Decision

Future Systems and Network Regulation Core Document

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This document sets out our decision on the overarching framework design for the network price controls for electricity and gas transmission and gas distribution that will run from April 2026.

In particular, it sets out our findings from the five workstreams where we sought views from respondents and through stakeholder workshops in our March 2023 Future Systems and Network Regulation (FSNR) framework consultation.

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1. Introduction

What are we deciding on?

1.1 In September 2022 we published an open letter setting out that we would be undertaking a review of the existing network regulation regime.[1] Following the open letter, in March 2023 we published our consultation on frameworks for future systems and network regulation ("the consultation").[2]

1.2 The consultation focused on whether wider energy system transformation required changes to how price controls are undertaken, specifically whether these factors merit large-scale change in our price control frameworks, methods, and processes, or whether we should rely on evolutionary change.

1.3 As part of our consultation process, we set out five workstreams, and for each of those workstreams we undertook targeted stakeholder engagement, including a combination of workshops, working papers and slide presentations, and meetings with interested stakeholders. The processes were targeted to each workstream: for example, on digitalisation (discussed in chapter 4), our work is at an earlier stage and the nature of our engagement reflected that. By contrast, in cost assessment (discussed in chapter 5), we were able to share detailed analysis of different options based on prior Ofgem decisions and company experience.

1.4 **This document sets out the findings of our detailed analysis in respect of the price control frameworks for gas transmission (GT), gas distribution (GD), and electricity transmission (ET)** taking into consideration both responses to our consultation and these subsequent workshops. We set out the next steps for the development of methodologies and processes for the next GT, GD, and ET price controls. This document should be read alongside our Future Systems and Network Regulation Overview Document ("Overview Document"), which was also published today.

1.5 The remaining five chapters of this document cover the following areas.

RIIO-2 lessons learned

1.6 In the consultation we set out our view that we need to ensure network regulation of the future delivers value for consumers by considering the whole

[1] Open Letter: Future Systems and Network Regulation | Ofgem

[2] Consultation on frameworks for future systems and network regulation: enabling an energy system for the future | Ofgem

energy system, while delivering changes to network infrastructure at pace. In line with RIIO-2, we consider that the overarching objective for RIIO-3 is to ensure network companies deliver the value for money services that both existing and future consumers need.

1.7 Chapter 2 sets out that, having consulted with stakeholders and considered their views and the alternative models available, we have come to the decision that the next round of price controls will be an evolution of RIIO-2, and they will be called RIIO-3. For ongoing costs, outputs and incentives, we consider that the current RIIO-2 broad economic framework remains appropriate. However, we will seek to reduce the regulatory burden by streamlining the price control setting process and its subsequent operation, where it does not expose consumers to undue risk.

Networks for net zero

1.8 Forecast increases in electricity demand and the changing location and nature of generation, require additional capacity to be delivered at pace by the electricity networks. Enabling the delivery of this new and upgraded network in the right place, at the right time and at low cost will be a key challenge for economic regulation.

1.9 Meanwhile, we face the opposite challenge in gas. With natural gas demand expected to decline there is a need to manage and minimise the risk of asset stranding in the gas networks. This transition is uncertain in terms of speed and location, and the costs of existing assets will need to be shared in a fair manner.

1.10 Chapter 3 sets out our decisions on how the price controls can better enable strategic planning of the networks and streamlined regulatory approval processes to meet these challenges.

Leveraging digitalisation

1.11 Energy sector digitalisation can enable transformational system-wide benefits such as cost savings and more agile regulation. It can contribute to a lowest true cost, just transition to a net zero power system by 2035, including by identifying and supporting vulnerable consumers.

1.12 Chapter 4 sets out that this requires a fundamental digital transformation across the sector – clarifying terminology, ensuring interoperability, determining standards, and developing distributed data infrastructure. This will bring system benefits, supporting network companies to address demand growth, tackle decarbonisation and improve resilience.

Cost of service

1.13 We have explored possible adaptations to the design of the existing RIIO-2 regulatory framework to make, for ongoing costs, a distinction between repeated activities and less predictable and one-off activities. Starting from this distinction, we considered options for simplification of network regulation through the lens of cost efficiency incentives. Chapter 5 sets out the analysis we undertook and the alternative options for incentive regulation we considered, and the resulting framework decisions.

Financial framework

1.14 Exploring whether wider energy system transformation requires changes to how price controls are undertaken requires us to also consider whether there is a need or benefit from adjusting the financial framework that underpins those price controls. When considering changes to the finance framework, we have focused on ensuring that we continue to meet our primary objective to protect the interests of existing and future energy consumers while allowing network companies to be able to raise and retain significant amounts of capital at the best possible value.

1.15 Chapter 6 sets out our analysis and decisions in relation to whether changes to the financial framework would help facilitate the changing needs, objectives and regulatory mechanisms of the energy network sectors.

Interlinkages to other workstreams

1.16 Our framework decisions on RIIO-3 interact with a number of other institutional, policy and regulatory changes that are enabling the system transformation. Our March consultation referenced these key areas, and we are continuing to ensure that all these areas are joined up.

1.17 This framework decision is therefore closely related to other areas that are the subject of recent or upcoming publications, including:

- Local energy institutions and governance[3]
- Centralised Strategic Network Planning[4]
- Role of flexibility - distributed flexibility and domestic flexibility[5]

[3] Due to be published on 07 November 2023.
[4] Consultation on Future System Operator supply and demand modelling | Ofgem
[5] Call for Input: The Future of Distributed Flexibility | Ofgem
Engaging domestic consumers in energy flexibility | Ofgem

- Future System Operator role[6]
- Review of electricity market arrangements[7]
- Competition policy.[8]

1.18 This framework decision does not pre-empt or decide on the outcomes of these consultation and decisions on these topics. This framework decision considers the way in which these wider changes might influence network price controls and factors these into our decision-making.

Implications for RIIO-ED3

1.19 Our RIIO-ED3 price control for electricity Distribution Network Operators (DNOs) will come into effect following the conclusion of the RIIO-ED2 price control in 2028.

1.20 Following this decision on the RIIO-3 framework, we will develop methodologies that we will use to set sector specific price controls for ET, GD and GT. We will ensure that we address common challenges affecting all sectors in a coordinated and consistent manner to ensure the RIIO-3 price controls are delivered in the most effective way to protect the interests of existing and future consumers and facilitate the transition to net zero.

1.21 Where we are working towards decisions on cross-sector issues and design principles or methodologies, including those relating to the financial framework, we will ensure that DNOs have the same opportunity as other stakeholders to be consulted and input to the process.

1.22 A key area for RIIO-ED3 will be the design of a new regional system planning approach and reviewing the role of the distribution network companies in allowing greater flexibility on the system. These decisions on local energy governance will be critical inputs to the future regulatory framework for distribution, and further work in developing that framework will be needed in the next year when we have greater certainty on the forward approach.

1.23 We will revisit the overarching framework for the electricity distribution sector for the next price control, consulting on this framework prior to making a decision. While we expect that the overarching RIIO-3 framework will provide a foundation

[6] Future System Operator Second Policy Consultation and Project Update | Ofgem
[7] Review of electricity market arrangements - GOV.UK (www.gov.uk)
[8] Competition in Onshore Electricity Networks: government response (publishing.service.gov.uk)

for the RIIO-ED3 framework, we will make necessary changes should there be compelling evidence for a different approach.

2. RIIO-2 Lessons Learned and Process for Price Control Review

2.1 Our March 2023 consultation recognised that the periodic price control review process was long and resource intensive. We said we would evaluate the role and benefits of this periodic price review process and options for change in the form of a RIIO-2 lessons learned exercise. This review has also taken into account the consideration of alternative regulatory models.

2.2 In order to assess whether the existing toolkit of incentives is appropriate to drive our desired outcomes, we:

- Reviewed the responses we received to our consultation
- Conducted a series of working groups and bilateral meetings with cross-sector stakeholders to gather their views and feedback
- Conducted a cross-sector review of all RIIO-2 outputs, incentives and uncertainty mechanisms.

2.3 This chapter discusses the findings of our lessons learned review, associated stakeholder feedback and how this has informed the next phase of the price control setting process, the methodology phase, for the following areas:

- The price control building blocks
- Length of the price control
- The strategic themes for future price controls
- The role of consumer and stakeholder engagement
- The RIIO toolkit for delivering of our broad consumer outcomes (see Figure 1 below)
- The business planning process; including governance and timelines.

2.4 The lessons learned review also informed our views in relation to cost assessment (boxes 1, 9, 10 and 11) and the financial framework (boxes 2, 6 and 12) as shown in Figure 1. These are discussed in further detail in Chapters 5 and 6 respectively.

Price control building blocks

2.5 We have undertaken a review of the key price control building blocks, shown in Figure 1 below, with a view to simplify and streamline the current RIIO-2

approach across all sectors, where appropriate and where it does not expose consumers to undue risk.

Figure 1: Key Price Control Building Blocks

Length of the price control

2.6 Our March consultation discussed the option of starting the next full gas price controls in 2028, with a two-year mini price control in advance of that. Our July 2023 open letter on the Future of Gas Price Controls,[9] set out our decision for the GD and GT price controls to take the form of a medium-term ex ante framework, building on RIIO-2, and commencing in 2026. We did not specify the precise length of a medium-term price control at that stage.

2.7 We have received feedback from stakeholders expressing a view on price control length in response to our request for views on whether there should be a shorter-term price control in GD and GT.

2.8 Some gas companies have communicated that the next price control should be up to, or 5 years. However, others are of the view that 5 years may not be a long enough period and that there is some benefit in a 7-year control to close out the repex programme and align gas distribution with the electricity distribution price controls. One network company noted that there is benefit in a 5-year control and maintaining alignment across transmission.

[9] Open Letter Decision on the Future of Gas Price Controls | Ofgem

2.9 We do not consider that there is any compelling evidence that suggests a move away from a fixed 5-year price control period for the gas sectors would provide significant benefit that would outweigh the complexity and risk of doing so.

2.10 We expect that any investment requirements or changes in spending as a result of the 2026 decision on hydrogen for heating can be handled using uncertainty mechanisms in a 5-year price control.

2.11 We do not consider there to be any advantage to be gained in lengthening the price control, including in aligning future distribution price controls (post RIIO-3) at this time, as the timescales in the development and rollout of the Future System Operator (FSO) regional plans mean that any benefit would not be realised until after 2030.

2.12 For ET, while we did not explicitly consult on this, based on significant engagement through working groups and bilateral discussions, and building on the RIIO-2 approach, we also consider that a 5-year periodic review remains an appropriate timetable for reviewing and setting parameters for how we regulate the electricity Transmission Owners (TOs), including the financial framework in the 5-year price control.

2.13 We recognise the interaction between timing of price control reviews and the timetable of the FSO in confirming strategic investments and consider that light-touch or automatic mechanisms can be applied to changes to ongoing costs that are linked to these strategic investments.

2.14 While we have not seen compelling evidence at this stage to support setting certain allowances and returns over a longer period than five years, we will keep this under review throughout future consultations and the operation of the price controls. If there is compelling evidence that proves clear benefit to both the system transformation and consumers to change the length of the price control to a period other than 5 years, then we may reconsider price control length ahead of the next round of price controls.

Strategic themes for future price controls

2.15 This section sets out in detail the strategic themes for future price controls and the key outcomes that we expect network companies to deliver. We have built on the approach that was taken for RIIO-2 but have evolved it to reflect our Consumer Interests Framework, which aims to keep consumer priorities at the

heart of our decision-making.[10] Having conducted extensive consultation with stakeholders, for RIIO-3, we consider that consumers and networks users expect the following outcomes for RIIO-3:

- **Infrastructure fit for a low-cost transition to net zero:** Network companies must facilitate a low-cost, environmentally sustainable, low carbon energy system that enables the transition to net zero, with infrastructure built at pace
- **Secure and resilient supplies:** Network companies must deliver a safe, secure and resilient network that is efficient, data rich and responsive to change. Consumers should have access to supplies that are resilient to physical, financial, and cyber shocks
- **High quality of service from regulated firms:** Network companies must deliver a high quality and reliable service to all consumers and network users, including those who are in vulnerable situation
- **System efficiency and long term value for money:** Network companies must deliver an efficient cost of service, minimise the costs to consumers of system transformation and ensure consumers and network users get a fair deal.

2.16 The measure of success for RIIO-3 will be to determine whether network companies have delivered against the outcomes set out above.

Infrastructure fit for a low-cost transition to net zero

2.17 We expect network companies to facilitate a low-cost, environmentally sustainable, low carbon energy system that enables the transition to net zero, with infrastructure built at pace.

Strategic planning and delivery of network infrastructure

2.18 We have previously set out our decision, in conjunction with DESNZ, that the FSO should undertake both electricity and gas strategic network planning, forecasting and market strategy functions to enable it to undertake whole system planning and a holistic view of the energy system.[11]

2.19 We proposed the creation of a new network planning output, called the Centralised Strategic Network Plan (CSNP),[12] that will be delivered by the new

[10] 2023/24 Forward Work Programme | Ofgem
[11] Proposals for a Future System Operator role - GOV.UK (www.gov.uk)
[12] Decision on the initial findings of our Electricity Transmission Network Planning Review | Ofgem

FSO. In developing the CSNP the FSO will consider the onshore and offshore electricity transmission networks in Great Britain (GB) as well as cross-border electricity interconnectors and offshore hybrid assets and make recommendations on how the system should develop to decarbonise the electricity system by 2035, which is critical for meeting the UK's overall 2050 net zero target.

2.20 As the FSO capabilities develop, it will identify future requirements of the gas transmission system and hydrogen that are expected to be incorporated into the CSNP.[13]

2.21 Regional system planners, currently being developed by Ofgem, and the Strategic Spatial Energy Plan (SSEP), which was recently recommended by the Nick Winser review,[14] will also be key to delivering more coordinated network investment that is able to support the net zero transition. Chapter 3 expands on these and the role of the CSNP in future price controls.

2.22 Future price controls will need to ensure that the outputs of this improved strategic planning can be delivered as quickly as possible. In the ET sector we will build on the ASTI framework to ensure that where TOs deliver major projects Ofgem is removed from the critical path and that TOs can engage the supply chain in a manner that facilitates fast and cost effective delivery. In the gas sectors we intend to further explore how our existing regulatory assessments can be streamlined to better facilitate fast delivery, where it's necessary.

Planning for future supply and demand

2.23 The forecasts of growth in demand and supply that network companies use to establish the need for future network capacity play a crucial role in the price control. We use them to assess whether planned expenditure looks reasonable, and flexibility providers use them to identify where constraints may arise on the networks to which they can offer a solution. Having consistency in these forecasts is also important as it allows us to benchmark companies against each other which helps root out inefficient costs. While the energy system is in transition it is hard to predict exactly how demand and supply levels will change in the future and so we expect companies to plan against a range of different scenarios.

2.24 As we develop our methodology for RIIO-3 we will be focusing on reviewing the use of scenarios in the business planning process. Consistent with the move to a

[13] Centralised Strategic Network Plan: Consultation on framework for identifying and assessing transmission investment options | Ofgem
[14] Accelerating electricity transmission network deployment: Electricity Networks Commissioner's recommendations - GOV.UK (www.gov.uk)

single whole system plan, it is our preference to use a common planning scenario for the electricity and gas networks. We want to ensure that the scenario is developed and used in a consistent manner and the ultimate choice of scenario for RIIO-3 reflects the most credible view of the future and is aligned with the objectives of the price control.

Environment

2.25 A key objective of RIIO-2 is that network companies take the appropriate steps to mitigate their own environmental impact. We continue to consider this a priority for RIIO-3. We consider that all companies should continue to act responsibly towards the environment when making investment decisions, take responsibility for their own environmental impact, working with customers, suppliers, partners and other stakeholders to overcome challenges.

2.26 Based on several working group and bilateral discussions there are a number of key areas of focus we consider will need review throughout the methodology phase. These include but are not limited to our approach to reducing leakage, including insulation and interruption gas leakage (eg SF6) and oil leakage from fluid filled cables (FFC), particularly in the ET sector, and reducing shrinkage, where methane escapes from gas pipe networks.

2.27 We will engage with network companies and will consult with wider stakeholders on key environmental output areas for RIIO-3, reviewing the existing RIIO-2 mechanisms and ensuring that these drive the right behaviours in terms of reducing environmental impacts.

Secure and resilient supplies

2.28 Network companies must deliver a safe, secure and resilient network that is efficient, data rich and responsive to change. Consumers should have access to supplies that are resilient to physical, financial and cyber shocks.

2.29 The energy system is evolving, especially with regard to the services and flexibility that network, and non-network companies can provide to each other and to the system.

2.30 Amidst this changing landscape, network companies must make sure that their organisations, assets and systems are resilient against a range of risks that they face, both now and in the future. These risks include:

- An increase in the severity and frequency of severe weather events as a result of climate change

- Malicious activity that could jeopardise key energy infrastructure, including cyber and physical
- An increasing level of interdependency between critical sectors and infrastructure
- Lack of skilled workforce, materials or equipment required to deliver key network services
- The use of emerging technologies and digitalisation to help manage an increasingly decentralised and integrated energy system.

2.31 Our objective for the next price controls is to ensure that network companies continue to embed resilience into their day-to-day decision making, as well as their long-term strategy development, to safeguard the security and resilience of network services for both current and future consumers.

2.32 In this section, we set out the key resilience priorities for the next price controls, which although not explicitly consulted on build on our approach in RIIO-2. These have not been explicitly consulted on but build on our learnings from our RIIO-2 lessons learned exercise and include:

- Asset resilience: ensuring that measures to manage long-term asset risk are in place
- Climate resilience: ensuring that network companies continue to develop their understanding of the risks and potential impacts of climate change and consider cost-effective options to mitigate these
- Ensuring Security of Supply: ensuring that network companies have the appropriate capabilities, protocols and response plans in place to deal with emergency system events such as a shortfall of electricity generation or gas supply
- Workforce resilience: ensuring that network companies have plans in place to demonstrate their approach to workforce resilience, ie they have access to the range of skills that future network activities will require
- Resilience to malicious activity: ensuring that network companies can meet their obligations which relate to the physical, personnel and cyber security of their assets and systems and take the steps necessary to maintain or improve this as required

Asset Resilience

2.33 Network asset risk refers to the probability and impact of asset failure. If a network company does not appropriately manage its assets, the risk of those assets failing will generally increase over time. To keep the network asset risk within reasonable bounds, network companies are funded to carry out asset management activities such as replacement and refurbishment.

2.34 In RIIO-1 and RIIO-2, we used the Network Asset Risk Metric (NARM)[15] to set the output targets and allowances associated with asset risk and resilience. We did not explicitly consult on the role of NARM, but we did have several working group discussions, and while there were mixed views on the role of NARM in future price controls, specifically from the gas distribution sector, we think that NARM remains an effective tool to deliver these outcomes and propose to continue building upon the existing arrangements in order to ensure that the outputs we set are more reflective of the work that is delivered.

2.35 Ahead of RIIO-3, we will however work with network companies through the relevant working groups to determine sector-specific methodologies and roles for NARM. This may include increasing coverage of the framework and to improve the consistency of application across the sector. We will continue to expect that up-to-date asset level risk data will be shared with Ofgem. We will work with network companies to look at where this can be enhanced as part of our review of NARM, and development of a shared data infrastructure, which we discuss in Chapter 4.

2.36 We also note the important role that the replacement expenditure (repex) programme plays in ensuring resilience in the gas distribution sector, and we will work closely with the sector through working groups, to identify any specific methodological changes that may be required for RIIO-3.

Climate Resilience

2.37 Severe weather events such as high winds, lightning and flooding will become more frequent and extreme as the effects of climate change are felt. Additionally longer-term climate changes such as sea level rises, higher temperatures, wetter conditions and drought cycles will become more apparent.

2.38 Events such as Storm Arwen in 2021 show that impacts from climate change are already being felt and all network companies need to consider the impacts of

[15] Note in RIIO-1 this was referred to as the Network Outputs Measure (NOMs) and in RIIO-ED1, Network Asset Secondary Deliverables (NASDs).

longer-term climate change on their networks and continue planning for and managing the risks this may bring.

2.39 For RIIO-ED2, we required DNOs to establish a 'climate resilience' working group that was tasked with helping them to develop climate resilience strategies that would inform their investment proposals for RIIO-3 and beyond. We also proposed the development of a wider resilience metric which could cover, among other activities, flood resilience and tree cutting.

2.40 We recognise that these requirements did not apply to the RIIO-2 price controls for transmission and gas distribution. However, we consider that the anticipated impacts of climate change mean it is important for all network companies to take these steps, to ensure their networks remain resilient over the course of RIIO-3 and beyond.

2.41 We will need to better design and build a system that addresses these challenges. In particular, we will be reviewing options such as: new requirements for stress testing, introducing new resilience metrics, reviewing engineering standards and working with the FSO, in its role as independent system operator and planner, to assess overall system design.

2.42 Ahead of RIIO-3, we propose to work with network companies through the relevant working groups to review our current regulatory approach to climate resilience.

Security of supply

2.43 The invasion of Ukraine by Russia has resulted in heightened risks to security of energy supply across Europe. While Great Britain has a diverse and reliable energy supply, these risks have resulted in a more prominent need to ensure current preparedness and response measures are as effective as possible in protecting the public from potential energy disruptions, and mitigating the impacts as far as possible, in the event that these disruptions do occur.

2.44 We have been working closely with DESNZ to review the established procedures for responding to an energy supply emergency. Ahead of RIIO-3 we will look to implement the recommendations of this review and work with network companies to ensure that the right mechanisms are in place to enable network companies to appropriately plan for and respond to emergencies.

Workforce and supply chain resilience

2.45 A resilient workforce and supply chain is essential to a network company's ability to deliver the services that its customers expect over the longer term. Without

the technically skilled people, equipment and material in place to build, manage and maintain network assets, it is unlikely that network companies will be able to build at pace the infrastructure required to deliver net zero. Additionally, the expected standards of service would deteriorate, and this could lead to poor standards in customer service and networks becoming less reliable and/or more costly in the future.

2.46 In RIIO-2 we required network companies to provide sustainable workforce resilience strategies as part of their Business Plan submissions. However, we decided against setting specific metrics and milestones for holding companies to account for delivery of their workforce plans. This is because we were concerned that setting workforce targets would represent unnecessary regulatory intervention and potentially constrain companies in developing effective and efficient resourcing strategies, potentially creating distortions and driving sub-optimal outcomes.

2.47 Noting the increasing importance of network companies to deliver a modern, diverse, high quality, well-trained workforce fit for the future, we think there could be scope to increase transparency of reporting, particularly around the steps network companies take to improve their workforce resilience.

2.48 Ahead of RIIO-3, we think there could be value in network companies working with relevant industry bodies to establish a consistent format for public reporting on an agreed set of key metrics. We propose to work with network companies through the relevant working groups to explore the benefit and feasibility of delivering this.

2.49 We are also aware that in recent years, shortages of raw materials, components and labour have resulted in rising costs and longer lead-times for the supply of some energy infrastructure. We note that DESNZ is working with network companies to identify supply chain risks and potential mitigation options. We will monitor the progress of this work and will work closely with DESNZ and the sectors through working groups, to identify any specific methodological changes that may be required for RIIO-3.

Resilience to malicious attacks and system failures

2.50 All network companies are becoming increasingly dependent on other parties for the provision of data, technology and services that enable the delivery of their operations. Failure of these capabilities could impact the delivery of essential energy services and vice versa. This level of interdependence will only increase as the networks become smarter, more automated and more digitised.

2.51 Additionally, as owners of energy infrastructure in GB, network companies are responsible for assets and systems that are deemed, by government, as Critical National Infrastructure (CNI). Working with DESNZ, network companies, implement measures to enhance the physical, cyber and personnel security at CNI sites.

2.52 Finally, under the Network and Information Systems Regulations, network companies must take appropriate and proportionate technical and non-technical measures to manage the risks and incidents posed to the security of their network and information systems, including their associated supply chains.

2.53 It is, therefore, crucial that network companies ensure their systems and processes are protected and can withstand the ever-evolving landscape associated with cyber, physical and personnel security, as well as the failure of other crucial services such as telecommunications.

2.54 Network companies are already funded through the RIIO-2 price controls to ensure they are resilient to these risks, however we will work with network companies to ensure that our current approach is fit for purpose for RIIO-3.

High quality of service from regulated firms

Quality of service

2.55 We expect network companies to deliver high quality services that meet the needs of consumers and network users and enable the transition to net zero.

2.56 The key outcomes for RIIO-3 support putting consumers and network users at the heart of network company decision-making. These outcomes are supported by outputs categories that reflect the broad role that energy networks play in delivering the objectives for RIIO-3.

2.57 These categories have sat at the core of RIIO price controls and have driven improvements in the level of service quality that customers and network users have received and continue to receive throughout RIIO-2.

2.58 Again, these were not explicitly consulted on but building on working group discussions and the approach taken in RIIO-2 we consider that these categories should continue to be at the centre of the price control review and drive the setting of the price control itself:

- Reliability: ensuring that the actions network companies take in efficiently managing their networks deliver reliable network services for existing consumers, as well as safeguarding the reliability of the network for the future

- Connections: ensuring that new customers and network users can get connected to the electricity grid quickly, efficiently and at least cost
- Customer service: ensuring that all customers and network users receive high quality customer service, including those in vulnerable situations
- Consumer vulnerability: ensuring that consumers in vulnerable situations are supported and protected.

Reliability

2.59 The most valuable service a network company can provide is an uninterrupted supply of power or gas. Reliability has therefore been a key focus for Ofgem and price controls have included a range of measures to ensure network companies improve their performance.

2.60 In RIIO-2, we use outputs and incentives to drive reliability standards across all sectors. The Energy Not Supplied (ENS) incentive drives TOs to improve network reliability in an efficient way by managing short-term operational risk, and the Unplanned Interruptions penalty-only incentive ensures that GDNs' performance on the duration of unplanned interruptions does not deteriorate. Cadent has a separate incentive to account for the high density of multiple occupancy buildings in its region.

2.61 In RIIO-ED2, the Interruptions Incentive Scheme (IIS) drives the overall reliability of the networks by measuring performance against output targets over the price control period.

2.62 Ahead of RIIO-3, we will work with network companies through the relevant working groups on the approach to reliability policy and the relevant mechanisms for RIIO-3. A key input into the RIIO-2 mechanisms, the ENS and the IIS, is the Value of Lost Load (VoLL). VoLL is a representation of the value that a customer places on security of supply. We will undertake a review of VoLL, ENS and IIS and will engage network companies and wider stakeholders through the methodology phase.

Connections

2.63 The provision of timely new connections to networks is a vital function of network companies as we transition to a decentralised and decarbonised energy system.

2.64 There are two Financial Output Delivery Incentives in ET2, designed to drive performance for TOs: the Timely Connections Incentive and Quality of Connections Survey Incentive.

2.65 In recent years, unprecedented numbers of electricity network connection applications have created challenges across the whole system. Around half of contracted distribution connections are now dependent on transmission reinforcements and new connection dates are typically in the 2030s in many parts of the country for transmission connections.

2.66 Industry, Ofgem and DESNZ are working together to progress short-term solutions and longer-term reforms. These will 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.

2.67 We will continue to work with industry to ensure that customers and system needs are at the heart of these reforms and that the regulatory levers that support these outcomes are appropriate and effective.

Customer service

2.68 We expect network companies to deliver high quality services that meet customer and stakeholder needs. We use a combination of customer and stakeholder surveys across the sectors and a measure of complaints in distribution sectors to measure network companies' performance.

2.69 In RIIO-2, GDNs, DNOs and NGT are incentivised to improve the quality of customer service delivery - where rewards are available for exceptional performance and sharp penalties ensure performance does not deteriorate.

2.70 All TOs (including NGT) are currently encouraged to survey stakeholders through reputational incentives. NGT is required to report the levels of stakeholder satisfaction measured through a stakeholder satisfaction survey. TOs are encouraged to survey stakeholders impacted by new infrastructure projects on their stakeholder engagement experience, driving companies to tailor engagement to better meet the needs of local stakeholders impacted by transmission networks.

2.71 Ahead of RIIO-3, we propose to work with network companies through the relevant working groups in the methodology phase on any updates to financial incentives which may be necessary, such as target setting calibration. We will also review the impact of reputational incentives on behaviour of network companies.

Consumer vulnerability

2.72 Ensuring energy companies support and protect consumers in vulnerable situations is a priority for Ofgem.

2.73 We consider that distribution networks have an important role in providing this protection and support. This includes:

- assisting those most at risk during outages
- identifying consumers in vulnerable situations
- taking measures to address vulnerability when responding to emergencies through customer service functions
- providing support where they are best placed to those in fuel poverty and to those most at risk of being left behind in the transition to net zero.

2.74 In RIIO-2, there is a package of outputs to support consumers in vulnerable situations. At the highest level, GDNs and DNOs are held to account for treating all domestic customers fairly, including those in vulnerable situations through a minimum standard.

2.75 The GDN package is further comprised of flexible funding for activities addressing consumer vulnerability and carbon monoxide (CO) safety, as well as a reputational incentive to encourage best practice and collaborative activities.

2.76 The DNO package comprises of a new incentive which holds DNOs to account in delivering the level of service expected, with an incentive to develop ambitious and best practice initiatives. This is supplemented by a reputational incentive.

2.77 We will work with network companies to review the current package of outputs for RIIO-GD3 through the methodology phase and consider whether any changes may be necessary. While this will not involve in-depth discussions on a future RIIO-ED3 package, we will consider the value of consistency across sectors while recognising the different roles carried out at distribution level across electricity and gas.

System efficiency and long term value for money

2.78 It is important to ensure that the transition to net zero comes at low cost for existing and future consumers. To this aim, we expect network companies to deliver services as efficiently as possible. In this context, the assessment of the efficient level of costs that will enable network companies to carry out their activities and deliver an appropriate level of outputs for consumers is clearly a core element of price controls setting.

2.79 In RIIO-2, we used a toolkit approach to set allowances reflecting efficient costs, complemented by the introduction of uncertainty mechanisms where appropriate. Again, we did not explicitly consult on this, but we propose to work closely with key stakeholders during the methodology phase in developing an approach that remains suitable for RIIO-3, while also looking at simplification opportunities wherever deemed to be sensible and not harming the incentive for network companies to deliver cost efficiency.

Embedding the consumer voice

2.80 Our March 2023 consultation set out plans to explore the role of stakeholder engagement and capturing the consumer voice in the price control review process. This included a review of the lessons learned from the RIIO-2 approach.

2.81 We had the objective of identifying different options for the role of consumers and stakeholders in future price control reviews. This included reviewing the RIIO-2 Enhanced Engagement framework through the lens of potential changes to the regulatory frameworks and the opportunity this might present for different forms of consumer engagement across the sectors.

2.82 We asked for views on what the role of the 'consumer voice' should be and through what institutions and processes it should be channelled in the next price controls. We received 34 responses through the consultation process and have gathered further views through industry working group discussions to inform our decision on the role of the customer and stakeholder voice in RIIO-3.

Role of customer and stakeholder engagement

2.83 The RIIO framework puts an emphasis on the need for companies and Ofgem to understand and respond to the changing requirements and needs of customers and stakeholders.

2.84 For RIIO-2, we decided that an enhanced engagement framework should give a stronger voice to network users, consumers and consumer advocates in the price control process and that transparent systematic challenge from established groups could achieve this by the following outcomes:

- Raising the bar for network companies' customer and stakeholder engagement activity and the quality of business plans
- Supporting Ofgem's business plan assessment, and ultimately informing regulatory decision-making on the final price control settlements
- Enabling more flexible regulation which accounts for regional differences.

2.85 The RIIO-2 Enhanced Engagement framework consisted of the following elements:

- Customer Engagement Groups (CEGs) – distribution companies established independently chaired Customer Engagement Groups to challenge each company and provide assurance to us. The groups provided a report to us on how the company reflected the needs and preferences of local users and consumers, including on outputs, service quality standards, and willingness to pay in their business plan
- User Groups (UGs) – transmission companies established independently chaired User Groups to provide input and challenge to their business plan and assurance to us. They provided a report to us on areas of agreement or disagreement with the companies
- RIIO-2 Challenge Group (CG) - we set up an independently chaired RIIO-2 Challenge Group made up of industry experts that assessed the business plan proposals in all sectors and provide a report to us on their findings. We provided the group with secretariat support and access to technical and financial assistance they required
- Open Hearings – each company had an Open Hearing which allowed stakeholder arguments in favour or against company proposals to be voiced. The focus of these sessions was informed by topics of particular contention that had been identified by the Customer Engagement, User and RIIO-2 Challenge Groups, and the Call for Evidence
- A Call for Evidence – we published a Call for Evidence seeking feedback from wider stakeholders on aspects of company business plans.

Consultation responses and stakeholder feedback

2.86 In response to our consultation, most stakeholders agreed that customer and stakeholder engagement is more crucial than ever and a fundamental element of price control development and design. Many respondents noted that the RIIO-2 framework had driven higher quality business plans and allowed for local and regional needs and priorities to be reflected in companies' submissions. These outcomes remain a high priority for stakeholders for RIIO-3.

2.87 Many respondents consider that there is no single "consumer voice" and the needs of all stakeholders need to be taken into account, specifically network users, generators, providers of system services, industrial & commercial customers and small-medium sized enterprises.

2.88 SSEN and WWU commented that the role of the output reports produced by the CEGs, UGs and CG in Ofgem's decision-making for RIIO-2 could have been clearer. This view was also raised in working group discussions.

Decision

2.89 Our decision is to maintain a clear objective for network companies to keep stakeholders at the centre of their business planning, but to streamline the RIIO-2 Enhanced Engagement framework to minimise duplication of activities for RIIO-3. We will also focus more effort on engaging consumer voices in the delivery of plans, not only on their development. The sections below detail our decisions on each element of the Enhanced Engagement framework for RIIO-3.

2.90 At a high level, we consider that a RIIO-3 framework consisting of three core elements will drive the outcomes realised in RIIO-2. We consider that the prominent outcome we are seeking to drive is the development of high-quality business plans which take into account local and regional energy system needs. This framework will consist of:

- CEGs and UGs, renamed Independent Stakeholder Groups (ISGs), which will provide challenge and scrutiny on network companies' business plan development as well as the delivery of this plan. This will include considering on the network companies' approach to stakeholder engagement at all stages
- The Call for Evidence to ensure that all stakeholders have the opportunity to comment upon, flag support for, or raise concerns with companies' RIIO-3 business plan proposals to us
- A mechanism for wider stakeholder feedback on delivery of plans. We will further consider how this can be informed by the digital reporting, and the involvement of the ISG.

2.91 The below sections set out the stakeholder feedback and our decisions in more detail.

Role of Customer Engagement Groups and User Groups

2.92 CEGs and UGs were introduced to challenge and scrutinise RIIO-2 business plans and simultaneously feed an authentic consumer and stakeholder voice into the process. These groups had an important role in driving the delivery of high-quality business plans.

Consultation responses and stakeholder feedback

2.93 There was strong agreement from stakeholders, particularly network companies, that CEGs and UGs provided value in embedding the consumer voice in the RIIO-2 price control process and significantly improved the quality of companies' business plans. This view was shared by CEGs who provided a response.

2.94 Some wider stakeholders have seen the model working in close quarters. Sustainability First noted that the value of these groups comes from the level of scrutiny of companies' approaches to engagement at a level Ofgem is not well placed to do. The Association for Decentralised Energy (ADE) noted that networks were responsive to feedback and that the expertise that developed within the groups enhanced the level of scrutiny.

2.95 Some stakeholders made suggestions of how the CEG and UG process could be improved and for adaptations that should be made for RIIO-3. These included:

- Removing duplication of roles across CEGs / UGs and the CG
- CEG and UG memberships should be refreshed regularly (every 2 regulatory periods) to ensure members avoid capture by companies
- There should be transparent links established between CEGs and regional system planners
- Ensuring that CEG and UG chairs have formal and transparent ongoing engagement to discuss common themes and issues
- The groups should be mandated for RIIO-3, as they were for RIIO-2.

2.96 The question of whether each company should have a mandatory independent group was discussed during industry working groups and a range of views was provided across companies and stakeholders.

2.97 Most stakeholders recommend mandating the continuation or establishment of these groups for RIIO-3, noting that a mandate enhances the "soft power" and voice of the groups within network companies and their influence in business plan development. A key risk highlighted with the absence of a mandate was the possibility for companies to deprioritise and reduce the focus on high quality stakeholder engagement.

2.98 We note that some network companies have retained the independent challenge of a CEG or UG for the RIIO-2 period, evolving the groups' roles in accordance with emerging challenges and priorities. Whilst these companies advocated for a mandate, they raised the importance of companies having flexibility and

discretion in how they utilise the groups to ensure that they can obtain the most value they can from them.

Decision

2.99 Our decision is to retain the mandate for companies to have an Independent Stakeholder Group (ISG) which will provide challenge and scrutiny on network companies' business plan development, including on their approach to stakeholder engagement. ISGs will fulfil a comparable role to CEGs (for GDNs) and UGs (for TOs).

2.100 We have decided to rename these independent groups for RIIO-3 as we consider ISG better reflects the role and character of these groups. We consider that CEG in particular is misleading as members are not necessarily a customer of the company they are affiliated to. We consider that 'stakeholder' is more appropriate across all sectors. We also want to emphasise the importance of the independence of these groups in the name.

2.101 We consider that more flexibility should be provided to companies in how ISGs are utilised, with the key outcome they challenge the companies to achieve being a high-quality business plan that takes into account local and regional consumer and network user priorities.

2.102 We recognise the value of ISGs is being able to come together to discuss key topics and issues, share knowledge and experience and understand the cultural attitude of companies relative to others. We consider that this would provide a useful angle by which ISGs can challenge companies.

2.103 We recognise that a large focus of the CEG and UGs in RIIO-2 was the production of an assurance report to Ofgem. Following extensive discussion via working groups and bilaterals, we consider that this element should be removed from the requirements of ISGs given the flexibility in how they will be used to consider key areas of companies' business plan development and stakeholder engagement activities. However, we propose to retain the right to contact the independent ISG chairs, requesting information on areas of challenge, disagreement, or general interactions with network companies.

2.104 Our next steps will be to engage with network companies through the methodology phase to refine the guidance in relation to the establishment, process and terms of reference for ISGs within the RIIO-3 Enhanced Engagement framework, including consideration for a more enduring role for ISGs after the price control setting process.

Role of the RIIO Challenge Group

2.105 We set up an independent Consumer Challenge Group (CG) in RIIO-2, the role of which was designed to challenge and scrutinise the companies' RIIO-2 business plans from the perspective of the end-consumer and in the interests of future consumers. This group had a cross-company and cross-sector view of the business plans allowing company ambition to be compared.

Consultation responses and stakeholder feedback

2.106 We received mixed feedback on the role of the CG as part of the lessons learned review of RIIO-2 and on whether such role for a CG should exist for RIIO-3.

2.107 Network companies including SGN, Cadent and SSEN were critical of the RIIO-2 CG, noting that the group was underinformed, not sighted on key issues and therefore unable to provide real challenge and high value feedback on company business plans.

2.108 Cadent and Citizens Advice noted that should the role of the CG exist for the RIIO-3 business planning process, more clarity would be needed to clarify the group's role. This was suggested to involve more comprehensive interaction with network companies and a focus on testing, validating, and calibrating common outputs to support Ofgem decision-making. This would result in a narrower focus, removing CG involvement in scrutinising bespoke proposals, wider costs and finance.

2.109 Sustainability First, stated that in some instances it seemed that a minority of CG members was influencing the challenge narrative, highlighting the importance of all members dedicating sufficient time and resource to engage in the process.

Decision

2.110 Our decision is to remove the role of the CG as part of the Enhanced Engagement framework for RIIO-3.

2.111 We recognise the value of comparative assessment and challenge provided by the RIIO-2 CG, however we take onboard the feedback from network companies and wider stakeholders noted above. We consider that removing this group will reduce duplication of efforts across the different challenge groups (eg ISGs) and allow Ofgem to take more of a lead on comparative business plan assessment. This will be aided by a targeted and consistent approach to the business planning process.

2.112 We consider that ISG chairs can have a more involved role in coming together as a group to discuss key topics across the companies, feeding insights from these meetings into the challenge process.

Role of Open Hearings

2.113 The Open Hearings were introduced in RIIO-2 to provide an open and transparent opportunity for stakeholders to comment and challenge company proposals in a public format, with senior Ofgem officials in attendance.

Consultation responses and stakeholder feedback

2.114 Stakeholder feedback on Open Hearings has been mixed. Network companies expressed in the working groups that the sessions proved to be resource-intensive and did not provide significant value. Some stakeholders suggested that this component of the framework can be removed altogether.

2.115 Some stakeholders suggested retaining a version of an open hearing, or an alternative which provides a company interaction with the Authority.

2.116 Other stakeholders suggested retaining the open hearings but suggested that the timings in the business planning process should be reviewed and amended to a point in the process where the feedback from stakeholders can be reasonably actioned within the remaining process timelines.

2.117 A lesson learned from RIIO-2 was the limited value of open hearings. Looking at the feedback we received we agree that open hearings were held late in the business planning process, missing great opportunities for a true impact. Ofgem considered that the value of open hearings brought could be obtained via alternative routes, such as through the Call for Evidence process.

Decision

2.118 Our decision is to remove the open hearings component from Enhanced Engagement framework for RIIO-3.

2.119 We consider that the Call for Evidence will provide a timely and formalised opportunity for stakeholders to highlight views to Ofgem on company business plans.

2.120 We consider that removing this element of the framework will relieve a substantial time, resource and administrative burden from both network companies and the regulator at a crucial stage in the price control setting process.

Role of the Call for Evidence

2.121 The Call for Evidence (CfE) during RIIO-2 was a formalised means of gathering stakeholder feedback on company plans and informing topics for the open hearings.

2.122 There has been little stakeholder feedback on the CfE, due to this being a component reviewed solely by Ofgem.

2.123 Subject to further feedback, our decision is to retain the CfE for RIIO-3. We consider that the CfE is crucial for providing a formal opportunity for interested stakeholders to provide us with a response to company business plans, feed into the process and have their voices heard.

2.124 We consider that the timing of the CfE should be reviewed to ensure that its timing allows stakeholders' contributions to have the optimum impact and value in both the business planning process and Ofgem's decision-making.

2.125 We also consider that providing some high-level, targeted guidance on key topics and areas we would value views on will be beneficial to obtaining feedback that can input easily into the process.

2.126 We intend to work with network companies and stakeholders to update and refine the Enhanced Engagement guidance for the RIIO-3, taking into account our decisions on the overall framework.

Outputs, Incentives and Uncertainty Mechanisms

Overarching framework for setting outputs and incentives

2.127 We use outputs and incentives to specify what it is we want the networks to deliver in return for the funding they are able to recover from consumers. They reflect the attributes of network service quality that are of most value to existing and future consumers (including those in vulnerable situations) and are based on consumer research and engagement.

2.128 In RIIO-2, we used a range of mechanisms to encourage network companies to deliver the outputs we set, efficiently and to the desired standard. These are summarised below:

- License Obligations (LOs): these set minimum standards of performance, and failure to meet these standards could lead to enforcement action being taken by Ofgem and / or financial penalties being imposed by Ofgem
- Price Control Deliverables (PCDs): these ensure that funding that was allocated in baseline totex for the delivery of specific activities or projects, is automatically returned to consumers if those projects are no longer required (or are delivered to a materially different specification) due to a change in circumstances since the control was set. There are two types of PCDs:

i. Evaluative PCDs are set where some flexibility in the activity or project is required, eg the scope of the project or how the project will be delivered, and have detailed reporting requirements to allow for decisions on these elements to be made during the price control period

ii. Mechanistic PCDs are set in cases where an activity is typically repeatable and can be defined by volumes or numbers of units of deliverables. We set allowances by reference to the unit cost and allowances are automatically modified based on the actual units of work delivered

- Financial Output Delivery Incentives (ODI-Fs): these are set when we want network companies to deliver service quality improvements which go beyond the minimum standard, where this is in the interest of consumers. Network companies are rewarded or penalised dependent on their performance relative to a target level or relative to other companies

  Rewards and penalties calibrated to reflect the benefit to the consumer of service quality improvement (or degradation). They are also capped at a maximum or minimum service level, where the benefit/detriment to consumers of further improvement/degradation is likely to tail off

- Reputational Output Delivery Incentives (ODI-Rs): these are applied where value to the consumer cannot easily be demonstrated or quantified, or when we require greater transparency or data on network companies' activities in a certain area.

2.129 Outputs and incentives are usually common to all network companies within a sector. This helps to ensure that customers receive a similar level of service regardless of where they are located in GB. However, we also recognise that each network company has unique requirements and circumstances which are based on its local geography and the needs of its local customers. Therefore, in RIIO-2 we gave network companies the opportunity to propose bespoke outputs where companies could justify why the output is required in addition to the common arrangements.

Summary of consultation proposals

2.130 In our consultation we didn't ask for views directly on the approach to outputs and incentives, but we did ask broadly about the case for simplification of the RIIO-2 framework. The framework, including outputs and incentives, should be focused on achieving the strategic objectives, including contributing to system transformation.

2.131 In some cases, a detailed and complex approach to regulation may be the only way to ensure that consumers are protected. However, further increases in complexity may mean that it is not practicable to adapt the RIIO-2 approach to the challenges of transition. This is because:

- It is hard to translate desired outcomes into clearly measured outputs. If measurement is imperfect, we may create incentives to optimise the wrong behaviour
- Where there are many incentives all simultaneously in play, it is possible for unwelcome, unforeseen and unintended interactions between them to lead to the wrong outcomes
- Each new output incentive may require a corresponding ex post monitoring mechanism to determine whether the outcome has been achieved, which imposes further in-period cost for regulator and company.

2.132 On this basis, we asked:

- If we were running RIIO-2 again, what lessons can we learn through the lens of simplification, in relation to outputs and incentives
- Whether there is an alternative, simpler framework that could be applied to outputs and incentives.

Stakeholder feedback

2.133 There was strong support from all stakeholders for our current framework for setting outputs and incentives. This is because it has delivered significant improvements for customers over RIIO-1 and RIIO-2.

2.134 However, stakeholders also noted that the framework could benefit from simplification to reduce unnecessary complexity and the regulatory burden on both Ofgem and industry. It was highlighted that any simplification needed to be proportionate and one respondent specified that simplification should not solely focus on the short-term lowest cost outcome at the expense of achieving strategic outcomes.

2.135 In relation to PCDs, stakeholders agreed that both mechanistic and evaluative PCDs are effective tools for holding network companies accountable for delivery. However, there needs to be more consistency around how they are scoped, designed and applied.

2.136 In working group discussions, several network companies provided examples of how PCDs were creating perverse incentives to deliver outputs that were no

longer required to avoid being penalised, even when this is no longer in the benefit of consumers.

2.137 This is particularly relevant to cases where there are multiple drivers for work on the same asset(s) and where the PCD has set very granular and detailed requirements. Network companies said that this prevented them from re-optimising their work to respond to changes.

2.138 It was also noted that where a network company is delivering benefits above the requirements set out in the PCD, the mechanism should include the ability to increase allowances according to work delivered.

2.139 Most stakeholders were of the view that PCDs should only be applied to projects associated with material costs to reduce the regulatory reporting burden.

2.140 In relation to ODI-Fs, there was broad recognition that financial incentives are a significant driver in improving company behaviour and benefits for consumers. There was strong support for well-designed incentives that drive positive outcomes for consumers, set a high benchmark for performance which is then embedded into future controls.

2.141 One respondent highlighted that in general, targets for financial incentives are set too far in advance and historically have not been stretching enough, as they fail to reflect the likelihood of outperformance. It also stated that incentive schemes should be designed to reward and penalise by comparing performance between companies.

2.142 Another stakeholder highlighted that resource and information asymmetries were an issue in the development and decision-making of incentives. This is because development primarily took place in working groups for which network companies were better able to resource attendance and input compared to other stakeholders.

2.143 During working group discussions, it was noted that incentive value is not always linked to consumer value or benefit. This could lead to the cost of meeting certain levels of performance, exceeding the benefit to customers from that improved performance.

2.144 Additionally, current reporting does not monitor spend associated with specific service improvements - this could lead to potential double-rewarding through totex and incentive payments.[16]

2.145 During working group discussions there was some support for the ODI-Rs, with one stakeholder stating that these types of outputs provide visibility and transparency to specific areas, as well as providing assurance that these areas have senior level visibility and attention.

2.146 There was also broad support for bespoke outputs however it was noted that the ratio of proposed bespokes to accepted bespokes was very low (around 27%). Better guidance was recommended to reduce the resource burden required to develop, review and assess proposals from an industry and Ofgem perspective.

2.147 One consumer body representative also noted that careful consideration was needed to the acceptance of bespoke outputs, as this could lead to a 'postcode lottery' where customers experience a different level of service, dependent on their location and network operator.

Decision

2.148 We think that our existing approach to setting outputs and incentives is effective in specifying what we expect network companies to deliver and holding companies accountable for delivering value for money. However, we note stakeholders' points around simplification and have proposed to streamline the suite of outputs and incentives by:

- Rolling forward RIIO-2 mechanisms that are working well and are reflective of the activities that network companies will deliver over the next price control
- Removing RIIO-2 mechanisms that are duplicative, not outcome focused, have low materiality or where the consumer value is not clear
- Review mechanisms that are not fit for purpose given the pace of change associated with the system transformation
- Narrowing the eligibility criteria for bespoke outputs (including PCDs and ODI-Rs) in order to raise the bar and limit number of bespoke proposals from companies
- Improving guidance on use of the toolkit.

[16] Some of the costs funded through baseline allowances may lead to improved performance on incentives, resulting in network companies also earning a reward through the incentive mechanisms.

2.149 We consider that our current toolkit of outputs (LOs, PCDs and ODIs), strikes the right balance between enhancing transparency and ensuring accountability for output delivery. A summary of our current thinking is set out below, which we will consult further on as part of the methodology phase:

- We will continue to use licence obligation to set minimum standards
- The proposed new shared data infrastructure and requirement to share granular data will provide an enhanced visibility and transparency of plans and delivery. This will provide the basis for streamlining some existing incentive structures
- We will continue to set PCDs where appropriate, however we will review the criteria for activities and projects that will be considered eligible for PCDs. We will work with network companies and relevant stakeholders to develop this guidance for inclusion within the Business Plan Guidance document
- We will continue to apply ODIs where service quality improvements beyond the minimum standard may be in the interests of consumers. However, we will work with stakeholders to ensure that incentive values are aligned to consumer benefit
- We will also reconsider the design and role of Business Plan Data Templates (BPDTs) and Regulatory Reporting Packs (RRPs) to support the effective implementation of these tools, in light of the intended development of the shared data infrastructure
- We may also assign reputational incentives and bespoke outputs to some output activities, however we will narrow the criteria for activities and projects that are considered eligible. Again, we will work closely with network companies and relevant stakeholders to set this out clearly in the Business Plan Guidance document.

Rationale for Decision

2.150 We note the broad support for our existing framework for setting outputs and incentives and believe that our proposed approach will drive value for consumers and enable us to ensure the price control rewards companies for genuine performance improvements.

2.151 We think that the actions that we set out in relation to simplification will:

- Allow resource to be focussed on the areas that are most important and drive greatest value to consumers

- Facilitate a principles-based framework with better incentive properties which are more consistently applied across network companies and sector
- Result in a less complex framework that will be easier for key stakeholders to engage with.

2.152 In relation to PCDs, we note the concerns over how we applied PCDs in RIIO-2. We agree that in some cases, their application may have driven perverse behaviours which are not in the interests of consumers. We believe that PCDs should be targeted on projects that are material, where there is a risk to delivery and/or where outputs are being delivered over several price controls. We will set out further details on the types of projects and activities that we consider suitable for packaging as a PCD, in the RIIO-3 business plan guidance.

2.153 In relation to ODI-Fs, we agree that aligning incentive values to consumer benefit will help ensure that companies are rewarded or penalised in line with how much customers value the service that is being incentivised. We also think that improving the design of BPDTs and RRPs to better capture costs associated with improving incentivised services, will help to reduce the likelihood of double-rewarding network companies for service improvements.

2.154 For ODI-Rs we believe that the visibility and transparency it brings to specific output area justifies its place in the incentive package, however we think that there should be more consistency in how they are designed and applied. Moreover, with the enhanced transparency and scrutiny from the new role of the ISG and the enhanced up to date digital information, there is an opportunity to reduce the role of ODI-Rs.

2.155 Finally, we agree that in setting bespoke outputs we must balance the need to ensure that customers experience a similar level of service regardless of their location and the need for network companies to deliver regional priorities and customer preferences. We think that narrowing the eligibility criteria for bespoke outputs will limit the number of bespoke proposals from companies and allow resource to be focussed on common mechanisms instead.

Truth telling incentives

2.156 In setting a price control, regulators require companies to submit information that otherwise regulators cannot directly observe via business plans. This information includes cost forecasts and output delivery plans. To get over this information asymmetry, regulators use truth telling incentives to incentivise plans with high-quality information and ambitious cost forecasts.

2.157 For RIIO-2, Ofgem has relied upon the Business Plan Incentive (BPI), a successor of the Information Quality Incentive (IQI) from RIIO-1, as an information revealing device to incentivise high-quality information and ambitious costs. The BPI was split into four stages. Information not reaching a minimum requirement (stage 1) and poorly justified costs (stage 3) incurred penalties, while information that revealed consumer value propositions (CVPs) that went beyond BAU (stage 2) and ambitious costs (stage 4) earned a reward. Stages 3 & 4 relied on the Confidence Dependent Incentive Rate (CDIR) which separated low confidence costs (assessed in stage 3) and high confidence costs (assessed in stage 4).

Summary of feedback

2.158 We did not explicitly consult on this but through our working groups and bilateral discussion we received feedback from network companies and key stakeholders. Numerous companies presented feedback that the BPI needed evolution and could not be rolled over in its current form. The BPI being subjective, complex, and opaque were presented as problems that needed to be solved for the BPI to work effectively.

2.159 UKPN said that sharpening the incentives of the BPI may help it become more effective. UKPN suggested companies may naturally inflate costs if penalties were weak and sharpening the penalties in particular was noted as important.

2.160 SSEN-T stated the BPI incentivised ambitious and well justified business plans, highlighting stages 1 and 4. It felt the CVPs are delivering value, though it commented the process to produce and assess these were difficult.

2.161 Two other companies commented that CVPs provided little added value, while Citizens Advice was concerned CVPs created a postcode lottery and Ofgem did not seek to apply the best practice identified across sectors. SGN said if the CVPs were to continue the assessment methodology needed to be reviewed.

Next steps

2.162 We consider that there is still a role for truth telling incentives in the next round of price controls. However, in line with lessons from RIIO-2 we believe that our approach can be better targeted, simplified and be conscious of the resource asymmetry that exists between the regulator and the network companies.

2.163 Considering all the feedback received on truth telling incentives, like the BPI, we believe that significant further review is required based on the outcome of the approach taken in RIIO-2.

2.164 We believe that the decision to implement a truth telling incentive like the BPI has led to an increase in the quality of submission from network companies and has facilitated greater engagement between companies and their stakeholders.

2.165 However, we recognise the concerns raised and some of the specific lessons learned and are of the view that there is scope for a more simplified, targeted approach to reveal information, recognising the resource asymmetry that exists between the regulator and the network companies. This approach may include:

- the removal of the Consumer Value Proposition (CVP) element
- streamlining minimum requirements
- removing Confidence Dependent Incentive Rate (CDIR) component
- simplifying penalty and reward mechanisms.

2.166 We will work closely with key stakeholders throughout the methodology phase to develop our approach on truth telling incentives for RIIO-3.

Efficiency Incentives

2.167 The Totex Incentive Mechanism (TIM) is a powerful incentive for network companies to deliver their required outputs efficiently while enabling customers to share the benefits of outperformance. The incentive also allows network companies to share any overspend against their totex allowances.

2.168 In RIIO-2 we used the CDIR from the BPI to set the TIM sharing factor. This increased the incentive rate for companies if we had a greater level of confidence in our ability to independently set cost allowances and lowered the incentive rate if we had lower confidence.

2.169 In RIIO-2 the range of TIM sharing factors across gas and electricity transmissions sectors was around 33% to 50%.

Summary of feedback

2.170 We did not explicitly consult on this but through our working groups and bilateral discussion we received feedback from network companies and key stakeholders. Numerous network companies told us the TIM was an effective incentive to provide cost efficiencies and innovative solutions.

2.171 NGN said that the TIM should have its incentives sharpened, both on its reward and penalty.

2.172 Citizens Advice believed the TIM is a reasonable incentive that gives customers value, but believed the rate should be reviewed as this could possibly be lower and still be a powerful incentive.

Next steps

2.173 We will work closely with key stakeholders to develop our approach on this, but building on the approach in RIIO-2, we consider maintaining the TIM and allowing companies to keep a share of underspend from efficiency gains, is appropriate. We are however continuing to assess the best way to set this sharing factor. The CDIR reduced transmission sharing factors but was considered resource-intensive, complicated, and particularly in distribution, was considered to deliver little benefit. As well as this, during the RIIO-2 framework decision, Ofgem identified a few issues that reduced the effectiveness of features in the IQI. This included a concentrated ownership structure and that our view of cost was not independent of the company view. The effectiveness of the CDIR like the IQI, has suffered from a view not fully independent of company views due to both reliance on company information but also the concentrated ownership structure.

2.174 We will work closely with key stakeholders throughout the methodology phase to develop our approach on efficiency incentives for RIIO-3.

Managing Uncertainty

2.175 The uncertainty surrounding network activity in the future makes it difficult to predict the allowances necessary for a range of different activities. Forecasts could be wrong to a significant degree, and this could harm consumers or investors. This uncertainty is likely to increase with the energy system transition, changing behaviours and the emergence of new technologies.

2.176 We use a range of mechanisms to manage this uncertainty. These allow changes to the base revenue during the price control period to reflect significant cost changes that are expected to be outside the company's control. A brief summary of our uncertainty mechanisms is provided below.

- Indexation: provides network companies and consumers some protection against the risk that outturn prices are different to those that were forecasted when setting the price control, eg general price inflation or cost pressures
- Volume driver: adjusts allowances in line with the actual volume of work delivered, where the volume of certain types of work that will be required over the price control is uncertain (but where the cost of each unit is stable)

- Use it or Lose it Allowance: to adjust allowances where the need for work has been identified, but the specific nature of work or costs are uncertain
- Re-opener: to decide, within a price control period, on additional allowances to deliver a project or activity once there is more certainty on the needs case, project scope, quantities or cost
- Pass-through: to adjust allowances for costs incurred by the network companies over which they have limited control and that, in general, we consider the full cost of which should be recoverable (eg business rates).

2.177 The use of uncertainty mechanisms is important to avoid implementing damaging incentives on network companies to be efficient, unnecessarily exposing network companies to risks outside of their control or exposing consumers to material forecasting risks at price control review.

2.178 In this chapter, we outline the range of uncertainty mechanisms we expect to apply in RIIO-3. We will consult on further details of each mechanism in the methodology phase.

Summary of March proposals

2.179 In our March consultation we said that the depth of uncertainty mechanisms utilised in RIIO-2 in some cases, has helped to address the pace and scale of the transition and the difficulty of presenting full business plans for the period of the price control. However, further increases in complexity may mean that it is not practicable to adapt the RIIO-2 approach to the challenges of transition.

2.180 The March consultation did not seek views on the lessons learned in relation to uncertainty mechanisms, however we engaged with stakeholders on this issue through our working groups.

Summary of consultation responses

2.181 There was a general consensus from stakeholders that the suite of uncertainty mechanisms we used in RIIO-2 remains appropriate for the purposes of future price controls.

2.182 Network companies agreed that greater clarification on the circumstances under which uncertainty mechanisms are applied to specific activities would be helpful to prepare better business plan submissions.

2.183 Several network companies highlighted the need to simplify the process for re-opener applications. One respondent noted the need to reduce the quantity and granularity of data required as part of the application process to hasten decision

making and progress delivery. It was noted that slow decision making could pose a risk to investment, delivery and meeting net-zero targets.

Decision

2.184 We think that our existing approach to managing uncertainty is effective in ensuring that the price control can adapt to a range of different future scenarios. For example:

- We will continue to index uncertain costs where possible. Specifically, we propose to retain our approach to indexing RPEs rather than set an upfront allowance figure
- Where the need for an activity is certain, unit costs are stable but quantities difficult to predict (eg due to load uncertainty in the future), we will continue to use volume drivers to enable revenue allowances to automatically adjust to changes in circumstances
- Where there may be need for work in a specific area but the scope, timing or cost of work is uncertain, we will continue to use a use-it-or-lose-it allowance to automatically adjust allowances
- Where there is uncertainty over the need, scope, timing or cost of work and the potential costs are significant for consumers, we will continue to use re-openers to adjust network companies' adjust revenue allowances.

2.185 We note stakeholders' points around simplification of some uncertainty mechanisms such as re-openers. We will work closely with stakeholders through the methodology phase and aim to provide further guidance on this in the business plan guidance document and supporting guidance documents, where necessary.

2.186 Proposals pertaining to specific uncertainty mechanisms in each sector will be set out in the methodology phase.

Rationale for our decision

2.187 In our view, it is appropriate for companies to be able to propose investments that are highly anticipatory (where these are sufficiently evidenced and supported by stakeholders and in the consumer interest and represent whole life value) as part of their business plans. We will work with network companies and stakeholders to refine our framework for considering this type of investment.

2.188 In relation to re-openers, we agree that these mechanisms need to be agile and adaptive in order to respond to changes in circumstances, ensure timely delivery

and enable us to meet out net zero commitments. We will work with stakeholders to streamline the application process where possible.

Review of RIIO-2 outputs, incentives and uncertainty mechanisms

2.189 We reviewed all RIIO-2 outputs, incentives and uncertainty mechanisms across the gas transmission, electricity transmission and gas distribution sectors, to identify opportunities to streamline our current approach and reduce the regulatory burden associated with developing, managing and monitoring these mechanisms.

2.190 We assessed the RIIO-2 mechanisms against the following questions:

- What is the driver/purpose of the mechanism and will this still be relevant in the next price control?
- How does the mechanism operate and is it operating as expected?
- Are we able to measure performance and does this evidence that the mechanism is delivering the intended outcomes?
- Is the mechanism material (associated allowances, or incentive value)?

2.191 Based on this assessment, we categorised each mechanism using the following criteria.

- Black: removal of RIIO-2 mechanism proposed
- Red: significant review of RIIO-2 approach required
- Amber: evolution/moderate review of RIIO-2 approach required
- Green: light touch review of RIIO-2 approach required.

2.192 In summary, for GD there are 58 PCDs, ODI-Is, LOs and UMs (excluding pass-through). Our review has identified 5 that can be rolled forward, 30 that will require moderate review, 7 that require a significant review, and 16 that are no longer required and can be removed from the price control.

2.193 For GT there are 44 PCDs, ODIs, LOs and UMs (excluding pass-through). Our review has identified 4 that can be rolled forward, 25 that will require moderate review, 10 that require a significant review, and 5 that are no longer required and can be removed from the price control.

2.194 Finally for ET there are 63 PCDs, ODI-Is, LOs and UMs (excluding pass-through). Our review has identified 4 that can be rolled forward, 32 that will require moderate review and 27 that require a significant review.

2.195 Please see Appendix 2 for more detail on our assessment for each mechanism.

Innovation

2.196 Network companies are natural monopolies, with low incentives to significantly invest in innovation projects that have longer payback periods. This means that innovation funding is needed to ensure resources are allocated to developing new products and services that support price control objectives, or improving processes that can provide long term cost efficiencies.

2.197 In RIIO-2 we have two main innovation stimuli:

- Network Innovation Allowance (NIA): A set amount that each RIIO network licensee receives (total of £278m across all RIIO-2 licensees). Licensees make the decisions as to which innovation projects they take forward with their NIA in accordance with a governance document that we produce. In RIIO-2 NIA provides funding for projects that have the potential to address consumer vulnerability and/or deliver longer-term financial and environment benefits for consumers
- Strategic Innovation Fund (SIF): This aims to find and fund ambitious, innovative projects with the potential to accelerate the transition to net zero. This funding is available to network licensees and utilises annual rounds of phased funding, with roughly £450m available across RIIO-2.

2.198 Each of these mechanisms has clear and tangible benefits.

- The flexibility provided by the NIA allows for more agile early-stage testing and increased third party engagement. Networks also report that NIA allows them to better manage their resourcing plans around innovation
- The SIF ensures that the wider market is highly engaged, with early signs suggest that it leads to projects of a high quality. The SIF also enables Ofgem to set clear direction to the market through SIF Challenges, while projects are well monitored by Innovate UK (the organisation that administers the SIF).

2.199 However, we intend to explore through our Sector Specific Methodology Consultation (SSMC) whether we could improve upon the current innovation framework. For example:

- Under the NIA there is currently limited Ofgem scrutiny and direction-setting which has led to low accountability, potential duplication of work, weak demonstration of outputs and a prioritisation of NIA over SIF by some licensees

- Under the SIF licensees complain of excessive workloads due to the multiple phases and constrictive governance and it is unclear if key 'move the needle' projects are coming through.

2.200 For information purposes only we set out below some of the points we are considering currently, which we will develop further at SSMC:

- Should the NIA and 'SIF Discovery' phase be merged? We could continue a NIA-like fund that networks can access flexibly, potentially slightly expanded to cover the inclusion of Discovery-phase type projects, and then remove the SIF Discovery phase which licensees complain can be burdensome at such an early stage
- Could we continue a SIF-like fund with Alpha and Beta phases? Challenge setting is retained, with delivery partner (currently Innovate UK) providing project monitoring. Introduce capacity for Ofgem to identify 'Ofgem-supported projects' that closely reflect our policy priorities to be delivered by networks, with Ofgem able to provide clear steer that projects should receive funding on a special-circumstance basis.
- Is there an opportunity to develop broader coalitions to address big challenges in a more coordinated way that can lead to bigger innovations more widely adopted?
- How can we ensure the price control structure/timing doesn't undermine incentives for innovation? Could some aspects in the price control such as innovation run on a longer timeframe and how would that work?
- How can we ensure innovators get the support required to best develop their ideas? Could a network-innovation focused accelerator enable this?
- Reflecting the pace of change required to reach net zero targets, what should the level of innovation funding be?
- Is a mechanism or incentives for in-price control rollout of successful innovation projects across all relevant networks needed?
- Is a scale-up fund required to be able to drive adoption in the next price control period?
- How can we better leverage private sector funding to enable network innovation?
- Should we incentivise sandbox trailing through price controls, and how best could that be done?

- How do we best enable third party involvement and access to innovation funding?
- Is there a need for a fund that enables the highest risk, highest reward projects that we believe are required to deliver net zero?
- How could we better incentivise licensees to bring products to market quickly and enable roll-out by other licensees?

Business Planning Process

2.201 In order for Ofgem to set regulated revenues and required outputs for the network companies, we require information on the activities that companies intend to undertake over the price control and their associated costs. Network companies provide this information to us in the form of a Business Plan. We issue Business Plan Guidance which sets out the information that should be included in companies' Business Plans and best practice, while giving companies agency to push the frontier on the quality of plans.

2.202 We consulted on the lessons that could be learnt from RIIO-2 regarding the potential simplification of the business planning process - in particular the possibility to streamline the business plan guidance and submission timelines.

Summary of consultation responses

2.203 A common point of feedback from stakeholders was that policies needed to be better communicated in advance of business plan submission, and ideally early in plan development, in order to limit inconsistencies which make business planning difficult. There was strong support for the removal of the draft business plan submission - it was felt that the draft submission needlessly added to an already onerous and resource intensive process.

2.204 Stakeholders responded that interpretating business plan guidance required a lot of effort because much of the guidance was subjective. It was felt that issuing clear business plan guidance early in the process could help provide clarity on expectations while minimising the guidance to focus on elements that really matter could help simplify the process.

2.205 Some felt there was significant scope for standardising and streamlining the submission of quantitative information, by prescribing the submission of key data only and reducing the need for detailed Engineering Justification Papers (EJPs) and Cost Benefit Analysis (CBAs).

Decision

2.206 The business plan guidance for the purpose of setting the RIIO-3 price controls needs to continue to improve plan quality, without needlessly increasing plan quantity. We have started reviewing the RIIO-2 business plan guidance in conjunction with our assessment of the minimum requirements for the BPI. It is our intention to minimise and streamline the guidance, making it more targeted to help simplify the business planning process. We will be engaging with the network companies throughout the methodology phase on the development of the RIIO-3 business plan guidance.

2.207 We intend to publish the final business plan guidance in late spring of 2024, with final business plan submissions from the companies expected in December 2024. Following consultation responses, we are minded to remove the need for a draft business plan submission in 2024. As we progress through the methodology phase, we will provide an updated and more detailed timeline of the expected business planning process for RIIO-3.

3. Developing networks for net zero

Introduction

3.1 The electricity networks at both the transmission and distribution levels will require significant reinforcement and new network build over the coming years to avoid becoming an obstacle to GB achieving net zero. This will require improved coordination of company investment plans, a more strategic approach to new network build and a streamlined regulatory process which takes Ofgem approval off the 'critical path'.

3.2 The situation on the gas networks is less certain. If the net zero transition involves a significant role for hydrogen, then significant investment will also be required to adapt gas networks. If not, a staged decommissioning of gas networks will be required over the coming decades.

3.3 It is imperative that network investment is carefully planned and co-ordinated to align with the location of new low carbon generation, future increases in electricity demand and potentially the location of hydrogen networks. The SSEP and CSNP will be key to facilitating this at the transmission level, and regional system planners will perform a similar role at distribution level.

3.4 The electricity networks have not seen significant levels of investment in building new infrastructure since the 1970s. There are several reasons for this:

- Network regulation in the 1990s and 2000s incentivised, and generally achieved, reductions in consumer bills when it wasn't necessary to fund new network build
- Recent price controls have sought to strike a balance between lower bills and new network investment, which has in some instances resulted in significant underspends shared between companies and consumers when companies deferred investment in new projects that weren't needed right away
- RIIO-1 and RIIO-2 used mechanisms such as the Strategic Wider Works (SWW) and Large Onshore Transmission Investment (LOTI) re-openers to allow us to undertake a detailed review of company needs cases for and costs of specific large projects. This was effective in ensuring design and cost efficiency for consumers, but such a detailed project-by-project review would not be suited to the volume of new investments that we now expect, which will require a more strategic and coordinated assessment of investment need.

3.5 As a result of these and other factors there has been underinvestment in electricity networks over the past 30+ years. For example, in RIIO-ET1 (2013-21) there was a cumulative underspend of 20% against allowances.[17] As a result, there is now significant catching up to do, with enormous investment required to avoid GB's energy networks becoming a blocker to GB's net zero ambitions.

3.6 Gas distribution investment in RIIO-1 and RIIO-2 has been and will continue to be largely driven by the mandatory Iron Main Risk Reduction Programme (IMRRP), which is determined by Health and Safety Executive (HSE) requirements, and which is currently expected to be completed in 2032. Gas transmission investment has focused on asset health and network resilience.

3.7 Natural gas use is expected to decline in line with carbon budget targets, but the speed and location of the anticipated decline in usage are uncertain at this stage. A phasing out of parts of the network is expected, as well as repurposing parts of the existing natural gas network for hydrogen. The speed and timings will be highly influenced by key government decisions, including on the role of hydrogen for home heating.

3.8 Global supply chain constraints currently being experienced by the energy industry are another key aspect that will shape our approach to setting the regulatory framework for future price controls. This has been caused by a multitude of factors including the war in Ukraine, the COVID-19 pandemic and the global push towards net zero which has increased demand for equipment. Clearly some of these factors are beyond the control of the network licensees or Ofgem, but nonetheless we will shape our regulatory framework to mitigate their impact as far as possible.

3.9 The government recently published recommendations that resulted from the Electricity Networks Commissioner's (ENC) review into accelerating electricity transmission network deployment.[18] These have featured heavily in our considerations around designing our approach to funding new electricity transmission network build, particularly the recommendations that relate to removing Ofgem from the critical path for project development, enabling early supply chain engagement and only using competitive tendering where it won't cause delays to project delivery.

[17] RIIO-ET1 Annual Report 2020-21 | Ofgem
[18] https://www.gov.uk/government/publications/accelerating-electricity-transmission-network-deployment-electricity-network-commissioners-recommendations

3.10 We also need to ensure that the energy networks are resilient to the effects of climate change. The impact of Storm Arwen on the energy networks in 2021 showed that investment will be required to enhance network resilience as the frequency and severity of extreme weather will increase as a result of climate change. The existing RIIO-2 price controls recognise the importance of climate resilience (eg through the introduction of climate resilience strategies in RIIO-ED2), but we expect that future price controls as well as system design and planning considerations will need to go further. Climate resilience is discussed in more detail at paragraphs 2.37 - 2.42 above.

3.11 This chapter details the changes that we have determined are required to future price controls to account for and remedy the contextual elements set out above.

Changes in strategic planning responsibilities

Context

3.12 To achieve net zero by 2050 the energy system will need to undergo radical change. Electricity generation will be overhauled to eliminate greenhouse gas emissions, and demand will shift to low carbon sources, such as electric transport and heat. Changes to the electricity and gas networks must occur to enable these changes, but for large strategic projects it takes a long time to build new networks.

3.13 Network planning must account for the uncertainty and challenges of the future generation and demand patterns. Delivering a low-cost energy transition will require strategically planned upgrades, anticipatory investment and reform to the way assets connect to the network. The change will require strategic planning of the forward work programme to ensure the availability of skilled people and account for the impact of the forward work programme on existing networks and the need to maintain these.

3.14 There is a need for more centralised decision making on network investment to ensure that it accounts for the various fast-moving factors that will affect the network in the net zero transition. We need to ensure that the sector attracts the investment needed to facilitate a low-cost transition to net zero, with infrastructure build at pace and therefore require a regulatory environment that enables and drives:

- Identification of what needs to be built, decommissioned, or repurposed, when and where and at what scale

- Once the need has been established, that the required investment, resources and capabilities are in place to support the build, decommissioning, or repurposing (recognising that the levers are not all within Ofgem's remit).

Centralised Strategic Network Plan (CSNP)

3.15 In November 2022 we set out our decision on the creation of a new network planning output (the CSNP),[19] that will be delivered by the new FSO.

3.16 In developing the CSNP the FSO will consider the onshore and offshore electricity transmission networks in GB as well as cross-border electricity interconnectors and offshore hybrid assets and make recommendations on how the system should develop to decarbonise the electricity system by 2035 and beyond, which is critical for meeting the UK's overall 2050 net zero target.

3.17 The FSO will also undertake gas strategic network planning, forecasting and market strategy functions to enable it to undertake whole system planning and to have a holistic view of the energy system. The CSNP will develop to integrate and consider gas strategic network planning in the future.

CSNP outputs and products

3.18 The FSO currently plans to publish the first whole-system longer-term CSNP in 2026 and to update it every three years. It will assess the network needs for electricity, gas and hydrogen out to 2050. It will select optimal projects, address operability challenges and advise the government and industry on energy system planning.[20]

3.19 The FSO also plans to publish an annual CSNP, that looks up to 12 years ahead, to update and optimise near-term network planning. The annual CSNP products will identify and signal opportunities for operability needs and give build recommendation.

3.20 The CSNP products will give a build recommendation where the needs case of a potential project becomes clear.

Transitional arrangements

3.21 The Energy System Operator's (ESO) Holistic Network Design (HND)[21] introduced a new way of planning the transmission network reinforcements needed to meet

[19] Decision on the initial findings of our Electricity Transmission Network Planning Review | Ofgem
[20] Centralised Strategic Network Plan: Consultation on framework for identifying and assessing transmission investment options | Ofgem
[21] The Pathway to 2030 Holistic Network Design | ESO (nationalgrideso.com)

the Government's target of 50GW of offshore wind by 2030. The HND proposed a coordinated approach for connecting 24 GW of offshore wind and together with the 2021/22 Networks Options Assessment (NOA) refresh,[22] formed the first transitional CSNP (tCSNP1 - published July 2022). The tCSNP1 provided an offshore network design and a set of onshore network investment recommendations required to deliver the UK Government's targets.

3.22 The tCSNP1 has given TOs greater certainty on the need for reinforcement projects as the needs case recommendation will not be revisited. To ensure onshore projects are delivered at pace, we have introduced the Accelerated Strategic Transmission Investment (ASTI) mechanism that will accelerate funding for HND projects.[23]

3.23 The second transitional CSNP (tCSNP2) will consist of the Holistic Network Design – Follow Up Exercise (HND-FUE) and the 2023 NOA. The HND-FUE looks to design a connection for an additional 20.7 GW offshore generation in Scotland. The tCSNP2 (expected in early 2024) will provide an offshore network design and a set of onshore network investment recommendations to deliver the additional offshore generation.

3.24 We expect the tCSNP2 to inform the majority of the TO load related business plans for the next price control period and will work with TOs and industry throughout the remainder of 2023 and 2024 on the funding arrangements for these projects. It is our intention to learn from and adapt ASTI as quickly as possible, and to implement some key elements identified in this chapter. Working with industry we will identify how we can use this approach for projects identified in tCSNP2, and will formally consult on this in 2024.

Future developments

3.25 Following the ENC's recommendations[24] and the Prime Minister's speech on net zero,[25] we are working with DESNZ and the ESO to consider the role of a SSEP. The SSEP is intended to map government policy targets spatially and temporally. This information is likely to be used to inform network planning as part of the wider CSNP process. We will ensure that the RIIO-3 framework is adaptable to

[22] Network Options Assessment (NOA) | ESO (nationalgrideso.com)
[23] Decision on accelerating onshore electricity transmission investment | Ofgem
[24] Accelerating electricity transmission network deployment: Electricity Networks Commissioner's recommendations - GOV.UK (www.gov.uk)
[25] https://www.gov.uk/government/speeches/pm-speech-on-net-zero-20-september-2023

accommodate the ENC's recommendations if they are taken forward by government.

Regional system planners

3.26 Ofgem is considering the introduction of regional system planners[26] to ensure there is accountability for regional energy system planning to inform distribution level strategic investment needs. Our decision on whether regional system planners will be introduced will be published in November 2023.

3.27 If implemented, regional system planners would develop a regional whole system strategic plan that is coherent with national and local net zero ambitions and energy security priorities and that supports achieving the most cost-effective decarbonisation outcomes, derived from, and informing the individual sub-plans made by local actors. The regional system planner would provide consistent critical planning assumptions to inform pathways to allow DNOs/GDNs to plan their network. The regional system planner will review these investment plans and ensure technical coordination across the whole system with recommendations to Ofgem to support the regulatory funding decisions.

3.28 Regional system planners may not provide approval of investment need as the CSNP will. It will be used to inform network investment for ED and GD, ensuring that a whole system approach to investment is taken that is coherent with national and local net zero ambitions. The output of the regional system planners would be a key input to the distribution price control setting processes for the justification of system/network need but stopping short of producing network plans for the network companies to implement.

3.29 Regional system planners would be intended to be in place late 2025/early 2026 to begin regional energy system planning. We expect that the role of regional system planners in assessing RIIO-GD3 business plans will be limited given that submission will need to be in late 2024, and we do not expect regional system planners to be up and running prior to then. In designing RIIO-GD3 we will ensure that the price control can accommodate any regional system planner recommendations relevant to GDNs during the period, eg via UMs. It's likely that regional system planners will be able to play a greater role in RIIO-ED3 setting, but the exact scope of that is to be determined in 2024/25 and will naturally depend on regional system planner design and readiness.

[26] Exact title to be confirmed

Consultation responses on strategic planning

Question 2

3.30 Respondents were asked how detailed an independent, cross vector view could become to determine future plans for periods beyond RIIO-2 and support effective use of the 'Plan and Deliver' model.

3.31 There was general support for independent, cross-vector approach to network planning through the establishment of the FSO, CSNP and regional system planners. There was an urge for clarification on the roles, responsibilities and remits of the FSO, regional system planners, network companies and Ofgem.

3.32 Respondents agreed that the success of future planning arrangements is dependent upon successful enablement of the FSO - ensuring capabilities and skills are there to address electricity and gas infrastructure, including industrial hubs, nuclear power stations and carbon capture facilities. Concerns were raised from the industry on the ability of the FSO to collect relevant data from TOs in an efficient timely manner.

3.33 In general gas network companies commented that it was important that any changes sought to ensure that the gas network continues to provide critical resilience and that network constraints are not exacerbated due to delays in investment decisions. Responses set out that price control mechanisms to manage uncertainty need to be more targeted to the future and be quicker and more flexible to deal more effectively with a range of possible end states.

3.34 TOs were broadly supportive of the FSO facilitating the CSNP for strategic, national investments so long as these were based on TO development of options. For example, SSEN argued that TOs should be responsible for identifying, designing and delivering regionally strategic projects whereas the FSO should retain independent evaluation and challenge role for strategic and regional investments. All TOs stressed that TOs have the local knowledge, technical expertise, relationships, and experience to plan and deliver regional networks.

Question 7

3.35 Respondents were also asked about the potential for ED planning and commissioning to move to an alternative model by the end of RIIO-2 and what the benefits and costs of doing so might be.

3.36 There was a broad consensus amongst respondents that for electricity distribution the debate around archetypes is not the correct one to be having right now, given how recently RIIO-ED2 started. Respondents felt that the benefits of the evolved

incentive-based model for RIIO-ED2 are yet to be observed and questioned whether early proposals, without adequate observation of the new counterfactual, can be meaningful at this stage.

3.37 All respondents highlighted criticality of developing the regional system planners' roles through consultation and the FSO's readiness, capability, and capacity to deliver role.

3.38 There were mixed views on whether a regional system planner could be a "commissioner" for investment. DNOs generally opposed such a proposal.

3.39 Some respondents discussed whether it might be appropriate for some elements of large distribution reinforcement to be planned by regional system planners, with alternative models for procurement such as tendering by the regional system planners to be carried out, but those respondents signalled that even this would be unlikely to apply for the majority of RIIO-ED3 spend. Other respondents felt that it was unlikely that ED investment would warrant competitive tendering as the sector rarely sees projects of the scale necessary to make tendering worthwhile.

3.40 Numerous respondents flagged that it would be important that whatever model is chosen, there remains scope for flexibility services to be considered as a viable alternative to reinforcement at lower voltages.

3.41 With the uncertainty about precisely how net zero will be delivered, most respondents signalled that it is important that the outcome of this consultation does not pre-empt the route via which this will be achieved and instead that future regulatory frameworks are developed in a way that can be agile and flexible to changes in pathway.

Ensuring effective and timely delivery of new capacity

Background

3.42 Supply chain and ineffective contracting are key risks to building networks to enable net zero on time and at reasonable cost. Engagement through this consultation period has indicated that previous price controls encountered two perceived challenges:

- Approval of 'need' didn't come early enough to allow TOs to plan delivery of large projects with certainty, which didn't allow the supply chain to prepare
- Late timing of cost assessment didn't provide TOs will early enough certainty of cost allowances, delaying signing of contracts and start of construction.

3.43 The regulatory framework must adapt to deal with the output of the CSNP and supply chain challenges. This large-scale investment must be delivered in a timely manner with no regulatory induced delay, ensuring efficient cost to consumers and value for money, with the investments being delivered to the required quality to help us reach net zero.

3.44 In December 2022, we published our decision to introduce a new Accelerated Strategic Transmission Investment (ASTI) framework to facilitate delivery of the projects recommended by the first Holistic Network Design (HND). Within this framework, Ofgem assesses and funds large, strategic onshore electricity transmission projects that are required to deliver the Government's ambition to connect up to 50GW of offshore generation to the electricity network by 2030. It provides TOs with pre- and early-construction funding (PCF and ECF) initially, followed by full construction funding, as well as an ODI-F to incentivise the timely delivery of these projects.

3.45 We consider that the ASTI framework provides a solid foundation to build upon in the next price control. ASTI strikes an appropriate balance between accelerating delivery of strategic onshore transmission projects and protecting consumers. The framework will allow the TOs to implement delivery plans without delay, is flexible and capable of managing future uncertainty and provides a regulatory platform that we believe can best facilitate the delivery of the Government's net zero ambitions.

Consultation responses on ensuring effective and timely delivery

Question 6

3.46 We set out an example model in ET. This model assumed that ET can be separated into activities aligned to the archetypes: Business as Usual (BAU)/Replacement (Archetype 2), Reinforcement (Archetype 1/2) and New Build (Archetype 1). Respondents were asked what the benefits and costs of using this approach for ET by comparison to an evolution of the approach in RIIO-2 and what are the implementation barriers.

3.47 The question was most substantially answered by TOs, with limited and more brief responses received from others.

3.48 SPEN commented that separation of responsibilities for planning and design for different activities would only serve to introduce barriers to the ability of TOs to fulfil their network planning and regulation statutory duties, and licence obligations to ensure that solutions are coordinated, economical and efficient.

3.49 NGET wanted to address key questions about the broader picture around the archetypes before committing to a mix and match approach that would separate out the components of the archetypes. Key questions for NGET were:

- who would be deciding what is needed
- how delivery responsibility would be determined
- how costs would and should be controlled.

3.50 SSEN felt that the consultation assumed too much about status of the energy system. For example, assuming that there will be national and regional holistic cross-vector energy system planning in place and that there will be substantial deployment of smart devices and appliances and network digitalisation for monitoring and control that enables smart networks. SSEN sought assurance that the increased framework complexity and regulatory uncertainty would be Ofgem's key focus and not a detriment to net zero.

Question 3

3.51 Respondents were asked under what circumstances would competition, or other procurement models such as open book contracting, have benefits over ex ante incentives as a cost control mechanism.

3.52 In general respondents felt that the benefits of competition included but were not limited to:

- Supporting larger capital projects with more predictability and security of costs
- Competitive pricing, service benefits and lower costs for consumers
- Attracting investors with clear plans and forecast returns
- Commercial accountability.

3.53 With regards to barriers to implementation of competition respondents felt that the following issues were crucial to ensuring success:

- Addressing roles and responsibilities, particularly if competition fragmented ownership of networks
- Recognising potential timescales, especially around avoiding project delay
- Measuring the potential for increased complexity
- Managing uncertainty in work volumes

- Balancing the potential increased regulatory burden to prevent inefficient or misaligned investment and governance
- Recognising when small, low-cost pieces of work are unlikely to benefit from competition
- Weighing up whether many of the benefits of competition could be delivered by clearer incentives on the networks
- Tackling lack of consistency in developed products which leads to issues with harmonisation.

3.54 It was the view of many respondents that broadened competition could have advantages for larger projects. There is scope for Ofgem to create effective competition between regional distributors using comparative benchmarking and ex ante incentives, in order for cost effective and innovative solutions to be realised.

3.55 Multiple respondents raised concern about how supply chain inefficiencies and difficulties could present barriers to creating effective competitive approaches. Concern was raised that in the context of global competition for access to supply chains, there would be a risk that introducing competition could inadvertently slow down infrastructure build (project by project as opposed to a programme of projects).

3.56 In relation to open book contracting, respondents generally set out that it should remain the responsibility of the network operator to determine the appropriate contractual framework in each case. It was suggested that where assets cannot easily be separated for competition, or competition procurement itself causes delays or inefficiencies, ex ante allowances or open book approaches give more flexibility to licensees to deliver an interactive portfolio of projects.

3.57 Respondents felt that benefits of an open-book approach included a reduction in the informational asymmetry between Ofgem and the regulated company. Whilst not entirely removing it, it would eliminate some sources of risk and may have benefits over ex ante incentives as a cost control mechanism, provided there were sufficient competitors to ensure competitive pressure exists.

3.58 However, respondents were concerned that there needs to be a balance against the weaker incentives that an open book approach creates for network companies to innovate, both in terms of technologies deployed and in terms of contracting approaches. Caution was urged as open book contracting can dull cost efficiency improvement, particularly where open book resembles 'cost pass through'.

Proposed model for ET

Summary

3.59 In short, this approach entails the following:

- The need for new load related ET projects is confirmed by the FSO through the CSNP and Ofgem approval of 'need' is embedded in CSNP processes
- Some projects will be directly competed by the FSO and this process will be developed in parallel with the process for those projects delivered by the existing TOs
- TO-led projects that meet need requirements receive automatic PCF and ECF for work needed to develop and start the project
- Prior to moving into construction phase, TOs are required to demonstrate efficient procurement in line with Ofgem guidance. Independent Technical Advisors (ITA) provide assurance to Ofgem that procurement and design choices are efficient and as TOs finalise procurement for delivery of a project Ofgem will set target costs aligned with efficient procurement
- Delivery incentives will be set early on in the project development process, once need has been established by the CSNP.

CSNP defines needs case

3.60 In our consultation on the CSNP framework for identifying and assessing transmission investment options,[27] we have set out our proposal that the longer-term (three yearly) CSNP will establish a 'funnel' of potential projects over different future pathways. Over time, through the annual CSNP update, the range of potential projects will narrow as the needs becomes more certain, so that the FSO is able to recommend projects to move into a set delivery 'pipeline'.

3.61 The current Network Options Assessment (NOA) process undertakes an annual assessment of all investments in its scope. This may place investments on hold that were previously signalled to proceed (or vice versa) and may slow down delivery by creating planning uncertainty. In our consultation we have proposed that once a project is in the CSNP delivery pipeline (ie recommended by the FSO to be funded), the needs case should not be re-evaluated again, unless the project parameters such as delivery dates and costs significantly change, or

[27] Centralised Strategic Network Plan: Consultation on framework for identifying and assessing transmission investment options | Ofgem

where there are significant changes to the system requirements. This will create greater certainty for project delivery and supply chain engagement.

3.62 We will ensure that Ofgem is adequately involved in the governance for the CSNP such that when it provides its recommendations there is no need for a further needs case assessment to be undertaken by Ofgem.

Role of competition

3.63 We still see a role for third party delivery of network infrastructure through competition in future price controls, but we will ensure that competition is only applied in cases where timely delivery of the project would not be compromised by the running of a tender. We consider that this is consistent with the balanced consultation responses we received on competition, summarised at paragraphs 3.51-3.58 3.51above.

3.64 The CSNP will signal which projects should be considered for competition rather than TO delivery. We consider that this will provide early enough steer to TOs and to the market regarding which party will be delivering key parts of GB infrastructure. We are working with the ESO on how competition in delivery of electricity transmission infrastructure would function in practice and will consult separately on this in due course.

Pre- and early-construction funding

3.65 PCF and ECF are essential to enable TOs to have the finances readily available to progress projects quickly from an early stage through to beginning construction. Continuing with the precedent set by ASTI, we will ensure that PCF (to support design and consenting) and ECF (to support procurement and supply chain engagement) is provided to TOs without regulatory delay following the CSNP to ensure that the regulatory model doesn't delay early project progress.

3.66 Our SSMC will provide more detail on the exact proposed scope of PCF and ECF, but indicatively we expect it to cover the following:

- PCF: Surveys, assessments and studies, project design, engineering development, stakeholder engagement and consultation, tasks associated with wayleaves, planning applications and tender activities. This will provide the funding needed to submit high-quality and robust planning applications, minimise the risk that planning does not get approved and enable TOs to submit planning applications within an accelerated timeframe
- ECF: Strategic land purchases, early enabling works, early procurement commitments. This will provide the funding required to engage early with the

supply chain (ie to reserve factory slots) where necessary and begin early aspects of construction such as civils works.

3.67 The approach taken under ASTI provided PCF of 2.5% of the total forecast totex for the portfolio of ASTI projects and an ECF provision of up to 20% of the forecast total expenditure across its ASTI programme, which will be treated in a broadly ex post manner. We will consider amendments to the ASTI approach for future CSNP projects during future price controls, first signalling this in the SSMC to follow later this year.

Independent Technical Advisor

3.68 In order to improve our confidence regarding project cost and design, which in turn will speed up decision making and remove us from the critical path of these large projects, we plan to introduce an Independent Technical Advisor (ITA) role into the delivery of large new transmission projects. We will consult formally on the scope and role of the ITA through our SSMC in December 2023.

3.69 The regulatory regime needs to optimise outcomes in terms of time, cost and quality of the network infrastructure. One barrier to this is the knowledge asymmetry which exists between Ofgem and the TOs. This impacts Ofgem confidence in TOs delivering effective value for money in the delivery of large projects, which can lead to lengthy engagements to set project costs.

3.70 To address this knowledge asymmetry, we have been researching the role and benefits of introducing an ITA into the process. We have taken learnings from Ofwat's experience of using an ITA on the Thames Tideway[28] project. The Ofwat ITA provides independent assurance on project delivery, risks, costs and schedule. In 2022 Ofwat published 'Competition in Strategic investment: a high-level stocktake'.[29] This report focuses on the role of competition in strategic investment and led to Direct Procurement for Customers[30] (DPC) primarily to support the delivery of major infrastructure in water and wastewater.

3.71 Ofwat has continued with the use of an ITA on the Haweswater Aqueduct Resilience Programme[31] (HARP), the first example of DPC project,[32] to provide assurance on costs and delivery.

[28] Thames Tideway
[29] Ofwat Competition in strategic investment: a high level stocktake
[30] Ofwat Direct Procurement for Customers
[31] Haweswater Aqueduct Resilience Programme
[32] United Utilities Appointment

3.72 We believe the following key benefits would be realised by introducing an ITA into the next price control:

- Assurance of key design decisions from an early stage would provide Ofgem with comfort regarding a key driver of future costs
- Assurance of procurement process would enable Ofgem to undertake faster cost assessments which will be increasingly reliant on the market revealing efficient prices
- Continued role during construction phase would provide a similar function for any issues that arise during construction requiring regulatory intervention.

3.73 We envisage the ITA would, under a non-disclosure contract, be allowed access to material relating to TO project delivery. This would allow it to verify information and provide assurance to Ofgem on TO delivery of the project, at the time it was generated. The stage at which we embed the ITA within the project delivery team will be further considered ahead of the SSMC.

3.74 The ITA would be in place with TO project teams from early on in the design process (ie after CSNP) throughout design and procurement, and during construction as:

- Cost influence is highest at the early design phases of a project and for efficient delivery long lead items are procured early
- Early design decisions make the difference between fit for purpose or a gold-plated design
- Use of an ITA would accommodate early contractor engagement.

3.75 Our initial thoughts which we will explore in greater detail throughout the SSMC phase of the project on the role of the ITA are as follows:

- ITA role will be project specific dependent on stakeholder assurance requirements
- ITA skills and expertise may change as assurance requirements vary over the life of the project
- ITA to provide independent technical advice on the operation of key contractual mechanisms eg during the construction phase, any delays or compensation events that may result in increased costs for customers, may be assessed by the ITA

- The ITA to provide expert guidance which is impartial to all engaged with the project. It is intended to speed the resolution of sometimes critical activities during the project.

Cost assessment speed

3.76 For the majority of project costs (ie excluding PCF and ECF) our decision is to retain a targeted project-based assessment of costs which uses cost sharing incentives to ensure that TOs are appropriately incentivised to deliver the most cost efficient solution on behalf of GB consumers.

3.77 However, to reflect the importance of avoiding delays on these projects and the significantly constrained supply chain, the form of cost assessment will fundamentally differ from the past.

- Direct costs will be set by the market: Where we can see an appropriate tender process has been followed and unit rates are broadly consistent with our expectations there will be limited challenge to direct costs. The ITA will be key in helping provide us with confidence in this area, enabling fast decision making.
- Indirect costs can be more easily benchmarked across projects, so we will continue to assess these on a project-by-project basis.

3.78 This should allow cost reviews that are quicker (3-5 months will be our target) and run in parallel with project delivery, which will be key to avoiding delay.

Delivery incentive

3.79 The ASTI framework includes a timely delivery incentive with rewards and penalties for early or late delivery against a target date, with rewards or penalties based on forecast constraint costs. There are also accompanying PCDs and licence obligations to ensure delivery of all outputs. We will look to build on this incentive throughout the SSMC phase of the project to provide even sharper incentives on TOs around timely and high-quality delivery.

Alternative model for ET

3.80 We have considered an alternative delivery model more consistent with the 'Freedom and Accountability' archetype set out in our consultation. This would be a more principles-based regime with incentives, spot audits and a rate of return based settlement for companies that deliver on time and in line with cost tramlines.

3.81 Under this approach, rules of engagement would be agreed up front to allow TOs to progress development, procurement and build of the project with certainty regarding cost recovery. The key difference between this and the option set out above would be the use of an ex post review to assess costs.

3.82 This approach could have some advantages. It may reduce gaming incentives and risk of corner cutting on quality. It may also reduce the risk of windfall TO gains from over-estimating of costs.

3.83 On balance however we consider that this approach is likely to result in higher risk to consumers than our preferred approach. There is limited evidence of rate of return regulation being implemented without introducing higher cost risk to consumers and we are looking at a sector where underlying cost overrun risk is already high. Similar approaches used in other nations show that high costs and a high bar for cost disallowance can be prevalent in such a model. As a result, there are significant risks to consumers where TOs do not have incentives to hold supply chain partners to account for increasing costs in the build phase of projects.

3.84 Nonetheless, should we find that it is too difficult to maintain effective cost incentives without delaying project delivery, we will consider further moves towards lighter-touch ex post review, particularly for companies that are meeting delivery targets.

Treatment of smaller schemes and 'site strategies'

3.85 We know that the numerous high-profile large new investments on the ET network will need to be supported by smaller but equally important investments.

3.86 Some of these will be identified by the CSNP. Where that is the case, we plan to introduce a mechanism for regulatory funding that still provides an appropriate balance between cost, quality and timely delivery, but given the smaller size of the projects this may look different to the funding approach used for larger ET works.

3.87 In addition, we expect that TOs will develop 'site strategies' to be delivered during the next price control. These will be sites where partial or full replacement is required due to asset condition (ie non-load) but where it may make sense to invest beyond a like-for-like asset replacement in light of potential future load related demands in that area of the network.

3.88 We will set out more detailed proposals in these areas through our SSMC, including providing steer on the extent which we expect to see these types of projects in RIIO-ET3 business plans.

Standardisation in ET

3.89 While the CSNP will set out the needs case for strategic new build, TOs are responsible for developing the detailed design and planning of the projects. The proposed regulatory model for RIIO-ET3 seeks to ensure that the network investment is delivered at the time it is needed and that the delivery is done as cost effectively as possible. Achieving the consumer outcomes additionally requires that new network build is also of sufficient quality such that economic efficiency is maximised in the long term.

3.90 We consider that there is scope for standardisation to play a role in ensuring that the detailed design decisions that are made by operators are done so with long-term consumer outcomes and cost-effectiveness in mind.

3.91 In making design decisions, TOs operate under a framework consisting of:

- Binding standards: TOs must comply with the Electrical Safety, Quality and Continuity Regulations (ESQCR) which impose requirements in terms of health and safety; and the Security and Quality of Supply Standard (SQSS) which sets out the criteria for planning and operating the transmission system
- Guidelines: Industry developed guidelines exist on a range of engineering design decisions to inform best practice on technical designs and engineering decisions
- Regulation: The price control framework sets out the incentives and outputs required to inform design practice and decisions.

3.92 Under this framework, we consider that there is a gap for requiring or encouraging longer-term thinking. Binding standards ensure that projects are fit for purpose at the time they are built, but only set a bare minimum which may not lead to the best outcome longer term. Industry guidelines are optional and are primarily concerned with engineering best practice for a given need – not with taking due consideration for future need and longer-term consumer outcomes.

3.93 This can lead to differing design philosophies between operators, with decisions around land procurement and substation design ultimately leading to delays in expansion and exacerbating connection queues.

3.94 We will work with network companies to develop an approach to ensure greater consistency in how network companies consider longer-term implications when developing designs.

3.95 There are risks with introducing standardisation into designs, these include:

- "Gold plating" with redundant additional capacity and space leading to lower cost efficiencies
- A "one-size-fits-all" approach leading to reduced quality of design through limiting scope for more bespoke solutions
- Stifling innovation and new solutions which could have positive impact on the consumer outcomes.

3.96 Thus, any approach developed for greater design consistency must:

- Drive longer-term thinking in designs such that networks are fit for the future
- Retain sufficient flexibility to avoid unintended consequences and stifling innovation
- Avoid leading to decisions that are counter to latest knowledge and engineering principles.

3.97 There are a series of strategic policy choices for how an approach to standardisation should apply. These include:

- The scope and detail of any standards: Standards could, at one extreme set out rules for decisions such as land procurement, substation layout and ratings for equipment. On the other hand, standards could set much higher-level principles for considerations operators should make in design decisions. An appropriate balance will need to be struck such that standards are meaningful, while retaining flexibility for operators to make appropriate decisions
- How standards would be developed: The knowledge and expertise of industry will continue to be crucial in ensuring any standards remain appropriate and fit for purpose, while sufficient Ofgem oversight will be required to ensure they are targeted to achieving the policy aims
- How standards would be applied: There needs to be sufficient implications for operators in terms of approval of plans, funding or incentives so that the standards achieve their intended impact to drive behaviours.

Proposed approach in gas sectors

3.98 The FSO in 2026 will produce a gas transmission strategic network plan as part of the CSNP and during the next price control the regional system planners will also provide regional strategic plans relevant to gas distribution. However, the scope of what will be in these plans is currently highly uncertain due to uncertainties relating to the role of gas and hydrogen networks in the net zero transition.

3.99 As such, the speed at which gas investment needs to be delivered may not be the same as in electricity and there could be greater uncertainty as to which investments may be required.

3.100 For these reasons our SSMC will propose that re-openers are used in the early years of the GT and GD price controls to account for potential developments in gas strategic network planning. These will resemble traditional price control re-openers where we would assess both the needs case and cost of the investments proposed by the licensees.

3.101 We will work with the gas licensees throughout the SSMC and SSMD phases of setting RIIO-3 on the scope, timing and design of these re-opener mechanisms to ensure that they don't delay investments which would be beneficial to GB consumers.

3.102 We expect that at a minimum the FSO's CSNP for gas transmission may provide an independent assessment of gas network capability to support price control investment decisions. Similarly, regional system planners in gas distribution could also provide independent technical analysis and advice to support price control decision making.

4. Leveraging Digitalisation

Overview of digitalisation within the energy sector

4.1 Energy sector digitalisation could enable transformational system-wide benefits such as cost savings (through optimal system maintenance and asset health, resilience, planning and operation), more agile regulation (reduced information asymmetry and seamless regulatory reporting) and a just cost-effective transition to net zero (identifying and helping vulnerable consumers).

4.2 This requires a fundamental digital transformation across the sector, from generation to transmission and distribution to end-use. This will bring system benefits, with digitalisation supporting network companies to address demand growth, tackle decarbonisation and improve resilience. The benefits of digitalisation are clear and have been since the publication of the findings of the Energy Data Taskforce (EDTF) in 2019[33] and the subsequent findings of the Energy Digitalisation Taskforce (EDiT) in 2022.[34]

4.3 In July 2021, we and government published our joint Energy Digitalisation Strategy,[35] committing us to a series of actions to support the digitalisation of the energy sector. We have been making good progress on delivering those actions. Within the Energy Digitalisation Strategy, we committed to supporting the sector in creating an ecosystem where "digital services will make it easier for people to know what data exists and how they can gain access to it". This decision document will make clear our intended next steps on how we achieve that vision.

4.4 Within the Energy Digitalisation Strategy, we also committed to creating an agile regulatory environment that builds digitalisation into regulatory frameworks. The prominence of digitalisation within the framework of the next price control period is further demonstration of the progress being made on digitalisation by Ofgem and licensees.

4.5 What we have seen however is that when it comes to digitalisation, there is often confusion about the terminology,[36] with other countries facing similar challenges to the UK[37] in terms of interoperability, standardisation and developing

[33] Energy Data Taskforce | A Modern Digitalised Energy System (catapult.org.uk)
[34] Energy Digitalisation Taskforce publishes recommendations for a digitalised Net Zero energy system - Energy Systems Catapult
[35] Digitalising our energy system for net zero: Strategy and Action Plan 2021. BEIS, Innovate UK, Ofgem
[36] Digital twins: An analysis framework and open issues - ScienceDirect
[37] Landscape report on energy and flexibility data models and interoperability across the sectors of energy, mobility and buildings | Shaping Europe's digital future (europa.eu)

distributed data infrastructure.[38] In the UK, digitalisation can enable savings of £30-70bn between now and 2050 through data-led strategic planning[39] and TOs are reporting reduced outage costs by over £6m/annum using their digitalised asset management systems.

4.6 Licensees must, during the next price control period, work to maximise the value of digitalisation to consumers. This will involve both unlocking efficiency gains and collaboration between licensees to establish standardised data and data sharing.

Need for a data sharing infrastructure

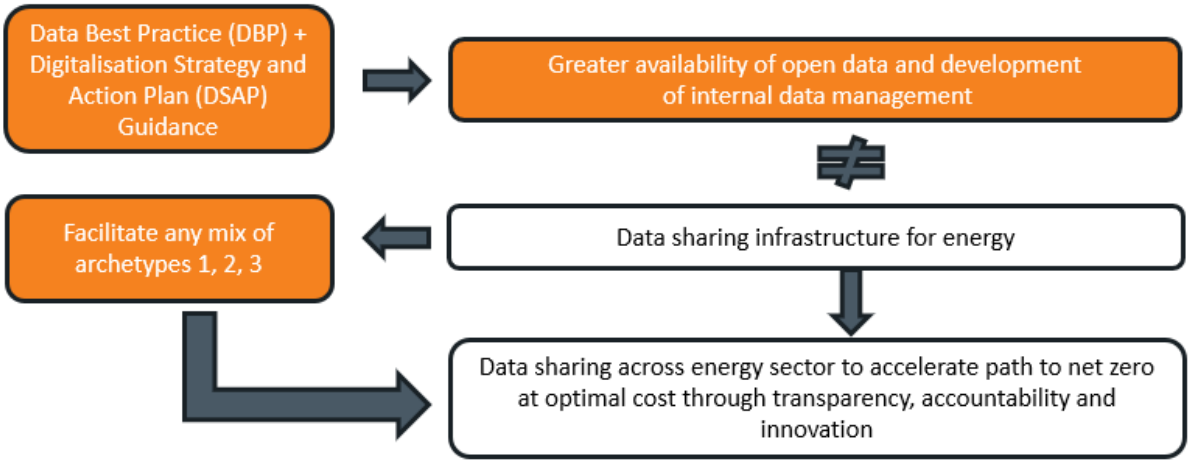
4.7 The key enabler for a digitalised energy system - and the tools that will accelerate the transition to net zero at lowest true cost - is the availability of, access to, and sharing of 'shared'[40] energy-related data based on seamless and secure data transfers among trusted parties.

4.8 While Data Best Practice Guidance and Digitalisation Strategy and Action Plan Guidance are strong building blocks that lead to greater availability of open data and development of internal data management, we consider there to be a need for a more coordinated approach to sharing data that can't be made openly available.

4.9 We consider a crucial activity in the next price control will be to utilise a data sharing infrastructure to aid this coordinated approach. Development and use of a data sharing infrastructure will enable organisations across the energy sector to have access to the right information, at the right time, for the right purpose, and of the right quality as per Figure 2. This will, alongside continued development of Data Best Practice Guidance and further data-related legislation, regulation, and codes, allow for a transition towards a coherent data sharing ecosystem for the energy sector.

[38] Enhancing Energy Systems: Exploring Data Models and Interoperability Across Sectors - EDDIE - European distributed data infrastructure for energy
[39] Digitalising our energy system for net zero: Strategy and Action Plan 2021. BEIS, Innovate UK, Ofgem
[40] Shared data is that which contains a sensitivity such as; personally identifiable information, critical national infrastructure risk, commercial risk, and/or not in the public interest to share openly.

Figure 22: Progress within the sector has enabled companies to begin their digital transformation, however our evidence suggests that a data sharing infrastructure will not occur organically.



4.10 Non-network stakeholders provided feedback that increasing transparency, visibility and data sharing will be critical to provide seamless service to consumers whilst also maximising the value flexibility can provide to consumers. We have published our initial findings from the call for input on the "Future of Distributed Flexibility" outlining a strong case for change in the policy and industry design and delivery.

4.11 The responses to this consultation further outline that a common data sharing infrastructure is needed to enable not just flexibility, but also strategic planning,[41] regional planning[42] and a seamless and efficient data sharing protocol between us and licensees. We consider that many key decisions will be taken in the above areas during the next price control period. Licensees must make these decisions with as much high-quality data from as many system participants as necessary.

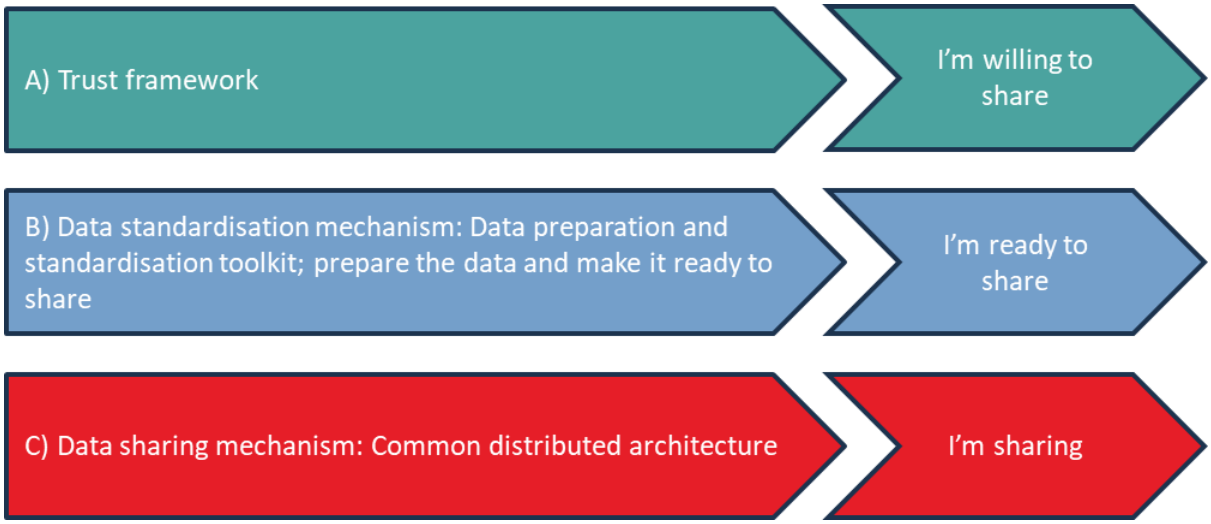
4.12 Access to up-to-date existing information held by licensees on assets, asset health and asset interventions is key to enabling a more streamlined RIIO process. Providing an exchange mechanism between Ofgem and licensees for this data is a key use case for a minimum viable product (MVP) of a data sharing infrastructure.

4.13 Figure 3 outlines the functional requirements of the data sharing infrastructure that we consider needs to be in place ideally by, but certainly during, the next

[41] Decision on the initial findings of our Electricity Transmission Network Planning Review - Ofgem
[42] Future of local energy institutions and governance consultation - Ofgem

price control period. This data sharing infrastructure should be comprised of a trust framework, data preparation mechanism, and data sharing mechanism.

Figure 3: Conceptual framework for a potential data sharing infrastructure



4.14 Investment is needed to create an open infrastructure underpinned by technical standards.[43] Human accountability for decision making when artificial intelligence or machine learning is deployed should be underpinned by strong governance processes that democratise decision making.[44],[45]

4.15 This safe and secure transfer of data will be crucial in enabling a mix of regulatory archetypes, enhanced monitoring and modelling, digitalised regulatory reporting, and the development of digital tools and capabilities (eg digital twins, flexibility markets).

4.16 The overwhelming feedback from consultation responses and stakeholder working groups was a desire for concrete leadership to ensure convergence in digitalisation efforts between licensees and across sectors, moving into specific detailed discussions on the essence of the data sharing infrastructure as per Figure 3.

4.17 Licensees are at different stages of maturity and capability with their own IT system architecture and internal digitisation of processes, tools and operations. This will affect what each individual licensee can achieve within the next price control. We expect licensees to continue to focus on developing their internal

[43] Towards ecosystems of connected digital twins to address global challenges | Zenodo
[44] Distinguishing two features of accountability for AI technologies | Nature Machine Intelligence
[45] A principles-based ethics assurance argument pattern for AI and autonomous systems — York Research Database

digital capabilities, a presumed open approach to data sharing and process digitisation.

4.18 Despite the progress across many different parts of the sector, we consider that further progress needs to be made on convergence, interoperability and data sharing between actors in the sector. We consider that improving interoperability is a necessity during the next price control period.

Leadership and governance

4.19 To build a data sharing infrastructure at speed, a clear vision needs to be set. This will require a roadmap (with timings) and delegation of responsibility for delivery and operation. Responses to our consultation called for clearer guidance and leadership from Ofgem to ensure convergence across network companies.

4.20 We consider that roles and responsibilities need to be assigned in relation to the data sharing infrastructure and wider digitalisation. We will be producing a publication on these governance requirements in spring 2024. This publication will allow the data sharing infrastructure to be delivered at pace, in a useful format for the next price control period.

4.21 A clear MVP needs to be created focused around significantly challenging, yet scalable use cases. Consultation responses identified a lack of central guidance so far, resulting in slow progress, misalignment and siloed working, varying digital maturity across the sector, and a fragmented data sharing vision.

4.22 Whilst we believe that great progress has been made in delivering on the recommendations of the EDTF and EDiT taskforces, and the Energy Digitalisation Strategy, we understand that the sector is keen for further guidance on the next steps of the digitalisation journey of the energy sector.

4.23 We will work with industry to ensure key use cases are considered in the development of a data sharing infrastructure MVP. These use cases are flexibility, strategic network planning and regulatory reporting. We outlined the need for improved data sharing between flexibility markets and market participants in our Future of Distributed Flexibility Call for Input in March 2023. A data sharing infrastructure could help solve some of the key issues restricting the deployment of distributed energy resources in national and local flexibility markets.

4.24 Strategic network planning is only effective if the right data is shared with a central planner at the right time. A data sharing infrastructure should allow the system operator to obtain the data it needs to plan and delegate effectively within the energy system. Regulatory reporting could be enhanced by utilising the data

sharing infrastructure as an exchange mechanism between the regulator and regulated parties.

4.25 Through Data Best Practice Guidance, we are promoting an open data approach in the sector with a key use case being that Ofgem can access this information to perform its role effectively. With the advent of a data sharing infrastructure, we will be given access to more restrictive data to fulfil its functions. This will allow us to be a more effective regulator, ensuring key energy system activities such as flexibility and system planning are delivered using high quality interoperable data.

4.26 Cyber security[46],[47] must remain an important pillar for balancing the need for open-data and data that could be safely and securely transferred between actors within the energy sector. Licensees, and the data sharing infrastructure, will continue to operate under the relevant cyber security regulatory and legislative frameworks.

Skills, capabilities and digital twins

4.27 Consultation responses identified the need for licensees to increase capacity and capability to utilise faster data transfer and greater data availability. We consider this would need to be equally matched by us to allow us to be an effective regulator.

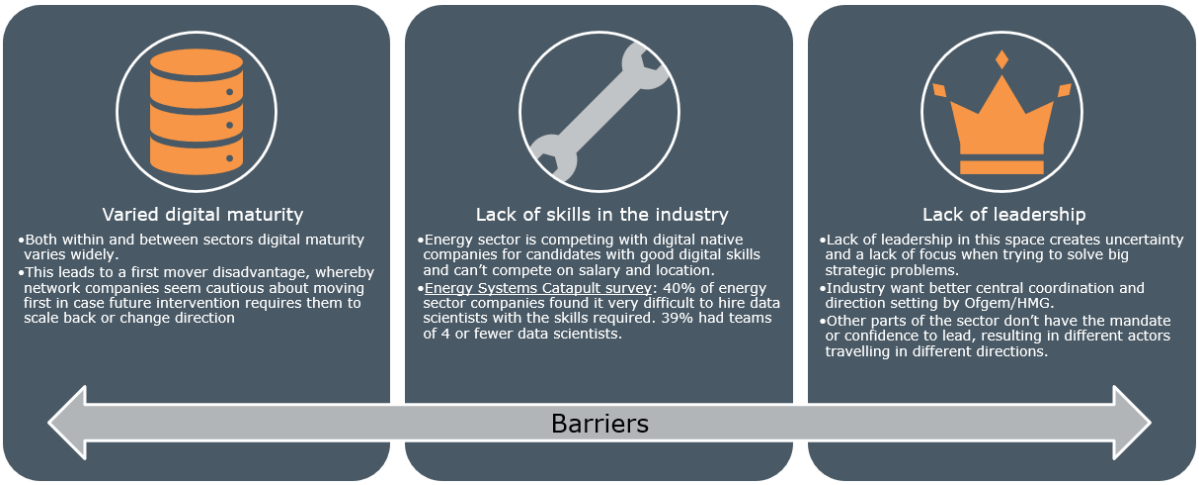
4.28 During working groups, network companies questioned whether all the data that is submitted to us is utilised and that it would be helpful to understand what data is necessary. They noted that the volume of regulatory reporting has increased from RIIO-1 to RIIO-2, with annual Regulatory Reporting Pack (RRP) reporting (eg cost/volume/revenue RRP, Network Asset Risk Metric (NARM) and Annual Iteration Process (AIP)) increasing.

4.29 A data sharing infrastructure presents opportunities to reduce regulatory burden on licensees whilst accessing granular data thus reducing the administration burden for information sharing between regulator and licensees. It is unclear at this time whether a data sharing infrastructure will provide an exchange mechanism between licensees and Ofgem, streamline regulatory reporting processes or both. We will continue to evaluate these potential benefits as we provide more information on the development of a data sharing infrastructure MVP.

[46] Cyber security management of critical energy infrastructure in national cybersecurity strategies: cases of USA, UK, France, Estonia and Lithuania - Archive ouverte HAL
[47] Cyber Physical Infrastructure - Energy Systems Catapult

4.30 Consultation responses highlighted three key barriers to digitisation and digitalisation of network data as outlined in Figure 4.

Figure 43: Barriers towards digitisation, digitalisation and convergence of data sharing infrastructures developed by individual entities.



4.31 Data and digital skills across the industry are also lacking, despite a lot of investment promoted in developing and understanding digital technologies. We expect to see licensees growing the pool of digital skills within their organisation during the next price control period, supported by third party organisations with digitalisation expertise where necessary.

4.32 We committed to modernise regulatory reporting as part of the RIIO-ED2 core methodology[48] and we plan to take that forward as a consideration during the selection process for the use cases of a data sharing infrastructure MVP. Other use case considerations are flexibility and strategic centralised and regional planning. These details will be separately consulted on during subsequent Ofgem and industry publications.

4.33 Enhanced data and digital capabilities will enable our new agile regulations that sets rules in advance whilst rewarding, penalising and changing allowances/rules if need be.[49] We initially consulted on the use of digital twins within a price control framework but consultation respondents indicated their preference that we first establish strong data standards and frameworks to build upon. Licensees should focus on developing these interoperable standards and frameworks, in concert with Data Best Practice Guidance, over the next price control period.

[48] RIIO-ED2 Draft Determinations
[49] Regulatory sandboxes in the energy sector - Publications Office of the EU (europa.eu)

Framework decision summary

4.34 We consider the key enabler for a digitalised energy system - and the tools that will accelerate the transition to net zero at lowest true cost - is the availability of, access to and sharing of energy-related data. This process should be based on seamless and secure data transfers among trusted parties. We are pleased to see the industry still considers the key tenets of Ofgem and DESNZ's joint Energy Digitalisation Strategy hold up over 2 years after publication.

4.35 With ongoing projects to make data available in progress,[50],[51] focus now needs to be placed on enabling access to and sharing of this data. We consider this requires a common data sharing infrastructure for the energy sector, comprised of a trust framework, data preparation mechanism and data sharing mechanism, implemented by or during the next price control period. We see Ofgem's role in the development of this data sharing infrastructure to be that of setting out governance, roles and responsibilities when utilising a data sharing infrastructure.

4.36 We have already started convening relevant stakeholders and organised workshops to explore alignment across emerging initiatives (including any gaps and overlaps), as well as possible options for governance.

4.37 We consider the key initial use cases for a data sharing infrastructure MVP to be flexibility, strategic network planning and regulatory reporting. We will collaborate with industry to ensure these use cases are captured effectively in an MVP to be delivered by the start of the next price control.

4.38 As the implementation and development of this infrastructure is deemed critical by Ofgem to enable the sector to transition to fully transparent, accountable, evidence-based net zero strategic decisions across sectors and vectors, we will be separately publishing our views on the governance options for data sharing infrastructure in Spring 2024 and how we can enable its development at pace.

4.39 This will enable strategic planning decisions[52],[53] to be based on evidence and would allow Ofgem to scrutinise decision-making by having access to granular data, which in combination with the enhanced regulatory reporting process will both reduce the administrative burden for companies and provide a more agile

[50] Decision on Data Best Practice guidance and Digitalisation Strategy and Action Plan guidance
[51] Automatic Asset Registration (AAR) Programme
[52] Decision on the initial findings of our Electricity Transmission Network Planning Review - Ofgem
[53] Future of local energy institutions and governance consultation - Ofgem

regulatory approach. The following decisions are made on the basis of available evidence and extensive stakeholder engagement:

- We will ensure that licensees, as part of the next price control period, continue to invest in digitalisation of their organisations and functions. We consider this investment should continue from the strong foundations set in RIIO-2
- We will consult, in Spring 2024, on the governance of a data sharing infrastructure MVP that should be developed and implemented by, or within, the next price control period. The funding mechanism, timetables and delivery route for any governance proposals will be separately consulted on within subsequent publications
- Ensuring licensees can connect to this data sharing infrastructure will be the key strategic focus before and during the next price control period from a digitalisation perspective. With greater access to energy system data, the sector can have greater confidence in the major decisions taken during the next price control period
- We will retain innovation funding as part of the price control structure and dedicated specific pots for the development of connected digital twins within the energy sector.

5. Cost of Service

The RIIO approach and the future context for cost assessment

5.1 In RIIO-2, as part of the price control setting process, companies provided Business Plans inclusive of historical and forecast information, on which we based our cost assessment process. For each sector we used a range of assessment tools, including quantitative methods such as regression analysis, unit cost and ratio benchmarking and historical trend analysis; and qualitative methods such as project- and scheme-level needs based engineering reviews. The extent to which quantitative and qualitative analysis, as well as top-down vs bottom-up assessments, were used varied between each sector but all used a mix of these approaches. For all sectors, we introduced a range of uncertainty mechanisms (such as PCDs, volume drivers and re-openers) to deal with uncertain costs or workloads for the RIIO-2 period.

5.2 When setting RIIO-2, we explicitly adapted our approach to address anticipated strategic concerns for the 5-year periods, including the evolution of the energy system to prepare for net zero. Additionally, we have recently introduced the ASTI programme aimed at funding and incentivising timely delivery of large strategic onshore ET projects, in support of the government's net zero ambition to connect up to 50GW of offshore generation by 2030.

5.3 However, as part of the March consultation, we questioned whether further increases in complexity to adapt the RIIO-2 approach to the challenges of transition would be practicable. We need to ensure that future network regulation delivers value for consumers by considering the whole energy system, not only the efficient delivery of networks and their operations. This means an ever-greater focus on delivering changes to network infrastructure at pace and effectively managing uncertainty about the future – considering the impacts and risks of not taking action, as well as the risks when we do.

5.4 For incentive regulation, this means future network regulation needs to balance:

- Ensuring consumers get a fair deal now and in the future (by incentivising efficient, well-justified expenditure)
- Enabling the rapid pace and extent of change and investment needed to deliver net zero (by setting a funding framework that provides sufficient certainty and adaptability).

5.5 Based on this trade-off, we looked at alternative options for incentive regulation from a cost efficiency perspective. Specifically, we looked at opportunities for

improving and/or simplifying the RIIO-2 approach to cost assessment, as well as at the potential to expand the application of ex post forms of regulation.

5.6 In this context, we explored possible adaptations to the design of the existing RIIO-2 regulatory framework to make, for ongoing costs, a distinction between repeated activities and less predictable and one-off activities.[54] Starting from this distinction, we considered options for simplification of network regulation through the lenses of cost efficiency incentives.

5.7 Specifically, for repeatable activities, the broad question was whether there are well-defined areas that might be subject to alternative forms of regulation "which could maintain desirable features of ex ante incentive regulation while reducing complexity" (March consultation, para 3.22), such as RPI-X or ex post productivity-based cost assessment mechanisms. For individual 'one-off' projects, the question was "whether there are less complex or more effective ways to apply incentive regulation" (para 3.30).

5.8 To answer these questions, we collected a wide range of evidence (eg review of regulatory practices, consultation responses, and extensive engagement with stakeholders) and analysed RIIO-1 and RIIO-2 data to assess potential separability criteria. The remainder of this chapter illustrates the separability analysis we undertook and the alternative options for incentive regulation we considered and the resulting framework decisions.

Assessing alternative cost assessment approaches

Cost separability for simplification

Separability analysis

5.9 We completed our initial separability analysis based on the separation of BAU and non-BAU costs. We considered that BAU costs are typically for repeatable activities where we and the industry have access to a higher quantity of data points with which to set cost benchmarks and allowances. Non-BAU costs on the other hand include non-repeatable, one-off costs where we more often rely on expert reviews and other qualitative assessments to determine our efficient view of costs. Through this analysis we wanted to determine if ongoing costs could be separated into BAU and non-BAU categories in a meaningful way that could simplify the overall cost assessment process.

[54] For the assessment of major projects, which we consider separable, refer to Chapter 3.

5.10 When testing whether cost separability was a viable option, we set out the regulatory objectives when assessing different types of cost shown in Table 1 below.

Table 1: Regulatory objectives for each type of cost

Type of cost	**Key regulatory objectives**
BAU/steady state	Simplify incentive regulation (cost assessment and funding) whilst maintaining the same or better incentivisation for cost efficiency and robustness of allowance-setting methodology.
Non-BAU/ transformative	Incentivise delivery of outputs. Enable a tailored/targeted approach for key net zero-enabling costs. Set appropriate incentive regulation for more uncertain costs. Enable and focus effort for more complex assessment and/or funding mechanisms.

5.11 Following feedback and suggestions from stakeholders, we also considered separating BAU and non-BAU costs according to the following alternative criteria:

- Option 1 'Activity type': defining costs according to the type of activity and work it delivers, ie whether work is BAU and predictable or non-BAU and unpredictable[55]
- Option 2 'Cost trend': defining costs according to the anticipated structural nature (whether steady state or transforming based on sector trends) of each activity for the next price control
- Option 3 'Assessment method': defining costs according to the assessment method most appropriate to use for each activity, eg regression and unit cost benchmarking would fall under BAU, and bespoke/technical assessment would fall under non-BAU.

5.12 We used RIIO-1 and RIIO-2 data to consider whether each option could present a viable, alternative starting point for a cost assessment approach potentially simpler than the one used in RIIO-2.

5.13 In our attempt to separate costs, we found that the interlinkages of costs due to the project-based rather than driver-based ET sector means these are difficult to define and split. For the ED sector non-BAU costs were unsuitable for

[55] This option essentially mirrors Ofwat approach that distinguishes between base and enhancement costs.

simplification. In the gas sectors, non-BAU costs were being treated differently already under the current RIIO approach, with GT's non-BAU costs being subject to PCDs and re-openers and GD's non-BAU costs sitting largely outside of the Totex model.

5.14 Overall, for each of the options outlined above we did not find that a specific option produced a consistent picture of the split between BAU and non-BAU costs across all sectors. We found that Option 3 'Assessment method' produced the highest indicative BAU cost share for ED and GD, whereas the highest indicative BAU cost share for ET came from Option 2 'Cost trend' and for GT, from Option 1 'Activity type'. We also noticed a reasonable degree of overlap in the cost activities that could be categorised as non-BAU across the separability criteria options and sectors, however the extent that load related capex is categorised as non-BAU is one of the main differentiators between options for each sector.

5.15 We identified various limitations of our options analysis, some as a result of using only historical data where some cost areas are likely to see significant change or uncertainty in the future. As expected, we also found that each sector displayed its own specific characteristics in both cost reporting and the treatment of costs under UMs. This made it difficult to draw clear comparisons in our analysis.

Stakeholder feedback

5.16 We received feedback on the options set out above from various stakeholders during the consultation period and working groups that we held. We found consistent sector-wide support from network companies for the simplification of the cost assessment process as a whole. However, network companies caveated that process simplification should not result in reducing the robustness and the accuracy of the cost assessment methods used.

5.17 NGT proposed that cost classification for it would require flexibility on the definition of categories due to the nature of the work that needs to be delivered in this sector. It also suggested that cost classification should be driven by the proposed regulatory framework and not the criteria for separating costs itself. The sector noted that the definition should focus on categorising steady state expenditure versus transformative expenditure or base expenditure versus strategic expenditure, rather than repeatable versus non-repeatable, as some activities might be one-off but still be core, necessary activities.

5.18 TOs suggested that time dedicated to the cost assessment process should be proportional to the value or importance of projects and that simplification of the RIIO-2 process could mean more focus on assessing 'big ticket' items rather than

smaller items that occur in greater numbers. The ET sector also expressed concern about how ex ante approaches would account for cost volatility and current market conditions, particularly with respect to supply chain constraints. One network company raised that the proposed cost separation options did not align with the way that it undertakes work, and that use of these methods could disincentivise 'bundling' of work or forms of anticipatory investment that could ultimately save money for consumers. Another network company proposed that cost separation should be delineated by whether an activity can be econometrically assessed through modelling or whether bespoke assessment is required.

5.19 Feedback received from the GD sector favoured complex cost assessments during price control setting, as normalisations and comparative analysis are used to reach settlements that are fairer for both consumers and network companies. The sector-wide view was that any separation of costs should build on previous approaches, ie be based on the method applied to assess costs. The sector suggested that the following types of cost would likely be inappropriate for regression analysis:

- Where the cost forecasts are not reflective of historical trends
- Where there are incomparable outputs
- Where there is uncertain size and scope or
- Where no robust normalisations or cost drivers exist.

5.20 The ED sector feedback suggested a preference for retaining the RIIO framework cost assessment methods and indicated that the use of cost separation could have detrimental effects on robustness of cost allowances as well as incentives and output mechanisms. The companies also highlighted that the sector has a different network topology as a radial network with many voltages and hundreds of customer connections. Therefore, much of the investment is focused on a great number of small and intertwined projects, particularly at the low voltage level, which is difficult to separate for cost assessment.

5.21 Finally, for all sectors, our analysis highlighted that cost separation might limit our ability to take into account interlinkages between costs. As such, we do not consider there are strong arguments to use separability to determine the incentive regulation approach for each type of cost or activity. We cover this in more detail in paras 5.37-5.40.

Assessment of options for alternative, simpler forms of regulation

5.22 Despite the results of our separability analysis, we consider alternative, simpler options for incentive regulation could still be assessed. In this respect, there are several principles we consider relevant for assessing any alternative forms of regulation:

- Incentivising cost efficiency, which in the context of future energy systems may mean 'best value' to consumers over the long term
- Enabling net zero and investment needed to deliver this, including avoiding foreclosing pathways
- Ensuring robust, fair cost assessment frameworks
- Simplification and effort efficiency – reducing preparation, assessment and/or administrative requirements where possible without sacrificing on delivery or efficiency and focussing regulatory effort on areas of most importance (strategic, £ value or other)
- Avoiding the creation of unintended, perverse incentives
- Transparency in cost assessment methods and process

5.23 Based on the March consultation (para 3.19-3.31), we set out some ex ante and ex post options, summarised in Table 2 below, highlighting advantages and disadvantages for each option. We then summarise consultation responses to the relevant consultation questions (Q4 and Q5) and the corresponding framework decisions.

Table 2: Alternative forms of regulation, pros and cons

Forms of regulation	**Description**	**Pros and cons**
Ex ante		
RPI-X	Focus on incentivising cost efficiency in certain cost areas rather than output delivery.	Pros: strong cost efficiency incentive given the ability to outperform; depending on how the efficiency challenge is set, potential to simplify underlying cost assessment process. Cons: limited output delivery incentives; inability to deal with uncertainty (less cost reflectivity over price control); potential perverse incentive on efficiency over

Forms of regulation	Description	Pros and cons
		longer term from ratchet effect.
Evolution of RIIO-2[56]	Simplified / more targeted cost reporting and business plan submissions and improving engagement process for cost model development. Identify RIIO-2 cost mechanisms or outputs that could be simplified, whilst still achieving the same outcomes/incentives.	Pros: utilises existing assessment models and methods; simpler preparation requirements as builds on existing framework with refinements; strong cost efficiency incentives and ability to adapt assessment methods to different types of costs Cons: may not be able to incentivise delivery at pace for strategic / anticipatory investment; complex, lengthy and resource-intensive process; risk of compromising output incentives with excessive simplification.
Ex post		
Ex post price review with ex ante efficiency approach specification.	Fund company forecast expenditure ex ante and then assess and adjust allowances at the end of the price control (or potentially during if monitoring threshold is exceeded).	Pros: might reduce risk that network companies do not deliver required outputs; no front-end cost assessment; greater freedom for companies in conducting their operations. Cons: limited or no incentive to reduce costs; might discourage innovation; investment risk increase; limited simplification to cost assessment, as significant work involved in upfront specification and ex post assessment still needed.
Ex post reward/penalty mechanism with ex ante measurement specification	Use of a productivity measure to calculate rewards / penalties against	Pros: might incentivise output delivery, although focussed on outputs used

[56] At working groups, we presented 'Evolution of RIIO-2' as two separate options, 'Refining the totex benchmarking process' and 'Simplifying outputs and/or cost mechanisms'. We combined these options following stakeholders' feedback.

Forms of regulation	Description	Pros and cons
	companies business plans and funding set at the start of the price control. Productivity measure would be intended to incentivise delivery of outputs. Efficiency / productivity assessment framework and metrics/outputs established at the start.	in reward / penalty measurement; no front-end cost assessment; greater freedom for companies in conducting their operations. Cons: risk that cost efficiency incentives of a new and untested mechanism are ineffective; potential loss of incentive for investment and innovation, given risk of disallowance; potential perverse incentive to focus on activities that improve reward / penalty measure; limited simplification to cost assessment, as significant design work required and ex post assessment still needed; extended closeout process.
Light touch or threshold regulation for strategic projects.	Intended to incentivise output delivery at pace by ensuring upfront funding is not a blocker to investment.	Pros: incentivisation of specific outputs; simplification of front-end cost assessment; more targeted use of cost assessment; greater freedom for companies in conducting their operations. Cons: requires greater / effective monitoring (incl. reporting) requirements, otherwise risk of passing through costs; still requires clearly specified assessment methodology, to avoid uncertainty over basis for disallowances that would disincentivise delivery; reduced cost efficiency incentive; risk of perverse incentive (companies trying to have more costs treated under light approach).

Consultation responses

5.24 Simplification of incentive regulation (Q4). Most stakeholders had a positive view of RIIO but endorse its simplification, particularly for outputs and incentives. However, they raised concerns for simplification of cost assessment, as this could be at the expense of accuracy and, more broadly, could undermine TIM, innovation, and efficiency. In general, most stakeholders agreed simplification could be positive but should be proportional to the outcomes and consider other factors such as project uncertainty. Stakeholders stated potential trade-offs, such as unintended consequences and investor uncertainty. Most network companies consider that simplification should be achieved in the cost assessment process rather than approach/methodology. One TO supported simplification of BAU activities' assessment, noting that digitalisation has the opportunity to bring simplification benefits.

5.25 A consumer group supported the use of an iterated version of RIIO and incentive regulation for activities that cannot be regulated under Archetype 1, including ex post regulation based on relative performance between networks, which in its view could result in a less symmetric distribution of risk between network companies and consumers. An environmental representative group noted simplification means accepting more risk and highlighted the benefits of RIIO's sharing factors and RAM vs costs of old style RPI-X or ex post regulation.

5.26 A move back to RPI-X regulation was seen by a few stakeholders as potentially helpful. This model however was always caveated with it being proportional to the activities that are being regulated. It was suggested only activities with higher certainty such as day to day operations would benefit from this style of regulation. Negative comments towards RPI-X were driven by network companies, but a few other stakeholders shared concerns regarding weakened efficiency incentives and concerns of less innovation.

5.27 An industry party highlighted that streamlining the approach to identifying strategic investment needs was a key area to focus on and that Archetype 1 could be helpful for doing this. However, it also noted that an independent approach to needs identification will not be required for many of the day-to-day needs of networks and should instead be targeted at the most appropriate needs and projects in order to avoid duplicated cost.

5.28 Ex post regulation (Q5). The general consensus amongst respondents was not to recommend an ex post framework with the main points raised being that ex post regulation would increase uncertainty for network companies and investors and

ultimately increase costs for consumers and would not be seen as beneficial when compared to an ex ante framework.

5.29 However, some respondents did identify specific cost categories where ex post regulation would be more suitable. For example, cyber security expenditure, site security and DSO costs were flagged as consistent areas that could be subject to an ex post assessment as part of a wider ex ante framework. On the other hand, some respondents suggested that an ex post framework could be applied to high-volume BAU costs that are well understood by Ofgem and the network companies, allowing for clear parameters for ex post assessment and cost allowances to be set in advance.

5.30 Some GDNs consider an ex post approach could be helpful in areas of uncertainty and where timely delivery is needed. All have concerns about an increased regulatory burden/cost of capital and lower efficiency, with some also concerned about reduced innovation.

5.31 DNOs believe proposals need further review and an impact assessment. Clear up-front outcomes and rules governing ex post review with a light-touch review excluding a retrospective regulation is a possibility. Otherwise, there would be uncertainty risk in investors and higher cost of capital.

5.32 TOs consider ex post would be useful where external cost drivers/scope cannot be forecasted either for smaller scale projects or under a 'Plan and Deliver with freedom and accountability'/Demonstrably inefficient or wasteful expenditure (DIWE) framework. However, delivery and procurement parameters would need to be clearly defined up front to avoid unnecessary asymmetric risk.

5.33 One TO did not support further ex post regulation, noting that it discourages innovation, creates risk aversion and makes networks a less attractive proposition. It did not believe that ex post monitoring has benefits over ex ante regulation for repeatable activities.

5.34 An industry party proposed that Archetype 3 should be deployed when one or more of the following circumstances exist:

- Activities where there is a need for delivery at pace, but lower concern about the efficiency of the activities, and no need to innovate in solutions
- Activities where we need to "learn by doing" – where there is no track record to provide data on which to base other regulatory approaches
- Activities where there is considerable uncertainty regarding the cost of the project, for example due to technical solution uncertainties and risks or

considerable uncertainty regarding the availability in the supply chain, but where the need for the project is certain or

- Activities where stakeholders are best placed to define desired activity and where unit cost is secondary to stakeholder-specified outcome eg undergrounding for visual amenity.

5.35 A consumer group did not see any areas where Archetype 3 would be in consumers' interests compared to using a combination of Archetype 1 and 2. It identified a number of issues under Archetype 3 that it saw as outweighing any potential benefits:

- Would lose totex efficiency incentive mechanism, which they see as an effective element of RIIO. Propose TIM should move to lower sharing factors
- Current performance monitoring could be more effective, so a move to lighter-tough ex post monitoring unlikely to deliver better outcomes
- Concerns about the use of suitably high thresholds for disallowing spending in order to address potential network company shareholder concerns – 'too big to be disallowed'
- Concerns that this could result in processes becoming debates mainly about the profit margins if it resembles a cost-plus rate of return approach.

5.36 A supplier did not recommend a move to an ex post regime, beyond the extent to which ex post mechanisms are already used. Both an environmental representative group and an industry party noted concerns that a move to greater use of ex post assessment and using different archetypes on different activities would add significant additional complexity, deter investment, undermining the power of established targeted incentives, and undermine the ability to take a whole systems view.

Framework decisions summary

Separability

5.37 Based on our analysis and consideration of stakeholder responses, we do not consider there are strong arguments to use separability to determine the incentive regulation approach for each type of cost or activity. Specifically, using RIIO-1 and RIIO-2 data, we have not found that separating costs into repeatable/non-repeatable or another split lends itself to alternative, simpler cost assessment and cost efficiency incentivisation for any sector.

5.38 For example, in the ET sector, the nature of costs is highly interlinked with and project- or site-based, rather than solely activity- or driver-based. The key reasons we do not find separability to be feasible for the ET sector are:

- We have not identified definable cost activities or areas of work to feasibly split out for different regulatory treatment to the rest of costs
- Cost activities cannot necessarily be split according to the driver / type of investment (eg replacement, reinforcement, or new build) as i) within each activity work may have different drivers, and ii) each piece of work may often be a mixture, or grey area, of different drivers where there is a future proofing element to it (eg an asset requiring replacement that is replaced with an upgraded version) and/or the work is being completed together with the other work that has a different driver, as part of the optimisation of site resources and access
- There are interlinkages between costs. For example, indirect costs are needed to support load and non-load capex but there can be shared costs and a non-linear relationship between indirects and capex. Another example are the interlinkages between capex and opex - the amount of load related capex activity can impact the amount of project management, inspections, repairs and maintenance costs incurred over time, as well as directly linking to asset replacement when there is replacement by way of upgrade or bundled work. Moreover, load related capex can also drive non-load related capex, eg wayleaves and diversions. Because of these interlinkages, separating costs into BAU / non-BAU buckets for different regulatory treatment might potentially create perverse incentives and / or investment uncertainty.

5.39 Analogous considerations apply to the gas networks. Moreover, in both GT and GD sectors, non-BAU costs/activities (with a higher share in GT than GD) are already subject to forms of ex post assessment such as evaluative PCDs, volume drivers or re-openers. As such, a different approach would not mark a great departure from the RIIO-2 approach.

5.40 In conclusion, we have decided not to use separability as a tool to determine the form of regulation for different types of network companies' costs/activities. Nonetheless, as we move towards the next phase of price controls setting, we will keep exploring alternative simplification opportunities in the cost assessment process and more generally on cost efficiency incentives wherever possible.

Alternative, simpler forms of regulation

5.41 Based on our analysis and consideration of stakeholder responses, we do not consider expanding the scope for ex post forms of regulation for ongoing costs (ie non-CSNP) is appropriate at this stage. Hypothetically, ex post incentive regulation provides companies with greater operational freedom and agility, but the uncertainty over final (dis)allowances can stifle this and push companies to more conservative, non-anticipatory investment approaches. Even though, as is the case in the RIIO framework, an ex post approach may be needed where there is high uncertainty over bespoke and non-comparable delivery of outputs, we noted general concern from network companies that this would increase regulatory/administrative burden between Ofgem and the companies. The uncertainty and the level of scrutiny on the review of the companies' deliveries can weaken investor confidence, raise the cost of capital, and increase customer bills. Therefore, in the scenario where there are clear up-front rules in an ex post approach, companies will carry a greater burden to proof their performance. Moreover, moving to any ex post approach would imply weaker cost efficiency incentives and likely mean that monitoring becomes more important and resource intensive, as we would rely on this to execute price controls after the fact. In order for them to work effectively, ex post regulation approaches such as the proposed ex post productivity incentive proposed in the March consultation would need highly specific frameworks set out in advance to avoid impacting levels of innovation and investment in the network companies. In this case there would likely be significant resources required to specify the framework, performance metrics and criteria for cost disallowances at the start of the price control. The closeout process at the end of the price control period would be significantly extended compared to the current approach under RIIO-2, as many of the decisions currently made before the start of the price control would be deferred to the end of the price control under an ex post approach.

5.42 We do not consider moving towards a more simplified ex ante approach such as RPI-X appropriate either, despite the retention of strong cost efficiency incentives. First, the way RPI-X was implemented in pre-RIIO price controls involved forms of cost assessment/benchmarking similar to those used within RIIO, thus there would be limited room for simplification should we re-implement the same approach. Second, we agree with the stakeholders who argued that future uncertainty and acceleration of the delivery of net zero meant that, when compared to RIIO, RPI-X puts innovation and other cost-saving incentives that are valuable for customers at risk. Third if, driven by simplification, we were to

implement a simplistic RPI-X approach not involving cost assessment/benchmarking (eg using individual network companies' historical average costs as a starting point), network companies' incentive to outperform might be weaker compared to the advantages from not disclosing the full potential of cost reductions. Moreover, customers would be likely to pay more, particularly to less efficient network companies.

5.43 Overall, for ongoing costs, we have not found circumstances relevant to the electricity or gas sectors where more pure forms of ex post regulation (compared to the existing ex ante totex-setting and ex post uncertainty mechanism forms) would be more effective at incentivising cost efficiency and innovation than the current RIIO framework. We also do not consider the benefits from an ex post regime, such as simplification or greater flexibility for network companies, are significant enough to overcome risks associated with a move away from a consistent and well-understood framework. The activities that we identified in this review as appropriate for such a purer ex post review appear to be limited to mid value projects where network companies would be able to evidence a clearly definable scope/driver, but where costs are hard to measure up front. Similarly, we have not found supporting evidence or stakeholder feedback for a move to a purer form of ex ante regulation such as RPI-X.

5.44 Therefore, from a cost efficiency incentivisation perspective and in relation to ongoing costs (ie non-CSNP directly related), for the next price controls we have decided to refine the RIIO model instead of moving towards alternative forms of regulation. This still aligns with our objective of exploring opportunities to simplify the process.

6. Financial Framework

Overview of the Financial Framework

Introduction

6.1 The price control allows companies to recover the costs of running their networks, including the cost of financing their activities. Investors in a network company require a return on the capital that they invest into network infrastructure. The baseline allowed return is our estimate of the return that equity and debt investors expect from an efficiently run company, ie a company that spends in accordance with its allowances and performs in line with the baseline performance targets set in the price control. We call this an estimate of the 'cost of capital'. In calculating these estimates, we use a notional capital structure based on a mix of financing that we consider to be appropriate for an efficiently run and prudently structured network company.

6.2 A company's actual return can be higher or lower than the baseline allowed return, depending on its actual financing strategy and how well it performs against incentive mechanisms for delivering better services and/or lower costs.

The FSNR consultation and the financial and financeability framework

6.3 In the previous Chapters we have described the strategically vital investment that will be required to meet net zero targets and energy security needs, as well as the proposed evolution of the mechanics of the price control process to help support the differing needs and objectives of gas and electricity networks.

6.4 We now turn to the issue of how we design and implement a financial framework that will best support the next price control, in particular in light of the decision to use Archetype 1 or 'plan and deliver' regulatory approaches for the significant additional investment required in the ET sector while retaining Archetype 2 as the predominant approach elsewhere in the price controls.

6.5 When considering changes to the financial and financeability frameworks, we must ensure that we can continue to meet our primary objective to protect the interests of existing and future energy consumers while allowing network companies to be able to raise and retain significant amounts of capital at the best possible value.

6.6 The FSNR consultation has considered whether changes to the financial and financeability framework would help facilitate the changing needs, objectives and

regulatory mechanisms of the energy network sectors. Specifically, question 10 of the consultation asked:

Q10: "Would there need to be any changes to maintain a stable and consistent financial framework if we were to make greater use of different regulatory archetypes, and if so, what would those changes need to be?"

6.7 We addressed this question with stakeholders via two working group sessions, focused on open discussion and idea generation, and via formal written responses to our consultation. Stakeholders took differing approaches to answering this question, with some focusing on specific areas of interest and some commenting more broadly.

6.8 In examining the answers to this consultation question, we have considered a range of inter-related issues, including:

a) The potential costs and benefits of setting different returns to match the different risk profiles of activities under the three archetypes

b) The potential costs and benefits of setting returns over time horizons specific to the three archetypes

c) The potential costs and benefits of evolving or broadening the ways that the allowed returns on equity and debt are assessed and set

d) The potential costs and benefits of evolving the approach to assessing the financeability of price controls under the three archetype model

e) The potential overall costs and benefits of making changes to the financial framework, specifically any likely positive or negative change in the overall cost and availability of capital needed to fund the sector through this period of high investment needs.

6.9 In considering these issues, we have examined the relevant counterfactual to be the financial and financeability approaches used in the current RIIO-2 price controls – in summary, a single 'all in' allowance set and considered as financeable over a fixed 5-year review period.

Engagement overview and financial framework decisions

6.10 In this section, we cover in turn each of the issues highlighted in paragraph 6.86.8.

Segmentation of allowed returns by archetype

6.11 Stakeholders expressed mixed views on this topic, with many stating that more detail on the archetypes and their deployment was needed before definite assessments could be made. Approximately a third of stakeholders supported the need for differentiated return by archetype. Those stakeholders stated that the risk exposure of activities under the three archetypes would be materially different, and this was likely to merit at least the investigation of segmented returns to ensure that these risks were appropriately compensated. Stakeholders also noted that there could be differentiation in risk exposure between the archetypes, and that risks may not be consistently higher or lower – depending on variables such as incentive mechanisms and contractual risk transfer with suppliers. A consumer voice group stated that risk reduction possible under archetype 1 would mean it anticipates lower overall risk and so lower returns.

6.12 Approximately a third of stakeholders stated that there would be little or no benefit from moving away from the single RIIO-style allowance. Stakeholders who had this view suggested that there were already a range of activities and associated risks 'covered' by a single allowance, and that the simplicity of the approach supports stability, transparency and, ultimately, a lower cost of capital. Stakeholders also noted a range of practical constraints to segmentation by archetype, including a lack of relevant comparator data and legal and financeability constraints to setting separate levels of return for different activities by the same licensee.

6.13 Approximately a third of stakeholders noted the potential advantages of segmenting returns but highlighted that the logistical and regulatory constraints may make such an approach impractical.

6.14 The TOs raised the associated issue of 'investability' and the need to raise significant amounts of fresh capital in order to fund significant investment projects over the coming price controls. It was noted that 'investability' could be supported by providing additional returns for certain archetypes, activities or specific strategically important projects and that this may be particularly important as interest rates rise and many sectors and countries are looking to capital markets to fund vital infrastructure projects.

6.15 We have carefully considered whether the growing use of Archetype 1 or 'plan and deliver' regulatory approach, which we have concluded should be used in setting allowances for significant additional investment required in the ET sector, would affect the approach to the financial framework. We considered, for

example, whether setting differential returns for these strategically important projects could either increase the availability of capital or be used as part of the incentive regime for effective delivery of these major projects.

6.16 As noted by some stakeholders, such segmentation of risk and reward could bring more accuracy to the total allowed return required within the price control and may, as a result, broaden the range of investors (and so broaden the pool of capital) willing to invest into the sector. In addition, raising the return available (sometimes termed 'aiming up') for certain types of projects could help to ensure that GB projects can access the significant amount of capital needed despite a more competitive market backdrop where many countries look to invest to meet climate, resilience and environmental challenges. Such an approach could also be used as part of the incentive regime for effective delivery of these major projects.

6.17 There are theoretical reasons for setting returns on a more targeted basis or setting multiple returns across activities, where the underlying risk profiles are significantly different. However, in practice, we consider there to be a range of practical and policy drawbacks that would limit or eliminate the benefits of a segmented approach.

6.18 For example, setting returns by archetype or project would involve a significant increase in regulatory, accounting and financial structure complexity. This would be exacerbated if such an approach were to require the further ringfencing of assets or the breaking up of licences into sub-licences. At a time when we are looking to simplify regulatory processes and speed up decision making, such a change would appear to be inappropriate.

6.19 We also note that a lack of listed direct peers can make a broad assessment of the energy network's exposure to systematic risk a very difficult process. Trying to further calibrate returns (in either direction) to better match the risk exposure of either archetypes or projects would risk impracticality and/or introducing a spurious level of accuracy into our processes.

6.20 In addition, investors cannot currently invest in the archetypes or projects directly and so segmentation in this way would not seem to increase the pool of available capital, although it may vary the return available to investors in different licensees. Further, Ofgem's 'financeability' duty is to licensees and it is not clear that there could be an appropriate action to support the financeability of a specific project within the current statutory framework.

6.21 When considering the potential broader benefits of 'aiming up' returns to secure capital, we note that the approach has academic support[57] and has been used in other jurisdictions, most notably New Zealand.[58] However, we also note that the practical evidence from UK markets is that 'aiming up' is likely to lead to increased returns to shareholders without commensurate benefits to customers via increased investment in infrastructure.

6.22 We also note the potential positive impact of implementing the CSNP. A significant element of the aiming up debate centres on encouraging companies to table investment projects that the regulator would not otherwise know about. Once responsibility for the identification and design of strategically important projects passes to the FSO, any 'investment identification' incentive from aiming up would appear to be negated.

6.23 After careful consideration of the evidence, responses to the consultation and views expressed at working groups, we consider that the evidence presented and the analysis undertaken to-date supports the ongoing use of a single calculated return on capital (at an appropriate notional level of gearing), applied across both existing Regulated Asset Value (RAV) and new investment. On balance, we consider the likely drawbacks of a segmented an approach to allowed returns make it unlikely to provide a net benefit to consumers or to materially improve the cost or availability of capital from investors. In addition, we consider the benefits of consistency, simplicity and transparency associated with the single financial package approach used in RIIO-2 to outweigh the benefits from marginal increases the accuracy of the risk and reward balance calculations.

6.24 When setting the allowed return on equity, we will therefore continue to calculate a single allowance per licensee (at the appropriate notional level of gearing). However, as noted below at Paragraph 6.346.34, we will consider evidence of changes in the exposure to systematic risk in each network type when estimating the appropriate beta in our cost of equity calculations. Subject to sufficient evidence, this may involve considering additional or alternative comparator data within our estimate of beta or may influence the time period of the beta data considered or point estimate used in our calculation.

6.25 With specific reference to setting returns appropriate to the likely activities and risks within the gas networks, stakeholders noted the potential for asset

[57] For example, see Dobbs (2011), 'Modelling welfare loss asymmetries arising from uncertainty in the regulatory cost of finance', page 3
[58] Commerce Commission New Zealand, (2014), Amendment to the WACC percentile for price-quality regulation for electricity lines services and gas pipeline services, paragraphs X17-X20.

stranding risk and the requirement for additional returns to compensate for this risk. This issue was addressed in the July Open Letter on Future of Gas Price Controls.[59] In this Open Letter we noted that we would consider mitigating this risk through an assessment of accelerated depreciation and asset lives or through a reopener if appropriate. This remains our position and the issue will be addressed in more detail in the SSMC.

The segmentation of review periods

6.26 In response to Question 10 of the consultation, stakeholders noted that different review periods might better accommodate the use of different archetypes but that this would need to be considered once more detail on the archetypes and associated activities was available.

6.27 Stakeholders also highlighted the importance of regularly scrutinising whether the approach to the estimation of cost of capital and the overall level of returns remained appropriate.

6.28 Overall, the majority of stakeholders that commented on this topic supported the continued used of a 5-year period as likely to continue to be appropriate, subject to further information on the broader regulatory framework.

6.29 We have carefully considered the potential impact of our proposed changes to the regulatory regime and whether fixed five-year periods for the financial framework remain appropriate. We note that it is likely that an increasing proportion of investment in the ET sector will be planned, assessed and actioned over time periods that do not exactly match the current 5-year price control review periods used to set allowed returns and assess financeability.

6.30 We recognise that there are potential benefits that may arise from changing the approach to setting returns and assessing financeability over periods that better match the planning, cost assessment and investment horizons of new projects. However, we see considerable downsides to such an approach. Moving to a bespoke approach that exactly matched these changing timeframes could not be accurately defined in advance, would not necessarily be practical or beneficial when considering appropriate returns on existing assets, would challenge the accurate consideration of the financeability of the licensee in-the-round and would risk significantly increasing the complexity within the price control setting process. Such an approach might also be significantly more complex and/or less

[59] Open Letter on Future of Gas Price Controls (ofgem.gov.uk)

effective, as in practice network companies are financed as a single entity, including both assets-in-place and new investments, and therefore the data that we have reflects that overall financial risk profile.

6.31 On balance and having carefully reviewed consultation responses and the evidence presented at the working groups, it is our view that the timing of allowed returns and financeability assessments does not need to correspond exactly to the period used where cost allowances and investment planning may be better considered over longer or shorter time horizons. In addition, we do not consider there to be evidence that the financial and financeability frameworks would be substantially improved by setting price controls over a set period different to five years. On this basis, we plan to retain the 5-year periodic review when setting allowed returns and assessing financeability.

The mechanics for setting allowed returns

6.32 While we said that consideration of the detailed mechanics of setting allowed returns were out of scope of this consultation, stakeholders made helpful submissions on the high-level principles.

6.33 In relation to assessing the cost of equity, those who commented continued to provide support for using the Capital Asset Pricing Model (CAPM) as the basis of any estimate, although stakeholders do not necessarily agree with the exact metrics or methodologies used in the RIIO-2 price controls. It was also noted that a lack of comparators would create significant difficulties if Ofgem were to seek to segment returns via further calibration of beta, as discussed above.

6.34 We agree that CAPM should continue to be the primary tool to estimate the allowed return on equity. While we have noted that assessing the cost of equity at the archetype or activity level may be impractical for the reasons specified in paragraphs 6.18 to 6.20, we remain open to considering differences between the systematic risk exposure of the different network types (GD, GT and ET), if sufficient evidence supports these differences and the data is available to allow us to make reasonable estimates of these differences.

6.35 In relation to the cost of debt, several network companies stated that significantly varying levels of required investment across networks may make a single allowed return on debt untenable. In principle, we agree with this assessment. For the next price control, we will assess alternative calibrations of the allowed return on debt with the aim of providing improved accuracy and flexibility within the cost of

debt assessment, as well as integrating the findings of the Call for Input on the impact of high inflation on the network price control operation.[60]

6.36 We also note that, since the launch of the FSNR consultation, the UKRN has published guidance for regulators on the methodology for setting the cost of capital.[61] This guidance is the result of a request from government, asking regulators to identify areas where there is already significant alignment in cost of capital methodologies and areas where further alignment could be achieved. As part of this process, we have committed to having regard to the recommendations in this guidance in future price control decisions where this is permitted by our statutory duties and to deviate only where we consider there are good reasons to depart from these recommendations. As a result, we expect to incorporate the guidance recommendations into the methodologies used when setting the allowed return on capital for RIIO-3. We consider these recommendations to be substantially in line with the approaches used in the RIIO-2 price controls.

6.37 In addition, stakeholders noted that competitive tendering could provide a new mechanism for setting the cost of capital for some projects. Such mechanisms could address some of the issues raises in relation to the segmentation of returns (in particular if competitively tendered assets were to sit outside of the RAV and thus avoid many of the practical constraints to returns segmentation). We propose to keep this issue under review and do not expect competition to be a major driver of returns in the next price control period.

Assessing financeability

6.38 In response to Question 10 of the consultation, all network companies and a range of other stakeholders suggested that there was a need for enhancements to our approach to assessing financeability, such as increased sophistication and longer time horizons in our assessment. Network companies specifically suggested a need to better consider equity financeability or 'investability' in the face of unprecedented demand for new equity financing over the coming decades.

6.39 We recognise the financeability challenges raised by stakeholders during this consultation. While we continue to consider the overall financeability framework to be appropriate for the coming price controls, we agree with stakeholders that a broader assessment 'investability' in addition to our traditional assessment of

[60] Ofgem (2023), Call For Input – Impact of high inflation on the network price control operation.
[61] UKRN (2023), Guidance for regulators on the methodology for setting the cost of capital.

financeability may have merit. This is likely to be particularly important in the ET sector where there is likely to be a requirement for companies to seek additional equity investment to maintain appropriate levels of financial resilience while undertaking significant investment programmes. Our framework for RIIO-3 will need to appropriately consider any financing costs of attracting this amount of equity capital. There may also be merit in assessing longer-term financeability (eg beyond the length of the periodic review) if it helps to secure lower costs and access to wider sources of capital during this important phase of high investment need. In addition, any appropriate associated updates to financial resilience requirements will be considered with reference to the changing needs of the sector, relevant external evidence and a consideration of the RIIO-3 price control in-the-round.

Opportunities to better apply the 'RIIO' approach

6.40 In response to Question 10 of the consultation, stakeholders noted that they do not necessarily agree with the exact metrics used to set the allowed revenues in the RIIO-2 price controls. However, there was broad and continuing stakeholder support for the overall financial and financeability frameworks used in the RIIO price control.

6.41 Stakeholders stated that the RIIO approach was generally well understood, transparent, stable and trusted by investors. We agree with this assessment and consider the RIIO 'one package' approach, potentially with further enhancements and/or simplifications, is likely to remain the most effective way to support the ongoing investment needs of the energy networks.

Overall costs and benefits of change

6.42 In response to Question 10 of the consultation, stakeholders stated that they were not able to assess accurately the net costs and benefits of the FSNR proposals at this stage of their development. Stakeholders who commented on this topic noted that that increasing complexity would bring risks in several forms and that these risks should be actively managed in order to maintain the current benefits of stability.

6.43 We acknowledge the potential risks of change to the financial framework. On balance, we do not consider there to be material change required within the financial or financeability frameworks to allow the implementation of the decisions described within this document.

Framework Decisions Summary

6.44 Based on the FSNR consultation findings, consideration of consultation responses and evidence presented at working groups, we have made the following decisions in relation to the financial framework to be applied at the next price control:

- The evidence presented and the analysis undertaken to-date supports the ongoing use of a RIIO style of financial package, specifically allowed returns on equity and debt capital applied to the entire RAV rather than on a project- or archetype-specific basis. We believe that consistency in our approach here is the most effective way to support the ongoing and future investment needs of the energy networks while providing value-for-money for consumers
- When setting the allowed return on equity, we will continue to calculate a single allowance (at the notional level of gearing). We do not consider varying the allowed return on equity by either archetype or by activity to be required to facilitate the FSNR objectives. However, we will consider how to accurately estimate the appropriate beta for each network type, including whether additional comparators would improve this estimate. We will continue to use the CAPM model as the primary tool when estimating the cost of equity
- When setting the allowed return on debt, we will review and update our approach to reflect the increasingly differing quantum and pace of investment at network companies, as well as the findings of our Call of Input on inflation
- When assessing the cost of capital and setting allowed returns on capital and debt, we anticipate incorporating the 2023 UKRN Guidance recommendations into our methodologies. We consider these recommendations to be substantially in line with the approaches used in the RIIO-2 price controls.
- We will continue to use a 5-year review period. We consider 5-years to remain appropriate for setting the allowed return and assessing financeability - even where planning, cost assessment and investment horizons operate over different time periods
- When assessing financeability, we do not anticipate a structural change in approach relative to the 'in the round' assessment used in the RIIO-2 price controls. However, it may be appropriate to make changes to better assess broader and longer-term measures of financeability and to consider evidence in relation to 'investability'.

6.45 As separately noted in the July Open Letter on the future of gas price controls, we do not currently consider there to be a need for additional returns on capital in

compensation for perceptions of increased risk in the gas sectors. However, we have noted that risk mitigations in the form of updates to regulatory depreciation and asset lives and/or through the inclusion of price control reopeners will be considered further in our consultation on methodology later this year. We will consider carefully how prices and charges should be set for gas infrastructure in RIIO-3 and beyond, ensuring both efficiency in future spending but also fairness in how different generations of gas customers pay for the sunk costs of historical investment in the gas grid.

6.46 Issues relating to topics such as notional capital structures, the use of cross checks, RAMs, corporation tax, standard rates of depreciation and capitalisation rates were not explicitly considered within the FSNR consultation and will be addressed in methodology consultations later this year.

6.47 Ofgem and Government decisions on related topics, such as the treatment of inflation, the long-term future of gas networks for household heat and the approach to hydrogen deployment, will be factored into our approach at the earliest possible stage.

Appendices

Appendix 1 - Questions asked in the consultation

A1.1 Q.1. What should the role of the 'consumer voice' be and through what institutions and processes should it be channelled?

A1.2 Q.2. How detailed could an independent, cross vector view become to determine future plans for periods beyond RIIO-2 and support effective use of the 'Plan and Deliver' model?

A1.3 Q.3. Under what circumstances would competition, or other procurement models such as open book contracting, have benefits over ex ante incentives as a cost control mechanism?

A1.4 Q.4. What is your view on the options identified for simplification of incentive regulation? What would be the benefits and costs by comparison to the approaches used in RIIO-2?

A1.5 Q.5. What are the network activities where there would be benefits for a move to an ex post monitoring regime, and what would be the associated costs?

A1.6 Q.6. What are the benefits and costs of this approach for Electricity Transmission by comparison to an evolution of the approach in RIIO-2, and what are the implementation barriers?

A1.7 Q.7. What is the potential for Electricity Distribution planning and commissioning to move to an alternative model by the end of RIIO-2, and what might be the benefits and costs of doing so?

A1.8 Q.8. What is your view on the most effective approach to regulation of Gas Distribution and Transmission beyond RIIO-2? What would be the benefits and costs of moving to a simpler approach to regulation of the ongoing costs of operating and maintaining the network?

A1.9 Q.9. Should there be a shorter-term price control in gas distribution and/or gas transmission, and how could this work in practice?

A1.10 Q.10. Would there need to be any changes to maintain a stable and consistent financial framework if we were to make greater use of different regulatory archetypes, and if so, what would those changes need to be?

A1.11 Q.11. Do you have any views on our proposed analytical approach?

Appendix 2 Review of outputs, incentives and uncertainty mechanisms

A2.1 As discussed in Chapter 2, we have conducted an initial review of RIIO-2 outputs, incentives and uncertainty mechanisms for the GT, ET and GD sectors.

A2.2 This review identified initial opportunities to streamline our current approach and reduce the regulatory burden associated with developing, managing and monitoring these mechanisms for RIIO-3.

A2.3 Our initial review is set out below. We intend to discuss this review as part of the methodology stage with network companies and stakeholders.

A2.4 Each output has been given an initial RAG rating using the following guidelines:

- Green – output still relevant for RIIO-3 with minimal change
- Amber – output still relevant for RIIO-3 but requires some review and changes (eg updating incentive targets)
- Red – significant review of the output required to determine whether it is still needed for RIIO-3 and/or whether the RIIO-2 mechanism is the right one for RIIO-3
- Black – we consider that this output can be removed as it is no longer relevant for RIIO-3

Gas Distribution

Output name	Output type	Companies applies to	Initial review outcome
Infrastructure fit for a low-cost transition to net zero			
Shrinkage Management	ODI-F	Common	Shrinkage remains a key issue – current ODI approach needs review
Shrinkage Management	ODI-R	Common	Shrinkage remains a key issue – current ODI approach needs review
Environmental Action Plan and Annual Environmental Report	ODI-R and LO	Common	Transparent reporting on environmental performance needed – review approach and consistency across sectors
Business Carbon Footprint	ODI-R	Common	Transparent reporting on environmental performance needed –

Output name	Output type	Companies applies to	Initial review outcome
			review approach and consistency across sectors
Biomethane improved access rollout	PCD	SGN only	SGN bespoke PCD with low materiality. It could form part of wider environmental reporting
Remote pressure management	PCD	SGN (Southern) only	SGN bespoke PCD with low materiality. It could form part of wider environmental reporting
Intermediate pressure configurations	PCD	SGN only	SGN bespoke PCD with low materiality. It could form part of wider environmental reporting
Commercial EV fleet	PCD	Common	Remove PCD, potential to align approach with other sectors
Gas escape reduction	PCD	SGN only	SGN bespoke PCD with low materiality. It could form part of wider environmental reporting
HyNet Front End Engineering Design	PCD	Cadent only	Work due to be completed by end of GD2
Net zero and Re-opener Development fund use it or lose it allowance	UIOLI	Common	Hydrogen feasibility studies going through this UIOLI likely still needed. Possibly less once HMG decision on hydrogen policy
Heat policy and energy efficiency reopener	Reopener	Common	Review energy efficiency element and adjustment mechanism
Net zero reopener	Reopener	Common	We consider that this will still be needed in line with other sectors
Net zero pre-construction works and small net zero projects reopener	Reopener	Common	Review reopener functioning as intended and what it would be used for in the next period
Coordinated adjustment mechanism (CAM) Re-opener	Reopener	Common	Review function and scope of this reopener
Secure and resilient supplies			
Job completion lead time (including reinstatement)	ODI-R	NGN only	Expectation that this output will be removed with performance improvements counted as part of CSAT and CM.

Output name	Output type	Companies applies to	Initial review outcome
Gas Holder demolitions Price Control Deliverable	PCD	WWU and NGN only	Retain output and funding for RIIO-GD3 for GDNs to complete work by 2029
Baseline Network Risk Output (NARM)	PCD, ODI-F and LO	Common	We will look to increase coverage, improve the consistency of application across sectors, and to enhance regulatory reporting
Tier 1 Mains decommissioned	PCD	Common	Required for repex Programme – review of unit costs needed
Tier 1 Services Repex	PCD	Common	Required for repex Programme – review of unit costs needed
Capital Projects	PCD	Common	Review of PCD scope, eligibility criteria, materiality threshold needed
Cyber Resilience OT	PCD, UIOLI, re-opener	Common	Review of requirements needed
Cyber Resilience IT	PCD, re-opener	Common	Review of requirements needed
London Medium Pressure	PCD	Cadent (London) only	Review PCD, works likely to continue as long as repex programme is ongoing
Tier 1 Stubs Repex policy	Re-opener	Common	GD2 stubs costs should inform required expenditure for next price control
Tier 2A mains and services replacement	Volume driver	Common	Required for repex programme – review of unit costs needed
HSE policy	Re-opener	Common	Retain for HSE changes – some review of worker fatigue issue
Multiple Occupancy Buildings safety	Re-opener	Common	Hackett review outcomes on regulatory changes could be built into business planning
Non-operational IT Capex	PCD, Re-opener	Common	Review use of UM in GD2
Physical Security	PCD, Re-opener	Common	Review use of UM in GD2 and overall resilience package
Diversions and Loss of Development claims policy	Re-opener	Common	Review scope and function of UM, including inclusion of severe weather events

Output name	Output type	Companies applies to	Initial review outcome
High quality of service from regulated firms			
Multiple Occupancy Buildings (MOB) Interruptions and Non-MOB Interruptions	ODI-F	Cadent only	Significant review required on approach to incentivising reliability and the bespoke approach for Cadent
Unplanned Interruptions	ODI-F	SGN, NGN, WWU	Significant review required on approach to incentivising reliability
Customer Satisfaction Survey	ODI-F	Common	Review incentive performance and approach to incentivising high quality customer service
Complaints Metric	ODI-F	Common	Review incentive performance and approach to incentivising handling of complaints
Collaborative Streetworks	ODI-F	Cadent and SGN only	Review incentive performance and overall approach to incentivising this form of collaboration
Fuel Poor Network Extension Scheme	ODI-R & volume driver	Common	N/A removed during GD2
Consumer vulnerability	ODI-R	Common	Review function of ODI-R in driving GDN behaviours
High rise building plans	ODI-R	Cadent only	Data can be reported separately in RRP
Personalising welfare facilities	PCD	Cadent only	Potential to be funded through vulnerability UIOLI
Smart Metering rollout costs reopener	Reopener	Common	Review costs for GD2 and whether reopener needed for this activity
Specified Streetworks Costs Reopener	Reopener	Common	Review function of reopener in GD2, likely still needed for GD3
New Large Load Connections Reopener	Reopener	Common	Review use in GD2 and whether there are likely to be new connections to network in GD3
Domestic Connections volume driver	Volume driver	Common	Review outcomes and behaviours in GD2 and HMG commitments to stopping new domestic gas connections

Output name	Output type	Companies applies to	Initial review outcome
Vulnerability and Carbon Monoxide UIOLI	UIOLI	Common	Review function, scope and materiality of UIOLI, alongside cross-sector vulnerability approach
Digitalisation Strategy and Action Plan	LO	Common	Review approach across sectors
Data Best Practice	LO	Common	Review approach across sectors
Consumer vulnerability minimum standards	LO	Common	Review cross-sector vulnerability approach
Guaranteed Standards of Performance	LO	Common	Review approach across sectors
Emergency Response Time	LO	Common	Review LO

Gas Transmission

Output name	Output type	Companies applies to	Initial review outcome
Infrastructure fit for a low-cost transition to net zero			
Compressor emissions PCD	PCD	Common	Review any potential investment needed in GT3
Compressor emissions Re-Opener	Re-opener	Common	Review whether still need for reopener mechanism in GT3
Redundant Assets Price Control Deliverable	PCD	Common	Likely that work will be completed in GT3
Funded incremental obligated capacity Re-Opener and PCD	Reopener, PCD	Common	We consider that a reopener will still be needed in GT3
Net zero Re-opener and PCD	Reopener, PCD	Common	We consider that a reopener will still be needed in line with other sectors
Net Zero and Re-opener Development Fund	UIOLI	Common	Hydrogen feasibility studies going through this UIOLI likely still needed.

Output name	Output type	Companies applies to	Initial review outcome
use it or lose it allowance			Possibly less once HMG decision on hydrogen policy
Net Zero Pre-construction Work and Small Net zero Projects Re-opener	Re-opener	Common	Review reopener functioning as intended and what it would be used for in the next period
Coordinated adjustment mechanism (CAM) Re-opener	Re-opener	Common	Review function and scope of this reopener
Environmental Scorecard ODI-F	ODI-F	Common	Review approach for environmental performance across sectors
Greenhouse gas emissions (venting)	ODI-F	Common	Review potential to include in wider environmental outputs
NTS shrinkage	ODI-R	Common	Review ODI-R impact on performance improvements
Environmental Action Plan and Annual Environmental Report	ODI-R, LO	Common	Transparent reporting on environmental performance needed – review approach and consistency across sectors
Secure and resilient supplies			
Baseline Allowed NARM Expenditure	PCD	Common	Review of approach to network asset risk
Asset health – non lead assets reopener	PCD	Common	Review of approach in parallel to NARM
Asset health reopener	Re-opener	Common	Review of approach in parallel to NARM
Physical Security Price Control Deliverable	PCD	Common	Review use of PCD and overall resilience package
Physical Security Reopener	Re-opener	Common	Review use of reopener and overall resilience package
Bacton terminal site redevelopment Price Control Deliverable	PCD	Common	Funding confirmed for project in RIIO-2 – review any further work required

Output name	Output type	Companies applies to	Initial review outcome
Bacton terminal site Reopener	Re-opener	Common	Remove as no longer need for reopener
King's Lynn subsidence Price Control Deliverable	PCD	Common	Funding confirmed for project in RIIO-2 – review any further work required
King's Lynn subsidence Re-Opener	Re-opener	Common	Remove – no longer need for reopener
Cyber Resilience IT	PCD, Re-opener	Common	Review PCD requirements and functionality of reopener (reopener windows, trigger)
Cyber Resilience OT	UIOLI, PCD Re-opener	Common	Review UIOLI funding approach, functionality of reopener (reopener windows, trigger) and PCD requirements
Quarry and Loss	Re-opener	Common	Remove – likely to no longer be a need for a reopener
Pipeline diversions re-opener	Re-opener	Common	Review approach across all sectors
Annual network capability assessment report (ANCAR)	LO	Common	Review approach to reporting in GT2
Network Asset Risk Metric methodology	LO	Common	Review of approach to network asset risk
Large Projects Delivery	PCD	Common	Review of PCD scope, eligibility criteria, materiality threshold needed
High quality of service from regulated firms			
Customer satisfaction survey	ODI-F	Common	Review incentive performance and approach to incentivising high quality customer service
Quality of demand forecast	ODI-F	Common	Review approach to incentivisation in light of establishment of FSO
Maintenance	ODI-F	Common	Review approach to incentivisation in light of establishment of FSO

Output name	Output type	Companies applies to	Initial review outcome
Entry and exit capacity constraint management	ODI-F	Common	Review approach to incentivisation in light of establishment of FSO
Residual balancing	ODI-F	Common	Review approach to incentivisation in light of establishment of FSO
Stakeholder satisfaction survey	ODI-F	Common	Review approach to incentivising stakeholder satisfaction considering cross sector framework
Digitalisation Strategy and Action Plan	LO	Common	Review approach across sectors
Data Best Practice	LO	Common	Review approach across sectors
Exit capacity	LO	Common	Review approach to reporting in GT2

Electricity Transmission

Output name	Output type	Companies applies to	Initial review outcome
Infrastructure fit for a low-cost transition to net zero			
SF6 Asset Intervention Reopener	Reopener	NGET	Review uncertainty around SF6 for ET3
SF6 asset intervention PCD	PCD	NGET	Review cross-sector SF6 approach and interaction with wider environmental reporting
Net zero Reopener and PCD	Reopener, PCD	Common	We consider that a reopener will still be needed in line with other sectors
Visual Impact Mitigation PCD	PCD, re-opener	Common	Review function and materiality for ET3
Operational transport carbon reduction	PCD	Common	Significant review on approach, including cost confidence for ET3
Net zero and re-opener development UIOLI	UIOLI	Common	Review use of UM in ET2
Net zero Fund UIOLI	UIOLI	SPT	Review use of UM in ET2
Net zero Carbon Construction UIOLI	UIOLI	NGET	Review use of UM in ET2

Output name	Output type	Companies applies to	Initial review outcome
Environmental Enhancement Requirements UIOLI	UIOLI	SPT	Review use of UM in ET2 and interaction with EAP
Coordinated adjustment mechanism Re-opener	Reopener	Common	Review function and scope of this reopener
Environmental Scorecard	ODI-F	NGET	Review bespoke nature of this ODI and performance in ET2
Insulation and Interruption Gas (IIG) leakage incentive	ODI-F	Common	Review ET2 performance and targets for ET3
Environmental Action Plan and Annual Environmental Report	ODI-R, LO	Common	Transparent reporting on environmental performance needed – review approach and consistency across sectors
Business Carbon Footprint	ODI-R	Common	Transparent reporting on environmental performance needed – review approach and consistency across sectors
Network Access Policy	LO	Common	Drives insight into how TOs work with ESO and optimise outage planning
Secure and resilient supplies			
Baseline Network Risk Output	PCD, ODI-F	Common	Review of approach to network asset risk
Pre-construction Price Control Deliverable	PCD	Common	Review mechanism in context of decisions on mechanisms for ET major projects
Incremental Wider Works Price Control Deliverable	PCD	Common	Review need for PCD beyond ET2
Incremental Wider Works volume driver	Volume driver	NGET	Review bespoke volume driver approach
Medium Sized Investment Price Control Deliverable	PCD	Common	Review approach in context of decisions on medium sized ET projects for ET3
Generation Related Infrastructure PCD	PCD	NGET	Review PCD approach for ET3
Overhead Line Conductor PCD	PCD	NGET	Review PCD approach for ET3
Protection and Control PCD	PCD	NGET	Review PCD approach for ET3

Output name	Output type	Companies applies to	Initial review outcome
Bay Assets PCD	PCD	NGET	Review PCD approach for ET3
Instrument Transformer PCD	PCD	NGET	Review PCD approach for ET3
Cyber resilience OT	PCD, UIOLI and re-opener	Common	Review of PCD requirements needed
Cyber resilience IT	PCD, re-opener	Common	Review of PCD requirements needed
Physical Security	PCD, re-opener	Common	Review of PCD use and overall resilience package
Non-Operational IT Capex	PCD, re-opener	Common	Review ET2 PCD mechanism
Resilience and Operability PCD	PCD	SHET, SPTL	Review in context of overall resilience package
Bengeworth Road GSP Project PCD	PCD	NGET	Work expected to be completed in ET2
Uncertain non-load related projects PCD	PCD	SPT	Work expected to be completed in ET2
Shared Schemes PCD	PCD	SHET, SPT	Work expected to be completed in ET2
Pre-construction funding reopener	PCD, Reopener	Common	Review in context of approach for major projects in ET3
Large Onshore Transmission Investment (LOTI) reopener	Reopener	Common	Review in context of approach for major projects in ET3
Medium sized investment projects reopener	Reopener	Common	Review in context of CSNP outputs and function of ET2 reopener
Generation Connections Volume Driver	Volume driver	Common	Review in context of longer-term connections reform and other ET3 mechanisms
Demand Connections Volume Driver	Volume driver	Common	Review in context of longer-term connections reform and other ET3 mechanisms
Uncertain non-load projects reopener	PCD, Reopener	SPT	Review bespoke reopener function in ET2
Substation Auxiliary Interventions Reopener	Reopener	NGET	Review need for UM for ET3

Output name	Output type	Companies applies to	Initial review outcome
Optel Fibre Wrap Reopener	Reopener	NGET	Review need for UM for ET3
Substation Civil Works Reopener	Reopener	NGET	Review need for UM for ET3
Towers and Foundations Reopener	Reopener	NGET	Review need for UM for ET3
Access and Charging Reform Reopener	Reopener	Common	Review need for UM for ET3
Tyne Crossing Reopener	Reopener	NGET	Review need for UM for ET3
Large Projects Delivery	PCD	Common	Review of PCD scope, eligibility criteria, materiality threshold needed
Subsea Cable Repairs Reopener	Reopener	SHET	Likely needed for high-cost low probability subsea cable events
High quality of service from regulated firms			
Energy not Supplied (ODI-F)	ODI-F	Common	Review required on approach to incentivising reliability, use of VoLL & scope of incentive
Timely Connections	ODI-F	Common	Review in context of industry connections reform work
Quality of Connections Survey	ODI-F	Common	Review to understand ET2 performance and behaviours driven by this incentive
New Infrastructure Stakeholder Engagement Survey	ODI-R	Common	Review approach to ODI-R
SO:TO Optimisation Survey	ODI-F	Common	Review in context of CSNP role

Appendix 3 - Impact assessment

A3.1 When we make decisions, we must do so in a way that best protects the interests of existing and future consumers. This includes balancing the benefits of any action we take against the costs that may arise because of those requirements. Impact Assessments (IA) play an important role in Ofgem's decision-making process by providing a clear and structured way to set out and assess the impacts of important policy proposals on consumers, industry participants, society and the environment.

A3.2 As this impact assessment concerns a framework, rather than a specific methodology consultation, it falls outside the scope of a s.5A Utilities Act 2000. Nevertheless, we have decided to publish an impact assessment as we are beginning to develop proposals in an area where, in due course, we will ultimately be making proposals that are "important" within the meaning of s.5A.

Electricity Transmission Load Related Expenditure

A3.3 The scope of this Impact Assessment concerns electricity transmission load related expenditure which we use as a proxy for projects within the scope of CSNP. With regards to ongoing costs (which we proxy via non-load related expenditure) it is assumed that they are dealt with through a continuation of the RIIO-2 framework. This is the case both in the counterfactual and in all scenarios that we model.

Rationale for Intervention

A3.4 As set out in the Overview Document, delivering new and upgraded networks in the right place, at the right time and at low cost while protecting the interests of existing and future consumers, will be the key challenge for economic regulation of electricity networks.

A3.5 This challenge requires holistic planning to drive strategically planned upgrades, anticipatory investment and reform to the way assets are connected to the network. The SSEP, CSNP and regional system planners will be implemented from 2026 onwards.

A3.6 In light of the scale and range of factors affecting the future development of GB's electricity networks, we have taken steps to consider the most appropriate regulatory framework for the challenges and opportunities that lie ahead.

Definition of the counterfactual

A3.7 We will use a counterfactual of the continuation of RIIO-2 framework. This choice aligns with HM Treasury Green Book guidance which calls for the quantification of Business As Usual (BAU) which in Green Book terms is defined as "the continuation of current arrangements, as if the proposal under consideration were not to be implemented".

A3.8 We therefore demonstrate in the following sections how the changes away from the RIIO-2 approach that we have considered would be expected to deliver net benefits to consumers.

A3.9 Our focus in this IA is on the costs and benefits associated with the investment programme. This is because we have concluded that under all options, we would continue to use an approach comparable to RIIO-2 for ongoing costs. The reasons for adopting such an approach are set out in paragraph 5.44.

A3.10 For the purposes of this impact assessment we estimate annual investment under the counterfactual scenario over the period 2027 to 2035 forecasts supplied by the TOs. This provided annual investment estimates to the period of 2034. We then used a 3-year moving average to estimate the annual investment to 2035.

A3.11 We measure annual investment over the period up to 2035 as this corresponds to the Government's net zero target for the decarbonisation of the energy sector. As such we consider the benefits of improved delivery of transmission infrastructure will continue to be accrued up until this period. As a sensitivity we also calculate net benefits over the relevant price control period only (ie up to 2031).

Scenarios under consideration

A3.12 Figure A1 below summarises the main components of the set of scenarios we have developed. Each scenario is designed to yield insight on the range of frameworks within scope rather than necessarily being intended to represent a credible policy option. Each scenario is composed of the following features:

- Definition of Totex baselines set by - totex baselines may either be set by TO-led procurement with ex ante cost assessment, as is the status quo, or TO-led procurement with enhanced Ofgem monitoring and an ITA providing assurance to Ofgem that procurement and design choices are efficient.
- Assumed delay to investment roll-out - there could be no delay to the roll out of transmission infrastructure, as is the case where baselines are set by TO-

led procurement with an ITA or, in the case of the counterfactual where ex ante cost assessment is used to set baselines, a delay. We assume a delay of 6 months as the central case under the RIIO-2 approach.

- Incentives to deliver baseline - this component flexes between the case where some form of cost sharing incentive is in place and the case where there are no explicit incentives to deliver costs below defined totex baselines, as is the case under a pure ex post framework.

A3.13 The counterfactual scenario is characterised by TO-led procurement but without an ITA. This corresponds to the current situation under RIIO-2 in which large projects are contracted out by TOs but without any specific oversight on the procurement arrangements by Ofgem.[62] It is assumed that under this arrangement the full benefits of competitive procurement are not overseen by Ofgem and not automatically passed to consumers. However, we do assume that ex ante cost assessment is conducted alongside the assessment of need and the corresponding cost efficiencies are passed on to customers.

Figure A1 Summary of Scenarios

	Counterfactual	1	2	3
Totex baseline set by…	TO-led procurement (without ITA) with ex-ante cost assessment	TO-led procurement (without ITA) with ex-ante cost assessment	TO-led procurement with ITA	TO-led procurement with ITA
Assumed delay to investment roll-out	6 months	None	None	None
Incentives to deliver baseline	Totex sharing	Totex sharing	Totex sharing	None
Purpose	Status quo baseline against which to measure net benefits	To demonstrate net benefits available if it was feasible to conduct ex-ante cost assessment without associated delays	To illustrate net benefits of preferred policy option.	To illustrate benefits of a pure ex-post regulatory framework.

The counterfactual scenario is also assumed to entail a 6-month delay to the roll-out of investment. This is based on the assumption that a combination of the needs assessment, understanding of project costs and review of cost efficiency are conducted on an ex ante basis at the cost review phase. This means the associated benefits of constraints savings are foregone in this scenario. While we do not directly measure them, we note that the carbon

[62] According to our RFI to TOs between 82% to 97% of projects/schemes over £100m in value are contracted out.

savings from accelerated deployment of transmission infrastructure are also an additional benefit of acceleration of large load-related projects.

A3.14 Finally, under the counterfactual we assume that totex sharing incentives are in place as is the case under the RIIO-2 framework.

A3.15 Scenario 1 is designed to illustrate the benefits that would be available in the case were ex ante cost assessment was assumed not to result in any delays in the roll-out of investment.

A3.16 Scenario 2 is designed to illustrate the net benefits of our preferred scenario in which baselines are set by TO-led procurement but with oversight by ITA's providing assurance to Ofgem that procurement and design choices are efficient. In this case it is assumed that the full efficiencies from competitive procurement are assumed to accrue and be passed on to customers, rather than the efficiencies identified in an ex ante cost assessment, which on average are likely to be lower due to information asymmetry. The use of TO-led procurement rather than cost assessment by Ofgem is assumed to alleviate any delays in the roll out of investment, in comparison to the counterfactual. Finally, it is assumed that mechanisms, such as totex sharing, are put in place to incentivise the delivery of baselines. This ensures that TO's have an incentive to deliver according to their original baselines in the face of escalating costs arising from the global supply chain crunch.

A3.17 Scenario 3 is designed to demonstrate the net benefits of a pure ex post framework. As such it differs from the counterfactual in assuming TO-led procurement with oversight by ITA but without the efficiencies of ex ante cost assessment. Additionally, it is assumed that there are no mechanisms to incentivise the delivery of baseline totex in the face of significant supply chain constraints and upward pressure to input prices.

Impacts on consumers against the counterfactual

A3.18 Following on from the definition of scenarios and the counterfactual, we flex four primary levers in determining the net benefits of each scenario.

The benefits of effective procurement

A3.19 In scenarios 2 and 3, where baselines are set by TO-led procurement with an ITA, we assume that the full benefits of effective procurement will accrue and be passed on to customers.

A3.20 We estimate the benefits of effective procurement by assessing the evidence base on efficiencies from competition for large infrastructure projects. In particular we have reviewed the following documents:

- 'Extending competition in electricity transmission' Ofgem, 2016
- 'Impact Assessment on developing arrangements to allow for early competition to be applied to future projects on the onshore electricity transmission network' Ofgem, 2021.

A3.21 This literature identifies the following theoretical benefits of competitive tendering in the ET sector:

- Static efficiencies - competitive tendering will place downward pressure on capital and operational expenditure
- Dynamic efficiencies – particularly in early competition models, bidders will seek to create innovative and cost saving solutions in order to submit the most competitive bids. Wider benefits will be felt if innovations adopted by one bidder are relevant for the rest of the sector, helping to further drive down costs for consumers
- The opening up of investment opportunities to new parties allowing new sources of labour and capital to enter
- Financing efficiencies - competition should exercise downward pressure on the cost of equity and debt and bidders adopt the most efficient financing structures to reflect the risk of delivering the project.

A3.22 The key relevant finding from Ofgem (2016) is the implied cost savings derived from the Ofgem OFTO regime operating in GB (which could be considered a very 'late' tender model for a constructed asset). A review of the tender round results reveals 'progressive improvements' in operational and financial savings compared to a counterfactual of non-competitive regulated approaches. In particular, the estimated savings for projects in all tender rounds to date are estimated at 23%-34% of the value of the projects.

A3.23 Both Ofgem (2016) and Ofgem (2021) include a number of international case studies of cost savings in other relevant infrastructure projects. The evidence, in terms of cost savings arising from competition, the sector, country and mode of competition is summarised in Table A1 below.

A3.24 The case studies imply a wide range of cost savings from competitive tendering but with the majority of savings lying between a range of 20%-35%. We note

that this range is consistent with the evidence on cost savings from 'very late' competition from the OFTO tendering rounds (23%-34%).

A3.25 For the purposes of this IA we have assumed an average cost saving in scenarios 2 & 3 of 22%, relative to the counterfactual. This is a conservative assumption given which represents the lower bound estimate of the OFTO tender savings and also coincides with the lower quartile of the full range of evidence which we have reviewed in Table A1.

A3.26 The assumption is also conservative in the sense that it is only likely to capture the static benefits of competition arising from direct cost savings. More dynamic benefits such as the development of new design solution and innovations that are of relevance to the rest of the sector are unlikely to be captured in any of the cost efficiency estimates we have surveyed.

A3.27 Table A1: Summary of evidence on cost savings from competition in procurement of large infrastructure projects.

Stage of competition	Project	Sector	Cost saving	Country
Early	Duff-Coleman EHV 345 kV Competitive Transmission Project	Electricity transmission	42%	United States
Early	Hartburg-Sabine Junction 500 kV Competitive Transmission Project	Electricity transmission	22%	United States
Early	Fort McMurray West project	Electricity transmission	21%	Canada
Early	Western New York Public Policy Transmission	Electricity transmission	22%	United States
Early	East-West tie line	Electricity transmission	22%-33%	Canada
Early	Artificial Island Project	Electricity transmission	60%	United States
Late	GB OFTO	Electricity transmission	22%-31%	United Kingdom
Late	Thames Tideway	Sewage	24%	United Kingdom

Source: Extending competition in electricity transmission, Ofgem 2016

The benefits of ex ante cost assessment

A3.28 For the counterfactual and Scenario 1, we assume that ex ante cost assessment results in reductions to baseline costs arising from the exercise of engineering scrutiny and (where possible) benchmarking of TOs proposed business plans. In comparison we assume, all else equal, that costs are higher in scenarios 2 & 3 as a result. We have based the quantum of these costs on the percentage reduction in totex between TO's submitted RIIO-T2 business plans and totex

baselines in the RIIO-T2 Final Determinations, having isolated the effect for a reduction in volumes or outputs. While somewhat simplistic in approach this provides an illustration of the quantum of benefits arising from ex ante cost assessment on a like for like basis (ie excluding the effect of a reduction in volumes). This yields an increase in totex, relative to the counterfactual, in scenarios 2 & 3 of approximately 10%.

The cost of a lack of incentives to deliver baseline costs

A3.29 In Scenario 3 we assume that there are no incentive mechanisms to deliver outturn costs at totex baselines. Theoretically this is expected to result in cost overruns as TO's would have little incentive to control upward cost pressures arising during the price control period. This is particularly likely to be the case in the current inflationary environment with global supply chain constraints.

A3.30 There is no precise way to measure the difference, as there is no way to directly measure what costs would have been under different regulatory options on a like-for-like basis, but it would be expected to be positive. For the purposes of this IA, we quantify the size of this cost overrun using evidence from Giovanelli and Rotund (2020). In particular we use the estimates in this study of the difference in the increase in airport charges observed over the 2015 to 2017 period for the subset of airports which were subject to ex ante regulation compared to those subject to ex post regulation. This analysis shows that the increase in charges was 10% greater for the airports subject to ex post regulation. This estimate is supported by the findings of Abito (2019) who measures the difference in prices between an electricity utility under rate of return regulation versus a counterfactual utility subject to ex ante incentive regulation. The study found an estimated difference is prices of 11%.

A3.31 This scale of this difference is consistent with the expectation that higher prices will arise where TOs as a contractor lack the incentives to keep costs down, having controlled for the other benefits of an ex post regime (such as flexibility). We use this as a proxy for the level of cost overrun which is expected to occur under the ex post regime modelled in Scenario 3.

The benefits of minimising delays to the deployment of transmission infrastructure

A3.32 In contrast to the counterfactual, under Scenarios 1-3 we assume that the process for setting baselines does not result in any delay to the roll out of transmission infrastructure. For the purposes of this IA we use the same methodology and inputs as the CBA for Ofgem's December 2022 ASTI decision

which is based on the 'delay regret cost' for each project.[63] This is defined as the additional cost to consumers of delaying a project by one year compared to its Earliest in Service Date (EISD). These delay regret costs, which are calculated by the ESO, are driven by the cost of constraints caused by a year's delay.

A3.33 As per the ASTI CBA we apply the average delay regret value as a percentage of the total cost (calculated from the projects in the January 2022 NOA to load related investment in the counterfactual baseline. The relevant value is calculated as 35% of project value for a years delay (calculated using projects greater than £100m in the January 2022 NOA). In applying this value, we implicitly assume that the profile of January 2022 NOA projects, in terms of their value of constraint alleviation to cost ratio, is similar to those investments within the scope of our IA. We consider this is a reasonable assumption given that the majority of load related investments fall under CSNP. We note that this estimate does not include the unquantified benefits of a reduction in carbon emissions from the acceleration of the deployment of net zero infrastructure.

Costs of regulation

A3.34 A cost under scenario 1 is the cost to Ofgem and TOs (which is ultimately passed on to customers) of Ofgem's full business plan assessment process under the RIIO-2 price review framework. Costs of Ofgem monitoring TOs' application of effective procurement and working with the ITA to oversee TOs' procurement practice are also expected to arise under scenarios 2-3. While it is not possible at this stage to accurately quantify the costs to Ofgem and TOs' at of these additional costs, we do have estimates of (i) the total costs to Ofgem from running the RIIO-T2 price control and (ii) the total cost to TOs from preparing their RIIO-T2 business plans and the subsequent engagement with Ofgem through to the publication of Final Determinations.

A3.35 These estimates when taken together are expected to act as an upper bound on the costs to Ofgem and TOs' of effective procurement or conducting a full ex ante cost assessment exercise. The order of magnitude of these estimates is in the tens of millions of pounds, compared to benefits of hundreds of millions of pounds. As such we can be confident that the benefits outweigh the costs in our impact assessment for scenarios 1-3.

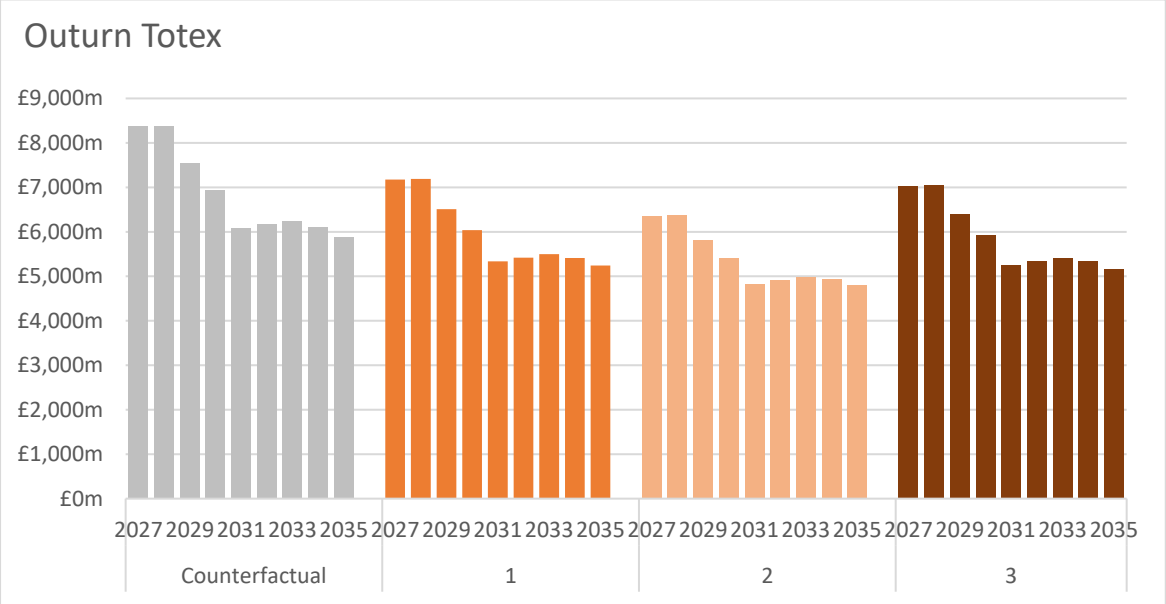
[63] Decision on accelerating onshore electricity transmission investment, Ofgem, December 2022.

Summary of net benefits

Gross totex profiles

A3.36 Figure A2 below summarises the gross outturn totex under the counterfactual and each of the scenarios. As shown in the figure, outturn spend, and therefore cost to customers, is lowest under our preferred option, Scenario 2.

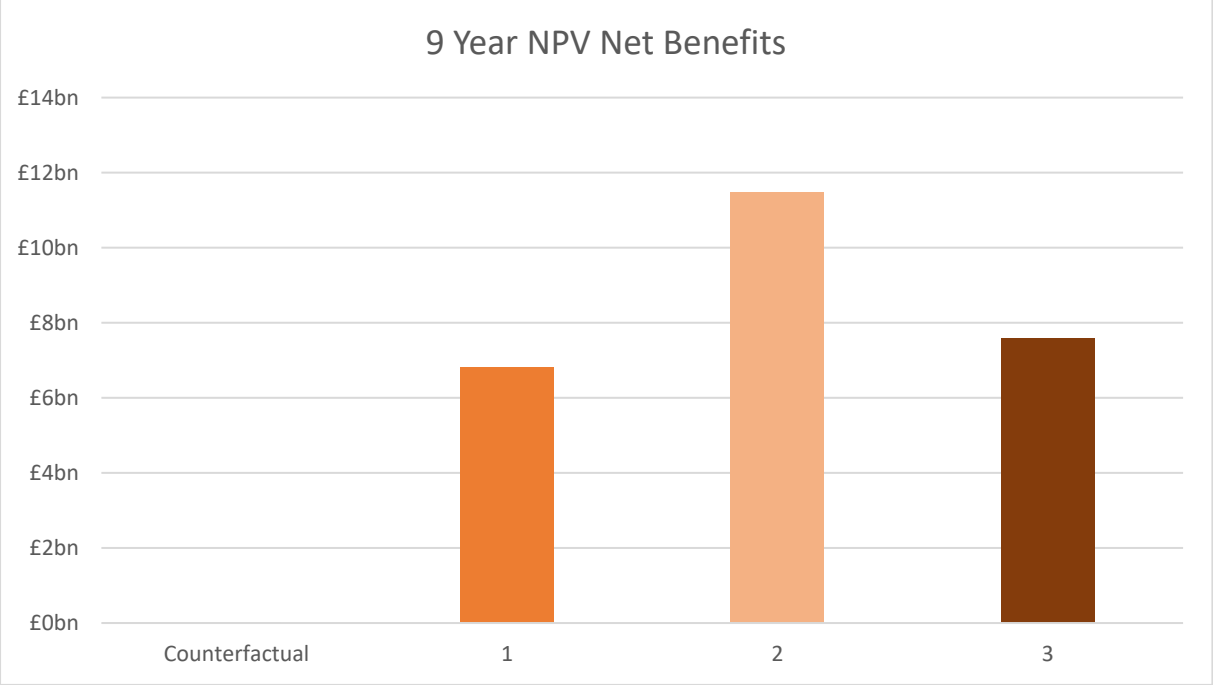
Figure A2: Forecast Totex Forecast under Each Scenario



Net present value

A3.37 Figure A3 summarises the 9-year net present value of benefits under each scenario relative to the counterfactual over the 9-year period from 2027 to 2035. As per Figure A2 above, Scenario 2 delivers the greatest net benefits to customers over the period of approximately £11bn. Scenario 3, proxying a pure ex post regime, delivers benefits greater than Scenario 1 for which there is no requirement for TOs to demonstrate efficient procurement and so the full benefits of competitive procurement are not realised. Net benefits under Scenario 3 are not as great as Scenario 2, however, due to cost overruns arising from a lack of efficiency incentives under a pure ex post regime. Scenario 1 delivers the lowest net benefits over the period but still substantially positive relative to the counterfactual (approximately £7bn).

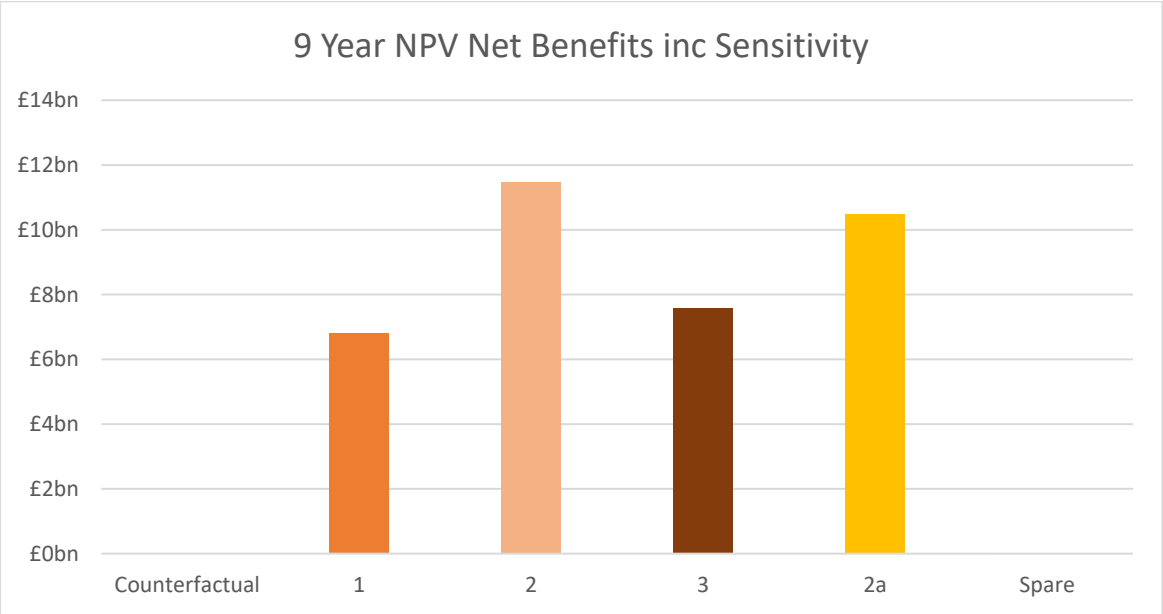
Figure A3 9 Year Net Present Value of Benefits relative to Counterfactual



Sensitivity

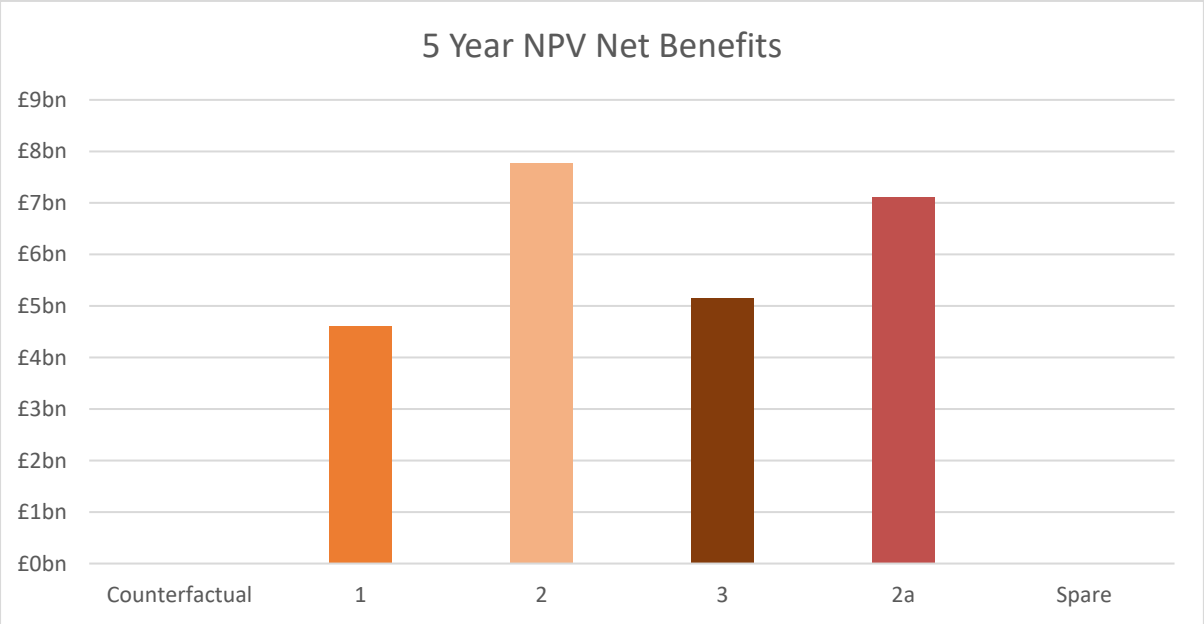
A3.38 As a sensitivity to Scenario 2 we have estimated a fourth scenario, Scenario 2a. Under this scenario we have assumed that outturn load-related expenditure is 2.5% higher than is otherwise the case under Scenario 2. This would correspond to the case where the full efficiency benefits of effective procurement are not realised. Alternatively, it may represent the case where it is not possible for the TOs to deliver effective procurement without some delay. As show in Figure A4 below, the net present value of this Scenario 2a is still positive compared to the counterfactual and at £10bn, greater than Scenarios 1 & 3.

Figure A4: Sensitivity of 9 Year Net Present Value under Scenario 2a



A3.39 As a final sensitivity we estimate the NPV of benefits over the five-year RIIO-3 price control period only. As shown in Figure A5 this does not materially alter the relative estimates of benefit under each scenario.

Figure A5: 5 Year Net Present Value of Benefits under each scenario



A3.40 In summary, our IA has shown that options which seek to accelerate the delivery of transmission infrastructure are expected to deliver significant benefits. We find that the greatest net benefits are delivered by our preferred

policy option (Scenario 2). While a caveat to our analysis remains that we have not explicitly monetised the additional admin costs that would be incurred under a TO-led procurement regime with an ITA and enhanced Ofgem monitoring, we are confident on the basis of evidence from the cost of the RIIO-2 price control setting process that the associated regulatory costs are of a much lower order than the monetised benefits.

Ongoing costs for Gas Distribution, Gas Transmission and Electricity Transmission

Definition of the counterfactual and scenario

A3.41 As with Electricity Transmission load-related costs, our counterfactual for ongoing costs for Gas Distribution, Gas Transmission and Electricity Transmission is defined as the continuation of the RIIO-2 regulatory framework. As set out in paragraphs 5.41 to 5.44, it is this counterfactual that most closely represents our preferred regulatory design option. Compared to this we have assessed the impact of a scenario where a simpler form of ex ante incentive regulation is used without any cost benchmarking.

Impacts on consumers against the counterfactual

A3.42 The primary benefit of a simplified form of ex ante regulation is savings in terms of the costs of regulation. As an upper bound on the value of this, we have observed from our own accounting information that the cost in terms of full time employees (FTEs) and consultancy fees used to administer the full RIIO-GD2 price control (including development phases) was approximately £6m. Streamlining the price control to omit cost benchmarking is expected to save a material proportion of this cost (£0.5m per annum).

A3.43 The primary cost of moving to a simplified ex ante regime is the potential totex efficiencies that are forgone absent full cost benchmarking. We estimate the order of magnitude of these forgone efficiencies by estimating a counterfactual GD2 price control which sets totex baselines by applying a simple RPI-X formula. This yielded a difference of approximately £500m.[64]

A3.44 While this analytical approach is relatively simplistic, it still suggests very material benefits still exist from benchmarking, in the order of magnitude of hundreds of millions compared to estimated savings in the cost of regulation in

[64] To do so we set initial revenues at the average of historical totex for the sector over the RIIO-1 price control and X at 1%, to represent frontier shift in each year. The resulting revenue allowances were compared to the counterfactual, (ie actual allowances set under the RIIO-GD2 framework).

the region of millions. As such we conclude that the counterfactual scenario of the continuation of a RIIO-2 framework with benchmarking yields substantial net benefits over the alternative scenario.