operator's Centralised Strategic Network Plan

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This is a decision document on the Future System Operator's (FSO) role in developing a strategic network investment plan - the Centralised Strategic Network Plan (CSNP) - to support the government's decarbonisation and net zero targets.

This document sets out our decision on how, and when, we expect the FSO to produce the CSNP and its related publications (including the Future Energy Scenarios (FES), together with the interaction between the CSNP and the Strategic Spatial Energy Plan (SSEP)). It sets out our decisions on areas we consulted on in May and July 2023.

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1. Introduction

Background

1.1 Ofgem is working with government to set up an independent system operator (the 'Future System Operator') by summer 2024. We intend for this body to be the central whole-system planner for the energy system, at both national and regional levels. In November 2022, Ofgem set out its decision that the Future System Operator (FSO) will be responsible for creating a new Centralised Strategic Network Plan (CSNP).[1]

1.2 The aim of the CSNP is to provide an independent, coordinated, and longer-term approach to wider network planning in GB to help meet the government's net zero ambitions. At first, this will focus on the electricity transmission network - onshore, offshore and interconnectors, as well as gas transmission and the proposed hydrogen network at the national level.[2]

1.3 The CSNP will help us to make quicker investment funding decisions about increasing the capacity in the wider network in preparation for local network developments such as the connection of low carbon energy sources and low carbon demand. It will also help keep costs of this investment as low as possible.

1.4 Ofgem's role in relation to the CSNP is to:

- set the objectives, principles, and scope
- set the regulatory framework for Future System Operator (FSO) to deliver the CSNP
- approve the FSO's methodologies for producing the CSNP in line with its licence obligations.

[1] https://www.ofgem.gov.uk/publications/decision-initial-findings-our-electricity-transmission-network-planning-review

[2] In November, we published our decision on the future governance and institutional arrangements for regional energy system planning: Decision on future of local energy institutions and governance | Ofgem

1.5 Ofgem is also responsible for adapting the broader regulatory framework, such as the network price controls, for how the CSNP will inform network planning and investment decisions.

1.6 In addition, Ofgem is working with the government and the FSO to establish the governance arrangements to validate the key inputs and monitor the outcomes of the CSNP to ensure it delivers value for money to consumers and supports the government's net zero transition.

1.7 In August 2023, Nick Winser, the Electricity Networks Commissioner (ENC), recommended that a strategic spatial energy plan (SSEP) be the foundation for future network planning.[3] The purpose of the first SSEP is to co-ordinate generation and transmission infrastructure in time and space, leading to lower carbon and congestion costs for consumers. In November 2023, government confirmed that this should proceed and that the FSO should develop it.[4]

1.8 We are working with government to commission the FSO to produce the first SSEP. Once a SSEP has been produced it should inform the first longer-term CSNP in 2026 covering the transmission network needed to deliver the spatial energy plan.

1.9 The CSNP will identify a firm delivery pipeline of work for transmission network development for the first 12 years, and a view on the longer-term pathway covering a 25-year horizon. The firm delivery pipeline will help us "lock in" transmission investments needed to be on track for net zero; while the longer-term pathway will identify potential strategic options to reduce long-term costs for consumers.

Context and related publications

1.10 In May 2023, we consulted on stage 1 – future energy demand and supply modelling ('May consultation') and in July 2023 ('July consultation') we consulted

[3] https://www.gov.uk/government/publications/accelerating-electricity-transmission-network-deployment-electricity-network-commissioners-recommendations
[4] https://www.gov.uk/government/publications/electricity-networks-transmission-acceleration-action-plan

on stages 2, 3 and 4 of the framework for identifying, assessing and selecting transmission investment options for the CNSP.

1.11 We received 25 responses in May and 29 responses in July from a range of stakeholders and we have engaged with stakeholders since then to get a better understanding of their views. We have published all non-confidential responses[5] we received on our website, alongside this document.

1.12 This document sets out our decision on stages 1 to 4 of the CSNP, having taken responses to our consultations into consideration.

1.13 The core documents relating to this area of work are:

- Government's Electricity networks: transmission acceleration action plan, November 2023[6]
- Electricity Networks Commissioner report, Accelerating electricity transmission network deployment, August 2023[7]
- Centralised Strategic Network Plan: Consultation on framework for identifying and assessing transmission investment options: our July 2023 consultation that precedes this decision[8]
- Consultation on FSO supply and demand modelling: our May 2023 consultation that precedes this decision[9]
- Decision on the initial findings of our Electricity Transmission Network Planning Review, November 2022 (from here on referred to as ETNPR decision)[10]
- Consultation on our Minded-to Decisions on the initial findings of our Electricity Transmission Network Planning Review, July 2022 (from here on referred to as ETNPR minded-to decision consultation)[11]

[5] We received one response to the July consultation that was marked confidential.
[6] https://www.gov.uk/government/publications/electricity-networks-transmission-acceleration-action-plan
[7] https://www.gov.uk/government/publications/accelerating-electricity-transmission-network-deployment-electricity-network-commissioners-recommendations
[8] Centralised Strategic Network Plan: Consultation on framework for identifying and assessing transmission investment options | Ofgem
[9] Consultation on Future System Operator supply and demand modelling | Ofgem
[10] Decision on the initial findings of our Electricity Transmission Network Planning Review | Ofgem
[11] Consultation on our Minded-to Decisions on the initial findings of our Electricity Transmission Network Planning Review | Ofgem

- Consultation on the initial findings of our Electricity Transmission Network Planning Review, November 2021 (from here on referred to as ETNPR consultation).[12]

Next steps

1.14 In the first half of 2024 we will consult on the draft licence conditions that are needed to implement the decisions set out in this document for the FSO to deliver the FES, SSEP and CSNP. We expect our consultation on these licence conditions to form part of a joint Department for Energy Security and Net Zero (DESNZ)/Ofgem statutory consultation in spring 2024 to bring into effect the Day 1 FSO in summer 2024. In parallel, we will work with stakeholders on the relevant associated documents to the licence condition, the FES and CSNP Guidance documents, which will set out in more detail how we expect the FSO to carry out its obligations. For example, we might highlight considerations that we expect the FSO to incorporate in its analysis and set out in its CSNP Methodology. The CSNP Guidance document will also be subject to consultation.

1.15 We also expect the Electricity System Operator (ESO) to share its plan and timetable with stakeholders in early 2024 for developing and consulting on its CSNP Methodology.

1.16 Work is ongoing with the ESO, DESNZ and Ofgem to develop a strategic governance group. We expect that the governance group will have an enhanced role in scrutinising and validating inputs and outputs over the whole CSNP network planning process. This should help to streamline investment decisions for the network solutions that are included in the CSNP at a later stage. This will include informing and reviewing the FSO's CSNP Methodology and other key inputs such as the SSEP and the FES, to ensure the CSNP will enable the network investment to meet net zero, while considering overall costs to consumers.

Your feedback

1.17 We welcome any feedback about this document, and answers to these questions:

- Do you have any comments about the overall quality of this document?
- Do you have any comments about its tone and content?

[12] Consultation on the initial findings of our Electricity Transmission Network Planning Review | Ofgem

- Was it easy to read and understand? Or could it have been better written?
- Are its conclusions balanced?
- Did it make reasoned recommendations?
- Any further comments?

1.18 Please send any general feedback comments to stakeholders@ofgem.gov.uk

2. Overview of our CNSP decisions

Section summary

This section provides an overview of our decisions on two overarching CSNP policy areas that stakeholders asked for more clarity on – its scope and how the CSNP affects the roles and responsibilities of network owners for planning their networks. It also provides an update on the government's Transmission Acceleration Action Plan and its interactions with the development of the CSNP.

2.1 There were two key overarching areas of CSNP policy where stakeholders, in responses to the July consultation, asked for greater clarity from us. This was the scope of the CSNP and role and responsibilities of parties contributing to it. Below, we have summarised our positions and provide a reference point to the related decisions in this document.

Section 1 - Changes to the CSNP's scope

Our consultation

2.2 In the July consultation, we confirmed our previous decision that the first CSNP in 2026 will be a whole-system assessment, covering onshore, offshore, and cross-border transmission network needs (out to 2050), as well as network developments needed for gas transmission and the proposed hydrogen network.[13]

2.3 We also said that in the CSNP the FSO would cover all network needs for load-related network planning.[14] We proposed that this includes planning to meet future government targets for the connection of specific generation technologies eg strategic connection exercises similar to the Holistic Network Design (HND), and other significant connections such as new nuclear generators or an accumulation of individual connections in an area.

[13] Paragraph 3.2, Centralised Strategic Network Plan: Consultation on framework for identifying and assessing transmission investment options | Ofgem
[14] Paragraph 4.3, Centralised Strategic Network Plan: Consultation on framework for identifying and assessing transmission investment options | Ofgem

2.4 One implication of our proposed scope is that it would have meant the FSO taking on some responsibility for local level planning of the electricity transmission networks. Some examples of local network planning are:

- Enabling works that are triggered by one or more connections of new generators to the transmission network.
- Local network works to maintain compliance with the National Electricity Transmission System (NETS) Security and Quality of Supply Standard (SQSS)[15]
- Strategic/anticipatory investment on the local network, to create additional capacity at substations for projected connections, combining it with non-load related works where appropriate, or to expand grid supply points for anticipated demand/generation changes on the electricity distribution network.

Our decision

2.5 We have decided that in the first CSNP, the FSO should focus on addressing wider system needs on the main integrated transmission system (the MITS) to:[16]

- facilitate timely wider transmission system reinforcement; and
- extend the MITS to new areas of potential generation and demand.

2.6 The FSO will also identify operational issues in the CSNP that are emerging on the NETS. Where suitable, the FSO will signal the requirements for options to address voltage, stability or constraints management issues and run a competitive

[15] https://www.nationalgrideso.com/industry-information/codes/security-and-quality-supply-standard-sqss

[16] The MITS is defined in the Connection and Use of System Code as comprising MITS Substations and Main System Circuits. MITS substations are defined as transmission substations with connections to more than 4 Main System Circuits. A Main System Circuit is defined as a Transmission Circuit but excluding a Grid Supply Point (GSP) transformer circuit. A Transmission Circuit is defined in the NETS SQSS as either an Onshore Transmission Circuit or an Offshore Transmission Circuit. An Onshore Transmission Circuit is defined as part of the onshore transmission system between two or more circuit-breakers which include, for example, transformers, reactors, cables and overhead lines and DC converters, but excludes busbars, generation circuits and offshore transmission circuits. Similarly, an Offshore Transmission Circuit is defined as part of an offshore transmission system between two or more circuit-breakers which includes, for example, transformers, reactors, cables, overhead lines, and DC converters but excludes busbars and onshore transmission circuits. A GSP is a point of delivery from the National Electricity Transmission System to the electricity distribution network or to a directly connected customers. Therefore, the MITs is a subset of the NETS which comprises both the onshore transmission system and the offshore transmission systems.

procurement process to secure these options efficiently. This is a continuation of the competitive procurement process known as Network Services Procurement (also known as "NOA Pathfinders").[17]

2.7 We have decided that local planning of the electricity transmission networks is outside the scope of the first CSNP which is why we have decided the focus should be on wider system needs on the MITS. We note, however, that there are circumstances where it will be necessary for the FSO and electricity transmission owners (TO) to cooperate on some aspects of local network planning as part of the CSNP. For example, where a wider network reinforcement strategy also requires changes to a part of the local network, or a local network reinforcement forms part of wider strategic reinforcement. More generally, we expect that the TOs' load-related and asset replacement for local transmission network planning to inform, and be informed by the CSNP, where the interactions with the wider network are relevant. We consider this further in Chapter 6, Decision 3.

Stakeholder responses and rationale for our decision

2.8 In response to the July consultation, the TOs highlighted concerns about 'scope creep' in the FSO's planning responsibilities. They considered that expanding the FSO's planning responsibilities to the local transmission network could risk non-delivery of the CSNP by over-burdening the FSO. They noted that the FSO also needs to build up its capability quickly for its other new planning responsibilities. The TOs consider they are best placed to continue local network planning, in accordance with their legal and regulatory obligations,[18] because of their experience and expertise in local transmission network activities.

2.9 We acknowledge that the scope of the CSNP proposed in the July consultation represented a significant expansion in the FSO's planning responsibilities compared to the current ESO's responsibilities. In addition to new gas transmission and potential hydrogen planning responsibilities, the FSO will also be undertaking environmental appraisals and public consultation on the CSNP. It is imperative that this new spatial element of the ESO/FSO's network planning is

[17] The ESO uses the Network Services Procurement process (also known as "NOA Pathfinders") to procure market solutions to specific network needs, such as stability, voltage, or constraint management.
https://www.nationalgrideso.com/industry-information/balancing-services/pathfinders
[18] This includes the need to plan and develop their network in compliance with the SQSS.

robust so that it gives more certainty on the planning and consenting process for the delivery of new infrastructure.

2.10 To deliver these new activities, the ESO/FSO will undergo a period of rapid resourcing and new skills acquisition to develop, in collaboration with the network owners and other stakeholders, the necessary frameworks, capabilities, processes, methodologies, tools and evidence base. We agree with stakeholders that it is important that the FSO, for the purpose of the CSNP, can focus its efforts on areas where it can add the most value. Therefore, we have decided that local transmission network planning will not be in scope of the first CSNP, and that it will focus on wider system needs on the MITS. This is discussed further in Chapter 5, Decision 1 and also in Chapter 6, Decision 3.

Section 2 - Roles and responsibilities

Our consultation

2.11 As explained in the decision document to create a new independent FSO, we and the government expect the FSO to have a leading role in shaping the UK's energy system to meet net zero and energy security.[19]

2.12 In the July consultation we said that under the CSNP the FSO would take on the lead role for load-related network planning across Great Britain. We also said that we expect the FSO to develop a CSNP process that is highly collaborative, so that the FSO, network owners and third parties[20] can develop options to meet system needs.

Our decision

2.13 Following consideration of the consultation responses, our decision on the role of the FSO in the CSNP, is that it is responsible for planning the MITS to meet wider system needs. The TOs will continue to be responsible for local network planning to accommodate specific generation and demand connections in accordance with their legal and regulatory obligations, including the SQSS. This will need to be

[19] Future System Operator: government and Ofgem response to consultation (publishing.service.gov.uk)

[20] Third parties in this document refers to businesses other than the incumbent licenced transmission owners, who may have an interest in developing the transmission system. Our decisions on the way in which third parties can be involved in CSNP are explained in Chapter 6, Decision 4 and Chapter 8, Decision 3.

aligned with reforms to connections arrangements, and the TOs will be expected to plan and deliver local infrastructure build, such as substations, to anticipate and enable the increasing volumes of electricity connections. Similarly, the TOs will remain responsible for developing and putting forward options to meet the wider system needs on the MITS identified by the FSO to meet their statutory and licence obligations on planning the transmission system.[21] In addition, the TOs will continue to collaborate with the FSO on identifying system needs within the CSNP (see Chapter 5, Decision 1).

2.14 We have decided to retain our proposal for the FSO to put forward its own options to meet wider system needs where it considers there could be benefit from it doing so. As part of this decision, we will require the FSO to collaborate with the relevant TO(s) to ensure options are deliverable given the potential impact they could have on a TO's network, other option development within the CSNP, and network plans outside the scope of CSNP. We consider this further in Chapter 6, Decision 3.

2.15 We recognise that wider stakeholders may benefit from more information about the respective roles of the FSO and network owners within the CSNP. Therefore, we have decided that the FSO will work with the TOs on the CSNP Methodology to develop how the FSO and TOs will work together on the CSNP, including their specific roles, contribution, key areas of cooperation and responsibilities.

2.16 In summary, our view on CSNP roles and responsibilities is that:

- The FSO will have overall accountability for delivering the longer-term CSNP and ensuring overall compliance with NETS SQSS for the wider system (see Chapter 8, Decision 4).
- The FSO and network owners will cooperate on identifying wider system needs and operational issues for the CSNP (see Chapter 5, Decision 1).
- The FSO will communicate system needs to third parties, network owners and wider stakeholders (see Chapter 5, Decision 4).

[21] These are Electricity Transmission licence standard condition B12: System Operator – Transmission Owner Code and standard condition D3: Transmission system security standard and quality of services.

- TOs will continue to be responsible for providing reinforcement options to meet statutory and licence obligations on planning their transmission system (see Chapter 8, Decision 4).
- Third parties will be able to put forward options to meet network needs under the CSNP (see Chapter 6 Decision 4 and Chapter 8, Decision 3).
- The FSO will put forward its own options to meet system needs where it considers there could be benefit from it doing so (see Chapter 6, Decision 3).
- The FSO will evaluate all options (including commercial options) to select the optimal solutions to deliver an economic and efficient transmission system (see Chapter 7, Decisions 1 to 7).
- The TOs will be responsible for the timely delivery of network solutions selected by the FSO and assigned to them in the CSNP delivery pipeline to fulfil their licence obligations to develop the transmission system.

Stakeholder responses and rationale for our decision

2.17 In their consultation responses, the TOs expressed the following concerns in relation to roles and responsibilities under the CSNP proposals:

- They perceived that the July consultation proposals transferred much of their existing responsibility for load-related network planning to the FSO.
- A significant change in their existing roles which would not correspond to their licence obligations and their statutory responsibilities in relation to their network, such as complying with the SQSS.

2.18 We acknowledge that in the July consultation, we could have expanded more on the important roles that network companies will have in network planning and the CSNP. In this decision document, we are confirming that the TOs will retain their responsibilities for local transmission network planning to comply with standards concerning security of supply, voltage, power quality, or to plan protection and control projects to ensure a safe, reliable, and operable network.

2.19 The TOs will also be important collaborators on the development and delivery of the CSNP. The TOs will also be responsible for designing and putting forward options to meet wider system needs on the MITS in their transmission area, and for delivering network infrastructure assigned to them when the need is established in the CSNP. Both roles fulfil their licence obligations to develop the transmission system.

2.20 We have looked into the TOs' concern that our proposal for the FSO to identify options could create a mismatch between the TOs' roles and licence obligations. We remain of the view that there are benefits of the FSO, as the central planner, developing high level options for consideration in the CSNP.[22] We consider that the risks can be managed effectively by the FSO and TOs:

- working jointly on the CSNP Methodology to embed a genuinely collaborative approach within the network planning process, particularly on areas with a high degree of interaction, and
- investigating if the SQSS can be amended to reduce the risk of different interpretations about how the standards should apply.

2.21 We note that the TOs' and FSO's SQSS licence conditions do not assign distinct planning accountabilities based on scope of network planning (wider versus local). As our decision is not making any fundamental change in the party responsible for these activities, we consider that licence changes are not necessary at this time. However, if the roles and responsibilities under the CSNP are developed further, as a result the CSNP Methodology or any SQSS review, we will consider whether licence changes are necessary.

Section 3 - The government's Transmission Acceleration Action Plan

2.22 On 22 November, the government published its Transmission Acceleration Action Plan ('TAAP')[23]. This is its response to the Electricity Network Commissioner's report ('ENC Report')[24] on accelerating electricity transmission network build.

2.23 The ENC Report was published on 4 August 2023 during the consultation period for our July consultation. Several of the recommendations related directly to the CSNP. A number of stakeholders responding to our consultation noted the interaction and importance of considering these recommendations in our decision.

[22] Please see Decision on the initial findings of our Electricity Transmission Network Planning Review (ofgem.gov.uk) for further elaboration on the expected benefits.
[23] Electricity networks: transmission acceleration action plan - GOV.UK (www.gov.uk)
[24] Accelerating electricity transmission network deployment: Electricity Networks Commissioner's recommendations - GOV.UK (www.gov.uk)

2.24 Since the publication of the ENC Report, we've worked closely with government, the ESO and industry to consider its implications. We are supportive of the TAAP and we will support the government and ESO/FSO to take forward their actions.

2.25 Most of the ENC report recommendations that related to the CSNP were broadly aligned with our positions in our July consultation. In our decisions, we've sought to highlight the links with the ENC Report and TAAP and Appendix 1 maps out the interlinkages.

2.26 One ENC Report recommendation, which has significant implications for network planning and interacts with the proposals in the May and July consultations respectively on the FES and the CSNP, was the development of a SSEP. Government has adopted this recommendation in the TAAP and confirmed:

- The SSEP will define the optimal mix and location of clean generation and storage to meet forecast demand and net zero targets.
- The SSEP outputs should inform the development of the CSNP and will be produced using policy inputs and priorities provided by government, with oversight from Ofgem.
- It will commission the ESO, in advance of becoming the FSO, in early 2024 to produce the first SSEP.

2.27 Government has confirmed in the TAAP that it will clarify the ESO's requirements to produce the first SSEP early next year. We think that the ESO's ongoing work on the FES will support the SSEP work over the coming months. The ESO plans to publish the FES in summer 2024 but we expect that the first SSEP will be an important part of the 'Stage 1' of CSNP development.

2.28 Given the first SSEP is not expected to be produced until late in the financial year 2024/2025, we have decided to continue with our proposed changes for producing the FES, the next iteration of which will be published in the Summer of 2024. This will allow the ESO to continue with their initial work on the analytical underpinning for the SSEP and the CSNP, whilst also addressing stakeholders' concerns that a delay in the production or approval of the SSEP would leave them with no modelling outputs to base their provisional planning on. Our decision takes into account two main considerations:

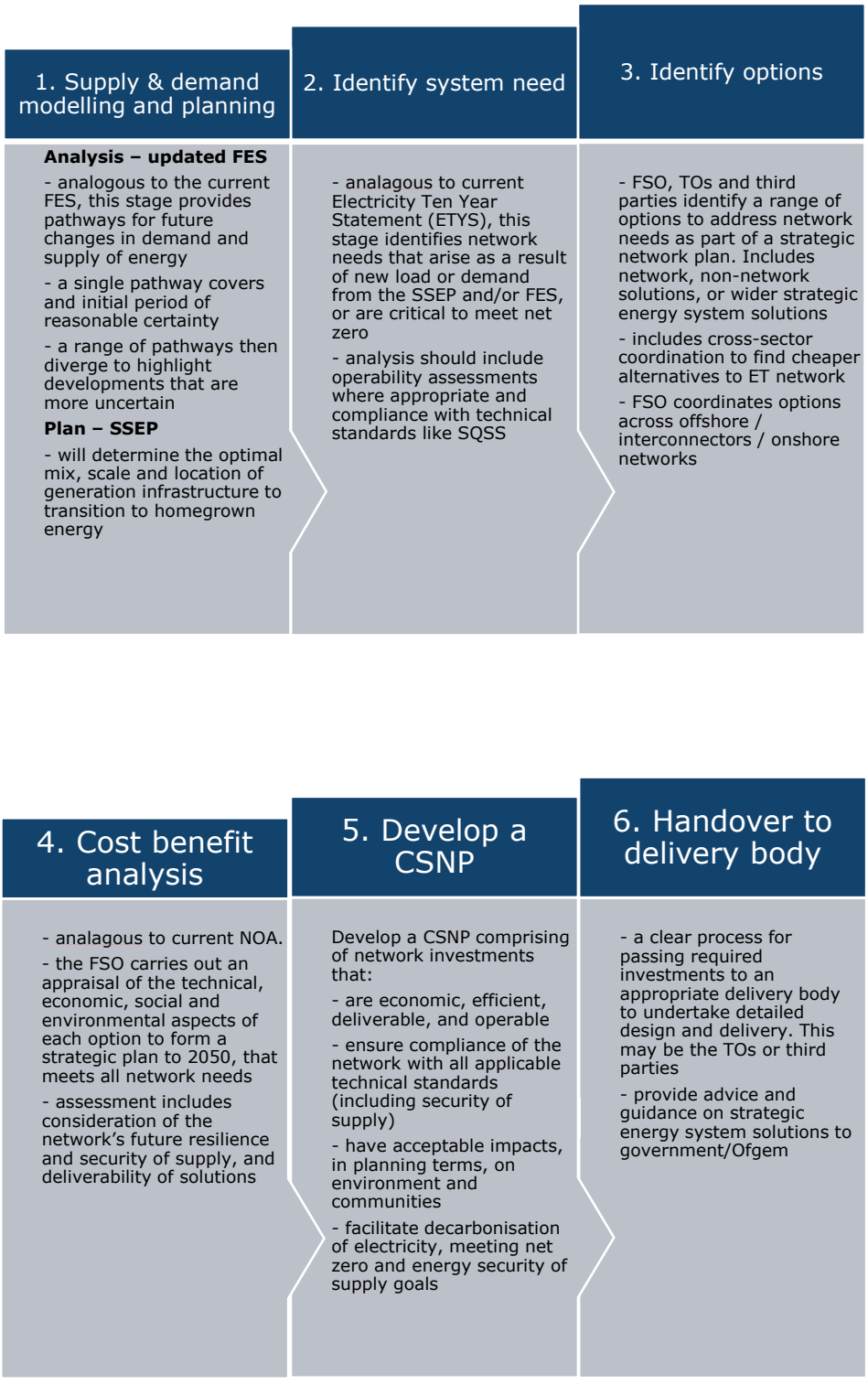
- As highlighted by most responses to our May consultation, the FES has many uses for industry and government, beyond its input into the network planning processes, and the changes we proposed were widely welcomed for those purposes also. It is important that these wider uses of the FES are not disrupted.
- It will inform the business planning thinking already ongoing for the RIIO-3 price control, with business plans due to be submitted in December 2024. RIIO-3 should have the flexibility to take account of the recommendations in the SSEP, but until it is published, business plans will need to be built on a common understanding of the supply and demand landscape currently produced by the FES. We are consulting on the use of scenarios in our 'RIIO-3 Sector Specific Methodology Consultation' (RIIO-3 SSMC).

2.29 As set out in Chapter 4 Decision 1, stage 1 aims to model the macro-level supply and demand environment and provide key inputs to use in the FSO's development of the CSNP. In our May consultation our presumption was that FES is the main product to do this. We were, however, clear (and have confirmed in this decision) that the FSO's supply and demand modelling needs to be able to evolve to remain robust. We also said that it appropriate for the FSO to determine what CSNP products stakeholders need, and their timings. The introduction of the SSEP (alongside the FES) will enhance the FSO's supply and demand modelling capability. We will collaborate with the ESO, government, and relevant stakeholders in 2024 to establish the scope and process for the first SSEP, and how it will be incorporated into stage 1 of the CSNP.

2.30 We will consult on a licence condition for the FSO to produce an SSEP in our joint DESNZ/Ofgem statutory licence consultation for the FSO licence in early 2024. This will include setting expectations for how the FSO's CSNP Methodology should be adapted in line with government requirements for the SSEP, through creation of associated Guidance for developing CSNP, FES, and SSEP Methodologies.

2.31 The diagram below shows how the stages of CSNP development will include the new SSEP.

Figure 1: Stages of the CSNP



Section 4 - Bringing the CSNP together

2.32 Effective governance across the whole CSNP process (stages 1 to 6) is critical for the effective delivery of network requirements; effective governance needs to be established early next year. Work is ongoing with the ESO and DESNZ to consider how to establish strategic governance groups to inform, review, and where required, endorse key inputs and outputs over the whole CSNP development process (from stage 1). We envisage these groups bringing together Ofgem, DESNZ, the ESO/FSO and network companies - building on the Network Options Assessment (NOA) forum today and governance of the HND. To support this, we may use the CSNP Governance document to set out any specific requirement for the FSO relating to strategic governance. We expect the ESO/FSO in developing its FES Methodology and CSNP Methodology to identify where key engagement points are and to consider how best to mobilise stakeholders to inform its CSNP products. We will provide final oversight and approval of the CSNP and FES Methodologies.

2.33 Stage 6 (See Figure 1 above) of the CSNP requires a clear process to be established for passing FSO identified system investments to an appropriate delivery body (either TOs or third parties). This includes defining the roles and responsibilities of Ofgem and government for providing guidance and/or signing off key inputs and outputs across the full process of developing the CSNP. In our RIIO-3 SSMC we are consulting on the regulatory treatment of the outputs from the CSNP in the next price controls. This includes consideration of what the regulatory framework for funding will look like. We expect further engagement ahead of the RIIO-3 final determinations.

3. CSNP outputs and products

Section summary

We set out our decision on the main CSNP outputs and publications that the FSO will produce and how they should work.

Background

3.1 In the July consultation we described how the ESO envisages that the FSO will deliver the CSNP. This included the scope, timings, and interaction of the various CSNP products to enable the FSO to make recommendations.

Our Decisions

Decision 1 – CSNP outputs, timing, and products

Background

3.2 In our July consultation, we set out the ESO's view that the FSO would deliver the two core outputs - a longer-term CSNP in 2026 updated every three years and a shorter-term CSNP set of annual updates. These are described in our decision below.

Our decision

3.3 Our decision is to adopt the consultation proposal. The FSO will publish the first longer-term CSNP in 2026 (covering a 25-year horizon) and update it every 3 years thereafter. The longer-term CSNP will include the onshore, offshore, and cross-border transmission network needs, as well as developments in natural gas transmission and hydrogen. Its broad purpose will be to:

- undertake a longer-term strategic assessment of network needs, primarily for bulk transfer of energy, identify potential projects, and select optimal solutions when the needs case is sufficiently certain
- provide firm build recommendations, ie gives the needs case, for projects and places them in a firm delivery pipeline that looks ahead 12 years

- provide a funnel of potential projects to meet long-term needs, covering a 25-year horizon, that move into the firm delivery pipeline as certainty of need increases
- assess longer-term challenges in system operability and consider how these can be resolved, eg changes to technical standards, innovation, third party solutions etc
- provide government with advice, and industry with recommendations, to inform planning the wider energy system together with networks.

3.4 In addition, the FSO will publish a shorter-term set of annual CSNP updates to optimise near-term network planning. The annual CSNP will:

- Signal if there are opportunities for TOs or third-party options to address residual network constraints, looking up to ~12 years ahead. This could result in short-term solutions being taken forward while projects are in delivery or indicate if existing solutions need to be enhanced.
- Give updated build recommendations if the needs case of a potential project becomes clear, ie move it into the firm delivery pipeline.
- Review projects but only if there are significant changes in the project's parameters, eg delivery date, cost, capacity, or needs case.

3.5 The ESO/FSO should work with stakeholders (including Ofgem and government) to finalise the naming, detailed scope, and timings of the CSNP products in its CSNP Methodology (see Chapter 3, Decision 1). We will implement, subject to consultation, a new CSNP licence condition to hold the FSO to account for delivery.

Stakeholder responses and rationale for our decision

3.6 Only a few stakeholders commented specifically on the outputs and products described in the July consultation. Two stakeholders suggested that the longer-term CSNP should be published every five years rather than three years. One stakeholder supported our position for three years as this would provide greater certainty for networks and industry, which we agree with.

3.7 Government's TAAP responded to direct CSNP recommendations made by the ENC on the need for a long-term and short-term CSNP and their publication frequency. The TAAP noted the government's support for our July consultation position. We welcome this support and think that our decision is broadly aligned with both the TAAP and ENC recommendations. We recognise there are some differences in the

timing and frequency of the longer-term CSNP in our decision relative to the ENC recommendations, ie three years versus five.[25] Another stakeholder also supported five years. We think our decision to publish the longer-term CSNP every three years, from 2026, strikes the right balance. It recognises that the FSO needs time to enhance its capability in network planning[26] and to enable the longer-term CSNP to update frequently enough given the scale of change in the sector at this present time.

3.8 In the July consultation, we proposed that the FSO should lead the naming of the CNSP products and publication timings, but that it should involve interested stakeholders, including ourselves and government. We received no comments on this. We think it is appropriate for the FSO to lead this to support its new roles and responsibilities. The ESO/FSO should use its CSNP Methodology to provide detail on the names, product scope, and timings as it works up the full details next year. Appendix 3 reaffirms the broad purpose of the longer-term and CSNP annual products that we set out in the July consultation. This should be used as the basis for developing the CSNP Methodology.

3.9 To hold the FSO to account for delivery, we have decided that the new CSNP licence conditions will set out the publication frequency and timings. We'll engage the ESO to consider specific product delivery dates, as part our next steps to develop the licence (see Decision 3 below). We will include formal derogation powers in the licence to direct an alternative delivery date for CSNP products, if appropriate. Those stakeholders who commented on this were supportive, particularly whilst new processes are being established - noting that adaptability is important but with formal inputs from stakeholders. We agree with the view that flexibility is desirable as it is the first time the CSNP process will run and will work with ESO to consider such licence derogation powers and consult on those as appropriate.

[25] ENC recommendation SS3 proposed the longer-term CSNP be updated every five years. Recommendation SS4 proposed the first CSNP to be published in 2025.
[26] Especially to support the new FSO responsibilities including to deliver an SSEP and SEA.

Decision 2 – Interaction of CSNP products to inform decision making

Background

3.10 In our July consultation we described how the longer-term and annual CSNP products should interact to inform decision making. The longer-term CSNP identifies a 'funnel of potential projects' to meet long-term needs, that move into a firm 'delivery pipeline' as certainty of need increases, based on the FSO's CSNP recommendations. Once in the delivery pipeline, how the FSO's CSNP recommendations are approved and linked to regulatory funding decisions is being considered as part of our RIIO-3 SSMC. It is also seeking views on how best to ensure TO-FSO collaboration and data sharing with respect of the development of high-level designs of options for the CSNP.

Our decision

3.11 The ESO/FSO should work with stakeholders to set out the detailed process for how CSNP products will interact to inform the FSO's CSNP recommendations. We expect the FSO to include this in the CSNP Methodology.[27]

Stakeholder responses and rationale for our decision

3.12 We think a funnel of potential projects and delivery pipeline remain an appropriate process for the ESO/FSO to develop in its detailed CSNP Methodology. We received few direct comments, however respondents were broadly positive on the approach. They recognised the benefits of greater visibility on longer-term need and option development and were supportive of a clear delivery pipeline to provide certainty to industry and supply chains. We agree.

3.13 Several respondents sought more clarity on the funding approach, once projects are in the delivery pipeline. This is being considered as part of the RIIO-3 SSMC. Others noted the importance of not revisiting the needs case for projects once they are in the delivery pipeline – we address this issue in Chapter 7, Decision 4.

3.14 Appendix 2 summarises the interaction of the CSNP products and remains broadly unchanged from the July consultation. The introduction of the SSEP will have a

[27] See Decision 3 in this chapter on the creation of the CSNP Methodology.

direct impact on supply and demand assumptions that inform the development of the CSNP. Further work is needed to understand how it may inform projects in both the shorter and longer-term funnel of potential projects. The ESO/FSO should consider this in the next stage of its work on the detailed CSNP Methodology using Appendix 2 as basis for further development.

Decision 3 – The regulatory framework to create the CSNP

Background

3.15 In our May and July consultations, we set out our proposals to create the regulatory framework for the FSO to deliver the CSNP, though a combination of new licence conditions, a CSNP Guidance document and CSNP Methodology, and a FES Guidance document and FES Methodology. We asked stakeholders whether they agreed with our broad regulatory approach to establishing the FSO's obligations to deliver the CSNP products.

Our decision

3.16 Our decision is to adopt our consultation proposal, with the addition of a further licence condition for the SSEP to produce a SSEP and a relevant associated document, in line with the recent government TAAP. We will engage with stakeholders and intend to consult on such conditions in 2024. The broad set of licence conditions we will create are grouped as follows:

- **FES and SSEP Licence Conditions**: these will set out obligations for the FSO to deliver the FES, and the SSEP when government has confirmed the parameters of the commission.
- **CSNP Licence Conditions**: that will set out obligations for the FSO to deliver the CSNP and related products.

3.17 We will use the above licence conditions to create the following guidance and methodology associated documents.

- **FES and SSEP Guidance Documents:** these will be associated documents to the licence, owned by Ofgem, setting out our expectations in specific areas (such as process, content, and stakeholder engagement). The documents are expected to be adaptable and amended by us subject to consultation.

- **CSNP Guidance Document**[28]**:** this will be an associated document to the licence, owned by Ofgem, setting out our expectations in specific areas (such as process, content, and role of a joint strategic governance group) and areas of the CSNP that will require Ofgem approval, oversight, or scrutiny. The document is expected to be adaptable and amended by us subject to consultation.
- **CSNP Methodology:** this document will be required via the licence but is owned by the FSO to publicly detail its process to determine the key CSNP outputs. This document is expected to be adaptable and can be amended by either us or the FSO subject to consultation. We expect to be fully involved throughout the development of the CSNP Methodology to ensure scrutiny and oversight of the outputs. The Methodology will be subject to Ofgem approval.
- **FES Methodology**: this document will be required via the licence but be owned by the FSO to publicly detail the FSO's methodology for creating the FES outputs. This document is expected to be adaptable and can be amended by either us or the FSO subject to consultation. The Methodology will be subject to Ofgem approval.
- **SSEP Methodology**: this document will be required via the licence but is owned by the FSO to publicly detail the FSO's methodology for creating the SSEP outputs. This document is expected to be adaptable and can be amended by either us or the FSO subject to consultation. The Methodology is expected to be subject to approval by the Secretary of State.

3.18 The 'Future System Operator – Second Policy Consultation and Update'[29], sets out the intention for the powers in the Energy Act 2023 to be used to create a licensing scheme for the Secretary of State to direct that the transmission licence held by the Electricity System Operator (ESO) is converted, from FSO Day 1, to have effect as an 'electricity system operator' licence held by the FSO, alongside a new Gas System Planner licence.

3.19 We plan to implement the CSNP decisions in the FSO's Day 1 licence and are working with ESO to build the required capability before FSO Day 1.

[28] In our July consultation, this was referred to as the CSNP Governance Document. The name has been changed to better reflect the role that this document will play.
[29] https://www.ofgem.gov.uk/publications/future-system-operator-second-policy-consultation-and-project-update

3.20 In this document, we talk about the decisions that will apply to the FSO once it is designated and the CSNP licence conditions are in place. We refer to the ESO when we discuss actions that it may need to take in the interim.

Stakeholder responses and rationale for our decision

3.21 We think it is justified to use licence conditions to set out clear duties for the FSO to deliver their planning roles. Licence conditions will provide public clarity to the FSO and its stakeholders on the purpose, outputs, and process for producing the CSNP, FES, and SSEP. Given the broad scope of these planning roles, it is vital that there is a clear set of licence obligations so that parties can understand how, and when, decisions will be made.

3.22 Associated documents will be created by the licence conditions and provide further guidance on how those licence conditions should be interpreted including the routes for engagement in the process.

3.23 Most stakeholders who responded to our questions in the May and July consultations on the appropriate regulatory architecture for the network planning, were broadly in agreement with our approach. Some stakeholders emphasised that the detailed development of the underpinning Methodologies (for FES and CSNP) must be carried out by the FSO via effective engagement with their stakeholders, particularly the spatial planning bodies. We agree and will ensure that the guidance that we set for the FSO to produce the Methodologies contain clear expectations regarding stakeholder input.

4. Stage 1 – modelling future supply and demand

Section summary

We set out our decision on how we expect the FSO to model supply and demand as part of the CSNP process.

Background

4.1 In May 2023[30], we consulted on our proposals for the first stage of creating the CSNP. It outlined principles for evolving the modelling of future supply and demand by the FSO to inform future network investment needs (currently published as part of the Future Energy Scenarios (FES)[31]).

4.2 Our aim in developing those principles was to improve and update aspects of supply and demand modelling to support the needs of the CSNP, whilst ensuring the outputs remained relevant to the wider uses of the FES by industry and the FSO's other stakeholders.

4.3 In November 2023[32] the government confirmed that the ESO/FSO should produce an SSEP that defines the optimal mix and location of clean generation and storage to meet forecast demand and net zero targets (see Chapter 2 on the government's TAAP). Where the SSEP is delivered in a timely manner it should be used to inform the CSNP, using policy inputs and priorities provided by government, with oversight from Ofgem and DESNZ.

4.4 Given the first SSEP is not expected to be produced until late in financial year 2024/2025, we have decided to continue with our proposed changes for producing the FES, the next iteration of which will be published in the Summer of 2024 (see Chapter 2, Section 3 - The government's Transmission Acceleration Action Plan).

[30] https://www.ofgem.gov.uk/publications/consultation-future-system-operator-supply-and-demand-modelling
[31] For clarity, we refer to the 'Future Energy Scenarios', 'FES' throughout this document. The FSO will consider any changes to the title of this publication as they develop their stakeholder engagement.
[32] https://www.gov.uk/government/publications/electricity-networks-transmission-acceleration-action-plan

4.5 In total, twenty-five stakeholders responded to our May consultation, including networks, local and devolved government, individuals, trade and professional associations, generators, and suppliers.

4.6 In this chapter we set out our decision on those proposals, taking account of the stakeholder feedback received, including any further work needed.

Our Decisions

Decision 1 - Develop a set of strategic pathways to net zero

Background

4.7 The current FES contains four scenarios which are presented as equally credible outcomes for the energy system. It does not provide a strategic view of how the energy system should develop, either with greater certainty in the near term, or with greater whole system coherence in the mid to long term. Therefore, the current neutral FES scenarios do not necessarily align with the future role of the FSO as 'advisor' and provider of strategic analysis to government.

4.8 We proposed in our May consultation that the FES should set out strategic pathways, instead of four illustrative scenarios, to enable the CSNP to be more directive about the type and scale of investment needed. We also proposed that these pathways should start with a shared single short-term view (length to be determined by the FSO), before branching out into different pathways as the range of uncertainties widen.

Our decision

4.9 Our decision is to adopt our consultation proposal. The requirement to produce a single short-term pathway, and multiple longer-term pathways will be set out in a licence condition for the FSO. However, we accept that moving to a single pathway may take several iterations of the FES so will ensure in the FES licence condition that the FSO has some flexibility to introduce this over time, subject to our approval.

4.10 The FSO will consult with stakeholders on the length of the single short-term pathway, to be included in their FES Methodology.

Stakeholder responses and rationale for our decision

4.11 Respondents largely favoured moving towards pathways instead of scenarios. However, one TO and one energy producer thought there was a lack of clarity between pathways and scenarios. Pathways are intended to show what 'must' happen across the sectors to enable net zero. Compared to the current scenarios produced under the FES, we expect pathways to be specific about the type, timing, location, and scale of investment needed, rather than illustrate possible changes in consumer or generation developments that could lead to net zero being achieved. We think this change is important to provide more certainty for investment and planning, across industry and the supply chain.

4.12 A small number of respondents suggested that pathways should be based on fact-based market indicators, supply chain confidence, security of supply, and financeability, rather than government policies or Climate Change Committee scenarios. We agree these factors should form part of the FES Methodology, as energy market development has a significant impact on the availability of resource to deliver plans. The pathways should also allow the FSO to demonstrate in the FES publication if a policy target or ambition is not likely to be met (including commentary on factors beyond the FSO's control, such as public policy), supporting the FSO's advisory role to government. We will ensure this is an explicit consideration for the FSO in the FES Methodology.

4.13 The majority of respondents largely agreed with our proposal of a single pathway in the short-term and highlighted the importance of a whole system approach (including all energy vectors) for this single short-term pathway. We agree that this should pave the way for ambitious and urgent investments. To confirm, we expect the FES to continue to reflect cross vector/whole system elements, but we understand this will need to evolve as the new FSO modelling capability and data improve. As such we expect the FSO to set out in its FES Methodology its approach to ensure a robust whole system approach and how it expects to review and adapt overtime.

4.14 Two respondents from the generation sector were concerned that a single forward view may lead to the FES becoming disconnected from short-term market developments, and that adequate testing (sensitivity and stress) of pathways would be needed to ensure they are robust against a range of factors. One particular area of their concern is the government's 2026 decision on the role of

hydrogen for heat, which makes establishing a single short-term pathway at this time challenging. We acknowledge the uncertainty. While a single short-term pathway should remain the FSO's ambition for the FES, we think the FSO should have the ability to present the FES as multiple pathways in the short term if there are material uncertainties that, in its opinion, make the presentation of a single short-term pathway sub-optimal. The ability of the FSO to do this will be part of the FES licence condition and the FSO will set out in their FES Methodology the circumstances under which they may need to exercise this flexibility.

4.15 We also acknowledge the importance of sensitivity and stress testing which we expect to play a greater role than in the past and support the development and justification of the FSO's single pathway in the future. This will be a key area for the FSO to demonstrate as part of developing the FES, including reviewing its assumptions against outturns and learning lessons to improve its forecasts. The FSO's approach to stress testing will be part of the FSO's FES Methodology, to be approved by Ofgem. Any extreme market events should be dealt with through the treatment of high-impact, low-probability events (see Decision 4 in this chapter).

Decision 2 - Type of pathways, and presentation of non-delivery of net zero futures

Background

4.16 The current FES has four scenarios and includes a 'falling short' scenario which fails to meet the 2050 net zero targets.

4.17 We proposed that, as the current 'scenarios' should become more directive 'pathways', it would be inappropriate to include a pathway that does not meet net zero. We proposed that the FSO should determine how many net zero pathways are appropriate, in consultation with their stakeholders. Under this proposal, we said that the FSO should also develop a separate counterfactual narrative, supported by data, showing the potential network development and financial implications of falling short of net zero targets.

Our decision

4.18 Our decision is to adopt our consultation proposal. The requirement for all pathways to meet 2050 net zero targets will be set out in a licence condition for the FSO. The FSO will consult with stakeholders on the optimum number of

pathways, and appropriate presentation of information showing which activities contribute to failing to meet net zero (the counterfactual), to be included in its FES Methodology.

Stakeholder responses and rationale for our decision

4.19 Respondents largely agreed to our proposal to have net zero compliant pathways only, with a separate narrative clarifying the financial costs and impacts of failing to meet net zero. However, the majority of responses also strongly noted the number of pathways, and the robustness of the underlying data for both the pathways and the counterfactual, should be discussed transparently by the FSO with their stakeholders. We agree that transparency and the need for effective stakeholder engagement is vital, and we will introduce requirements to ensure this in the FES Guidance. We also expect the FSO to set out how they will ensure this in their FES Methodology.

4.20 Some respondents emphasised the importance of the counterfactual demonstrating the economic impact of delaying action, or failure to meet interim goals (ie faster, more expensive action needed between 2035 and 2050). Some linked the importance of using a counterfactual as a gap analysis for each pathway, to show the difference between actions taken versus pathways' demonstrated need. This information can then be used by the FSO to recalibrate the pathways and inform policy making. We agree that the counterfactual is only of use if it highlights economic impacts and resulting costs, as well as implications of delays in one sector/vector upon the others. We will provide guidance in the FES Guidance to ensure this is taken into account in the FSO's FES Methodology.

4.21 Some respondents also queried the nature of pathways, including whether the net zero targets to be met are solely 2050 targets, or also regional targets, or interim carbon budget targets. Whilst we agree that regional or interim targets should be accounted for in the development of the pathways, it may be that the ultimate 2050 targets are met even if the interim targets are not. As such, we will not mandate that the FSO ensure every pathway meets all interim targets, but that each pathway should be clear which targets are met or missed.

4.22 Two gas networks highlighted risks with our proposal to have pathways that only meet net zero. Suggestions included a more cost effective approach be taken, ensuring security of supply and transition to net zero even if it is delayed. One

respondent suggested that an 'economically misleading' approach to enforce net zero by 2050 will result in poor decision making and pose a risk of a consumer backlash (because of increases to customers' bills by anticipatory upgrade of networks). We think our decision that the FSO separately should also develop a separate counterfactual narrative showing the potential implications of falling short of net zero target helps address this concern, as it will demonstrate the cost implications of decisions take later. Decisions on need, options, and cost benefit analysis will be taken in the later stages of developing the CSNP and will consider these aspects at that point.

Decision 3 - The time horizon for pathways

Background

4.23 Many transmission network assets have a 40+ year timeframe, so we need to determine the most effective time frames for energy modelling.

4.24 We proposed that the FES should outline pathways up until 2050 to align with net zero goals. There are no targets set beyond this point, so we proposed the FSO should consult with stakeholders over time to determine when to extend the pathways past 2050.

Our decision

4.25 Our decision is to adopt our consultation proposal. The requirement for all pathways to run to 2050 will be set out in a licence condition for the FSO. The FSO will be expected to set out in their FES Methodology the criteria for extending beyond 2050.

Stakeholder responses and rationale for our decision

4.26 The majority of respondents agreed with our proposal that the FES pathways should run to 2050, given this is consistent with net zero targets and is the focal point for action. Going beyond 2050 at this stage was seen as too uncertain (in particular modelling the demand side) and of limited value to policy makers and industry. We agree with the challenges of forecasting beyond 2050 and do not think it adds any value to the production of the immediate FES publication.

4.27 Most respondents agreed with our proposal to ensure the pathways modelling approach can be extended beyond 2050 at an appropriate time. Several responses

suggested the need for a moving window (or rolling plan), eg of 25 years, to take into account the life expectancy of assets, or costs of decommissioning. We agree, and the CSNP will automatically roll forward with each subsequent iteration.

4.28 As future government policies are not yet known, it is appropriate to set the initial forecasts out to 2050 but enable the FSO to build into their FES Methodology a clear approach to consult with stakeholders on the times and triggers for extending the pathway timescales. We will also include in the licence conditions the ability for Ofgem use its discretion to approve or direct such a change, should we consider it necessary to ensure specific developments are accounted for.

Decision 4- Treatment of high-impact, low-probability events

Background

4.29 The current FES scenarios do consider a range of potential impacts, but there is growing uncertainty about, for example, increased volatility of gas prices, cyber security, and climate change impacts. Ensuring a resilient and robust network requires understanding the potential impacts of high-impact low-probability (HILP) events.

4.30 We proposed that the FES model should be capable of incorporating, and testing, extreme data ranges that are HILP in order to support the FSO's strategic advisory role. This modelling ability should be used to identify consequences across the energy sector resulting from high-impact events. This analysis may be published as part of the FES, and/or treated separately as part of the FSO's wider strategic advisor function.

Our decision

4.31 Our decision is to adopt our consultation proposal that the model will be capable of stress testing a range of pathways against HILPs at stage 1. This will ensure that the pathways are gauged with associated risks including extreme weather events that could affect supply, demand, or damage to assets. The requirement for increased model capability will be set out in the FES Guidance to the FSO licence condition. The FSO will be expected to set out in their FES Methodology their process for developing this capacity.

Stakeholder responses and rationale for our decision

4.32 The majority of respondents agreed with our proposal that the FSO should develop the capacity to include extreme data ranges in their modelling suite. Most agreed that this capacity can be used for sensitivity analysis and stress testing of the pathways. These risk assessments and stress testing are required as climate risks may affect the suitability of different technologies at different locations. These risks are not limited to under/over investment risks. The pathways should also be stress tested against change in government policies, and significant changes in global market fundamentals.

4.33 We agree with the majority of the respondents that energy system planning should not be done solely on the basis of extreme ranges. However, with this capability, the FSO shall be able to provide a risk envelope attached to the pathways. This forward-looking stress test and associated risk envelope are vital to inform decisions based on appropriate risk appetite on system need (ie stage 2).

4.34 Forward looking stress tests/risk assessments will also be required to inform decision making under uncertainty on the best investment options (ie stage 4 cost benefit analysis). This is especially important to determine future resilience given that climate change will lead to unprecedented events; the transition to net zero will increase vulnerability to these events meaning that past data is not a good indicator of future resilience levels or security of supply.

4.35 One energy generator stakeholder thought that consideration of the effects of extreme events in electricity infrastructure is already covered through the requirements in the Electricity Safety, Quality and Continuity Regulations (ESQCR)[33] and that infrastructure should be designed (and costed) in accordance with these regulations. As such, the impact of HILP events should be considered in the next stages of the investment planning, and not the in the pathways. We agree that the ESQCR is relevant but want to ensure that the FSO has wider capability to consider extreme events at key junctures throughout the network planning process.

[33] The Electricity Safety, Quality and Continuity Regulations 2002 (legislation.gov.uk)

4.36 In our FES Guidance, we will expect the FSO to consult with stakeholders on the appropriate uncertainty ranges to apply to its pathway development, building on the type of ranges they use currently. We will also require the FSO to develop, consult and review their capability to model HILP events, either by government request, or as part of sensitivity analysis, or specific risk assessments.

Decision 5 - Incorporating network constraints into the modelling

Background

4.37 The current FES model does not include network constraints, it assumes that the necessary infrastructure will be available to convey changing supply and demand.

4.38 We proposed that the FSO's modelling should factor in network constraints and the impacts on generation in the near term[34] but model an unconstrained network in the long term.

Our decision

4.39 Our decision is to adopt our consultation proposal. The requirements for modelling constraints will be set out in the FES Guidance. The FSO are expected to set out in their FES Methodology their process and assumptions for developing this capacity.

Stakeholder responses and rationale for our decision

4.40 A majority of respondents agreed with our proposal that the FSO should develop the capacity to incorporate network constraints (at both transmission and distribution levels) into their pathway modelling process in the near-term. We agree and think that modelling constraints on the electricity network will not only help inform current and future infrastructure requirements but will highlight opportunities (or limitations) for other vectors or solutions to relieve electrical constraints, eg hydrogen or flexibility markets.

4.41 Three respondents (one gas network, one TO, one charity organisation) thought the near-term pathway should be modelled unconstrained because otherwise it would deter generators from planning in these areas. We disagree. The single short-term pathway is intended to reflect 'reality' as closely as possible. Given the

[34] We are not defining 'near' and 'long' term at this stage but will expect the ESO/FSO to consult with stakeholders on appropriate time periods as part of their FES Methodology consultation.

timescale for building new transmission infrastructure, it is of little value to encourage new generation to build where there are known substantial constraints in the short term. These should therefore be clearly visible in the near-term pathway, to support optimal siting of generation, and increased use of flexibility mechanisms. We think it is of substantial value to policy makers and industry to understand the demand and supply backdrop across parts of the country, recognising the reality of constraint costs which will take several years to alleviate and limit the ability of certain technologies to connect to, or types of customers to use, the network (eg industry).

4.42 Some of the respondents not in favour of including constraints in the long-term pathways emphasised the need for the FSO to go beyond constraint modelling to show what the network could look like with additional load (because of the electrification of heat and transport sector), what would be required in terms of physical works on the ground, and a view of how deliverable it would be. We agree with other respondents, who considered that these issues were best considered under the next stages of the CSNP, ie the needs and options stages. The initial stage – modelling net zero pathways – should lay out where investment will be needed in the long-term, taking into account the government's proposals to speed up infrastructure planning, and so not extrapolating from existing constraints that should be solved in the interim.

4.43 Some respondents were in favour of including constraints in the long-term to 2050, to help generation make siting decisions. There are material changes to be considered across the industry, which are being implemented to help accelerate electricity transmission network build (see comments on the government's TAAP in Chapter 4). In addition, Ofgem's new Accelerated Strategic Transmission Investment (ASTI) framework provides funding and incentives to help deliver the government's ambition to connect up to 50GW of offshore wind generation to the network by 2030.[35] In this context, we think including network constraints in long-term modelling risks not being reflective what is expected to be a markedly different picture on the level of network constraints in the long-term. This assumption will be kept under review with each subsequent iteration of the FES.

[35] https://www.ofgem.gov.uk/publications/decision-accelerating-onshore-electricity-transmission-investment

4.44 One respondent suggested that the understanding of network constraints should be widened beyond thermal limitations (ie load on the network) to include issues such as seabed availability), land availability, planning considerations and community acceptability. We consider that these issues, whilst important, are not part of the common understanding of network 'constraints' when assessing existing infrastructure but will play an important consideration in the latter stages of CSNP development. In addition, the SSEP (see Chapter 2) will look at some of these issues.

4.45 We expect the FSO to include its assumptions on where and why constraints have been included in the modelling as part of its FES Methodology (having engaged with stakeholders).

Decision 6 - Improvements to transparency in analysis and outputs

Background

4.46 Transparent understanding of how pathways are established and reviewed, including the datasets behind them, will help support robust decision making and be of value to wider stakeholders in shaping public policy.

4.47 To improve transparency, we proposed that input and output data, models, and algorithms used in the FES modelling should be treated as Presumed Open[36] and be subject to an open data triage process, only restricting access when there is a specific and clear reason not to publish the data. We said that as part of the FES, the FSO should publish a timetable (including scope) for meeting this objective, and updates on progress made.

4.48 We also proposed that the FSO should demonstrate how its key decisions are taken, including the process for considering stakeholder feedback, and how any significant changes in assumptions have been identified and corrected between subsequent iterations of the FES.

[36] Presumed Open: The treatment of Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Open Data, subject to Open Data Triage. Definition from Data Best Practice Guidance (link below).

Our decision

4.49 Our decision is to adopt our consultation proposal. The requirement for data transparency and audit will be set out in a licence condition for the FSO, and our specific expectations set out in the associated FES Guidance. The FSO is expected to set out in their FES Methodology their process for developing this capacity.

Stakeholder responses and rationale for our decision

4.50 The majority of respondents agreed with our proposal. Some respondents considered that the current ESO licence condition on Data Best Practice[37] principles should be applied to the FSO, and others considered there were issues with the ENA Data Triage Playbook[38] that should be addressed to support open data.

4.51 We will work with our Ofgem Data team and the ESO to develop and adopt a practical set of guidelines for the FSO. This will include an expectation that data that is shared by the FSO should be in a usable format for stakeholders, to enable them to run their own operational and investment planning forecasts. This should help to facilitate third party engagement and involvement in the network planning process. The ENA Data Triage Playbook is currently being reviewed by the Data and Digital Steering Group which will consider the issues raised.

4.52 The guidelines will also look at interactions with wider licence conditions which we expect the FSO will retain after its transition from the ESO[39] and utilising best practice from industry sources like the ENA Data Triage Playbook. Our FES Guidance will refer to these guidelines, and we expect the FSO to demonstrate how it is meeting these guidelines as part of its FES Methodology.

4.53 Some respondents stated that it is important that the assumptions used in the modelling process are credible and are consulted on with stakeholders (eg lifecycle costs, or societal costs). Respondents who commented on our proposal for auditing and publishing changes to previous assumptions agreed with it. We think

[37] https://www.ofgem.gov.uk/publications/decision-updates-data-best-practice-guidance-and-digitalisation-strategy-and-action-plan-guidance
[38] The Energy Networks Association document is a framework to support organisations' Data Triage process to provide a consistent approach to making datasets available throughout the energy industry: https://www.energynetworks.org/publications/ena-data-triage-playbook
[39] For example, the current ESO Data Best Practice licence condition is expected to be part of the FSO licences and is currently being consulted on.

it is important to clarify where previous assumptions have changed, to prevent them perpetuating in third parties' own planning assumptions. Therefore, we expect the FSO to clearly set out and consult on their audit process as part of the FES Methodology.

4.54 Many respondents were keen to emphasise that where information is suppressed, the reasons given should be confined to matters of national security, or commercial sensitivity. We agree, and also that stakeholders should be clear how their potentially sensitive data will be used, to enable them to make better decisions about how much can additionally be shared. We expect the FSO to clarify this process in their FES Methodology.

4.55 Respondents suggested a wide range of specific data outputs that the FES should provide, many of which are covered under the topics above. We will consider further which, if any, of these we will wish to mandate and include in our FES guidance, and which the FSO should develop in partnership with its stakeholders.

Decision 7- National and regional outputs

Background

4.56 The current FES provides a GB-wide view, with some discussion and data related to regional requirements. To inform the CSNP, which will look at national and regional planning requirements, in our May consultation we said that the FES should provide more granular outputs, providing pathways for all regions to show supply and demand factors (eg via the Distribution Future Energy Scenarios (DFES)), and spatial and local area energy plans.

4.57 We proposed that the FES provides pathways for each region (eg North Scotland, Central Belt, South Scotland) as well as those industrial hubs with high generation and/or demand.

Our decision

4.58 Our decision is to adopt our consultation proposal. The requirements for national and regional outputs will be set out in a licence condition for the FSO, in which we will require the FSO to set out in their FES Methodology their process for developing this capacity.

Stakeholder responses and rationale for our decision

4.59 The majority of respondents agreed with our proposal. Responses were mostly in favour of a more robust bottom-up modelling approach to be taken in the future, with a clear iterative process between the roles and outputs of the FES, CSNP, and Regional Energy System Planners (RESPs).

4.60 Once in place, the RESPs will be accountable for developing a regional whole system strategic plan[40]. The RESPs will use a wide range of inputs - for example national forecasts, electricity and gas network operator data, local plans (eg Local Area Energy Planning (LAEP), Local Heat and Energy Efficiency Strategies (LHEES) in Scotland). However, the roles and responsibilities for developing future pathways at a national and regional level need to be further defined to ensure they are coherent with each other.

4.61 In addition, some responses clarified that there should be more transparency of decision-making processes between these entities. We consider that DFESs should feed into the FES data, which should feed into the RESP strategic plans.

4.62 The feedback loop with the RESPs should ensure that the regional FES pathways produced by the FSO do not inadvertently promote one region over another, which may have subsequent impacts on investment. Several respondents suggested that the FSO should model down to and at grid supply point (GSP) level, and that DSOs model from local level up to and at the GSP level. Should there be major discrepancies between the FSO and the DSO at the GSP level (based on their different data sources and assumptions), we expect the FSO (as producer of the RESPs) to create a framework of internal checks to resolve any such discrepancies in the data used, or the assumptions made. This should be included in their FES and CSNP Methodologies, along with the process for feedback and interaction between the development of the RESP and the CSNP.

4.63 Responses mainly favoured the FES producing industrial pathways. Some suggested that only industrial hubs over 100MW should be considered, or where there is an equivalent size of transmission asset need. We agree that defining

[40] https://www.ofgem.gov.uk/publications/decision-future-local-energy-institutions-and-governance

what constitutes an 'industrial hub' for the FES is needed and expect the FSO to consult with stakeholders on this point for definition in their FES Methodology.

Decision 8 - Timing of FES publications

Background

4.64 Currently the FES is produced annually. As the new pathways were expected to support more certain investment options in the CSNP, we proposed that the timing and frequency of the FES changes to optimise its input.

4.65 We proposed that a 'major' FES publication is produced a year prior to the publication of the main CSNP to allow the CSNP to utilise the pathways for its investment recommendations. We proposed that 'minor' annual updates be published to take account of any significant changes in the preceding twelve months.

Our decision

4.66 Our decision is to adopt our consultation proposal with amendments to take account of the new government TAAP recommendation to introduce an SSEP. Until the SSEP has been formally commissioned and produced, a 'major' FES publication should still be published 18 months to two years prior to the main CSNP, not one year prior. Annual 'minor' FES updates should be published in the years between major versions. This decision is subject to the introduction of an SSEP cycle that will inform and constitute important part of stage 1 of the CSNP. Once the SSEP is settled, we expect the FSO to engage further with its stakeholders on the optimum timing of any further FES publications for usage outside of the CSNP planning process.

4.67 The requirements for publication will be set out in the FSO's FES licence condition, including the ability for major FES publications to also take place outside of the planning cycle if this is needed. We will require the FSO to set out in their FES Methodology their process and criteria for adjustments to the planned publication cycle – with any changes subject to our approval.

Stakeholder responses and rationale for our decision

4.68 The majority of respondents mostly disagreed to our proposal of a major FES publication a year ahead of the CSNP publication with some minor updates in

between. Views were mostly in favour of keeping the current annual FES publication cycle to reflect any material changes in the sector or changes to underlying inputs or assumptions, rather than being allowed to diverge substantially between each 'major' FES. However, we proposed that the minor annual updates should take account of any significant changes to policy, targets, completion/delay/cancellation of major projects, and so do not agree that material changes will not be reflected by our decision to move to major/minor annual FES publications.

4.69 Some respondents considered that full yearly updates were necessary to reflect distribution level changes, such as take up of heat pumps, solar panels, or EV chargers. We do not think that there is likely to be such a massive discrepancy between the difference in forecast take-up, and actual take-up, such that the pathways would materially change over the course of twelve months.

4.70 Some respondents who agreed with our proposal wanted flexibility in changing the publication cycles to align to regulatory business planning processes for the price controls. We are currently considering the interaction of the CNSP cycle with future price controls as part of our RIIO-3 SSMC. Through this we are seeking views on how best to ensure that future price controls enable network companies to act quickly on CSNP recommendations and deliver the CSNP projects on time at an efficient cost to consumers.

4.71 A few respondents wanted clarity on the criteria that defined major and minor publications and suggested that flexibility to publish a major update is needed to respond to significant changes in the market, government policy, or technology development. We agree with these views. As part of the FES licence condition we will ensure that the FSO consults with stakeholders on the criteria for triggering a major update out of cycle and set this out as part of its FES Methodology. Through the FES licence condition, we will also enable the FSO to propose to us for approval that a major update is required out of cycle. We will ensure that we have the ability to require a major update and will set out the reasons why we might do this in our FES Guidance Document.

4.72 Some respondents challenged the assumption that producing a major FES publication one year prior to the main CSNP would provide enough time to work through the subsequent stages of CSNP development (ie identifying need, identifying options, decision-making). We agree the timescale is challenging, and so we have decided to change our consultation position to require the major FES publication 18 months to two years prior to the main CSNP publication.

4.73 Some views highlighted the need to enable the FES to be updated closer to real-time, with data flowing through as it becomes available and changing the outputs automatically. We agree with this longer-term ambition, and once the FSO is established and its new planning and advisory duties are in place, we expect the FSO to consider further development to its modelling capability (see section below 'Longer-term evolution of energy supply and demand modelling').

Longer-term evolution of energy supply and demand modelling

Background

4.74 The remaining issue in our May consultation concerned what further modelling capabilities the FSO may need to develop over the longer-term.

4.75 We did not put forward a proposal on this topic, but asked for views on how stakeholders thought modelling approaches should evolve in the future, including to capture currently unquantifiable uncertainties.

Consultation responses

4.76 Respondents broadly considered that the FES should evolve to a fully optimised model, meaning that the energy demand and supply modelling methodology should have the capability to address and incorporate variations in assumptions, deep uncertainty and HILP events at national, regional, and local levels, across all sectors and vectors. The model should be capable of optimising pathways for various requested policy goals including lowest cost, highest security, or best reliability.

4.77 A few respondents also suggested that the FSO should work towards a detailed, real-time network model, covering connected generation, transmission and distribution capacity, and the behaviours of demand-side products (including peak demand, average demand, and flexibility capacity). They considered this could evolve into a digital twin over time, providing more spatial granularity and paving the way for increased efficiency of the whole system.

4.78 Some respondents thought the focus for the FSO should be on modelling supply and demand in a way that creates clarity for industry on how to deliver what government policy requires, while others raised concerns about whether the level of investment needed for such a model would be justified by overall consumer benefits.

Our assessment of consultation responses

4.79 Our current focus is to implement the decisions in this document to support the FSO to develop an evolved FES publication and FES Methodology that will inform the first CSNP process and improve overall planning.

4.80 However, we expect the FSO to regularly review and engage stakeholders on their longer-term modelling approach and capabilities to ensure best practice and the identification of new approaches. Given the ENC Review recommendations and government TAAP which includes the FSO taking on a role in wider strategic spatial energy planning, we think it is appropriate that the FSO should look at options to further enhance its modelling capabilities.

4.81 We recognise the scale of the challenge for the FSO to acquire the technical capability and skillset necessary for the purpose described above. In our FES Guidance we will clarify how we expect the FSO to set out within its FES Methodology:

- a long-term roadmap for how their capabilities are expected to evolve
- their approach to stakeholder engagement in this area
- an assessment of the timeline, costs, and resources anticipated to develop this new type of modelling capability.

4.82 We expect delivery of any such proposed modelling evolution to be justified, assessed, and funded as part of the FSO's regulatory business planning cycle. We consider that developing this type of capacity would also support the FSO in its strategic advisor role to government and us.

5. Stage 2 – Identifying system need

Section summary

This section sets out our decisions for the future approach adopted by the FSO for identifying system needs in the CSNP process.

Background

5.1 A key stage of the ESO's planning for future transmission requirements is identifying the impact of future changes in electricity generation and demand on the NETS. This includes identifying where insufficient transfer capability, or operability issues, could arise in the future and need to be resolved to continue delivering electricity reliably.[41] TOs and third parties use this information (along with taking into account other relevant planning drivers) to develop network options to meet the expected future system needs.

5.2 In the July consultation, we proposed that the FSO's approach to identifying future system need is further developed from the current practice to:

- cover a wider scope of system need
- extend the analysis of system need out to 2050
- move to a year-round nodal assessment of system need
- enhance its associated publications, including stakeholder communication.

5.3 In this section we set out our decisions on these four areas.

[41] The ESO assesses future system need by splitting the NETS into notional boundaries that define network areas from which power is either exported or imported across critical circuits. The ESO models power flows across boundaries at peak winter demand for future generation and demand profiles, to identify the minimum required capability that complies with the NETS SQSS. It currently publishes a statement of future network requirements under the different scenarios in the Electricity Ten Year Statement.

Our Decisions

Decision 1 - Scope of system need

Background

5.4 The ESO's assessment of system need in the Electricity Ten Year Statement (ETYS) has predominantly focused on identifying areas on the transmission network where additional capacity is needed to transfer bulk power flows across the network and securing the system for a range of contingencies set out in the SQSS. Operability needs have traditionally been identified under separate processes. An issue with this mixed approach to identifying system need is the risk of potential gaps, particularly around longer-term system needs. At a time when the UK is experiencing a radical change in the generation mix, it is vital that future operational issues are anticipated in advance and addressed in the CSNP.

5.5 In the July consultation, we proposed that the FSO expand and integrate its analysis on future system needs to include all areas of load related network planning to keep on top of the complex operational issues that could arise in future given the pace and scale of change in the generation mix.

Our decision

5.6 We have decided to adopt our consultation proposal but with a modified scope so that stage 2 of the CSNP will identify wider system needs and operability issues (eg voltage and stability) for option development and assessment (stages 3 and 4 of the CSNP). For the first CSNP, wider system needs for the electricity vector are future network reinforcements on the MITS, or extensions to the MITS to accommodate new areas of potential demand or generation. Stage 2 will not cover local needs on the transmission networks to connect new generation or demand growth, which will continue to be identified by the relevant TO.

5.7 We will set out that we expect, as part of the CSNP Guidance document, for the FSO to work with relevant stakeholders, including Ofgem, to specify the wider system needs and operability issues and also to develop the end-to-end process for identifying these. Similarly we expect the FSO to work with relevant stakeholders to agree the system needs of other energy vectors that are to be included in the scope of the CSNP. We expect the FSO to set this out in their CSNP Methodology.

Stakeholder responses and rationale for our decision

5.8 Alongside the introduction of an SSEP, energy network planning will undergo a significant and rapid transformation. Therefore, we consider it is appropriate that the FSO focuses in the first CSNP on signalling wider system and operability needs for the reasons given in the "Changes in the CNSP's scope" section in Chapter 2.

5.9 Stakeholders generally agreed that the CSNP should encompass the types of electricity transmission requirements listed in the July consultation.[42] A few stakeholders noted that system requirements for other energy vectors need to be added in preparation for when the FSO starts system planning in these areas.

5.10 A couple of stakeholders said that additional aspects and other network planning drivers, eg asset replacement should be covered by the CSNP, to ensure a whole system approach is achieved. Other issues highlighted by some stakeholders included a potential duplication of activities (between FSO and TO), and that it would be helpful to set out the rationale as to why each party undertakes a particular activity.

5.11 We have decided that the scope of the first CSNP should focus on wider system needs and operational issues. We are not the best placed to resolve the next level of detail on the types of issues this will entail for electricity transmission and the other energy vectors. We think it is more appropriate that the ESO/FSO works with relevant stakeholders to stipulate the specific system needs that will be identified in stage 2 of the first CSNP. The ESO/FSO should also work with stakeholders to devise an implementation plan for identifying wider system and operational needs. This should map out the activities, inputs, and stages of analysis, that each party is best placed to contribute.

Decision 2 - Extend the analysis of system need out to 2050

Background

5.12 In the ETYS, the ESO identifies system need for the next ten to 12 years. In the July consultation, we considered that the current time horizon is too short,

[42] See table 1 in chapter 4 of the July consultation.

particularly when developing and delivering solutions, such as network reinforcements, can also take a similar period.

5.13 We proposed that the FSO extend its assessment of system need out to 2050 and use multiple net zero pathways for the period beyond the FES single pathway to cover key uncertainties. We considered that a longer time horizon would provide an early signal to TOs and third parties to develop options in advance of critical delivery milestones. This could result in longer-term strategic options being considered (in subsequent stages of CSNP) to address the system need, provide a timely signal for supply chains, and lead to better coordinated network planning. These are important for reducing the financial cost to consumers and the wider impact of new network. We considered it important to include multiple FES pathways in the longer-term analysis of system need to provide insight into the impact of different net zero pathways.

Our decision

5.14 We have decided to adopt our consultation proposal. However, rather than fixing the time horizon to 2050, the target year for achieving the UK's net zero ambition, we have decided to adopt a rolling horizon for a minimum of 25 years.

5.15 We will set out an expectation in the CSNP Guidance document for the FSO to extend the time horizon of its needs assessment on a rolling basis for a minimum of 25 years.

Stakeholder responses and rationale for our decision

5.16 All stakeholders that commented on this proposal supported adopting a longer-term planning horizon. Most of these stakeholders also suggested adopting a minimum rolling 25-year ahead time horizon over a fixed horizon to 2050. The main reasons were to ensure future potential developments that might be needed beyond 2050 are monitored well in advance of a critical delivery path, and to signal longer-term capacity requirements to supply chain. One stakeholder also noted that it is easier to build in consideration of the environment in the early stages of need identification.

5.17 Given the resounding stakeholder support for this change we are satisfied that adopting a rolling time horizon for a minimum of 25 years in the CSNP needs

assessment is in the best interest of consumers for the reasons given in paragraph 5.13.

Decision 3 - Move to a year-round and nodal assessment of system need

Background

5.18 In ETYS, the ESO has modelled future network transfer requirements using a winter-peak demand scenario. The benefit of this approach is that it is relatively simple, and quick, to get a high-level view of system issues. For example, it might say that in five years, network capacity at a particular boundary will be exceeded by the expected power flows on the system from generation scenarios at winter-peak demand. The downside of this modelling approach is potentially a loss of detail and accuracy given it is based on a winter-peak demand scenario.

5.19 In our July consultation, we proposed that for the CSNP the FSO moves towards:

- a year-round assessment of system needs, instead of assessing system need at winter peak demand conditions
- an assessment of future requirements at system nodes rather than looking at network boundaries.

5.20 We considered that these changes will improve the quality of information available about system needs, which will assist industry and solution providers to target opportunities for network or commercial solutions to address these needs.

Our decision

5.21 Our decision is to adopt our consultation proposal but with additional flexibility for the FSO to select the most appropriate approach to communicate on system needs to stakeholders. We will set out an expectation for the FSO to continue developing its assessment of future system needs in the CSNP Guidance document, and to set out its approach in its CSNP Methodology.

Stakeholder responses and rationale for our decision

5.22 We consider that improving the way that future network needs are assessed is appropriate because it will ensure new complexities and issues that arise as we transition to net zero are captured. For example, the increasing challenges the

system is facing outside of winter peak demand conditions. We note that the ESO has already taken significant steps to enhance its modelling of system needs and to communicate these to stakeholders.[43]

5.23 Stakeholders were generally supportive of the proposal that the FSO should undertake more detailed analysis on system needs. They expect this to lead to better strategic planning decisions being taken, as well as improve the information available to assist network users and developers to make more informed decisions.

5.24 A couple of stakeholders asked what is meant by conducting a nodal assessment of need. To clarify this point, it entails conducting power system analysis to identify limitations at the level of individual circuits and substations on the network.

5.25 Two TOs and the ESO highlighted that power system analysis of boundary capability is carried out already on a full node and branch model of the network. The ESO also said that the concept of network boundaries is how it has communicated thermal issues historically.

5.26 Several stakeholders thought there was value in retaining the concept of network boundaries for communicating large power transfers across regions, and that a nodal perspective should be in addition to the status quo when it adds value, ie where a targeted mitigation is required to address a limitation at a particular point of the network. The ESO also explained that thermal limitations at particular nodes can be sensitive and may shift between nodes. It said that it can overcome this issue by looking at thermal limitations in aggregate across the relevant boundary.

5.27 We understand that system needs vary and that different modes of assessment can be expedient without losing relevant information. Similarly, we also see that different perspectives can be helpful to communicate effectively on a system need based on its particular circumstances and characteristics. On this latter point, we consider that the FSO should have the flexibility to select the most appropriate

[43] See the 2023 Electricity Ten Year Statement for more information.

approach to communicating system needs subject to stakeholder engagement on their preferences.

5.28 It is important to distinguish assessing system need from how it is communicated. For the former, we consider it vital that the FSO has capacity to conduct full nodal modelling of the NETS going forward. As set out in our Chapter 6, Decision 3, we expect the FSO may design some network options for bulk power flow limitations. Such options will have an impact on, and also be affected by, the regional and local network and requirements led by the TOs. It is therefore important that the FSO has sight of these developments when identifying long-term needs and stakeholders broadly support this. We also consider that analysis over the year will also improve the understanding of system needs under conditions that are closer to the market. In addition, this capability will also enhance the FSO's capability to verify analysis/inputs provided by other parties and ensure FSO has effective oversight of future network needs.

Decision 4 - Enhance its associated publications, to communicate effectively with stakeholders on system need

Background

5.29 Currently, the ESO publishes a range of documents covering different system needs. Communicating with stakeholders on future system need is challenging. The range of issues, the technical terms, and the inherent uncertainty make it complicated.

5.30 As future system needs increase, and new issues arise, it might be challenging for industry to keep up to date, understand the interactions between issues and know how to get involved. It is imperative that the FSO communicates its view on these effectively to different stakeholders and provides a timely call to action where relevant.

5.31 In the July consultation, we proposed that the FSO reviews how it can communicate effectively with stakeholders on future system need (including the frequency and scope of its publications) under the CSNP.

Our decision

5.32 Our decision is to adopt our consultation proposal. We will set out an expectation in our CSNP Guidance document that the FSO to review the approach to communicating on system need with stakeholders.

Stakeholder responses and rationale for our decision

5.33 All stakeholders that responded on the consultation proposal supported it. Most stakeholders also suggested some steps the FSO should take to communicate effectively about future system needs going forward.

5.34 Many stakeholders recognised that a greater variety of stakeholder groups will be interested in engaging on system need and the CSNP more generally and that new approaches for communicating on these are needed. Some stakeholders suggested that the FSO should undertake strategic stakeholder mapping to understand the different needs of the stakeholder groups.

5.35 Some stakeholders highlighted the ENC's recommendation for the government to design and implement a public information campaign on the need for a grid refresh.[44]

5.36 Industry stakeholders said they generally find the ESO's existing communications on system need relevant and useful, and that the availability of technical information about the system was important.

5.37 Community groups highlighted that transparency in assessment and decision making is essential in all stages of the CSNP, including the assessment of system needs. They also said that communities should be included in the process of delivering new infrastructure at an early stage. One stakeholder noted that lessons can be learnt from other countries on processes for shaping spatial plans.

5.38 Some TOs stressed that a collaborative approach should be adopted on communications with wider stakeholders and communities on meeting system

[44] See recommendation NC1 in Electricity Networks Commissioner: companion report findings and recommendations (publishing.service.gov.uk)

needs and new infrastructure. In addition, key messages must be holistic, targeted, consistent, and coordinated across industry.

5.39 We welcome these stakeholder suggestions. We will draw on these when setting out our expectations for the FSO's communication on system need in the CSNP Guidance document.

6. Stage 3 – Identifying options

Section summary

This section sets out our decisions for the approach to be adopted by the FSO, TOs and third parties for identifying options to address future system needs in the CSNP process.

Background

6.1 In this stage, for the areas of network planning in scope of the CSNP, the FSO will run a process which allows it, TOs and third parties to provide options to solve network needs that have been identified in stage 2. We expect the CSNP to be a highly collaborative process, to allow for a range of options to be brought forward and refined. The options identified in this stage will then be assessed by the FSO in stage 4 to decide on which options will become part of the CSNP. We expect to be involved in this process to ensure appropriate oversight and scrutiny. Strategic governance groups are being developed to support this (see Chapter 1, 'Next Steps').

Our Decisions

Decision 1 - Ensure consistency in the high-level design of options

Background

6.2 In our July consultation, we proposed that the FSO develops and provides guidance on the minimum level of detail needed for the high-level design of CSNP options. We proposed that this guidance should be followed consistently by all TOs, third parties and the FSO when developing options.

Our decision

6.3 Our decision is to adopt our consultation proposals.

6.4 We expect the FSO to set out its guidance on the minimum level of detail needed for the high-level designs (including any templates) as part of its CSNP Methodology. As part of our CSNP Guidance document we will set out any specific expectations and guidance to support the FSO to deliver this.

Stakeholder responses and rationale for our decision

6.5 We think our decision is justified because establishing a consistent level of detail for option design is an important foundation for effective network planning. It will help to ensure that the FSO has the information it needs to robustly review proposals, support third parties putting forward options by providing clarity on what is needed and reduce the risk of scope change as options are refined though more detailed design. Most stakeholders were in favour of our proposal.

6.6 Options may be more detailed than the minimum level of detail in the FSO's guidance by the time they get assessed for entry into the delivery pipeline (see Chapter 7, Decision 3). We also accept that in limited circumstances, exceptions may be required to this. For example, for options developed for very long-term needs, it may not be possible to develop the level of detail as per the FSO's guidance. Therefore, the FSO should consider, as part of the CSNP Methodology, whether the same minimum level of detail is needed for options in the longer-term funnel of potential projects versus those in the delivery pipeline (see Chapter 3 Decision 1 on the CSNP products).

6.7 The government's TAAP, responding to the ENC recommendations, has set out that the FSO should create Electricity Transmission Design Principles (ETDP) which will set out the principles and standards used to design network assets, to provide greater clarity on the type of asset to be used in different environments. This could help speed up the consenting process by having a common set of principles to follow rather than debating their merits at every submission. We support this recommendation, and these standards should inform both the high-level designs where appropriate, and detailed designs of options. The ESO/FSO is expected consider how to integrate this, where appropriate, within its CSNP Methodology for high-level design of options.

6.8 Some stakeholders suggested going a lot further on design assessments in this stage of network planning. We expect the ESO/FSO to work with key stakeholders to set out in the CSNP Methodology the level of detail that can be captured in the high-level designs and the approach that can be taken to undertake high level designs. We expect the three-year CSNP cycle to give more time than previously available to develop high level designs. However, we do not expect this stage to produce detailed designs that require substantive site visits, and/or site-based surveys and assessments. TOs/third parties will remain responsible for

establishing the detailed designs after the CSNP recommendations. For FSO led high-level designs, we expect that it should be able to collaborate as required with TOs to obtain site-based information to aid in development of prospective CSNP options. In some cases this may require TOs to conduct site visits concerning their network at the request of the FSO. See decision 5 of this chapter for further details on data exchange between parties for CSNP.

6.9 Several stakeholders provided views on better design practices and requirements that they considered should be part of CSNP high-level design of options. This included the use of digital and automated tools such as advanced Artificial Intelligence and 3D modelling to assess route corridors and considering future use and expansion of sites and assets.

6.10 We are supportive of the use of advancements in technologies that enable better quality designs, especially in the early stages of a project's development. However, the extent to which these can assist in developing the high-level design of CSNP options will depend on the minimum requirements that will be developed as per this decision. We are also supportive of better design practices such as considering future use of sites and assets when producing high-level designs of options. These views should be considered by the FSO, with key stakeholders, as part of the development of the CSNP Methodology. This CSNP Methodology, is also adaptable over time and we expect the FSO to ensure that minimum requirements for high-level designs of options is reviewed periodically to capture advances in technology.

6.11 A stakeholder suggested that design requirements should consider the full suite of network requirements (such as those outlined in Table 1 of our July consultation) to avoid changes to CSNP recommendations once the work on detailed designs begins. We agree with this view. The intent behind bringing a host of system needs assessments under the CSNP umbrella is to provide the benefit of considering solutions with a wider lens, to avoid repeated works and avoid material scope changes during the detailed design phase, thereby increasing efficient network development.

6.12 A stakeholder expressed concern that CSNP recommendations based on high level design of options may end up being unsuitable once the detailed design is considered. We acknowledge this risk in some cases. Network infrastructure development follows a staged process, where initial concept design is carried out

at a higher level to enable the comparison of options that can resolve a system need. The CSNP will include feedback loops through which material changes in later stages of a project's development can be fed back to the FSO for it to ascertain if it needs to reevaluate options. However, we also recognise the need to make firm decisions and sticking with them where the need is certain, in order to deliver required infrastructure to meet net zero at pace. See our Chapter 7, Decision 4 that explains our approach to decision-making and reassessments.

Decision 2 - Ensure environmental and community impacts are effectively considered

Background

6.13 Considering the impact on local environment and communities when developing options is vital in the early stages, to help mitigate delays in the later stages of project development. There is currently no consistent minimum requirement on this. We proposed that the FSO, as part of its CSNP Methodology, should:

- develop guidance on the minimum consistent approach to identify and, where appropriate, mitigate, environmental and community impacts using desktop assessments, as part of developing high-level designs of options.
- set out its stakeholder engagement plan to ensure interested parties are clear how and when to engage.

6.14 We also proposed that the FSO is well placed to conduct a Strategic Environmental Assessment (SEA)[45] and that this should form part of the CSNP process. In our July consultation, we left open whether a SEA for the CSNP undertaken by the FSO should incorporate any marine environmental assessments.

Our decision

6.15 Our decision is to adopt our consultation proposals related to the scope of the CSNP Methodology.

[45] The SEA became a statutory legal requirement in the UK following the adoption of Directive 2001/42/EC on the assessment of effects of certain plans and programmes on the environment (commonly referred to as 'the SEA Directive'). The Directive was transposed into national legislation by The Environmental Assessment of Plans and Programmes Regulations 2004.

6.16 We have also decided to adopt our consultation proposals related to the FSO conducting an SEA, including both onshore and offshore (any relevant marine environmental assessments) parts of the CSNP. In the CSNP Methodology, the FSO is also expected to set out the scope, detail, and timings for the development of the CSNP SEA.

Stakeholder responses and rationale for our decision

6.17 The majority of respondents agreed with our proposal for the CSNP Methodology to set out the minimum consistent approach to identify and, where appropriate, mitigate, environmental and community impacts using desktop assessments, as part of developing high-level designs of options.

6.18 One respondent noted that the lack of design definition on site location and route corridors will make it exceedingly difficult to robustly identify and mitigate environmental or community impacts at the high-level design stage and that this should be left to the detailed design and assessments stage after CSNP recommendations. We agree, and as set out in Decision 1 of this chapter, we do not expect detailed designs or assessments to be part of the minimum design requirements for CSNP. As per our July consultation (paragraph 5.19), a project specific Environmental Impact Assessment (EIA) is associated with the detailed design process, and out of scope of the CSNP. The nature of the environmental and community impact assessment and mitigation measures should be based on the high-level design approach set out in Decision 1 of this chapter.

6.19 We agree with ESO's view that it should continue to build upon lessons learned from the HND and Holistic Network Design Follow-up Exercise (HND FUE)[46] in developing its approach to identifying and mitigating environmental and community impacts as part of the high-level design of options. Lessons are already being learnt from this by the ESO from its engagement with stakeholders and these are expected to be integrated into the CSNP Methodology – See Chapter 8, Decision 2.

6.20 Two TOs felt that a desktop based high-level design of options can lead to incorrect environmental and community impact assumptions, ruling out technically

[46] Holistic Network Design Follow-Up Exercise Methodology https://www.nationalgrideso.com/document/270851/download#:~:text=The%20Holistic%20Network%20Design%20Follow,collaborative%20and%20efficient%20design%20process

and economically feasible options or resulting in mitigations that may not be necessary. We expect the FSO to work with TOs and other stakeholders in developing its CSNP Methodology, to consider these concerns, and develop an approach and level of assessment that is practical for this stage.

6.21 Several respondents agreed with the need for a stakeholder engagement plan as part of network planning, including to help build public support for change. One respondent however, felt that there are limitations to the amount of information that is available on environmental and community impacts during the high-level design stage and highlighted that a robust need-case remains fundamental to engaging on and consenting reinforcement projects. We agree that there are limitations and note that much of this will remain part of the detailed design process that is the responsibility of the TOs/third party after the CSNP recommendations have been made by the FSO (see Decision 1 in this chapter). Another respondent cited the ESO's recent HND as an example of where lessons can be learnt to inform a stakeholder engagement plan and felt that there was a lack of clarity on how various options were considered against each other. We expect the FSO to build on the lessons learnt from the HND and HND FUE exercises in developing its stakeholder engagement plan as part of the CSNP Methodology. This should incorporate stakeholder engagement requirements of the SEA, as appropriate.

6.22 Environmental respondents agreed that carrying out an SEA on the CSNP will help ensure that strategic environmental issues are identified and can be mitigated upfront by supporting those involved in the option development.

6.23 Two respondents stated that the CSNP SEA would support the ENC recommendations for the National Policy Statements (NPS) and National Policy Framework (NPF) to refer and support both the SSEP and CSNP. We note that DESNZ is progressing work in this area.[47] The respondents also noted that a CSNP supported by a SEA will elevate its status in planning and support the acceleration of network build by expediting obtaining planning consents.

[47] National Policy Statement for Electricity Networks Infrastructure (EN-5) (publishing.service.gov.uk) https://assets.publishing.service.gov.uk/media/655dc25e046ed400148b9dca/nps-electricity-networks-infrastructure-en5.pdf

6.24 We also think that a CSNP SEA can support planning consents, particularly as it will start stakeholder engagement earlier in the process than is currently the case. When coupled with the government's TAAP, we think that a CSNP SEA is a key addition, supporting the wider work to accelerate network investment decisions.[48]

6.25 However, network operators questioned whether the CSNP SEA will be of sufficient granularity to support planning consent, given it may lack details on site locations or route corridors which will only be identified using desktop assessments at this early stage. We recognise the concerns, but it remains the role of TOs or third parties to undertake environmental and community impact assessments necessary to obtain planning consent – the CSNP SEA will not remove this responsibility from delivery bodies. However, the CSNP and the CSNP SEA should help this for a recommended option. Collectively they will demonstrate the system need driving the recommended option, and why the high-level design was selected over other options having taken account of aspects such as economic, environmental and community impacts, and deliverability and operability of the available options. As set out in Decision 1 of this chapter, we do not expect detailed designs or assessments to be part of the minimum design requirements for the CSNP.

6.26 In our consultation, we left open whether a SEA undertaken by the FSO for the CSNP should incorporate any marine environmental assessments. Several stakeholders commented that there should be a requirement for both offshore and onshore elements of the CSNP to be subject to an SEA. We agree with stakeholders and recognise the importance of the SEA in supporting the offshore planning process and ensuring timely delivery of CSNP network reinforcements that take an offshore route.

6.27 We confirm that the FSO's responsibilities for a CSNP SEA should cover both onshore networks and offshore networks, where the offshore network is in scope of CSNP. Aligned with our decision on offshore network planning, set out in Chapter 8, Decision 2, we expect the FSO to engage with relevant stakeholders, to identify roles and responsibilities, and how to best coordinate the delivery of any offshore elements of the CSNP SEA. We expect the FSO to consider and set out

[48] See Appendix 1 on TAAP and CSNP interlinkages.

the roles and timings of both onshore and offshore parts of the SEA in the CSNP Methodology.

6.28 Our decision also aligns with the TAAP[49] recommendation for a Marine Environmental Assessment to be undertaken for a separate SEA for the SSEP. Early next year, we intend to work closely with government, the ESO and wider stakeholders to consider the scope, timings, and responsibilities for the SEA of the SSEP and wider environmental assessments to ensure they integrate with the CSNP and can support the wider planning process.

6.29 We think it is essential to ensure that the implications of conducting a CSNP SEA are well understood. We expect the ESO to investigate and form an initial view on the following questions which relate to the legal requirements and practicalities of supporting the CSNP SEA, by no later than 31 March 2024:

a) What is the scope and high-level methodology of the CSNP SEA?
b) Is it expected that this assessment can be done without site surveys?
c) What information does the FSO require to collect to conduct an SEA?
d) What level of community and other stakeholder engagement will be required to produce the SEA?
e) How long will it take to conduct the SEA and how will it fit in the CSNP 3-year timeline?
f) What are the processes, roles, and responsibilities for conducting the SEA for both onshore and offshore?
g) What are the requirements for a marine environmental assessment for the offshore element of the CSNP SEA? (which relevant organisations are currently responsible for delivering it?)
h) What are the interactions between the SEA for an SSEP signalled as necessary in the government TAAP and a SEA for the CSNP?
i) Does the FSO need to conduct a plan-level Habitat Regulations Assessment (HRA)[50] as part of developing the CSNP?
j) What threshold should the FSO's CSNP SEA meet to support the obtaining of planning consents by delivery bodies?

[49] See recommendation SS2: Transmission Acceleration Action Plan: Government response to the Electricity Networks Commissioner's report on accelerating electricity transmission network build (publishing.service.gov.uk)
[50] https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

6.30 Answers to the above questions are needed to ensure that the implications of conducting a CSNP SEA are well understood. Once understood, the ESO/FSO is expected to set out in the CSNP Methodology, how it will integrate the CSNP SEA into the CSNP process.

Decision 3 - FSO to decide which system needs it will develop options for

Background

6.31 In our ETNPR Decision, we decided that under the CSNP the FSO should be empowered to come up with its own options to address network needs, rather than solely rely on TOs. This will allow the FSO to use its strategic, whole system position, in developing network plans.

6.32 In our July consultation, we proposed that:

- the FSO should independently decide which network needs will benefit from its own design of high-level options and that we will not define a concept of Strategic Investment (SI) to dictate when the FSO will do this.
- where the FSO leads the option design, it does not preclude the TO proposing their own options and it is for the FSO to invite the TOs and/or other parties to do this.

Our decision

6.33 We have decided to adopt our consultation position that we will not use or define the concept of SI, and the FSO will independently decide which network needs will benefit from its own design of high-level solutions.

6.34 For network needs for which the FSO develops its own options, we have set out the high-level roles of the FSO, TOs and third parties in CSNP stage 3 below:

- TOs will also be responsible for providing their own options to meet the needs identified in stage 2. The FSO is expected to set out in its CSNP Methodology, how and at what stage, TOs will be notified of when to submit their options.
- The FSO is expected to set out in its CSNP Methodology, how, when and under what circumstances, third parties will be able to identify options as part of the network planning process under CSNP. See Decision 4 of this chapter

for further information on how CSNP will support the identification and assessment of third-party solutions and Chapter 8 Decision 3 for more details on our decision relating to Onshore Competition under CSNP.

6.35 We will set out our decision in our CSNP Guidance.

Stakeholder responses and rationale for our decision

6.36 We think our decision that the FSO should decide which network needs will benefit from its own design of high-level options and to not define SI remains justified. Limiting the FSO to only develop its own options for certain types of network needs may restrict its ability to strategically plan the network, and/or prevent it from proposing options which could add value in meeting government targets efficiently and at pace. It may also lead to missed opportunities if we only restrict the FSO to develop options for larger system needs. The FSO could equally add value in exploring lower cost non-network or innovative solutions that temporarily, or partly, resolve a larger system need or address less onerous needs. A large proportion of non-electricity transmission network companies that responded, broadly agreed with this proposal.

6.37 A TO was also comfortable with our proposal but felt that the FSO should be required to engage with TOs and any relevant third parties to test its designs. Another TO felt that the lack of a definition of SI could delay network investment, due to potential ambiguity in FSO/TO roles. A TO noted that FSO responsibility to lead option design could overload the FSO and result in duplication or replacement of existing industry expertise. It also felt that there would be no scope for independent challenge of FSO options.

6.38 We note these concerns, alongside our clarification on roles and responsibilities (See 6.35 above). We also think it is appropriate that the FSO works with stakeholders to set out in its CSNP Methodology the process it will use to:

- Develop its own high-level design of options.
- Communicate to TOs and third parties which system needs it will undertake its own high level option design for. This may be before or after receiving options from others. For example, if it considers that certain options have been missed, or if it considers value in adding further options to resolve the system

need. It may also identify linkages with other network needs that it is not proposing to address with its option but may be impacted.

- Communicate all CSNP system needs to TOs and third parties and the process by which the TOs will meet their obligation to provide high level options to meet those needs under CSNP.
- Set out the criteria and processes under which it will invite third parties to propose high level options. See Decision 4 of this chapter, and Decision 3 of Chapter 8 for further details on involvement of third parties in CSNP.
- Set out in each CSNP, if there are aspects of local transmission network planning that the FSO and TOs will cooperate on as part of the CSNP due to any overlap with wider system needs. See Chapter 2, Decision 1 for further details on the scope of CSNP.

6.39 As part of the RIIO-3 SSMC, we have sought views on how best to ensure cooperation and timely data sharing between the TOs and the FSO to complement the FSO's CSNP Methodology and ensure the deliverability of high-level solutions through effective collaboration. The FSO is strongly encouraged to consider any responses as part of developing its CSNP Methodology and as part of its review of relevant industry codes for data sharing and cooperation (see Decision 5 of this chapter for data sharing between parties for the CSNP).

6.40 A TO noted that the FSO doesn't have sight of non-load related projects, which will hinder its ability to find efficiencies. We expect TOs to provide the FSO with up-to-date information on their non-load work programmes and local load related works. This means that the FSO can consider alignment of plans and find efficiencies by developing solutions with shared drivers, in consultation with TOs. See Decision 5 of this chapter where we set out our expectations for data exchange for CSNP.

6.41 A TO also noted that the FSO must also be accountable for compliance of the options that it leads the high-level designs of, with relevant standards eg SQSS. Our decision on SQSS is set out in Chapter 8, Decision 4.

6.42 One TO was opposed to the FSO designing its own network options but suggested that it could design "non-network" options. We think it is appropriate that the FSO can consider both network and non-network options as set out in 6.37 of this Decision and for the reasons set out in Chapter 5, Proposal 3 of our July consultation.

6.43 We set out in our consultation, that without a definition of SI there is a risk that the FSO will not actively embrace our expectations that it should develop its own high level network solution options. We suggested that this risk can be mitigated by us monitoring this area and reserving the right to introduce (subject to consultation) specific expectations for this within our CSNP Guidance document. There were no specific comments on this in responses to our July Consultation. We retain this position as part of our decision as we think the FSO should build capability in this area.

6.44 For system needs for which the FSO will develop its own options for, TOs were concerned with our proposal that it is for the FSO to invite' the TOs and/or other parties to put forward their options. After reviewing stakeholder feedback, we would like to clarify that we did not intend for the FSO to act as a "gatekeeper", potentially limiting TOs' ability to put forward options. We confirm that TOs will be able to put forward options for all CSNP network needs which are identified in stage 2. The word "invitation" is to signal a specific point(s) during the stage 2 and 3 process, where the FSO will need to be clear when it expects the TOs and third parties to submit their options. This is required to ensure the FSO can coordinate the delivery of the CSNP.

Decision 4 - Supporting the identifying and assessment of third-party solutions as part of the CSNP

Background

6.45 The FSO has an important role under the CSNP to identify and facilitate third-party solutions, including short-term and non-network build solutions to meet network needs. This can enhance innovation and provide a greater richness of options for the FSO to consider under the CSNP.

6.46 We proposed that the FSO should establish the process for how, and when, third parties will be able to provide options to network needs under the CSNP, and how these will be assessed against TO proposed options.

Our decision

6.47 We have decided to adopt our consultation position. We expect the ESO/FSO to set out in the CSNP Methodology, how, when, and under what circumstances third parties will be able to put forward their options within CSNP. This decision should

be read alongside Chapter 8 Decision 3 on how third-party options for onshore competition will be considered as part of the CSNP process.

Stakeholder responses and rationale for our decision

6.48 Non-TO stakeholders broadly supported our consultation positions. They agreed that including third-party options through competitive processes in network development can support innovation and efficiency. Some stakeholders requested an increase in transparency around how this will be done. We agree with the benefits identified from competitive processes and think that the CSNP Methodology can help provide this transparency to stakeholders. This should include being clear on how wider CSNP-driven changes to areas such as data exchange (Decision 5 in this chapter), consistency in high-level designs (Decision 1 in this chapter) and CBA approach (Chapter 7, Decisions 1 - 7) will help create a 'level playing field' for third parties.

6.49 One stakeholder noted that even though third parties can put forward options through the Interested Persons' Options process[51], to date this has not resulted in any options coming through. We expect the ESO/FSO to set out clearly in its CSNP Methodology how the Interested Persons' Options process and its "Network Services Procurement" processes (also known as "NOA Pathfinders"), which it uses to procure market solutions to operability and constraint management needs, will integrate into the CSNP Methodology, so third parties have clarity on how and when to engage. This will help to fully unlock the potential for innovation and efficiency from alternatives to TO options.

6.50 TOs provided mixed views on the role of onshore competition in bringing forward third-party solutions. We have considered these within Chapter 8, Decision 3. Two TOs supported the role of the FSO in setting out in the CSNP Methodology, how, when and under what circumstances, third parties can get involved in the CSNP. TOs stated the need for a clear and transparent process that should set out what would trigger third-party involvement and engagement under the CSNP.

[51] The Interested Persons' Options Process is a process designed to increase the diversity of options considered within the NOA process through industry and academic participation. Under the process third parties can suggest new and innovative options that may not otherwise be captured in the NOA process. If the third-party gives demonstrable evidence of benefit to meet system needs, there is scope for the ESO and TOs to provide additional support and analysis.

One TO stated that third-party options should be expected to comply with SQSS. See Chapter 8, Decision 4 for our decision on SQSS compliance under CSNP.

6.51 To enable maximum participation by third parties, we expect the FSO as part of its CSNP Methodology to set out transparently when, how and under what circumstances third parties can put forward options under CSNP and can get involved. It should also set out in its CSNP stakeholder engagement plan, how it will liaise with third parties. We will set this expectation in our CSNP Guidance document.

6.52 Several stakeholders stated that 'Deliverability' of options should be a key criterion when assessing options, including those proposed by third parties. Another stakeholder proposed that there should be clarity on the evaluation criteria for all options. Both of these points are part of our decision on the criteria used for assessing options under the CSNP - see Chapter 7, Decisions 2 and 3.

Decision 5 - Ensuring effective data exchange between parties

Background

6.53 In the July consultation we set out the following proposals:

- the ESO should lead a review of existing codes to ensure they support the exchange of information that is needed to implement the first CSNP; and
- the ESO should lead a review of existing data sharing arrangements to ensure they are sufficient for the FSO to enable third party participation, including early competition.

6.54 We also set out our expectation for wider data exchange improvements across Ofgem and government to be considered by the FSO (eg the development of the ESOs Data Sharing Infrastructure[52], previously known as the 'Digital Spine').

Our decision

6.55 Our decision is to adopt our consultation position set out above.

[52] Virtual Energy System - Raising awareness and fostering culture (nationalgrideso.com)

6.56 For both electricity and gas transmission, we will set out in the CSNP Guidance document our expectation that the FSO should develop processes and governance for the periodic review of existing, and future, codes and guidelines that will support effective information exchange. We expect the FSO to set out its approach to data exchange in their CSNP Methodology.[53]

Stakeholder responses and rationale for our decision

6.57 Our rationale should be read alongside Chapter 4, decision 6 - Improvements to transparency in analysis and outputs.

6.58 Most responses, including the ESO, agree that the ESO should review the existing codes, including the SO-TO Code (STC) and associated procedures (STCPs), to ensure they support the exchange of information to implement the first CSNP. This includes but is not limited to:

- Ensuring that data sharing is not hampered simply by the change in terminology eg the move from NOA to CSNP.
- Consideration of whether specific areas need to be added/tightened, eg provision of:
  - Direct access to asset and substation information, including existing site layout drawings, overhead line and cable routes, electrical schematics, asset specifications, and condition information to support high-level option design.
  - Data on committed work programmes for investment in assets or sites to accommodate new connections, reinforce local networks, and non-load related work programmes such as asset replacement programmes for upgrading ageing equipment. This includes information on contracted commitments made on assets such as substation bays. This will ensure accurate planning, consideration of staged works and outage planning, help determine efficiencies in proposed options, and help with better estimation of earliest in-service dates (EISDs).
- Determination of incurred costs to inform cost estimation and scrutiny of options.
- Ensuring that FSO has access to all power system modelling data for the network so it can conduct its own analysis and become an informed buyer of

any options and analysis put forward by TOs. This will enable the FSO and TOs to develop a common view on system needs and the relative benefits of different options.

6.59 We said in our July consultation, the ESO should convene an industry group to review the codes by October this year. Since then, a broader Cross-Code Workgroup (CCWG) has been established to develop the industry code changes required for the day one establishment of the FSO. While this will help with ensuring CSNP impacts are recognised, the CCWG does not provide a review of STC and STCP required to action the CSNP. We remain of the view that the ESO needs to lead an industry group review as soon as possible.

6.60 An area of focus for respondents was to ensure that the ESO's reviews of industry codes also support third-party participation in the CSNP process through the provision of information. We agree, and as set out in paragraph 4.51, Chapter 4, Decision 6, that we will ensure that the FSO shares data in a usable format for stakeholders to run their own forecasts and engage in network planning that will support third-party participation. This enables the FSO, TOs and third parties to develop solutions for Stage 3 of the CSNP in a consistent manner because all parties will have the same starting assumptions which should enable greater collaboration and transparency.

6.61 Several respondents highlighted the importance of 'Open Data'[54] as a means of supporting effective data exchange. They have highlighted ESO's Data Sharing Infrastructure[55] as a facilitator to Open Data. Several respondents particularly suggest that data used in the FES should be treated as Open Data. Some respondents sought clarification on how 'Open Data' can be accounted for by established data exchange standards and how would the FSO protect sensitive network data. Others noted the need to balance the Open Data principles with the security and safety of the network. We note these concerns and have set the requirements for data transparency and audit in Chapter 4, Decision 6.

[54] Open Data: Data Assets, their associated Metadata and software scripts used to process Data Assets that are made available for anyone to use, modify, and distribute with no restrictions.
[55] Chapter 6: Future Systems and Network Regulation: Framework Decision Overview (ofgem.gov.uk)

6.62 Several gas networks assume that these proposals do not apply to natural gas in the short term. However, as part of the FSOs future gas system planner role,[56] we expect that that the FSO will develop and consult on processes and governance for the periodic review of existing, and future, codes and guidelines that will support effective information exchange for gas transmission. In the August 2023 – joint Ofgem-DESNZ Second Policy Consultation and Update,[57] the current position is for the FSO to become a new class of user under the Uniform Network Code (UNC). This will enable our Chapter 5 Decision 5 to be delivered. We also expect the ESO/FSO to review data exchange requirements for natural gas as the scope of its planning role evolves.

[56] Future System Operator: government and Ofgem response to consultation (publishing.service.gov.uk)
[57] Future System Operator - Second Policy Consultation and Update (publishing.service.gov.uk)

7. Stage 4 – Decision-making tools including Cost Benefit Analysis (CBA)

Section summary

This section sets out our decisions for how the FSO should assess options and make recommendations in the CSNP.

Background

7.1 This stage sets out how the options developed in stage 3 (see Chapter 6) to resolve system needs, across both near and longer-term time horizons, should be evaluated by the FSO to produce CSNP recommendations.

7.2 The CSNP will cover a variety of system needs with different drivers.[58] For example, wider system needs to cater to additional future capacity requirements, and operability issues on the system due to the changing mix of demand and generation. This will require a range of assessment criteria and approaches to be developed by the FSO to support decision-making under CSNP.

Our Decisions

Decision 1 - General principles on CSNP decision-making framework

Background

7.3 In our July consultation, we proposed that the FSO's CSNP Methodology covering the stage 4 decision-making approach, should be based on the general principles of transparency, open stakeholder engagement, being adaptive to change, and that it should be robust, consistent, and reproducible.

[58] See Chapter 5, Decision 1.

Our decision

7.4 Our decision is to adopt our consultation proposal on the general principles of the CSNP decision-making framework.

7.5 As part of our CSNP Guidance document, we will set our expectation on the FSO to demonstrate how, as part of its CSNP Methodology, it meets the principles above and provides clarity on its approach to ongoing stakeholder engagement. This should include the FSO ensuring that its website is clear on how and when stakeholders can get involved in the CSNP process.

Stakeholder responses and rationale for our decision

7.6 Most stakeholders agreed with the need for the specified principles to have confidence in CSNP outputs. We think our decision is justified. With the substantial amount of new network investments required to meet net zero, all stakeholders of the network, from electricity consumers to local communities who will be impacted by an increased presence of network assets in their locality, will rightly have an expectation that network development plans meet these general principles.

7.7 Several stakeholders suggested that the FSO should be able to demonstrate the reasons for its decisions and the basis of its assumptions, to ensure stakeholder trust and confidence. Stakeholder engagement should also be timely and responsive.

7.8 One stakeholder noted that with the FSO being a public body, it will have broad obligations that mean that as part of its decision-making process it will need to clearly set out how it manages any trade-offs in a transparent way. We acknowledge that the FSO will have a broad set of obligations to consider when making decisions which will stem from its overarching duties in the Energy Act 2023. This includes its duties in section 163 of the act to promote net zero, Security of Supply and Efficiency and Economy and in section 164 to have regard to Competition, Consumers, Whole Systems, and Innovation. The FSO will take into account its statutory duties and obligations when developing its CBA and wider CSNP Methodology.

7.9 TOs asked to be included in the development of the CSNP Methodology. Some stakeholders asked for clarity on dispute management and resolution under the CSNP. We agree and expect that the ESO/FSO to include TOs, Ofgem, third party

network developers, and other key stakeholders in the development of its CSNP Methodology. In terms of dispute resolution, this is also discussed in Chapter 8, Decision 4.

7.10 We will also set out in our CSNP Guidance Document, our expectation on the FSO to develop a CSNP Methodology based on the above general principles, and for the FSO to provide clarity on its approach to stakeholder engagement for the CSNP.

Decision 2 - Decision-making framework for selecting potential projects to address longer-term system needs

Background

7.11 As set out in Chapter 3, Decisions 1 and 2, we expect that the FSO will develop a 'funnel of potential projects' that cover long-term system needs to 2050. This decision describes how the FSO should determine which options to include in the 'funnel of potential projects'. As the FSO determines that the certainty of need is sufficiently established these projects may then enter the firm 'delivery pipeline'.

7.12 In our July consultation we proposed that the FSO should establish and manage a clear assessment methodology for selecting options to enter the potential projects funnel. This methodology should include a mix of economic decision-making support tools and qualitative analysis to support the selection of potential projects. We proposed that these tools should strike an appropriate balance between future system needs, capital cost of the options, avoided constraint costs, and environmental and community impacts.

Our decision

7.13 Our decision is to adopt our consultation proposals.

7.14 Based on responses to our July consultation, we have also decided that the ESO/FSO should include the consideration of deliverability of projects and their impact on network operability as assessment criteria within this stage of CSNP.

Stakeholder responses and rationale for our decision

7.15 Stakeholders were supportive of our proposals for a decision-making framework for selecting potential projects to address longer-term system needs. We think our decision is justified because a clear and transparent assessment methodology for

selecting options to address these needs is necessary to produce CSNP investment recommendations.

7.16 One stakeholder felt that choosing options that allow for different future pathways rather than decisively closing down future optionality was important to deal with uncertainty. We agree – there will be situations where longer-term needs will be uncertain, given the CSNP will be looking out to 2050. In our July consultation, we recognised that the longer-term CSNP framework will provide the flexibility to allow one or more options to be developed further for a particular system need until there is greater certainty and the FSO decides to move an option into the delivery pipeline. It will also follow 'adaptive planning' so that short term actions can be taken to secure future options. The longer-term decision-making approach will also consider risk envelopes to consider broader resilience issues, such as Climate Resilience (see Chapter 8 Decision 5). We expect the ESO/FSO to consider this as part of developing the CSNP Methodology.

7.17 Several respondents supported the use of qualitative evaluation criteria for assessing options in the near and longer-term funnel such as environmental, community, and operability impacts, together with project deliverability, in addition to economic assessments based on costs alone. Decision 5 in this chapter sets out our decision on how environmental and community impacts will be embedded in CSNP decision-making frameworks.

7.18 We support the expansion[59] of CSNP stage 4 assessment criteria to include the consideration of deliverability of projects and their impact on network operability. The ESO has introduced these criteria for its assessments under the TCSNP-2[60] and we expect the CSNP to build on the lessons learnt from the TCSNP-2 assessments. The ESO/FSO should consider this with stakeholders as part of developing the CSNP Methodology. We note that the level of detail to make these assessments will vary based on the certainty and timing of the need (see Chapter 6, Decision 1).

[59] Previously, the Network Options Assessment Methodology used economic assessments as the primary driver for decision-making in the CBA.
[60] Transitional Centralised Strategic Network Plan - 2 (TCSNP-2) is the combined output of the Holistic Network Design Follow Up Exercise and the Network Options Assessment that will be published by 31st March 2024 by the ESO. The TCSNP-2 includes economic, environmental and community, deliverability, and operability impact assessments to evaluate options.

7.19 One respondent felt that there is a risk if a TO purchases land or makes other initial investments for solving a localised network need, and the CSNP then proposes a different solution to solve that need, investments may get stranded. We agree that there is a potential risk that CSNP solutions may interact with and impact local network planning. However, collaboration between TOs and the FSO is a central feature of the CSNP (See Chapter 2, Decision 2). This collaboration will be bolstered by enhanced data sharing between TOs and FSO, including:

- the sharing of TO network plans relating to activities outside the scope of CSNP such as planning relating to local network or non-load related works (see Chapter 6, Decision 5);
- the FSO's role to manage connections (see Chapter 8, Decision 6); and
- regulatory changes to enable this eg code modifications (see Chapter 6 Decision 5).

7.20 One Stakeholder suggested that both Least Worst Regret (LWR)[61] and Laplace[62] approaches, which require monetisation of costs and benefits, may result in one option being selected over another based on marginal cost savings. While this may be appropriate it may not adequately reflect non-monetised benefits and costs and be highly sensitive to demand and supply modelling (stage 1). It suggested 'stress testing' of FES pathways is essential. We don't expect CSNP decision-making to rely simply on marginal cost factors. As we explain in this decision, we expect there to be a range of assessment criteria, and the FSO will be expected to use a wide set of considerations, including those based on engineering assessments, and a mix of decision-making support tools to support its decision making under CSNP. These should also be stress-tested, for example by using Breakeven and Sensitivity analysis,[63] and the FSO should justify its recommended options into the funnel of potential projects. In Chapter 4, Decision 1 we have also required the FSO to stress test the FES to ensure that these are robust. We expect the ESO/FSO to set out in its CSNP Methodology how it will do this.

[61] The Least Worst Regret (LWR) approach is currently used in the NOA. It will calculate the net present value of cost and benefits of various options under multiple CSNP FES pathways and choose the option which performs best across all of them.
[62] The Laplace decision criterion will assume an equal probability of each pathway and choose the option which performs best on average.
[63] These economic decision-making support tools are explained in Chapter 6, Proposal 2 of our consultation.

Decision 3 - Decision making framework to bring potential projects into the 'delivery pipeline' for near-term needs

Background

7.21 In our July consultation, we proposed that the FSO should establish and manage a clear assessment methodology for when, and how, to move projects to the delivery pipeline (ie recommended by the FSO to be funded, see Chapter 3 Decision 1). At a minimum, we suggested that an assessment should be triggered when the system need associated with a potential project is included in the single FES pathway within the near-term time period (see Chapter 3 Decision 1).

7.22 We also proposed that the FSO develop an assessment toolkit to support a delivery recommendation, that should be similar to the one used for including options into the funnel of potential projects. However, the analysis should be more detailed as it will result in a decision to move a project into delivery.

Our decision

7.23 Our decision is to adopt our consultation proposals on the decision-making framework to bring potential projects into the 'delivery pipeline' for near-term needs in the CSNP.

7.24 Based on responses to our July consultation, we have also decided that the ESO/FSO should include the consideration of deliverability of projects and their impact on network operability as assessment criteria within this stage of CSNP.

Stakeholder responses and rationale for our decision

7.25 Most respondents broadly agreed with our proposals. We think our decision is justified because a clear and transparent assessment methodology comprising of economic decision-making support tools and qualitative analysis for selecting options to address near-term needs is necessary to produce CSNP recommendations.

7.26 The majority of respondents called for greater clarity and transparency on what constitutes the decision-making support tools and the methodologies that sit behind them. Respondents stated that the tools should evaluate between competing options based on consistent and repeatable analysis and criteria. We agree. The FSO's CSNP Methodology should set out the decision-making approach

for bringing potential projects into the CSNP 'delivery pipeline', based on the general principles set out in decision 1 of this chapter. We will set this expectation in our CSNP Guidance.

7.27 Several stakeholders strongly disagreed with the current method of evaluating network investments under the NOA which is primarily based on the avoided costs of constraints payments,[64] because of the level of uncertainty and because the evaluation is biased by assumptions used in the FES. Respondents strongly supported the use of wider metrics beyond simply constraint costs assessed against the cost of infrastructure. Several stakeholders requested clarity on how wider costs, benefits, environmental and community impacts, contribution to net zero or other government targets, or to compliance with technical standards will be assessed. Stakeholders noted that the detailed project evaluation and selection criteria need to be as objective as possible.

7.28 The changes to FES outlined in Chapter 4 of this document, and the introduction of the SSEP should help to address some of the concerns around the use of the FES in decision-making for network investments. We note that the ESO has made improvements to the latest NOA methodology for TCSNP-2, as explained in Decision 2 of this chapter. This methodology incorporates the assessment criteria used for the HND, including economic, environmental and community, deliverability, and operability impact assessments. Similar to Decision 2 of this chapter, we agree with stakeholders and support the expansion of CSNP stage 4 assessment criteria to include the consideration of deliverability of projects and their impact on network operability. In Decision 2 of this chapter, we acknowledge and agree that the decision-making framework cannot be only cost based and there must be a framework for assessing a wider range of factors in a transparent and consistent manner and that the ESO/FSO will need to build on this for the CSNP. The framework for evaluating options for near-term needs will be more detailed than that applied for the longer-term funnel of projects, as it will result in a decision to move a project into delivery. In our CSNP Guidance document we may provide further guidance to support the FSO.

[64] https://www.nationalgrideso.com/electricity-explained/how-do-we-balance-grid/what-are-constraints-payments#:~:text=When%20there%20are%20physical%20constraints,compensated%20via%20a%20constraint%20payment

7.29 Some stakeholders noted that the assessment needs to be resilient to uncertainty. However, a stakeholder suggested that while the CSNP decision-making framework will consider certainty of need as a driver to trigger delivery, recognition must also be given to when an option must be triggered for it to be completed in time for a less certain need. Waiting for absolute certainty, might result in being unable to build new network infrastructure in time. Similarly, the ESO stated that to ensure that a project is delivered on time to meet a system need, the transition from the funnel to the pipeline should also be based on an individual project's delivery timescales and timing of system need, rather than only following a fixed timeframe of the two CSNP products. We agree. The CSNP decision-making framework in the CSNP Methodology should be based on a toolkit that allows for robust decision-making under different levels of certainty of need. Examples of decision-making support tools are explained in our July consultation, Chapter 6. We agree that a balance will need to be struck between the level of certainty of need and the risk of delaying investment to achieve absolute certainty. We expect the FSO to set out in its CSNP Methodology, a transparent and clear approach that will be used for bringing potential projects into the 'delivery pipeline' in the CSNP.

Decision 4 - Our proposal to not re-evaluate projects that are in the CSNP delivery pipeline

Background

7.30 In our July consultation we proposed that once a project is in the CSNP delivery pipeline (ie recommended by the FSO to be funded), it should not be re-evaluated again, unless the project has significant changes to parameters such as delivery dates and costs, or where there are significant changes to the system need.

Our decision

7.31 Our decision is to adopt our consultation position.

7.32 In our CSNP Guidance document we may set out expectations and guidance to support the FSO. The FSO is expected to set out its approach for the re-evaluation of projects that are in the CSNP delivery pipeline in its CSNP Methodology.

Stakeholder responses and rationale for our decision

7.33 Most respondents agreed with the broad principle to not re-evaluate a project's need once it's in the CSNP delivery pipeline. This was broadly seen to provide additional certainty throughout the value chain. We recognise that there are some associated risks in doing this, such as asset stranding, but we believe they are significantly outweighed by the benefits in terms of investor and supply chain confidence. In a situation where a certain amount of capacity created as part of a strategic investment plan for the GB network to meet net zero is left unused, it is likely to provide opportunities for future users. Our decision is also broadly in line with the ENC's recommendation set out in the government's TAAP.[65] The recommendation states that "projects identified in the shorter-term Centralised Strategic Network Plan (CSNP) should become the baseline, and the need for them should not be revisited in the next shorter-term CSNP".

7.34 In our July consultation, to mitigate against risks of stranding of assets, or changing of need, we proposed that risks can be moderated by an appropriate materiality trigger whereby, under a limited and defined set of conditions, a project in the delivery pipeline could be revisited. In general, stakeholders that responded supported the idea, given the materiality of investments that will be part of the CSNP. Some respondents suggested that material changes should include environmental impacts that are identified at detailed design stage. However, some respondents stated that any materiality threshold to re-open the decision must be sufficiently high and any decision to take a project out of the CSNP delivery pipeline needs to be as robust as the decision to put it into the pipeline. Some respondents felt that re-evaluation of projects in the delivery pipeline should only occur under a limited and defined set of conditions, which are set out in the CSNP Methodology. This includes timescales for carrying out the assessment with the appropriate governance, such that any breach of the threshold does not pose a risk to all other projects in the delivery pipeline. One stakeholder also requested that there must be a provision to ensure efficient costs already incurred for projects can be recovered by the delivery body.

7.35 We acknowledge these concerns and suggestions. We remain of the view that it is important to maintain some discretion to revisit projects in the delivery pipeline. This is due to the risk to consumers from the scale of investment and, in some

[65] Recommendation SS4

cases, the pace to develop new options for near-term needs that will be considered by the CSNP, which might mean that options don't have a sufficiently developed high level design at the first instance of being considered. The assessment criteria for re-evaluating projects in the delivery pipeline, timescales associated with re-assessment, appropriate change control including the assessment of any impact of changes to projects that are in the delivery stage, and the nature of any materiality threshold, will be considered with industry and developed by the FSO as part of the CSNP Methodology. In our CSNP Guidance, we will consider setting expectations and guidance to support the FSO, including views on the scope of the materiality trigger which may be used to re-evaluate projects.

Decision 5 - Inclusion of environmental and community impacts in the CSNP CBA

Background

7.36 In our July consultation we proposed that the CSNP Methodology should explain how the assessment of impacts of network options on the environment and communities will be included within the CSNP decision-making process,[66] including in the stage 4 CBA.

Our decision

7.37 Our decision is to adopt our consultation position. The FSO is expected to set out and consult on its approach in its CSNP Methodology.

7.38 In our CSNP Guidance document we will provide guidance to support the FSO.

Stakeholder responses and rationale for our decision

7.39 The majority of stakeholders agreed with our proposal. Embedding environmental and community impacts in the decision-making for network planning should improve the quality of analysis and reduce the chances of material changes to

[66] In Chapter 6, Decision 2 we set out the minimum approach to identifying and avoiding environmental and community impacts in the high-level design of options.

project design or delivery timing. Considering these impacts in decision-making will help to support the accelerated delivery of investments.

7.40 Some stakeholders voiced concerns that considering environment and community impacts in decision making based on desktop assessments alone, could risk eliminating good options, which could have gone ahead with the right mitigation of impacts. CSNP assessments are based on the high-level design of options, even though some of these may be developed further than the minimum requirements (see Chapter 6, Decision 1). This somewhat limits the scope of the analysis that can be conducted for the CSNP. That said, environmental and community impacts will be embedded in the CSNP CBA decision making criteria providing an explicit focus on these considerations (see Decision 2 and 3 above). Coupled with the introduction of the SSEP and SEAs, we expect a marked improvement in the level to which environment and community impacts are considered in CSNP decisions. There may be occasions where options that fare poorly in environmental or community impacts, but fare well in other criteria, are part of the potential options in the longer-term funnel. To move into the delivery pipeline may require going beyond the minimum desktop based high-level design requirements, so perceived environmental and community impacts and their mitigation are considered in more detail. We expect the FSO to develop its approach, working with key stakeholders, as part of the CSNP methodology. It should take lessons from the recent HND process.

7.41 A stakeholder suggested the inclusion of historic environment impacts in the CSNP Methodology to reduce risks in later stages of a project's development due to historic environment legislative requirements.[67] The FSO should, as part of developing the CSNP Methodology, consider if these impacts can be reasonably identified as part of the minimum requirements for the high-level design of options within stage 3, and how any impacts can be used for evaluating options in stage 4.

7.42 Stakeholders requested transparency and clarity in how environmental and community impacts of options will be evaluated in CSNP stage 4 to reach investment decisions. We expect the FSO to develop its assessment approach as

[67] Historic environment is protected by legislation. An example of impacts can be those associated with installing underground cables and the risk to archaeological remains of national importance. https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment

per this decision, and clearly and transparently set this out in the CSNP Methodology.

7.43 In our July consultation, we had stated that we expect the FSO to consider how to utilise The Green Book guidance issued by HM Treasury in its approach to assessment of environmental and community impacts for CSNP stage 4. Several stakeholders welcomed this. We agree and expect the FSO to consider this as part of the CSNP Methodology.

7.44 Some stakeholders suggested additional cost and benefit areas to those in our July consultation to include in the CSNP CBA. These included the option for staged expansion of network, and interaction with and impact on other areas of network planning such as non-load related works or connections works. We expect the FSO to consider if and how these should be included within the CSNP stage 4 assessments as part of developing the CSNP Methodology.

7.45 One stakeholder agreed with our position that the CBA does not need to consider environmental and community impacts in a way that is above what is necessary to be granted planning consents. They also considered that any impacts included above what is considered necessary for planning consents could impact the consenting process in Scotland which is based on determining the most economic and efficient solution. We think our position remains justified as mitigating environmental and community impacts beyond what is required to achieve planning consents may have the result of making network development unjustifiably expensive. We expect the FSO to remain up-to-date with the planning consent process and ensure that the CSNP Methodology remains robust. We also note that on-site identification of environmental and community impacts and mitigation where necessary for obtaining planning consents remains the responsibility of the TOs or third parties as part of detailed design, after the CSNP recommendation to deliver a project.

7.46 Some stakeholders also pointed to the work being undertaken by DESNZ on community benefits for electricity transmission network infrastructure,[68] and suggested that this may be considered in CSNP stage 4 decision-making assessments. We note that the scheme detail and implementation of this decision

[68] https://www.gov.uk/government/consultations/community-benefits-for-electricity-transmission-network-infrastructure

is still in development. Once further detail is developed and the Guidance on Community Benefits is published in 2024, we will consider if the FSO should consider how relevant parts of it can be factored this into the CSNP Methodology. This should be done working together with us, DESNZ, and other key stakeholders.

7.47 Some stakeholders agreed with our proposals that the CSNP CBA will embed qualitative and quantitative socio-economic impacts of new network and enable a balanced approach to be taken for their inclusion. This could include benefits relating to reduction in carbon emissions due to new networks which facilitate low carbon energy and demand and could use the government's latest carbon valuation. We see no reason to change this position as it is reflective of best practice.

7.48 In our July consultation, we acknowledged that we expect that achieving net zero will require significant investment in energy infrastructure. This new network may result in impacts to the local environment and communities. At the same time, Ofgem has a statutory duty to carry out its functions under the relevant parts of the Acts[69] in a way that promotes economy and efficiency. Therefore, the impacts should be managed and mitigated to the extent possible, whilst keeping the overall cost of new network low. After considering all responses to our consultation, we have found no reason to change this position, and we retain this as our decision. This balance should be considered as part of the FSO developing its CSNP Methodology.

7.49 The FSO should develop the approach to include environmental and community impacts in the CSNP CBA as part of its CSNP Methodology. Based on the above, we have retained our July consultation position that, we expect the FSO to consider how:

- 'Costs' could include wider societal cost of not meeting net zero, and 'benefits' could include carbon reduction benefits from network reinforcements.
- To utilise The Green Book guidance issued by HM Treasury.[70]

[69] Utilities Act 2002, Electricity Act 1989, and Gas Act 1986
[70] https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2020

- Qualitative assessment is integrated into the process (but noting it should be supplemented, where possible, with quantitative assessment too)
- Constraint costs, environmental and community impacts should be weighted (if at all).
- Environmental and community impacts of new network should be included into the CBA, whilst meeting the FSO's duty of promoting efficiency and economy (see decision 1 of this chapter) by keeping the overall cost of new network low.
- The CBA can identify mitigation of environmental or community impacts beyond those required to obtain planning consents, at minimal detriment to the wider GB energy consumers.

Decision 6 - CSNP decision-making framework to assess and recommend investments for near and long-term operability needs

Background

7.50 In our July consultation we proposed that the FSO's CSNP Methodology should set out how operability solutions will be assessed and taken forward for near-term and longer-term operability needs.

Our decision

7.51 Our decision is to adopt our consultation position. For operability needs that are in scope of the CSNP, see Chapter 2 Decision 1, Chapter 3, Decision 1 and Chapter 5, Decision 1. The FSO should set out and consult on its approach in its CSNP Methodology.

7.52 In our CSNP Guidance document we may provide guidance to support the FSO.

Stakeholder responses and rationale for our decision

7.53 The CSNP as a holistic plan, considers a range of system needs, including those impacting system operability (see Chapter 5, Decision 1). It must assess near and longer-term operability solutions to decide which ones to take forward as part of its recommendations. Most stakeholders agreed with our proposals on the decision-making framework to assess and recommend investments for near and long-term operability needs.

7.54 One respondent noted that due to the changing nature of supply and demand, the ability to effectively model the ongoing evolution of the power system will be important. It also noted that the Network Services Procurement process (also known as NOA Pathfinders) will play a key role in trialling potential solutions, as will innovation projects. The ESO agreed with our proposal and stated that it is currently developing future markets for thermal, voltage and stability as part of its "markets roadmap" and expects to procure long-term operability needs through the long-term markets under development. We are supportive of its work to develop new markets for operability solutions.

7.55 Another respondent agreed with the proposals and felt that this longer-term proactive approach will foster investor confidence and give direction on key areas of focus.

7.56 Another stakeholder agreed with our proposal, however cautioned that due to the "urgency of system issues", there may be a need to assess operability solutions outside the CSNP. It considered that the CSNP should focus on strategic system development only and highlighted that short term issues, should be resolved through other routes, however, didn't provide suggestions on where those could be picked up. We think that the change in the scope of the CSNP (see Chapter 2, Decision 1 and Chapter 5, Decision 1) addresses this concern to some extent. We expect the FSO, as part of CSNP to consider strategic wider network operability needs and arising issues within the scope defined above, as part of CSNP. The FSO is expected to set out and consult on its approach in its CSNP Methodology.

7.57 Some stakeholders urged for transparency on how all types of operability solutions within CSNP are assessed and taken forward. We agree with this feedback. See Decision 1 of this chapter on the general principles for the CSNP decision-making framework, which covers the need for transparency, and Chapter 6, Decision 4, and Chapter 8, Decision 3 on how third-party options can be identified and assessed within CSNP.

Decision 7 - CSNP CBA approach to assessing options with different lifespans, to thermal and operability needs

Background

7.58 We proposed in our July consultation that the ESO should:

- Review its CBA approach to assess any shortcomings in fairly assessing short- and long-term options for resolving network constraints.
- Review its current approach to resolving operability needs in the scope of CSNP. This should include assessing if the duration of the service and the assessment methodology is appropriate and provides best value for consumers.
- Use the outputs of the above reviews to transparently set out, its approach as part of the CSNP Methodology.

Our decision

7.59 Our decision is to adopt our consultation position.

7.60 We expect the ESO/FSO to lead work to identify and start to address how any shortcomings can be addressed. Its approach is expected to be set out in the CSNP Methodology and reviewed over time.

7.61 We will include an expectation for the FSO to formalise and continue to review its approach as part of the CSNP Guidance document.

Stakeholder responses and rationale for our decision

7.62 We think our decision for the ESO to review its CBA approach to assess short- and long-term options for resolving network constraints is justified as the scale of change required to meet net zero will need a mix of solutions to be taken forward, including innovative and non-network ones.

7.63 We also think that our decision for the ESO to review its current approach to resolving operability needs in the scope of CSNP, including considering if the duration of the service and the assessment methodology is fit for purpose and provides best value for consumers, is justified. This is because we believe that where there are clearly greater benefits to consumers in progressing with options that provide a longer duration of benefit, a process should not artificially disregard such benefits.

7.64 Stakeholders agreed that it is important to be able to assess different types of solutions which provide different durations of benefits, fairly. One respondent stated that many of the network needs on the system that are currently being addressed by the provision of ancillary services, will exist on the network in the

longer term, and so the longer-term needs should be considered in the CBA, and the costs and benefits assessed should be based on the lifetime of the need and not a shorter duration due to the design of the process. In line with our decision, we expect the ESO to work with stakeholders to develop the approach to assessing and resolving operability needs in the scope of CSNP, as part of the CSNP Methodology.

7.65 One stakeholder noted that network solutions (as opposed to non-network solutions) have over time provided resilience and robustness to unforeseen events and market developments, that have offered real benefits to consumers. We acknowledge this point however, given the pace of change required, there is a need for the FSO to consider all options, network and non-network ones. It is important that, as far as possible, the FSO's CBA approach can fairly consider both options to ensure the most effective solutions are progressed.

Decision 8 - CSNP will include appraisal of different combinations of energy system and network options

Background

7.66 In our July consultation we proposed that the FSO should develop capabilities to appraise and compare different combinations of energy system options, eg the siting of future hydrogen electrolysis plants, and network options within the CSNP Methodology and CBA.

7.67 We acknowledged how and when this capability is used to inform policy making and industry, requires further engagement with stakeholders, but proposed that the FSO's strategic outputs from using this capability should be part of the CSNP products.

Our decision

7.68 Our decision is to adopt our consultation position on the FSO developing capabilities to appraise and compare different combinations of energy system options – the modelling tools and capability the FSO will develop as part of the CSNP, FES and SSEP will be vital to support this.

7.69 In terms of how, and when, the FSO should use this capability, this is a wider issue than just the CSNP. At a minimum, the FSO should use the longer-term CSNP to provide strategic thinking to inform policy making and industry.

Stakeholder responses and rationale for our decision

7.70 The FSO will have the capability to compare different combinations of energy system options and network options in the CSNP. It's work on the FES and SSEP will also enhance capability in this area (see Chapter 4). Together, these will enable it to identify opportunities for maximising efficient utilisation of networks, and minimising need for new network by co-optimising demand and supply. For example, the CSNP could demonstrate comparison of options where future offshore wind generation is situated closer to demand (and/or hydrogen production plants) resulting in less need for new network, with options where offshore wind generation is situated far away from demand necessitating significant investments in new networks to reduce constraints.

7.71 Most stakeholders agreed with our proposals, and some felt that this capability will be a significant determinant of the required transmission system capacity and functionality. Gas stakeholders also agreed with the proposal and considered that the FSO as part of CSNP should be able to develop a whole-system plan which could include co-optimising gas (including Hydrogen production and pipelines) and electricity networks. Stakeholders also felt that this could be a key input into the FSO's proposed work on developing the SSEP (see paragraphs 1.7 and 1.8 of this document). We agree and think that the FSO's modelling capabilities and internal expertise will mean that strategic appraisals in the CSNP could inform future versions of the SSEP. Equally the development of the first SSEP and FES will also provide essential strategic inputs into the CSNP. The government is commissioning the scope of the SSEP early next year and as part of this we expect consideration to be given to the role the FSO, through the SSEP, can play appraising different combinations of energy system options.

7.72 Stakeholders also noted that how and when the FSO uses it strategic advice capability, requires further engagement, policy development and governance at various levels across government. One TO felt that TOs should be included in this engagement governance. One TO, although supportive of the FSO building whole system capabilities through the evolution of the CSNP, had concerns of overloading the FSO which would, in its view, impact the deliverability of the

CSNP. It stated that it was unable to support this proposal at this time. It was also unclear about the governance framework.

7.73 In terms of how, and when, the FSO should use this capability, this is a wider issue than just the CSNP. At a minimum, the FSO should use the longer-term CSNP to provide strategic thinking to inform policy making and industry. The FSO is expected to build the skills required to be able to carry out this role[71] and it will be a missed opportunity if it doesn't utilise its whole-system capability, as part of the suite of CSNP products. In our July consultation we proposed that at a minimum the longer-term CSNP should do this. We remain of this view. As a consequence of producing the longer-term CSNP, the FSO will have developed a broad and robust view of the energy system and should be able to utilise this to provide advice to decision makers to inform their future energy system policy. If the FSO considers that providing strategic advice as part of its other CSNP products is relevant, it should have the flexibility to do so. We acknowledge that the FSO should ensure that as part of its CSNP Methodology it sets out a process for adequately engaging stakeholders.

7.74 Under Section 171 of the Energy Act 2023, the FSO has a clear obligation to provide strategic advice to Ofgem and government.[72] The governance of how and when this will be used is a matter for the wider FSO work and will be set out in due course.

[71] https://assets.publishing.service.gov.uk/media/624c840ce90e075f1120592f/future-system-operator-consultation-govt-response.pdf
[72] https://www.legislation.gov.uk/ukpga/2023/52/section/171/enacted

8. Cross cutting CSNP policy areas

Section summary

The section sets out our decisions on key cross cutting areas of CSNP policy.

Background

8.1 This section considers key CSNP policy areas that do not fit into any of the stages in the previous chapters. The policy areas broadly relate to:

- the scope of the CSNP's coverage eg gas, interconnection, and offshore wind
- regulatory policy that should be considered throughout the development cycle or at several stages of the CSNP eg SQSS and climate resilience.

Our Decisions

Decision 1 - Future Interconnection and Offshore Hybrid Assets

Background

8.2 The ESO has an existing licence requirement to publish an annual assessment, as part of the NOA, that looks at the benefit of additional interconnection[73] between GB and other markets.[74]

8.3 In our 2021 Interconnector Policy Review[75], we decided to hold application windows for interconnection in the future to ensure the right projects come forward in the right locations, at the right times to support a net zero energy system and maximise consumer benefits. We also decided that the FSO, through the CSNP, should inform future application windows for new projects.

8.4 In the July consultation, we proposed to replace the existing NOA licence requirement with a new CSNP licence requirement for the FSO to provide

[73] An electricity interconnector is a physical link that transfers electricity across borders. It is defined under section 4(3E) of the Electricity Act. Ofgem's cap and floor regime is the regulatory regime for electricity interconnectors in GB.
[74]The requirement for an annual NOA for interconnectors is part of standard licence condition C27.
[75] https://www.ofgem.gov.uk/publications/interconnector-policy-review-decision

recommendations on additional interconnection and offshore hybrid assets between GB and other markets as part of the longer-term CSNP whole system assessment. We also proposed this should include modelling the potential value of new cross-border capacity to the system and to GB as a whole. By default, these recommendations should follow the longer-term CSNP cycle. However, FSO support for interim assessments could also be appropriate.

Our decision

8.5 Our decision is to adopt our consultation proposal. The requirement will be set out in the FSO's licence (CSNP licence condition). We will also set out expectations in the CNSP Guidance Document in relation to the FSO's role and process to inform future application windows and to support future needs case assessments of candidate projects.

Stakeholder responses and rationale for our decision

8.6 Most stakeholders responding to this question supported our proposal. They recognised that interconnectors could have a material impact on the wider onshore system because of their high-capacity and bi-directional flow and should be considered along with other strategic network options. We agree that locating future interconnection optimally from a system-wide perspective aligns with the ambition for a long-term holistic plan.

8.7 One stakeholder said that a discrete obligation for the FSO to assess interconnection opportunities rather than all forms of technology or capacity provision could distort market competition. We disagree with this view. Coordinating the siting of major sources of flexibility, such as interconnectors, is a strategic network planning consideration given the prospective benefits and the potential costly impacts on network capability and system operability these might otherwise have. Better coordination should assist the viability of other types of projects by improving network access and avoiding higher than necessary network costs.

8.8 Several stakeholders said that it was important that the application windows for future interconnection retain some flexibility on the types of projects that developers can bring forward. We note that the CSNP licence requirement for the FSO to advise on interconnection opportunities is not predetermining the scope and process of future application windows for interconnection. The latter is

dependent on government's ambition for interconnection and will be subject to further development and consultation in future.

8.9 Having considered responses, we remain of the view that it is in consumers' interests for the FSO to assess, as part of the longer-term CSNP, the benefits, optimal location and network impacts of additional interconnection and offshore hybrid assets between GB and other markets, and how these projects can be optimised.

Decision 2 - Offshore Network Planning

Background

8.10 In Decision 6 in this chapter we confirm that, future offshore strategic connection exercises like the Holistic Network Design (HND) and Holistic Network Design Follow-Up Exercise (HND FUE), will be outside the scope of the CSNP. The FSO will, however, play a vital function supporting future offshore strategic connections that will need to be accommodated by the outputs of the CSNP. The optimal location of offshore generation is also expected to be an output of the SSEP and form a key input into the CSNP Stage 1 (see Chapter 4, Decision 8).

8.11 These developments change the context of our proposal but do not impact our overall decision given the SSEP may form a major input into CSNP stage 1 and would require significant collaboration and coordination between interested offshore parties.

8.12 In our July consultation we proposed that the FSO should continue to implement lessons from the HND[76] and collaborate with interested parties[77], as part of the CSNP development, to:

- support the identification and development of future seabed leasing to ensure effective planning ahead of need.
- support their efforts on strategic marine environmental assessments.
- align the timings of the CSNP publications, where practical, with future seabed leasing rounds.

[76] The Pathway to 2030 Holistic Network Design | ESO (nationalgrideso.com)
[77] Including the government, The Crown Estate (TCE) and Crown Estate Scotland (CES).

8.13 In our consultation we proposed that our CSNP Guidance document will set out our expectation that the FSO will use '*reasonable endeavours'* to engage and support stakeholders to support the process, recognising that the FSO cannot fully control participation and engagement.

8.14 We also set out that further thinking was required to determine whether a CSNP Strategic Energy Assessment (SEA) can/should incorporate any marine environmental assessments.

Our decision

8.15 Our decision is that the FSO should continue to implement lessons from the HND and collaborate with interested parties to support the identification and development of future seabed leasing rounds that will facilitate the identification of optimal offshore generation. This will also support the creation of the SSEP.

8.16 Our decision is to adopt the consultation position and use our CSNP Guidance document to provide guidance on our expectations for *'reasonable endeavours'* and to help inform the FSO's development of their CSNP Methodology which will support collaboration with stakeholders.

8.17 We confirm that the FSO's responsibilities for a CSNP SEA should cover both onshore and offshore networks.

Stakeholder responses and rationale for our decision

8.18 Most respondents supported our proposals for continued collaboration and learning lessons from the HND process. We think embedding collaboration between the FSO and stakeholders is essential to ensure effective coordination between the FSO and relevant offshore bodies. While one stakeholder felt that collaboration for the HND was unsuccessful; the ESO has already run a series of 'lessons learned' exercises which should inform the CSNP Methodology development.

8.19 One stakeholder commented that the use of "reasonable endeavours" is insufficient for the FSO's collaboration role. They considered that further guidance from Ofgem is needed in the CSNP Guidance Document. We agree; this will be part of the scope of the CSNP Guidance, and we will consider specific text as part of its detailed development. The stakeholder also suggested that the FSO should

be formally identified as a central coordinator with the role set out in the FSO licence. We disagree that this needs to be set out in the licence, because offshore planning is not directly led by the ESO/FSO and is subject to seabed leasing and marine licencing regimes.

8.20 In our consultation, we left open whether a CSNP SEA undertaken by the FSO should incorporate any marine environmental assessments. We set out our decision in Chapter 6, Decision 2.

Decision 3 - Onshore Competition

Background

8.21 In our July consultation we proposed that the FSO should:

- develop an analytical approach that allows for third-party options to be fully and transparently assessed against TO proposed options.
- recommend delivery of projects by early and late competition[78] that meet the relevant criteria.

Our decision

8.22 Our decision is to adopt both our consultation positions.

8.23 Within the CSNP Methodology, the FSO should include an analytical approach that ensures third-party options, including non-network solutions, can be fully considered within the CSNP development process alongside TO-proposed options. The CSNP Methodology should also integrate in the design of the detailed competition delivery model (to be consulted on by us next year) and set out how the CSNP (and its process) will recommend appropriate projects for competition, with particular regard to ensuring that the tender process does not lead to delays in resolving network needs.

[78] Ofgem are currently only developing an early competition model for onshore projects, however we will consider also introducing late model competition in the future Decision on early competition in onshore electricity transmission networks | Ofgem

Stakeholder responses and rationale for our decision

8.24 Non-TO stakeholders broadly supported our July consultation positions. One TO supported competition where it delivers best value for consumers. However, two TOs did not support onshore competition at this time. In particular, TOs raised concerns that competition could lead to delays in commissioning network upgrades and securing long term supply chains. The ENC[79] recommendation to introduce offshore competition in the first instance and onshore competition later was used to bolster this view, with some TOs suggesting that competition should not be used for the first CSNP.

8.25 We remain of the view that the introduction of onshore competition has the potential to bring significant long-term benefits to consumers in terms of reduced costs and additional innovation in the delivery of critical infrastructure. The government's TAAP estimates that introducing competition can provide potential savings of up to £1bn by 2050, alongside greater levels of inward investment into GB networks.[80] We share the government's intention to identify suitable projects for competition in late summer and announce the launch of a competitive process by the end of 2024. Over time we then expect to gradually increase the prevalence of onshore competition across a pipeline of suitable projects as the FSO builds up its capability and capacity.

8.26 We note stakeholders' concern that the introduction of onshore competition could lead to delays. Development of the onshore competition model is ongoing, and we intend to consult on and implement the detailed design in 2024. This includes the approach that will be used to determine which of the projects in the CSNP meet the competition criteria,[81] and are expected to deliver the greatest net benefit for consumers. Projects will not be recommended for competition if doing so will lead to excessive delays, which results in constraint costs greater than any likely cost savings through competition. We also disagree that assessing third party options against TO proposals will lead to project delays, as these options will all need to

[79] See section 5.6 Accelerating electricity transmission network deployment: Electricity Networks Commissioner's recommendations - GOV.UK (www.gov.uk)
[80] Recommendation CT1.
[81] Competed onshore projects must be new, separable, and have a positive Competition CBA outcome, as per our Decision on early competition in onshore electricity transmission networks | Ofgem (chapter 4) . The Competition CBA is applied to the projects recommended by the CSNP and seeks to identify which of those projects will provide the greatest consumer benefit if competitively tendered.

be assessed by the FSO as part of the same CSNP process. The FSO's competition and CSNP processes need to be joined up given the overlaps and to help provide clarity to stakeholders. We think this is best achieved by incorporating the competition methodologies into the FSO's CSNP Methodology where appropriate to do so.

8.27 One TO argued that there could be a lack of interest from third parties providing options for the FSO to consider. We recognise this concern and acknowledge that more work needs to be done to ensure that the design of the competition model, when integrated within the CSNP development process, enables third parties to participate on a level playing field with TOs. The scope, and timings of competition models, as well as how to replace or enhance the Interested Persons' Options process need to be finalised, such that the FSO has visibility of a wide range of potential network and non-network options that could form part of the CSNP (see also Chapter 6, Decision 4, which sets out how the CSNP process will support the identification of options).

8.28 One respondent questioned whether the scope for competition includes allowing third parties to deliver network solutions and become TOs, indicating support for this. We confirm that this is our longer-term intention.

8.29 Respondents also provided detailed comments related to the competition model, for example, fully defining the competition criteria, refining the competition CBA, and code reform. These issues are being considered separately as part of the competition workstream that we are currently undertaking – we intend to consult on development of the competition model in 2024.

Decision 4 - Roles and responsibilities (Network planning under the Security and Quality of Supply Standards (SQSS))

Background

8.30 The SQSS sets out the criteria and methodology for planning and operating the NETS[82]. TOs are obligated by their licence to plan and develop their transmission

[82] The ESO are the code administrator for the SQSS, and oversee any proposed changes to them, along with other transmission licensees. All changes have to be reviewed by the SQSS review panel and by Ofgem.

system in accordance with the SQSS.[83] The ESO, as per its licence is also obligated to plan, develop, and operate the NETS in accordance with SQSS. [84]

8.31 As part of our stakeholder engagement prior to the July consultation, the ESO and TOs expressed concerns about whether the CSNP would impede their ability to comply with their respective SQSS obligations. For example, they said increasing the FSO's responsibility for planning the NETS for all load related works (and reducing the TO's role in such planning) would not correspond to the TOs licence obligations to comply with the SQSS and other statutory responsibilities in relation to their network. In our consultation, we asked for more information and whether changes are needed, including to the relevant licence conditions.[85]

Our decision

8.32 Following consideration of the consultation responses, we do not intend to change the respective ESO or TO SQSS licence conditions at this stage.

8.33 Instead, we will set out expectations in the CSNP Guidance document that the FSO works with the TOs on developing the CSNP Methodology to set out how they will work together on the CSNP, including their roles, contribution, key areas of cooperation, and accountabilities. This should also explain:

- how the TOs, and third parties, can both inform and feedback on high-level option designs and the CSNP overall, to flag and assess any deviations from the SQSS, and evaluate the case for a derogation, and
- the process to resolve disagreements about the SQSS compliance of high-level options.

8.34 We also encourage the ESO to lead an industry review of the SQSS to reduce the risk of different interpretations about how the standard should apply. More generally, we consider that an SQSS review should also consider if the standard is fit for planning the future NETS against the backdrop of the changing generation mix, network operation and growing threats to resilience. The FSO should also

[83] Transmission Licence Standard Condition D3.
[84] Transmission Licence Standard Condition C17.
[85] ESO responsibilities are set out in C17 of its Special Conditions, and TO responsibilities are set out in D3 of their Special Conditions.

review and modify the System Operator Transmission Owner Code (STC)[86] in respect of the CSNP to ensure clarity over security responsibilities.

Stakeholder responses and rationale for our decision

8.35 Two TOs noted concerns that a lack of clarity on roles and responsibilities for network planning under CSNP could impact their licence obligations for planning and developing an SQSS compliant network. They suggested that a licence change is needed but did not elaborate further on the amendment they considered to be appropriate.

8.36 The ESO noted that it is not appropriate to use the SQSS to assign roles and responsibilities since it is a planning standard. Like the TOs, it wanted clarity on parties' roles and responsibilities and considered that reviewing the relevant licence conditions is appropriate, with any changes made before the introduction of CSNP. It also noted that modifications to the STC are needed to ensure clarity over responsibilities and to support the delivery of the CSNP.

8.37 We have determined, at this stage, not to propose any modifications to the relevant licence conditions. We are satisfied that our decision on the scope of the CSNP, focussing on planning for wider system needs and operational issues (see Chapter 5, Decision 1) will not fundamentally alter the planning roles of the FSO or the TOs because:

- The TOs continue to be responsible for planning to meet local system needs in accordance with SQSS (eg to facilitate connections and local reinforcement for generation and demand growth).
- The TOs will be responsible for providing high-level design solutions to the FSO to meet wider system needs identified by the FSO.
- The FSO, as central planner, will be responsible for producing the CSNP to meet wider system needs in accordance with the SQSS, evaluating options developed by the FSO, TOs or third parties to select the most optimal solutions.
- The FSO will also be responsible for identifying if a solution in the CSNP deviates from the SQSS where this is economically justified.

[86] The System Operator Transmission Owner Code is an agreed framework that defines the relationship between the transmission system owners and the system operator.

- The TOs will be responsible for the timely delivery of network solutions if selected by the FSO in the CSNP and assigned to them in the CSNP delivery pipeline.

8.38 We acknowledge the importance and merit of the TO responses on the need for clarity on the respective roles and responsibilities for network planning under CSNP. At this stage we are satisfied with the existing collaborative approach between the ESO/FSO and TOs regarding network planning. We think that outlining within the CSNP Methodology, how they will work together on the CSNP, including their roles, contribution, key areas of cooperation and accountabilities will provide sufficient clarity on the respective roles and responsibilities for network planning under CSNP. We are satisfied that, at this stage, the question of roles and compliance with the SQSS does not require a licence modification. We will continue to monitor the development and implementation of the CSNP and the interactions between the FSO and the TOs. We may consider revising the TO and FSO licence conditions in the future, if we find that there are ambiguities, gaps or inconsistencies that affect the effectiveness or efficiency of the CSNP. Any such changes would be subject to further consultation

8.39 We acknowledge that in the event of an unresolved dispute between the FSO, TOs, or a third party, on a CSNP recommendation that a dispute resolution process might be necessary. We will give consideration (as part of developing the CSNP Guidance) as to whether an Ofgem-led dispute resolution process is needed for the CSNP process and will consider what this might look like with stakeholders.

8.40 Industry stakeholders, and network companies, noted concerns with the SQSS itself. This included that it is outdated and does not reflect the changes in the energy landscape, eg new generation and demand profiles. One TO felt that the SQSS considers economics over network security which could lead to underinvestment and a less resilient network. Another TO however, did not see the need to change the SQSS, and felt that the CSNP should be designed around SQSS compliance.

8.41 We agree with industry stakeholders that the SQSS does not necessarily reflect the current energy landscape. For example, the Economy Planned Transfer[87]

[87] Economy Planned Transfer Conditions: As defined in the SQSS.

background used to determine boundary transfer requirements is based on arbitrary scaling of generation behind the boundary, rather than an assessment of the optimal economic level of boundary capacity that should be provided. This results in different views on what background the system should be planned against. Similar differences arise in assessing the need for local enabling works for connecting new generation.

8.42 The ESO, as part of its RIIO 2 Business Plan 2 (2023 – 2025)[88], is reviewing the SQSS. The review should ensure that it is fit for purpose in planning the future transmission system and remove any ambiguity on how it should be applied. We encourage the ESO to include in its review, the concerns presented by stakeholders to the July consultation (some of which are noted above). We encourage the ESO to complete this review before the 2026 CSNP publication. The ESO/FSO should also review and modify the STC to ensure clarity over security responsibilities.

8.43 We also received comments from natural gas network companies who want the FSO to consider and balance the future impacts of gas and potential hydrogen network when designing the electricity system. We have considered these points in our decision in Decision 7 in this chapter.

Decision 5 - Climate Resilience

Background

8.44 Further climate change is inevitable, which will lead to increased frequency and severity of extreme weather. This will increase risks to security of supply at the system level including; due to damage to assets (from events such as flooding and storms), changing supply (from events such as prolonged wind droughts) and changing demand (for example increased demand for summer cooling during heatwaves). At the same time, the transition to net zero will result in greater reliance on electricity and increase vulnerability to these risks.

[88] https://www.ofgem.gov.uk/publications/business-plan-2-final-determinations-electricity-system-operator

8.45 Therefore, it is vital that the decarbonised network is also planned to be resilient to changing climate conditions and continues to deliver high levels of security of supply.

8.46 In the July consultation, we recognised that long-term, whole system planning should take the impacts of climate change risks into account and assess that the system is sufficiently resilient.

8.47 We proposed the FSO develops its capability to evaluate the climate resilience of energy infrastructure in the longer-term CSNP and that this could include:

- identifying the climate change related risks at the system level and the potential implications of failing to adapt; and
- stress test future plans to evaluate the system's resilience to resist and minimise potential impacts of High Impact, Low Probability events caused by extreme weather, as well as recover quickly after events.

Our decision

8.48 Our decision is to adopt our consultation proposal with an amendment that the FSO consider broader resilience issues relevant to the longer-term CSNP. In Chapter 4 Decision 4 we have provided further details on the need for FSO to build capability on stress testing High Impact, Low Probability (HILP) events, including extreme weather in order to provide a risk envelope to inform decisions at various stages of CSNP, including on supply and demand in stage 1, system need in stage 2 and investment decision-making in stage 4.

8.49 We will set out expectations in the CNSP Guidance Document for the FSO to incorporate resilience considerations of the longer-term CSNP in its CSNP Methodology.

Stakeholder responses and rationale for our decision

8.50 Stakeholders that responded to this question all supported the proposal. Some stakeholders suggested expanding the definition to include resilience considerations beyond climate change risks. We also note that government and Ofgem recently proposed a new role for the FSO to support whole-system energy

security and resilience in a joint consultation on the FSO's day 1 and future functions.[89]

8.51 We consider that assessing climatic and other risks of the longer-term CSNP is consistent with the FSO's proposed new role. Once the joint government/Ofgem decision on the FSO day 1 and future functions are made (expected in summer 2024), the ESO/FSO should set out, in its CSNP Methodology, how relevant resilience considerations are being incorporated into the longer-term CSNP.

Decision 6 - Customer connections and the CSNP

Background

8.52 We said in our July consultation that:

- Individual connections should sit outside of the CSNP, unless the FSO considers there would be benefit to considering a significant connection such as a new nuclear power plant, or an accumulation of connections in a given area in the CSNP.
- Under the CSNP, the FSO should lead on the strategic assessment of connection exercises, such as the one undertaken in the HND.

Our decision

8.53 We have decided to change our position on both of our proposals, as follows:

- Assessment of individual connection applications, including for significant connections, such as a new nuclear power plant, or for an accumulation of connections in a given area, will remain outside the scope of the CSNP.
- Any future iterations of strategic connection exercises similar to the HND, will remain outside the scope of the CSNP.

Stakeholder responses and rationale for our decision

8.54 The ESO's July consultation response noted that it has recently consulted on its initial recommendations for a reformed connections process[90], which it anticipates will cover all future connection applications from 1st January 2025. It proposes

[89] Future System Operator - Second Policy Consultation and Update (publishing.service.gov.uk)
[90] https://www.nationalgrideso.com/industry-information/connections/connections-reform.

that a batched and co-ordinated network design process for connections would take place after an 'application window', considering the CSNP and informing future ones. The reformed process is anticipated to be a separate process to the CSNP, but strongly linked to it. The ESO expects the CSNP to consider the impact of significant new connections and strategic connections exercises on the wider system. It also suggests that it may be possible or desirable for the CSNP to guide or stipulate elements of the connections design for significant connections or strategic connection exercises. For example, the CSNP can indicate the region in which offshore wind farms should be connected to relevant stakeholders such as The Crown Estate and Crown Estate Scotland, and government.

8.55 The ESO's proposed reforms to the electricity connections process form part of a wider programme of measures being undertaken by industry (working closely with Ofgem and government) to reduce the number of speculative applications, better utilise existing network capacity, remove slow moving projects and reduce friction at the interface between transmission and distribution. This wider programme of connections reform is described in the Connections Action Plan[91], we jointly published with DESNZ. This will be delivered under the strategic oversight of the newly established Ofgem-chaired Connections Delivery Board. Whilst the detailed approach and policy is still under development, consideration is being given to how these different policy areas can work together to enable the benefits of these significant reforms.

8.56 The ESO also noted in its response that strategic connection exercises should stay out of the CSNP. It suggested that it could be inefficient if the connection of one type of generation technology is optimised over other connections, without considering the mix of generation types that is most efficient to meet decarbonisation targets. It also noted that the timing of some of these exercises could be driven by government's policy decisions, and therefore may not align with the CSNP's 3-yearly updates. We also note that the timing of such exercises could also be driven by the FSO's work relating to connections under the Connections Action Plan and/or the SSEP.

[91] https://www.ofgem.gov.uk/publications/ofgem-and-desnz-announce-joint-connections-action-plan

8.57 Some respondents agreed with our proposals. However, several respondents, similar to the ESO, disagreed and preferred a separate CSNP and connections process, but noted that connections should drive the network planning in CSNP. Respondents acknowledged the wider connections reform work and the need to coordinate that with the CSNP. Respondents also expressed concern over potential favouring of one technology type over another.

8.58 We agree with the feedback above that the CSNP should not directly include the connections process within it. The CSNP will include consideration of the wider network reinforcements required to facilitate existing and anticipated connections, and it will inform future connections, as per the ESO's suggestions. It will also include consideration to extend the MITS into areas of potential new generation and demand (see Chapter 2, Decision 1). While the connections process is undergoing significant reform, we think it is prudent to keep the CSNP process separate but note that it is vital to ensure that the FSO effectively coordinates the two. Therefore, we will place a clear expectation on the FSO (as part of our CSNP Guidance Document) to ensure that within its CSNP Methodology it can demonstrate how the conclusions of the connections reform process can inform the CSNP and its development (and vice versa).

8.59 We agree with stakeholder feedback that strategic connections exercises should stay out of the CSNP. This is because the CSNP timings may not align and, to the extent needed, should be driven by our wider connection reform developments. However, we expect the FSO'S SSEP and CSNP to coordinate with this work and provide signals for where offshore wind farms should be connected to relevant stakeholders such as The Crown Estate and Crown Estate Scotland, and government. Therefore, we will place an expectation on the FSO (as part of our CSNP Guidance Document) to ensure that within its CSNP Methodology it can demonstrate how interactions between future strategic connection exercises and its SSEP and CSNP will be managed, to ensure the overall network remains optimally planned. Where possible, future strategic connection exercises should be developed to coordinate effectively with the overall CSNP development process.

Decision 7 – Natural Gas and Hydrogen strategic network planning

Background

8.60 In our past network planning decisions[92]we confirmed that the scope of the CSNP would include natural gas transmission and the potential hydrogen assets. In our July consultation, we noted that a process is being developed for the FSO to identify future requirements of the natural gas National Transmission System (NTS)[93] and potential hydrogen networks that are expected to be incorporated into the CSNP.[94]

8.61 We expect the ESO/FSO to develop its capabilities to meet its new gas planning role. The government's FSO Second Policy Consultation[95], sets out that:

- Gas transmission networks will be considered in the first longer-term CSNP, to be published in 2026.
- Between 2024 and 2026, the FSO will run a one-off process to produce a Gas Network Capability and Needs Report (GNCNR) and a subsequent options assessment document, for the NTS and will provide the foundations for how the NTS will be considered as part of the 2026 CSNP.

8.62 For hydrogen, the government set out its minded to position[96] that strategic planning for hydrogen transportation and storage will not be a Day 1 activity for the FSO. However, from Day 1 the FSO will need to account for hydrogen production, transportation, and storage to the extent it impacts the electricity and natural gas networks. For example, the FSO should consider where hydrogen can add system value by overcoming electricity network constraints and account for the grid implications of potential hydrogen electrolysers. The government's Hydrogen Strategy Delivery Update (published 14 December 2023)[97] signals that it will consult, by the summer of 2024, on the full role the FSO should play in hydrogen transportation and storage planning. We will support the government on

[92] Decision on the initial findings of our Electricity Transmission Network Planning Review (ofgem.gov.uk)
[93] The GB electricity transmission system is referred to as the National Electricity Transmission System (NETS).
[94] Paragraph 7.1 of the July consultation.
[95] Future System Operator - Second Policy Consultation and Update (publishing.service.gov.uk)
[96] Proposals for hydrogen transport and storage business models - GOV.UK (www.gov.uk)
[97] https://www.gov.uk/government/publications/uk-hydrogen-strategy

this work and ensure that, where practical, the outcomes are embedded within the first CSNP in 2026.

Our decision

8.63 We expect the ESO/FSO to begin engaging with industry as soon as possible to help shape how it will develop the methodologies, processes and governance required for its emerging role as the centralised gas strategic planner and potential roles as hydrogen transportation and storage planner.

8.64 We will make clear in our CSNP Guidance document, that the FSO will be expected to set out in its CSNP Methodology how it will identify electricity system requirements (under Stage 2) by also considering the supply and demand of natural gas, hydrogen, and other technologies.

Stakeholder responses and rationale for our decision

8.65 On the roles and responsibilities of planning on the NTS (linking to comments in Chapter 8, Decision 4), stakeholders noted the need for clarity in the planning and management of the gas systems. In particular, they questioned how the FSO will plan in accordance with the gas system Safety Case[98] given responsibility currently rests with the National Gas Transmission.

8.66 We recognise stakeholder concerns, on the importance of ensuring the NTS remains safe and reliable for the conveyance of natural gas. Therefore, we expect the ESO/FSO to engage with the Health and Safety Executive (HSE) and industry as soon as possible to understand how gas safety requirements impact the development of methodologies for strategic planning of the NTS. Consideration is needed on the accountability for security of supply in gas planning changes, or if there is an impact on gas system operation if the FSO builds and recommends its own options. This will support the work on the GNCNR as well as provide lessons for its integration into the CSNP.

[98] The Safety Case sets out how a gas transporter plans and manages the safe flow of gas in its network.

8.67 We expect the ESO/FSO to clearly set out next year its programme of work on NGTS strategic planning and how this will move into the CSNP. This should be done within its CSNP Methodology.

8.68 Stakeholders queried how the FSO will ensure future natural gas and hydrogen (as well as other technologies) supply and demand will be taken into consideration in the identification of electricity system requirements. We recognise that as the decarbonisation of the energy system progresses, the supply and demand profiles of different energy vectors will change, and this will influence the requirements of the NTS. See Chapter 4 Decision 1, for further information on how demand and supply modelling is expected to evolve.

8.69 In line with the FSO's Day 1 activities, the first iteration of the CSNP will at a minimum, need to account for hydrogen in so far as it impacts electricity and gas networks. This will be made clear in CSNP Guidance Document.

Appendices

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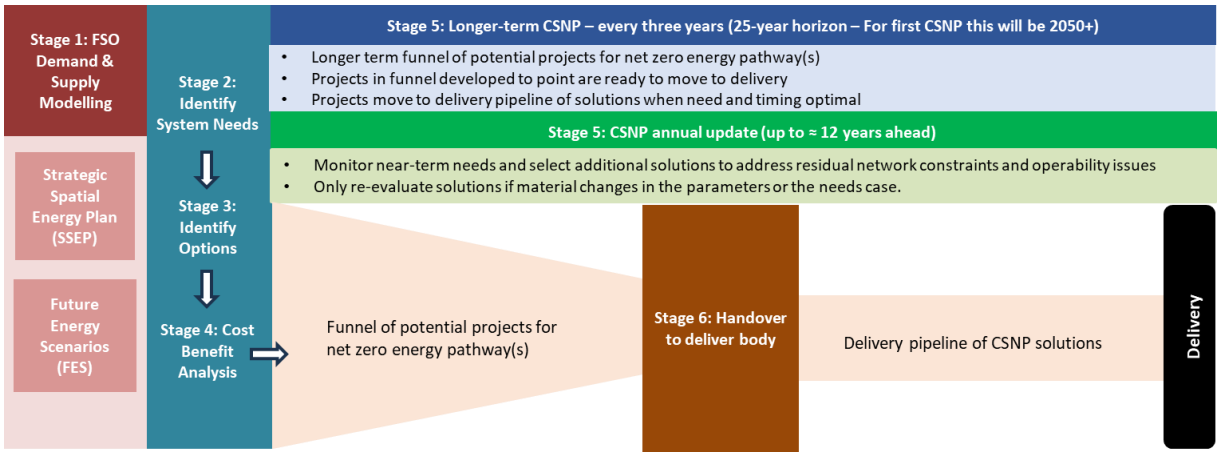
Appendix 1 Interlinkages between CSNP decisions and government's TAAP

Area	TAAP reference	Reference in this decision
SSEP	SS1	Chapter 2
CSNP outputs and products	SS3, SS5, SS6	Chapter 3, Decision 1
Do not re-evaluate projects that are in the CSNP	SS4	Chapter 7, Decision 4
Ensure environmental and community impacts are effectively considered	CBA1	Chapter 6, Decision 2
Ensure consistency in the high-level design of options	RD1	Chapter 6, Decision 1
Onshore Competition	CT1	Chapter 8, Decision 3

Appendix 2 Interaction between CSNP products and CSNP Stages



Appendix 3 CSNP products

CSNP products	Broad scope	First publication	Frequency of publication	ESO product it replaces
CSNP	Longer-term strategic assessment of network needs, primarily for bulk transfer of energy, across electricity transmission, gas transmission, hydrogen with a rolling 25-year time horizon. Assess options for achieving net zero target and select optimal projects for delivery pipeline and funnel of potential projects for longer-term pathway. Longer-term trends in system operability that can be addressed through commercially, innovation or network investments. Advice to government and recommendations to industry and stakeholders on wider energy system to maximise efficient utilisation of ET network infrastructure.	2026	Every 3 years	NOA
CSNP Annual products	Review nearer-term system operability needs including voltage, stability, to result in TO or third party delivered solutions (similar to the ESO's Pathfinders). TO or third-party delivery of solutions to address any residual network constraints. Bring potential projects into delivery pipeline where the needs case sufficiently firm. Only review solutions in delivery if significant change in parameters eg delivery date, costs, location or needs case driver.	2024	Each year between the 3-yearly CSNP	ETYS, NOA Operability Strategy Report, Voltage Screening Report, Pathfinder service procurement specifications