

Decision

RIIO-2 Sector Specific Methodology – Core document

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In December 2018, we consulted on proposals to set the sector-specific methodologies for the Electricity Transmission, Gas Transmission, Gas Distribution and the Electricity System Operator RIIO-2 price controls starting on 1 April 2021. This document sets out our decision on the policy areas applying across these sectors, except where otherwise indicated. There is a separate annex setting out Finance decisions. Further information on decisions for each sector are set out in separate annexes to this document. Network companies will use this information to develop their Business Plans over the remainder of 2019.

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1. Executive summary

Overview

- 1.1 In December we consulted on our sector-specific methodologies for the next round of RIIO price controls beginning in April 2021, covering electricity transmission, gas transmission, gas distribution, and the electricity system operator (ESO).
- 1.2 This document provides our decisions on the methodologies for these sectors, considers responses to consultation and sets out the reasons for our decisions. In addition, we set out further proposals for consultation in a few areas. The impact we expect from the changes in our methodology for RIIO-2 is set out throughout the documents and in the Draft Impact Assessment that will be published shortly after this document.

Ensuring the energy networks for a smarter, cleaner future

- 1.3 Ofgem sets price controls to ensure that the private companies who have a monopoly on the operation of Great Britain's gas and electricity networks continue to act in the best interests of energy consumers. These networks are essential to the functioning of society and the economy, moving energy from where it is produced to homes, businesses, and other premises across the country.
- 1.4 Since 2013 we have used the RIIO (Revenue = Incentives + Innovation + Outputs) framework to set the price controls. The next set of RIIO price controls (RIIO-2) will operate from April 2021 for electricity and gas transmission, gas distribution and the ESO, and from April 2023 for electricity distribution.
- 1.5 In RIIO-2, consumers will continue to want to receive a safe, reliable and affordable supply of energy. We will respond to this through our principal objective of protecting the interests of existing and future consumers, including those in vulnerable situations or that are poorly served by the gas or electricity networks. We achieve this by ensuring that consumers get value through the efficient and sustainable operation of the networks and delivery of associated services.
- 1.6 These objectives must be achieved within the context of an energy system transition that is happening at pace. The move to a low carbon future will continue, with increasing amounts of renewable generation and more homes and businesses getting their heat and power from cleaner energy sources.
- 1.7 For the electricity networks, the shift towards electric vehicles will accelerate and the growth of distributed energy resources is also expected to continue. Demand side measures will help us avoid having to build new generating or network capacity to meet peak demand, as will storage and electric vehicles, which may help to shift demand or release electricity onto the system when it is needed.
- 1.8 The pathway towards the decarbonisation of heat remains uncertain as a number of other energy sources and technologies are explored. This includes electrification, hydrogen networks, and local low carbon heat networks, each of which could have a different impact on the future use of the existing networks. Indeed, in his Spring Statement, the Chancellor of the Exchequer announced a proposal to introduce a Future Homes Standard which would future-proof all new homes with low carbon heating from 2025. Government policy in this area could change quickly and we need to make sure the appropriate arrangements are in place during RIIO-2 to accommodate this.

- 1.9 The way consumers use and buy energy will change too. Smart meters, combined with half hourly settlement and smart technologies, will allow consumers who shift consumption to save money and help balance the system.
- 1.10 While these transformations in the energy system driven through the forces of decarbonisation, decentralisation and digitalisation will continue, the realisation and timing of many of these changes is uncertain and presents a number of challenges.
- 1.11 The energy networks sit at the heart of our energy system and the RIIO-2 price controls will have a critical enabling role. Within the context of Ofgem's wider integrated strategy for network regulation, RIIO-2 will need to be sufficiently flexible and agile to respond to a range of exciting future possibilities. This approach will ensure that networks can connect and manage the low carbon technologies required to meet climate change targets, maintain high levels of reliability, at the same time as ensuring that network capacity is not increased unnecessarily or at high cost.
- 1.12 In some situations, this approach will require a move away from traditional investment to newer, more flexible solutions, including smart grid technologies and increasing use of flexible contractual arrangements between demand and generation consumers. In the longer term, coordinated action between networks could also increasingly deliver much lower whole system costs to consumers. To do this well will involve new thinking, innovation and a transformation in how networks use and share data. If these opportunities are taken networks will be able to cut costs by reducing the need for expensive new power lines and substations and free up existing grid capacity for new generation and demand.
- 1.13 We are adapting our framework of regulation to enable these changes. In RIIO-2 we are placing a renewed focus on the things that really matter to consumers, retaining strong but cost-efficient incentives, encouraging greater efficiency and innovation, while lowering the cost of investing in the networks. This approach will support the delivery of high quality services but at lower cost, ensuring that the energy networks are fit for a smarter, cleaner energy future that is fair to all consumers.

Summary of key decisions

- 1.14 In RIIO-2 our aim is to drive better value for consumers by learning the lessons from previous price controls, at the same time as preparing the networks for the energy system of the future¹. We achieve this by:
- confirming an outputs and incentive framework that focuses on the things that really matter to consumers, with rewards and penalties set accordingly.
 - setting outputs for the networks so they play a full role in the decarbonisation of power, heat, and transport, and mitigate their direct impact on the environment.
 - imposing tough scrutiny of network company Business Plans through the Enhanced Engagement programme, including through the RIIO-2 Challenge

¹ In the future, it is possible that system operation arrangements may need to change more significantly, for example from changing government policy or new legislation, Ofgem's review of the ESO separation arrangements, or other developments affecting the energy systems. If material policy changes arise, we will work with NGGT and other relevant stakeholders to explore how they would impact the RIIO-2 price control framework, and develop revised arrangements if they are needed.

Group and the company-level User Groups and Customer Engagement Groups.

- confirming protections for consumers in vulnerable situations, including stronger minimum standards of service; higher direct compensation to consumers who suffer poor service; dedicated funding to connect fuel poor households to the gas grid where appropriate; and measures to help networks build effective partnerships to deliver integrated energy solutions to households and businesses.
- retaining an incentive regime that ensures the transmission and gas distribution companies can continue to strive for efficiency but with a higher share of the savings returned to consumers compared to current levels.
- reducing the harm to consumers from forecasting error by indexing rather than trying to forecast key variables such as interest rates and the process of construction and labour.
- reducing the return that can be paid to equity investors through better alignment with current market conditions and the risks that networks face in a stable and predictable price control environment.
- confirming the opportunity to use competition rather than monopoly regulation to drive efficiency, including the use of new flexible technologies to compete with traditional investment, where the benefits are likely to exceed the costs.
- confirming the introduction of automatic correction mechanisms (called return adjustment mechanisms) to protect against the risk of extreme deviations from expectations set at the start of the control.
- retaining a strong innovation stimulus covering both large-scale transformational R&D projects, as well as smaller scale process or technological innovations.
- supporting a broad definition of 'whole system' and introducing mechanisms to facilitate the co-ordination of expenditure between networks that could help respond to a decentralised energy system.
- including measures that ensure the actions and investment that network companies undertake in RIIO-2 maintain the long-term safety, security and reliability of their networks.

Achieving a reasonable balance

- 1.15 We have had to balance competing ambitions in deciding on these methodologies. We want RIIO-2 to be accurate so that consumers do not pay any more than is necessary. We also want RIIO-2 to be a simple price control that is easy to understand.
- 1.16 In this document, we explain why we have decided not to proceed with certain elements of our December proposals (such as the competed element of the Business Plan Incentive, anchoring as a return adjustment mechanism in gas distribution, and the cashflow floor). This will help to streamline the regime and minimise complexity. We have carefully considered our proposals in light of the consultation responses received. We are now satisfied that the mechanisms that remain are in the interests of consumers, and are both necessary and proportionate.

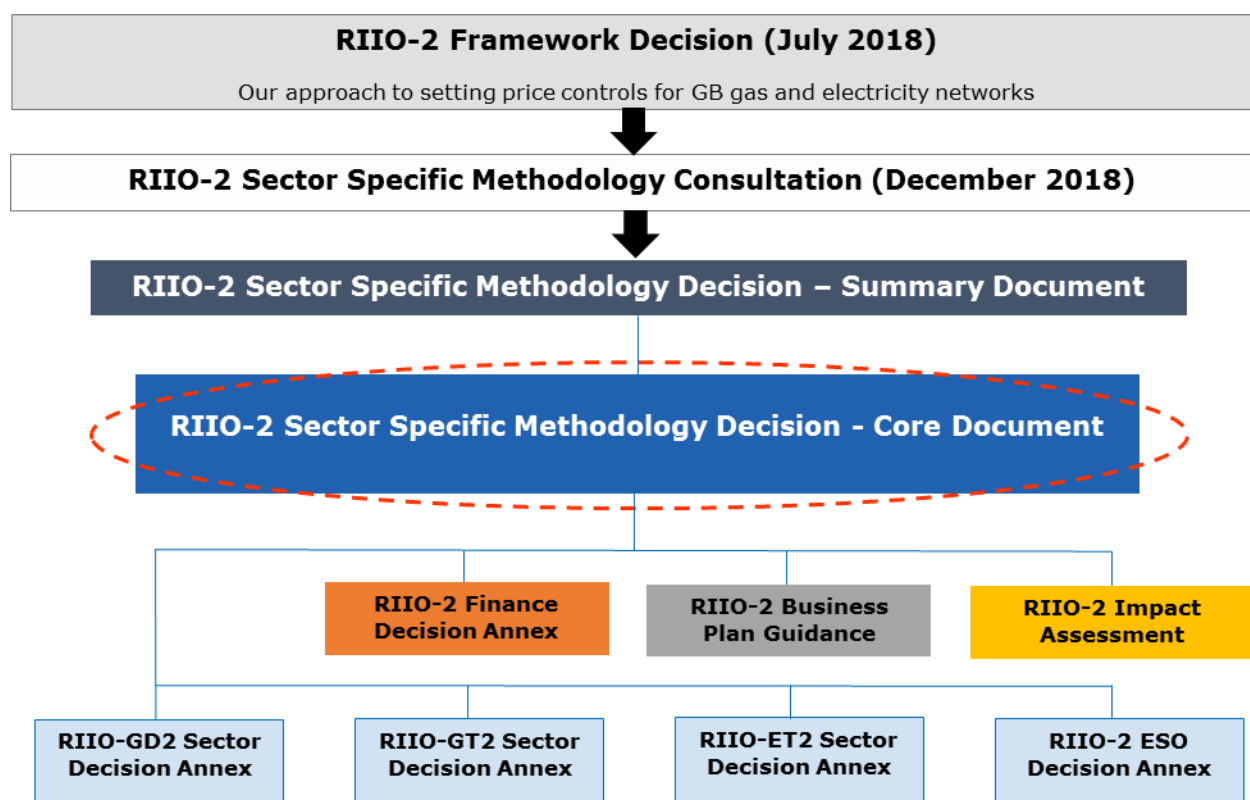
- 1.17 We believe that the process of setting upfront allowances and targets brings with it an unavoidable degree of error and risk. We will apply learning from previous price controls and put in place controls for factors outside of the companies' influence. These measures though do not eliminate the possibility of higher returns than anticipated and an expectation of outperformance will be an input to determining the cost of equity. We are also introducing new mechanisms to allow consumers to share the benefits of any unanticipated factors driving very high returns.
- 1.18 We also have to balance the risks that companies are exposed to with the returns that they are able to earn. RIIO-2 will have stronger protections for network companies to cope with changes in the operating and financial environment (such as potentially lower incentive rates, and indexation mechanisms to automatically revise allowances for changes in interest rates and the prices of inputs such as construction and labour). These should lower the risk companies will be exposed to in RIIO-2 compared to RIIO-1. At the same time, our evidence base (including from the capital competitions we run for offshore transmission assets) suggests that investor return expectations have declined since RIIO-1. Although we are not setting numbers for the cost of capital at this stage, we consider that the working assumptions provided in this document (based on current market data) represent a fair balance between risk and return for investors in RIIO-2.
- 1.19 We also have to balance the interests of different groups of consumers. For instance, we are introducing additional protections and support for consumers in vulnerable situations. This will be targeted at areas where network companies are best placed to deliver solutions, and where it is appropriate to fund these through network charges (that are paid by all consumers). Similarly, to protect the interests of future consumers, we are putting in place a framework to guide the role the companies play in protecting the environment and promoting the decarbonisation of transport, heat and power. This will be supplemented by innovation support and the encouragement of whole system and long-term planning to help support the transition to a smarter, more flexible, sustainable low-carbon energy system.
- 1.20 Finally, we wish to ensure that the services delivered by network companies appropriately reflect the local priorities of consumers in the regions that they serve. Our enhanced engagement framework – together with the opportunity for network companies to propose bespoke outputs informed by this engagement - is designed to achieve this.

Structure of this document and sector-specific annexes

- 1.21 Many of the features of RIIO-2 will be common to the sectors with price controls starting in April 2021. In this core document we make decisions that apply across these sectors, except where otherwise indicated.
- 1.22 The type of network services that the companies need to deliver will be different among the sectors. This reflects their separate functions and the needs of their respective users and consumers. For this reason, we provide a separate annex for each sector (ET, GT, and GD) and the ESO, in which we set out the sector-specific methodology decisions, including on outputs and incentives.
- 1.23 Given the volume of technical detail involved in the financial aspects of price controls, we have provided an overall summary of our decisions in the core document, with much greater technical detail in a separate finance annex.

- 1.24 In December, the reasoning, analysis and evidence associated with our consultation proposals was integrated into the consultation document, with a relatively high-level approach to impact assessment published alongside this. While there is analysis supporting our decisions within this document and annexes, we will also publish a separate, more comprehensive draft impact assessment shortly after this decision document. The impact assessment will be preliminary since we have not yet seen network company spending plans for RIIO-2. We intend to publish a full impact assessment at the Determinations stage in 2020.
- 1.25 While a number of the overarching principles set out in this core document should apply to the ESO, the practical application of these principles may be different. We have explicitly identified which sections within this core document apply to the ESO, while the ESO decision document sets out our consolidated methodology for the ESO price control. The ESO document also consults further on certain specific features related to the new remuneration model and stakeholders are invited to respond to this consultation by 5 July 2019.
- 1.26 Further detail on company reporting requirements is also provided through an updated version of our Business Plan guidance which will be published shortly after this decision.
- 1.27 Figure 1 below provides a map of the documents to be published as part of the decision on the RIIO-2 Sector Specific Methodologies.

Figure 1: Document map



2. Introduction

What is this decision on?

- 2.1 This is our decision on the methodology we will apply for setting the RIIO-2 price controls for the gas distribution and gas and electricity transmission networks and the electricity system operator. These price controls will run for the period 2021-2026.
- 2.2 The next price control for electricity distribution network operators (DNOs) will begin in 2023 and we are not making decisions for that sector at this time.
- 2.3 We will consult on arrangements for the electricity distribution sector prior to any decisions being made for that sector. This consultation process will start later this year with the publication of an open letter. This process will include consideration of the applicability of the approach taken in other sectors and the specific features of electricity distribution that may warrant a departure from that approach.
- 2.4 Subject to that consultation process, and any developments in the interim period that we will take into account, certain decisions set out in this document may be capable, in principle, of application to the electricity distribution price control starting in April 2023 (RIIO-ED2).

RIIO-2 objective

- 2.5 Our objective for RIIO-2 is to ensure that regulated network companies deliver the value for money services that both existing and future consumers need. This involves achieving the following outcomes:
 - Meet the needs of consumers and network users: Network companies must deliver a high quality and reliable service to all network users and consumers, including those who are in vulnerable situations.
 - Maintain a safe and resilient network: Network companies must deliver a safe and resilient network that is efficient and responsive to change.
 - Deliver an environmentally sustainable network: Network companies must enable the transition to a smart, flexible, low cost and low-carbon energy system for all consumers and network users.
- 2.6 We are seeking to achieve our objective for RIIO-2 by:
 - Giving consumers a stronger voice in setting outputs and in shaping and assessing Business Plans;
 - Allowing network companies to earn returns that are fair, represent value for consumers, and properly reflect the risks faced by network companies in the prevailing financial market conditions;
 - Incentivising network companies to respond, in ways that benefit consumers, to the risks and opportunities created by potentially dramatic changes in how networks are used;
 - Using the regulatory framework, or competition where appropriate, to drive innovation and efficiency, and
 - Simplifying the price controls by focusing on items of greatest value to consumers.

Interlinkages within RIIO-2

- 2.7 Given the breadth of the RIIO-2 framework, there are inevitably a number of interlinkages between different elements. Where possible, we highlight these likely interactions in each policy area and in the subsequent Impact Assessment. In many instances, we may only be able to fully consider these once we have received Business Plans. In reaching a final decision on the RIIO-2 settlement for each licensee, we will consider how the individual building blocks and associated sub-components interact with one another to deliver a price control that is in the interests of existing and future consumers, and in line with our statutory duties.

Links with wider Ofgem Forward Work Programme

- 2.8 RIIO-2 interacts with a number of activities identified in our Forward Work Programme² as well as some of the priority areas outlined in our strategy for regulating the future energy system.³ Throughout the RIIO-2 programme we will continue to ensure that all of these areas are aligned where appropriate, and in line with our statutory duties. In doing so we will remain focussed on protecting the interests of existing and future consumers and supporting the transition to a smarter, more flexible, sustainable low-carbon energy system.
- 2.9 There are strong ties between the RIIO-2 framework and our ongoing reforms to how users are charged for access to and use of the networks. Network charges serve two purposes:
- They can provide signals about how users can impose costs and confer benefits on the network in future, to encourage them to use existing network capacity as efficiently as possible and reduce the need for new network investment. (We call these 'forward-looking charges').
 - They are necessary to ensure that network companies' allowed revenues are recovered in a fair way that minimises distortions. (We call the network charges that ensure this 'residual charges').
- 2.10 In electricity transmission and distribution, we published our decision to launch a review of network access and forward-looking charging arrangements (the 'Access project') in December. We have also consulted on proposals for how residual charges (and other non-locational embedded benefits) need to change through our Targeted Charging Review (TCR).
- 2.11 In gas, Ofgem is supporting industry in taking forward the conclusions of the Gas Charging Review to ensure that the Transmission Operator charges for access to, and use of, the gas transmission network are compliant with EU law.
- 2.12 Access and forward-looking charging reforms aim to make better use of existing networks and reduce the costs of future network expansion. Hence they may change the triggers for investment or the amount of investment expected for both electricity transmission and distribution, as well as change how network costs are recovered from network users.
- 2.13 Electricity and gas network companies are closely involved in all aspects of these network charging reforms, and we expect them to consider the implications in their Business Plans. However, we will also need to consider what mechanisms

² Forward Work Programme 2018-19

https://www.ofgem.gov.uk/system/files/docs/2018/03/forward_work_programme_2018-19_0.pdf

³ Our strategy for regulating the future energy system <https://www.ofgem.gov.uk/publications-and-updates/our-strategy-regulating-future-energy-system>

and processes are required to deal with any changes to existing arrangements that may arise during the price control period. One important interaction is that any change to the connection charging boundary at distribution level would affect the allowed revenue which DNOs recover from all customers under the RIIO-ED2 price control, rather than directly from a connecting customer. We aim to align any change in this area with the start of RIIO-ED2, with the policy direction confirmed in sufficient time so that DNOs can reflect this in their Business Plans.

- 2.14 We issued a consultation in December 2018 on our proposals to modify the electricity transmission and distribution licences to clarify licensees' responsibilities in delivering whole system outcomes. We set out expectations that they engage with other licensees (and where appropriate relevant stakeholders) to consider the impacts of their actions on other parts of the network, to coordinate in order to identify and implement whole system solutions and to collect and share relevant information and data where this can support whole system outcomes. The consultation closed in February 2019 and we are considering consultation responses.⁴ We expect to publish our decision this summer.
- 2.15 The industry is already beginning to develop whole system approaches. Work under the ENA's Open Networks programme is making progress in whole system planning and forecasting through future energy scenarios and by assessing options for expanding the Network Options Assessment (NOA). The Open Networks programme is also working to improve and streamline the connections process at the transmission-distribution interface, and improve the statement of works process. This programme has published a feasibility report looking at the potential for a system wide resource register to capture information on flexibility providers across the system in a streamlined way.
- 2.16 In late 2018, Ofgem together with BEIS and Innovate UK established an Energy Data Taskforce chaired by Laura Sandys and managed by Energy Systems Catapult. Their aim is to develop a set of recommendations for how industry and the public sector can work together to facilitate greater competition, drive innovation and enable more dynamic markets in the energy sector through improving data availability and transparency. The Taskforce have been discussing their ideas with a wide range of stakeholders. We are aware that the Taskforce are considering recommendations that relate to network companies and the RIIO price controls. In RIIO-2, they are exploring a range of options including asking companies for a data strategy as part of the Business Plans. We will want to revisit this area, in consultation with industry and wider stakeholders, in the light of the taskforce recommendations once their report is published. This could include considering whether further components need to be added to RIIO-2 to enable a modern, digitalised energy system.
- 2.17 In November 2018, the government announced an Engineering Standards Review. These standards have changed little in over 50 years, and may be no longer fit for purpose for the future energy system. This review could have a significant impact on network investment, the level of security built into these networks, the reliability of these networks, the quality of energy supplied, opportunities for connecting to and using these networks, and how distributed energy resources and smart technology could supplement the need for traditional network reinforcement. We recognise that RIIO-2 may need to adapt to respond to the outcomes of this Review. We expect network companies' Business Plans to put

⁴ <https://www.ofgem.gov.uk/publications-and-updates/consultation-licence-conditions-and-guidance-network-operators-support-efficient-coordinated-and-economical-whole-system>

forwards mechanisms to deal with the range of possible outcomes from this Review.

Framework for appeals

- 2.18 In December, we sought views on a proposal which would permit us to consider the extent to which a successful appeal has consequences, if any, on other components of the price control. Please refer to paragraph 2.20 of our December consultation document for full details.
- 2.19 A number of respondents commented that they would require further details on our proposals in order to reach a view and to be able to fully respond to our consultation question. Two respondents also noted the recent letter from the Competition and Markets Authority (CMA) Chair, Andrew Tyrie, to the Secretary of State⁵, outlining proposals for reform of the competition and consumer protection regimes.
- 2.20 In addition, respondents raised concerns that our proposals went beyond GEMA's statutory powers and could undermine the current appeals framework. A number of respondents have also questioned the need for these proposals, expressing the view that the current regime already allows the CMA to consider interlinkages.
- 2.21 Respondents also highlighted concerns that our proposals could have a negative impact on regulatory certainty, which would be detrimental to consumers in the long-term. Finally, some of the responses also provided detailed comments on the operation of the existing appeals regime, which we are also carefully considering. For example, it was argued that the appeals mechanism frustrates consideration of the price control as a whole as it allows appellants to set the boundaries of the appeal, and the matters which are in dispute, and that it is not clear how Ofgem could defend the merits of the appealed components by looking to non-appealed components. One respondent noted that it hopes the CMA would consider the price control as an overall package. Further, another respondent noted case management issues in ensuring that matters in dispute are aired and considered in pre-appeal discussions between all potential appellants and Ofgem.
- 2.22 Our policy thinking in this space is still in development. We will consult further ahead of any decision on fully developed proposals being taken. A decision could be in the form of a statement of policy in Final Determinations. It may (or may not) involve a mechanism in the licence.
- 2.23 Our proposals are not intended to undermine the current appeals framework, which we made clear in our December consultation. We also recognise the importance of an effective appeals mechanism and of maintaining regulatory confidence. Any future consultation will seek views from stakeholders on the scope of any such statement of policy (and / or licence mechanism) and on the circumstances under which either may apply. The policy objective will be to maintain the integrity of the appeals regime and mitigate detrimental impacts on regulatory confidence, while, insofar as is possible and where appropriate, maintaining a coherent regulatory settlement.

RIIO-2 timetable

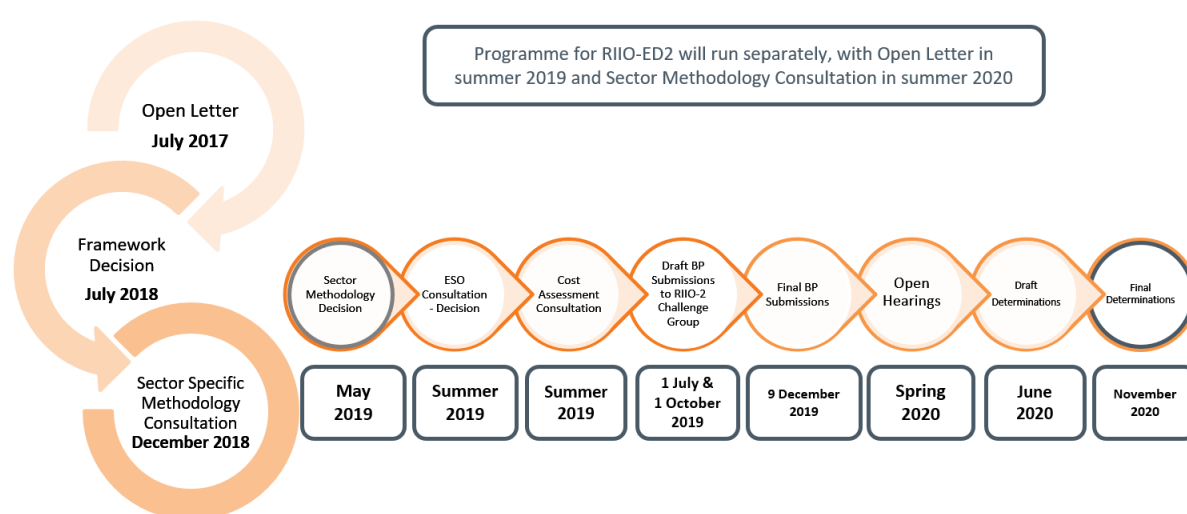
- 2.24 We began the RIIO-2 process in July 2017 when we issued an open letter, setting out the context and high level aims for RIIO-2 and inviting views from

⁵ Available here: <https://www.gov.uk/government/publications/letter-from-andrew-tyrie-to-the-secretary-of-state-for-business-energy-and-industrial-strategy>

stakeholders on the framework. In March 2018, we issued a consultation on the proposed overarching RIIO-2 framework and followed this with our RIIO-2 Framework Decision in July 2018.

- 2.25 In December 2018 we issued a consultation on the methodology we proposed to apply in each of the sectors with price controls starting in 2021. This consultation closed in March and we received 133 responses. All non-confidential responses have been published on our website alongside this Decision Document. We expect to receive Business Plans from network companies on 9 December 2019.
- 2.26 Figure 2 below illustrates where we are in the process of setting price controls for electricity transmission, gas transmission, gas distribution and the electricity system operator.

Figure 2: RIIO-2 timetable



- 2.27 In this document, we have made decisions on some of the values we intend to apply to parts of the price control. For instance, in relation to the Business Plan Incentive we confirm that the value of this will be worth up to +/- 2% of Final Determination totex. In other areas the values we provide are our current working assumptions and we will confirm the final value through the process of issuing Draft and Final Determinations. This will include elements such as the parameter values for the cost of equity, some of the incentives for output delivery (including any caps and collars that may be applied) and the range that we will apply for determining the incentive rate for totex. We have made clear throughout where the value should be considered a working assumption or the value that we have decided to apply.

The RIIO Handbook

- 2.28 The first RIIO price controls were introduced in 2013. In developing the RIIO model we published a RIIO Handbook⁶ to provide guidance on how the model works in practice. The RIIO Handbook was intended to be a living document. Our intention was that it would be adapted over time to reflect learning and development as the regulatory framework was applied to the price controls. However, we note that the Handbook has not been explicitly revised since its publication in 2010, and it is therefore not an accurate reflection of the RIIO-2

⁶ <https://www.ofgem.gov.uk/ofgem-publications/51871/riiohandbookpdf>

framework. The RIIO framework as contained in the RIIO Handbook has been adapted by our July 2018 Framework Decision, and further adapted by those aspects of the framework which were carried over to the strategy phase and which we are deciding as part of this decision.

General feedback

2.29 We believe that consultation is at the heart of good policy development. In addition to the specific points we are consulting on in the ESO document, we welcome any comments about how we've run this consultation. We'd also like to get your answers to these questions:

- Do you have any comments about the overall quality of this document?
- Do you have any comments about its tone and content?
- Was it easy to read and understand? Or could it have been better written?
- Are its conclusions balanced?
- Did it make reasoned recommendations?
- Any further comments?

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

3. Giving consumers a stronger voice

In this chapter we outline how RIIO-2 will strengthen the voice of consumers both in setting the price control and in the day-to-day operation of the network companies.

The chapter is applicable to the Electricity Transmission, Gas Transmission, Gas Distribution and Electricity System Operator RIIO-2 price controls.

Introduction

- 3.1 Stakeholder engagement is a core element of RIIO. By stakeholders, we mean individuals, organisations or communities that are impacted by the activities of the network company. This includes existing and future consumers. We want companies to respond to changes in how their networks are used, and this requires an understanding of stakeholder needs to be at the heart of the way companies run their businesses. We expect network companies to undertake high quality engagement with their stakeholders continuously, and not consider it as a stop and start activity. This is to ensure their businesses evolve and align with rapidly changing consumer needs.
- 3.2 RIIO-1 aimed to achieve this by requiring Business Plans from network companies to be supported by high quality stakeholder engagement and by introducing a Stakeholder Engagement Incentive. We believe this approach worked well for consumers in RIIO-1 and it was one of the key successes of the RIIO framework.
- 3.3 For RIIO-2, we want to see network companies building on their engagement activities in RIIO-1 and seek further improvements to ensure they deliver the outcomes that consumers value most. To enable this, we are enhancing the engagement arrangements to give consumers a stronger voice.

Stakeholder engagement and RIIO-2 Business Plans of network companies

- 3.4 Given the success network companies have had in engaging with stakeholders in RIIO-1, we now expect high quality stakeholder engagement to be a business as usual activity. As a minimum, we expect the RIIO-2 Business Plans to:
 - a. be underpinned by robust and high quality engagement with stakeholders.
 - b. include proposals on how companies will maintain a process of robust and high quality engagement with stakeholders on an ongoing basis within RIIO-2 to enable them to meet the needs of existing and future customers and consumers. This might include consideration of (but not be limited to):
 - how they will incorporate best practice from RIIO-1 into their activities.
 - what commitments they will give to support engagement (including what the consequences of non-delivery will be)
 - what tools will they use to monitor their performance and delivery of commitments
- 3.5 We are also replacing the RIIO-1 Stakeholder Engagement Incentive in RIIO-2 with an opportunity for the network companies to propose bespoke outputs in their Business Plans on stakeholder engagement, where these reflect stakeholder requirements for the company's engagement to go above and beyond the business as usual activity they would otherwise undertake in order to deliver additional value to the consumer.

Challenge to RIIO-2 Business Plans

- 3.6 In our RIIO-2 Framework Decision, we confirmed new arrangements for enhanced stakeholder engagement for RIIO-2. These arrangements involve challenge to the company Business Plans by groups consisting of expert consumer advocates and network users.
- 3.7 These groups have now been set up;⁷ each transmission company and the ESO now has a User Group (UG), and each gas distribution company has a Customer Engagement Group (CEG). These company specific groups are independently chaired. They will provide, for our consideration, a public report with their views on the companies' Business Plans for RIIO-2. We have also established the RIIO-2 Challenge Group, which is also independently chaired⁸. This group will also provide, for our consideration, a public report on all of the companies' Business Plans.
- 3.8 We expect companies to engage fully with the groups and to provide them with timely information to enable them to robustly challenge the companies' Business Plan proposals. In Chapter 11, we describe our decision to have a new Business Plan incentive. This will involve an assessment of the cost and quality of the Business Plans. Companies that fail to engage adequately with the RIIO-2 Challenge Group, UGs and CEGs may face a penalty as part of this Business Plan Incentive. Companies that are able to demonstrate the additional value their Business Plan will deliver may receive a reward. We will seek views from these groups on the quality of engagement by each company as part of their report (due to be submitted alongside Business Plans in December 2019), and these will be taken into account along with other information in our assessment of Business Plans.
- 3.9 We also confirmed that we will hold Open Hearings prior to our Draft Determinations of the price control to focus on areas of disagreement raised by the UGs, CEGs and the RIIO-2 Challenge Group, and to invite any other evidence in support of, or against, company Business Plans.
- 3.10 The Authority retains the ultimate responsibility for making Determinations relating to the Business Plans.

Role of CEGs/UGs beyond the price control settlement process

- 3.11 We will continue to consider the extent to which CEG/UGs could be involved in network companies' engagement activities in the run up to Draft and Final Determinations in the RIIO-2 price control process.
- 3.12 Beyond the price control settlement process (ie during RIIO-2), we consider that the CEGS/UGs could play a key role in monitoring the delivery of company Business Plans during RIIO-2, for example in areas such as stakeholder engagement, network investment and innovation, workforce planning, reducing their environmental impact and progress towards decarbonisation. We will consider updating our Enhanced Stakeholder Engagement guidance⁹ in the future to provide guidance on the role of these groups beyond price control settlement process.

⁷ Further details on all the groups can be found [here](#).

⁸ Further details on the workplan and priorities of the RIIO-2 Challenge Group, including information on Business Plans that must be submitted to the RIIO-2 Challenge Group on 1 July 2019 and 1 October 2019, can be found [here](#)

⁹ [Enhanced Stakeholder Engagement Guidance](#)

4. What consumers want and value from networks

Overarching framework for outputs and incentives:

In this chapter, we outline the overarching framework for ensuring that the price controls deliver what consumers want and value from the network.

In the three chapters that follow, we describe in more detail how this framework will

- Meet the needs of consumers and network users
- Maintain a safe and resilient network
- Deliver an environmentally sustainable network.

The chapter is applicable to the Electricity Transmission, Gas Transmission, Gas Distribution RIIO-2 price controls.

It is also partly applicable to Electricity System Operator RIIO-2 price controls. Although we do not intend to introduce new or amended outputs for the ESO price control, we expect the general spirit of the outputs and incentives messages set out in this chapter to continue to apply to the ESO. Additionally, although we do not expect the proposals around asset resilience to apply to the ESO, we would expect the cyber and physical security proposals to apply to it, together with the general principles around workforce planning.

Decisions	<ul style="list-style-type: none"> • We are consolidating RIIO-1 output categories into three new output categories. • We are confirming the principles underpinning the three types of outputs (Licence Obligations, Price Control Deliverables (PCDs), and incentivised outputs) to bring additional clarity to the overarching framework.
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Summary of issue

- 4.1 In this section, we outline our overarching framework for outputs and incentives in RIIO-2. The framework presented here will apply to electricity and gas transmission, and gas distribution networks. This section does not apply to the ESO as it will operate under a different price control framework; see the ESO decision annex. Please see paragraphs 2.1 to 2.4 for details of how our decisions might apply to DNOs.

December proposals

- 4.2 In this section, we summarise the proposals we consulted on in December. Please refer to our December consultation for full details.

Consolidation of output categories

- 4.3 In our RIIO-2 Framework decision, we stated that we would specify outputs as a set of consumer-facing outcomes that we expect companies to deliver. In December, we proposed consolidating the six RIIO-1 output categories into three new output categories for RIIO-2. These are:
- Meet the needs of consumers and network users;
 - Maintain a safe and resilient network; and

- Deliver an environmentally sustainable network.
- 4.4 Our view was that there is significant benefit in articulating clear, consolidated outcomes.

Overarching outputs framework design

- 4.5 In our RIIO-2 Framework decision, we signalled that we would improve clarity and accountability by distinguishing between three types of outputs. In December, we also consulted on introducing further clarity and accountability into our overarching framework by distinguishing between three different types of outputs:
- Licence Obligations;
 - Price Control Deliverables (PCDs - specific deliverables with funding attached); and
 - Service level improvements incentivised through Output Delivery Incentives (ODIs).
- 4.6 This overarching framework underpinned the more detailed outputs and incentives proposals, on which we sought views in each of the sector-specific annexes.

Summary of responses

Consolidation of output categories

- 4.7 We received 29 responses to our questions on the consolidation of the output categories. 21 respondents generally supported our proposed output categories (or had no strong views), noting that the consolidated outcomes accurately reflect consumer needs. Some respondents noted that the proposed changes are in line with the outcomes that they have tested with their stakeholders.
- 4.8 While there was broad support for the new output categories, a number of respondents suggested amendments or additions to the proposed approach. Several argued for stronger wording around environmental commitments, and that drafting or definition changes would help tighten the categories. Similarly, some respondents suggested additional categories may be needed to cover the full range of outputs, such as financing or the role companies can play in society more broadly.
- 4.9 Some respondents (including some network operators) raised concerns about whether the consolidation of outputs is a step forward, arguing that this change reduces clarity, does not align with the interests of consumers, and that it will be difficult to map network companies' activities onto these categories. Others noted that the categories do not explicitly cover value for money.

Overarching outputs framework design

- 4.10 We received 21 responses to these questions. Our proposed framework received support in principle from a number of respondents, who highlighted the importance of setting minimum standards through Licence Obligations, and of ensuring that incentives reward true improvements in performance, rather than business as usual activities.
- 4.11 However, a number of respondents requested further clarity on the overarching framework. For example, some respondents highlighted that the distinction between PCDs and Licence Obligations is unclear, with a potential risk of

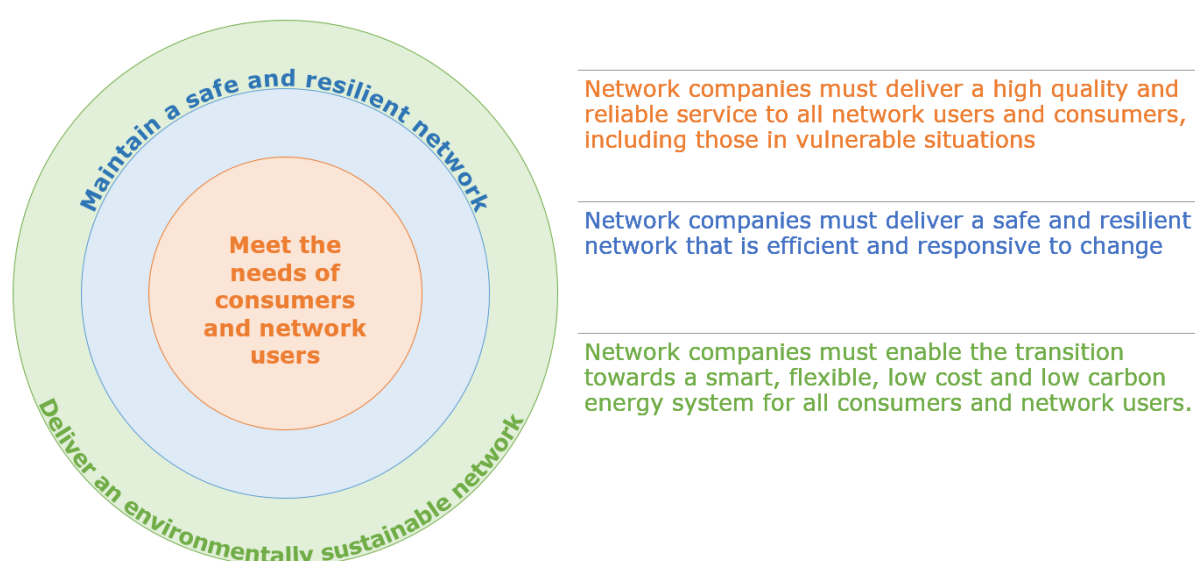
penalising companies twice. Others noted that the Network Asset Risk Metric (NARM) could be classified either as PCDs or ODIs. One respondent also pointed to micro-management as an additional potential risk associated with the introduction of PCDs, and another expressed concern that the proposed framework is notably different to the RIIO-1 framework.

- 4.12 Respondents noted that they would also welcome further clarity on processes for setting targets for ODIs, and reviewing and assessing performance, for example around under or over-delivery of ODIs and PCDs.
- 4.13 Other respondents noted the need to ensure that the framework continues to drive improvements in quality of service, does not dampen incentives on efficiency and innovation, and remains flexible and responsive to change.

Decision

Consolidation of output categories

- 4.14 Having reviewed the responses to our December consultation, we have decided to proceed with consolidating the existing six output categories into three new output categories for RIIO-2. We think these categories clearly articulate the outcomes we expect network operators to deliver through their price control settlement.



- 4.15 While we welcome respondents' suggested amendments and additions to the output categories aimed at tightening the categories, we do not believe that the suggested changes would add to our expectations of what network companies should deliver in RIIO-2.
- 4.16 Furthermore, our view is that these output categories are not intended to be restrictive. We want to strike a balance by capturing the key outcomes that network operators should deliver without providing a comprehensive list of subjects to cover. We understand that network companies may have started engaging with stakeholders prior to our decision to consolidate output categories and therefore may have been using different language to describe output categories as part of their stakeholder engagement. We expect network operators to base their Business Plans on the three new RIIO-2 output categories outlined

here and to clarify where appropriate how the approach they have used in their stakeholder engagement maps to these categories.

- 4.17 We note that there was strong support for additional wording and/or clarity on environmental commitments. We explain how our framework for RIIO-2 addresses environmental considerations later on in this chapter.
- 4.18 Similarly, some respondents called for the inclusion of categories to cover affordability and/or the need to consider wider interests. We believe that the 'core' output of 'Meet the needs of consumers and network users' will drive network operators to include such activities in their approach to running a network.

Design of Overarching outputs framework

- 4.19 We outline here our decision on the overarching framework for RIIO-2 and confirm the principles underpinning the three types of outputs (Licence Obligations, PCDs, and incentivised outputs). In light of the feedback received in response to our consultation, we provide additional detail on the design of the outputs framework and how it will operate. Please see the sector-specific annexes for further details on how we are implementing this framework in individual sectors.
- 4.20 We also note that this framework is likely to continue evolving as we further develop our policy thinking in the run up to Draft and Final Determinations and in light of the companies' Business Plans.

Licence Obligations

- 4.21 We will use Licence Obligations to set minimum standards which network companies must achieve through their baseline funding, with clear consequences where these are not met through the use of penalties and/ or enforcement action.
- 4.22 Where appropriate, we will update existing minimum standards and/ or set new minimum standards from the start of RIIO-2. In doing so, we will consider the extent to which proposing stricter minimum standards would require an increase in related cost allowances or existing payments and the extent of the resultant benefit to consumers.

Price Control Deliverables

- 4.23 Where appropriate, we will use PCDs to capture those outputs that are directly funded through the price control and where the funding provided is not transferrable to a different output or project. The purpose of a PCD will be to ensure the conditions attached to the funding are clear up-front. By introducing PCDs, we are building on the lessons learned from the RIIO-1 Mid Period Review processes, where we identified a number of projects for which conditions around funding and delivery were not clearly identified up-front.
- 4.24 Not all projects or deliverables will need a PCD; we will take a proportionate approach in their application.
- 4.25 PCDs could include for example:
- Large one-off capital projects – to be delivered to a stated specification, budget or timing
 - Commitments or assumptions associated with a baseline level of funding – eg MW of connected generation, or kilometres of pipe replacement

- Other input activities to be delivered to a stated standard – eg activities related to changes in government policy. These will be determined by us on a case-by-case basis.
- 4.26 We will ensure that the use of PCDs drives the right behaviours. We will build in sufficient flexibility to ensure genuine efficiencies are captured and acknowledged in assessing delivery against PCDs. We will ensure PCDs do not restrict network operators' freedom to innovate or be efficient in delivering the best outcomes for consumers. We believe this is a natural evolution for the RIIO framework that builds on the RIIO-1 approach, ensuring network operators retain the freedom to deliver for their consumers, while providing additional up-front clarity on conditions for funding.
- 4.27 We note that one stakeholder has suggested that we explain how our proposals interact with the principles of the RIIO Handbook, with particular reference to the guidance on the use of secondary deliverables¹⁰. As highlighted in paragraph 2.28, the RIIO Handbook is a living document. Our view is that our approach is in line with the RIIO-2 Framework decision. We recognise that flexibility may be required in setting PCDs.
- 4.28 We also recognise that in some instances, there may be uncertainty around the need for or scope of a PCD. We may choose to introduce uncertainty mechanisms to address such uncertainty.

Interactions between PCDs and uncertainty mechanisms:

- 4.29 We expect PCDs to be funded up-front using specified allowances, either in totex baselines or using uncertainty mechanisms such as reopeners. Once a PCD has been specified, we propose to specify the conditions under which allowances will be automatically refunded to consumers if the need for them disappears due to a change in circumstances. In some situations, we may also consider attaching PCDs to projects that are not funded up-front in the Business Plan. For example, if we fund a project later in the price control period (such as a visual amenity project), we may choose to establish that project as a PCD.

Delayed and poor quality delivery:

- 4.30 Companies should not benefit from delay in delivery or failure to deliver PCDs, including delivery which does not meet a specified standard. However, PCDs are also intended to ensure companies deliver the right outcomes for consumers, without preventing companies from driving efficiencies and innovation. We will link certain PCDs to licence conditions to help ensure that consequences for failure to deliver, late delivery, or delivery to a lower than expected standard are specified. This could include, for example, the automatic deferral of allowances to ensure revenues are better aligned with the delivery of the output while removing any gains related to timing, or the introduction of penalty mechanisms.
- 4.31 We recognise that in some cases it may not be appropriate to apply automatic penalties. Therefore, we may also use the licence to clarify how we will assess company performance in relation to delayed or poor quality delivery.

Encouraging innovation and efficiency/ changes in scope:

- 4.32 In the same way that companies should not benefit from a delay in delivering PCDs, we expect that companies should seek to innovate and deliver the most

¹⁰ Please see table 4 in the RIIO Handbook: <https://www.ofgem.gov.uk/ofgem-publications/51871/riiohandbookpdf>

efficient solution for a PCD. We do not expect network operators to stick to their original plan where a more efficient alternative is available; PCDs are not intended to reduce the effects of the Totex Incentive Mechanism (TIM), but instead to provide a clear link between specific costs and outcomes for consumers.

Service level improvements incentivised through ODIs

4.33 We have decided to apply the following principles when setting financial and reputational ODIs:

- We will apply ODIs to reflect the fact that the baseline level of allowances we provide is associated with a baseline level of service delivery when measured across all a network's customers.
- We will seek to broadly equalise the incentives to improve service quality or cut costs at the margin, by setting baseline service quality levels so that the marginal benefit to consumers of further improvements is proportionate to the marginal cost in higher network charges. However, this may not always be possible to make precise due to the lumpy nature of network investment.
- In calibrating rewards or penalties for improving/falling short of the required standards, we will seek where appropriate to reflect the value to the consumer of the service improvement (or the detriment caused by service degradation), measured by methods such as willingness to pay.
- Where value to the consumer is difficult to assess, we may use relative incentives in cases where the outputs are broadly comparable across network companies.

4.34 In all other cases, we will consider the use of reputational rather than financial incentives. As is the case with RIIO-1, we may introduce incentives that include both a financial reward and penalty, and/or a combination of financial and reputational incentives. Similarly, some outputs may be specified as a combination of licence conditions (for instance, for a minimum standard) and/or ODIs (for performance targets above a minimum standard) and/or PCDs.

4.35 We set out our decision on the common ODIs that will apply in individual sectors in each of the sector-specific methodology decisions. This includes next steps on setting the financial rewards and/ or penalties associated with these ODIs, and on setting targets.

Rationale / evidence to support decision

4.36 The decisions we outline here will ensure that the RIIO-2 price controls drive value for consumers across the board. Our rationale is outlined against the relevant decisions and is summarised below.

4.37 The introduction of three new consolidated output categories will bring further clarity and accountability by articulating the outcomes network operators must deliver through their price control settlement.

4.38 In addition, our overarching framework for outputs and incentives will enhance transparency and accountability, through the identification of three new types of outputs and clear accountability for output delivery.

Interaction with other policy areas

- 4.39 Our sector-specific annexes explain how we have decided to implement this framework in individual sectors.
- 4.40 The overarching outputs and incentives framework we have set out here also interacts with a number of other policy areas including:
- Our decision on a Business Plan Incentive (BPI)
 - Our approach to assessing Business Plans and setting cost allowances, including the use of uncertainty mechanisms.

5. What consumers want and value from networks: Meeting the needs of consumers and network users

In this chapter we describe how we will apply the framework of outputs and incentives to deliver value for money for consumers.

The specific outputs that we expect networks to deliver are set out in each of the sector-specific methodology decision documents. This includes the approach we want networks to take in relation to consumer vulnerability. The detail on this topic is provided in the gas distribution annex and is summarised here to help stakeholders understand how RIIO-2 will deliver for all consumers, including the most vulnerable.

Framework for the use of relative and flexible incentives and bespoke outputs

Decisions	<ul style="list-style-type: none"> We are confirming the overarching framework for the use of relative and flexible (ie dynamic) incentives. We are confirming the criteria for assessing bespoke Output Delivery Incentives (ODIs).
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December proposals

Dynamic targets/incentives

- 5.1 We want to ensure ODIs for RIIO-2 deliver value for money for consumers. To this end, in our December consultation, we proposed that, where appropriate, we would take a dynamic approach to:
- setting targets - for example by setting targets based on sector-wide performance or reflecting continuous improvements in performance through the use of improvement factors; and/ or
 - designing incentives - for example by allocating rewards and/ or penalties on the basis of relative performance.
- 5.2 We also recognised that there are a number of considerations to take into account in deciding whether to introduce dynamic targets and/ or incentives, or whether to take a static approach:
- where we wish to maintain static incentives, the extent to which evidence of consumer value and/or cost of delivery is available when considering the potential size of rewards and/ or penalties;
 - the extent to which we would like our framework to drive competition and/ or collaboration in different areas; and
 - where appropriate, the extent to which company performance and/or company circumstances are comparable.

Criteria for bespoke ODIs

- 5.3 In line with the introduction of a framework designed to give consumers a stronger voice, we highlighted in December that there would be opportunities for network operators to propose bespoke ODIs (in addition to PCDs), reflecting feedback from their stakeholders and Customer Engagement Groups/User Groups. This could include proposing:

- bespoke ODIs, reputational and/or financial in nature, including in areas already covered by common sector-wide outputs; and
- more stringent individual targets or incentive rates for common ODIs.

5.4 We also sought views on a set of criteria for the introduction of bespoke ODIs.

Summary of responses

Dynamic targets/incentives

- 5.5 We received 22 responses to these questions. Respondent views highlighted the potential advantages and disadvantages of using dynamic and relative incentives. On the one hand, a number of respondents raised concerns that using dynamic and/or relative incentives could dampen the impetus to collaborate, questioning whether such an approach would have a positive impact for consumers. Respondents also highlighted the need to ensure that comparable and consistent information is available and/or that regional differences are taken into account. Finally, one respondent suggested that the impacts of any move to dynamic and/or relative incentives should be robustly assessed.
- 5.6 On the other hand, a number of respondents highlighted the potential benefits associated with using dynamic and/or relative incentives. Such an option could mimic competition and help address issues around information asymmetry; one respondent stated the view that dynamic and/or relative incentives should not dampen collaboration. Another respondent noted that a competed-for pot approach may be appropriate in the context of incentives where performance and/or benefits to consumers are harder to quantify (eg around stakeholder engagement).
- 5.7 A number of respondents noted that the use of relative incentives and targets have the potential to increase the overall risk of the price control, without necessarily providing an associated increase in the rewards available. They noted that this risk would be driven by the overall reward/penalties being outside of the companies' control, which would have knock-on effects on cash flow, expected returns and, potentially, the cost of capital.

Criteria for bespoke ODIs

- 5.8 We received 18 responses to the questions on bespoke ODIs. In general, respondents showed support for allowing network companies to propose bespoke outputs. Several highlighted the importance of bespoke outputs being supported by clear evidence that they are in consumers' interests, backed up by robust stakeholder engagement. Similarly, respondents called for a transparent, robust, and appropriate methodology to assess any proposed new outputs.
- 5.9 Other respondents raised concerns about the increased complexity that may result from bespoke outputs, noting that developments in this sphere will have interactions with other elements of the price control. They also noted that the desire for network companies to propose bespoke ODIs (and, therefore, factor this into the assessment of a competitive Business Plan Incentive) is likely to be at odds with the drive for greater collaboration across the companies.
- 5.10 A number of respondents raised concerns around the time that will be available for scrutiny of any bespoke outputs or incentives that are proposed. This ties in with views from other respondents who suggested that companies should not be restricted to providing quantitative or direct evidence of the benefit of the proposed outputs. Some respondents believe network companies should be able

to propose bespoke outputs during the price control, while others maintained that this should only happen during the Business Planning stage.

Decision

Dynamic targets/incentives

- 5.11 We confirm that we will consider the use of dynamic targets and/ or incentives, as appropriate. We provide further details on our overarching framework for these here. Our view is that these can, in some circumstances, play a key role in ensuring that incentives deliver value for money for consumers.
- 5.12 Some respondents noted that dynamic targets and/or incentives could have a negative effect, for example by potentially decreasing collaboration or increasing uncertainty. We recognise that dynamic targets and/ or incentives may not be appropriate in all cases. However, as noted in one of the responses to our consultation, there are a number of examples of dynamic targets and/ or incentives in RIIO-1. We also note that, in some cases, we may not know how much customers value an output and a dynamic incentive may be more effective in this context.
- 5.13 We will consider whether to introduce dynamic/relative incentives on a case-by-case basis, weighing up the advantages and disadvantages of all options. Our sector-specific annexes detail our decision on outputs and incentives in individual sectors, including commentary on the use of dynamic targets and/ or incentives.
- 5.14 In applying dynamic targets and/ or incentives, we will refer to the overarching framework in Appendix 1.

Criteria for bespoke ODIs

- 5.15 Where network operators propose bespoke ODIs of a financial nature, we will consider whether proposals deliver value for money and are backed by robust evidence and justification. We confirm that we will assess these against the criteria we consulted on in December. Our case by case approach to the assessment of bespoke ODIs proposed by the network companies will be guided by the application of the criteria set out in Appendix 1 in evaluating proposals for bespoke ODIs put forward by network operators in their Business Plans.
- 5.16 While respondents were generally supportive of our proposed approach to bespoke outputs and did not propose any material changes in our criteria for assessment, one response highlighted that bespoke outputs could add unnecessary complexity to the framework. This respondent also noted that it is likely that bespoke proposals would be of benefit across the relevant sector. We agree this is possible and, where appropriate, we will consider whether bespoke outputs should in fact become common outputs and apply across an entire sector. We encourage network operators to engage with Ofgem on potential bespoke ODIs ahead of the Business Plan submissions.

Rationale / evidence to support decision

- 5.17 Where appropriate, the use of dynamic targets and/ or incentives will drive performance by ensuring targets remain stretching and encouraging network operators to outperform their peers.
- 5.18 Our framework will also ensure that, where network operators propose bespoke ODIs, these are backed by robust evidence and represent value for consumers.

Next steps

Business Plans

Licence Obligations

- 5.19 Network operators may propose new/ updated Licence Obligations reflecting feedback from their User Groups or CEGs. We will assess these proposals as part of our assessment of their Business Plans.

Price Control Deliverables

- 5.20 We expect network operators to identify potential PCDs as part of their Business Plans. We will consider our treatment of any proposed PCDs during our cost assessment of company Business Plans.
- 5.21 As part of their Business Plans, and where appropriate, network companies should identify:
- Whether an uncertainty mechanism is likely to be required (see also Chapter 9 of this document); and
 - the potential consequences of any delay or failure to deliver PCDs. This should include considerations of any potential detriment to consumers.

Bespoke ODIs

- 5.22 Network operators may propose bespoke ODIs as part of their Business Plans (reputational and/ or financial) reflecting feedback from their User Groups or CEGs.
- 5.23 Network operators may also propose more stringent targets under the ODIs that apply in their sector, reflecting feedback from their User Groups or CEGs.
- 5.24 We will assess all proposals relating to ODIs as part of our assessment of company Business Plans.

Upcoming decisions

Caps and collars for sector-wide ODIs

- 5.25 For some ODIs we may set upper and/or lower limits ('caps and/or collars') on the penalties or rewards associated with them.
- 5.26 We will generally consider setting ODI-specific upper limits on rewards where we have good reason to believe that further improvements in performance would be of limited value to consumers.
- 5.27 We will generally consider setting ODI-specific lower limits on penalties where we have good reason to believe that network companies may face financeability issues in the absence of a mechanism-specific floor.
- 5.28 We will consult on any ODI-specific caps or floors as part of Draft Determinations, clearly setting out the rationale in each case. Where we set caps and collars for ODIs they will be represented as a fixed amount, which can be expressed as either a percentage of network companies base revenue or £xm.
- 5.29 Where appropriate, we have indicated potential caps and collars for specific ODIs that we may introduce in our sector-specific annexes, to assist companies in the Business Planning process. However, we think it is appropriate to fully consult on

these at the Draft Determinations stage, once we have more robust information available through the network companies' Business Plans.

The role of the networks in supporting and protecting consumers in vulnerable situations

- 5.30 Supporting and protecting consumers in vulnerable situations is a priority for us and we think distribution networks in particular have an important role in helping consumers in vulnerable situations.
- 5.31 In this section, we outline the approach we are taking to ensure the gas distribution networks (GDNs) play an appropriate role in supporting and protecting vulnerable consumers. This is a summary of our approach and more detail is provided in the gas distribution sector annex.
- 5.32 We have decided that the GDNs' role in addressing vulnerability should be related to their existing areas of competence, activity and consumer interaction. This could include assisting vulnerable consumers during outages, identifying consumers in vulnerable situations and taking measures to address vulnerability when responding to emergencies and through their customer service functions.
- 5.33 We will use the following package of measures to target consumer vulnerability.

Table 1: The consumer vulnerability package

Minimum Standards	Licence Obligation to provide priority services for specific customer groups
	Guaranteed Standards of Performance
	Fuel Poor Network Extension Scheme
	Principles-based Licence Obligation on treatment of consumers in vulnerable situations
Supporting Flexibility	Consumer vulnerability and carbon monoxide safety use-it-or-lose-it allowance
	Innovation funding
Incentives supporting ambition and delivery	Business Plan Incentive
	Consumer vulnerability reputational incentive

6. What consumers want and value from networks: Maintaining a safe and resilient network

In this chapter, we set out our decisions on how RIIO-2 will support asset resilience and workforce planning and ensure the networks can improve their cyber resilience and the physical security of key sites.

Introduction

- 6.1 The gas and electricity networks across Great Britain have demonstrated a high degree of resilience over many years, and remain resilient today.
- 6.2 The energy system is changing. In particular, society is becoming increasingly reliant on electricity, while continuing to have a high dependence on gas for heating. It is imperative that companies adapt to this changing environment and ensure their networks continue to be resilient into the future.
- 6.3 We provide the companies with sufficient funding to maintain a reliable network. In RIIO-2 we will use the Network Asset Risk Metric (NARM) to ensure companies maintain assets in good condition using the price control funding provided for this purpose.
- 6.4 Companies also need to ensure that their assets are secure. This may require security upgrades to be implemented at critical sites, and investment in flood defences to continue where needed. Critical assets also need protecting where vulnerable to third party damage. Companies are also required to protect their network and information systems from failure, which includes securing them against cyber-attack.
- 6.5 Resilience also depends on companies having sufficient people with the required skills needed to design, build, operate, maintain and repair their networks. Attracting and retaining people into such roles is becoming increasingly challenging, which is compounded by an aging workforce, limited diversity, and competition from other sectors.
- 6.6 This chapter sets out our decisions on the four dimensions of resilience proposals set out in the December consultation: Asset Resilience, Workforce Planning, Cyber Resilience, and Physical Security.

Asset Resilience¹¹

Decisions	<ul style="list-style-type: none"> Confirm that the relative measure of reduction of long-term monetised network asset risk should be used to justify the funding for, and to define outputs related to the asset management activities. Confirm principles for treatment of over-delivery and under-delivery of outputs as well as funding approach for work spanning price controls.
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Summary of issue

- 6.7 In order to maintain the network asset risk – a combination of the probability and impact of asset failure – within reasonable bounds, network companies carry out asset management activities such as replacement or refurbishment. Network assets typically have a long operating life (more than 40 years in many cases).

¹¹ This section does not apply to the ESO as the ESO does not generally own long-life physical assets. We will address how the ESO manages its assets separately via its wider price control framework.

Asset management work can therefore have an impact over a much longer period than the timeframe of a price control.

- 6.8 We need to guard against potential consumer detriment of asset management shortfall within a price control leading to an unacceptable higher risk of asset failure in the future. Setting appropriate levels of funding and required outputs requires careful consideration on a forward-looking basis of how prone assets are to failure and what the consequences are likely to be.
- 6.9 In RIIO-1, the cost allowances were tied, where possible, to the delivery of the Network Output Measures (NOMs) that reflected the levels of risk reduction that network companies should achieve. The way the asset risk is measured and incorporated into network companies' asset management decision-making has been developed through RIIO-1 into a common methodology for each sector based on monetised risks. This provides a positive foundation for RIIO-2 to reflect consumer value in setting the cost allowances and required outputs, as well as in measuring network companies' delivery and addressing any deviation from output targets.

Definition and use of the NARM

December proposals

- 6.10 We proposed to build on the progress made in RIIO-1 and use monetised risk – which we term the Network Asset Risk Metric (NARM) – as the primary measure for setting the output targets and allowances associated with asset resilience. In the December consultation we set out that we expected the general proposals to apply to the four sectors (gas and electricity transmission and gas and electricity distribution), with variation in some detailed application approach. However, we also noted that we were not consulting on the application approach for electricity distribution, which is two years behind the other sectors in its regulatory cycle, and that further development and learning between now and the sector specific methodology development for RIIO-ED2 may lead to some changes of approach. We will consult fully on that methodology prior to making any decisions for RIIO-ED2. We also stated that we will address how the ESO manages its assets via its price control framework, separately from the network asset risk proposals.
- 6.11 We proposed to define the NARM outputs using a relative measure of monetised risk, ie the reduction of asset risks achieved through work delivered during RIIO-2 (as opposed to an absolute measure, which would be the risks remaining in the entire asset base).
- 6.12 We also proposed that the NARM should take account of the long-term effect of the work that the companies are funded to do during RIIO-2 through the estimated present value of future benefits. This would be a development to the RIIO-1 measure which is based on a one-year snapshot view of the benefits delivered during the price control period.
- 6.13 Given the current status of collection and verification of relevant data, the asset categories covered by the NARM vary across sectors and sometimes across companies within sectors. For the gas and electricity transmission and gas distribution sectors, we proposed that the NARM mechanisms for RIIO-2 would apply only to the asset categories within the scope of the current NOMs mechanisms as set out in relevant licence conditions.
- 6.14 For electricity distribution, we have started working with DNOs to achieve more alignment across the companies ahead of RIIO-ED2, and to explore the possibility

of extending the scope of the NARM to a wider asset base. The outcome of this work will be reflected in RIIO-ED2 proposals in due course.

6.15 We proposed to use monetised risk to assess the companies' Business Plans and inform allowances and outputs for RIIO-2. We said that we expected companies to set out their longer-term objectives for monetised risk in their Business Plans by:

- setting monetised risk objectives that are informed by stakeholder engagement including appropriate understanding of consumers' willingness to pay, and
- carrying out cost benefit analysis (CBA) to demonstrate that they have selected investment options that efficiently meet their stakeholder-driven objectives and deliver sufficient net benefits for consumers.

6.16 We proposed to use monetised risk as part of our Business Plan assessment to:

- benchmark the companies' proposals
- ensure that allowances are efficient and deliver value for consumers
- set outputs that can be used to hold companies to account for their investment decisions.

Summary of responses

6.17 We received 23 stakeholder responses (of which 11 were from network companies) in respect of asset resilience.

6.18 Respondents were broadly supportive of the use of monetised risk to help justify network companies' asset management investments and to inform the setting of cost allowances and output targets.

6.19 Non-network company respondents tended to agree that monetised risk should be the primary basis for network companies to justify their investment proposals for their asset management activities. However, network companies considered that monetised risk should only be used as part of a toolbox approach to justification. They cautioned that monetised risk methodologies are not yet sufficiently mature, or reflective of all relevant considerations, to enable monetised risk to be used as the primary basis for justifying investment decisions.

6.20 All but one network company respondent that commented on the proposal agreed that a relative risk reduction target was preferable to an absolute one, and that such an approach better aligns allowances and workloads. The respondent who disagreed with this proposal argued that an absolute target is the simplest and most transparent way to ensure risk is allocated appropriately between consumers and network companies, and also that network companies are better placed to manage risk on asset deterioration than consumers.

6.21 Though stakeholders agreed with the principle of defining outputs by using a longer-term risk reduction measure, some respondents (all of which were network companies) expressed some concerns over the maturity, complexity and uncertainty involved in this approach. These stakeholders had some concerns over the timescales available to adequately test the robustness of longer-term risk measures and suggested that the success or failure of the proposal depends on devising and clearly setting out the practical details of implementation ahead of setting targets.

- 6.22 For respondents that commented on the scope of the NARM in terms of asset categories covered, all agreed that for RIIO-2 Business Plan submission, it should remain as they are for RIIO-1 NOMs.
- 6.23 Most respondents, other than network companies, broadly supported our proposal to use monetised risk to assess the companies' Business Plans and set allowances and outputs for RIIO-2.
- 6.24 Several network companies, however, were resistant to our proposal to use monetised risk benchmarking for Business Plan assessment. Their concerns related primarily to the aforementioned difficulties with using a longer-term risk view, and the proposed CBA approaches to justify investment plans. Some noted the difficulty of understanding consumers' willingness to pay to inform their objectives and also argued that monetised risk values are not directly comparable to the cost incurred in delivering the most efficient interventions across a population of assets.

Decision

- 6.25 Our decision is that the NARM, defined as the relative reduction of long-term monetised network asset risk, will be used to justify the funding for, and to set the outputs of, asset management work. The NARM will be part of a toolbox assessment approach including other inputs such as engineering judgement.
- 6.26 On the scope of the NARM, our decision is that for gas and electricity transmission and gas distribution sectors for RIIO-2, this will be as set out in our December consultation. This means that the NARM mechanisms will apply only to the asset categories within scope of the current NOMs mechanisms as set out in the relevant licence conditions.
- 6.27 Asset management works that are out of scope of the NARM will be subject to separate assessment, funding and output arrangements, depending on their drivers and deliverables.

Rationale / evidence to support decision

- 6.28 We note the broad support for our proposals regarding the definition and use of the NARM. We accept that monetised risk may not necessarily be the suitable primary basis for justifying all the investment choices. We expect it to be part of a toolbox approach to justifying and assessing network companies' proposed investments and preferences for chosen strategies. The toolbox approach should also include engineering judgement and CBA in accordance with the relevant sectoral guidance note on engineering justification and investment decision pack guidance¹².
- 6.29 Our decision to use a relative risk reduction measure for all sectors is because this approach is more directly aligned with work that companies are funded to deliver. An absolute measure is likely to be affected more by external changes and could require a greater degree of adjustment to exclude undue windfall gain or loss in reported performance. Even though we will use a relative risk measure associated with the funded work to set output targets, we will still require network companies to report absolute levels of risk over the wider asset base. This will show us how

¹² Draft guidance notes on engineering justification and investment decision pack guidance were published on Ofgem's website on 29 March 2019 alongside draft data templates: <https://www.ofgem.gov.uk/publications-and-updates/riio-2-draft-data-templates-and-associated-instructions-and-guidance/>

they appropriately manage the totality of their assets while targeting interventions on certain assets in RIIO-2, at both stages of planning and delivering work.

- 6.30 We remain of the view that a longer term measure, rather than the single year snapshot approach of RIIO-1, is preferable. This is because it takes account of the longer-term impact on asset degradation of the various intervention options and is therefore more likely to lead to planning and implementation decisions that better reflect consumer value.
- 6.31 We recognise that due to the current maturity of the modelling of long-term risks and uncertainty around longer-term asset risk forecasts, there are difficulties associated with calculating a longer-term measure that accurately reflects the consumer value of investments. There may therefore be limitations in using the long-term monetised asset risks for some CBA approaches to derive optimum solutions in a deterministic way. However, we expect the network companies to use long term monetised risk to help demonstrate that they have chosen to:
- intervene at the optimal time, and
 - use the correct type of intervention (eg where there is a choice between replacement and refurbishment).
- 6.32 Due to differences in risk assessment methodologies and networks, the scope for cross-company benchmarking may be limited in some sectors. However, we intend to utilise cross-company benchmarking where it is appropriate to do so, and also to use benchmarking techniques to validate companies' proposals at asset category, activity, and/or project levels as appropriate.
- 6.33 We set out below some further work related to the modelling and use of the NARM.

Next steps

- 6.34 We will continue to work with the network companies and other stakeholders to ensure that specific technical aspects of the NARM reflect the modelling approaches applied and the data output from the models. We will also take this into account when using the NARM for setting cost allowances and output targets, as explained in the next section.
- 6.35 We have progressed work on a number of relevant aspects with the network companies to make the NARM an effective output measure. These will be further developed in detail and informed by our review of the companies' Business Plans. Our initial thinking is as follows:
- The risk benefit delivered by an intervention varies depending on its timing. Over the five year period of RIIO-2, we would expect to see some degree of variation in the timing of interventions from those set out in the Business Plans. Variations in timing might occur for various reasons, some of which may be outside of the control of the network company. Therefore, to ensure a consistent comparison between output targets and delivery, we will base both calculations on the same timing assumptions regardless of when actual delivery takes place. This may mean assuming, for example, that all delivery takes place at fixed point(s) in time over RIIO-2;
 - Network companies are expected to efficiently manage risks that are reasonably within their control in order to deliver consumer value; and

- The NARM must be based on network companies' robust asset health data and deterioration trends. Ofgem has been conducting an asset data audit across all the electricity network companies. Once that work is completed, we may consider the appropriate approach to ensuring the required data quality.

Dealing with deviation of delivery from output targets

December proposals

- 6.36 We proposed that where a company fails to deliver its output target, it will lose the associated cost allowances for RIIO-2. We also proposed that if the company fails to justify its under-delivery, it will be penalised (in excess of the cost allowances clawed back) by an amount equivalent to the monetised risk benefit that consumers have lost as a result of the under-delivery.
- 6.37 Due to the potential for greater confidence in baseline outputs provided by a shorter price control and the ability to base outputs more explicitly on balance between costs and benefits, we expect network companies to take responsibility for developing and delivering their Business Plans. We therefore proposed that they should be exposed, under the totex incentive mechanism, to the cost of delivering more than their output targets. However, we also proposed to consider relevant criteria and options for maintaining cost neutrality, where there is material consumer benefit to justify delivering more than the targets.

Summary of responses

- 6.38 While most non-network company responses agreed with our proposals, the majority of network companies disagreed with our proposed options for dealing with deviation from delivery targets. This was mainly because of the asymmetric nature of reward/penalty for over-delivery and under-delivery from output targets.
- 6.39 The network companies' responses emphasised that the downside risk outweighed the upside reward in our proposal; they argued this may encourage them to stick strictly to their plans, regardless of whether doing so benefits consumers. Therefore, most network companies suggested they should be held cost-neutral in the case of justified over-delivery. As for under-delivery, almost all network companies agreed that they should not keep any unspent allowances associated with under-delivery. However, they disagreed with the proposal to penalise unjustified under-delivery by an amount equivalent to the monetised risk benefit that consumers have lost, on the basis that it could be disproportionately large compared to the associated original cost allowance.

Decision

- 6.40 Our decision is to proceed in principle as set out in the following paragraphs.
- 6.41 For over-delivery, the default position will be that the cost of over-delivery will be subject to the totex incentive mechanism. However, at the end of RIIO-2, a company may make a case to Ofgem for being held cost neutral for a certain part of the over-delivery on an exceptional basis. Where, having considered the case put forward by the company and any other relevant information, we deem any portion of the over-delivery to be justified, then the company will be made cost neutral for the relevant additional costs it has incurred for that portion of the over-delivery. The cost of over-delivery in this circumstance will be taken to be our view of the efficient cost of such over-delivery.
- 6.42 We will consider cases for justified over-delivery on an exceptional case-by-case basis and intend to apply a high hurdle. Further detail on this will be considered as

part of the Draft and Final Determinations. This may include clearly demonstrating:

- a significant net benefit to consumers compared to on-target delivery,
- that the work that led to over-delivery could not have been deferred to RIIO-3, or to do so would have been significantly less beneficial for consumers,
- that the over-delivery was due to factors that could not reasonably have been included in their Business Plans at the time of target-setting, and
- that they could not, without a significant consumer dis-benefit, have traded risk against other work to deliver overall on-target.

6.43 For under-delivery, the default position will be that we will claw back any allowances associated with the under-delivery plus a penalty which is an amount proportionate to this clawed back amount (with the proportion to be further developed as part of the Draft and Final Determinations). However, at the end of RIIO-2, a company may make a case to Ofgem that some or all of the under-delivery was justified.

6.44 Where, having considered the case put forward by the company and any other relevant information, we deem any portion of the under-delivery to be justified, then we may reimburse the penalty associated with that portion of the under-delivery. We intend to apply a similar high hurdle for companies to justify any under-delivery as will apply to over-delivery, including demonstrating:

- a significant net benefit to consumers compared to on-target delivery,
- that work could not have been brought forward from RIIO-3, or to do so would have been significantly less beneficial for consumers,
- that the under-delivery was due to factors that could not reasonably have been included in their Business Plans at the time of target setting, and
- that they could not, without a significant consumer dis-benefit, have traded risk against other assets not in the original plan to deliver overall on-target.

Rationale / evidence to support decision

6.45 As noted in the previous section, we recognise that the current maturity of the modelling and uncertainty around long-term monetised risk make it difficult to estimate accurately the value of consumer benefit associated with asset management work. Whilst it is an appropriate measure to inform our setting of the cost allowances and output targets, this will not be used in a deterministic way. Consumer benefit lost due to any under-delivery may not be accurately captured by the numerical value of the shortfall in the reduction of long-term monetised risk. We have therefore decided that adopting a penalty mechanism similar to that used in RIIO-1 – a proportion of the relevant cost allowances clawed back – is a more suitable approach.

Next steps

6.46 Before we decide on the detailed aspects of the mechanism, we will carry out further work to ensure that the mechanism works for all potential delivery scenarios and to ensure that it incentivises appropriate company behaviour and efficient delivery.

Work programmes spanning price controls

December proposals

- 6.47 Some asset intervention work may need to start in one price control period but will only deliver an output on completion in the next price control period. We proposed the following two options for funding these types of projects:
- Option 1: allow costs in RIIO-2 only for outputs delivered in RIIO-2. Any expenditure in RIIO-2 on outputs for delivery in RIIO-3 would be logged up and considered for funding in the next price control;
 - Option 2: provide a fixed pot of money in RIIO-2 for funding outputs to be delivered in RIIO-3, carry out a true-up at the end of RIIO-2 and reflect this in funding for RIIO-3.

Summary of responses

- 6.48 The majority of responses preferred our proposed Option 2 over Option 1 (with only two stakeholders supporting the first option); some respondents asked for more clarification of the two options without giving a clear preference.
- 6.49 In support of Option 2, stakeholders argued that the bridging fund between regulatory cycles proposed in this option is more effective for providing long-term benefits, while Option 1 would perversely encourage companies to do only what is absolutely essential in-period and intentionally defer some necessary investment to the following price control period.

Decision

- 6.50 Our decision is to proceed with Option 2. Our reasoning for choosing Option 2 is that it will ensure that companies have sufficient confidence over ex-ante funding for projects spanning into RIIO-3. This should ensure they are properly incentivised to take longer-term views of network risk and choose the optimal commencement date for projects. Option 1 would have led to greater uncertainty over whether companies could recoup any early stage costs on such projects and would have potentially disincentivised efficient delivery.
- 6.51 For the avoidance of doubt, we do not expect it to be necessary to provide a fixed pot of funding for such work for every sector and every network company. This will only apply to high value investments with long lead times from pre-construction to output delivery.

Interaction with other funding mechanisms

December proposals

- 6.52 We proposed to discount the monetised risk impact of any activities that are funded through other mechanisms, when we assess a company's NARM output delivery for RIIO-2. This would include load related projects that also involve asset replacement. We considered that this approach should help to avoid double funding.

Summary of responses

- 6.53 Respondents broadly supported our proposal to discount monetised risk delivered via other funding mechanisms to avoid double funding.
- 6.54 Some stakeholders considered that projects which have multiple drivers should allow for schemes to be suitably apportioned across interacting funding

mechanisms. One respondent suggested that uncertainty mechanisms should be triggered in circumstances where the assumed investment drivers for asset health work covered by other funding mechanisms no longer exist during RIIO-2. One respondent cautioned that increases in the utilisation and loading of networks will result in accelerated degradation of some assets. This will invalidate the assumptions of asset health assessments. It recommended that Ofgem and network companies work with the supply chain to inform the NARM mechanism.

Decision

- 6.55 Noting the broad support in the responses, our decision is to exclude monetised risk delivered through other funding mechanisms in assessing a company's NARM output delivery for RIIO-2.

Next steps

- 6.56 We will continue to work with network companies and other stakeholders to ensure that allowances and outputs can be adjusted under all funding mechanisms so as to ensure appropriate funding levels in circumstances where investment drivers change.

Ring-fenced projects and activities

December proposals

- 6.57 We proposed that it may be appropriate to treat certain projects or activities separately from the NARM mechanism even if they contribute monetised risk benefits. For such projects and activities, we proposed to consider ring-fencing them with separate funding and Price Control Deliverables (PCDs), and discount the monetised risk benefit they deliver from any NARM output delivery.

Summary of responses

- 6.58 There was overwhelming support from stakeholders for our proposal to ring-fence certain activities and projects with separate funding and PCDs. One respondent pointed out that companies should be able to choose to deliver more of a ring-fenced PCD if it is in customers' interests.
- 6.59 Respondents have proposed a number of types of projects and activities that could be ring-fenced, which include: non-load related projects that are not asset health driven; legislative requirements due to safety or resilience; site-specific projects; and, High-Value Projects (HVPs).

Decision

- 6.60 Our decision is to ring-fence certain activities and projects with separate PCDs and allowances, and we will continue to work with companies and stakeholders to identify projects and activities for appropriate application of ring-fencing.
- 6.61 We require licensees to indicate in their Business Plans the projects and activities that, in their view, should be ring-fenced as well as those that should be subject to other funding mechanisms. Whether a company may deliver more or less of a ring-fenced PCD, and any associated allowance adjustments, will be dependent on the nature of the ring-fenced project and activity, and will be considered on a case-by-case basis.

Workforce Planning

Decision	<ul style="list-style-type: none"> Companies should plan for a workforce fit for the future, delivering a modern, diverse, high quality, well-trained, resilient workforce within their baseline regulatory settlement, without any additional funding or incentives.
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Summary of issue

6.62 Resilience is not just about network assets; it is also about the people and processes put in place to build, operate, repair and maintain those assets, without which the ability to deliver the services expected by customers would rapidly deteriorate. Recruitment, training and retention of human resources with the necessary skills is becoming increasingly difficult. This is due in part to an ageing workforce, limited diversity, competition from other sectors and the challenge of attracting young people into the industry and down a technical career path.

December proposals¹³

- 6.63 In our December consultation, we acknowledged the increasing challenge facing network companies in attracting, developing and retaining a sustainable workforce with the technical skills they need to run their businesses effectively. We also noted that this is the responsibility of companies to manage, and failure to do so could ultimately result in poor customer service and networks becoming less reliable and more costly to operate in the future.
- 6.64 To address this issue, we proposed that companies submit a sustainable workforce strategy as part of their wider Business Plans under RIIO-2, taking on board any input from the company's User Groups, Customer Engagement Groups and the RIIO-2 Challenge Group.
- 6.65 We suggested these plans should extend beyond the 5-year time horizon of RIIO-2, covering both direct labour and the supply chain. We also suggested that these plans look to improve workforce diversity, promote multi-skilling and increased productivity, and reflect the more advanced technology skills needed to support the energy system transition.
- 6.66 We encouraged companies to collaborate to establish a common approach to encouraging school leavers/college leavers/technical graduates into the industry, possibly involving the creation of dedicated technical academies for developing key utility skills.
- 6.67 To the extent we consider these plans to be robust, proportionate and demonstrably efficient against a clear evidence base, we proposed that costs associated with delivering these plans could be funded as part of the RIIO-2 revenue allowances. Where extraneous factors introduce risks that companies cannot manage themselves, we suggested that uncertainty in this area could be addressed through indexation of Real Price Effects (RPEs).
- 6.68 We also sought views on what measures could be established to hold companies to account for delivering these plans, without distorting optimal resourcing decisions.

¹³ Our December proposals did not include the ESO. While it will have similar challenges in attracting and retaining the skills they need to operate the system, we consider this separate to the workforce planning issues addressed here. The ESO should reflect on its unique resource challenges in its own Business Plan submission.

Summary of responses

- 6.69 We received 22 responses on this topic, from network companies, Suppliers, Trade Unions, the RIIO-2 Challenge Group, consumer advocates and other industry parties and a number of contractors who provide services to network companies.
- 6.70 Funding for workforce planning and explicit inclusion within RIIO-2 Business Plans was widely supported by respondents. One respondent also suggested the reintroduction of DPCR5 'use-it-or-lose-it' type allowances. The need to recognise regional factors in developing these plans was also suggested, and the need to widen the definition of critical roles.
- 6.71 The general view was that workforce planning was firmly the responsibility of companies to manage as part of their normal activities, without the need for additional regulatory oversight. One respondent suggested that more clarity was required on what should be included in a workforce strategy.
- 6.72 Views on establishing specific KPIs or milestones to hold companies to account for delivery were mixed. Some supported the idea, while others opposed it. One network company expressed concerns that this approach would represent micromanagement, while another was concerned this could potentially punish early movers already investing in their future workforce. Some network companies supported using metrics and milestones to hold companies to account, with one suggesting the development of a skills measure.
- 6.73 Consumer advocates suggested holding companies to account with measures of new recruits/apprentices, diversity, collaboration, retention and turnover. The Trade Unions proposed introducing metrics for workforce satisfaction, diversity and equality, and health and safety, with a dedicated funding pot for workforce development, renewal and training. Another respondent suggested high-level measures rather than KPIs to hold companies to account. One company suggested measures around retention, churn, and diversity, and introducing bespoke ODIs for individual networks.
- 6.74 The RIIO-2 Challenge Group also supported measures to hold companies to account for delivery and suggested a reputational incentive may be appropriate.
- 6.75 One respondent suggested a sustainability incentive could be used to hold companies to account for delivery; others suggested performance reporting and the use of reputational incentives. Another respondent suggested the use of high-level measures and an annual people resilience statement on progress signed by the companies' Executives. Another suggested companies should report on progress.

Decision

- 6.76 Ofgem continues to recognise the challenge faced by network companies in attracting, developing and retaining the skilled workforce needed to run their businesses effectively. However, workforce planning is the responsibility of individual companies to manage as a business as usual activity. Companies should plan to deliver a modern, diverse, high quality, well-trained workforce fit for the future as part of their regular Business Plan submissions. We decided not to include any additional funding, output measures or incentives for workforce resilience in the RIIO-2 framework.
- 6.77 We have carefully considered the arguments around setting specific metrics and milestones for holding companies to account for delivery of their workforce plans.

However, we are 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.

Cyber Resilience

Decisions	<ul style="list-style-type: none"> Network companies should develop and submit Business IT Security plans as part of their RIIO-2 Business Plans. Funding for IT will be provided as part of normal regulatory allowances. Network companies should develop and submit Cyber Resilience plans. A Separate 'use-it-or-lose it' allowance which will be provided to increase Cyber Resilience of operational technology requirements considered appropriate, proportionate and efficient, together with a re-opener mechanism to deal with uncertainty.
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Summary of issue

6.78 Network companies are increasingly dependent on business IT systems and operational technology, which will only increase as networks become smarter, more automated and more digitised. Network companies must ensure these systems are protected and can withstand an ever-evolving cyber-risk landscape.

December proposals

- 6.79 In our December consultation, we proposed to consider Cyber Resilience costs which are (1) efficiently incurred as a direct result of the introduction of the Network and Information Systems (NIS) Regulations 2018, and (2) above 'business-as-usual' activities.
- 6.80 We requested that network companies in all sectors (including electricity distribution and the ESO) develop and submit strategic investment plans for cyber resilience setting out the steps they propose to take during the RIIO-2 period and beyond to comply with the NIS Regulations. These would be in addition to improvements identified against the Cyber Assessment Framework ('CAF') undertaken during RIIO-1.
- 6.81 We indicated that in our role as joint Competent Authority (CA), we plan to publish by June 2019 detailed guidance to inform the development of these strategic plans. However, there was a recognition that it may not be possible to develop such plans until longer-term enhanced security requirements under the NIS Regulations had been clarified.
- 6.82 We said that we expected that costs associated with these strategic investment plans would form part of the RIIO-2 Business Plan submissions. To the extent that these plans are considered appropriate, proportional and efficient, we proposed to fund them through an ex-ante 'use-it or lose-it' allowance reflecting the uncertainty of the associated costs and the evolving cyber-risk landscape.
- 6.83 If network operators are not able to submit their strategic plans by December 2019, we suggested that funding for these operators could be considered through a re-opener mechanism. We proposed that this re-opener mechanism could also deal with any changes in the regulatory and/or risk landscape during RIIO-2.
- 6.84 We proposed that Ofgem would monitor the delivery of these strategic investment plans in the same way as in RIIO-1 to ensure appropriate and proportionate security measures are being put in place and to inform where any funding

adjustments may be required. We suggested that deviation from the plans without Ofgem's approval may result in a 'claw back' of associated funding.

Summary of responses

6.85 We received 17 responses on this subject, including from the ESO, 12 network operators, two suppliers, Citizens Advice and the RIIO-2 Challenge Group. Views on our proposed scope for cyber resilience costs, our proposal for a 'use-it or lose-it' baseline allowance and our proposal to include a re-opener mechanism for cyber resilience costs are summarised below.

Scope of cyber resilience costs

- 6.86 A number of respondents agreed with our proposal for the scope of costs, ie efficiently incurred as a direct result of the introduction of the NIS Regulations, and above 'business-as-usual' (BAU) activities. However, some respondents highlighted the difficulty in separating 'BAU' activities from 'above BAU' activities given the rapidly changing landscape and called for greater clarity on how this is being defined. Others suggested that all cyber costs should be treated the same.
- 6.87 Some respondents suggested that Business Plans should identify initiatives to deal with known risks / threats, with an uncertainty mechanism used to deal with the unknown.
- 6.88 Some respondents noted that cyber investment goes beyond the NIS Regulations, which only cover operational systems rather than business systems, and the scope should be widened to include all such costs.
- 6.89 One respondent suggested we should differentiate between NIS costs and BAU costs, rather than above BAU costs, while another suggested that Cyber Resilience costs should not be treated separately as they are an integral part of the Business Plan. One respondent suggested that only costs above BAU should be funded under this category.

Use-it-or-lose-it Baseline Allowances

- 6.90 Most respondents supported the provision of an evidence-based baseline allowance for projects identified in the strategic investment plans submitted by network companies. Some suggested linking these to the delivery of output measures, others to specific PCDs, while another favoured a more outcomes-based approach. Some recognised the difficulty in setting clear output targets or fixed PCDs given the pace of change in this area.
- 6.91 Support for a separate use-it-or-lose-it allowance for this category of costs was mixed, with half of the respondents opposed to it. Some suggested there would be no incentive to find efficient solutions compared to a set allowance, and this approach could result in inefficient substitution between these and BAU costs. Another suggested that this approach is not reciprocal – it would protect customers from reduced scope/costs but not companies from increasing scope/costs. It was also suggested that this approach would not allow outputs to be adjusted as requirements change.
- 6.92 Respondents generally favoured an incentive-based framework with clear ex-ante allowances and measureable outputs, leaving companies responsible for delivery.
- 6.93 Some respondents were opposed to year-on-year monitoring with the potential adjustments to deal with deviations from their strategic investment plan, with one regarding this as ex-post micromanagement not consistent with the RIIO

philosophy. One respondent supported ongoing monitoring to ensure only necessary investment is undertaken.

Uncertainty Mechanisms

- 6.94 The majority of respondents supported the use of a re-opener mechanism to deal with uncertainty around requirements, unknown and emerging risks/threats, new regulatory requirements and technology changes.
- 6.95 Some suggested this should operate mid-term, 2-3 years into the control, and others suggested a low or zero - materiality threshold. One respondent proposed a logging-up mechanism to deal with costs resulting from new requirements that emerge during RIIO-2.

Decision

- 6.96 Under the NIS Regulations, network companies must take appropriate and proportionate technical and organisational cyber security measures to manage risks posed to the security of the network and information systems on which their essential service depends, and to prevent and minimise the impact of incidents on these essential services.
- 6.97 The National Cyber Security Centre ("NCSC") has developed a sector-agnostic CAF to assist operators covered by the NIS Regulations to perform self-assessments.
- 6.98 Each network company has performed a self-assessment against the CAF, and taken a risk-based approach through dialogue with the Competent Authority. Each network company has drafted short-to-medium term cyber-security improvement plans to be completed during RIIO-1.
- 6.99 Separate to these improvement plans, network companies are invited to submit Business Plans in December 2019 for Transmission, Gas Distribution and the ESO, covering the RIIO-2 period, which include the following two sections:
- A **Business IT Security Plan** (which would be considered BAU expenditure) – focused primarily on IT security for business systems, and
 - A **Cyber Resilience Plan** – which is expenditure focused primarily on Operational Technology (OT), in response to the NIS Regulations.
- 6.100 We will be publishing guidance during summer 2019 to support network operators in formulating these plans. We encourage operators to engage with us and BEIS (as the joint Competent Authority) during current and future workshops during 2019 to assist in this process.
- 6.101 We recognise that this is an evolving area and operators may require further guidance and time to clarify their needs, and we appreciate that some operators may not be ready to submit their Cyber Resilience Plans by December 2019. A re-opener mechanism will be available to deal with this possibility.
- 6.102 We also recognise that network operators may not be in a position to share their Cyber Resilience Plans with the RIIO-2 Challenge Group prior to the final submission of Business Plans in December 2019. However, some operators may take the opportunity to informally share draft proposals with the Competent Authority, ahead of the December submission, to enlist guidance and direction with the development of these plans.

- 6.103 For both plans, Ofgem is not expecting these to include the cost of general technology refresh or end of life replacement. Ofgem expects such projects to form part of more general system investment plans, which should already include appropriate cyber security measures.
- 6.104 For the Cyber Resilience Plan, IT Security measures for the business domain are generally considered out of scope. However, Ofgem will consider crossover within the Cyber Resilience Plan, where an associated risk is highlighted, for example around the interconnection between business IT and OT.
- 6.105 In general, both plans should include efficient, appropriate and proportionate measures, to deliver necessary enhancements to the overall security and resilience of the systems and networks used to operate essential services. When submitting these plans, a clear and coherent strategy with a robust risk-based approach to assessing and managing risk must be taken. Current risks, vulnerabilities, threats and mitigation options are expected to be documented, together with the relative benefits of the options considered.
- 6.106 In providing ex-ante allowances, we will consider the extent to which these plans are efficient, appropriate and proportionate. Such allowances would be provided as part of allowed revenues to deliver the agreed level of cyber security and resilience set out in these plans.
- 6.107 For the Business IT Security plan, baseline allowances will be provided subject to the Totex Incentive Mechanism. Requirements in these areas are relatively mature, and operators should already be investing in capabilities to mitigate IT cyber security risks as a business as usual activity. This approach should provide an incentive for companies to continue maintaining an appropriate level of security for their business systems in an efficient manner. However, Ofgem recognises that new risks / threats may emerge post submission, and will therefore introduce the re-opener mechanism described below to address this risk.
- 6.108 For the Cyber Resilience Plan, allowances will be provided on a 'use-it-or-lose it' basis, with expenditure subject to ongoing monitoring as part of an outcome based PCD. We recognise that this may limit flexibility, but consider this appropriate given the relative uncertainty around scope and cost of security enhancements that may be required in this area.
- 6.109 For the Cyber Resilience Plan, a re-opener mechanism will be available at the beginning of RIIO-2 to companies who are unable to submit these plans by December 2019.
- 6.110 For both plans, a mid-period re-opener mechanism will be included to deal with uncertainty. This will be designed to cover new risks/threats, as well as new statutory/regulatory requirements and will cover both Business IT Security and Cyber Resilience Plans. We will consult on the materiality threshold to be used for this re-opener as part of our Draft Determinations.

Physical Security

Decisions	<ul style="list-style-type: none"> We will consider allowing baseline allowances for physical security investment mandated by government. We will include a re-opener at the mid-period and end of the price control to adjust allowed revenue if government mandates changes to the scope work required during the period.
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Summary of issue

- 6.111 As owners of electricity and gas transmission and distribution assets in Great Britain, the network operators licensed by Ofgem are responsible for a number of assets that are deemed by government as Critical National Infrastructure (CNI).
- 6.112 Working with the responsible government department, ie the Department for Business, Energy and Industrial Strategy (BEIS), network operators agree and implement the Physical Security Upgrade Programme (PSUP), which involves measures required to enhance physical security at CNI sites.

December proposals

- 6.113 We proposed to consider allowing baseline allowances for physical security investments (including the ESO, if required) that is mandated by government because the requirements are now clear. Additionally, we proposed to include a re-opener to adjust allowed revenue (either upwards or downwards) if government mandates changes to the scope of the enhanced physical site security work required during the period.
- 6.114 We asked whether stakeholders agreed with maintaining the scope of costs that fall under physical security as well as whether they agreed with our proposed approach to baseline allowances. We also sought views on the inclusion of a re-opener, including the timing and number of windows.

Summary of responses

- 6.115 We received responses from 19 stakeholders, including the ESO, 12 network companies, two suppliers, two interested parties, Citizen's Advice and the RIIIO-2 Challenge Group.

Baseline allowances and scope of costs

- 6.116 All respondents agreed with our proposal to consider baseline allowances for physical security. The majority of responses supported the proposed scope of physical security costs however, some network companies had opposing views on our proposal.
- 6.117 Some companies suggested that the scope should be broadened to include non-mandated physical security investment as business as usual (BAU) aspects of the PSUP are not included in the existing scope of costs. Other companies said that the current scope was appropriate as it clearly distinguishes between government mandated work and general security work. In their view, the general security work should be included as part of baseline allowances which companies are responsible for managing and requires separate justification as part of the Business Plan.

Re-opener mechanism

- 6.118 The majority of responses supported our proposal to include a re-opener for physical security given PSUP costs are outside the network companies' control. Some respondents suggest that the scope of the re-opener should consider any changes in the threat landscape as a change in government policy. Another respondent suggested that a re-opener for "protection from external threats as a whole" should be included.
- 6.119 Some stakeholders suggested alternatives to a re-opener, including just carrying out an assessment of costs at the end of the price control.
- 6.120 The majority also supported a mid-period re-opener as proposed in our consultation however, a variety of suggestions were proposed for the optimum timing and number of re-openers, including a suggestion that the re-opener should be on a case-by-case basis or the re-opener windows should align with government reviews of PSUP, of which there would be two during RIIO-2. Some network companies also suggested that there should be an additional window at the end of the price control, ie close-out, to consider any changes in the last two years of the price control.
- 6.121 Some network companies also suggested that no materiality threshold should be applied to the re-opener or that it should be treated as a revenue/volume driver because costs are outside of their control.

Decision

Baseline allowances and scope of costs

- 6.122 Our decision is to consider baseline allowances for physical security investment mandated by government as we consider there to be sufficient clarity of government requirements.
- 6.123 We have decided to maintain the existing scope of costs that fall under Physical Security (including the ESO, if required), ie costs associated with PSUP works mandated by government. We agree with the respondents that suggested the importance of clearly distinguishing between government mandated work and general or BAU physical security work. Companies have discretion over BAU work and therefore must justify the investment need in the Business Plan submission. Furthermore, companies should be responsible for managing any allowances as part of totex.

Re-opener mechanism

- 6.124 We will include a re-opener at both the mid-period and end of the price control to adjust allowed revenues if government mandates changes to the scope of work required during RIIO-2.
- 6.125 The re-opener will consider any changes in the threat landscape within scope and may adjust allowed revenue either up or down. We do not consider it appropriate to widen the scope of this re-opener further, for example to consider "protection from external threats as a whole", as these would have broader impacts than just work that is mandated for PSUP by government which, as set out above, is the purpose of this re-opener.
- 6.126 As set out above, we have decided to have two re-openers for physical security, one window at the mid-period and one at the end of the price control. We accept that it is necessary to consider all changes in government policy during the price

control and this can only be done at the end of the price control. We consider there to be a need for the mid-period re-opener to provide certainty of allowed funding where there has been a significant change to the work required. Therefore, our view is that this approach strikes the right balance between providing flexibility to respond to changes in government policy and providing certainty to companies where there is significant change so that they can proceed with delivering the required investments.

- 6.127 Stakeholders also responded with views on whether there should be an associated materiality threshold. We are not taking a decision at this stage, however, we are proposing that both the mid and end-of-period re-openers for Physical Security would have an associated materiality threshold. This is to ensure that only changes in government policy which have a material impact on the required investment are considered, rather than using significant resources and introducing regulatory burden for costs that are not material. We are also of the view that companies should be able to engage effectively with government and this approach maintains an incentive on companies to consider and engage with government requirements going forward.

Next steps

- 6.128 We will consult on final materiality thresholds to be used for this re-opener as part of our Draft Determinations.

7. What consumers want and value from networks: Delivering an environmentally sustainable network

Decision	<ul style="list-style-type: none">We will introduce a common framework across the electricity and gas transmission and gas distribution sectors that builds on the environmental framework that was proposed for electricity transmission in the December consultation.
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Summary of issue

- 7.1 A key objective of the RIIO-2 Framework is that network companies support the transition to a smarter, more flexible, sustainable low-carbon energy system and take the appropriate steps to mitigate their own environmental impact.
- 7.2 As more homes and businesses source their heat and power from cleaner energy sources, and the growth in electric vehicles accelerates, a core responsibility of networks will be to facilitate these changes. This means responding to the demands for low carbon connections in a timely way, finding efficient ways to respond to the new sources of demand and flexibility on the networks, and by supporting innovation that could expand the range of possibilities for the decarbonisation of heat, power and transport.
- 7.3 Alongside these responsibilities, the gas and electricity networks also need to mitigate their environmental impact through their own business activities. This includes:
- Climate change
 - Pollution to the local environment
 - Resource waste
 - Biodiversity loss
 - Other local impacts relating to the network infrastructure, such as adverse effects on visual amenity.
- 7.4 In this section, we outline the cross-sector approach we are taking to ensure the network owners efficiently reduce business carbon footprint and broader environmental impacts while also supporting the decarbonisation of the energy system. In addition to this cross-sector approach, we outline sector-specific measures in each sector annex.¹⁴

Summary of December proposals

- 7.5 The December consultation included an output category for all sectors to 'Deliver an environmentally sustainable network'. Based on the priorities we identified for each sector, our sector specific consultation proposals differed one from another. Our proposals are summarised in following table. Please refer to the December consultation for full details of our proposals for each sector.

¹⁴ This chapter does not specifically apply to the ESO as the ESO price control framework will not use the same outputs framework as other sectors. See the ESO decision document for details about how the ESO price control will deliver an environmentally sustainable network for consumers.

Electricity Transmission	Gas Transmission	Gas Distribution
<ul style="list-style-type: none"> • Framework focusing on decarbonising the network and wider energy system, and other areas of environmental impact • TOs to embed environmental actions into Business Plans, with associated PCDs • New requirement to publish annual environment report to increase transparency • ODI for SF₆ emissions • Option to develop bespoke ODIs with stakeholders for delivering an additional contribution to the low carbon transition not captured elsewhere • Remove the RIIO-ET1 Environmental Discretionary Reward scheme. 	<ul style="list-style-type: none"> • Low carbon energy systems and heat decarbonisation <ul style="list-style-type: none"> ◦ No outputs proposed ◦ Consider as part of Business Plan Incentive • Compressor Emissions Compliance <ul style="list-style-type: none"> ◦ PCDs for solutions ◦ Re-opener for changes to identified solutions allowances • ODIs <ul style="list-style-type: none"> ◦ Greenhouse gas emissions from venting ◦ Shrinkage • Retain business carbon footprint reporting as reputational-only or remove • Bespoke ODIs 	<ul style="list-style-type: none"> • Framework focusing on the challenge and uncertainties of heat decarbonisation: <ul style="list-style-type: none"> ◦ Re-openers for change in government heat policy ◦ Bespoke re-openers for company or area specific uncertainties ◦ Innovation funding targeted at energy system transition challenges ◦ Ability to propose low/no regrets investment • ODI for shrinkage and leakage • Option to develop bespoke ODIs with stakeholders, including on biomethane connections • Remove business carbon footprint and biomethane connections outputs but maintain reporting requirements • Remove discretionary reward scheme

Summary of responses

- 7.6 Stakeholders that responded to this area provided significant comment on our environment proposals in the December consultation.
- 7.7 Consumer advocates (such as Citizens' Advice) as well as environmental groups (such as Sustainability First) criticised our proposals as lacking ambition for the energy networks role in decarbonisation; and in improving the long-term quality of the environment more generally. Several environmental stakeholders (Natural England) said that our proposals were not joined up with government policy goals and are ambiguous on the level of ambition that is expected of companies in delivering an environmentally sustainable network.
- 7.8 Environmental stakeholders also highlighted major concerns about different environmental proposals in each sector. They thought this had resulted in shortcomings including downgrading the objective of environmental sustainability in RIIO-2, and inconsistency across the different sectors, without any single thread (or set of principles) tying them together. Several stakeholders that responded to the environmental proposals in the December sector specific annexes said that Ofgem should adopt a consistent cross- sector approach.
- 7.9 Another stakeholder suggested that the approach in electricity transmission should be adopted as the model for the other sectors. Most stakeholders responding to questions on our environment proposals also said that an annual environment report should be mandatory for all of the sectors. The RIIO-2 Challenge Group made a similar overarching critique.

- 7.10 Other stakeholders highlighted that while they agree that decarbonisation is the primary focus, addressing other environmental impacts are not optional extras.
- 7.11 Please see the relevant decision in our sector-specific annexes for further details of stakeholder views on the December sector specific consultation proposals for delivering an environmentally sustainable network.

Decision

- 7.12 We have carefully considered all responses, and are reflecting them in an updated approach that addresses many of the points highlighted by stakeholders. We have decided to:
- set out our vision for the energy networks in delivering an environmentally sustainable network in RIIO-2, and
 - align the approach we are taking across the three sectors, recognising that there will remain sector specific drivers, issues and considerations.
- 7.13 Our vision for the electricity transmission, gas transmission and gas distribution sectors is:
- All companies should act responsibly towards the environment when making decisions on investment and operational practices/activities they should internalise environmental impacts in their decision making;
 - All companies should demonstrate high degrees of transparency and public accountability for their network's environmental impacts; and
 - All network companies should take responsibility beyond mitigating their own environmental impact. Network companies should play a full role in facilitating the low carbon energy transition by working constructively with customers, suppliers, partners and other stakeholders to overcome the challenges of this transition.
- 7.14 We have decided to introduce a common framework across all of the sectors that builds on the environmental framework that was proposed for electricity transmission in the December consultation. Within this framework, we expect companies' focus to be on the following impact areas:
- Decarbonising the energy networks – with a focus on business carbon footprint and embedded carbon in networks.
 - Reducing networks' other environmental impacts ie pollution to local environment; resource waste; biodiversity loss; and other adverse local effects that are specific to each sector.
 - Supporting the transition to a smarter, more flexible, sustainable low-carbon energy system.
- 7.15 We've adopted the environmental framework that was proposed for electricity transmission because we consider it addresses stakeholders' concerns about the lack of cross-sector consistency and the lack of ambition for network companies to address other environmental impacts, as well as decarbonisation. At the same time, we consider that the framework is flexible enough to allow companies to take into account the sector specific circumstances and opportunities and to focus on the most material impacts arising from their network, in order to achieve meaningful improvements in environmental performance.

7.16 We intend to utilise the full range of tools available within the price control, including Licence Obligations, PCDs, as well as reputational and financial output delivery incentives to drive significant improvements. The improvements we particularly want to see are:

- The integration of environmental considerations into network companies' decision-making on their Business Plans so that these are addressed at same level and same time as economic issues.
- Transparency on the networks' overarching environmental objectives and the actions they will take in RIIO-ET2 to progress towards these.
- Consistency across the network companies' monitoring and reporting on environmental impacts, including metrics, methodologies and assumptions underpinning these.
- Greater comparability of companies' environmental performance against their peers, network companies in other sectors, and over time.

7.17 The key parts of the framework will involve:

- **Companies embedding considerations for the three impact areas into their RIIO-2 Business Plans in the form of an Environmental Action Plan.** The action plan should explain how a company will take responsibility for the environmental impacts of their network in RIIO-2. If the action plan is well-justified, we will set funding allowances for the efficient incremental costs of delivering the company's action plan and set PCDs accordingly. We will also review the quality and ambition of the environmental action plan as part of our assessment for the Business Plan Incentive.
- **Companies publishing an annual environmental report. This will set out the environmental impact of the network, progress in delivering their action plan during RIIO-2, and the evolving role of the network in the low carbon energy transition.** This will be a new Licence Obligation and it will require that the network companies work with stakeholders in the development of the environmental report. We also intend to provide guidance to the companies on the general aims, scope and form of the annual public report. We expect the companies to be in the position to deliver high quality reports from the first year of RIIO-2.
- **Sector specific common output delivery incentives for companies to reduce environmental impacts that are material, measurable, and controllable.** Please see the sector specific methodology decisions for full details on the ODIs that will operate in each sector in RIIO-2.
- **Potential bespoke ODIs**, which might come forward in companies' Business Plan. These will be subject to our assessment of whether proposals are well-justified and meet the bespoke ODI criteria set out in Chapter 5 and Appendix 1.

7.18 In the case of the companies' contribution to the low carbon energy transition, we consider that the networks should act both as facilitators as well as be proactive in the face of change. The precise roles will differ by sector, but some examples could include responsive and timely action on low carbon connections, investing in innovation that furthers the evidence base that will inform decarbonisation approaches, making low or no regrets investment that supports decarbonisation pathways.

- 7.19 We note that the network companies also have the option to propose bespoke ODIs for contributing to the low carbon transition. Any such ODI would need to provide a specific additional contribution over and above arrangements captured elsewhere in the price control.
- 7.20 We consider that the environmental framework will benefit consumers over the course of RIIO-2 and beyond and will complement the sector specific common ODIs we will operate in each sector. There are challenges around setting robust output delivery incentives for environmental improvement in some impact areas. This difficulty arises because we do not currently have the data to measure performance, set target metrics, or calibrate incentives that reflect consumers' valuations of improvements in these areas. In the absence of the framework to embed environmental considerations into the Business Plan, we could miss an opportunity in RIIO-2 to get some traction on addressing some of the impact areas, such as embedded carbon and resource waste. If we did attempt to set an output incentive in these areas, there is a high risk that they turn out to be poorly specified which could result in a failure to deliver meaningful environmental gains in RIIO-2 and/or an output incentive that is poor value for money for consumers.
- 7.21 In our view, the environmental framework will ensure that fundamental steps are taken by the network companies in RIIO-2 that are needed to achieve meaningful reductions in the networks' environmental impacts in the longer term across the range of impact areas.
- 7.22 Of key importance, the approach will ensure that there is comprehensive dataset on a range of environmental impacts from the energy networks. This will give greater transparency to stakeholders and consumers on the level of responsibility the network owners are taking for reducing their impacts on the environment. It will also give stakeholders greater assurance that the network companies are undertaking this responsibility in a holistic way. In addition, it will also provide clarity on how the network companies are contributing to wider government goals such as the Clean Growth Strategy¹⁵ and the 25-Year Environment Plan¹⁶, as well as the National Infrastructure Commission's recommendations in its 2018 National Infrastructure Assessment¹⁷. Lastly, it will provide solid foundations for developing robust output delivery incentives in RIIO-3.

Our expectations for well-justified environment action plans

- 7.23 We expect network companies to include well-justified environment action plans as part of their Business Plan. As a minimum, we would expect network company Business Plans to explain:
- the methodology used to assess the environmental impacts of their network and Business Plan in RIIO-2
 - their overall targets/objectives for the network's environmental impacts, which might be longer term than the RIIO-2 period;
 - their assessment of the network's environmental impacts in RIIO-2 in comparison to its current impacts;
 - the impact areas it has prioritised for action in RIIO-2 and how these are linked to its long-term targets;

¹⁵ <https://www.gov.uk/government/publications/clean-growth-strategy>

¹⁶ <https://www.gov.uk/government/publications/25-year-environment-plan>

¹⁷ <https://www.nic.org.uk/publications/national-infrastructure-assessment-2018/>

- the role the company envisages playing in supporting the low carbon energy transition;
- the milestones and indicators to track their RIIO-2 performance towards their environmental targets;
- the efficient costs of delivering environmental benefits through the action plan, including robust evidence that these are value for money for consumers;
- the expected deliverables, outputs or environmental benefits from implementing the action plan and the PCDs that will be used to achieve these.

7.24 Failure to provide this may result in a Business Plan penalty. Where networks can make a sufficiently strong consumer value proposition for going beyond the environmental impact mitigation that they are statutorily required to undertake by law, we will consider rewards under the Business Plan Incentive.

8. Enabling whole system solutions

In this chapter, we outline our decision on proposals to enable whole system solutions with the potential to deliver benefits for network consumers.

The chapter is applicable to the Electricity Transmission, Gas Transmission, Gas Distribution and Electricity System Operator RIIO-2 price controls.

Decisions	<ul style="list-style-type: none"> We will apply a broad definition of 'whole system' for the price control for projects which pass a consumer benefits test. Of the six mechanisms considered in the consultation, we will advance the following: <ul style="list-style-type: none"> whole system aspect in the Business Plan Incentive, whole system aspect in the innovation package, and Coordinated Adjustment Mechanism (a whole system re-opener)
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Summary of issue

- 8.1 Energy systems and their networks are becoming increasingly interlinked. The actions of a network company can impact other network companies in their own or other energy sectors, as well as non-energy sectors such as transport. Similarly, actions in these broader sectors can also impact upon energy networks. As these linkages grow, so too does the value of cooperation across the whole system.
- 8.2 There is a risk that the prospective benefits offered by whole system solutions may not be fully realised, at the long-run expense of consumers. This may be due to obstacles arising from a lack of whole system specific incentives, a lack of information, behavioural barriers, or hindrances arising from regulatory processes. RIIO-2 seeks to increasingly capture this value by enabling a more coordinated approach to identifying and implementing efficient whole system solutions.

December proposals

- 8.3 In our December Consultation, we sought views on a proposed scope to define what is meant by 'whole system', and on possible mechanisms that may overcome any barriers there may be to whole system approaches.
- 8.4 Our proposed scope was to focus on coordination of investment planning and operational delivery between the regulated sectors, ie the Electricity System Operator (ESO), the Gas System Operator (GSO¹⁸), gas transmission, electricity transmission, gas distribution and electricity distribution.
- 8.5 We put forward six potential whole system mechanisms for consideration:

¹⁸ In the future, it is possible that system operation arrangements may need to change more significantly, for example from changing government policy or new legislation, Ofgem's review of the ESO separation arrangements, or other developments affecting the energy systems. If material policy changes arise, we will work with NGGT and other relevant stakeholders to explore how they would impact the RIIO-2 price control framework, and develop revised arrangements if they are needed.

- Inclusion in the Business Plan Incentive – whereby companies may face a penalty for failing to demonstrate sufficient consideration of whole system thinking, and a reward for those demonstrating an ambitious approach.
- Ensuring network innovation has a whole systems focus – the potential introduction of whole system related activities into the innovation stimulus package.
- A coordination and information sharing incentive – to incentivise networks to undertake additional whole system option analysis.
- Balancing financial incentives between traditional and whole system behaviour – a broad consultation into potential financial barriers to cost-effective coordination across networks.
- Ensuring the framework is able to flex to meet whole system needs – a proposal to use coordinated re-openers to facilitate more cost-effective outcomes by realigning revenues and responsibilities.
- A whole system discretionary funding mechanism – a path through which networks could apply for additional funding for projects that were unknown or unclear at the beginning of the price control.

Summary of responses

- 8.6 We received 44 responses to the questions asked on whole system outcomes; all network companies responded, plus 32 responses from suppliers, government, consumer bodies, professional associations, research bodies, environmental / sustainability bodies, and individuals.
- 8.7 All networks responded in support of our focus on whole systems in RIIO-2, noting the potential for reducing overall costs for consumers. Many stated that the industry has been looking wider than their own sectors already and that clarifying responsibilities and incentives in this area is appropriate for the next price control. A number of gas and electricity networks highlighted the strong link between whole system activities and the decarbonisation of the energy system.
- 8.8 The majority agreed with our analysis of the main blockers to greater whole system integration, with some additional high level points raised, including:
- The best incentive for facilitating whole system outcomes is the totex incentive mechanism.
 - There is uncertainty regarding wider governmental policy decisions which will affect the speed and extent of cross sector coordination. These will include policies on the decarbonisation of heat, achieving climate change targets, and the electrification of heat and transport.
 - The different timing of the electricity distribution price control may require transitional arrangements for the electricity distribution sector.
 - Legislation for gas and electricity network licences contained in separate pieces of legislation may affect financing.
 - There is uncertainty regarding future Ofgem decisions on the potential roles and responsibilities belonging to Distribution System Operators, transmission operators, and the ESO.

The definition of whole system in cost-benefit analysis for RIIO-2

Summary of responses

- 8.9 Thirty-six respondents provided views on the proposed scope of 'whole system' to be applied in RIIO-2. Nineteen were in favour of implementing a broader scope of whole system that looked beyond the regulated sectors. Thirteen were in favour of implementing the proposed narrow scope of whole system. Four respondents recommended limiting the scope to the electricity networks only.
- 8.10 Our proposal for a narrow scope – limited to regulated sectors only – was considered by a number of respondents to be a pragmatic but transitional approach, as a wider definition would be eventually needed. However, these same respondents noted that to be effective, some of our proposed whole system mechanisms would need to operate against a broader scope.
- 8.11 Most of the responses supporting a broader scope – looking beyond the regulated sectors – focused on the need for coordinated action to tackle the challenges of the energy system transition. Supportive networks identified that a broader scope would allow for the most cost-effective set of solutions across the energy system. Many argued that demand-side ('behind the meter') activities, including energy efficiency, should be considered as part of the whole system. Many also noted that a broader whole system approach would better facilitate the energy sector's contribution to meeting the UK's climate change goals.
- 8.12 Lastly, three electricity networks and a non-network stakeholder suggested that the scope should be narrowed to electricity transmission and distribution, and expanded only in response to a potential change to government policy.

Decision

- 8.13 For RIIO-2 we will adopt a broad definition of whole system. In addition to the gas and electricity sectors, the scope of the 'whole system' is expanded to apply to all other areas so long as coordination with those areas produces net benefits for the existing and future consumers of the relevant network sector.¹⁹ For projects involving broader areas, networks should particularly focus on the goals of decarbonisation and sustainable development.
- 8.14 Ofgem will, where appropriate, consider whole system costs and benefits when making decisions. While our assessment of projects will be based on the facts in each circumstance, for networks putting forward whole system focused projects, we provide the following guidance:
- Networks will need to demonstrate that projects of a whole system nature produce net benefits for *their sector's consumers*, and where the project will generate broader whole system benefits, such benefits should be explicitly evidenced. In comparing alternative potential approaches to a project, Ofgem will consider both sets of benefits.
 - Networks are encouraged to propose solutions which incorporate options from, and benefits to, the broader whole system. For example, a gas transmission network should consider the potential for gas system solutions

¹⁹ The use of 'sector' in this regard refers to the distribution, transmission and operation of a single energy source. For example, the 'gas sector' includes the firms responsible for gas transmission, distribution, and system operation.

from a different network or sector, such as a gas distribution network providing a service which replaces a capital investment requirement. Or, an electricity distribution network should consider solutions which generate significant benefits for other areas of the whole system, such as long run benefits for telecommunications consumers (along with the net benefit to their own sector's consumers).

- In addition to the standard CBA templates, whole system proposals may require a bespoke CBA approach which is proportionate to the value potentially arising from the project.
- Ofgem will consider – and networks should evidence – prospective benefits which accrue to both existing and future consumers (ie short term and long term benefits).
- Where benefits are split between networks, networks should demonstrate they have considered how to appropriately split the contribution of costs between both (or more) consumer sets, with particular consideration given to aligning the parties who receive benefits with the liability for costs.
- Where relevant, Ofgem's cost assessment teams will consult with networks to develop relevant methodologies.

8.15 With regard to energy efficiency, as stated in our Framework Decision, we will design the price controls such that networks consider supply side and demand side (including energy efficiency) solutions on a level playing field.

Rationale / evidence to support decision

- 8.16 Adopting a broader approach to whole system will increase the level of whole system benefits captured by the price control, including by expanding the coordination across the energy sector and associated sectors. Combining a wide focus as well as the requirement for networks to ensure projects produce net benefits for their sector's consumers will ensure networks incorporate whole system approaches which will support existing consumers and ensure a more cost-effective whole system for future consumers.
- 8.17 Responses from networks revealed that they already undertake projects that are broader than the narrow scope we proposed. These included examples of gas-to-electricity network engagement for the connection of a gas peaking plant, a distribution company aligning its road works with a telecommunications company (similar to how independent network operators sometimes coordinate and align the connection of numerous utility services), and where those distribution companies consider aggregators who focus on behind-the-meter operations. These are examples of 'whole system' work that we believe networks should and do undertake, and we do not wish to artificially limit such activities.
- 8.18 We will continue to consider any potential barriers which may arise from the relevant legislation, and where appropriate, how they can be addressed.
- 8.19 We note the comments from respondents who referenced the ongoing RIIO-1 whole system consultation.²⁰ Through that consultation, Ofgem will provide clear guidance on the scope of whole system as it applies to electricity licensees for the remainder of RIIO-1 at the time of that decision.

²⁰ <https://www.ofgem.gov.uk/publications-and-updates/consultation-licence-conditions-and-guidance-network-operators-support-efficient-coordinated-and-economical-whole-system>

Mechanisms to support the development and delivery of whole system solutions

Summary of decision

- 8.20 We will include whole system elements into the Business Plan Incentive assessment and the innovation stimulus package, and a coordinated whole system re-opener (the 'Coordinated Adjustment Mechanism'). This set of mechanisms will work cohesively to improve whole system planning and operation, improve support for new whole system approaches, and ensure the price control is not a barrier to the efficient allocation of projects across networks. We believe this approach delivers the right balance of setting expectations, incentivising and supporting new and efficient whole system solutions, and managing the risks of introducing unnecessary complexity and perverse incentives.
- 8.21 For this reason, we will not be taking forward the coordination and information sharing incentive or a whole system discretionary funding mechanism. In relation to potentially unbalanced financial incentives impacting whole system outcomes, we will do further work to review the operation of 'excluded services' and 'directly remunerated services' as potential barriers of whole system solutions.

Rationale / evidence to support decision

- 8.22 We agree with the view of many respondents that the Totex Incentive Mechanism (TIM) is the best and most balanced incentive for supporting whole system solutions. The TIM rewards networks for undertaking cost-effective implementation of whole system solutions. As has been raised through the consultation, however there are likely to be some residual barriers to greater uptake of whole system approaches. To address this, we have decided to introduce a package of mechanisms for RIIIO-2 that will work together with the TIM to provide a cohesive framework for greater whole system outcomes.
- 8.23 Inclusion of whole system elements in the Business Plan Incentive gives networks the incentive to ensure their network planning includes wide engagement and consideration of other sectors relevant to, and impacted by, their behaviour. The new focus on the whole system in the innovation stimulus package will provide support for new and untested whole system projects or behaviours, particularly as the frequency and value of these opportunities may intensify through the energy system transition. And, to ensure that the price control framework itself does not create artificial barriers to whole system outcomes, the Coordinated Adjustment Mechanism will allow for the cost-effective realignment of revenues and responsibilities within the price control period.

Business Plan incentive

Summary of responses

- 8.24 We received 21 comments on this proposed mechanism, with 15 in favour of introducing a whole system element to the Business Plan Incentive, and 6 arguing against.
- 8.25 Those in support highlighted the value of rewarding upfront whole system planning with consistent principles across networks. Some raised concerns that the Business Planning Incentive alone would not sufficiently incentivise companies, that it would not allow for whole system activities which could not be identified at the Business Planning stage, and that the timing of the electricity distribution price

control could undermine planning. Others stated that Ofgem should appropriately assess Business Plans such that certain business-as-usual whole system behaviours and those which are already encouraged by the totex incentive mechanisms are not additionally rewarded.

Decision

- 8.26 We will include networks' whole system planning and consideration in our assessment of their Business Plans and the application of any rewards or penalties through the Business Plan Incentive. This will ensure that the engagement and planning which networks will undertake for RIIO-2 has a whole system focus.

Rationale

- 8.27 Greater coordination and investment planning is needed between parts of the energy system to help minimise costs across the whole system. For that coordination to be most effective, it should be open, transparent, and timely. While the whole system element is only one part of the overall Business Plan Incentive, we believe that networks who score well on this element will have developed their thinking and processes to be well positioned to receive additional rewards under the TIM throughout the price control. We will require networks to demonstrate how their proposed whole system behaviour will exceed BAU expectations.
- 8.28 Among other things, good planning will include consideration of the wider impact of their works on the public, such as innovative approaches to coordinating with local authorities and sectors such as water, communications, or waste to minimise the impact of infrastructure and development projects. We will provide more detail in the updated Business Plan Guidance.

Ensuring innovation has a whole systems focus

- 8.29 In our December Consultation, we proposed two relevant reforms to network innovation: that whole system activities should also be eligible for a proposed new funding pot for strategic network-related energy system transition challenges; and that the joint gas licensee and joint electricity licensee innovation strategies should each contain a strand dedicated to whole system activities. We also noted that if NIA was retained, this could also be used to support other whole system innovation projects.

Summary of responses

- 8.30 Seventeen respondents provided views on our proposals in this chapter, all of whom agreed that whole system projects should be eligible to receive innovation support. The majority supported innovation funding for projects which met a broader definition of whole system, as these types of projects were more novel. Others noted that this innovation funding should be used for whole system projects which specifically focus on improving our energy system transition, particularly where projects would generate evidence for policy makers.

Decision

- 8.31 We will incorporate a whole system aspect in the innovation stimulus package, through development of whole system criteria to qualify for additional stimulus funding.²¹ We will also require licensees to include whole system considerations in

²¹ The full discussion on the innovation stimulus reform is in Chapter 10 – this chapter concerns only the two proposals specific to whole systems policy.

their respective gas and electricity joint innovation strategies. This will ensure that we support new and untested approaches to capturing greater whole system benefits.

Rationale / evidence to support decision

- 8.32 The innovation mechanisms will – consistent with their principal focus on energy system transition and vulnerable customer challenges - encourage whole system projects which networks would not undertake without innovation funding support. These projects will provide learning and information across the networks, reducing the overall costs to consumers in the long run, and will inform Ofgem and government's approach to the energy system transition.
- 8.33 Chapter 10, covering innovation and competition, discusses these issues in more depth, including next steps, and the potential roles and access for the ESO and DNO sectors.

Ensuring the framework is able to flex to meet whole system needs (Coordinated Adjustment Mechanism)

- 8.34 As we stated in December, the revenue and responsibility for outputs and projects should be aligned with the party best placed to cost-effectively deliver them. There are two reasons why the original assignment of projects or outputs at the start of the price control may not be the most cost-effective: there may be a change in circumstance and/or information, or this may arise from the different timing of the electricity distribution price control. This concern can be addressed by ensuring the price control has a mechanism to adjust revenues and responsibilities between networks through a coordinated process.

Summary of responses

- 8.35 Overall views on a potential re-opener were split. Responses in favour held the view that overall system costs will be most efficient where projects are aligned with the parties best able to deliver them (so long as that lower overall cost was demonstrated). Others noted the potential role for such a mechanism in assisting an industry in rapid transition. Some noted the potential use of the mechanism for larger projects, to support innovative approaches, and to allow the price control to flex in response to new information. Some offered support conditional on the mechanism:
- having limited windows in which it could be triggered;
 - not being available where standard commercial solutions were possible; and
 - only being used as a 'failsafe' mechanism where other avenues failed.
- 8.36 Some responses were not supportive and indicated that the status quo approach of networks paying each other for services was sufficient to achieve the same result. Others noted a re-opener could create perverse incentives, potentially by encouraging networks to petition Ofgem to transfer difficult or less profitable projects. Others believed that aligning RIIO-ED2 with the other sectors was a better solution (Ofgem made a specific decision in the July RIIO-2 Framework Decision not to align the price controls)²².

²² https://www.ofgem.gov.uk/system/files/docs/2018/07/riio-2_july_decision_document_final_300718.pdf

Decision

- 8.37 We will develop and implement a whole system re-opener (named a 'Coordinated Adjustment Mechanism') to protect consumer interests by supporting the reallocation of project revenues and responsibilities to the network(s) best placed to deliver those projects.

Rationale / evidence to support decision

- 8.38 The appropriate reallocation of revenues and responsibilities will improve in-period cooperation and make the price controls more resilient to changes arising from the energy system transition. However, the mechanism must be designed such that it cost-effectively achieves appropriate reallocations.
- 8.39 To balance between the needs of flexibility and certainty, we intend to design threshold requirements which ensure focus on projects that will produce the most value for consumers at reasonable administrative cost. This also addresses a concern from networks that such a process might introduce unjustified additional costs and administration to the price control. While the details of the mechanism will be developed at a sector specific level, in Appendix 2 we outline some early thinking to guide our ongoing policy development.
- 8.40 With regard to the potential requirement and value of incentivising the use of the mechanism, we note the concern about potentially creating perverse incentives. We share a concern that an incentive may encourage networks to alter their planning processes to 'build in' inefficiencies, only to subsequently receive a payment for reallocating projects. We will continue to consider whether there is a need to incentivise networks to utilise the mechanism. Any introduction of an incentive would need to include features which mitigate this risk.
- 8.41 One such feature which may be a requirement for triggering the Coordinated Adjustment Mechanism is that networks demonstrate how the potential solution could not have been foreseen and therefore proposed through the usual Business Planning processes [see design guidance in Appendix 2]. This means that in cases where networks attempt to trigger the mechanism in circumstances where we consider the work was foreseeable, we can reject the application or reward of any possible incentive.
- 8.42 This mechanism will be further expanded and refined at a sectoral basis and will be finalised through the Draft and Final Determination stages. Ongoing work will ensure necessary consistency between the sectors.

Other mechanisms we considered

- 8.43 As a point of principle we do not consider it appropriate to introduce additional incentives unless there is a clear justification and where they are unlikely to interfere with the balance between existing mechanisms. We consider the following options may not produce sufficient additional benefit to justify their potential distortion and operation of the totex incentive mechanism and the mechanisms we do propose to take forward (ie the Business Plan Incentive, the innovation stimulus, and the Coordinated Adjustment Mechanism).

Coordination and information sharing incentive

- 8.44 This proposed mechanism aimed to incentivise networks to identify potential opportunities for whole system coordination. This was hypothesised as being necessary as networks may need to commit effort (expenditure) to generating these options.

Summary of responses

- 8.45 Seven respondents were in favour of such a mechanism, five were not, but there was no clear agreement on how such a mechanism could work in practice. The majority of respondents also had some concerns about perverse incentives, most notably the unintended consequence of companies withholding information until such time as they receive an additional incentive to release it.
- 8.46 Other views included that the Business Plan process can already provide upfront funding for whole system engagement, although some thought this could be difficult to forecast at the outset and preferred a volume-based driver. Finally, some were concerned that many of these options analyses should be BAU for companies, and only behaviour clearly beyond BAU should be rewarded.

Decision

- 8.47 We have decided not to progress a coordination and information sharing incentive at the RIIO framework level.

Rationale / evidence to support decision

- 8.48 We consider that greater coordination and information sharing should be considered BAU, and as such can be assessed and funded where appropriate through Business Plans and encouraged through the Business Plan Incentive. Furthermore, we believe the mechanisms being implemented (the Business Plan Incentive, the innovation stimulus, and the Coordinated Adjustment Mechanism) provide a cohesive and comprehensive package of support to whole system outcomes.
- 8.49 One of our primary concerns around this mechanism is that it could generate unintended incentives for networks to behave inefficiently, that is, by creating a perverse incentive to conceal opportunities for coordination and information sharing in the expectation of being later rewarded for revealing and undertaking them. Depending on the size of the incentive, in an extreme case a network may be rewarded for designing inefficiencies into their Business Plan. As raised by a respondent, of particular concern was that the difference in timing between the electricity distribution and the sectors could exacerbate this potential to misuse this incentive (rather than openly coordinating at the Business Planning stage).
- 8.50 While it may be possible to address these perverse incentives in the further design of the mechanism, project specific consideration is likely to be the best mitigation to protect consumers. Any process which required case-by-case consideration, however, could either replicate much of the Coordinated Adjustment Mechanism function, or might not be cost-effective.

Balancing financial incentives between traditional and whole systems behaviour

- 8.51 We consulted broadly on potential areas in which networks were comparatively under-incentivised to undertake whole system solutions rather than more traditional insular solutions. We outlined three areas: funding routes; redefining or transferring outputs; and sufficient incentives for whole system outcomes.

Summary of responses

- 8.52 The majority of responses on this issue were from network companies, who supported the overall objective of balancing financial incentives between insular and whole system behaviour but had a variety of views as to how this should be

achieved. There was a common view among gas network companies that the issues relating to balancing incentives were less pertinent in the gas industry than in the electricity industry, as there was unlikely to be any significant reinforcement of the former network in the foreseeable future.

- 8.53 On funding routes, responses indicated that where there are prescribed values for certain payments between networks (such as Directly Remunerated Services (DRS)), this could be a barrier to whole system outcomes. In certain cases, the payment for services between networks is necessary for whole system outcomes, but limitations on those payments (as with DRS) could mean they were underutilised. This was particularly the case where the payments were for long-life assets or where the allowed margin was significantly lower than the benefit of cooperation.
- 8.54 The issue of redefining or transferring outputs was broadly similar to our consultation on a potential 'whole system re-opener' (discussed above), and similar concerns around complexity and misaligned incentives were raised.
- 8.55 In response to our proposal related to 'ensuring regulatory incentives support beneficial outcomes', networks identified the Totex Incentive Mechanism as being the most appropriate mechanism and that undermining or replacing this could have unintended consequences. Some responses indicated that the ESO should undertake a greater role in ensuring whole system outcomes – an oversight role that could remove the potential for insular solutions to be chosen by individual networks.

Decision

- 8.56 We have decided not to establish a mechanism to redefine or transfer outputs (which would be in addition to the Coordinated Adjustment Mechanism), and have decided not to introduce any additional incentives for whole system outcomes.
- 8.57 We will undertake more work investigating the potential barrier to whole system outcomes which may arise from prescribed payments (such as DRS).

Rationale / evidence to support decision

- 8.58 With regard to redefining or transferring outputs, we understand many of the concerns raised by stakeholders around complexity and misaligned incentives. To address these, we are introducing the Coordinated Adjustment Mechanism as the most appropriate mechanism to facilitate any requirement to transfer outputs that may arise (see our discussion on this above).
- 8.59 In response to concerns from networks that prescribed transfer values (such as DRS) may introduce artificial barriers to greater whole system coordination, we will engage further on this issue. However, we note that further work will remain cognisant of the original justifications for prescribing certain values (such as ensuring networks do not recover the cost of providing the same service twice).
- 8.60 We agree that the Totex Incentive Mechanism, supported by a requirement for whole system thinking in the Business Plan Incentive, are sufficient incentives to encourage whole system behaviours. Introducing additional unjustified incentives may disrupt the existing set of incentives and mechanisms.
- 8.61 With regard to the role of the ESO in delivering a whole system approach, we note that in April 2019 the ESO published a vision for the RIIO-2 period with Chapter 6

focusing on their contribution to developing a whole system approach.²³ Our approach and rationale on our decisions for the ESO, including whole system outcomes, is set out in the ESO annex.

Whole system discretionary funding mechanism

- 8.62 In December, we asked whether there was a need for a discretionary funding mechanism to push networks to think innovatively and to 'push the boundaries' in finding benefits for their consumers, in particular where the benefit was not immediately clear, may be less direct, or harder to monetise.

Summary of responses

- 8.63 The majority of responses on this topic were from network companies. Although opinions were divided, a majority of stakeholders favoured the inclusion of this mechanism. Those supporting indicated a discretionary fund could be more flexible and could fund smaller, more bespoke, projects than a re-opener or innovation funding. Others voiced concerns that the mechanism could see networks spending greater efforts on demonstrating how they would produce consumer benefits rather than ensuring they materialised. In addition, some thought that a whole system re-opener and effective incentives to consider whole system outcomes would render a discretionary fund unnecessary.

Decision

- 8.64 We have decided not to implement a discretionary funding mechanism.

Rationale / evidence to support decision

- 8.65 We note that any discretionary mechanism will require additional administrative costs on networks and Ofgem. In this case, these additional costs are not justifiable considering we have also introduced a whole system element to the Business Plan Incentive and support for whole system projects via the innovation stimulus package. Taken together, these should provide an opportunity for networks to explore the type of projects that may have been funded by a discretionary mechanism.

Alternative mechanisms suggested by stakeholders

- 8.66 A number of respondents proposed alternative means of implementing our proposed mechanisms to deal with perceived issues – we have addressed those suggestions through our design and decisions in the relevant mechanism sections.

Interaction with other policy areas

- 8.67 There are a number of interlinkages and potential dependencies between whole system and other policy areas, including enhanced engagement; with the additional external scrutiny of Business Plans from the RIIO-2 Challenge Group we expect to see more exploration of potential whole system solutions.
- 8.68 Within this decision document there are also whole system elements within uncertainty mechanisms (see Chapter 9), competition (see Chapter 10), innovation (see Chapter 10), and the Business Planning process (see Chapter 11).
- 8.69 As raised by a number of respondents, the next electricity distribution price control does not start until April 2023, two years after those of the other sectors. We will take this into account when designing the specific application of our

²³ National Grid ESO, 'Our RIIO-2 ambition', April 2019, available at: <https://www.nationalgrideso.com/document/141256/download>

mechanisms to each sector, ensuring DNOs are able to engage in the discussions. We will also ensure any potential work on whole system changes to the electricity RIIO-1 licence conditions and guidance clearly supports aims of RIIO-2.

- 8.70 We welcome the whole system work-stream currently under development in the ENA's Open Networks programme²⁴, and will continue to engage in that work.

Next steps

- 8.71 We will continue work on the detail of the mechanisms that we have decided to take forward, including their application in the separate sectors. We will also review DRS to investigate whether there is a need for any adjustment to enable whole system activities.
- 8.72 We will work further on reviewing and quantifying the nature of whole system benefits to the consumer, including further work by the cost assessment teams on methodologies for assessing those benefits.

²⁴ <http://www.energynetworks.org/electricity/futures/open-networks-project/workstream-products/ws4-whole-energy-systems.html>

9. Managing uncertainty

In this chapter, we outline our decision on the approaches we will use to manage uncertainty in RIIO-2.

The chapter is applicable to the Electricity Transmission, Gas Transmission and Gas Distribution RIIO-2 price controls.

Introduction

- 9.1 The energy system transition generates uncertainty around the future demand for electricity and gas. This is due to changing behaviours as well as the emergence of new technologies. This means that forecasting future requirements brings with it a degree of risk.
- 9.2 There is a forecast risk that we provide expenditure allowances that are higher or lower than they actually need to be. We use a range of uncertainty mechanisms to manage this risk.
- 9.3 There may also be a potential stranding risk, whereby the demand for a network asset may fall away but remaining consumers would still need to pay for the original investment.
- 9.4 In this chapter we discuss the tools we will use to manage uncertainty and to allow the price control to be reactive to changes (uncertainty mechanisms). Within the broader topic of uncertainty mechanisms, we specify our approach to the treatment of materiality thresholds for re-openers, real price effects and ongoing efficiency. We also discuss how we propose to manage the risk of assets being built that turn out not to be needed (managing stranding risks).

Uncertainty Mechanisms

Summary of issue

- 9.5 Forecasting costs and outputs with confidence for the duration of a price control is challenging. Uncertainty in cost forecasts can arise for several reasons, including whether a network company needs to conduct an activity or make an investment, the amount of an activity they need to conduct, as well as the cost of the activity. Uncertainty over outputs that a company is required to deliver can also arise, for example, from changes in legislation or government policy. In the event there are material changes in government or Ofgem policy (such as future policy on the potential separation of the GSO) we will work with both government and NGGT to explore how any such changes would impact the RIIO-2 price control framework.
- 9.6 Where there is uncertainty in the volume of certain types of work that will be required over the course of a price control (but where the cost of each unit is stable), we can use volume drivers to adjust allowances in line with actual volumes.
- 9.7 Where there is uncertainty as to both prices and quantities (and/or the economic needs case is not proven, or the scope of expenditure is unclear) at the start of the control period, we can use re-opener mechanisms within the control period to set allowances once there is more certainty on price and quantity.

- 9.8 If the scope of work has the potential to change during the control period so that allowances are no longer required, we can use automatic mechanisms (PCDs) to return any unused allowances to consumers.
- 9.9 We will determine how and when we will apply volume drivers, re-openers and PCDs to mitigate uncertainties that are revealed in the Business Plans through the process of making Draft and Final Determinations.
- 9.10 In addition, there are some uncertainties that we can be aware of without having to receive Business Plans, and we are also able to specify the mechanisms we will use to mitigate these. The table below describes the uncertainty mechanisms that will be applied in the gas distribution and in the gas and electricity transmission sectors. We provide more information on how these will be applied in areas where this is changing from RIIO-1 to RIIO-2, either in this document or the RIIO-2 Finance Decision Annex.
- 9.11 We provide more information on any uncertainty mechanisms that are specific to a particular sector in the sector-specific methodology decision documents.

Name	Type of mechanism
Cross sector	
Ofgem licence fee	Pass-through
Business rates	Pass-through
Inflation indexation of RAV and allowed return	Indexation
Cost of debt indexation	Indexation
Tax liability allowance	Re-opener
Pensions (pension scheme established deficits)	Re-opener ²⁵
Physical security	Baseline allowance and re-opener
Cost of equity indexation	Indexation
Real Price Effects	Indexation
Cyber resilience	Use-it-or-lose-it allowance and re-opener
Whole systems 'Coordinated Adjustment Mechanism'	Re-opener

December proposals

Materiality thresholds for re-openers

- 9.12 Materiality thresholds for re-openers are used to ensure that specific elements of the price control are considered again during the price control period if significant changes occur in the course of the price control. Network companies are expected to manage non-material changes in costs. We apply incentive rates so that the benefit of cost underspends and over-spends are shared between companies and consumers.
- 9.13 A materiality threshold is the level of cost that may have (or be expected) to be incurred, in order for networks (or us) to trigger a re-opening of the price control to adjust allowances for that activity.

²⁵ Triennial review

- 9.14 In RIIO-1, the materiality for re-openers was a deviation from expected costs that was equivalent to one per cent of base revenue (following the application of the incentive rate). We did not specify these thresholds in our December consultation.

Real Price Effects

- 9.15 We set price control allowances which can include the difference between our general inflation measure and certain input price indices that reflect the external pressure on companies' costs. We refer to these differences as Real Price Effects (RPEs). In RIIO-1, we set fixed assumptions to adjust allowances over the eight-year price controls, resulting in us providing upfront allowances for RPEs.
- 9.16 In our RIIO-2 Framework Decision, we stated that we would index uncertain costs where possible, including for labour and construction cost inflation (to the extent evidence suggests that input prices are different from general consumer price inflation). In our December Consultation, we sought views from stakeholders on how best to implement RPE indexation, and highlighted a number of other issues that will require further work and consideration.
- 9.17 We highlighted the need to consider the frequency with which to update allowances for RPEs, and presented the following options:
- Option 1: annually, or
 - Option 2: at the end of the price control period.
- 9.18 We proposed to update allowances annually.
- 9.19 In addition to considering the frequency with which to update allowances for RPEs, we also highlighted the need to decide on whether or not to include forecasts of RPEs in upfront allowances. We presented the following options:
- Option 1: to forecast RPEs as zero – ie to assume that input price inflation is the same as general inflation.
 - Option 2: to fix a forecast of RPEs for the duration of the price control (using the same broad approach as for the current RIIO-1 price controls).
 - Option 3: to annually update RPE forecasts with the latest available input price data (assuming that RPE allowances are updated annually).
- 9.20 We proposed to include a forecast of RPEs in upfront allowances, where evidence suggests that input prices will materially track above or below general output price inflation. Any RPE forecast included in upfront allowances will require a subsequent true-up once RPE inflation measures are known.
- 9.21 In determining RPE allowances, we proposed to base the assumed proportions of each expenditure category (eg Opex and Capex) on the average (notional) cost structures, where this is an option, as reported by companies in their Business Plans.

Ongoing Efficiency

- 9.22 Our ongoing efficiency assumptions represent the reduction in the volume of inputs required to produce a given volume of output. Whereas RPEs relate to the changes in the price of inputs used by network companies, ongoing efficiencies relate, in part, to changes in the volume of those inputs used to provide services to users.

- 9.23 We proposed, as in RIIO-1, to use the EU KLEMS dataset to assess UK productivity trends. We also sought feedback from stakeholders on other sources of evidence we could use.
- 9.24 We proposed, as in RIIO-1, to focus on those sectors that have similarities with network companies, eg those that have significant asset management roles, and to exclude sectors (eg the energy sector) where historical performance is heavily influenced by increases in productivity realised after privatisation.
- 9.25 We set out our intention to apply ongoing efficiency assumptions wherever we apply RPEs that represent networks' input prices. We proposed to avoid applying an ongoing efficiency assumption to an RPE representing an output price, as it will already reflect efficiency improvement.

Summary of responses

Materiality thresholds for re-openers

- 9.26 In response to the December consultation, several stakeholders provided views on the design of materiality thresholds for re-openers. Some respondents have stated that:
- The materiality threshold should be considered in light of how any over/under spend is shared between companies and consumers. In RIIO-1, the 'incentive rate' that companies retained was between 45%-70%. In RIIO-2, it is likely to be lower than this, meaning that companies' exposure to under/overspends will be lower.
 - Changes in how we will set the incentive rate could make the spread of incentive rates across network companies larger in RIIO-2.²⁶ This would mean that the same level of gross under/overspend would have a different consequence for companies with different incentive rates.
 - Different re-openers should have an aggregated materiality threshold to avoid a series of changes each individually falling below thresholds but cumulatively having a material impact.

Real Price Effects

- 9.27 We received 21 responses relating to RPEs and/or ongoing efficiencies.
- 9.28 Two responses expressed their dissatisfaction with indexing RPEs, but said that should we use this method, they would be supportive of our proposal to update annually. As the decision to apply indexed RPEs – where appropriate – was taken in the RIIO-2 Framework Decision, we will not be addressing the comments about the whether or not to index here.
- 9.29 Almost all respondents agreed with our proposal to update RPE allowances annually and include a forecast of RPEs in allowances, subject to the appropriate selection of indices. Very few responses contained any further comments on this question. One respondent, while still supportive, pointed out the additional complexity this would add to the annual iteration process. One respondent disagreed with our proposal to update allowances annually, arguing that ex-ante allowances for TOs score well – relative to indexation – under the regulatory best practice criteria and asked that we adopt this approach instead.

²⁶ See Chapter 11 for more detail on our approach to setting the incentive rate.

- 9.30 Respondents were also generally supportive of our view to retain notional cost structures where possible. Some respondents pointed out that this would not be possible for sectors with only one network, while others raised concerns that regional disparities have led to cost structures that vary too greatly to allow comparison. One stakeholder stated that notional cost structures could be applied to all sectors, regardless of sector make-up.

Ongoing Efficiency

- 9.31 All respondents considered we should continue to utilise the EU KLEMS dataset to assess UK productivity trends (which we use as proxy for GB productivity). Several stakeholders suggested that we also use Bank of England and Office for Budget Responsibility (OBR) data for comparison purposes.
- 9.32 Some stakeholders raised concerns for how we make productivity assumptions and asked that we only consider recent productivity trends unless we had evidence to suggest that GB was returning to pre-crisis productivity levels.
- 9.33 Two network companies informed us that they have commissioned research on whether we should apply ongoing efficiencies where we apply RPEs.

Our intended approach

Materiality thresholds for re-openers

- 9.34 As a starting position for setting the materiality threshold for each re-opener under RIIO-2, we think that the RIIO-1 approach and level is broadly appropriate.
- 9.35 However, we note the consultation responses and agree that some additional thinking may be required in this area. We will consult on final materiality thresholds to be used for all our re-openers as part of our Draft Determinations.

Real Price Effects

- 9.36 In our assessment of RPEs, we will rely on multiple sources of evidence to determine whether or not RPEs are warranted, including that submitted by network companies as part of their Business Plans. We intend to apply a materiality threshold when assessing RPE costs, and will consult on this in more detail as part of both our summer consultation on tools for cost assessment and Draft Determinations.
- 9.37 We intend to update allowances for RPEs annually rather than at the end of the price control period, with a final true-up incorporated in RIIO-2 close-out. However, to achieve this we will need to address a number of governance and implementation challenges.
- 9.38 We intend to include a forecast of RPEs in upfront allowances. In doing so, we will look to true up annually the difference between RPE forecasts and upfront allowances for RPEs, with a final true-up incorporated in RIIO-2 close-out.
- 9.39 We intend to set RPE allowances on a notional (rather than actual) cost structure basis, where appropriate. That is, we intend to base the assumed proportions of each expenditure category (eg Opex and Capex) on a hybrid version of the cost structures submitted by companies in their Business Plans. We will consider the appropriateness of applying a notional cost structure on a sector-by-sector basis, regardless of the number of networks in a sector.

Ongoing Efficiency

- 9.40 We will consider retaining the use of the EU KLEMS dataset to assess UK productivity trends and will continue to think about whether further sources of data – such as from ONS, Bank of England and OBR - may also be of use.
- 9.41 Our focus will be on those sectors that have similarities with network companies, eg those that have significant asset management roles, and to exclude sectors where performance may still be influenced by increases in productivity realised after privatisation.
- 9.42 We will consider applying an ongoing efficiency assumption wherever we apply an RPE that represents a network's input price, but will consider the extent that output prices may already reflect ongoing efficiency improvement. We will also consider more broadly how we could implement ongoing efficiency to reflect changes in productivity in other areas of network operations.

Rationale/evidence to support our intended approach

Materiality thresholds for re-openers

- 9.43 We think it is appropriate to consider materiality thresholds for re-openers at the Draft Determination stage because we will have more information on the RIIO-2 package as a whole at that stage, including the overall size of the Business Plans, the level of our proposed incentive rate, the whole suite of re-openers and key finance parameters.

Real Price Effects

- 9.44 We think that updating allowances for RPEs annually will provide the following advantages:
- It will provide a better balance of charges between existing and future consumers by enabling a more frequent recalibration of allowances, within-period.
 - It will reduce risk and volatility compared to an ex-ante approach and reduce any final true-up.
 - It will provide us with the opportunity to update forecasts for RPEs annually using the latest available RPE price indices.
 - It will better facilitate other aspects of our framework, such as reporting a more up to date RoRE, reflecting allowances updated for RPEs.
- 9.45 While updating allowances for RPEs at the end of the price control, rather than annually, would likely increase bill predictability and decrease bill volatility in the short term, these benefits would likely be offset by a larger cumulative adjustment of allowances towards the start of the next price control.
- 9.46 We think that including a forecast of RPEs in upfront allowances will provide the following advantages:
- It is more likely to lead to more accurate cost allowances, which better reflect our view of future expenditure.
 - It is more likely to increase bill predictability and reduce bill volatility, given our intention to update both allowances and forecasts annually.

- 9.47 We consider the use of a notional cost structure, where this is an option, is appropriate because if we set RPE allowances based on particular organisational structures, we may reward inefficient structures.

Ongoing Efficiency

- 9.48 We consider that the EU KLEMS database is a useful source of information on productivity trends in the UK. Additionally, other regulators and competition authorities use the EU KLEMS dataset, in assessing ongoing efficiency. We will look at how we might continue to use the EU KLEMS dataset but this does not, however, preclude the analysis of other information in relation to productivity. We expect companies to include within their Business Plans an assumption for ongoing efficiency and to evidence how this assumption has been derived.

Next steps

Real Price Effects & Ongoing Efficiency

- 9.49 We intend to consult further on both RPEs and ongoing efficiency in our summer consultation on tools for cost assessment, focussing on the index criteria and materiality thresholds we will look to employ in our assessment of RPEs and the interactions between RPEs and ongoing efficiency.
- 9.50 We also expect to utilise sector-level working groups, where appropriate, to advance discussions on both RPEs and ongoing efficiency at a more detailed level.
- 9.51 We will develop governance arrangements for implementing RPE indexation, which will set out, among other things, what happens in the event of the temporary unavailability or the discontinuation (or amendment) of a price index.

Managing the risk of future asset stranding

Decisions	<ul style="list-style-type: none">• We will not introduce a utilisation incentive for the gas distribution, gas transmission or electricity transmission price controls.• Where we consider it will add value to our decision-making process, we will bring together experts from across government and other institutions to advise Ofgem on strategic network development decisions.• We will not set out at this time a mechanism by which the risks and rewards of any highly anticipatory investment might be shared.
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Summary of issue

- 9.52 Funding requests through the price control process for any investment are assessed with regard to the duties and obligations on both ourselves and network companies. Principally this means that making the investment is in the interest of consumers.
- 9.53 By its nature all investment proposed in a Business Plan is anticipatory²⁷. For instance, the expectation that demands on the network may change or that assets and systems may be approaching the end of their useful life will drive expenditure for an increase in capacity or a programme of renewal, either with like for like assets or alternative flexibility solutions.

²⁷ In our consultation we noted that any new investments would be subject to a higher hurdles test. We have provided further details on this in the draft RIIO-2 draft data templates and associated instructions and guidance we published in March. We will further develop our views in this area as the guidance and templates are finalised.

- 9.54 Accompanying this anticipation is risk, whereby the current or expected demand for a network asset may fall away but future consumers would still need to pay for the original investment. Stranding risk can emerge for both existing and new investments.
- 9.55 There is not a predetermined divide separating the type of anticipatory investment that may normally be funded and the type that may normally not be. This requires judgement on the levels of risk and the prospect of additional benefit to be applied on a case-by-case basis. In this section, the type of anticipatory investment that normally may not be funded is referred to as 'highly anticipatory'.
- 9.56 Highly anticipatory investment might include expenditure that is not proposed or allowed either because the need for or the benefit from the investment is relatively more uncertain than would normally be the case. This might include new approaches which offer better future option value, such as flexibility solutions, that may provide benefits over long- term asset solutions. These investments might however deliver significant value to consumers, and additional risk-sharing arrangements might be appropriate to unlock this value.
- 9.57 This section sets out how we will protect consumers and investors against the risk of asset stranding and our approach to highly anticipatory investment.

December proposals

Utilisation incentive

- 9.58 One way of managing stranding risks could be to incentivise companies to maintain an efficient level of utilisation of their assets. In December, we said that there is a high evidentiary hurdle which makes it hard to justify the introduction of a utilisation incentive for existing assets. In light of the issues we highlighted in December, we did not intend to introduce such an incentive for gas network companies or for electricity transmission. We said that we will consider this further as part of the development of RIIO-ED2.
- 9.59 We asked stakeholders whether there was a need for utilisation incentive at the sectoral level and, if so, how such an incentive would operate coherently with the proposed RIIO-2 price control framework for that sector.

Inter-institutional group

- 9.60 In December, we said that we saw value in establishing a forum which would allow Ofgem to better understand the wider context for decisions we may have to make regarding highly anticipatory investments. We said this group would be made up of members from various public sector institutions and other organisations.

Risk sharing for highly anticipatory investment

- 9.61 We noted in our consultation that there may be some high-value investments that could deliver benefits for consumers, but which are highly anticipatory.
- 9.62 We said that if companies identify such projects, then it may not be appropriate for customers to be exposed to the associated risks. However, to enable the delivery of the potential benefits, there may be merit in enabling a degree of risk-sharing between investors and consumers, where investors take on some additional demand risk in exchange for a higher return on their investment.
- 9.63 We asked stakeholders to identify whether there were any projects that might be appropriate for risk sharing, and how best risk might be shared. We also asked for

views on how best to prevent licensees from using this arrangement to earn a higher return for activities they might undertake as business as usual.

Summary of responses

Utilisation incentive

- 9.64 18 respondents directly addressed whether or not we should introduce utilisation incentives. Of these, 13 noted that there was insufficient evidence to support the introduction of such incentives.
- 9.65 While they did not offer evidence, some respondents noted that there may be a case for some form of utilisation incentive based on the ratio of peak demand to capacity on a particular part of the network, and that any incentive should focus on maintaining capacity headroom.
- 9.66 One respondent noted that a utilisation incentive could incentivise distribution network operators to invest in operational rather than capital solutions. However, they did not offer evidence to support this.
- 9.67 Other respondents noted that this is a subject we may wish to return to when considering the RIIO-ED2 price control.

Inter-institutional group

- 9.68 We did not ask a specific question regarding the establishment of an inter-institutional working group. However, a number of respondents expressed their support for such a forum. In giving their support however, respondents noted it had to be clear what decision-making power, if any, the group would have.

Risk sharing for highly anticipatory investment

- 9.69 Respondents held differing views regarding the possibility of specific mechanisms that might share the risk of highly anticipatory investment. Some welcomed and encouraged our consideration of such mechanisms, while others noted that increasing the risk a licensee bears would have a consequential impact on the cost of capital.
- 9.70 A number of respondents questioned the need to introduce specific risk-sharing mechanisms for anticipatory investment. Further some respondents noted the totex incentive mechanism already incentivises anticipatory investment.
- 9.71 On the types of proposals that could be funded through a risk-sharing mechanism, one respondent noted that companies should be able to invest in carbon capture, transportation and storage. Others noted that investment in gas assets that might facilitate a potential transfer to hydrogen should be considered anticipatory investment and subject to risk sharing.
- 9.72 One respondent noted that the risks should be borne by those who trigger any investment. For example, this could be where a new customer connecting to the network triggers the need for additional capacity.
- 9.73 A number of respondents expressed the view that we need to define exactly what we considered to be an anticipatory investment.
- 9.74 Respondents noted that the inter-institutional group could provide advice on any decisions relating to applications for highly anticipatory investment.

Decision

Utilisation incentive

- 9.75 We will not introduce a utilisation incentive for the gas distribution, gas transmission or electricity transmission price controls.
- 9.76 We will consider again any new evidence that is developed in advance of the RIIO-ED2 price control review.

Inter-institutional group

- 9.77 Where we consider it will add value to our decision-making process, we will bring together experts from across government and other institutions. For example, this could arise where we need to understand how a decision might interact with government policy.

Risk sharing for highly anticipatory investment

- 9.78 We will not set out at this time a specific mechanism by which the risks and rewards of any highly anticipatory investment might be shared.
- 9.79 Where appropriate, network companies should propose in their Business Plans specific investments they consider to be highly anticipatory, along with how they expect such investments to be treated within the price control. We expect network companies to consider non-traditional solutions for highly anticipatory investment, including flexibility solutions, and to take account of the option value and declining technology costs that these solutions can offer.
- 9.80 We will take this into account in making our decision on whether to provide revenue to support the expenditure, and whether to develop any additional mechanisms to recover the associated costs. We will assess each case on its individual merits.
- 9.81 Our decisions on what amounts to highly anticipatory investment will be determined on case-by-case basis on the basis of proposals provided to us in the Business Plans. However, in order to be considered, these proposals must address a potential future requirement, rather than a current network need, they must be directly related to licensable activities of network operators and it must be clear what the potential benefits and risks are for consumers.
- 9.82 There may be cases where a licensee wishes to make an anticipatory investment but has insufficient certainty on cost or need. It may be the case that it expects to have more certainty in the course of the price control period. We will therefore allow licensees to propose specific re-openers for highly anticipatory investments, eg the transition of gas distribution networks to transporting one hundred per cent hydrogen.
- 9.83 These re-openers will need to be justified on the same basis as baseline allowances. Licensees will need to make clear as part of their Business Plans the maximum amount that should be made available through each re-opener and when it expects to have sufficient confidence to trigger a re-opener.

Rationale / evidence to support decision

Utilisation incentive

- 9.84 No new evidence was provided to justify a utilisation incentive at this time. We noted a number of factors in our consultation document that we consider are still relevant. These include, that:

- the totex incentive mechanism already rewards companies for better utilising existing assets.
- it could pull in the opposite direction to other mechanisms, particularly those that protect asset health. An asset utilisation incentive of sufficient strength may undermine our efforts to ensure long-term asset health.
- the primary factors impacting utilisation may be outside a network's control.

9.85 An asset utilisation incentive might therefore either allocate risk inappropriately, or reward networks for improvements for which they were not responsible. There are also significant issues with collecting and verifying the data required for such an incentive.

Inter-institutional group

9.86 We noted in our consultation that decisions to make highly anticipatory investment will be driven in part by current or future government policy. We, therefore, consider that where it will add value to our decision-making process, we will bring together experts from across government and other institutions consider the interactions between proposals for highly anticipatory investment and government policy. However, it is important to note that these groups, if formed, will be advisory. The decision on whether to allow funding to support a proposed highly anticipatory investment will be made by Ofgem through the process of making Draft and Final Determinations.

Risk sharing for highly anticipatory investment

9.87 We are aware that investing ahead of need can, in certain circumstances, deliver longer-term benefits to network users. However, we also recognise there is a risk that a forecast need does not arise. Given this, we recognise the need to retain flexibility to allow for specific pieces of highly anticipatory investment if they are warranted.

9.88 We have not been provided with examples of specific projects that would justify a bespoke approach. In general, respondents were neutral as to whether different approaches should be introduced to incentivise anticipatory investment, other than the existing totex arrangements. We are similarly uncertain but recognise the value in retaining flexibility to introduce a mechanism to fund these investments, if it is warranted. However, we need to ensure that there is no way in which licensees can receive an enhanced return for expenditure that should be business as usual. We remain open to licensees making proposals for specific pieces of investment that are not part of totex. We will consider the treatment of these through the process of making Draft and Final Determinations.

Interaction with other policy areas

Inter-institutional group

9.89 In establishing the requirement for an inter-institutional group, we will also consider interactions with issues such as innovation where we will be developing proposals for new governance arrangements to help us set strategic innovation challenges in due course. This innovation governance framework will consider where licensees need to innovate to address future energy system transition challenges and will seek to ensure stronger alignment between network innovation activities and wider public innovation funding.

10. Driving efficiency through innovation and competition

In this chapter, we outline our decision on how we will use innovation and competition to drive efficiencies in network investment and operation, facilitate the energy system transition and provide increased support for projects which have the potential to benefit vulnerable consumers.

The chapter is applicable to the Electricity Transmission, Gas Transmission, Gas Distribution and Electricity System Operator RIIO-2 price controls. Additionally, the ESO decision document considers some ESO-specific considerations in relation to innovation funding and considers the role for the ESO in facilitating early competition.

Innovation

Decisions	<ul style="list-style-type: none"> • We confirm measures to encourage companies to do more innovation as business as usual (BAU) using totex allowances. • We confirm the removal of the Innovation Rollout Mechanism re-opener. • We confirm the introduction of a new innovation funding pot, replacing the existing Network Innovation Competition (NIC), to refocus innovation funding on the energy system transition and what is strategically important, and better aligned with wider public sector R&D funding. • We will retain the opportunity for additional innovation funding in the form of the Network Innovation Allowance (NIA). This will be reformed to focus primarily on projects solving problems relating to longer term energy system transition and addressing consumer vulnerability, ensure improved public reporting of projects, set allowances based on justification and supporting evidence in company Business Plan submissions. • We confirm that Distribution Network Operators (DNOs) will be encouraged to participate in RIIO-2 innovation projects prior to the start of the RIIO-ED2 price control. • We confirm plans for further development of the detailed implementation of the RIIO-2 innovation stimulus mechanisms, including its governance, and measures to increase third party involvement. We will also further consider changes, including legislative change, that could be required to provide direct third party access to Ofgem administered network innovation funds.
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Summary of issue

- 10.1 Innovation is important to ensure that network companies support the transition to a smarter, more flexible, sustainable low-carbon energy system and reduce costs to consumers by finding new ways of operating and developing their networks.
- 10.2 Within RIIO-1, we encouraged innovation in a number of ways. The eight-year price control, totex approach and totex incentive mechanism encouraged innovation within the core price control framework. Three additional innovation stimuli (the Network Innovation Allowance (NIA), Network Innovation Competition (NIC) and Innovation Rollout Mechanism (IRM)) provided companies with additional funding for innovation.
- 10.3 We made the decision in July 2018 to retain an innovation stimulus for RIIO-2, limited to projects that might not otherwise be delivered. We also decided to

pursue areas for reform: increased alignment of funding to support the energy system transition; greater coordination of public innovation funding; and enabling increased engagement from third parties.

- 10.4 Building upon these objectives, we want to ensure that the RIIO-2 framework continues to place innovation at the heart of what network companies do. This chapter includes decisions on how to encourage companies to undertake more innovation as part of their business as usual (BAU) activities and the composition of the RIIO-2 innovation stimulus.

December proposals

- 10.5 In December, we set out our expectation that more innovation projects should be funded as BAU by companies, and highlighted that the wider RIIO-2 framework retains strong incentives for companies to innovate (in particular via the totex incentive mechanism (incentive rate)). We also proposed:
- to reward companies with ambitious Business Plans using the Business Plan Incentive
 - that the enhanced engagement groups (Customer Engagement Groups, User Groups and the independent Customer Challenge Group) would challenge the level of ambition within companies' innovation strategies
 - to remove the Innovation Roll-out Mechanism re-opener.
- 10.6 In order to focus network innovation more on strategic energy system transition challenges, increase coordination with other public sector innovation funding and increase third party involvement in network innovation, we proposed to introduce a new funding pot to replace the NIC. This would focus on big strategic innovation challenges within networks and system operation.
- 10.7 We also consulted on the case for retaining the NIA and operation of the innovation stimulus for electricity distribution companies prior to the commencement of RIIO-ED2. Additionally, in the ESO December consultation, we consulted on the application of an innovation stimulus within the ESO price control.²⁸

General comments on RIIO-2 innovation framework

- 10.8 In total, 68 responses commented on RIIO-2 innovation proposals. We received comments from more stakeholders on the topic of innovation than on any other. Generally, most responses welcomed continued support for innovation, especially in light of the scale of future challenges companies face with roll out of electric vehicles and decarbonising heat. There was considerable emphasis that continued innovation is important to ensure companies can respond to future challenges and meet wider targets government has set to increase research and development spending in the UK economy more generally.

Encouraging more innovation as part of BAU

Summary of responses

- 10.9 There was widespread agreement among the 40 respondents on this question that companies should do more innovation as BAU activities in RIIO-2. However, there

²⁸ See ESO decision document for decisions on the application of an innovation stimulus within their price control.

was some disagreement on the type of innovation companies should finance themselves.

- 10.10 There was general agreement in the vast majority of these responses that companies should finance short-term lower risk operation and maintenance innovation using their totex revenues.
- 10.11 However, some responses from suppliers and industry parties suggested expectations on companies should go further and they should fund all types of innovation themselves, without the need for additional funding for innovation, as wider incentives within the RIIO framework ensure companies are rewarded. A response from a SME also expressed frustration at the 'trials culture' within network companies and suggested companies could increasingly use procurement processes in order to introduce new technologies and practices.
- 10.12 Several network companies, trade bodies and SMEs emphasised that companies' willingness to fund innovation is dependent on strong incentives in the wider RIIO-2 package – in particular, a strong totex incentive mechanism (incentive rate) which ensures companies can share the benefits of efficiencies that result from innovation.
- 10.13 Several respondents also highlighted that, if companies finance innovation using their own money within a competitive environment in which network companies' performances are relatively assessed, this could perversely incentivise certain company behaviours. Namely, there will be less collaboration between companies and a lack of support for the energy system transition or whole system related projects. Additionally, companies would end up focusing on short-term projects that deliver quick financial efficiencies.
- 10.14 There was general agreement among respondents to this question with the proposal to use Business Plan Incentive or enhanced engagement groups to encourage more BAU innovation. There was, however, little specific feedback regarding this. Some responses indicated agreement with specific proposals. However, several network companies indicated that more clarity is needed about how Ofgem and enhanced engagement groups will assess Business Plans and reward innovative companies. There was also the suggestion from the RIIO-2 Challenge Group that reputational incentives should be used to encourage more BAU innovation.
- 10.15 A few responses from network companies also sought clarification of paragraph 8.16 of the December consultation.²⁹ They disagreed with any suggestion that innovation spending should be clawed back if the projects are unsuccessful and not rolled out in BAU because, by the very nature of the innovation, projects do fail and companies should not be punished for this.

Decision

- 10.16 We expect companies to fund more innovation in RIIO-2 as BAU using their totex allowance, under the totex incentive mechanism, rather than rely solely on additional innovation stimulus funds.

²⁹ In paragraph 8.16 of the December consultation, we stated "Any allowed funding for BAU innovation which is not subsequently rolled out will be recovered as part of close-out for RIIO-2".

- 10.17 We will use the totex incentive mechanism, Business Plan Incentive and challenge from the RIIO-2 Challenge Group, Customer Engagement Groups and User Groups to encourage companies to do this.

Rationale / evidence to support decision

- 10.18 Network companies have had dedicated innovation funds in one form or another for many years now. For example, gas distribution, gas transmission and electricity transmission companies have had access to innovation stimulus funds since the introduction of the Innovation Funding Incentive in 2007. We have previously stated that dedicated innovation funding within the RIIO framework should be time-limited, until such time that wider incentives on companies and developments in companies' cultures result in companies doing more innovation themselves.³⁰
- 10.19 Responses indicated that network companies, SMEs and trade bodies believe that the innovation stimulus has resulted in some of the desired cultural shift as there is an increased willingness to innovate and recognition of the benefits that innovation can deliver. Network companies have also suggested that they are now increasingly willing to innovate themselves and roll out proven innovation using their own money. Additionally, there is a strong argument from other respondents that network companies should, just like any other company, move with the times, take advantage of opportunities and innovate as part of BAU activities.
- 10.20 We continue to believe that companies should do more innovation using their totex allowance and the RIIO-2 framework retains a strong incentive on companies to innovate. In particular, the totex incentive mechanism (incentive rate) enables companies to retain a share of the efficiency savings that result from innovation over the course of the five-year price control. This is a strong incentive to encourage companies to do innovation which reduces an individual companies' network costs.
- 10.21 Although many respondents suggested that increased innovation as part of BAU activities may result in less collaboration and more inward looking behaviour from network companies, this itself could be a natural consequence of a competitive market, rather than solely because of our innovation reforms. Additionally, we believe our measures to increase competition within networks also drives progress and greater efficiencies across the board.³¹
- 10.22 We appreciate the point made by many responses that there are some types of innovation which companies are not inherently incentivised to do using their own money. For example, projects where the payback period extends beyond the length of an individual price control and may not result in an immediate net financial benefit to the individual network company, including those which deliver benefits to other parties. We recognise this and, for this reason, we will continue to support these innovations using wider innovation mechanisms. We discuss the role of NIA and the new innovation funding pot in supporting innovations that would not otherwise happen below.
- 10.23 In response to feedback that further detail is needed regarding the Business Plan assessment framework and the role of enhanced engagement groups, we have

³⁰ This was our stated intention at the start of RIIO-1. For example, see A new way to regulate energy networks – final decision, Ofgem, October 2010; <https://www.ofgem.gov.uk/ofgem-publications/51870/decision-docpdf>

³¹ For more detail about measures to increase competition in networks, see section on competition later within this chapter.

also provided more detail on these in the accompanying documents. Additionally, our decision clarifies that we will not seek to recover funds companies have used for innovation projects that are not rolled into BAU as we acknowledge that innovation projects are inherently risky. However, if companies make a case for additional money as part of their Business Plan to rollout proven innovation and then do not use it for that purpose, then we will seek to recover this money.

Removing the Innovation Rollout Mechanism re-opener

Summary of responses

- 10.24 There were 33 responses which directly commented on this question. There was very wide agreement within these responses that the IRM mechanism has not worked, has had limited practical application in RIIO-1 and should be removed for RIIO-2. These respondents largely agreed that the shorter RIIO-2 price control, desire for companies to finance more innovation themselves and benefit through the totex incentive mechanism should reduce the need for the IRM.
- 10.25 However, many respondents highlighted that with a shorter price control it will continue to be difficult to roll out proven innovations, especially those which do not deliver financial efficiencies for the individual network company. A couple of these responses believed that this was a reason for the retention of the IRM, whereas the other respondents believed we should consider new measures to help companies roll out proven innovation.

Decision

- 10.26 The RIIO-2 framework will not include an Innovation Rollout Mechanism re-opener.
- 10.27 Companies will be incentivised to include plans to roll out proven innovation using their totex revenues in their Business Plan by the Business Plan Incentive. They will also be incentivised to roll out proven innovation within the price control period by the totex incentive mechanism (incentive rate). Additionally, if necessary, companies will be able to receive additional totex allowance to roll out proven innovation via within their Business Plan submission if they can demonstrate the need for this additional funding.

Rationale / evidence to support decision

- 10.28 Widespread agreement from these respondents reaffirms our view that the IRM should not be used in RIIO-2 as the mechanism has had little use in RIIO-1 and lacks flexibility. Additionally, the shorter RIIO-2 price control reduces the need for specific innovation rollout re-openers.
- 10.29 Based upon responses, we recognise the difficulties faced by some companies rolling out innovation during the price control period if the implementation costs are high. However, it is important that companies roll out proven innovation using their totex allowances and we believe that the incentives framework, in particular the totex incentive mechanism (incentive rate) and Business Plan Incentive, encourages and enables them to do so.
- 10.30 Additionally, there is the opportunity for companies to receive additional totex allowance to roll out proven innovation via the submission of their RIIO-2 Business Plans. We will consider any specific expenditure proposed within companies' Business Plans that will enable roll-out of specific innovations through their baseline funding, providing they can demonstrate the need for additional funding to roll out proven innovation within their submission. Accordingly, we do not

believe we need to introduce a new mechanism to support the roll-out of innovation for RIIO-2.

Introducing a new funding pot to focus on strategic challenges, in place of the Network Innovation Competition

Summary of responses

- 10.31 Among the 39 respondents to this question, there was wide agreement with focusing on strategic innovation challenges, which are set in conjunction with other public innovation funders such as BEIS, UKRI and the devolved administrations. Although several respondents highlighted the practical difficulties of defining energy system transition challenges, most responses indicated support for targeting this funding at large future-facing strategic challenges. There were also other comments within wider innovation responses which highlighted the need for a stronger strategic direction to network innovation and welcomed increased Ofgem involvement in network innovation in the future.
- 10.32 A few responses from consumer bodies, network companies and the RIIO-2 Challenge Group expressed support for innovation challenges which seek to address consumer vulnerability. Some responses, including those from the RIIO-2 Challenge Group, a few SMEs and a few network companies, also indicated that challenges should not ignore local, regional or company specific innovation requirements.
- 10.33 Gas network companies, and trade bodies and SMEs working within the gas sector were particularly keen that this new fund should focus on the future of heat and indicated that this area needs more funding. The RIIO-2 Challenge Group also questioned whether the level of innovation funding provided for NIC projects in RIIO-1 would be sufficient for projects in RIIO-2.
- 10.34 Several SMEs, trade bodies and a network company also indicated that this new fund should also support earlier stage research and trials.
- 10.35 Several responses from network companies, trade bodies and SMEs provided constructive feedback on the operation of such an innovation fund, for example suggesting there is a need for transparency when setting challenges, for representation from industry experts or network companies and a role for the ESO in setting the direction. One response highlighted that any work identifying innovation priorities and setting challenges should build upon what industry and the ENA already does as they develop innovation strategies.
- 10.36 There were a small number of respondents (including a couple of DNOs) who disagreed with the proposal. They suggested that setting innovation challenges could prevent disruptive innovation that companies think of themselves, while some others suggested there was still a need for funding for large scale deployment trials of non-energy system transition projects which could result in significant consumer benefit.
- 10.37 There were 27 responses to the question seeking views on how we raise funds for this new funding pot. Most agreed that funds for the new innovation funding pot should be recovered from use of system charges. Some of these responses agreed that we should look to recover these electricity innovation funds from a wider user base. Specifically, some responses agreed we should use balancing charges (Balancing Services Use of System (BSUoS) Charges)) to recover these electricity innovation funds, in addition to transmission charges that are currently used (Transmission Network Use of System (TNUoS) Charges). While a few other

responses suggested that the ESO's innovation funds should be fully recovered from balancing charges.

- 10.38 However, a few responses from industry bodies explicitly disagreed that innovation funds should be recovered from balancing charges. One of these responses queried whether it made any difference where the funds came from as they all come from consumers at the end of the day. One network company also suggested that high value innovation projects should be recovered through companies' regulated asset base.

Decision

- 10.39 We confirm that RIIO-2 will include a new innovation funding pot in place of the existing NIC to refocus innovation funding on the energy system transition and what is strategically important. This funding pot will primarily focus on energy system transition challenges, ensuring stronger alignment with wider public innovation funding. Consistent with that focus of attention, it will support network innovation projects addressing a broad range of whole system solutions (including the future of transport, heat and waste for example).
- 10.40 Funds for this new innovation funding pot will be recovered from use of system charges, in a similar manner as they currently are for the NIC. In electricity, these innovation funds will be recovered from TNUoS Charges and potentially Balancing Services Use of System (BSUoS) Charges. In gas, these innovation funds will be recovered from National Transmission System Transportation (NTS) Charges.

Rationale / evidence to support decision

- 10.41 Pöry's evaluation of the Low Carbon Network Fund (LCNF) estimated that the benefits of additional innovation funding are potentially significant.³² Pöry estimated that the LCNF, costing around £300m in total, could deliver between £4.8-£8.1bn in financial benefits by 2030 if all solutions were rolled out, as well as delivering £600-£1.2bn in carbon reduction benefits. This, therefore, provides a strong rationale for additional funding for high value innovation projects as these would not otherwise be delivered by network companies.
- 10.42 Widespread agreement among responses to this question has reaffirmed our view there is a need to primarily focus on big strategic innovation challenges, considering the scale of the energy system transition challenges. This builds upon CEPA's conclusions that the type of innovation needed to meet the scale of the energy system transition may not be delivered without additional funding on top of companies' allowed revenues.³³
- 10.43 The nature of these challenges means there is a need to coordinate more with wider public sector funding from BEIS, UKRI and devolved administrations. Many challenges facing the energy sector (such as the future of heat, rollout of electric vehicles and increasing use of distributed energy resources) necessitate increased collaboration between network companies, greater consideration of whole system solutions, third party involvement and increased alignment between funders of innovation. We believe that primarily focusing this innovation funding on the energy system transition will enable us to support these projects.

³² An independent evaluation of the LCNF, Pöry, October 2016;

https://www.ofgem.gov.uk/system/files/docs/2016/11/evaluation_of_the_lcnf_0.pdf

³³ Review of the RIIO framework and RIIO-1 performance, CEPA, March 2018;

https://www.ofgem.gov.uk/system/files/docs/2018/03/cepa_review_of_the_riio_framework_and_riio-1_performance.pdf

- 10.44 In response to feedback, we believe that the governance framework developed to underpin the process setting challenges can mitigate concerns that new and emerging innovations may not receive innovation funding and may fail to consider local, regional or company specific innovation challenges.
- 10.45 We also believe it is sensible to seek to build upon what network companies and the ENA already do when identifying priorities and developing strategies for energy innovation.
- 10.46 We additionally appreciate that such an innovation mechanism may not be suitable for smaller scale innovation projects or for some SMEs given the time and effort involved in securing funding. We have taken this into account in our decision on the future of NIA for RIIO-2 below.

The case for retaining the Network Innovation Allowance

Summary of responses

- 10.47 There were 40 responses to our question asking whether there is a continued need for NIA. There were strong representations from most of these respondents that there is continued need for NIA in RIIO-2. These responses indicated that companies have no inherent incentive to undertake smaller-scale, longer-term, higher-risk, energy system transition, whole system or vulnerability-related projects which deliver benefits beyond individual network company. Several network companies, trade bodies and SMEs also provided examples of RIIO-1 NIA projects which sought to protect vulnerable consumers and support the energy system transition that companies had no incentive to fund under the core price control framework.
- 10.48 Accordingly, these responses suggested that NIA is needed to ensure companies are ready to meet the challenges of the energy system transition and deliver projects which have the potential to benefit future consumers. Several of these responses from networks and trade bodies suggested that such additional funding is particularly necessary for earlier-stage research, rather than later-stage demonstration and deployment of technologies, as this would not otherwise happen within a price control setting.
- 10.49 Responses from these network companies, trade bodies and SMEs also highlighted the impact that removal of NIA would have on wider third party involvement in network innovation and the supply chain more generally. It was also argued that removal of NIA would lead to less collaboration and knowledge dissemination.
- 10.50 Some network companies, trade bodies and SMEs suggested there is evidence of the benefits NIA has delivered in RIIO-1. For example, one network company suggested that there is a ratio of 1:6 short term return on investment for consumers. The same respondent also suggested that from their existing portfolio there is the potential £91m in savings between 2021-2026 and up to £684m in savings up to 2050.
- 10.51 Some respondents (including one network company, a couple of suppliers and one trade body) disagreed with need for additional innovation funding. The suppliers and trade bodies argued that companies should not receive additional funding as they should innovate as part of core business, as other companies have to do. One trade body also noted that there is limited transparency and accountability associated with this additional funding mechanism. However, the network company's response suggested that the willingness of companies to innovate in the absence of additional funds is dependent on the retention of strong incentives

within the wider RIIO-2 framework– in particular a strong totex incentive mechanism (incentive rate).

- 10.52 Additionally, there were responses to the gas distribution sector methodology consultation which discussed the need for, and role of, NIA. Gas network companies, trade bodies and SMEs working within the gas sector advocated the retention of the NIA to allow early exploration of low carbon options or small scale projects. However, some concerns were expressed by academics and consumer bodies about the objectivity of evidence produced by gas network companies given its implications for their core business. In particular, academics told us their review of NIA projects found "innovation of poor quality was being carried out by certain gas networks and the key aim of this 'innovation' was political influencing". Involvement of academics and requirements to produce annual innovation reports were suggested in mitigation.
- 10.53 There were 33 responses which provided constructive suggestions as to how NIA could be improved in RIIO-2 and benefits tracked. Many network companies, consumer bodies and SMEs noted that the Energy Innovation Centre's Innovation Measurement Framework could be used to track the benefits that innovation delivers. A few network companies were, however, opposed to more stringent benefits tracking and reporting of NIA spending as they believed that this could result in perverse incentives and manipulation of projects.

Decision

- 10.54 We will retain the opportunity for network companies to receive NIA funding in RIIO-2. It will, however, be subject to reform in three areas:
- Focussing primarily on projects related to the longer-term energy system transition and addressing consumer vulnerability
 - Improving the public reporting of projects funded, including costs and benefits, and demonstrating that successful innovation is being diffused across the energy sector
 - Instead of providing automatic allowances linked to revenue, any innovation allowances would be set based on the justification set out in company Business Plan submissions.

Rationale / evidence to support decision

- 10.55 We note that some respondents who do not rely on the existing NIA funding mechanism believe that additional innovation funding is not necessary for network companies. We understand these views and continue to believe that companies need to finance more innovation themselves as they benefit from short-term financial efficiencies, and consumers should not have to pay twice for innovation that results from the totex incentive mechanism.
- 10.56 However, we note that the majority of responses to the questions about NIA argued they would not otherwise embark upon longer-term, energy system transition-, whole system- or vulnerability-related innovation projects, which deliver benefits beyond an individual company without additional funding. This also builds upon CEPA's conclusions that the type of innovation needed to meet

the scale of the energy system transition may not be delivered without additional funding on top of companies' allowed revenues.³⁴

- 10.57 Additionally, some network companies, SMEs and trade bodies have suggested there is strong evidence of the benefits that NIA has delivered to date and highlighted the risks of removing this additional innovation funding. This includes evidence that larger scale transformational projects are often triggered from trial and error, smaller scale R&D activity
- 10.58 We also note Pöyry's evaluation of the Low Carbon Network Fund (LCNF) that estimated that the benefits of additional innovation funding are potentially significant.³⁵ Although it is difficult to quantify potential future benefits against a counterfactual, we believe that if these proven NIA innovation projects are rolled out into BAU activities by all network companies, the potential benefits could be significant.
- 10.59 We therefore believe that there is logic in complementing the large-scale strategic innovation fund for RIIO-2 with the opportunity of a smaller scale innovation allowance. This approach will help protect the interests of:
- future consumers, who will benefit from R&D activity that may not otherwise happen in a five-year price control
 - vulnerable consumers, given that spending in related activities may not generate any short-term totex benefits.
- 10.60 We continue to have a concern, shared by several respondents, that providing each network company with automatic, individual allowances can result in fragmentation, duplication, and a potential lack of strategic direction. As set out above, we also believe that network companies need to finance some innovation themselves given the benefits from short-term financial efficiencies, and the need to protect consumers from paying twice for innovation that results from the totex incentive mechanism. We also think that current levels of public reporting can also be improved to support greater transparency around how innovation funding is being used, the benefits of individual NIA projects, and their wider implementation in the energy sector. These reforms will require a review of the NIA governance arrangements for RIIO-2, and the next steps for that process are set out below.

Process for setting individual innovation allowances

- 10.61 We ask companies to explain what additional innovation allowance they need within their Business Plan, explaining why they would not be able to fund this innovation using their totex allowances. We would like companies to include high-level areas of focus for NIA spending, rather than individual projects, and how much funding they additional funding they believe is necessary for these areas of focus.³⁶
- 10.62 When setting allowances, we are likely to take into account the following, along with other information that may be relevant:

³⁴ Review of the RIIO framework and RIIO-1 performance, CEPA, March 2018; https://www.ofgem.gov.uk/system/files/docs/2018/03/cepa_review_of_the_riio_framework_and_riio-1_performance.pdf

³⁵ An independent evaluation of the LCNF, Pöyry, October 2016; https://www.ofgem.gov.uk/system/files/docs/2016/11/evaluation_of_the_lcnf_0.pdf

³⁶ We detail what we expect within companies' Business Plans within our Business Plan Guidance document.

- companies' proposals for these allowances in their Business Plans
- the extent to which companies are undertaking other innovation as BAU activities
- the extent to which companies' proposals incorporate the application of best practices
- the processes companies have in place to roll out proven innovation into BAU and the evidence that they are already doing so
- the processes companies have in place to monitor, report and track innovation spending and the evidence that they are already doing so.

The participation of electricity distribution companies in RIIO-2 innovation projects prior to the commencement of RIIO-ED2³⁷

Summary of responses

- 10.63 There were 22 responses to in relation to this issue. Most of the responses to this question agreed that it is desirable to have continued collaboration between electricity distribution companies and other network companies before the start of RIIO-ED2 in 2023, especially considering the desire for innovation projects to support whole solutions. These responses agreed that electricity distribution companies should be able to participate as a project partner in a RIIO-2 innovation project led by another network company (GT, GD, ET or ESO) between 2021 and 2023.
- 10.64 One network company suggested that more detail is needed on proposals for ED companies, while one response from a SME believe that ED companies should be able to access RIIO-2 innovation funding before the start of RIIO-ED2.

Decision

- 10.65 Electricity distribution companies will continue to be able to use existing RIIO-ED1 innovation funding mechanisms until 31 March 2023. Additionally, they are encouraged to participate as project partners within RIIO-2 innovation projects led by GT, GD, ET network companies or the ESO before the end of RIIO-ED1 / start of RIIO-ED2.

Rationale / evidence to support decision

- 10.66 We have previously decided that ED companies should use RIIO-1 NIC and NIA funds until the end of RIIO-ED1.³⁸ We disagree with responses which suggest that ED companies should be able to use both RIIO-1 and RIIO-2 innovation mechanisms at the same time as this could complicate arrangements, and is unnecessary given the level of funding available via RIIO-1 innovation mechanisms.
- 10.67 Considering the general agreement from responses to this question, we believe that ED companies should be able to, and encouraged to, participate as project

³⁷ We will consult on innovation arrangements for RIIO-ED2 within the sector specific methodology consultation in 2020.

³⁸ We previously decided that £40m will be available for NIC under the electricity distribution price control until 2023; see page 26 of the Network Innovation Review decision, March 2017, https://www.ofgem.gov.uk/system/files/docs/2017/03/the_network_innovation_review_our_policy_decision.pdf

partners in RIIO-2 innovation projects before the end of RIIO-ED1 / start of RIIO-ED2. This will facilitate continued support for joint gas and electricity innovation projects and support our whole system objectives.

Interaction with other policy areas

10.68 Our decisions on RIIO-2 innovation support objectives on many policy areas, which are also explored elsewhere. For example, both the new innovation funding pot and the NIA will potentially support projects:

- considering heat decarbonisation, rollout of electric vehicles and distributed generation
- that seek to deliver certain whole system solutions
- that seek to address consumer vulnerability.

10.69 More widely, our consideration of how we raise innovation funds in the future also links into wider Ofgem work as part of the Targeted Charging Review (TCR) as they consider how residual network charges are recovered from network users.

Next steps

10.70 Further work is necessary to develop the detailed operation and governance of the new network innovation funding pot and reform NIA for RIIO-2.

Reforming Network Innovation Allowance governance

10.71 Considering the risk of fragmentation that providing individual allowances to each network company carries as each company has their own portfolio of innovation, we believe there is a need to do further work to improve public reporting on the costs and benefits of projects funded via NIA, documenting successes as well as failures, and demonstrating that successful innovation is being diffused across the industry.

10.72 Similarly, we continue to believe companies need to do more to collaborate, disseminate learnings, involve third parties and roll out proven innovations into their businesses. This will build upon work of the Energy Data Taskforce to increase collaboration and improve data transparency.³⁹ Although some responses expressed views otherwise, we therefore believe that there should be closer tracking of the benefits of NIA spending and reform of NIA governance to ensure it is being spent appropriately and benefiting consumers.

10.73 Accordingly, we will work with industry over coming months to reform the design and operation of NIA for RIIO-2, considering feedback to the consultation. We aim to consult on this during summer 2019.

Introducing the new strategic innovation funding pot

10.74 Similarly, we will also conduct further work to confirm the design and operation of this new innovation funding pot, considering the governance necessary for us to set specific challenges. As part of this, we will consider feedback on the level of funding provided via this mechanism, how we identify priorities and set challenges, and the need for the overarching governance framework to be transparent and flexible. Additionally, we will further consider recovering these

³⁹ For more details about Energy Data Taskforce, see <https://www.gov.uk/government/groups/energy-data-taskforce>

funds from balancing charges (BSUoS) in addition to transmission network charges (TNUoS).

10.75 We will develop, and consult on, detailed proposals for this new funding pot in due course. We will do this with the aim of operating the new innovation funding pot during the early years of RIIO-2.

Increasing third party involvement and a wider evaluation of the RIIO-1 innovation stimulus

10.76 As part of work on developing the RIIO-2 innovation mechanisms, we will consider increasing third party involvement:

- Some respondents, including several SMEs, trade bodies and Citizens Advice, expressed their strong support for increased third party involvement and potential third party direct access to innovation funding. Several SMEs and trade bodies also noted barriers within the current framework, such as requirements to share intellectual property, which limit third party involvement.
- Responses to the gas distribution sector methodology consultation highlighted the importance of third party and independent academic parties within network innovation projects to ensure transparent and objective research.
- Whereas other respondents, including many network companies, emphasised the need for continued network involvement in innovation projects and the risks associated with direct access. For example, one respondent highlighted that direct third party involvement could conflict with existing obligations imposed on network companies to maintain and operate critical national infrastructure.

10.77 We note the importance of third party involvement, and need for objective and independent research to facilitate informed discussions on the energy system transition. As we develop the details surrounding the operation of the RIIO-2 innovation stimulus, we will consider and consult on measures which increase third party involvement. Direct third party access to innovation funding would require legislative underpinning and, we will continue discussions with BEIS about the possibility of amending Gas and Electricity Acts to enable third party direct access to network innovation funds. Moreover, the implementation of third party direct access would be subject to consultation on changes to network licences.

10.78 Additionally, as indicated in our December consultation, our intention is also to evaluate the RIIO-1 innovation stimulus at the end of the RIIO-1 period to enable us to more fully evaluate its benefits. We may use the findings from this evaluation to amend the level of innovation funding available and the governance underpinning the RIIO-2 stimulus.

Competition

Decisions	<ul style="list-style-type: none"> • We will: <ul style="list-style-type: none"> ○ Confirm the criteria for late competition in the electricity transmission and gas sectors and the availability of the existing late models in those sectors. ○ Ensure RIIO-2 is capable of delivering some form of early competition, and require network companies to identify projects which are potentially suitable for such competition. ○ Require network companies to develop a competition plan as part of their Business Plans evidencing their ambitions in aligning with the native competition best practices principles.
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Summary of issue

10.79 In RIIO-2 we are looking to expand the use of competition where it is in consumers' interest. Our focus has been on the expansion of late competition the introduction of early competition, and greater expectations around the competitive processes already incentivised by the totex incentive mechanism, which we have termed 'native competition'.

10.80 We have also been considering which organisations – including the ESO – might run competitions.

December proposals

10.81 In our December consultation, we sought views on early and late forms of competition, on specific late delivery models, on which institutions might be best placed to facilitate competitions and on criteria to guide our future decisions, including whether to apply competitive processes to specific projects.

Overall summary of responses

10.82 We received responses from 32 stakeholders to our competition questions, 11 of which were from network companies. Network companies noted that a large proportion of the works they undertake is already subject to some form of competitive process, particularly given their obligations under the Utilities Contracts Regulations 2016. Furthermore, some responses noted that there has already been a large increase in the level of competition in network services through such avenues as competition for new connections through Independent Distribution Network Operators (IDNOs)⁴⁰, Independent Gas Transporters (IGTs)⁴¹, Independent Connection Providers (ICPs) and Utility Infrastructure Providers (UIPs)⁴².

Late competition

10.83 In December, we consulted on the position that the new, separable and high value criteria (developed in RIIO-T1 for ET) are appropriate for identifying projects suitable for competition in all network sectors (ET, GT, GD, ED). We also said that

⁴⁰ <https://www.ofgem.gov.uk/electricity/distribution-networks/connections-and-competition/independent-distribution-network-operators>

⁴¹ <https://www.ofgem.gov.uk/gas/distribution-networks/connections-and-competition/independent-gas-transporters>

⁴² <https://www.ofgem.gov.uk/electricity/distribution-networks/connections-and-competition/competition-connections>

we considered that our three late models (CATO, SPV, and CPM)⁴³ would be generally applicable in each sector, but that we needed to consider in more detail any sector-specific differences in design and implementation of the models. We provided a draft Impact Assessment⁴⁴ supporting our proposals to expand late competition in general into all sectors.

10.84 We have set out short descriptions of each of the existing late delivery models in the glossary at Appendix 6.

10.85 As set out in paragraphs 2.3 and 2.4, we will consult on arrangements for the electricity distribution sector prior to any decisions being made for that sector.

Summary of responses

10.86 Stakeholders provided mixed views on the suitability of the late competitions models described in the consultation. Five of the eight network companies who expressed a definitive view were supportive of a CATO delivery model. Four network companies were supportive of SPV and four were supportive of CPM.

10.87 The most common concern with CATO was the lack of a proposed timeline in securing the legislative changes required to implement the model. With regards to the SPV model, stakeholders identified issues such as perceived legal and regulatory concerns with respect to whether participation by the SPV in network activities would be permissible without a licence, whether the model would lead to the savings proposed in the accompanying draft IA, a lack of clarity about the role of Ofgem, and risk allocation for the licensee.

10.88 Where stakeholders responded in relation to CPM, most noted that it was not a true 'competition' for delivery of those assets, and one expressed the view that therefore CPM could not deliver any benefits from competition such as innovation or price discovery. One stakeholder questioned whether having multiple delivery models would lead to a sustainable pipeline of works for relevant contractors.

10.89 Ten network companies who expressed a view in relation to the existing criteria for competition were supportive of using the existing new, separable, and high value criteria in assessing suitability of projects for late competition. Four network companies suggested amendments to the existing criteria or inclusion of additional criteria, for example, not allowing non-contiguous or non-electrically separable assets, including potential timeliness of delivery, and excluding 'first of a kind' type projects eg projects related to new hydrogen networks. Network stakeholders in ED, GT, and GD said that they did not expect any projects in their sectors to meet the criteria in RIIO-2. The RIIO-2 challenge group expressed concern around ensuring the criteria were applied in a robust manner so as to ensure all relevant projects were identified.

10.90 Sixteen responses, coming from a wide range of stakeholders, provided a substantial number of comments in relation to our IA. Half of these respondents expressed no clear agreement or disagreement with our conclusion that competition for network projects which are new, separable and high value can deliver savings for consumers in RIIO-2. Five stakeholders, all network

⁴³ Competitively Appointed Transmission Owner (CATO); Special Purpose Vehicle (SPV) model; Competition Proxy Model (CPM).

⁴⁴ 'Draft Impact Assessment on applying late competition to future new, separable and high value projects in electricity and gas networks during the RIIO-2 period', available at https://www.ofgem.gov.uk/system/files/docs/2018/12/competition_draft_ia_dec_2018.pdf

companies, disagreed with our conclusions; three stakeholders, all non-network companies, agreed.

- 10.91 Five stakeholders mentioned the OFTO savings figures, with one saying that those savings were not comparable to onshore competition, and one stakeholder saying that Ofgem needed to update the underlying financial assumptions for the counterfactual against which OFTO savings were determined (in the consumer savings evaluation undertaken by CEPA)⁴⁵ to account for new market conditions. One stakeholder said that Ofgem should undertake different IAs for each sector to capture the specific circumstances and arrangements of each sector. Two stakeholders said that our IA had ignored the disbenefits of potential delays through introducing new delivery models. One stakeholder encouraged us to recognise that there are already some competitive arrangements in place through the existing IDNO regime.

Decision

- 10.92 We confirm the criteria for late competition (new, separable, and high-value) in the electricity transmission and gas sectors. We confirm the availability of the existing late models (CATO, SPV, CPM) in those sectors for projects meeting the criteria.

Models of competition

- 10.93 Having considered stakeholders responses to our December consultation, we continue to consider it is in the interests of consumers to be able to apply our three existing late models (CATO, SPV, CPM) to projects in the electricity transmission and gas sectors which meet our criteria for competition. In relation to stakeholder comments on the detail of specific delivery models, we expect to continue to develop the relevant areas of policy in due course and take those comments into account. Further information on our policy development in relation to the three existing late models is available on our website.⁴⁶
- 10.94 In support of our decision, we have published our updated 'Impact Assessment on applying late competition to future new, separable and high value projects in electricity and gas networks during the RIIO-2 period'.⁴⁷ That document contains a summary of stakeholder responses in relation to the IA, and our views on those responses and consequential changes to the IA where appropriate.
- 10.95 We will continue to consider the need for additional late delivery models to protect the interests of consumers, and will develop and consult on these as appropriate. This will include, as we develop the electricity distribution price control for RIIO-2, giving consideration to additional models of competition which could be relevant and appropriate for the characteristics of that sector.
- 10.96 We have set out short descriptions of each of the existing late delivery models in the glossary in Appendix 6. Further information on the detail of each model is available in the relevant documentation available on our website.⁴⁸

⁴⁵ 'Evaluation of OFTO Tender Round 2 and 3 Benefits', available at: <https://www.ofgem.gov.uk/publications-and-updates/evaluation-of-to-tender-round-2-and-3-benefits>

⁴⁶ <https://www.ofgem.gov.uk/electricity/transmission-networks/competition-onshore-transmission>

⁴⁷ <https://www.ofgem.gov.uk/publications-and-updates/riio-2-sector-specific-methodology-decision>

⁴⁸ <https://www.ofgem.gov.uk/electricity/transmission-networks/competition-onshore-transmission>

- 10.97 We remain committed to working with government to seek an appropriate opportunity to introduce the legislative change necessary to implement the CATO model.
- 10.98 We intend to undertake further development of the SPV model in due course, building on our previous work through 2017 and 2018. In the immediate term (ie over the next year), our priorities will be implementation of the Competition Proxy Model and development of supporting legislation to underpin the CATO model (should a legislative opportunity arise). We will work closely with network licensees as appropriate to ensure that any project put forward for delivery under the SPV model delivers savings for consumers. For the avoidance of doubt, in RIIIO-2 the SPV model is one of the delivery models we may apply to a project.

Criteria for competition

- 10.99 We consider that our existing criteria for late competition (new, separable, high-value) are applicable in the electricity transmission and gas sectors. Having considered consultation responses, in conjunction with our own analysis, we have not identified any material reasons why the current criteria for late competition should be different across the sectors.
- 10.100 We will continue to give further consideration to the potential impacts on safety arising from increased use of competition. At this stage, we are not aware of any safety issues that would emerge from further competition so long as the relevant party acts in line with industry and safety requirements (including any Health and Safety Executive requirements).
- 10.101 Where appropriate, we consider that consistency across the sectors has the additional benefit of promoting regulatory certainty and that whole system approaches can more easily be treated equally across different networks. We do not intend to introduce any additional criteria at this stage.
- 10.102 We intend to balance the benefits of not changing the competition criteria (both within and across sectors throughout the price control) with the need to keep the criteria under review to ensure that they continue to produce favourable outcomes for consumers. We may look to review the criteria for competition at an appropriate point in the future, for example where there is new evidence of benefits for consumers.
- 10.103 We expect network companies to identify in their Business Plans projects that they consider are likely to meet the new, separable and high value criteria for late model competition.

Early competition

- 10.104 In our December consultation, we set out a range of high-level approaches to early competition and sought views on them. Early Competition can be described as competition run prior to the project design process to reveal the best idea to meet a system need, and could reveal non-network (and flexibility) solutions. We identified two high level approaches to early competition, the first is where the competition for ideas and delivery are separated into two stages; the second is where one competition process is run for both idea and delivery.

Summary of responses

- 10.105 Overall there were fewer responses to the early competition questions when compared to the late and native competition questions, with an average of 14 responses for each of the five questions. Respondents engaged most with the

potential issues regarding early competition that we raised in the December consultation (such as 'access to land'). Respondents also identified a number of additional issues which would need to be considered through any further development of early competition approaches. Approximately half of respondents were unable to identify any existing model of early competition (whether internationally and or in another sector) that they believed could generate benefits to GB consumers.

10.106 In relation to the high level approaches to early competition that we outlined, there was an equal split among respondents as to whether they preferred a one-stage or two-stage model. Generally, respondents provided broadly the same analysis in this regard – a one-stage model focuses on ensuring deliverability at the risk of potential reduced innovation while a two-stage model focuses on maximising innovation at the risk of potential reduced deliverability.

10.107 Among responses, four key specific issues with our proposed initial ideas on early competition were raised:

- The need to consider the time-criticality of projects because more immediate needs might not be able to undergo lengthy tendering and development processes
- The need to ensure the deliverability of proposed network solutions, especially when new or novel ideas are suggested
- The difficulty inherent in comparing different types of solutions
- The need to confirm system need early on so as to avoid expensive cancellations after significant costs have been sunk into a project

10.108 Most network companies agreed that the criteria we consulted on could be useful for identifying potentially suitable projects to undergo early competition. One network company disagreed with the usefulness of the high-value, separable, new and certainty of system need criteria. Two network companies stated time-criticality would not be a relevant issue, and three network companies raised concerns with the difficulty in applying the contestability criteria.

10.109 The ESO outlined a hybrid between the one-stage and two-stage approach to early competition in its response. This 'two-phase' approach would involve an initial screening phase, where proposals would be assessed and shortlisted, followed by a second phase in which the potential solutions that had been shortlisted would be further developed into full bids in a tendering process. A network company respondent indicated a preference for a similar approach, with a very light touch first round followed by full bids in the second round.

Decision

10.110 In RIIO-2, certain projects may be subject to early competition.

10.111 Based on the responses to our consultation and our own analysis (including considering the positive experiences internationally)⁴⁹, we have decided to continue development of early competition. Network companies will be required to identify projects which have a value of over £50m and which are contestable (that

⁴⁹ For example the PJM tender process for the Artificial Island project, the New York ISO tender process on the Western New York Public Policy Transmission Need, the Alberta Electric System Operator (AESO) tender process of the Fort McMurray West Transmission Line, and the Midcontinent ISO tender process of the Hartburg-Sabine Junction project.

is, there is the potential for alternative solutions) as being possibly suitable for early competition. We note some concerns around the potential challenges (such as 'changes in need' and access to land), and will ensure these are considered and addressed in any further development.

Models

10.112As is discussed further below in the 'who runs the competition' section, our focus will be to continue to work with the ESO to expand on their existing processes and capacities for facilitating early competition. For any models of early competition developed by Ofgem, we note the need for further policy development and consultation.

Project identification

10.113In order to help identify system needs which could be beneficially met through potential early competition models, network companies are required at this stage to 'flag' certain system needs in their Business Plans (discussed below).

10.114Flagged projects will not necessarily be subject to early competition. Equally, early competition may ultimately be applied to projects which are not flagged by the network companies in their Business Plans.

Criteria for identification

10.115We consulted on a wide range of potential criteria (as set out in Appendix 2 of the December consultation document) that might be used to identify projects suitable for undergoing an early competition process. Based on the responses and our current thinking – as explained below – we have decided that for the purpose of initially flagging potential projects, network companies should consider value and contestability.

10.116A 'threshold value' will help us focus on projects for which there is more likely to be an overall net benefit for consumers to running the competitive process. On the basis of our analysis, for the purposes of initial identification, we are setting this value at £50 million.

- In applying the threshold value criteria for early competition, we are setting a bespoke threshold that reflects the inherent differences between early and late competition (where late competition has a £100m 'high value' criterion). Early competition raises the possibility of higher savings than late competition, a view expressed by the majority of respondents to the consultation.
- This view is supported by our analysis of North America's experience with early competition. However, for the purposes of our analysis, we also assumed early competition may have higher administration costs arising from possible greater complexity of the tender process (noting one respondent's view that early competitions would have limited additional costs to the late models).
- Our internal modelling and analysis indicates a threshold of £50m is appropriate for flagging in Business Plans projects as possibly suitable for early competition.

10.117A contestability test will help us to focus on the projects which are more suitable for early competition.

- In December, we said 'a primary criterion for determining whether early competition models may be appropriate is contestability of solutions (ie whether or not there are different potential solutions to a network problem)'.
- We note, however, the concerns of network companies with the potential difficulties in formally applying this criterion.
- In their Business Plans network companies are invited to indicate, from among the projects that they have flagged as meeting the threshold value, any which they consider would have no reasonable probability of being addressed by an alternative solution. Network companies would need to explain why they have identified these projects as not being contestable, and can provisionally 'unflag' these projects in their Business Plans.
- Ofgem will examine network companies' flagged and provisionally unflagged projects (and the associated reasoning provided) in considering which projects may potentially be eligible for early competition and will consult in this regard through the Draft Determination.

10.118 For the purposes of flagging potential projects, we have decided not to refer to the criteria of 'new' as it pre-empts the type of solution which may be relevant for the system need in question. For example, where a traditional solution might be the replacement of an existing asset, an early competition might reveal a better overarching solution to the underlying system need.

10.119 While we recognise that separability is useful in reducing the potential complexities between a new entrant and the incumbent network company, this consideration can form part of an eventual overall project-specific assessment of whether to apply early competition to a specific project. Similarly, such an assessment would include elements of time-criticality and certainty of need.

10.120 Where a project meets the value threshold and is clearly contestable but the system need requires immediate addressing or the need is uncertain, the decision to submit the project to early competition may not be in the interests of consumers.

10.121 It is likely that all projects identified as being eligible for late competition will also be flagged as being potentially suitable for early competition.

Native competition

10.122 By native competition, we mean competitions run by network companies within the price control framework operating under the totex incentive mechanism (for instance, the use of flexibility tenders in electricity distribution).

10.123 In December, we asked stakeholders for their views on whether they agreed with the description of 'native competition' we put forward, and on the potential approaches of ensuring consumer value through the 'best practices' and 'price finder' approaches.

Summary of responses

10.124 Of the stakeholders who explicitly engaged with the question of whether we had accurately described native competition, the majority (six) expressed the view that we had. Four network companies said that native competition processes already take place under the price control, while three network companies commented that they were unclear on our description of native competition.

Best practice principles

10.125 In response to our proposals on enhancing native competition through best practice principles, many network companies indicated that their obligations under the Utilities Contracts Regulations 2016 already cover many elements of the competition 'best practices' we outlined, and indicated that the best practices were broadly descriptive of current practices. Two non-network companies noted that native competition processes should include approaches such as framework agreements or flexibility markets, where these could be more efficient (rather than being limited to specific individual tender processes).

10.126 All but one network company took the view that the totex incentive mechanism was sufficient to create a 'level playing field' between network and non-network options. Network companies indicated that under the totex incentive mechanism, they had already begun utilising non-network solutions (eg through flexibility markets).

Competition as a price finder

10.127 In our December consultation we said that we were considering developing a process for projects or items of expenditure where we were not confident that the costs could be accurately estimated at the time of setting the price control. We set out our early thinking on the basic elements that this process could include and sought the views of stakeholders on an approach of this kind. Broadly, respondents were unsupportive of the idea (primarily network company respondents) or said that they would engage with the details of the concept if it was potentially further developed. Two non-network company respondents supported the idea, and two network companies were supportive of the idea being used only for re-openers or where the circumstances made such a process more suitable for estimating costs than benchmarking. A number of specific concerns were raised, including that:

- applying a price finder model to projects in the baseline would reflect a movement towards ex post regulation and could undermine the current totex framework.
- introducing a tenderer's fee could incentivise inefficient behaviour and gaming (a network company respondent raised a specific example where a network company may be able to maximise profit by designing the competition and selecting certain bidders and retaining the tenderer's fee). It was also seen as potentially bringing excessive complexity to the price control.
- bidders would make unrealistically low bids and then push the eventual risks onto the network company (who would be ultimately responsible).
- if network companies were to run competitions solely to generate cost estimates but not for the genuine purpose of issuing a contract to the winning party, this could either breach procurement rules or undermine the long-term viability of the market for future tenders.
- further efficiencies would be lost if a price finder approach is not designed to incorporate the totex incentive mechanism dynamic (namely, to encourage the network company and winning bidder to seek further savings after the competition process has been finalised).

Decision

Native competition – best practice principles

10.128 Network companies will be expected to develop and present a competition plan, as described below, as part of their Business Plan which aligns with our native competition best practice principles, and to ensure they act in accordance with their framework competition plan throughout the price control.

10.129 Based on the consultation responses and our analysis, in their approach to native competition network companies should adhere to the following 'best practice' principles:

- Utilisation of competitive processes for all procurements and projects, except where the potential benefits of doing so are outweighed by the costs.
- The competitive process must be robust, transparent and ensure equal treatment of potential bidders and protect information appropriately.
- The complexity of the competitive process used should be proportionate to the value and time-sensitivity of the project or system need in question.
- All information must be provided equally to all parties, and any conflicts of interest have to be appropriately managed.
- Licensees should be agnostic to technology and bidder type.
- Competitions should be structured to generate outcomes in the interests of existing and future consumers.

10.130 These best practice principles should be followed by networks except where these conflict with any legal obligations, including the Utilities Contracts Regulations 2016 and Utilities Contracts (Scotland) Regulations 2016 (as amended or replaced; which implement the EU Directive 2014/25/EU). Our view is that an ambitious approach to implementing the best practice principles should result in processes which go above and beyond the existing minimum obligations where appropriate. Additional information will be provided in the updated Business Plan Guidance.

10.131 In their competition plans, networks should outline the relevant information and data they will make available throughout the price control such that Ofgem can monitor performance against their commitments.

10.132 Those plans which we consider to be particularly ambitious, for instance because the plan's approach will facilitate greater competition of ideas and/or because the plan includes an extensive commitment to provide relevant information and data, may be eligible for a reward under the Business Plan Incentive.

Native competition - price finder

10.133 For larger projects that are not in baseline allowances but may be subject to re-openers, we will do further work on requiring market testing of costs through a price finder approach of revealing efficient costs through competitive processes run by network companies

10.134 As we stated in the consultation, our view remains that the use of competitive processes to reveal efficient costs for larger projects could be in the interests of consumers, and note the views of the responders which were supportive or conditionally supportive. Accordingly, we will continue to consider and develop this

idea at a sectoral level, noting that the use of competitive processes to determine efficient costs could occur either (i) at the time the re-opener is finalised and funding is approved, or (ii) through a closeout process (similar to the proposed close-out mechanism for High Value Projects in ED-1)⁵⁰. For clarity, the price finder approach would not be used where the project was subject to early or late competition models.

10.135A price finder approach could potentially facilitate new ideas for meeting system needs, and could offer some protection to consumers from ex ante allowances for larger projects which turn out to be higher than the competitive result. However, we recognise that further work in this area will need to address the concerns raised in the responses (as discussed above).

10.136In our further work, we note that widespread use of a price finder approach could weaken the beneficial properties of the ex ante totex framework (as it would move more of the price control into an ex post approach). Therefore, we will limit our further development of the price finder approach to projects which are not placed in baseline revenues (and are subject to re-opener processes to award project based revenues).

10.137We have provided further thinking to guide our further development of the price finder approach in Appendix 3.

Who should run early and late competitions in RIIO-2?

10.138In December, we sought views on the criteria that might be used to assess which organisations were best placed to run early and late competitions. We identified three organisations that we considered could undertake some or all of the responsibilities associated with running competitions, namely; Ofgem, the ESO, and network companies in their own areas.

Summary of responses

10.139Overall, 25 respondents responded on the topic of who should run competitions, reflecting the highest level of engagement with the competition questions.

Criteria

10.140There was broad agreement from respondents as to the suitability of the three criteria we outlined for determining who is best placed to run competitions. Network company respondents focused on the importance of technical proficiency and appropriate legal basis. Non-network company respondents focussed on independence (lack of bias) and economies of scale (eg centralising multiple competition functions in one institution). One network company respondent suggested a fourth criterion of in-depth knowledge of the relevant "network topography". Another network company respondent expressed the view that the focus should be on real, as opposed to perceived, bias because the sorts of commercial entities who would be submitting bids would understand the difference between perceptions and reality.

Ofgem

10.141Approximately half of network companies who stated an outright preference, along with some third parties, generally believed that Ofgem was best placed to

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https://www.ofgem.gov.uk/system/files/docs/2019/03/consultation_on_the_closeout_methodologies_for_riio-ed1.pdf

run competitions. Generally, respondents suggested Ofgem would have the requisite technical and commercial capability across the sectors to efficiently run competitions, as well as impartiality.

- 10.142 The RIIO-2 Challenge Group thought that Ofgem should be responsible for selecting the winning bidder, but that the ESO might be best placed to undertake the technical and preparatory work for competitions. A small minority of respondents raised concerns around Ofgem's independence, expressing the view that Ofgem is a party focused on certain outcomes and is therefore potentially "an interested party".

ESO

- 10.143 Among non-network companies, the ESO was the preferred institution to take full or partial responsibility for running network competitions. This was because of its technical capacity, perceived neutrality, and its growing capacity to develop a whole system view of network investment, particularly through developments of the NOA to consider non-traditional solutions. One electricity distribution company said that the ESO should run competitions for electricity transmission assets, and another indicated this should be extended to very large distribution projects (for example, those with a value over £100m). Gas licensees were concerned that the ESO has limited technical competence in gas.
- 10.144 Common themes from respondents were that the ESO was well suited to a role in running competitions but that steps were needed to "sufficiently mitigate the risk of bias" and to ensure the ESO had the ability to outsource some functions associated with undertaking competitions – particularly where the use of third parties might improve overall effectiveness of the competition framework.
- 10.145 Three responses raised concerns around the ESO's lack of full independence from National Grid Group. One respondent's view was that a conflict could arise between the ESO's existing responsibilities – which utilise non-network options – and a new role in assessing competitions between network and non-network options to meet system needs arising, for example, from the NOA. Two respondents had the view that the ESO's asset-light structure could make it a poor counterparty to a large set of network solution contracts. Licensees had some concern that requiring the ESO to undertake certain competition functions could risk inappropriate obligations and roles which overlapped with those of Ofgem. Further, it was noted that the ESO does not have licensing powers.
- 10.146 The question of how the winning tender and project costs arising from a competition run by the ESO might be funded (funding routes) was also raised as an issue which would need to be further investigated. For example, whether the ESO would raise these costs through BSUoS, DUoS, or TNUoS, all of which have different charging methodologies and subsequent implications.
- 10.147 The ESO was supportive of itself having a potential role in running early competitions for electricity system needs, but indicated that developing its capacity to undertake some of the pre-construction processes would require significant investment (and that other entities might be better suited for these processes). Those parties that strongly supported the ESO noted that providing sufficient resourcing to develop necessary capabilities was crucial. One licensee expressed the view that the securing of consents and planning permission should be undertaken by the CATO licensee or incumbent network licensee, rather than by the ESO.

Network companies in their own areas

10.148 Approximately half of licensees indicated that they believed they were best placed to run competitions in their own areas. Some of these were of the view that the requirement to understand the system could mean that incumbent network companies should be running their own competitions, with potential oversight from consumer advocacy groups as a bias mitigation strategy.

10.149 From other respondents, however, there was a strong view that it would not be appropriate for network companies to run competitions in their own transmission or distribution areas, and certainly not where they themselves were competitors.

Decision

10.150 Ofgem will continue investigating and developing the ESO's ability and capacity to facilitate early network competition.

10.151 We will continue to consider the most appropriate institutional arrangements for undertaking competition. We note the broad acceptance of our suggested criteria (bias, economies of scale, and technical proficiency) for determining the appropriate party to run a competition, and will refer to this for future work. Below we outline our path forward for early competition, the state of play for late competition, and our approach for the gas sector.

Early competition for electricity system needs

10.152 For early competition, we will focus at this stage on investigating and developing the ESO's ability and capacity to facilitate early competition. We consider that the ESO's Network Options Assessment (NOA), which it uses to make recommendations on when and how to invest in meeting system needs, could provide a strong basis for the facilitation of early competition. It is currently developing its NOA methodology to consider a wider range of system needs (eg load-related reinforcement, stability, voltage, and system inertia), and alternatives to transmission assets to address these, including non-network and distribution network solutions.⁵¹ The ESO is also considering expanding its analysis to asset replacement and reinforcement works associated with connections.

10.153 In December we noted that the strong technical competence of the ESO added to its suitability to facilitate competitions. In coming to our decision to focus on the ESO's potential role, we particularly drew upon the point raised by respondents regarding the ESO's ability to compare a range of different technical solutions, and to take whole system considerations into account when making recommendations or decisions on potential solutions to system needs. Furthermore, our decision is also supported by the value of incrementally building upon the current work of the ESO to gradually extend its existing processes to consider an increasing range of options for meeting system needs (as opposed to creating such capacity in a different institution).

10.154 We note the concerns from stakeholders around potential conflicts for the ESO. As we investigate and develop the ESO's ability and capacity to facilitate early network competition, we will continue to monitor whether the ESO exhibits sufficient independence from National Grid group and other National Grid businesses, as well as other potential biases.

⁵¹ National Grid ESO, 'Our RIIIO-2 ambition', April 2019, available at: <https://www.nationalgrideso.com/document/141256/download>

10.155 In response to some stakeholder concerns, we note that we have in place some mitigations for potential bias, including requiring three Sufficiently Independent Directors on the ESO Board, requiring an annual Compliance Statement and Report, instituting an ESO Compliance Subcommittee (chaired by one of the Sufficiently Independent Directors), and our review of the success of separation to be undertaken in 2020/2021. We will also continue to keep the need for further mitigation under review as these arrangements are developed further.

10.156 In response to other concerns raised, we will also work with the ESO to address its ability to enter into longer term contracts for solutions to network needs, including any considerations of whether the ESO's RIIO-2 regulatory framework and/or Roles and Principles guidance could be used to remove any perceived barriers.

10.157 In addition, we will ensure that there is clarity between the ongoing roles of the ESO and Ofgem to avoid potential inconsistencies. We will also consider the potential impacts of reclaiming costs arising from ESO-led competition including any changes to BSUoS that may be proposed following the conclusions of the Balancing Services Charges Task Force.⁵²

Late competition

10.158 For CATO, we will consider the institution(s) best placed to undertake various competition functions, both for competitions in the near and longer-term, as part of work to progress CATO legislation. For clarity we note that under the CPM Ofgem applies a regulatory approach which replicates the benefits of competition, and under the SPV model the incumbent network company runs the competition.

Facilitating competition in gas networks

10.159 With regard to which institution would facilitate early competition in gas networks, given the strong view that there would be no eligible projects for late or early competition, we will make a decision on institutional responsibilities for early competition if and when appropriate projects emerge.

10.160 Subject to consideration of the ESO's legal basis for undertaking relevant roles and responsibilities, we may consider approaches which ensure that electricity consumers do not pay for competitions in the gas sectors. This may include ensuring that competition and administrative costs are reimbursed through competition participants.

Next steps

Late competition

10.161 We will continue to consider in more detail any sector-specific differences in the design and implementation of the late competition models, and will take into account the relevant comments from respondents. We will also continue to consider the need for additional late delivery models to protect the interests of consumers, and will develop and consult on these as appropriate.

10.162 Will we continue to work to implement the Competition Proxy Model, focusing first on its application in electricity transmission.

⁵² <http://www.chargingfutures.com/charging-reforms/task-forces/balancing-services-charges-task-force/resources/>

10.163 We will work with BEIS to develop and enact the supporting legislation to underpin the CATO model (should a legislative opportunity arise).

10.164 We intend to undertake further development of the SPV model in due course, building on our previous work through 2017 and 2018. We will work closely with network licensees as appropriate to ensure that any project put forward for delivery under the SPV model delivers savings for consumers.

Native competition

10.165 Additional sectoral consideration will be given to addressing any circumstances in which network companies may not have the legal power to contract with a competition winner. For example, where an electricity transmission led competition reveals a non-network option as the most cost-effective solution but the network may be unable to contract with that provider.

Price finder approach

10.166 As outlined above, we will undertake further work developing the price finder approach for projects which are subject to reopener processes. Further details to guide our development of the price finder approach are in Appendix 3.

Investigating and developing the role of the ESO

10.167 As set out in Chapter 2 of the ESO Annex, we will work iteratively with the ESO in developing a plan to potentially expand its role in facilitating early competition. We will consider the ESO's plan as part of our continuing development of the ESO's role and responsibilities.

11. Business Plan and totex incentives

In this chapter, we describe how we will incentivise the submission of good quality Business Plans and the delivery of efficient expenditure.

The chapter is applicable to the Electricity Transmission, Gas Transmission and Gas Distribution RIIO-2 price controls.

Decisions	<ul style="list-style-type: none"> We will set RIIO-2 totex incentive rates based on our level of confidence in cost allowances. Each company's totex incentive rate will be determined by the balance of high-and lower-confidence baseline costs within its totex allowance. We will introduce a new Business Plan incentive with absolute rewards and penalties.
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Summary of issue

- 11.1 The Totex Incentive Mechanism is designed to encourage companies to improve efficiency in delivery and ensures that the benefits of these efficiencies are shared with consumers. It also provides some protection to companies arising from overspending, as these are also shared with consumers. We set an incentive rate, which determines the proportion of underspend that can be retained, and the proportion of overspend that is borne by the company.
- 11.2 In the RIIO-1 price controls, the incentive rate was set through the use of an information-revealing device called the Information Quality Incentive (IQI). Under the IQI, where companies' forecasts were nearer to our assessment of efficient costs, a higher incentive rate was set. The incentive rate decreased on a sliding scale depending on the extent to which companies' forecasts exceeded Ofgem's view.
- 11.3 Companies in RIIO-1 have systematically provided higher forecasts than their actual spending and for this reason we are concerned that the IQI has not provided a sufficiently strong incentive on companies to forecast costs that reflect their best estimate of expenditure. We have therefore been considering what improvements we could put in place for RIIO-2.
- 11.4 Furthermore, as we have decided to rule out early settlement ('fast-tracking') in the gas transmission, electricity transmission and gas distribution sectors in RIIO-2, we have also been considering the options available to us in encouraging companies to submit high-quality Business Plans.

December proposals

- 11.5 In the consultation document, we set out our preference for removing the IQI and instead setting incentive rates via an approach we called the 'blended sharing factor'.⁵³
- 11.6 Under this proposed approach, we would determine the proportion of a company's proposed totex that we consider to be 'high-confidence baseline' costs - these are

⁵³ Our proposals did not apply to the ESO. Further detail on the incentives arrangements for the ESO are set out in the outputs and incentives section of the ESO decision document.

the costs where we have a high-confidence in our ability to independently set a baseline cost allowance. The remaining elements of totex would be considered 'lower-confidence baseline' costs.⁵⁴ A higher incentive rate would apply to the high-confidence costs and a lower incentive rate to the lower-confidence costs. A single incentive rate would then be determined for each company on a weighted average basis.

- 11.7 We proposed a lowering of the overall incentive strength with an incentive rate range of 15% to 50%.
- 11.8 We also proposed a Business Plan Incentive (BPI) to encourage companies to submit ambitious Business Plans. We said that company Business Plans would be assessed in terms of their cost and quality.
- 11.9 The incentive would make rewards available to companies if their plan represented genuine value for money and provided information that helps us to set better price controls. Inefficient, low quality plans would be subject to a financial penalty.
- 11.10 We proposed that companies within each sector would compete for a share of the reward 'pot' but would face absolute penalties where plans are assessed to represent poor value. We proposed the reward/penalty under the incentive should be within the range of $\pm 2\%$ of totex equivalent. We also proposed not to include the incentive within the scope of any potential return adjustment mechanisms.

Summary of responses

Totex incentives

- 11.11 Most network companies said that the proposed incentive rate range of 15%-50% was too low. Several network companies said that low incentive rates would not provide sufficient incentive for companies to seek out and deliver efficiency improvements within the RIIO-2 control periods.
- 11.12 One respondent said that the totex incentive rates allowed by Ofgem in the RIIO-1 price controls were unnecessarily high and said that it was pleased that Ofgem was proposing that these should be reduced in RIIO-2. This respondent said that a reduction of incentive rates within the range proposed by Ofgem should have the effect of diminishing unjust returns made by network companies.
- 11.13 Although several respondents focussed on the incentive rate range, rather than the method through which the incentive rate would be determined, network companies were generally not in favour of the blended sharing factor approach outlined in the consultation.
- 11.14 One respondent said that it thought the blended sharing factor approach should encourage companies to provide more compelling justification for their cost proposals and that it would be likely to result in a better allocation of risk between consumers and companies.
- 11.15 Two network companies made the specific point that the blended sharing factor approach provided weaker incentives in uncertain cost areas where, in reality, stronger incentives are most needed. One company said that it is in these uncertain areas where management focus may offer the greatest reward in terms

⁵⁴ In the December consultation we referred to these costs as 'low-confidence baseline costs'. Using the term 'Lower-confidence baseline costs' is more accurate, as this makes clear that Ofgem's level of confidence in setting such costs is not necessarily 'low' but that it is lower than is the case for high-confidence baseline costs.

of lower costs and better outcomes, yet these areas would receive the lowest incentive rate.

11.16 One network company said that there should be more than just two categories of high or lower-confidence costs, and that at least one intermediate category should be introduced, if Ofgem were to proceed with the proposal.

11.17 All network companies and another respondent said that they were against the idea that the incentive rate could be adjusted after the price control has been set. Objections raised included: that allowing such adjustments to be made would introduce additional complexity and risk, would undermine predictability of the regulatory regime and would pose difficulties for companies in deciding whether or not to proceed with an investment. For example, the incentive rate may be an input into an investment appraisal. If the incentive rate could be subsequently adjusted, this could undermine investment decisions taken prior to the adjustment.

11.18 Respondents expressed mixed views on Ofgem's assessment of the IQI. Some respondents agreed with our assessment, some disagreed with our reasoning but agreed with the outcome of our assessment and others disagreed with both our reasoning and with the outcome of our assessment, concluding that the IQI, or a variant of the IQI, should be retained for RIIO-2:

- Some respondents said that the IQI could have been more effective at influencing behaviour had the design of the IQI been shared with companies at an earlier stage in the RIIO-1 price controls.
- One network company said the IQI had led to better outcomes than if no incentive had been in place and a 'simplified and intensified' version of the IQI should be considered further.
- One network company said that the IQI, as used in the RIIO-ED1 price control, failed to sufficiently reward efficient Business Plans and that it should be removed.
- One network company said that the IQI was complex and difficult to calibrate and that Ofgem's assessment of Business Plans should incorporate the quality of those plans, not just cost efficiency.
- One respondent said that the intentions behind the IQI concept were good but were not realised in practice.
- One respondent said that there was little evidence that the IQI had been effective in encouraging companies to submit their most accurate expenditure forecasts but that an improved version of the IQI was the preferred method for delivering an incremental benefit over RIIO-1 as more significant changes (such as the Business Plan Incentive as proposed) ran the risk of introducing unintended consequences.

11.19 Some network companies criticised the blended sharing factor proposal, saying that the assessment of whether costs were high or lower-confidence baseline costs would be subjective in nature. Some network companies said that Ofgem needed to provide more detail on how the blended sharing factor would work in practice in order for them to provide a full set of views on the proposed mechanism.

Business Plan Incentive

- 11.20 The majority of respondents who responded to our questions on the BPI were in favour of some form of BPI. However, most of these respondents raised concerns with one or more aspects of Ofgem's proposed approach.
- 11.21 The majority of network companies told us that they were not in favour of an approach that would involve rewards available under the BPI being shared between eligible companies. Reasons for this included that (i) the approaches adopted by other companies would not be known, creating uncertainty over the level of reward available; (ii) the competed nature of the reward would effectively reduce the size of the reward available under the BPI and (iii) the proposal, if implemented, would deter companies from collaborating with each other.
- 11.22 In the consultation, we proposed that the Business Plans would be categorised as 'Good' under the cost element of the BPI where a company's forecast is lower than Ofgem's view, 'Poor' where a company's forecast exceeds Ofgem's view by more than 4% and 'Standard' in all other cases.
- 11.23 Seven respondents told us that this proposal created 'cliff edges', and that companies could receive substantially different treatment even though their cost forecasts may be very similar. For example, a company with a forecast just below 4% above Ofgem's view may receive no penalty, but a company exceeding Ofgem's view by just above 4% may face a sizeable penalty. Several network companies told us that a framework under which rewards and penalties were introduced more gradually on a continuum would avoid this issue.
- 11.24 One network company said that, as the threshold for 'Poor' was proposed to be set where a company's forecast exceeds Ofgem's view of efficient cost by more than 4% with a penalty rate of 1% or 2% of totex applied (depending on the 'Quality' assessment), the incentive is effectively "switched off" for companies that estimate their costs are likely to exceed 4%. This would mean that for these companies there is in effect no additional penalty for submitting a heavily inflated plan. Most of the network companies that responded on this point said that the proposed 4% boundary for categorising companies as 'Poor' was too low.
- 11.25 One respondent said that boundary between 'Poor' and 'Average' under the cost assessment element should be no higher than the RIIO-ED1 'breakeven' point of 3% above Ofgem's assessed level of efficient costs.
- 11.26 Respondents had mixed views on whether the cost assessment element of the BPI should be applied to all totex or only those costs that Ofgem considered to be high-confidence baseline. Some respondents that addressed this point said that the cost assessment should be based on all totex, whereas others said that only the costs that Ofgem assesses to be 'high-confidence baseline' costs should be included in the calculation. One network company that was in favour of using only high-confidence baseline costs said that this was because excluding lower-confidence baseline costs from the assessment would make for a more robust process, given the higher level of uncertainty associated with the lower-confidence baseline costs. One network company in favour of using all totex said that, if Ofgem only used a subset of totex for this assessment, it would damage the incentives for companies to provide robust, well evidenced, cost forecasts. Another respondent said that carrying out the assessment on all totex would provide a stronger incentive on companies to submit ambitious cost forecasts in more uncertain areas.

- 11.27 Views on the overall size of rewards and penalties available under the BPI were mixed. Some respondents told us that the size of the reward on offer was too small to encourage companies to submit high-quality Business Plans. Other respondents said that the proposed rewards seemed reasonable.
- 11.28 One company said that the proposed BPI placed an excessively strong focus on the qualitative assessment. This respondent said that, because of the structure of the proposed incentive, this had the potential to dilute the cost element of the incentive which, in its view, was the more important part. Another company highlighted that the proposed incentive could see Ofgem placing undue weight on statements of ambition contained in Business Plans at the start of the price control, rather than focussing on actual delivery in-period.

Decision

Information Quality Incentive

- 11.29 We have decided not to retain the IQI in the form it was used in RIIO-1.
- 11.30 In RIIO-1, the IQI performed two key functions. It rewarded companies for ambitious cost forecasts and penalised inefficient-looking plans. These rewards were based on a comparison of the company's forecast versus our view of costs. It also determined the incentive rate that should be applied to cost under/overspends.
- 11.31 Having considered the range of views expressed on the IQI in response to our December consultation, we remain convinced that the fundamental assumptions that are essential to make the IQI in its RIIO-1 form effective do not apply in the specific context of the gas distribution, gas transmission and electricity transmission sectors. The most important of these is that our view of cost has to be independent of the company view. If it is not (in whole, or in part) then the measure of whether a plan is ambitious or not, or whether any subsequent underspend against an allowance is reflective of a genuine efficiency is less reliable.
- 11.32 Additionally, we believe that the IQI is a complex and often misunderstood incentive mechanism. These concerns are set out in the consultation document.⁵⁵
- 11.33 Some responses to the consultation indicated that, had Ofgem implemented the IQI in a different way, by setting out the detailed IQI design in advance of receiving Business Plan submission in the transmission and gas distribution price controls, it may have been a more effective tool in the RIIO-1 period. We do not believe an amended implementation of the IQI approach in its RIIO-1 form would have overcome the concerns that we have identified.
- 11.34 For RIIO-2 we intend to retain the properties of the IQI that encouraged ambitious cost forecasts/discouraged unambitious plans, and determined the incentive rate for expenditure delivery. Additionally, we want to take account of our level of confidence in the cost estimates in the process. These reforms, together with the removal of the fast-track process, have led us to decide to introduce two mechanisms: a Totex Incentive Mechanism that uses a confidence-dependent incentive rate and a Business Plan Incentive.

⁵⁵ Paragraphs 9.27 to 9.35

Totex Incentive Mechanism

- 11.35 The totex incentive mechanism will apply a confidence-dependent incentive rate. This will be based on a metric of confidence, calculated as the ratio of high-confidence baseline costs to totex, where our independent baseline for high-confidence baseline costs is the numerator and the company's overall totex allowance is the denominator. High-confidence baseline costs are those costs where Ofgem has a high level of confidence in its ability to independently set a cost allowance.
- 11.36 Our baseline for setting cost allowances should be constructed from information that is substantially independent of company forecasts. Where either we already have this information, or companies can provide such independent baseline information, they will receive a higher incentive rate.
- 11.37 Therefore, if companies wish to do so, they will be able to submit information in support of a view that certain costs should be classified as high-confidence baseline costs and Ofgem will assess this information. We consider that the following types of information may be relevant to Ofgem's consideration of whether certain costs should be classified as high-confidence baseline costs:
- Realised actual costs in RIIO-1
 - Evidence that cost forecasts have been arrived at via a competitive process or other market testing.
 - Other independent benchmarking (eg industry or international benchmarks)
 - Costs where we are able to determine a unit cost allowance with a high degree of confidence and where an appropriate volume driver or other uncertainty mechanism will be implemented and applied to a volume drawn from a baseline scenario volume
- 11.38 This is not an exhaustive list and we will take into account other evidence that companies may propose that meet the test of serving as an independent benchmark. We will therefore not determine which costs are high-confidence until after we have received Business Plans.
- 11.39 Our working assumption at this time is that we will assign high-confidence baseline costs with a 50% incentive rate and other costs with a 15% incentive rate.
- 11.40 A single, incentive rate will be calculated based on the balance of high-confidence and lower-confidence baseline costs included in final totex allowances.
- 11.41 We do not intend to adjust the incentive rate determined at the time of the price control during or after the RIIO-2 price control period. Having reviewed the responses to our consultation, we are persuaded that the additional simplicity and certainty provided by a fixed incentive rate that applies throughout the control period outweighs the potential benefits of an incentive rate that may change based on actual spend (ie an incentive rate that could change to reflect differences between the forecast and outturn mix of high and lower-confidence baseline costs).
- 11.42 We expect that our assessment of Business Plans for the purpose of the BPI will be carried out and rewards or penalties applied at the level of the company, rather than the level of the licensee.

Business Plan Incentive

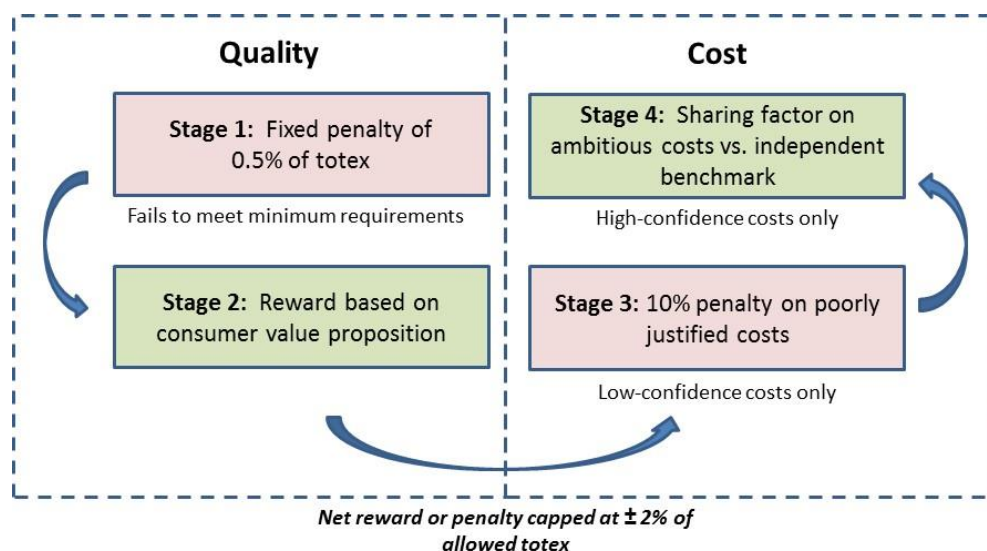
- 11.43 We will introduce a BPI to encourage high-quality and ambitious Business Plans. We believe that the incentive set out below will help to achieve benefits for consumers. It will reward companies that include cost forecasts that offer genuine value for money within their plans. Companies that submit Business Plans that fail to meet minimum requirements or that have poorly justified cost forecasts will incur a penalty.
- 11.44 We have given careful consideration to the responses we received in the consultation and as a result have decided to make some modifications to the design of the incentive that was proposed in December.
- 11.45 We have decided not to pursue our December proposal for rewards under the Business Plan Incentive to be shared between eligible companies. Any reward or penalty applied through this mechanism will be company-specific and not linked to the performance of other companies.
- 11.46 The assessment of Business Plans for the purposes of the BPI would be undertaken after Ofgem has carried out its assessment of which costs will form part of allowed totex baseline costs and, within these costs, which are high-confidence baseline costs which are lower-confidence baseline costs. For the purposes of the BPI, Business Plans will be assessed in the following way:
- Stage 1: we will carry out a qualitative assessment of Business Plans in order to ensure that they contain all of the information that we consider to be the minimum required. The assessment areas within which Business Plans will be assessed and the minimum required information for each area are set out in the Business Plan Guidance. If Ofgem finds that a plan has failed to meet the minimum requirements, an upfront penalty of 0.5% of allowed baseline totex⁵⁶ will be levied on the company. Where this is the case, the company would not be eligible for any reward under the BPI but could still be penalised under Stage 3.
 - Stage 2: We will carry out a qualitative assessment of what additional value the Business Plan offers to consumers. Companies may bid for a reward on the quality aspects of its plan as revealed through a 'Consumer Value Proposition' (CVP). In its CVP, a company should demonstrate the additional value its plan will generate for existing, future and consumers in vulnerable situations. The reward will be reflective of this additional value. The reward may be linked to delivery where relevant. Further information on this will be provided in the updated Business Plan Guidance document.
 - Stage 3: We will review the forecasts for costs assessed by Ofgem to be lower-confidence baseline costs included in companies' plans. Any costs deemed to be poorly justified and removed by Ofgem from the companies' forecasts through this cost assessment process will be subject to a penalty. The size of the penalty will be 10% of the value of those poorly justified costs removed by Ofgem from the companies' forecasts.
 - Stage 4: We will review the cost forecasts for costs assessed to be high-confidence baseline costs included in companies' plans. An upfront reward will

⁵⁶ Based on totex allowances in Final Determination

be available to companies that submit forecasts lower than a benchmark that Ofgem would otherwise have used in setting the allowance.⁵⁷

- 11.47 The provision of the Stage 4 reward will be dependent on Ofgem using the information provided by the company to set allowances. In order to be eligible for a Stage 4 reward, the cost information must be useful to Ofgem in setting allowances. If it is not useful, it would not generate any benefit and therefore should not be rewarded.
- 11.48 We will set the Stage 4 reward rate at the same level as the totex incentive rate. As this would be an upfront reward, companies would receive a time value of money benefit for revealing cost savings at the time of setting the price control and these rewards would also be excluded from the return adjustment mechanism.
- 11.49 Additionally, as stated above, the metric of confidence for determining the confidence-dependent incentive rate is calculated as the ratio of high-confidence baseline costs to allowed totex, where our independent baseline for high-confidence baseline costs is the numerator and the company's overall totex allowance is the denominator. Where we use a company's forecast in the cost assessment process and the forecast is lower than the independent benchmark, we will set allowances at the level of the company's forecast. This means that a company that forecasts below the benchmark level will receive a higher confidence-dependent incentive rate than if it had forecast at the benchmark level. In Appendix 4, we give worked examples of how a forecast below the independent benchmark in a high-confidence baseline cost area would affect the totex incentive rate.
- 11.50 These additional benefits reflect the added value we may get from information revealed in setting more accurate price controls for other companies.

Figure 3 – Business Plan assessment under the BPI



⁵⁷ This benchmark could be derived from an econometric model. Where this is the case, the model is likely to include historical or forecast costs submitted by network companies. Such a benchmark would not be wholly independent of information provided by the network companies. However, Ofgem may still regard costs derived from a robust econometric model as high-confidence baseline costs. Notwithstanding this caveat, we refer to such benchmarks as 'independent benchmarks' in this chapter.

- 11.51 In relation to the cost assessment elements of the BPI (stages 1 and 2, above), there will be no threshold or 'deadband' within which the relevant rewards or penalties will not apply.
- 11.52 These four stages will result in a net penalty or reward. A total cap of $\pm 2\%$ of allowed totex will apply to the net reward or penalty available under the incentive. All companies whose plans meet the minimum requirements⁵⁸ will have the opportunity to earn a BPI reward up to this level by demonstrating that their Business Plan offers additional value under its consumer value proposition and offering ambitious cost forecasts in high-confidence baseline cost categories.
- 11.53 Rewards and penalties under the Business Plan Incentive will not be included within the scope of the return adjustment mechanisms outlined elsewhere in this document. This means that any benefit that a licensee receives as a result of submitting a high quality Business Plan will not risk being eroded as a consequence of its subsequent performance. This approach will sustain the strength of the Business Plan Incentive and reflect the immediate value that a Business Plan that offers additional value provides.
- 11.54 We do not intend to adjust the incentive rate determined at the time of the price control during or after the RIIO-2 price control period. Having reviewed the responses to our consultation, we are persuaded that the additional simplicity and certainty provided by a fixed incentive rate that applies throughout the control period outweighs the potential benefits of an incentive rate that may change based on actual spend (ie an incentive rate that could change to reflect differences between the forecast and outturn mix of high and lower-confidence baseline costs).

Rationale/evidence to support our decision

Business Plan Incentive

Removing competed-for rewards

- 11.55 We have taken the decision not to pursue our December proposal for a competed-for reward pot under the Business Plan Incentive in order to strengthen the incentive on companies to submit plans that are ambitious in terms of quality and cost. Our revised approach will ensure that the previously-envisioned competitive element of the incentive does not act as a barrier (whether real or perceived) to collaboration between companies.

Distinguishing between high and lower-confidence costs

- 11.56 We believe that it is appropriate to treat lower-confidence and high-confidence baseline costs differently from each other under the BPI for the reasons set out below.
- 11.57 In relation to high-confidence baseline costs, in the absence of compelling evidence to the contrary, we are likely to set allowances at the level of the relevant independent benchmark. Therefore, if a company expects these costs to decrease in RIIO-2, it may choose not to reveal this in its Business Plan forecast, and instead reveal the lower cost in-period, enjoying any benefit accrued under the Totex Incentive Mechanism. As the information would not have been revealed

⁵⁸ The assessment areas within which Business Plans will be assessed and the minimum required information for each area are set out in the Business Plan Guidance.

at the time of the price control, Ofgem would be unable to use it in other parts of the RIIO-2 price control, such as the setting of allowances for other companies.

- 11.58 Conversely, if forecasts in such high-confidence categories are higher than the independent benchmark, it is not likely that Ofgem will both (a) accept that allowances should be higher than the independent benchmark and (b) deem that those costs should be high-confidence baseline costs. Therefore, we have decided that it is not necessary to apply a penalty to forecasts in high-confidence areas that are in excess of the relevant independent benchmark.
- 11.59 It may be the case, for example in areas of significant change, that historical costs are not a good predictor of future costs. In circumstances where Ofgem believes it has a good benchmark on which to base an allowance but where a company includes a forecast above this level, likely outcomes are:
- Ofgem sets the allowance at the level of the benchmark and deems the costs to be high-confidence baseline costs; or
 - Ofgem deems the costs to be lower-confidence baseline costs and sets the allowance at our view of efficient cost. For example, this could be the case where, having reviewed the Business Plan, Ofgem reaches the view that the company's proposed cost is reasonable.
- 11.60 In relation to lower-confidence baseline costs, due to the absence of an independent benchmark, we are, by definition, more reliant on companies' forecasts in setting allowances than is the case for high-confidence baseline costs. We think it is appropriate to encourage companies to ensure that their forecast lower-confidence baseline costs are thoroughly justified and clearly represent value-for-money to consumers. To achieve this, companies will be subject to a penalty in proportion to the amount we deem to be poorly justified and that will be removed from the Business Plan in the setting of allowances for Final Determination.
- 11.61 This should not discourage companies from being ambitious, or from including innovative and new approaches to improve network services. We fully realise that it is possible for companies to generate value for consumers including such approaches (for example, by increasing automation to reduce operating costs) and through our cost assessment process we will not disadvantage companies that propose to make such trade-offs, provided they are well-justified. Indeed, these aspects of the plan may be considered in our assessment of the overall Consumer Value Proposition at Stage 2 and could warrant a reward.

Scaling the incentive on costs

- 11.62 Under our December proposal, where a company's forecast exceeded Ofgem's assessed level of efficient costs by more than 4%, a penalty of 1% or 2% of totex could be imposed.⁵⁹ Theoretically, if a company did not intend to submit a plan within the 4% threshold level (for example if it thought that its best estimate of totex might exceed the threshold), the effective power of the BPI would be diminished.⁶⁰

⁵⁹ Under the proposal set out in December, the level of penalty would depend on how the company had performed in the qualitative assessment. Under that proposal, a company with a 'Good' quality plan would not have faced any penalty, irrespective of where its totex forecast sat in relation to Ofgem's assessed level of efficient costs.

⁶⁰ Of the 'slow-track' companies in RIIO-1, only one company's plan would have been at a level within 4% of Ofgem's assessed level of efficient costs.

11.63 However, under the BPI methodology set out above, the size of the reward or penalty would scale based on the quantum of lower-confidence baseline costs removed by Ofgem from the forecast included in the Business Plan. In order for the 2% cap to be hit, the company's forecast would have to be 20% higher than the expenditure we deemed to be efficient, assuming all of these were lower-confidence costs and there was no penalty for failing to meet minimum requirements (stage 1). Taking these points together, we believe that the approach we have decided upon represents an improvement upon the December proposal, as it is more likely that companies will respond to the incentive in order to minimise their exposure to penalty.

Rewarding/penalising Business Plan costs

11.64 We will set the reward rate for high-confidence costs that beat an independent benchmark at the same level as the totex incentive rate. As this would be an upfront reward, companies would receive a time value of money benefit for revealing cost savings at the time of setting the price control and these rewards would also be excluded from the return adjustment mechanism. These additional benefits reflect the added value we may get from information revealed in setting more accurate price controls for other companies.

11.65 One additional incentive to reveal ambition upfront (in addition to time value of money and exclusion from RAMs) is that this would reduce the company bid for totex relative to the independent benchmark, and therefore is likely to result in a higher incentive rate (compared to a company that bids at the level of the independent baseline).

11.66 The penalty rate for poorly justified lower-confidence costs will be 10%. Whereas rewards under the BPI are calculated with reference to the company's totex incentive rate, we do not think there is a good rationale for calculating penalties under the BPI at the same rate. To an extent the harm these disallowed costs could lead to has been corrected by their exclusion from allowances and companies will be subject to a penalty through the incentive rate if they overspend this allowance. An equivalent penalty on costs removed from the Business Plan may serve as a double-penalty. We do however want to discourage poorly justified costs where we have little independent information available to set allowances. We therefore consider a lower rate of 10% will provide a sufficient penalty for this purpose.

11.67 These changes to the cost elements of the BPI will provide greater certainty to companies over the level of reward and penalty available and will remove the 'cliff-edges' in the incentive profile that were raised as a concern by several respondents.

Rewarding/penalising Business Plan quality

11.68 In relation to Stage 1 of the BPI assessment, Ofgem cannot precisely value the detriment of companies submitting incomplete Business Plans. However, we do believe that it is appropriate to put in place a penalty to ensure that companies are discouraged from submitting incomplete or poorly justified Business Plans. As the Stage 1 assessment is binary, in the sense that companies' plans will either pass or fail, we have reached the view that a fixed penalty should apply in these circumstances.

11.69 We believe that a penalty of 0.5% of totex for Stage 1 of the assessment will provide a sufficient incentive for companies to apply the necessary effort to provide us with a plan that is of an acceptable standard. We believe that all

companies should be able to meet the minimum requirements, thereby avoiding a penalty at Stage 1 and becoming eligible for a reward under other elements of the BPI.

- 11.70 In the Stage 2 assessment, Ofgem will consider how and to what extent Business Plans have demonstrated additional value to the consumer and the reward determined by Ofgem will be commensurate with the level of additional value offered. Rewards will therefore not be fixed but will scale to the level of additional value that the plans offer.

Capping net rewards/penalties

- 11.71 We have decided to incorporate a net cap on rewards and penalties under the BPI. In December, we consulted on a proposed BPI reward of $\pm 2\%$ of totex. As noted above, views on the strength of the incentive were mixed with some respondents indicating that the proposed 2% level was not sufficiently strong and others stating that it appears reasonable. In this context, we note that we are no longer proposing that rewards under the BPI will be shared between eligible companies. This has the effect of increasing the maximum level of reward payment that could be made under the scheme within each sector. We believe that by retaining a cap on net reward and penalties under the BPI of set at a level of $\pm 2\%$ of allowed totex is reasonable and will provide a sufficiently powerful incentive.
- 11.72 However, where a company fails to pass Stage 1 of the BPI assessment, meaning that its Business Plan has omitted what we consider to be essential information and/or the company has not put in the appropriate level of effort to meet expectations, we think it is appropriate to ensure that no reward can be earned by the company under any part of the BPI.

Totex Incentive Mechanism – method for setting the totex incentive rate

- 11.73 The totex incentive rate determined by Ofgem via the approach outlined in the 'Decision' section above reflects our level of confidence in our ability to set cost allowances for different types of activity, without being influenced by companies' submissions.
- 11.74 If we have lower-confidence in our ability to set costs independently, then subsequent variations in actual expenditure against budgets may only be partly attributable to improvements or deterioration in efficiency. Errors in setting allowances, along with inflated cost submissions may also be factors. The greater the proportion of such lower-confidence baseline costs contained in a company's Business Plans, the lower the proportion of cost overruns or saving the company will be exposed to. We believe that this is an appropriate way to treat uncertain costs that is fair to both companies and consumers.
- 11.75 The inverse is true in relation to high-confidence baseline costs, where Ofgem is more likely to be able to set cost allowances nearer to the outturn level of cost. Equally, if companies are able to underspend against allowances in these areas, it is more likely that such underspends will arise from improved efficiency, rather than inaccuracies in the setting of allowances at the price control.
- 11.76 Alongside the implementation of this approach in RIIO-2 we will also undertake a rigorous cost-assessment process. We will use all of the tools at our disposal in order to set realistic and challenging cost allowances. However, it is correct for us to acknowledge that this is a more difficult task in some cost areas than others. Under the approach we have decided use in RIIO-2, we actively seek to address this issue (in a way that the IQI and other proposed approaches do not) and to

mitigate the negative effects that may arise from the information asymmetry that exists between Ofgem and the companies.

Totex Incentive Mechanism – incentive rate range

- 11.77 We have considered the appropriate incentive rate range carefully, including the pros and cons of higher and lower incentive rates and the representations made to us in response to the December consultation.
- 11.78 In our view, a rate of 50% is warranted where we have a high level of confidence in our ability to independently set cost allowances but, where this confidence is lower, a lower rate should apply. We believe that this will help to protect companies by reducing cost exposure in areas where costs are less certain. It will also reduce the size of any 'windfall' profits that companies can make as a result of possible inaccuracies in Ofgem's forecasts, which are more likely to occur in areas where we have a lower level of confidence in our ability to independently set cost allowances.
- 11.79 There is no exact science to determine an "optimal" incentive rate. The strength of the incentive regime should balance the harm to the consumer from ex ante adverse selection (where high incentive rates encourage companies to earn rents by inflating spending plans before the control is set) and ex post moral hazard (where low incentive rates leave companies with little incentive to find cost efficiencies once the control has been set).
- 11.80 As is discussed in the RIIO handbook, a network company may place greater value on the future cash-flows it will receive through the RAV, as a result of additional expenditure, at more than the immediate costs associated with that expenditure. If so, there is a risk that a company may incur additional expenditure not because it contributes to the efficient delivery of outputs, but because it will achieve a higher future income stream from an enlarged RAV. This risk arises because the company may be able to finance this additional expenditure at a rate that is lower than the return it expects to earn on (additions to) the RAV.
- 11.81 Furthermore, though we would expect that the level at which the incentive rate is set will have a bearing on totex performance (under or overspend), there are a number of other factors that are also relevant. It is not possible for us to identify and quantify the effect of all potential influences on totex performance but these influences may include the level of allowed totex and the scope for efficiency improvements. For example, a company's ability to underspend will be increased if Ofgem provides too large an allowance for a given cost item due to information asymmetry. This may explain why there is no clear and obvious link between totex incentive rates and levels of totex performance in the RIIO-1 price controls.
- 11.82 For the upper end of the range we believe 50% is appropriate. There is regulatory precedent for setting an incentive rate of 50%. For example, several companies in RIIO-1 have been assigned incentive rates at or around this level and Ofwat's cost sharing mechanism is centred on a rate of 50% (ie where the Ofwat's view and the company view of totex are 100% aligned). In addition, the CMA determined in regulatory appeals made by Bristol Water plc⁶¹ and Northern Ireland Electricity Limited⁶² that the relevant efficiency incentive rate should be 50%.

⁶¹ Bristol Water plc A reference under section 12(3)(a) of the Water Industry Act 1991 Report, Competition and Markets Authority Final Determination, 6 October 2015, paragraph 3.54(c)

⁶² Northern Ireland Electricity Limited Price Determination. A reference under Article 15 of the Electricity (Northern Ireland) Order 1992, Final Determination, 26 March 2014, Paragraph 5.93.

- 11.83 For the lower end of the range, our analysis indicates that, in RIIO-1, a company would need a combination of a 10%-15% incentive rate and perceive its 'true' cost of equity to be significantly lower than the allowed cost of equity in order to marginally prefer not to underspend. The lower cost of equity that will apply in RIIO-2 further reduces the likelihood of this risk materialising, as there is less scope for significant divergences between the allowed cost of equity and companies' perceived 'true' cost of equity. In reality, our expectation is that the totex incentive rates that will apply in the RIIO-2 price controls will be higher than the minimum of 15%. This is because a weighted average incentive rate of 15% would only be achievable if a Business Plan contained no costs assessed to be high-confidence baseline costs. We consider this to be an unlikely outcome.
- 11.84 For the reasons given above, the 15-50% range for incentive rates is our current working assumption. We will consult on this range and on the resulting incentive rate for each company at Draft Determination.

Interaction with other policy areas

- 11.85 The Business Plan Incentive is closely linked with other areas of the price control. Stages 1 and 2 of the BPI assessment process outlined above will involve a qualitative assessment of the information that companies have provided in their Business Plans relating to key policy areas in the RIIO-2 price controls. These areas will be set out in the Business Plan guidance document and will include competition, innovation, outputs and incentives and whole system solutions. For stages 2 and 3 of the BPI assessment, there is a clear link with how we carry out our assessment of forecast costs included by companies within their Business Plans.
- 11.86 As is discussed below, the threshold for return adjustment mechanisms will be determined after having received Business Plans and have fully considered the total package and interactions with the cost of equity, the Business Plan Incentive, the totex incentive, and output delivery incentives.

Next steps

- 11.87 We will publish an updated Business Plan guidance document that sets out how we will undertake the qualitative assessment of the Business Plans that companies will submit to us in December 2019.
- 11.88 In RIIO-1, the incentive rate on totex is applied on a post-tax basis whereas in previous price controls it was calculated on a pre-tax basis. This means that allowed revenues are adjusted by both the share of any under-/over-spend allocated to customers and by the tax impact of that under-/over-spend. This means that for the same incentive rate (eg 50%), network companies' returns are exposed to wider variations as a result of under- or over-spends. We are considering this policy for RIIO-2 and will provide our intended approach at Draft Determination.
- 11.89 Having considered the range of views expressed in response to the December consultation, we have decided to redesign certain aspects of the Business Plan Incentive. In particular, as set out above, we have decided:
- not to proceed with the proposal that rewards under the BPI would be shared between eligible companies;
 - to remove the 'cliff-edges' in the incentive profile that were raised as a concern by several respondents;

- that we will distinguish between high and lower-confidence baseline costs under the incentive; and
- to reformulate the qualitative assessment of Business Plans to apply a penalty to plans that fail to meet the minimum requirements and reward plans that offer additional value to consumers.

11.90 In our view, these changes strengthen the design of the Business Plan Incentive and address a number of the concerns raised by stakeholders in response to the proposals we consulted on in December. We intend to organise one or more workshop sessions with stakeholders in June 2019 to seek their input to clarify these changes and seek views on how they can be implemented in the most effective way

12. Fair returns and financeability

In this section, we set out a brief summary of our methodology decisions on a range of financial issues. These include the methodologies to determine the cost of debt and the cost of equity, and financeability matters. **Our finance methodology decisions are set out in detail in the Finance Annex, which should be referred to for a fuller understanding of the consultation responses and our analysis and decisions.**

We also set out our decisions for return adjustment mechanisms in each sector, as well as what aspects of return adjustment mechanisms will be consulted on and decided at a later stage.

The chapter is applicable to the Electricity Transmission, Gas Transmission and Gas Distribution RIIO-2 price controls. Financing of the ESO is discussed in the ESO Annex and is not duplicated here.

12.1 In this section, we provide:

- A brief background to the finance issues we consulted on
- A summary of responses, updated analysis, and decisions on financial topics including the cost of debt, cost of equity, financeability and other finance issues
- An updated working assumption for the allowed return on capital

12.2 This Core Document summary is provided as a high-level overview only. The reader should refer to the Finance Annex for our detailed views.

Background to our finance work

- 12.3 In the Finance Annex⁶³ to the Sector Specific Consultation, we proposed how we would approach the financial elements of network company price controls (for gas distribution, gas transmission and electricity transmission) that are due to begin on 1st April 2021 (together referred to as RIIO-2).
- 12.4 We asked stakeholders for their views on 37 finance questions. We received responses from Citizens Advice, Centrica, the RIIO-2 Challenge Group, investors and the network companies.
- 12.5 Responses from the network companies are notably substantial, referring us to 21 consultancy reports, that had been conducted individually or collectively (see Tables 1 and 2 in the Finance Annex).
- 12.6 We held bilateral meetings and met with network companies and other stakeholders to discuss some of the issues arising.

Cost of debt

Decisions	<ul style="list-style-type: none"> • We have decided (a) not to share cost of debt variances, and (b) to apply full indexation
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⁶³ https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf

- 12.7 The cost of debt is a significant component of allowed returns and the cost of network services to consumers.
- 12.8 In the December Finance Annex, we considered the remaining two options for setting the cost of debt (full indexation and partial indexation) and proposed ruling out partial indexation unless new information provides reasons to reassess this position. We also stated that we proposed to rule out an annual within-period debt sharing mechanism.
- 12.9 The majority of network companies and Citizens Advice support full indexation.
- 12.10 The majority of respondents support no sharing with many noting the added complexity and reduced incentives that the introduction of debt sharing would bring.
- 12.11 Given that the majority of network companies and Citizens Advice support full indexation, and our own views of its merits (including that it is transparent, simple and can be calibrated to provide a good estimate of efficient sector debt costs), we have decided to retain full indexation for setting the cost of debt allowance.
- 12.12 Absent any convincing evidence of the consumer benefit of debt sharing and given our concerns that implementing this now and risking retrospective capture of decisions or risks taken in previous price controls (when debt sharing was not in place) could call into question regulatory stability, we have decided not to implement debt performance sharing. It is our view that the risks and challenges of implementing debt sharing outweigh any potential benefits.
- 12.13 Although we will leave calibration of the cost of debt index until after Business Plan submission, we do recognise that for Business Plan submissions, it would be useful to have a best estimate forecast for the cost of debt allowance.
- 12.14 Consultation evidence submitted by networks and their consultants suggested that a benchmark based on a 10-year trailing average would be likely to undercompensate for sector efficient debt costs in RIIO-2, largely due to the now longer time period between allowance calculation date and historical long dated debt issuance profile compared to RIIO-1.
- 12.15 Our intention is to broadly match debt allowances with sector expected efficient debt costs for RIIO-2 through the calibration of the index. There are a number of ways the index could be calibrated to meet this aim, including adjusting the trailing average period, changing the specific iBoxx indices referenced or the weightings of the indices used, and/or providing a 'wedge' for expected sector embedded debt cost differential to the index. The calibration will consider Business Plan information regarding expected volume of new debt to be raised in RIIO-2 and will also consider the efficiency of sector embedded debt. Calibration may exclude inefficiently raised debt and/or complex, unusual or opaque products that would not be contemplated for the notional company.
- 12.16 In consideration of the evidence submitted but without prejudice to the eventual calibration of the index at Final Determinations, which will be based on scrutiny of full information available at the time, we propose that the networks use a working assumption based, illustratively, on an 11-15-year trombone⁶⁴ for Business Plan

⁶⁴ The averaging period starts on 1 November 2009 and ends on 31 October 2020 for 2021-22 (11 years) and the end of the period will advance by a year each year, trombone-like, until the period length reaches 15 years. For 2025-26, the averaging period will start on 1 November 2009 and end on 31 October 2024 (15 years).

submission. This does not indicate a methodology decision to this trailing average period and is illustrative and for working assumption purposes only. We provide a forecast of the updated working assumptions in Table 4 following the cost of equity section, which shows the RIIO-2 average cost of debt working assumption increases from 1.74% CPIH real to 1.93%, as a result of changes to bond yields and the updated working assumption on indexation calibration.

- 12.17 In terms of next steps, we continue to consider the cost of debt impact of the “halo effect” (where network companies may consistently be able to issue debt at rates below our iBoxx benchmark). Based on consultation evidence and our own analysis, we estimate that the halo effect has reduced to approximately 10 basis points (0.1%).
- 12.18 It may also be appropriate to consider the evidence for or against the proposition that small companies face a structurally higher cost of debt compared to large ones (a ‘small company premium’).
- 12.19 We will also consider whether either calibrating the index to cover transaction and liquidity costs or providing a specific allowance for transaction and liquidity costs may be appropriate, subject to also considering the impact of floating rate and non-bond debt on sector performance versus the index. This will be decided after consideration of Business Plans and other available evidence.
- 12.20 Please refer to Chapter 2 of the Finance Annex for further detail.

Cost of equity

Decisions	<p>Risk-free rate</p> <ul style="list-style-type: none"> We will implement equity indexation by updating the allowed return on equity to reflect changes in the risk-free rate only, referring to data prior to the financial year beginning, and to long-horizon inflation forecasts (t+5 from OBR). We will re-consider the exact calibration of how this is done, including the method for deriving CPIH (or CPI) real values, the averaging period and the relevant tenor. We will propose an updated approach at Draft Determinations. <p>TMR</p> <ul style="list-style-type: none"> We will apply our proposed methodology to focus on long-run average returns while placing due weight on TMR cross-checks. We re-present our TMR range of 6.25% to 6.75% CPIH-real as a working assumption, which we believe is conservative in light of the range of reasonable evidence. <p>Equity beta</p> <ul style="list-style-type: none"> We will estimate the raw equity beta by focusing on outturn data over long periods of time of at least 5 years, primarily using OLS, with GARCH as a cross-check. We will adjust for gearing by considering outturn data over the same time periods of at least 5 years. Our estimation of gearing will reflect our estimation of EV:RAV and of the market value of debt. In our view, adjustments for outturn gearing are not safely separable from the outturn market data on EV:RAV or the market value of debt. The relevant proxy sample includes five companies (SSE, NG, UU, SVT and PNN). We will consider at Draft Determinations the weight we attach to each company, in light of the relevant for RIIO-2 given for example arguments made about SSE, by NERA, Oxera and CEPA. At Draft Determinations we will re-consider evidence submitted on risk, alongside a consideration of risk implied within Business Plans. We will propose at Draft Determinations whether there are (systematic) risk differences between sectors or notional companies. <p>Cross-checks</p> <ul style="list-style-type: none"> We will cross-check CAPM results using the four cross-checks that we proposed in the consultation, and We will consider further at Draft Determinations the other cross-checks proposed by stakeholders. <p>Allowed versus expected returns</p> <ul style="list-style-type: none"> We will include step 3 in the equity methodology, and continue to consider further evidence on other price controls. We will estimate at draft determination the expected (out- or under-) performance for RIIO-2 in light of updated information available to us, including additional information provided by network companies in business plans, revealed investor expectations, the RIIO-2 incentive regime, and the approach to setting RIIO-2 cost and incentive baselines. We will propose an allowed return on equity at draft determinations that reflects our estimation of: a) the cost of equity; and b) expected (out- or under-) performance for RIIO-2, insofar as the AR remains within the bounds of our estimate of the cost of equity range. Ultimately, we may estimate an expectation of zero for (out- or under-) performance.
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12.21 In the Sector Specific Consultation (December 2018), we proposed a methodology for setting the allowed return on equity. The proposal involved three sequential steps.

- Step 1 – The CAPM evidence
- Step 2 – Cross-checking the CAPM results
- Step 3 – Distinguishing between expected and allowed returns

12.22 We outlined our rationale and approach for each of these three steps, proposing that we would conduct these steps at Draft and Final Determinations. We also:

- proposed to update the allowed return on equity based on annual information for the risk-free rate
- presented a working assumption for the allowed return on equity (4% CPIH-real) based on the evidence available to us at that time.

12.23 We sought views from stakeholders, asking 17 questions on the various aspects of the proposed methodology.

Step 1

12.24 In general, stakeholders were supportive of our proposals to update the allowed return on equity for changes in the risk-free rate. Issues raised by network companies focused on how (calibration and implementation), not whether, equity indexation is applied. The RIIIO-2 Challenge Group argued that we were passing interest rate risk on to consumers, who had no ability to hedge this risk and that investors would be protected under these proposals, whereas they were previously exposed.

12.25 Based on consultation responses (to FQ5-FQ8) and our updated analysis, we have decided to:

- implement equity indexation by updating the allowed return on equity to reflect changes in the risk-free rate, referring to data prior to the financial year beginning, and to long-horizon inflation forecasts (t+5 from OBR).
- re-consider the exact calibration of how this is done, including the method for deriving CPIH (or CPI) real values, the averaging period and the relevant tenor. We will propose an updated approach at Draft Determinations.

12.26 In our view, the methodology proposed in the December Finance Annex, in terms of estimating and updating the risk-free rate, remains suitable for Business Planning purposes. We will make detailed implementation and calibration proposals at Draft Determinations.

12.27 Regarding CAPM Total Market Returns (TMR), in the Sector Specific Consultation we addressed in detail three of the primary arguments made by companies that we had incorrectly interpreted outturn data in our Framework Decision (July 2018). We also provided a reconciliation, from previous advice we received (2003 and 2006) to more recent advice we received in 2018 via the UKRN Study. In the December Finance Annex, we proposed a working assumption for the TMR of 6.25% to 6.75% CPIH real, and asked stakeholders three related questions.

12.28 In general, our proposed methodology for TMR divided opinion, particularly our proposal to focus on long-run outturn averages of market returns as the best single objective estimate of investors' expectations. Citizens Advice and Centrica raised concerns that our focus on long-run averages is upwardly biased, given that other measures, including our cross-checks using the Dividend Growth Model and expert forecasts, point towards much lower values. On the other hand, network

companies continued to support our approach to focus on long-run outturn averages, but continued to disagree with how we have interpreted available data, while raising concerns about which data we should focus on.

12.29 Based on consultation responses, we have updated our evidence base as follows:

- We continue to believe that the UKRN Study provides a robust recommendation that the TMR is between 6% and 7% CPIH real.
- The DGM cross-check indicates a TMR return of approximately 8% nominal, or 6% CPIH real (after deducting 2% for the CPIH expectation and ignoring the Fisher equation for simplicity).
- The expert forecasts continue to indicate a TMR below our proposed range, although this evidence indicates a higher number than presented in December. This cross-check now indicates 7.65% nominal, or 5.5% CPIH real (after deducting 2% for the CPIH expectation using the Fisher equation).

12.30 Given our analysis as summarised above, we have decided:

- To apply our proposed methodology to focus on long-run average returns while placing due weight on TMR cross-checks.
- To re-present our TMR range of 6.25% to 6.75% CPIH-real as a working assumption, which we believe is conservative in light of the range of reasonable evidence.

12.31 Regarding CAPM beta, in the Sector Specific Consultation (December 2018) we published, and summarised, two consultancy studies that had been undertaken by Indepen Ltd and by Dr Robertson. We also addressed various issues that were raised by stakeholders during 2018 (for example in response to the Framework consultation in March 2018 or that were raised in workshops and bilateral meetings with stakeholders between July and December 2018). These included arguments raised by network companies and suggestions by Citizens Advice and Centrica.

12.32 We also presented a notional beta range, showing how raw equity beta⁶⁵ values (0.6 to 0.7) translated into notional equity beta values (0.646 to 0.762), based on assumptions for gearing (actual, adjusted actual and notional) and debt beta.

12.33 We did not identify a central estimate, noting that it was, at that time, appropriate to assume a consistent equity beta range across the sectors and companies pending our review of: a) company Business Plans, and b) the overall systematic risk of the RIIO-2 price control.

12.34 We asked four consultation questions relating to beta (FQ12-FQ15).

12.35 In general, stakeholders did not provide significant challenges on the raw equity beta evidence. The main concern, as raised by network companies and Citizens Advice, was the method that we demonstrated to account for financial risk

12.36 In light of stakeholder responses to these questions and our analysis, we have decided:

⁶⁵ The 'raw equity beta' is a term we use to refer to the systematic risk that we derive from outturn market data on share price movements.

- That we will estimate the raw equity beta by focusing on outturn data over long periods of time of at least 5 years, primarily using OLS, with GARCH as a cross-check.
- That we will adjust for gearing by considering outturn data over the same time periods of at least 5 years. Our estimation of gearing will reflect our estimation of EV:RAV and of the market value of debt. In our view, adjustments for outturn gearing are not safely separable from the outturn market data on EV:RAV or the market value of debt.
- The relevant proxy sample includes five companies (SSE, NG, UU, SVT and PNN). We will consider at Draft Determinations the weight we attach to each company, in light of the relevant for RIIO-2 given for example arguments made about SSE, by NERA, Oxera and CEPA.
- At Draft Determinations we will re-consider evidence submitted on risk, alongside a consideration of risk implied within Business Plans. We will propose at Draft Determinations whether there are (systematic) risk differences between sectors or notional companies.

Summary of Step 1

12.37 Based on stakeholder views and our updated analysis, our working assumption for the Step 1 CAPM cost of equity is slightly higher than we presented in the December consultation. The mid-point of our notional equity beta range is 0.75 rather than 0.7. Our mid-point for the CAPM-implied spot cost of equity is 4.7% CPIH Real rather than the 4.4%⁶⁶ we presented in December. The increase of 0.3% is due to:

- outturn Net Debt / EV gearing being lower when we take an average of historical data rather than the most recent observation;
- the low end of the raw equity beta range is now 0.55 instead of 0.6, and
- the introduction of a Market Value Factor (of between 1.03 and 1.06), for both the low-end and high-end of our range, in order to account for the market values of debt being larger than the book values.

Step 2

12.38 Step 2 is designed to check CAPM results against other information on equity investor expectations. Doing so helps provide assurance that the estimate for the cost of equity is not unduly influenced by individual or combined CAPM parameters – all of which have a degree of uncertainty.

12.39 In the Sector Specific Consultation, we proposed to include a number of cross-checks on CAPM evidence, including:

- Market to Asset Ratios (MARs),
- returns bid by investors in competitions run by Ofgem (Offshore Transmission Operators (OFTOs)),
- professional forecasts from investment managers and advisors, and

⁶⁶ See the Sector Specific Consultation, Finance Annex, Table 13. The CPIH range presented was 3.79% to 4.98%. The simple average of these is 4.4%. Given the sensitivity of the values to re-gearing, we now present a mid-point that takes into account the re-gearing effect, taking the average of the underlying inputs.

- infrastructure fund discount rates.

12.40 We set out how evidence for these four cross-checks could be interpreted. We can summarise this as follows:

- MARs evidence indicated that investors were expecting to earn returns in excess of their cost of capital, although we did not put a numerical estimate on this excess.
- Latest OFTO bids indicated a cost of equity of approximately 7.2% nominal.
- Professional forecasts from investment managers and advisors indicated nominal returns on the total market of 6.7% nominal.
- Infrastructure fund discount rates, excluding 3i from our sample, indicated nominal returns of 7.2% to 7.9% nominal.

12.41 We also noted that there was no perfect cross-check to CAPM, noting that some cross-checks involved assets that were exposed to different risk profiles or gearing levels.

12.42 Based on available cross-checks, the CAPM-implied range (3.85% to 5.01%⁶⁷ in CPIH terms) was rounded to 4% to 5%. We stated that, forward-looking UK equity market returns led to an increase in the bottom end of the range and that the top end was supported by infrastructure fund and OFTO data. The rounding of the December range can be interpreted as an increase of 0.1% to the mid-point.

12.43 Consultation responses to FQ16-FQ18 focused on the four cross-checks that we proposed, including the interpretation of the evidence we presented. We are open-minded about including other cross-checks, including those suggested by Centrica (international TMR assumptions), Citizens Advice (company bids or licence applications) and Oxera (ARP - DRP). However, our current view is that suggestions by Centrica and Citizens Advice are of greater benefit than the proposal from Oxera, mainly because they are forward-looking and contemporary.

12.44 We have therefore decided that:

- We will cross-check CAPM results using the four cross-checks that we proposed in the consultation, and
- We will consider further at Draft Determinations the other cross-checks proposed by stakeholders.

12.45 After analysing consultation responses and refreshing the underlying data, we have increased one of the cross-checks to reflect consultation responses (see below for our current summary of cross-check evidence).

⁶⁷ This range is the average of the Low and High values for the 5-year period ending 31st March 2016 including the impact of the forward curve. See Sector Specific Consultation, Finance Annex, Table 14.

Table 2: Summary evidence on three cross-checks and a cross-check hybrid

	Nominal	CPIH-real	Source
OFTOs	7.20%	5.1%	Nominal value as per Figure 14 of the consultation. CPIH-real derived using 2% CPIH assumption. $(1+7.2\%) / (1+2\%) - 1 = 5.1\%$
Investment managers	7.65%	5.5%	Nominal value as per Figure 6 of the Finance Annex of this decision. CPIH-real derived using 2% CPIH assumption. $(1+7.65\%) / (1+2\%) - 1 = 5.5\%$
Infrastructure funds	7.55%	5.4%	Nominal value is average of 7.2% and 7.9%, as listed in Table 15 of the consultation. CPIH-real derived using 2% CPIH assumption. $(1+7.55\%) / (1+2\%) - 1 = 5.4\%$
CAPM with investment managers' value for TMR	6.05%	4.0%	Real value calculated using notional equity beta of 0.75, risk-free of -0.75% and real TMR of 5.5%. Nominal value derived using 2% CPIH assumption. $(1+4\%) * (1+2\%) - 1 = 6.05\%$

Summary of Step 2

12.46 In our view, the cross-checks support the revised CAPM cost of equity range. We believe that there is similar pressure on the CAPM-implied range that we noted in December, with the low-end best supported around 4.0% CPIH real and the high-end best supported by 5.6%. A mid-point of 4.8% is, in our view, appropriate.

12.47 We therefore retain an implied 0.1% uplift to the CAPM-midpoint, similar to the impact that we set out within the December consultation. The outcome of Step 2, therefore, increases our estimation of the cost of equity from 4.7% to 4.8% CPIH-real.

Step 3

12.48 Step 3 is designed to apply a distinction between the returns that investors expect (ER) and the baseline allowed return (AR) that we provide on equity. The AR can be different from the ER due to financial incentives within the price control design. The larger the expected financial incentive (positive or negative) the greater the divergence between the ER and the AR.

12.49 In the Sector Specific Consultation, we re-stated the principle that the WACC is an expected return by definition. By extension this meant that the cost of equity is equal to the ER.

12.50 We summarised engagement that we had undertaken with the Energy Networks Association, noting concerns raised by stakeholders that:

- The distinction between AR and ER could be tackled at source - cost allowances and associated incentives could be set on the expectation of zero (out- or under-) performance.
- Future price controls may not reflect the past and that investor expectations for RIIO-2 may not, given other changes being made for RIIO-2, reflect the outcomes of other price controls.

12.51 We identified two options for implementing a consistent distinction between AR and ER.

- The first option was described as a strict application, where we would obtain the consistency that we sought, by setting the AR in light of our best estimate of the cost of equity, and our best estimate of expected (out- or under-) performance during RIIO-2.
- The second option was described as a more conservative application, whereby we would set the AR in light of our best estimate of expected (out- or under-) performance, within the bounds of the estimated cost of equity range (as per Step 1 and Step 2 of the methodology). This option reflected stakeholder concerns that RIIO-2 expectations or outcomes may not be easy to estimate and may not reflect returns that had materialised in other price controls.

12.52 We presented evidence on outperformance of other price controls, both within and outside the energy sector, and we referred to equity analyst estimates that outperformance can be realised in future price controls.

12.53 We stated that based on current evidence available to us, we believed that, on the balance of probabilities, investor expectations will be positive and that companies will be expected to outperform regulatory targets during RIIO-2. We therefore proposed to set the AR by selecting a point estimate at the lower end of the cost of equity range where the range is first estimated by CAPM (Step 1) then cross-checked to other market data (Step 2). We proposed that prior to making Determinations for RIIO-2, we would update the underlying analysis from Step 1 and Step 2 and reflect on any relevant information regarding Step 3.

12.54 This approach led us to a working assumption of 4.0% CPIH real for the allowed return on equity, implying a 0.5% reduction from the mid-point (4.5%) of the Step 2 cost of equity range (4% to 5%).

12.55 In response to consultation, we received a wide range of views. All network companies opposed applying an adjustment in the application of Step 3, arguing that the AR should not differ from the ER, and arguing that it is arbitrary and duplicative of existing mechanisms. Citizens Advice supported the concept but thought that the approach presented lacked robustness. Centrica argued that cost allowances should not be easily beaten although it also added that the correct adjustment could potentially be larger than 0.5% and therefore our proposal may be too conservative. The RIIO-2 Challenge Group supported the concept but noted that it was difficult to form a definitive view on the exact amounts in the absence of a full understanding of the proposed incentive package.

12.56 Following analysis of consultation responses (FQ19-FQ21), we have decided that we will:

- We will include step 3 in the equity methodology, and continue to consider further evidence on other price controls.
- We will estimate at draft determination the expected (out- or under-) performance for RIIO-2 in light of updated information available to us, including additional information provided by network companies in business plans, revealed investor expectations, the RIIO-2 incentive regime, and the approach to setting RIIO-2 cost and incentive baselines.
- We will propose an allowed return on equity at draft determinations that reflects our estimation of: a) the cost of equity; and b) expected (out- or under-) performance for RIIO-2, insofar as the AR remains within the bounds

of our estimate of the cost of equity range. Ultimately, we may estimate an expectation of zero for (out- or under-) performance.

12.57 Consultation responses have not provided material evidence that changes our proposed methodology or proposed working assumption for expected outperformance. In particular, as noted in the consultation, the quantum of expected outperformance will be revisited at Draft Determination and calibrated based upon the final RIIO-2 incentive proposals. We continue to believe that the value used as a working assumption (0.5%) is, at this time, reasonable.

Summary of Step 3

12.58 In effect, our updated working assumption for the allowed return on equity remains 0.5% less than our current central estimate of the cost of equity. In any case however, this means that investors can expect to achieve 4.8% returns on equity. Our current view is that 4.3% will be earned through the allowed return on equity and 0.5% will be earned through incentives. By extension, if we are persuaded, in light of the additional information to which we refer, that expected outperformance is less than 0.5%, then we would set the allowed return closer to the cost of equity. In either case, investors should, based on our current view, expect 4.8% return on equity.

Summary

12.59 Based on responses, updated analysis, and our updated view, we update the working assumption for the allowed return on equity from 4.0% to 4.3%, on the basis that our central estimate of the cost of equity has increased from 4.5% to 4.8% (all values in CPIH Real).

12.60 For further detail on the equity issues, see Chapter 3 of the Finance Annex.

An update on our working assumptions for the allowed return on capital

12.61 Inflation forecasts are an important part of our working assumptions for RIIO-2 and underpin many of the consultation issues raised and discussed. We present the latest available information from the Office for Budget Responsibility (OBR):

Table 3: Inflation expectations, OBR's March 2019 forecast⁶⁸

YE 31st December	2018	2019	2020	2021	2022	2023
CPI	2.48%	2.05%	1.86%	1.98%	2.00%	2.00%
RPI	3.34%	2.95%	2.77%	3.02%	3.07%	3.07%

12.62 We continue to focus on the longest horizon available for the purposes of estimating working assumptions for RIIO-2. We also continue to assume that the best proxy for CPIH is CPI. On this basis, we derive a difference between RPI and CPIH (the RPI-CPIH wedge) of 1.049%⁶⁹ based on the OBR forecasts for the year 2023.

⁶⁸ See CPI and RPI worksheets here: <https://obr.uk/download/public-finances-databank/>

⁶⁹ Derived using the Fisher equation: $(1+3.07\%) / (1+2.00\%) - 1$. We display three decimal places solely to allow stakeholders to derive the subsequent tables.

12.63 Therefore, in this document and in the Finance Annex we refer to a CPIH expectation of 2.00%, an RPI expectation of 3.07%, and an RPI-CPIH wedge of 1.049%.

12.64 We summarise below an updated working assumption for the cost of capital in CPIH terms. After reviewing the consultation responses, we have increased our assumption for the allowed return on debt by 19bps (0.19%) and increased our assumption for the allowed return on equity by 30bps (0.30%). The Baseline Allowed Return on capital (WACC) therefore increases by 24bps (0.24%) relative to the assumption we presented in December.

Table 4: Working assumptions for the RIIO-GD2 and RIIO-T2 allowed return in CPIH terms

Price base	Component	Year-end 31st March					Average	Ref	Source
		2022	2023	2024	2025	2026	'22-'26		
CPIH	Allowed return on debt	2.03%	1.96%	1.91%	1.88%	1.86%	1.93%	A	Working assumption as per Finance Annex Table 5
	Allowed return on equity	4.27%	4.29%	4.30%	4.31%	4.32%	4.30%	B	Working assumption as per Finance Annex Table 21
	Notional gearing	60%					60%	C	Working assumption as per Finance Annex Paragraph 7.33
	Allowed return on capital	2.93%	2.89%	2.87%	2.85%	2.84%	2.88%	D	$D = A * C + B * (1 - C)$

12.65 In general, these values are provided for the purpose of Business Planning only. Network companies asked us to re-consider whether CPI, rather than CPIH, is a better basis upon which to set allowed returns and apply increases to RAVs. We propose to provide an update on this issue at Draft Determinations and believe that for now, CPIH remains an appropriate basis upon which to progress.

12.66 In the consultation, we estimated that the cost saving to consumers associated with a lower cost of capital than in RIIO-1 to be worth approximately £6.5bn, or roughly an average £30/year reduction on domestic consumer bills.⁷⁰ Given the increase of 24bps in our working assumption for the allowed return on capital, these savings reduce to £6.0bn and £25/year respectively.

⁷⁰ Over the RIIO-2 periods in real 21/22 CPIH prices, discounted at 3.5% to the 21/22 financial year. Approximately three-quarters of the savings presented are attributed to RIIO-GT2, RIIO-ET2 and RIIO-GD2 which begin in 2021, but the total figure includes RIIO-ED2 for completeness in assessing the potential impact. See paragraph 1.11 of the Finance Annex for further information.

Financeability

Decisions	<ul style="list-style-type: none"> We have decided to suspend work on the cashflow floor and to focus on notional company financeability for setting price control parameters.
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12.67 Financeability relates to licence holders' ability to finance the activities which are the subject of obligations imposed by or under the relevant licence or legislation.

12.68 Ofgem has a duty to have regard to the need to secure that companies are able to finance the activities which are the subject of obligations imposed by or under the relevant legislation.

12.69 In the Sector Methodology Consultation, we proposed to continue to focus on the notional company in assessing financeability but noted that we believe it is important for companies to assess financeability of their RIIO-2 Business Plans on both a notional and actual basis.

12.70 In the event of material underperformance, we proposed to look to company actions or the operation of a cashflow floor to address any associated financeability issues, rather than relying solely on headroom in base case credit metrics.

12.71 We set out the actions companies could take to address any financeability concerns, which were:

- dividend policies can be adjusted to retain cash within the ring-fence during the RIIO-1 or RIIO-2 period
- equity injections can be used to reduce gearing
- expensive debt or other financial commitments could be re-financed
- companies can propose alternative capitalisation rates and/or depreciation rates, if appropriate
- adjust notional gearing.⁷¹

12.72 We also proposed to develop the cashflow floor as an important additional measure to address potential downside financeability concerns and set out three main objectives of a cashflow floor and six design principles.

12.73 We proposed not to rule out either the onus on companies or a cashflow floor for addressing financeability at this stage and set out our intention to develop the cashflow floor further in 2019.

12.74 We stated our intention to provide companies with more guidance with regards to how they should assess financeability, including a draft financial model for RIIO-2. Since December, we have held a number of meetings with the ENA and individual network companies to discuss financeability. We provided companies with a draft financial model for RIIO-2 along with a further information document published on

⁷¹ Although notional gearing was not listed in the financeability section of the December consultation finance annex (it was discussed in paragraphs 7.17-.21), we included notional gearing as another potential lever for addressing financeability concerns in the "[Financeability Assessment for RIIO-2: Further Information](#)" document published on 26th March 2019.

26th March 2019⁷² setting out further detail on our proposed approach to financeability and explaining the ratio calculations included in the model and their significance for a financeability assessment. This publication was followed by ENA and stakeholder calls.

- 12.75 We asked four questions in relation to financeability in the December Finance Annex and a further four questions in the financeability further information document.
- 12.76 Some responses raised questions about our financeability duty. Section 3A of the Electricity Act 1989 and section 4AA of the Gas Act 1986 set out Ofgem’s principal objective and general duties. The relevant wording in relation to Ofgem’s financeability duty in both Acts provides that “the Authority shall have regard to.....(b) the need to secure that licence holders are able to finance the activities which are the subject of obligations imposed.....”.
- 12.77 The financeability duty requires us to “have regard to” the need to ensure that licensees are able to finance their activities, rather than a duty to ensure or secure the financeability of licensees. While financeability is an important consideration, and one that we take very seriously, it is not the only consideration to which our attention is directed by statute. The relevant sections of the Electricity Act and Gas Act, and relevant CMA authorities, require us to weigh these considerations in the round.
- 12.78 We therefore believe that a continued focus on the notional company for setting price control parameters is appropriate in light of our financeability duty and our other duties. We will consider actual company debt positions and structures to inform the notional structure and to inform our views on potential increased monitoring of actual companies with a less comfortable credit profile. However, we do not believe that we are required to “ensure” or “secure” that all licensees are actually financeable in any and all circumstances (whatever risks they have taken or however inefficient they may be).
- 12.79 An obligation to “ensure” or to “secure” actual company financeability would have the effect of the consumer underwriting all financing decisions of networks despite companies, their boards and management being better placed to manage risks associated with these decisions and benefitting from additional returns if those decisions lead to outperformance.
- 12.80 Based on our initial extracted high-level modelling of RIIO-2, which is subject to amendment following receipt of Business Plans, the key notional company credit ratios are expected to be broadly similar in RIIO-2 compared to RIIO-1 despite the lower equity allowance and lower expected equity return. This is due to the following factors:
- gradually decreasing cost of debt as historical debt is refinanced at lower interest rates
 - lower notional gearing contributing to lower interest expense and cash interest costs
 - reducing 'inflation gap' between the real cost of debt allowance and interest expense which largely includes inflation. This reducing inflation gap is due to the switch to CPIH-based allowances and RAV inflation.

⁷² <https://www.ofgem.gov.uk/publications-and-updates/financeability-assessment-riio-2-further-information>

- 12.81 We believe that the calibration of the price control parameters will be sufficient to ensure the notional company would be financeable and that any company-specific notional company financeability constraints (due to scale or timing of capital investment profile for example) could be addressed through NPV neutral measures (depreciation or capitalisation rate changes, if appropriate) with the onus on network companies to address any actual financeability concerns using the remaining available company measures. We provide examples and analysis of the use of these company measures for addressing financeability in the Finance Annex.
- 12.82 As the credit metrics for the notional company are mainly stable or improved compared to RIIO-1, we do not believe long term dividend restraint would be required for the notional company. Therefore, any such requirement would likely be due to company specific actual financeability constraints, for which it is appropriate for companies to consider addressing through dividend restraint or equity injection. We consider that restricting dividends can be an effective measure for addressing company-specific financeability constraints as this would increase funds available for making debt service payments or, if used to pay down debt (either at maturity or before to pay for refinancing high coupon debt or other financial commitments), it can reduce gearing and/or debt interest costs and improve key credit metrics.
- 12.83 In principle, we still see potential value in a cashflow floor as a concept. However, given consultation feedback that the variant proposed would not have significant value for ratings, the lack of support from networks and the lack of any submissions suggesting support from any debtholders, and our current view that it is not required for networks to be financeable, we have decided to suspend work on the cashflow floor. Our intention is that work would only resume on any alternative variants of the cashflow floor following Business Plan submission if deemed necessary due to any relevant financeability concerns that could not be better addressed by other measures.

Other finance issues

Decisions	<ul style="list-style-type: none"> We have decided to implement an immediate switch from RPI to either CPIH or CPI from RIIO-2 onwards for the purposes of calculating RAV indexation and allowed returns. We will not phase the move away from RPI.
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- 12.84 The December Finance Annex also addressed a number of other finance-related issues, including corporation tax, RAV indexation, regulatory depreciation and economic asset lives, capitalisation rates, notional gearing, equity issuance costs, pension scheme established deficit funding, directly remunerated services, and amounts recovered from the disposal of assets. In this respect we asked eleven questions.
- 12.85 Regarding corporation tax, we will further consider the merits and applicability of the Fair Tax Mark before deciding whether to make it a requirement for all companies to obtain. In assessing the relative merits and applicability, we will also consider whether it adds further consumer value. We will retain all three options (A. Notional allowance with added protections; B – Pass-through for payments to HMRC; and C – The "double-lock") open for further consideration as part of our assessment of Business Plan submissions. For Option A, we will continue to

explore a methodology for a potential re-opener to be triggered under certain conditions. These conditions could include information from HMRC or whistleblowers or following major transactions, for example.

- 12.86 In the December Finance Annex, we proposed an immediate switch from RPI indexation after considering the cashflow impact on companies and consumers. We argued that an NPV-neutrality is best secured by a one-off point-in-time switch from RPI to CPIH (or CPI), reflecting the expected difference at that time. We proposed not to attempt to secure unconditional NPV-neutrality over time relative to multiple measures of inflation.
- 12.87 Following our consultation on these issues, we have decided to:
- implement an immediate switch from RPI to either CPIH or CPI from RIIO-2 onwards (1st April 2021 for GT, ET and GD) for the purposes of calculating RAV indexation and allowed returns. We will not phase the move away from RPI.
 - consider again whether to use CPIH or CPI, in light of factors listed in the consultation⁷³ and in terms of the most accurate reference point for estimating real returns. We will provide an updated position in this regard at Draft Determinations.
- 12.88 At this time, Business Plans, cost assessment, and our estimation of real returns, will progress relative to CPIH.
- 12.89 Regarding depreciation, we confirm that we are open to exploring further changes in the depreciation methodology in line with the economic principle of intergenerational fairness. Part of this assessment will involve careful consideration of the useful economic lives of network assets and therefore appropriate regulatory depreciation rates. Companies should consider regulatory depreciation and asset lives as part of the RIIO-2 Business Plan submissions, providing evidence that any changes are appropriate and justified.
- 12.90 We intend to review our capitalisation assumptions for the fast/slow money split in light of operational practice to date and the information in company Business Plans. In addition, we will consider the impact of the implementation of IFRS16, which effectively brings all leased assets on to company balance sheets, following submission of company Business Plans. Companies should submit fast/slow money splits as part of the RIIO-2 Business Plan submissions, providing evidence that their proposed capitalised rates are appropriate and justified.
- 12.91 We believe it is too early to decide on the level of notional gearing until Business Plans have been assessed and the overall price control package is known. Notional gearing values of 60% for both RIIO-GD2 and T2 are, at this stage, only working assumptions.
- 12.92 We will continue to review notional gearing in light of the riskiness of the overall price control settlement and the ability of the notional efficient company to sustain downsides. We confirm our notional gearing working assumption, in advance of receiving Business Plans, is 60% for both RIIO-GD2 and RIIO-T2. Network companies should assess the overall risk of their Business Plans and make realistic and well-justified proposals for notional gearing.

⁷³ See paragraph 6.16 here: https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf#page=68

12.93 Please see the Finance Annex for further details on how we address equity issuance costs, pension scheme established deficit funding, directly remunerated services, and amounts recovered from the disposal of assets.

Ensuring fair returns

Decisions	<ul style="list-style-type: none">• Our decision is to rule out discretionary adjustments and Class 2 (anchoring) proposals for the gas distribution sector. Instead, we intend to implement a class 1 (sculpted sharing) mechanism for gas distribution, gas transmission and electricity transmission sectors. Further details on the Class 1 sculpted sharing RAM can be found in Appendix 5.• We will also not consider financial or tax performance in a return adjustment mechanism.• As decided in the Business Plan Incentive section, it is intended to exclude performance through the BPI from RAMs. The rationale is provided in the BPI section.
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Summary of issue

12.94 Network company returns in RIIO-1 have been higher than expected when the price control was set. In some cases, the outperformance reflects genuine innovation and efficiency, which improves services and reduces costs for consumers. In others, it has been the result of factors not linked to the companies' own actions.

12.95 It is possible that these factors might work in the opposite direction, leading to companies earning much lower returns than were anticipated.

December proposals⁷⁴

12.96 We proposed to introduce arrangements that would adjust company returns if they were found to be significantly outside of a range that might be expected. These could be discretionary or mechanistic. We proposed a spectrum of different approaches, identified in the table below.

⁷⁴ Our proposals did not directly apply to the ESO due to the different nature of that price control. For confirmation of our ESO finance decisions, see the ESO decision document.

Table 5: Spectrum of mechanistic return adjustment approaches

Class 1	Class 2	
Sculpted sharing	Sector average sculpting	Anchoring
Applying a higher adjustment to individual companies' performance the further away that performance deviates from predetermined thresholds (could be applied by either using a RoRE or a totex metric).	<p>Adjusting out or underperforming companies based on the sector average.</p> <p>This is done by setting sculpting levels for companies performing above or below a predetermined threshold but the level of sculpting is linked to different sector average returns. As sector average returns increase or reduce, so too does the level of sculpting for out or underperforming companies.</p> <p>We provided more information on this option in the appendix to the December document.</p>	<p>Adjusting companies' performance when the sector average exceeds a predetermined threshold, so that the adjustment returns the sector average back to the threshold.</p> <p>Our proposed approach for anchoring would apply 'proportionate adjustments' to companies in a sector, and that with no adjustments would send a company's return below its allowed return on equity.</p>

12.97 We proposed not to apply a discretionary approach in any sector. We provided a comparative assessment and proposed to use a Class 1 approach of sculpted sharing of individual company outperformance for the gas transmission and for the electricity transmission sectors. We proposed a Class 2 approach for the gas distribution sector, and we indicated that proportional anchoring may be the simplest and most appropriate approach.

12.98 We also asked:

- Whether we should set the threshold for adjustment at +/- 300bps (3%) around the cost of equity, and whether we should apply adjustments that would take a company's return below its cost of equity
- Whether we should use return on regulatory equity (RoRE) as the return adjustment metric
- Whether we should include financial metrics in our calculation of returns
- Whether we should make any adjustments as part of the price control close-out process, or via the annual iteration process

Summary of responses

Type of mechanism

12.99 Some non-network stakeholders agreed with implementing a return adjustment mechanism, but did not respond in detail regarding a preference between Class 1 and Class 2 variants.

12.100 Several network licensees recognised the need for a return adjustment mechanism as identified by Ofgem, while others and the ENA disagreed with introducing any mechanism.

12.101 All network licensees (with one exception) opposed introducing a Class 2 mechanism, and anchoring in particular. Network companies responded that we

had understated the negative impacts of anchoring in our comparative assessment, and did not adequately consider concentration in the gas distribution sector. It was argued that the size of Cadent in the GD sector unduly affected smaller companies. Network licensees agreed that Class 1 sculpting would provide relatively more certainty over returns.

- 12.102 Almost all responses agreed with removing discretionary adjustments as an option, although one DNO stated it should be discussed for RIIO-ED2.

Threshold and use of RoRE

- 12.103 One supplier proposed the +/- 300bps range be tightened, while a consumer advocate stated it seemed reasonable given observations in RIIO-1.

- 12.104 Several networks responded that 300bps of outperformance was unlikely to be triggered with the current RIIO-2 proposals. One network company suggested a 500bps collar should be applied, with incentives offering the potential to earn at least this much. Others stated that we did not justify the 300bps proposal.

- 12.105 Two networks proposed that sculpted sharing should apply only to the totex incentive mechanism, as opposed to overall RoRE. One network company proposed applying the adjustments to the return on RAV; this would allow it to link to the overall cost of capital, (rather than cost of equity), but stated the need for a full assessment of all alternatives.

- 12.106 One gas distribution network agreed with the use of RoRE, but noted concern about company specific benchmarks. The network responded that RoRE potential should be equivalent across networks, and not become more or less achievable due to a specific calibration of an Output Delivery Incentive (ODI). Others noted the need to ensure a clear definition of RoRE with a consistent methodology.

Financial performance

- 12.107 Two network companies supported including financial performance within the scope of return adjustment mechanisms and stated that excluding financial performance risked significant unintended consequences. Other networks generally disagreed with the proposal to include financial performance within the scope of return adjustment mechanisms. Some noted that challenges we had flagged elsewhere in the December consultation on how to apply a sharing mechanism on cost of debt out/under performance would equally apply to a return adjustment mechanism that included financial metrics.

Implementation

- 12.108 Eight networks indicated a preference for implementing adjustments through a close out process, while two companies preferred using the annual iteration process. One network company proposed this implementation detail regarding close out or AIP could be discussed at consumer engagement groups.

- 12.109 One network company noted that RoRE includes cash and non-cash performance (as totex performance is earned through both slow and fast money), which may cause a distortion depending on the manner in which adjustments are made (eg an adjustment to fast money values only at close out).

Decision

- 12.110 Our decision is to rule out discretionary adjustments and Class 2 (anchoring) proposals for the gas distribution sector. Instead, we intend to implement a class

1 (sculpted sharing) mechanism for gas distribution, gas transmission and electricity transmission sectors. Further details on the Class 1 sculpted sharing RAM can be found in Appendix 5.

12.111 We will also not consider financial or tax performance in a return adjustment mechanism.

12.112 As decided in the Business Plan Incentive section, it is intended to exclude performance through the BPI from RAMs. The rationale is provided in the BPI section.

Rationale / evidence to support decision

Legitimacy and the need for a mechanism

12.113 Our principal objective is to protect the interests of existing and future electricity and gas consumers. Price controls play a vital role in this by constraining the amount network companies can earn from charges to use the networks.

12.114 Since the open letter on the RIIO-2 framework in July 2017, we have referred to the concept of *legitimacy* of the price control. Legitimacy requires public confidence that the regulatory regime is protecting consumers' interests. We explained in the open letter:

"Stakeholders are more likely to view high returns as legitimate or fair when they are the product of efficiency or innovation. They are less likely to view them as legitimate or fair when they are perceived to be the result of companies' exploiting information asymmetry or windfall gains due to economic conditions differing from original forecasts."

12.115 Many of our proposed policies seek to ensure the legitimacy of RIIO-2. It is one of the reasons why we launched the ring-fence review, enhanced our financial reporting requirements, proposed that companies obtain the "Fair Tax Mark" certification and report executive remuneration, and decided to move away from the discredited RPI measure of inflation.

12.116 Return adjustment mechanisms contribute to the legitimacy of the price control by constraining profits beyond pre-defined thresholds. We intend to use return adjustment mechanisms to help ensure the legitimacy of RIIO-2 by protecting consumers and investors against ex post overall returns from network price controls deviating greatly from ex ante expectations. When designing an incentive, we consider the returns achievable by a high performing company. When returns fall well outside ex ante expectations, particularly across all companies in a sector, we think it is more likely to be due to network companies exploiting information asymmetry, forecasting errors, or due to a poorly calibrated price control mechanism.

12.117 These profits could be considered excessive, or not reflecting value for money, and we think such profits call the legitimacy of the price control into question.

12.118 In responses to the December consultation, some networks disputed that any return adjustment mechanism is necessary, and argued that any such mechanism will have a dampening effect on the incentives to innovate and find efficiencies. For example, one network company referred to the ENA report which asserts that

"none of these mechanisms is clearly going to create net-benefits for consumers".⁷⁵

12.119 However, that assumes that all or most outperformance is generated by genuine efficiencies or innovation (as noted on page 41 of the ENA report referenced above). This is unlikely to be the case, as we identified in the March consultation document and above. We continue to hold the view that other factors beyond genuine efficiencies and innovation can affect the level of return a company earns through incentives.

12.120 We view an automatic return adjustment mechanism, designed as a failsafe for unexpected outcomes, as an entirely reasonable tool for an economic regulator. At this stage we are not determining the precise levels which would constitute an appropriate failsafe, or the details of implementation.

12.121 In responses to the December consultation, some network companies argued that there was overlap or duplication between return adjustment mechanisms and our proposals to distinguish between expected and allowed returns (as to which, see the Finance Annex). We do not accept that these measures are duplicative. The principle behind 'allowed returns' addresses ex ante expectations to set the most appropriate baseline for returns, having regard to the systemic nature of information asymmetry and other potential sources of return. Return adjustment mechanisms are intended to operate only as a failsafe mechanism when ex post outturns deviate substantially from those ex ante expectations.

Ruling out class 2 mechanisms

12.122 A return adjustment mechanism could either be company-specific (Class 1) or they could link the level of adjustment for individual companies to how the sector is performing on average (Class 2). Sculpted sharing is an example of a Class 1 return adjustment mechanism, while sector average sculpting and anchoring are examples of Class 2 mechanisms.

12.123 In December, we proposed to apply 'proportional anchoring' (a Class 2 mechanism) to the gas distribution sector, as there was a more diverse ownership structure of RAV in comparison to the transmission sectors. For the gas transmission and electricity transmission sectors, we proposed to apply a Class 1 mechanism (sculpted sharing), because the concentrated ownership structure in those sectors made Class 2 mechanisms more appropriate.

12.124 In December, we indicated our view that a Class 2 mechanism was appropriate for gas distribution because a single outperforming company was less likely to give rise to legitimacy concerns, such that we were more concerned with sector average outcomes. We want to provide room for the incentives to operate effectively; therefore, taking action only when the sector average reached a pre-defined threshold preserved stronger incentives.

12.125 We have considered the arguments in consultation responses that we have overstated the ownership diversity of the gas distribution sector, with the RAV for Cadent about 50% of the sector.

⁷⁵ "Evaluating the need for, and strengths and weaknesses of, fair returns mechanisms for RIIO-2", Final report for Energy Networks Association, 30 May 2018, see Response 71 to the [RIIO-2 Framework Consultation](#).

12.126 For example, on the approach we proposed in December, a Cadent outperformance of roughly RIIIO-1 levels would be sufficient to trigger anchoring, assuming a 150bps outperformance of the remainder of the sector.

12.127 After considering consultation responses carefully, we have concluded that ownership structures in gas distribution sector are not sufficiently diverse to sustain a Class 2 measure such as anchoring.

12.128 Therefore, we have decided not to proceed with our proposal for anchoring in the gas distribution sector, and to rule out Class 2 mechanisms for the gas distribution, as well as for the gas transmission and electricity transmission sectors because:

- The concentrated ownership structures within the sectors meaning that one company could have material influence over the sector average; and
- As a result of this level of concentrated ownership, it may not be possible for a class 2 mechanism to be implemented in a way that is a fair outcome for all companies.

12.129 Although it is not directly tied to sector average performance, a Class 1 mechanism would still effectively restrain the performance of a sector on average. We are satisfied that a Class 1 mechanism such as sculpted sharing would address concerns about unduly high returns. We acknowledge it could reduce incentives for genuine efficiencies (potentially more than a Class 2 mechanism). This highlights the need for the mechanism to act as a failsafe, rather than a feature of the regime that is likely to interact frequently with other incentives and we will take this into consideration when determining the detail of the mechanism.

Excluding financial performance

12.130 As discussed above, a return adjustment mechanism contributes to price control legitimacy by serving as a failsafe mechanism when returns are well outside ex ante expectations.

12.131 A material potential cause of unexpectedly high returns is information asymmetry between the regulator and the network companies when setting totex levels and incentives. In contrast we rely on external, outturn indices for setting the cost of debt (and have expanded our requirements for reporting embedded debts). As such we do not see the same asymmetry around financial performance and therefore consider it more appropriate to use a pre-financing measure of profitability for our return adjustment mechanism calibration.

12.132 Additionally, financial out/under performance is largely known ex ante (due to the companies' embedded debt costs). If we were to set return adjustment mechanism boundaries on post-financing profits, companies' ability to perform against operational targets (our main area for concern), could vary widely.

Interaction with other policy areas

12.133 While we consulted on the appropriateness of a +/-300bps threshold, we are not proposing it as a working assumption at this stage. We will determine it after having received Business Plans and have fully considered the total package and interactions with the cost of equity, the Business Plan Incentive, the totex incentive, and output delivery incentives.

Next steps

- 12.134 The mechanism is intended to encompass both output and totex incentives, but we will consider whether it should account for each of these separately or in a combined manner. If it is applied separately we would need to identify the appropriate threshold for each driver of returns. We will also detail the implementation of the adjustments (through either the annual iteration or close out).
- 12.135 We will consider and consult on whether we should retain symmetry of the mechanism, as the case for symmetry would be lessened by implementing a class 1 mechanism (eg would it be necessary for the sculpting to operate on a -300bps threshold as well as +300bps).
- 12.136 In due course we intend to provide further details and consult on the design of the class 1 sculpted sharing return adjustment mechanism. This will be with the benefit of business plan information and a more complete picture of incentives.

Ring fence review and financial disclosure

Background

- 12.137 In the December Consultation, we noted our ongoing review of company financial arrangements including debt and tax (called the ring-fence review). We are continuing to establish whether our findings have any implications for the prices that consumers pay for network services, and the resilience of network companies against financial failure. In the December consultation we highlighted that any actions arising from this analysis could be implemented either during RIIO-1 through the RIGS process and/or through our RIIO-2 licence change proposals.
- 12.138 In particular, we noted that we are planning further updates to the Regulatory Financial Performance Reporting (RFPR) process; that licensees should disclose more information on debt and tax, including returns to HMRC and appropriate reconciliations; and to integrate greater transparency by expecting the licensees to publish their dividend policies and disclose more information on executive pay. We also said that any amendments to the ring-fence conditions for RIIO-2 would be informed by the results of our work on the cashflow floor mechanism. We update on these areas below and on wider measures to address financial legitimacy.

Gearing

- 12.139 Capital structure and corporate finance/treasury affairs remain matters for companies and their shareholders. Notwithstanding this, we have introduced increased financial transparency through the 2017-18 Regulatory Financial Performance Reporting disclosure, which will be updated further during the remainder of RIIO-1.
- 12.140 Average debt/RAV for all energy network companies in RIIO-1 to date was 60.8% as at March 2018⁷⁶. While some companies had higher gearing levels (particularly taking into account the balance sheet treatment of derivatives), we do not see any systematic problem of over-gearing. There are a number of constraints that companies will face in raising gearing levels in RIIO-2 including the Licence Obligation to maintain an investment grade credit rating, the credit assessment criteria of the rating agencies and the allowed return level working assumptions.

⁷⁶ Ofgem RFPR data

In addition, RIIO-1 already has a tax clawback mechanism to transfer the tax benefit of high gearing to consumers.

12.141 In other sectors, gearing levels are a concern for regulators and we note Ofwat's proposed sharing of financing outperformance arising from gearing in excess of the notional level⁷⁷. Given the absence of widespread excess gearing in energy networks and the constraints discussed above, we do not see a need at this time to introduce a similar measure in RIIO-2. To the extent financial structures pose any future consumer-interest issues, we would look to act on them in line with evidence.

12.142 As we propose to suspend work on the cashflow floor mechanism, no changes to the ring-fence arrangements will be made for this purpose, but other ring-fence review work will continue as described.

Dividend policies

12.143 Dividends are now transparently disclosed in new RIIO-1 RFPR arrangements. We propose to require companies to publish sustainable dividend policies, as part of the RIIO-2 Business Planning process for RIIO-2 and on an annual basis in future RFPR reports.

Executive remuneration

12.144 There is increased scrutiny of executive remuneration in regulated sectors⁷⁸. As part of our ongoing amendments to financial disclosure in RIIO-1, we propose to require disclosure of executive remuneration to a similar level to that required for UK-listed public limited companies. This will be subject to consultation/discussion with companies under the RIGS process.

Tax affairs

12.145 The ring-fence review did not highlight any systematic deviations between tax allowed and tax paid in the energy sector, and we note that RIIO-1 already has a corporation tax uncertainty mechanism that allows price control allowances to be adjusted for changes in corporation tax rates and tax legislation, for example. Hence, allowances are, in this respect, protected from forecast error.

12.146 As discussed in section 5 in the Finance Annex, our RIIO-2 proposals will allow us to better scrutinise companies' tax affairs (including potentially exchanging data with HMRC) and we propose to be able to revisit tax allowances in cases of material deviations or new information.

⁷⁷ See Ofwat (Putting the sector back in balance, April 2018)

⁷⁸ See for example Ofwat (PN28/18)

13. Achieving a reasonable balance

- 13.1 In reaching our decision on the RIIO-2 methodologies we have had to balance competing ambitions. In our December Consultation, we asked for views on whether our proposals achieved a reasonable balance.
- 13.2 Most of the responses we received came from network companies, including one from an Independent Gas Transporter. In total, we had five responses to these questions from non-network stakeholders, and these included detailed responses from Citizens Advice, Centrica and the RIIO-2 Challenge Group.

Accuracy and simplicity

Summary of responses

- 13.3 Network companies considered that in striving for accuracy our consultation proposals had become too complex. They considered that return adjustment mechanisms, the cashflow floor proposal, an expectation of outperformance that would be incorporated into the cost of equity (the 'expected-allowed wedge') and a basket of relative and competed-for incentives were unnecessary, could overlap with each other leading to unintended consequences and created uncertainty and risk. A perceived lack of clarity on how these would operate contributed to these views.
- 13.4 A general sentiment from network companies was that instead of introducing measures that would correct the price control to offset returns being too high, we should focus on ensuring the inputs to the control were set correctly. Where appropriate this should be accompanied by uncertainty mechanisms. This would then allow us to continue to apply strong incentives on performance improvements.
- 13.5 In our December consultation, we discussed how a return adjustment mechanism could be used either as a safety net to guard against unanticipated returns, or a mechanism that was applied continually to counter any deviation from forecast. We asked whether stakeholders would prefer us to use these in the first capacity with an expected-allowed wedge incorporated into the cost of equity to offset information asymmetry, or in the second capacity with no need for a wedge.
- 13.6 Network companies generally considered there was no need for the expected-allowed wedge, and some considered there was also no requirement for a return adjustment mechanism, as other tools were available to offset the risks of unintended outcomes. Others conceded that there may be some benefit in having an adjustment mechanism as a safety net, providing it did not create uncertainty.
- 13.7 The RIIO-2 Challenge Group recognised the risk of additional complexity associated with some of our proposals but also acknowledged the potential benefits to consumers they could bring in lowering the cost of capital. They also acknowledged that fewer controlling mechanisms on company behaviour could reduce accountability. Centrica considered that broadly our proposals were necessary but suggested the proposed design of certain mechanisms, such as the Business Plan Incentive and the cashflow floor, could be enhanced. The RIIO-2 Challenge Group, Centrica and Citizens Advice saw the return adjustment mechanism as a protection that should be reserved for when something has gone significantly wrong in the setting of the price control. The RIIO-2 Challenge Group and Citizens Advice thought this should only be in exceptional circumstances,

while Centrica advocated triggering these at a much tighter threshold around the cost of equity.

- 13.8 We have simplified the price control where possible, but we have also made sure that the price consumers pay will accurately reflect the costs incurred. There is a trade-off between these two ambitions.

Our view

- 13.9 We want the price control to be as simple as possible. Through consultation and our own analysis, we are not proceeding with, or are changing certain elements of our December proposals. These changes better help to streamline the regime at this stage. This includes:

- suspending work on the cashflow floor
- not introducing competed-for incentive on Business Plans
- not applying multiple initiatives to drive 'whole system' outcomes
- not proceeding with the application of a Class 2 approach to return adjustment mechanisms in these sectors.

- 13.10 We have also made clear that relative output incentives and dynamic targets will only be applied in circumstances where these are likely to bring added value. The same principle will apply to our use of competition.

- 13.11 We have considered our proposals in light of the responses received and on balance, we are satisfied that the mechanisms that remain are all in the interests of consumers and our decisions are necessary and proportionate.

- 13.12 We believe that the process of setting upfront allowances and targets brings with it an unavoidable degree of error and risk. We will apply learning from the past and put in place controls for factors outside of the companies' influence. Enhanced engagement and the Business Plan Incentive can help to mitigate the risk of errors in the setting of allowances and targets. How we set incentives and reducing their overall power can also limit the cost to consumers.

- 13.13 To reflect any expectation of (out- or under-) performance, we incorporate an explicit step in our method to set the allowed return. As noted in the consultation, the working assumption for the quantum of expected outperformance will be revisited at determination and calibrated based on the final RIIO-2 price control as a whole.

- 13.14 Ultimately, we will take care to set the allowed return and the supporting return adjustment mechanisms at levels that do not disrupt the day to day function of other incentives.

Risk vs return

- 13.15 Many of the mechanisms we are introducing will help to support a low risk environment for investors. These include the indexation of certain prices and interest rates, along with other mechanisms to allow the price control to accommodate uncertainty. These help to support the lower financing costs we expect for RIIO-2. In December, we asked whether the level of return indicated for RIIO-2 fairly remunerated networks for the risks carried in these businesses.

Summary of responses

- 13.16 Network companies did not feel we had reflected the increased risk of the changing environment in which they operate. A number of DNOs drew attention to the heightened risk environment arising from their function potentially changing from that of a network operator to a system operator. Network companies also took the view that the introduction of a number of untested mechanisms in RIIO-2 brings additional risks.
- 13.17 Network companies said that changes to how incentives to outperform totex budgets (the 'incentive rate') were set, would weaken the overall power of the regime to drive innovation and the energy system transition. Networks considered that the effect of dulling incentive rates could be compounded by potential changes to the innovation stimulus that might limit funding available to companies. Network companies also considered that our proposals led to an incentive regime that was skewed to the downside. A combination of competed-for rewards along with downside-only incentives and strengthened licence conditions contributed to this view.
- 13.18 In summary, network companies wanted a regime with stronger incentives that offered much greater potential for higher returns where these were driven by additional consumer benefits.
- 13.19 Citizens Advice, the RIIO-2 Challenge Group and Centrica observed that if anything we had overestimated the risks facing these companies. There was a belief that many of the measures we proposed such as uncertainty mechanisms, greater use of indexation, return adjustment mechanisms lowered risks to the companies in comparison with RIIO-1. The RIIO-2 Challenge Group made the observation that in many cases risks were being passed from companies to consumers, in which case consumers should not have to pay again through higher company returns. Citizens Advice also highlighted that declining expenditure in gas distribution relative to the RAV and, in turn, income inevitably offers greater protection for company returns and cashflows.

Our view

- 13.20 In relation to how much risk network companies are exposed to in RIIO-2 compared to RIIO-1, we consider that, as noted by some stakeholders we are introducing additional protections for companies to cope with changes in the network operating and financial environment. These include uncertainty mechanisms, and the indexation of RPEs and the cost of equity.
- 13.21 We also consider that the fact that the average incentive rate will be lower (though still strong) in RIIO-2 compared to RIIO-1, should mean there is less risk for companies from the operation of the totex and outputs incentives that depend on the incentive rate.
- 13.22 We are conscious of the risks associated with introducing new mechanisms into the price control. As explained above, further to consideration of consultation responses and further analysis, we have taken steps to reduce the number of mechanisms we are introducing, as well as providing more clarity on how and when we will apply those we are using. In our impact assessment we have considered their combined impact and we do not believe that on balance they will have an adverse effect.
- 13.23 In relation to the returns that companies will be able to earn, we continue to consider that networks face much lower systematic risk due to the various

regulatory protections they enjoy than was suggested in the calculation of the RIIO-1 cost of equity. We also note the change in our assessment of expected stock market returns, which reflects a change in financial circumstances rather than anything attributed to action by the networks.

- 13.24 We recognise the network companies' concerns at the strength of incentives associated with the regime, and their perception that these are skewed to the downside.
- 13.25 At this time, we do not intend to specify how much additional earning potential companies should expect above their cost of equity. This requires an understanding of their expenditure (in terms of quantum and composition) and the value to consumers of improvements in service quality. This will emerge through our assessment of Business Plans.
- 13.26 In considering the overall balance of the RIIO-2 package, including the incentive regime, we will also take into account our expectations of the likely outcomes. Where we set licence conditions and minimum standards, we enable companies to access the revenues required to deliver these. There is no reason why we would expect properly run companies to fail to achieve these. In other aspects, we will aim to set expenditure allowances and output targets in a way that does not anticipate any sector-wide outperformance, nor underperformance. We therefore do not accept that the regime is likely to drive companies on average to underperform.
- 13.27 In arriving at the overall balance, weight will be given to all aspects of the price control, including any expectation of (out- or under-) performance (as reflected by the methodology to set the allowed return on equity).⁷⁹ In the event that any one aspect of the control is changed, we would re-assess other aspects in order to retain the appropriate balance between risk and return.

Efficiency vs fairness

- 13.28 In our December consultation, we also described how we had aimed to balance the interests of different consumers. Generally, we want to achieve cost-reflective pricing of network services, and to avoid significant cross-subsidy. Nevertheless, in accordance with our principal objective, we have to ensure that the interests of existing and future consumers (including those in vulnerable situations) are properly protected.

Summary of responses

- 13.29 There appeared to be a broad agreement among network companies and other stakeholders that our proposals in relation to providing additional support for consumers in vulnerable situations were broadly appropriate. ENWL and Centrica held the view that while targeted support may be appropriate where networks are best placed to deliver, delivering wider social benefits through network charges may not be suitable or transparent. Although not directly responding to these questions on the 'balance' of our proposals, National Energy Action thought that GDNs could go further in helping vulnerable customers by installing or funding in-home energy efficiency measures.
- 13.30 Many network companies, as well as Citizens Advice, considered that our proposals put insufficient weight on the interests of future consumers. This was

⁷⁹ See Chapter 12 Fair returns and financeability; Finance Annex chapter 3

particularly drawn out in relation to the role networks could play in supporting the decarbonisation of the energy and other sectors.

- 13.31 There was a more general observation made by some networks that designing a regime that reflected consumer interests required research to establish what consumer priorities were and that these might differ by region.

Our view

- 13.32 We have implemented a framework of enhanced engagement in order for networks to develop plans that reflect local preferences. Our expectation is that companies use this framework to bring forward well evidenced and justified plans that reflect regional priorities.
- 13.33 We were pleased that stakeholders broadly considered we had struck the right balance in relation to our proposals for supporting consumers in vulnerable situations. We note the views raised that we should go further in supporting the installation of boilers and heating systems. However, we think this would constitute a significant change in the role of the networks and we note there is already a range of different funding streams for these activities. We therefore think the GDNs should continue to leverage these funding streams through their partnership networks.
- 13.34 We also note that the government is actively considering whether networks should have a role in delivering energy efficiency measures. We will introduce a re-opener to respond to changes in their role, should the government conclude that these are necessary.
- 13.35 In terms of protecting the environment and promoting the decarbonisation of transport, heat and power, we have addressed this through a clearer vision of how we expect networks to play a role in the environment/decarbonisation. We are also retaining innovation support, including the Network Innovation Allowance, and we will be encouraging whole system and long-term planning of investment, taking a relatively broad view of benefits to future consumers.

Appendices

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Appendix 1 - Overarching incentives framework and criteria for bespoke outputs

Updated framework for dynamic targets and incentives

In our December consultation, we set out our proposed overarching approach to dynamic incentives. We have now updated this in light of the feedback received.

In referring to dynamic incentives, we make a distinction between dynamic targets and dynamic rewards/ penalties:

- Dynamic targets: refers to setting targets that evolve during the period.
- Dynamic rewards/ penalties: refers to rewards and/ or penalties that are allocated on the basis of an individual company's performance relative to their peers.

For additional clarity, by dynamic targets we refer either to:

- Targets that change with time in a way that is set out upfront, and funded through baseline allowances; **or**
- Targets that change with time in way that is not set out upfront, but depends in a known way on the revealed performance of the company or the sector, with service improvements generally not funded through baseline allowances.

We note that any decision to introduce dynamic incentives will be taken on a case-by-case basis. The purpose of the framework is to provide guidance on their potential application only.

Table 6 – Framework for dynamic targets

	Description	Potential benefits	Potential disadvantages	Potential for application
Static targets	<ul style="list-style-type: none"> - Targets set at the start of the price control, either based on company's own performance and/or sector performance. Do not evolve during the period. 	<ul style="list-style-type: none"> - Provides clarity on potential rewards/ penalties associated with performance. 	<ul style="list-style-type: none"> - Setting stretching targets will still be difficult where robust data is not available. - Does not capture on-going improvements in performance, or sector-wide performance. 	<ul style="list-style-type: none"> - Where it is not possible to compare performance and/ or activities across companies - Where it is not possible to accurately quantify on-going performance improvements in-period - Where year-on-year incremental performance improvements are not achievable

Dynamic-absolute targets	<ul style="list-style-type: none"> - Targets set at the start of the price control based on company's own performance. Evolve during the period to take account of improvements in company's own performance. 	<ul style="list-style-type: none"> - Captures improvements in individual company performance and helps ensure targets remain stretching. 	<ul style="list-style-type: none"> - Does not capture sector-wide improvements in performance. 	<ul style="list-style-type: none"> - Where it is difficult to obtain an independent benchmark or target - Where it is possible to accurately quantify on-going performance improvements in-period - Where year-on-year incremental performance improvements are achievable
Dynamic-relative targets	<ul style="list-style-type: none"> - Targets set at the start of the price control either based on company's own performance and/or frontier company. Evolve during the period to take account of improvements in performance across the sector. 	<ul style="list-style-type: none"> - Captures improvements across sector and helps ensure targets remain stretching. 	<ul style="list-style-type: none"> - Requires some level of comparability of performance and circumstances - May reduce collaboration - Less certainty over potential reward/ penalty - Practical considerations: need to ensure clear process for updating targets in-period 	<ul style="list-style-type: none"> - Where it is possible to compare performance and/ or activities across companies - Where it is possible to accurately quantify on-going performance improvements in-period - Where year-on-year incremental performance improvements are achievable

Table 7 – Framework for dynamic rewards and/ or penalties

	Description	Potential benefits	Potential disadvantages	Potential for application
Static rewards	<ul style="list-style-type: none"> - Rewards based on company's own performance against targets. 	<ul style="list-style-type: none"> - Provides clarity on potential rewards associated with outperformance and fosters collaboration. 	<ul style="list-style-type: none"> - Does not address potential difficulty in setting the right level of rewards (if data is not available). Potential risk of significant outperformance, depending on how targets were set. - Does not drive competition in the sector. 	<ul style="list-style-type: none"> - Where we are able to quantify the value that consumers attach to a particular output. - Where it is possible to obtain an independent benchmark or target.

Dynamic rewards	<ul style="list-style-type: none"> - Rewards allocated based on a relative assessment of performance. 	<ul style="list-style-type: none"> - Drives competition in the sector, in particular where less evidence of consumer value is available. - Helps ensure value of incentive reflects benefit to consumers. 	<ul style="list-style-type: none"> - Requires some level of comparability of performance and could disincentivise collaboration in some instances. - Risk of rewarding poor performance and/ or penalising good performance. - Less visibility of potential rewards. 	<ul style="list-style-type: none"> - Where it is difficult to obtain an independent benchmark or target. - Where it is possible to compare performance and/ or activities across companies. - Where performance across companies is correlated (eg good/ poor weather affects all in the same way).
Static penalties	<ul style="list-style-type: none"> - Penalties based on company's own performance against targets. 	<ul style="list-style-type: none"> - Provides clarity on potential penalties associated with poor performance. 	<ul style="list-style-type: none"> - Does not address potential difficulty in setting the right level of penalties (if data is not available). - Does not drive competition in the sector. 	<ul style="list-style-type: none"> - Where it is difficult to obtain an independent benchmark or target.
Dynamic penalties	<ul style="list-style-type: none"> - Penalties allocated based on a relative assessment of performance. 	<ul style="list-style-type: none"> - Drives competition in the sector. 	<ul style="list-style-type: none"> - Requires some level of comparability of performance. Risk of disincentivising collaboration. Risk of disincentivising good performance, which could be partially mitigated through the introduction of stringent minimum standards. - Less visibility of potential penalties. 	<ul style="list-style-type: none"> - Where it is difficult to obtain an independent benchmark or target. - Where it is possible to compare performance and/ or activities across companies. - Where performance across companies is correlated (eg good/ poor weather affects all in the same way).

Criteria for bespoke outputs

Where network operators propose bespoke ODIs of a financial nature, we will consider whether proposals deliver value for money and are backed by robust evidence and justification. In assessing proposals, we will be guided by our assessment of the following:

- whether the output reflects a service that consumers expect to receive from a network company and that is not already being provided or funded;
- whether the activity in question is best dealt with through the price control, rather than through a government body responsible for the public interest in that area (eg Highways Authorities for matters relating to the occupation of the highway);
- the value that consumers will receive from a proposed new service level, and by extension the potential associated reward and/ or penalty, and the extent to which these are symmetrical, in terms of value and likelihood of outcome; and
- the extent to which an independent measure of the existing level of service that consumers receive is available, and the degree to which the target level being proposed represents an improvement on this.
- whether it is appropriate that the cost of delivering the bespoke output should be socialised across all the network's customers through the price control

In assessing a proposal, we may also consider supplementary information that may be relevant, such as:

- the level of service provided by other companies/comparators (where available);
- the activities (and indicative cost) associated with achieving the targeted level of service; and
- proposals for licence conditions and/or penalties if performance falls below existing service levels.

Appendix 2 - Whole System 'Coordinated Adjustment Mechanism' design guidance

In Chapter 8 we outline our decision to introduce a Coordinated Adjustment Mechanism into RIIO-2 to allow for the realignment of revenues and responsibilities of projects where doing so is in the interests of consumers.

Further development of the mechanism will happen at a sectoral level, with Ofgem ensuring there is sufficient coordination such that the mechanism can work across the different sectors. In this Appendix, we provide guidance for this further development.

Who can trigger?

The mechanism would ideally be triggered by two (or more) cooperating networks, but a single network could also trigger the mechanism if they were able to meet the threshold requirements.

We intend that in response to new information or analysis (for example, new proposals arising from the NOA), Ofgem can also use this mechanism at the specified trigger points (years two and four of the price control).

Trigger thresholds

To ensure the mechanism is used appropriately in the interests of consumers, we provide guidance for design of the threshold requirements. To trigger the mechanism, networks should:

- provide a sufficient level of specificity of the proposed changes, their impacts, and their estimated costs and benefits on all affected networks' consumers
- provide evidence that the overall value of the project meets a pre-specified threshold. At this stage, we indicate £20m as a rough estimate of a value sufficient to justify the administrative cost. Final figures will be specific to each sector, based on sector specific analysis of projects raised in the Business Plans.
- meet the windows we have established for when the mechanism can be triggered. This will be in years two and four of the 2021 RIIO-2 price controls to allow for integration of the ED-2 Business Planning cycle and to ensure projects with long planning periods are not unnecessarily delayed
- demonstrate that the coordinated solution cannot be delivered through existing regulatory or commercial arrangements, or is substantially more efficient than any other solution
- evidence that the potential solution could not have been proposed through the usual Business Planning processes, potential because of new information which was unforeseeable at the time of Business Planning
- demonstrate that the realignment of revenues and responsibilities does not create excessive distributional issues, and does not contribute to any unreasonable outperformance on other incentives
- where relevant (eg, particularly for TOs) have received and included the advice and opinion of the ESO.

Eligible projects

At this stage, given RIIO-2 will be the first time such a mechanism is introduced, we expect it to be limited to projects which have **pre-defined outputs and revenues** (such as a PCD). This will reduce the complexity of the mechanism.

Application of incentives

As noted in Chapter 8, we noted that we may consider the option of incentivising the use of the Coordinated Adjustment Mechanism.

At a high level, if such an incentive was justified, it could be designed on a similar basis as the totex incentive mechanism. Simply, where the delivery of the project would have cost £100 but the proposed reallocation leads to an overall cost of £80 to network consumers, some share of saved £20 should go to the participating networks. The incentive may be designed such that networks propose an 'agreed share' of benefits, which is likely to be relevant if one network is undertaking more effort to organise the project.

Appendix 3 – Price finder approach design guidance

In Chapter 10 we outline our decision to undertake further work on the price finder approach for revealing efficient costs for projects subject to a re-opener.

Further development of the mechanism will happen at a sectoral level. In this Appendix, we provide guidance for this further development.

Bidding market

Some concerns were raised that under a price finder approach, bidders might make unrealistically low bids. However, we do not view that this risk is unique to the price finder approach. Indeed, licensees could manage this risk through careful specification of the tenders, and through good contractual risk management. For example, by ensuring that a contractual party appropriately faces the risk of cost overruns over which they have control. These approaches will continue to ensure good competitive outcomes.

Others raised concerns that the future level of bidder participation in network competitions could be diminished if the price finder approach was purely used to reveal costs, without a substantial chance that the winning tenderer would secure an eventual contract. For this, and for reasons of procurement regulation, our future design of the price finder approach will look to ensure competitions are genuine and support the future of the bidding market.

However, we also note that certain situations will arise in which a licensee – for good reason – will not contract with the winner of a network led competition. Strong bidding markets for network services are in the long term interests of consumers, and for this reason, we may consider the incorporation of a ‘bidder’s compensation’ mechanism to cover efficient costs plus a margin for winning bidders who are not awarded an eventual contract. Such a mechanism will need to have limitations and restrictions to prevent misaligned incentives and to protect consumers from excessive payments.

Efficient costs

We recognise that when a licensee runs a robust competition, this can reveal the efficient costs of delivering a network service. After this point, however, the network and winning tenderer might undertake additional effort to reveal further cost efficiencies. Cost efficiencies are in the interests of consumers, and are encouraged by the totex incentive mechanism. As such, we expect any design of the price finder approach to be consistent with such an incentive structure.

Tenderer’s fee

We agree with concerns around the tenderer’s fee (as outlined in Chapter 10), particularly as running tenders for services and works are part of licensee’s status quo approach to delivering for consumers. As such, we think the risks and complexity of a tenderer’s fee are not outweighed by potential benefits, and do not propose to further consider using a tenderer’s fee in our future development of the price finder approach.

Appendix 4 – Confidence-dependent incentive rate

We confirm in Chapter 11 of this document that companies' totex incentive rates in the RIIO-2 price controls will be determined based on the level of confidence that Ofgem has in its ability to independently determine cost allowances. We give these incentive rates the term 'confidence-dependent incentive rates'.

Below are two indicative examples of how the confidence-dependent incentive rate would be calculated.

Example 1

Considering a case with three cost items. Ofgem has assessed Cost items A and C to be high-confidence baseline costs and Cost item B a lower-confidence baseline cost:

	Cost item A	Cost item B	Cost item C
Allowed expenditure	250	500	400
Baseline confidence	High	Low	High
Incentive rate	50%	15%	50%
Independent benchmark	250	N/A	400

In this example above:

- the company is set an allowance of 500 in the lower-confidence baseline Cost item B.
- The independent benchmark levels for the two high-confidence cost items A and C are 250 and 400, respectively.
- The company has forecast that it will spend 250 against Cost item A and 400 against Cost item B (ie at the level of the benchmark). The company's allowance for these two items is set at the level of the benchmark: $250 + 400 = 650$.
- The company's allowed baseline totex is therefore $500 + 650 = 1150$

To calculate the confidence-dependent incentive rate, we take our independent baseline for high-confidence costs as numerator and the company's overall totex allowance as the denominator. This gives the ratio of high-confidence costs to totex

$$650 / 1150 = 56.5\%$$

Therefore, 56.5% of costs are deemed to be high-confidence baseline costs and the remaining 43.5% of costs are deemed to be lower-confidence baseline costs.

If we attribute an incentive rate of 50% to high-confidence baseline costs and an incentive rate of 15% to the remaining lower-confidence baseline costs, the confidence-dependent incentive rate is calculated as:

$$56.5\% * 50\% + 43.5\% * 15\% = 34.8\%$$

This means that:

- The totex allowance is set at **1150** (500 lower-confidence baseline costs + 650 high-confidence baseline costs)
- The confidence-dependent incentive rate is set at **34.8%**
- The company receives **no BPI reward**.⁸⁰

Example 2

This example considers the same three cost items, A-C. In this case, the company gives a forecast for Cost item C at a level below the benchmark.

	Cost item A	Cost item B	Cost item C
Allowed expenditure	250	500	350
Baseline confidence	High	Low	High
Incentive rate	50%	15%	50%
Independent benchmark	250	N/A	400

In this example above:

- the company is set an allowance of 500 in the lower-confidence baseline Cost item B.
- The independent benchmark levels for the two high-confidence cost items A and C remain at 250 and 400, respectively.
- The company has forecast that it will spend 250 against Cost item A and 350 against Cost item B. The company's allowance for these two items is set at the level of the forecast: $250 + 350 = 600$.
- The company's allowed baseline totex is $500 + 600 = 1100$

To calculate the confidence-dependent incentive rate, we again take our independent baseline for high-confidence costs as numerator and the company's overall totex

⁸⁰ This simplified example does not take into account the other reward and penalty elements of the BPI.

allowance (which, in this example, is lower) as the denominator. This gives the ratio of high-confidence costs to totex

$$650 / 1100 = 59\%$$

Therefore 59% of costs are deemed to be high-confidence baseline costs and the remaining 41% of costs are deemed to be lower-confidence baseline costs.

If we attribute an incentive rate of 50% to high-confidence baseline costs and an incentive rate of 15% to the remaining 48% of costs, the confidence-dependent incentive rate is calculated as:

$$59\% * 50\% + 41\% * 15\% = 35.7\%$$

This means that:

- The totex allowance is set at **1100** (500 lower-confidence baseline costs + 600 high-confidence baseline costs)
- The confidence-dependent incentive rate is set at **35.7%**
- The company receives a BPI reward of **17.8**, calculated as the difference between the benchmarked level of high-confidence baseline costs and the forecast level, multiplied by the confidence-dependent incentive rate: $(650-600) * 35.7\% = 17.8$.⁸¹

⁸¹ This simplified example does not take into account the other reward and penalty elements of the BPI.

Appendix 5 – Class 1 return adjustment mechanism

This appendix describes the concept of the class 1 RAM approach in further detail, reprinted from the December consultation document Appendix 4.

Class 1: Sculpted sharing

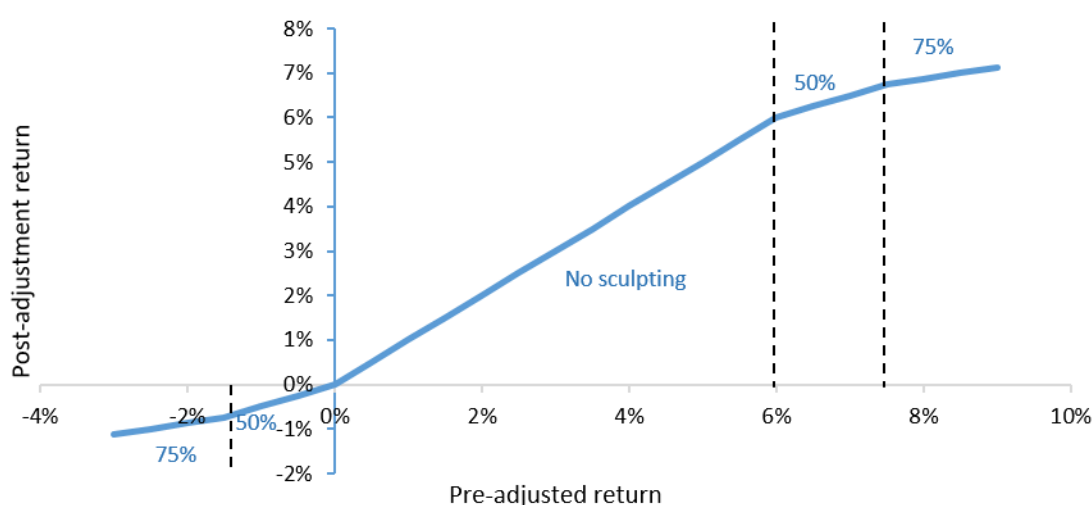
Sculpted sharing would adjust individual companies' RoRE when it deviates from a predetermined collar.

In the illustration below (Figure 4) we have shown a methodology that would apply the incentive to over and underspend.

Unlike anchoring, it would not provide a complete backstop to a high/low sector average return. Sculpted sharing would result in companies sharing more of their outperformance with consumers, the more they outperform above the threshold (or conversely, sharing more of their underperformance, the more they underperform below a threshold).

Figure 4 illustrates the adjustment that would be made to RoRE for various levels of outperformance. The X axis indicates companies' RoRE ahead of any adjustment, and the Y axis indicates the level of RoRE after sculpted sharing is applied. The example assumes a base cost of equity of 3% as a starting point and adjustments starting at 6% (or 0% for underperformance), with more intense adjustments starting at a threshold of 7.5% (or -1.5% for underperformance).

Figure 4: post 'sculpted sharing' returns as a function of return levels pre-adjustments⁸²



As seen in the figure above, when a company breaches the threshold of 6%, 50% of its performance above that point would be shared with consumers. When the level of return breaches the level of 7.5%, 75% of its performance above that point would be shared with consumers. For companies that perform below the threshold of 0%, 50% of its underperformance beyond that point would be shared with consumers. When the level of return breaches the threshold of -1.5%, 75% of its underperformance beyond that point would be shared with consumers. Note that we are not setting the thresholds or the adjustment rate at this time – these are provided for illustration only.

⁸² Using a base cost of equity of 3% and a 300bps symmetrical collar

Appendix 6 – Glossary

A

Allowed revenue

The amount of money that a network company can earn on its regulated business.

The Authority/Ofgem/GEMA

Ofgem is the Office of Gas and Electricity Markets, which supports the Gas and Electricity Markets Authority (GEMA or 'the Authority'), the body established by section 1 of the Utilities Act 2000 to regulate the gas and electricity markets in Great Britain.

Asset stranding

Assets which have subsequently become either not used or underused as compared with initial expectations.

B

Balancing Services Use of System (BSUoS)

The BSUoS charge recovers the cost of day-to-day operation of the transmission system. Generators and suppliers are liable for these charges, which are calculated daily as a flat tariff for all users.

Baseline Allowed Return

Our estimation, taking into account expectations, of the efficient return for debt and equity capital. Based on a weighted average of the pre-tax cost of debt and the post-tax cost of equity, adjusted for ex ante expectations if any. The weighting uses notional gearing.

Base revenue

Base revenue is the amount of revenue network companies are allowed to recover as set up front at the beginning of the price control. Additional revenue may be allowed during the price control under certain, specified circumstances, for example, if it is triggered under an uncertainty mechanism.

Basis Points ('bps')

Used in finance to express small changes in rates. One basis point is 0.01% or one hundredth of 1%. 50bps is 0.5%.

Benchmarking

The process used to compare a company's performance (eg its costs) to that of best practice or to average levels within the sector.

Biogas

A gas produced by the biological breakdown of organic matter in the absence of oxygen. This gas can be used in a similar manner to natural gas to produce heat or electricity but unlike natural gas, biogas is a renewable fuel.

Bond

A type of debt instrument used by companies and governments to finance their activities. Issuers of bonds usually pay regular cash flow payments (coupons) to bond holders at a pre-specified interest rate and for a fixed period of time.

Business carbon footprint (BCF)

A measure of the total greenhouse gas emissions (in tonnes of CO₂ equivalent) caused directly and indirectly by the reporting company. Direct and indirect emissions sources are categorised into scope 1, 2 and 3 emissions.

The greenhouse gases that may be reported include carbon dioxide (CO₂), methane (CH₄), sulphur hexafluoride (SF₆) and specified kinds of hydro fluorocarbons and perfluorocarbons.

Greenhouse gas emissions are measured as tonnes of carbon dioxide equivalence (tCO₂-e). This means that the amount of a greenhouse gas that a business emits is measured as an equivalent amount of carbon dioxide which has a global warming potential of one. For example, in 2018–19, one tonne of SF₆ released into the atmosphere will cause the same amount of global warming as 23,500 tonnes of carbon dioxide⁸³. So, one tonne of SF₆ is expressed as 23,500 tonnes of carbon dioxide equivalence, or 23,500 tCO₂-e.

C

Capital Asset Pricing Model (CAPM)

A theoretical model that describes the relationship between risk and required return of financial securities. The basic idea behind the CAPM is that investors require a return for the level of risk in their investment.

Capital expenditure (capex)

Expenditure on investment in long-term distribution and transmission assets, such as gas pipelines or electricity overhead lines.

Capitalisation policy

The approach that the regulator follows in deciding the percentage of total expenditure added to the RAV (and thus remunerated over time) and the percentage of expenditure remunerated in the year that it is incurred.

Challenge Group (CCG)

Ofgem has set up a central RIIO-2 Challenge Group that is independently chaired. It will provide Ofgem with a public report on companies' Business Plans from the perspective of end consumers.

The Competition and Markets Authority (CMA)

A non-ministerial government department in the UK that considers regulatory references and appeals, conducts in depth inquiries into mergers, markets and aspects of regulation of the major regulated industries.

Competition Proxy Model (CPM)

Under the CPM, Ofgem would utilise relevant benchmarks from other regimes, alongside other market information, to set a project-specific revenue for the incumbent network licensee that we consider would have eventuated from an efficient competitive process

⁸³ https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf

for construction and long-term operation (currently expected to be 25 years) of a project.

Competitively Appointed Transmission Owner (CATO)

Under late CATO build a 'preliminary works party' (most likely a network company's licensee) would complete all necessary preliminary works for a new, separable and high value project. Ofgem or another appropriate party would then run a tender to determine a CATO responsible for construction and operation of the project. The CATO would bid a 'tender revenue stream' to construct, own and operate the asset for a long-term operational period (currently expected to be 25 years).

Consumer

Within the regulatory framework we consider consumers as the end user of gas and electricity, whether for domestic or business use.

Consumer Prices Index (CPI/CPIH)

The CPI is an aggregate measure of changes in the cost of living in the UK. It differs from the RPI in that, it does not measure changes in housing costs and mortgage interest repayments - whereas the RPI does, they are calculated using different formulae, and have a number of other subtler differences.

CPIH includes a measure of owner-occupiers' housing costs.

Coordinated Adjustment Mechanism

A whole system focused re-opener to protect consumer interests by supporting the reallocation of project revenues and responsibilities to the network(s) best placed to deliver the relevant projects.

Corporation tax

A UK tax levied on a company's profits.

Cost of capital

The cost of capital is the combined cost of debt and cost of equity.

Cost of debt

The effective interest rate that a company pays on its current debt. Ofgem calculates the cost of debt on a pre-tax basis with reference to a trailing average index of debt costs.

Cost of equity

The rate of return on investment that is required by a company's shareholders. The return consists both of dividend and capital gains (ie increases in the share price). Ofgem calculates the cost of equity on a post-tax basis.

Credit rating

An evaluation of a potential borrower's ability to repay debt. Credit ratings are calculated using a number of factors including financial history and current assets and liabilities. There are three major credit rating agencies (Standard and Poor's, Fitch, and Moody's) who use broadly similar credit rating scales, with D being the lowest rating (highest risk) and AAA being the highest rating (negligible risk).

Customer Engagement Group

For RIIO-2, distribution companies will each be required to set up a Customer Engagement Group. These Groups will provide Ofgem with a public report on their views and the companies' Business Plans from the perspective of local stakeholders.

D

Decarbonisation

In a network price control context, the role of network operators in facilitating the reduction or removal of carbon dioxide from energy and other sectors of the economy, eg transport.

Depreciation

Depreciation is a measure of the consumption, use or wearing out of an asset over the period of its economic life.

Distributed generation (DG)

Any generation connected directly to the local distribution network, as opposed to the transmission network, as well as combined heat and power schemes of any scale.

Distribution Network Operators (DNOs)

A DNO is a company that operates the electricity distribution network, which includes all parts of the network from 132kV down to 230V in England and Wales. In Scotland 132kV is considered to be a part of transmission rather than distribution so their operation is not included in the DNOs' activities.

There are 14 licensed DNOs that are subject to RIIO price controls. These are owned by six different groups.

Distribution Price Control Review 4 (DPCR4)

The price control applied to the electricity distribution network operators from 1 April 2005 until 31 March 2010.

Distribution Price Control Review 5 (DPCR5)

The price control applied to the electricity distribution network operators, following DPCR4. It ran from 1 April 2010 to 31 March 2015.

Distribution System

The system of low voltage electric lines and low pressure pipelines providing for the transfer of electricity and gas within specific regions of GB.

Distribution System Operation (DSO) roles

The development of distribution system operation roles is a live and evolving policy area with various workstreams currently in progress. In general, DSO roles refer to innovative techniques and use of market-based solutions as alternatives to network reinforcement, as well as greater coordination with other network and system operators to achieve efficient outcomes in a whole system context.

Distribution Use of System (DUoS)

DUoS is a cost paid by suppliers to Distribution Network Operators (DNOs) for the building and maintenance of the local distribution network. Suppliers then pass this DUoS charge on to energy consumers.

E

Economic life

The period over which an asset performs a useful function.

Electricity System Operator (ESO)

The entity responsible for operating the electricity transmission system and for entering into contracts with those who want to connect to and/or use the electricity transmission system. National Grid Electricity System Operator Limited is the electricity system operator in Great Britain.

Energy efficiency

A reduction in the amount of energy required to provide energy services to consumers. For example, loft, cavity wall insulation and double glazing allows a building to use less heating and leads to a reduction in base heat demand.

Equity beta

The equity beta measures the covariance of the returns on a stock with the market return. The weaker this covariance, the lower the return that investors would require on that stock.

Equity risk premium

A measure of the expected return, on top of the risk-free rate, that an investor would expect for a portfolio of risk-bearing assets. This captures the non-diversifiable risk that is inherent to the market. Sometimes also referred to as the Market Risk Premium.

Ex ante

Refers to a value or parameter established upfront (eg at the price control review to be used in the price control period ahead).

Ex post

Refers to a value or parameter established after the event (eg following commencement of the price control period).

F

Fast money

Fast money allows network companies to recover a percentage of total expenditure within a one-year period with the rest being capitalised into the RAV (slow money).

Fast-tracking

Incentive that was available as part of RIIO-1, where a network company submitted a realistic and well-justified Business Plan that clearly provided value to consumers, we could apply lighter touch regulatory scrutiny to elements of the plan. If the plan was of sufficiently high-quality and provided good value overall, we considered it for fast-

tracking. This meant we accepted the Business Plan as submitted and concluded the company's price control review early.

Financeability

Financeability relates to licence holders' ability to finance the activities which are the subject of obligations imposed by or under the relevant licence or legislation. Financeability is assessed using a range of different qualitative and quantitative measures, including financial ratios.

Flexibility

The ability to modify generation and/or consumption patterns in reaction to an external signal (such as a change in price, or a message).

Fuel poverty

In England, a household is considered to be fuel poor if it has above-average required fuel costs, and if it were to spend the amount needed to fully meet its energy needs, it would be left with a residual income below the official poverty line.

In Scotland and Wales, a household is considered to be fuel poor if it would have to spend 10% of income to achieve adequate standards of warmth (although the calculating methods differ between Scotland and Wales).

The Scottish definition is expected to be revised this year through the Fuel Poverty (Target, Definition and Strategy)(Scotland) Bill which is currently before the Scottish Parliament.⁸⁴ This will define Fuel Poverty in terms of the ratio of the cost of fuel needed to heat the home to net income, after housing costs and with reference to an income threshold defined for different household types. Households will need to fulfil both conditions to be considered fuel poor.

G

Gas Distribution Networks (GDNs)

GDNs transport gas from the National Transmission System to final consumers and to connected system exit points. There are eight network areas managed by four companies that are subject to RIIO price controls.

Gas Distribution Price Control Review (GDPCR)

The price control applied to gas distribution networks that covered the extension of the existing price control for the year 2007-08 and a new price control for the five-year period commencing 1 April 2008.

Gas System Operator (GSO)

The entity responsible for operating the gas transmission system and for entering into contracts with those who want to connect to and/or use the gas transmission system. National Grid Gas Transmission is the gas transmission system operator in Great Britain.

Gas transporter (GT)

The holder of a Gas Transporter licence. The gas distribution networks and National Grid Gas Transmission are Gas Transporters.

⁸⁴ <http://www.parliament.scot/parliamentarybusiness/Bills/108916.aspx>

Gearing

A ratio measuring the extent to which a company is financed through borrowing. Ofgem calculates gearing as the percentage of net debt relative to the RAV.

Gilts

A bond issued by the UK government.

H

Headroom

A term in finance related to borrowing which has different meanings in different contexts. Here we use it to mean a safety margin of a borrower.

High-confidence baseline costs

Costs included in baseline totex allowances or forecasts where Ofgem has a high level of confidence in its ability to independently set a cost allowance. See also 'Lower-confidence baseline costs'.

I

Indexation

The adjustment of an economic variable so that the variable rises or falls in accordance with index movements (eg inflation indices, bond indices).

Inflation index

This is a measure of the changes in given price levels over time. Common examples are the Retail Prices Index (RPI) the Consumer Prices Index (CPI) and the Consumer Prices Index including housing costs (CPIH), which are all measures of the aggregate change in consumer prices over time.

Innovation Funding Incentive (IFI)

The IFI was intended to encourage network companies to invest in appropriate research and development activities that are designed to enhance technical development of the networks and to deliver value (ie financial, supply quality, environmental, safety) to end consumers. The IFI was replaced by the Network Innovation Allowance (NIA) in RIIO-1.

Information Quality Incentive (IQI)

The IQI mechanism incentivises network companies not to inflate their expenditure forecasts. It does this in two ways: by giving additional income to companies who forecast spend close to our assessment; and by providing these companies with a higher incentive rate than those companies with higher capex forecasts, thereby increasing their rewards for outperformance.

Interconnector

Equipment used to link electricity or gas systems across borders.

Intermittent generation

Electricity generation technology that produces electricity at irregular and, to an extent, unpredictable intervals, eg wind turbines.

L

Licence conditions (obligations)

An obligation placed on the network companies to meet certain standards of performance. The Authority has the power to take appropriate enforcement action in the case of a failure to meet these obligations

Load Related Capex

Capital expenditure on new assets to accommodate changes in the level or pattern of electricity or gas supply and demand.

Low Carbon Networks Fund (LCN Fund)

A funding mechanism introduced under DPCR5 to encourage the DNOs to prepare for the role they will have to play as GB moves to a low carbon economy.

Lower-confidence baseline costs

Costs included in baseline totex allowances or forecasts that are not High-confidence baseline costs. See also 'High-confidence baseline costs'.

M

Market to Asset Ratios (MAR)

The MAR represents the ratio between the market enterprise value ie the market valuation of a company, of a regulated network and its regulatory asset value (RAV).

N

Net Present Value (NPV)

NPV is the discounted sum of future cash flows, whether positive or negative, minus any initial investment.

Network charges

These are charges recovered for the use of network services.

Network Options Assessment (NOA)

The NOA is the process for assessing options for reinforcing the National Electricity Transmission System (NETS) to meet the requirements that the Electricity System Operator (ESO) finds from its analysis of the Future Energy Scenarios (FES).

Network users

Companies along the gas and electricity supply chain (ie producers and generators, transmission and distribution network companies, and energy suppliers) and consumers.

Non-Load Related Capex

The replacement or refurbishment of assets which are either at the end of their useful life due to their age or condition, or need to be replaced on safety or environmental grounds.

Notional company/business

A hypothetical, but typical, network company.

O

Offshore transmission

The majority of offshore generation will be connected to the electricity grid through offshore transmission cables. Offshore transmission is defined as being any offshore transmission network that operates at 132kV or above.

Offshore Transmission Owners (OFTOs)

OFTOs operate and maintain the offshore transmission assets.

Operating Expenditure (opex)

The costs of the day-to-day operation of the network such as staff costs, repairs and maintenance expenditures, and overheads.

Outputs

Services, requirements, and deliverables that network companies are funded or incentivised to deliver through the price control.

Output Delivery Incentives (ODIs)

In RIIO-2, output delivery incentives will apply where service quality improvements beyond a level that is funded through base revenues may be in the interests of consumers.

P

Pass-through (of costs)

Costs for which companies can vary their annual revenue in line with the actual cost, either because they are outside network companies' control or because they have been subject to separate price control measures.

Price control

The control developed by the regulator to set targets and allowed revenues for network companies. The characteristics and mechanisms are developed by the regulator in the price control review period depending on network company performance over the last control period and predicted expenditure (companies' Business Plans) in the next.

Price Control Deliverables (PCDs)

In RIIO-2, we will use PCDs to capture those outputs that are directly funded through the price control and where the funding provided is not transferrable to a different output or project. The purpose of a PCD will be to ensure the conditions attached to the funding are clear up-front.

R

Regulatory Asset Value (RAV)

The value ascribed by Ofgem to the capital employed in the licensee's regulated business (the 'regulated asset base'). The RAV is calculated by summing an estimate of the initial market value of each licensee's regulated asset base at privatisation and all subsequent allowed additions to it at historical cost, and deducting annual depreciation amounts calculated in accordance with established regulatory methods. These vary between classes of licensee. A deduction is also made in certain cases to reflect the value realised from the disposal of assets comprised in the regulatory asset base. The RAV is indexed to allow for the effects of inflation on the licensee's capital stock.

Regulatory burden

A term used to describe the cost to regulated companies – both monetary and opportunity – of regulation.

Regulatory Instructions and Guidance (RIGs)

A document that is published as part of the price control settlement which sets out further detail on how the price control is to be implemented and how compliance with it will be monitored.

Reinforcement

The installation of new network assets to accommodate changes in the level or pattern of electricity or gas supply and demand.

Re-openers

A process undertaken in certain limited circumstances by Ofgem to amend revenue allowances (or the parameters that give rise to revenue allowances) within the price control period.

Research and development (R&D)

Work undertaken in order to increase knowledge, and used to create new processes or technologies that will advance capabilities.

Retail Prices Index (RPI)

The RPI is an aggregate measure of changes in the cost of living in the UK. It has a different formula to CPI; for example, it measures changes in housing costs and mortgage interest repayments, whereas the CPI does not.

Return Adjustment Mechanisms (RAMs)

Failsafe mechanisms to mitigate the future risk of companies earning materially higher or lower than expected returns in a changing system.

Return on Regulatory Equity (RoRE)

RoRE is the financial return achieved by shareholders in a licensee during a price control period from its actual performance under the price control. RoRE is calculated post-tax and is estimated using certain regulatory assumptions, such as the assumed gearing ratio of the companies, to ensure comparability across the sector. We use a mix of actual and forecast performance to calculate five-year average returns. These returns may not equal the actual returns seen by shareholders.

Revenue Driver

A means of adjusting companies' allowed revenue during the price control if a specific measurable event occurs. Revenue drivers are used by Ofgem to increase the accuracy of the revenue allowances. See also 'volume driver'.

RIIO (Revenue = Incentives + Innovation + Outputs)

Ofgem's regulatory framework, stemming from the conclusions of the RPI-X@20 project. It builds on the success of the previous RPI-X regime, but better meets the investment and innovation challenge by placing much more emphasis on incentives to drive the innovation needed to deliver a sustainable energy network at value for money to existing and future consumers.

RIIO Electricity Distribution Price Control Review 1 (RIIO-ED1)

The price control applied to the electricity distribution network operators, following DPCR5. It runs from 1 April 2015 to 31 March 2023.

RIIO-Gas Distribution Price Control Review 1 (RIIO-GD1)

The price control review applied to the gas distribution network operators, following GDPCR. It runs from 1 April 2013 to 31 March 2021.

RIIO-Transmission Price Control Review 1 (RIIO-T1)

The price control review applied to the electricity and gas transmission network operators, following the TPCR4 rollover. It runs from 1 April 2013 to 31 March 2021.

Ring-fence

The Ring Fence Conditions in gas and electricity network operator licences provide assurance that network operators always have the financial and operational resources necessary to fulfil their obligations under legislation and their licences.

Risk-free rate

The rate of return that an investor would expect to earn on a riskless asset. Typically, government-issued securities are considered the best available indicator of the risk-free rate due to the extremely low likelihood of the government defaulting on its obligations.

Real Price Effects (RPEs)

Expected changes in input price indices, eg wages, relative to a measure of general inflation, such as the Retail Price Index (RPI), or CPI.

RPI-X

The form of price control applied to regulated energy network companies before RIIO. Each company was given a revenue allowance in the first year of the control period. The price control then specified that in each subsequent year the allowance would move by 'X' % in real terms.

RPI-X@20

Ofgem's comprehensive review⁸⁵ of how we regulate energy network companies, announced in March 2008. Its conclusions, published in October 2010, resulted in the implementation of a new regulatory framework, known as the RIIO model.

S

Scope 1 emissions

Direct emissions from sources owned or controlled by the reporting company that release emissions straight into the atmosphere. Examples of scope 1 emissions include emissions from combustion in owned or controlled boilers, furnaces, vehicles; emissions from chemical production in owned or controlled process equipment.

Scope 2 emissions

Indirect emissions being released into the atmosphere associated with the reporting company's consumption of purchased electricity, heat, steam and cooling. These are

⁸⁵ <https://www.ofgem.gov.uk/network-regulation-riio-model/current-network-price-controls-riio-1/background-rpi-x20-review>

indirect emissions that are a consequence of the reporting company's activities but which occur at sources they do not own or control. This includes losses of electricity for electricity transmission and distribution companies.

Scope 3 emissions

Other indirect emissions that occur that are a consequence of the reporting company's actions, which occur at sources they do not own or control and which are not classed as scope 2 emissions. Examples of scope 3 emissions are business travel by means not owned or controlled by the reporting company, waste disposal, or purchased materials or fuels.

Shrinkage

Shrinkage is a term used to describe gas either consumed within or lost from a gas transporter's system. It includes leakage from the network, gas used by network operators during transportation (eg to power compressors), and gas stolen from the network.

Slow money

Slow money is where costs are added to the RAV and therefore revenues are recovered slowly (eg over 20 years) from both existing and future consumers.

Special Purpose Vehicle (SPV)

Under the SPV model, the incumbent network licensee would run a tender to appoint an SPV to finance and deliver a new, separable and high value project on the licensee's behalf through a contract in effect for a specified revenue period. The allowed revenue for delivering the project would be set over the period of its construction and a long-term operational period (currently expected to be 25 years).

Storage (electricity)

Storage refers to any mechanism which can store energy which has been converted into electricity. This can be primary (super-conducting and capacitor technologies); mechanical (pumped hydro, compressed air, flywheels); and electrochemical (batteries).

Storage (gas)

Installations owned by GDNs and contracted storage capacity from third parties, for example salt cavities, liquefied natural gas, storage vessels and gas holders. Gas storage is required to balance diurnal and seasonal variations in supply and demand.

Strategic Wider Works (SWW)

As part of the RIIO-T1 price control we put in place a mechanism to allow TOs to bring forward large investment projects where funding has not been awarded as part of the price control settlement.

Supplier

Any person authorised to supply gas and/or electricity by virtue of a Gas Supply Licence and/or Electricity Supply Licence.

Supply chain

Refers to all the parties involved in the delivery of electricity and gas to the final consumer - from electricity generators and gas shippers, through to electricity and gas suppliers.

Sustainable energy sector

A sustainable energy sector is one that promotes security of supply over time; delivers a low carbon economy and associated environmental targets; and delivers related social objectives (eg fuel poverty targets).

System Operator (SO)

The SO is the entity responsible for operating the transmission system and for entering into contracts with those who want to connect to the transmission system. In relation to electricity and gas this role is performed by National Grid.

T

Third party

Within the innovation context, third party refers to any person other than network companies. It may include, for example, private companies, academics, small and medium-sized enterprises, and trade bodies. It is often used interchangeably with non-network company.

Total expenditure (totex)

Totex includes both capital expenditure (capex) and operating expenditure (opex). It also includes replacement expenditure (repep) in gas distribution. Totex is made up of fast money and slow money.

Total Market Return (TMR)

The TMR is a measure of return that equity investors expect for the market-average level of risk.

Transmission Owners (TO)

Companies that hold transmission owner licences. Currently there are three electricity TOs: NGET, SP Energy Networks and SHE Transmission. NGGT is the gas TO.

Transmission Network Use of System (TNUoS)

TNUoS charges recover the cost of installing and maintaining the transmission system in England, Wales, Scotland and Offshore, spread amongst users of the network.

Transmission system

The system of high voltage electric lines and high pressure pipelines providing for the bulk transfer of electricity and gas across GB.

U

Uncertainty mechanisms

Uncertainty mechanisms 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.

User Group

For RIIO-2, transmission companies will be required to set up a User Group. This Group will provide Ofgem with a public report on their views and the companies' Business Plans from the perspective of network users.

V

Volume driver

An uncertainty mechanism allowing revenue to vary as a function of a volume measure (eg number of new connections).

W

Whole system solutions

Solutions arising from energy network companies and system operators coordinating effectively, between each other and with broader areas, which deliver value for consumers.