



Making a positive difference
for energy consumers



RIIO-2

Framework Decision

Our approach to setting price controls
for GB gas and electricity networks.

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Executive Summary

We set price controls for the companies that operate the gas and electricity networks in Great Britain using the **RIIO framework**. We do this by setting **Revenue** using **Incentives to deliver Innovation and Outputs**. We introduced RIIO in 2013. This decision on the framework will apply to the second round of RIIO price controls (RIIO-2) that will begin in 2021 for gas distribution and gas and electricity transmission network. This framework will also apply to the electricity system operator. The next price control for electricity distribution network operators (DNOs) will begin in 2023.

Our objective for RIIO-2 is to ensure that regulated network companies deliver the value for money services that both existing and future consumers want. In particular, that the price controls:

- Give due attention to mitigating the impact of networks on the environment
- Are designed so that networks play a full role in addressing consumer vulnerability issues.

To do so, they should develop and maintain a reliable, safe and secure network that is flexible in supporting the transition to a low-carbon future.

We will achieve this objective by:

- **Giving consumers a stronger voice** in setting outputs, shaping and assessing business plans
- Allowing network companies to **earn returns that are fair** and represent good value for consumers, properly reflecting the risks faced in these businesses, and 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**
- **Simplifying the price controls** by focusing on items of greatest value to consumers.

In March, we consulted on a number of ways we could enhance the RIIO framework to meet this objective. We are now making decisions on certain elements of the framework across the sectors that are necessary to establish now in order to settle the structure of the price control.

For other elements, we are narrowing down the options we are considering for reforms to the framework.

These are our decisions:

Giving consumers a stronger voice

- We are introducing a new enhanced engagement model for RIIO-2, involving the establishment of Customer Engagement and User Groups at the company level. We will also establish a central RIIO-2 Challenge Group.
- We are introducing open public hearings to focus on areas of disagreement or contention raised by the various groups, and to invite any other evidence in support of or against company spending proposals.

- The Gas and Electricity Markets Authority (GEMA) retains ultimate responsibility to make Initial and Final Determinations using, among other things, evidence from the enhanced engagement process as a key input.

Responding to how networks are used

- We will set the default length of the price control at five years. We will consider proposals we receive from companies to set allowances for certain activities for a longer-term. We will need to see evidence of significant net benefits to consumers relative to a five-year period.
- We are not aligning the electricity transmission (ET) and electricity distribution (ED) price control start and end dates. We will undertake further work to investigate if any enabling reforms need to be introduced – or regulatory barriers removed – within the price control framework to support the delivery of whole-system outcomes. We intend to clarify the term “whole-system” in a way that is meaningful in the context of the next price controls and the appropriate role of network companies in supporting the energy transition.
- We will set a separate electricity system operator (ESO) price control. We will carry out further work on potential regulatory and remuneration models for the ESO and engage with industry on potential options later in summer 2018.
- We do not propose, at this stage, a separate gas system operator (GSO) price control. We will set the price control for the GSO as part of the price control for gas transmission. We may need to consider the appropriateness of any proposals for the ESO for the GSO as well, where we have identified improved ways of regulating system operation functions. We also note there may be a need to consider changes more generally as the gas system evolves.

Driving innovation and efficiency

- We are retaining an innovation stimulus package, limited to innovation projects that might not otherwise be delivered under the core RIIO-2 Framework. Further work will be undertaken on three broad areas of reform: (i) increased alignment to energy transition challenges; (ii) greater coordination with wider public funding; and (iii) increased third party engagement (including potential direct access to available funding).
- We are extending the role of competition (for the market) where it is appropriate and provides better value for consumers, including using the criteria applied in electricity transmission (new, separable, and high-value) to identify projects suitable for competition in other sectors. We will develop a range of models, including late-stage as well as early-stage competition. We will undertake further work on how we might apply these models within a given sector.

Simplifying the price controls

- We will set outputs and cost allowances through the approach we set out in the March consultation. We will establish mechanisms to enable automatic refunds to consumers if outputs or deliverables for which we have provided funding are no longer required due to external circumstances beyond the licensees’ control. We will also establish outputs that are up to date when the price control begins, and remain current throughout. We will minimise the risk of forecasting error by exploring the use of indexation where feasible, including for labour and construction cost inflation (to the extent evidence suggests this is different from general consumer price inflation).
- We are ruling out early settlement (a component of fast-tracking) for the electricity transmission, gas transmission and gas distribution sectors. The option to use early settlement will remain on the table for RIIO-ED2 and will be considered as part of the process of setting that sector’s control methodology. We

will develop alternative incentives for business plans, including the role of IQI, as part of the work on sector specific methodologies.

Fair Returns and Financeability

- We will use the principles for setting an allowance for the cost of debt as set out in the March consultation. We are ruling out a pure pass-through of the cost of debt as a means of setting the cost of debt allowance. We will continue to examine the remaining options: a recalibration of our current model of “full” indexation; and a move to a “partial” indexation model (as proposed by Ofwat for PR19). We note the importance of considering our approach for individual companies in developing sector specific methodologies.
- We will use the Capital Asset Pricing Model (CAPM) for estimating the cost of equity and approach to key parameters. We will cross-check the CAPM calculation against Market to Asset Ratios (MAR) and returns bid by investors (for example, against Offshore Transmission Owners (OFTOs)). We do not rule out indexation of the cost of equity at this stage.
- On financeability options we are ruling out moving to a nominal RAV. We will continue to explore the remaining options (an onus on companies to address issues through their business plan, and establishing a revenue floor to protect debt) to address any financeability issues that may arise.
- We will move away from the Retail Price Index (RPI) to CPIH¹ for inflation adjustment in calculating Regulatory Asset Value (RAV) and allowed returns. We will carry out further work on whether phasing is necessary for the transition and if so, what form it could take.
- We will maintain our existing depreciation policy of using economic asset lives as the basis for depreciating the RAV. We will undertake further work on the calculation of this in each sector.
- We are ruling out the hard cap and floor return adjustment mechanism option. We will continue to explore the applicability of other options in each sector (discretionary adjustments, constraining totex and output incentives, a RoRE sharing factor and anchoring returns).

We are also signalling the need for **further work** in the following areas. We will take this work forward for the consultation on sector specific methodologies planned for December 2018.

Network utilisation, stranding and investment risk

In the March consultation, we signalled how uncertainty in future levels of demand could lead to costly infrastructure being underutilised or not used at all. We are not making any decisions on our policy on this issue at this time. However, we intend to ensure that network company business planning processes subjects new investment to higher hurdles (particularly testing network reinforcement options against alternative options such as demand-side measures and storage). These processes must still recognise the need to ensure that sufficient and timely investment is made to meet the changing requirements of the system.

We will carry out further work on refining existing aspects of the price control at a sector level to manage the risk of inefficient network investment and utilisation. We will

¹ Consumer price inflation including owner-occupiers’ housing costs.

consider whether it may be appropriate for certain types of investment to have different risk allocations.

Energy efficiency

In the March consultation, we sought views on whether network companies had a role to play in encouraging a permanent demand reduction from consumers. In the first instance, this is a policy issue for Government. We will undertake further work with Government to consider the role network companies may play in energy efficiency. However, we intend to create a level playing field in price controls between demand and supply side solutions to network constraints. We will also design the price controls for the distribution sectors with sufficient flexibility to respond to changes in the role of networks in this space. This may be in response to Government policy, but could also be in the wider context of the design of the future energy market.

Outputs

The outputs that we expect networks to deliver must reflect the network services that existing and future consumers require. We should be able to use these to measure the benefits that consumers receive through the actions of the network companies. Many respondents highlighted the need for additional outputs in RIIO-2, including:

- Requiring network companies to play a stronger role in minimising their environmental impact and facilitating the decarbonisation of the energy system²
- Introducing measures to ensure the energy companies' workforces have the necessary skills and resource to meet network requirements in the long-term
- Asking network companies to do more to address the needs of vulnerable consumers in RIIO-2.

We will consider and address these issues in our consultation on sector specific methodologies, which we intend to publish in December 2018.

As we have made clear in our objectives, RIIO-2 has to endeavour to **mitigate the impact of networks on the environment**. Where there is merit in developing a common incentive across sectors in this area, then we will do so. Our objectives also emphasise that networks must play a full role in addressing **consumer vulnerability**³ issues. We will achieve this by:

- Expecting network companies to set out in their business plans how they intend to assist consumers in vulnerable situations. Companies should develop these proposals using the insight that stakeholders can bring. We will take into account the quality of their proposals, and the views of stakeholders, in our assessment of business plans.
- Identifying and developing appropriate output measures for each sector to ensure companies play a full role in addressing consumer vulnerability. This will take into account proposals we have already received from stakeholders in response to our March consultation.

² An example of this is the proposal from Sustainability First for a low carbon incentive in RIIO-2 http://www.sustainabilityfirst.org.uk/images/publications/other/Sustainability_First_Low_Carbon_Incentive_in_RIIO2_Discussion_Paper_FINAL_web.pdf

³ We define vulnerability as when a consumer's personal circumstances and characteristics combine with aspects of the market to create situations where they are:

- significantly less able than a typical consumer to protect or represent his or her interests in the energy market
- significantly more likely than a typical consumer to suffer detriment, or that detriment is likely to be more substantial.

- Exploring how we can use the innovation funding we provide to support projects that deliver benefits across the system. In particular, where those benefits may be most valuable for vulnerable consumers.

Financial metrics

In the March consultation, we published proposals associated with setting the cost of capital for network companies. These included an estimate of a plausible range for the cost of equity for RIIO-2. These proposals inevitably attracted great attention. Network companies and other stakeholders responded with significant new information in support of, or arguing against them.

We are not updating our estimated range for the cost of equity at this time given that a number of issues linked to the calculation remain under consideration. In March, we signalled the potential for the equity beta to be lower than the indicative range presented, drawing on the conclusions presented by the UK Regulators Network (UKRN). We are currently reviewing all available evidence, including the material received in the consultation responses, to inform our methodology for assessing the cost of equity. At the end of this year, we will publish our consultation on the sector specific methodologies, and update our estimated range for the cost of equity.

The principles we proposed on the cost of debt are consistent with our objectives for RIIO-2 - we want companies to be incentivised and consumers to be protected. We will stress test our price control package in the round to test for its financial robustness and we will consider closely any arguments that companies make with regards to how they might individually perform financially against the RIIO-2 settlement. The policy on cost of debt will reflect the degree of control companies have over their financial structures and choices. As clearly set out in the March consultation, our use of indexation for setting cost of debt allowances in RIIO-1 has benefitted consumers significantly and there remains a high-bar for us to move away from this approach in RIIO-2.

The amount of tax that utility companies pay has become an increasingly sensitive topic. We are not making any decisions currently on whether these arrangements need to change. We will review the approach to setting allowances for taxation. We will not rule out any options at this stage, since information is insufficient, but we note that the approach in RIIO-1 provides a favourable starting point in this area. Our focus will be on identifying any material defects in the current approach. This will inform any proposals for reform we make in this area in December, based on the options we set out in our March consultation document.

RIIO Accounts/Annual Reporting

We are committed to improving the quality and transparency of financial reporting by network companies. We have engaged extensively with stakeholders on potentially introducing revised regulatory accounts ("RIIO Accounts"). Having considered the responses both to this and the feedback on annual reporting through the March consultation, we have decided to defer the formal implementation of RIIO Accounts until at least the start of the RIIO-2 period.

Through the remainder of RIIO-1, we will instead focus our efforts on strengthening our annual reporting product to ensure it provides a comprehensive, transparent, accessible and accurate measure of network company performance to all stakeholders. This will include supplementing our assessment of how companies have performed on output and cost incentives, with a transparent assessment of their performance on financial parameters, including tax and finance, based on both notional as well as actual gearing. We will also seek to include a transparent judgement of how much may be clawed back

from or returned to network companies as a result of the close-out mechanisms⁴ at the end of the price control.

We will issue an open letter in August 2018 in relation to RIIO Accounts and Annual Reporting.

Implementing the RIIO framework and implications for RIIO-ED2

Alongside setting the RIIO framework, we will also develop the specific methodologies that will apply to the gas and electric transmission, gas distribution networks' and electricity system operator price controls. Revenues for the gas system operator will be incorporated within the gas transmission price control.

Here we will establish the design of outputs and incentives for each sector, as well as deciding whether to adapt any element of the RIIO framework to reflect the specific characteristics of each sector. We will consult on these areas for gas and electricity transmission and gas distribution in the sector specific methodologies. We expect the consultation for the ESO price control to follow a similar timing.

The next electricity distribution (RIIO-ED2) price control starts in April 2023 - two years after the other sectors. Electricity Distribution Network Operators (DNOs) have expressed concern that the immediate focus on other sectors may limit their ability to input to decisions that could ultimately apply to them.

This will not be the case. Where we are working towards decisions on cross-sector design principles or methodologies, including those relating to the financial framework, we will ensure that DNOs have the same opportunity as other stakeholders to input to the process.

Similarly, when we develop the sector specific methodology for DNOs, we will consider how best to apply the framework to reflect the specific circumstances that apply in this sector, together with any new information that emerges in the intervening period. DNOs will have a full opportunity to be engaged in this process.

⁴ We use these to deal with under or overspend after the price control period has ended and they enable us to reduce revenues for any shortfalls in delivering outputs.

1. Introduction

Chapter summary

This chapter sets out the background and purpose of this decision document.

Network companies, consumers and price controls

- 1.1 As consumers, we rely on gas and electricity for heat, light and power. A vast network of pipes and wires spans Great Britain transporting energy from its place of generation, or point of injection, to our homes and businesses. Private companies own and operate these networks, and we pay for them through our energy bills.
- 1.2 These companies operate in regions where they largely have a monopoly on network services.⁵ That is why we cap the revenues they can recover. Our role is to ensure that both existing and future consumers pay a fair price for the cost of running these networks and get the services they require. We do this through a price control process. We look at what companies need to deliver over a fixed period and allow them to recover revenues that reflect the efficient costs of doing so.

The RIIO framework

- 1.3 We use the RIIO framework as our approach to running the price control. RIIO involves setting **R**evenue using **I**ncentives to deliver **I**nnovation and **O**utputs designed to encourage energy network companies to:
 - Play a full role in delivery of a sustainable energy sector
 - Deliver value for money network services for existing and future consumers.
- 1.4 The first round of RIIO price controls (for companies operating electricity and gas transmission and gas distribution networks) began in 2013. This included the costs of “system operation”. In 2015, we set the price control for electricity distribution. In total, network companies will recover revenues of around £96bn⁶ over the RIIO-1 period.

Preparing for RIIO-2

- 1.5 RIIO has worked well since its introduction in 2013. The networks are more reliable. Customer satisfaction with the service provided by local network operators has improved. The innovation stimulus has increased research and development spending on the networks and this is supporting greater deployment of lower cost operational solutions.
- 1.6 At the same time, we have learned some valuable lessons. Returns across companies have been higher than we expected. We have also learned that assumptions, that seemed reasonable at the time we set the control, have not always played out as expected.
- 1.7 In setting the next round of RIIO price controls (RIIO-2), we want to learn from our experience and ensure that networks can deliver the network services that

⁵ Network extensions and where appropriate reinforcements can be competed for.

Independent Distribution Network Operators (electricity) and Independent Gas Transporters (gas) compete with incumbent distribution network companies for the construction and operation of new networks. Offshore transmission operators are appointed through a competitive tendering process.

⁶ Based on estimated allowed revenue in 2015/16 prices following the Annual Iteration Process 2017.

consumers will require in the future. In July 2017, we issued an open letter inviting views on our approach to RIIO-2. We followed this with extensive engagement with stakeholders. In March, we issued a consultation on a number of ways we can enhance the RIIO framework in RIIO-2.

Our proposals on the Framework

- 1.8 The price control consists of a number of topics. In our March consultation, we clustered our decisions on these topics against the five themes we used for the July 2017 open letter. In summary, our key proposals in March for each topic, and by theme, were as follows:

Giving consumers a stronger voice

- We set out a new enhanced engagement model for RIIO-2. In distribution, companies will each be required to set up a Customer Engagement Group. In transmission, companies will each be required to set up a User Group. We will set up an independent RIIO-2 Challenge Group comprised of consumer experts to assess proposals in both sectors. Where any of these groups disagree with company proposals, we proposed to hold open hearings to hear evidence on the points of contention, and to give an opportunity for any other critics or supporters of the company plans to provide arguments or evidence.

Responding to how networks are used

- We proposed to set a **price control length** of five years as a default for each sector
- We proposed to support the delivery of **whole-system outcomes** across the energy system, but did not consider it necessary to align the start of the electricity transmission and electricity distribution price controls
- We proposed to separate the **electricity system operator (ESO) price control** from National Grid Electricity Transmission's (NGET's) Transmission Owner (TO) control
- We described our intention to protect consumers against **inefficient network investment and utilisation**
- We sought views on the potential role network companies might play in encouraging a reduction in **end use energy efficiency**.

Driving innovation and efficiency

- We described our intent to transition more **innovation** spending to business-as-usual using the incentives framework. We proposed to continue to provide an innovation stimulus, but reform this in a number of specific areas
- We proposed to extend **competition** across the sectors (electricity and gas, transmission and distribution), where it is appropriate and provides better value for consumers.

Simplifying the price controls

- We described our approach to setting **outputs** to recover revenues that companies were provided with but that are no longer required, and to set stretching output targets. We described how we will set **cost allowances** to reduce the risk of forecasting error, including greater use of indexation

- We consulted on different options to enhance the devices we use to get better information from the network companies, including the role of the Information Quality Incentive (**IQI**) and **fast-tracking**
- We sought views on the broad opportunities for improving and simplifying the **annual reporting** process.

Fair returns and financeability

- We consulted on options to improve our approach to setting the **cost of debt**
- We consulted on our proposed methodology to setting the **cost of equity**. We also provided an indicative range of what the cost of equity might be based on current financial market conditions
- We consulted on three options to ensure the **financeability** of companies
- We consulted on three options for the treatment of **tax**
- We proposed to move away from using the retail price index (RPI) as an **inflation** measure
- We consulted on new mechanisms to ensure **fair returns**.

Consultation Responses and other engagement

- 1.9 We received 87 responses to our March consultation. These are published on our website⁷ and a summary of key responses is provided at Appendix 6. In addition, we have held bilateral meetings with all network companies and a range of stakeholders including suppliers, consumer bodies, unions, government and investors. We have also attended industry workshops on key topics. This engagement has been essential in informing our decisions and the further work we plan to undertake.

Structure of this decision document

- 1.10 We have retained the five themes we used to cluster topics together in the March consultation. Against each topic that sits within each theme, we summarise our proposals and stakeholder responses. We then give our decision, the reasons that support it and the next steps that we intend to take.

Interlinkages within the RIIO-2 programme

- 1.11 Given the breadth of the RIIO-2 framework, there are inevitably a number of interlinkages between different elements. We believe that the decisions that we are taking at this time are relatively separable. But as we proceed through this process, there are a number of areas where we will have to be mindful of interdependencies:
- Enhanced engagement (including the use of open hearings) will subject company business plans to more external scrutiny. This should improve their overall quality. We will take this into account in developing our thinking on the merits of reputational and/or financial incentives for high-quality business plans in RIIO-2
 - One of the reasons we extended the price control to eight years in RIIO-1 was as part of a package of measures to support longer-term thinking. In moving

⁷ RIIO-2 Framework consultation <https://www.ofgem.gov.uk/publications-and-updates/riio-2-framework-consultation>

to a five-year price control as a default for RIIO-2, we will need to ensure that other elements of the price control continue to drive the required behaviour

- A shorter price control also reduces the exposure of both consumers and investors to forecasting risk. We will take this into account in our development of measures to manage uncertainty, and in our assessment of the overall risk profile for a sector
- The innovation stimulus may support whole-system outcomes. Improvement in network utilisation (through both the price control and price signal reform outside of the price control) should also lead to improved whole-system outcomes. Elsewhere we may seek to promote more competition to enable the delivery of whole-system solutions
- Some network companies highlighted that certain proposals, such as return adjustment mechanisms and increased competition, could affect the extent to which companies collaborate with each other to deliver greater benefits to consumers
- Decisions on financial methodologies and the associated parameters all interlink so that while we can evaluate each individually, where possible they must also be tested collectively in terms of the overall financeability of the price control “in the round”.

Interlinkages with other work

- 1.12 RIIO-2 interacts with a number of activities identified in our forward work programme⁸ as well as some of the priority areas outlined in our strategy for regulating the future energy system.⁹ The March consultation provided further detail on these areas. We are continuing to ensure that all of these areas are joined up. We are all working towards the common purpose of driving innovation and supporting the transition to a low carbon energy system.
- 1.13 One of the key areas where there are strong ties to the RIIO-2 framework is reforming access and forward-looking charging arrangements. We recently published a consultation on this topic.¹⁰ Access and forward-looking charging reforms may change the scope of what is included in the price control for a sector. For example, changes in price signals or changes in how investment is recovered may change the amount of investment that is expected.
- 1.14 Our aim is to signal changes to access and charging to network companies so that they can consider the implications in their business plans. However, we will also need to consider what mechanisms and processes are required to deal with any changes to existing arrangements that may arise during the price control period.
- 1.15 Two other key areas of work are the Electricity Targeted Charging Review and Gas Charging Reviews, both of which aim to reduce harmful distortions associated with charging and ensure that system users receive fairer treatment. The Electricity Targeted Charging Review is reviewing how charging needs to change to align with the current electricity system. Ofgem is supporting industry in taking forward the conclusions of the Gas Charging Review to ensure that the Transmission

⁸ Forward Work Programme 2018-19

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

⁹ Our strategy for regulating the future energy system <https://www.ofgem.gov.uk/publications-and-updates/our-strategy-regulating-future-energy-system>

¹⁰ Getting more out of our electricity networks by reforming access and forward-looking charging arrangements https://www.ofgem.gov.uk/system/files/docs/2018/07/network_access_consultation_july_2018_-_final.pdf

Operator charges for access to, and use of, the gas network are compliant with EU law.

Approach to assessing impacts

- 1.16 In this document, we set out a number of decisions that we are taking at this stage. The relevant chapters of this document and the March consultation should be referred to for the reasoning, evidence, assumptions and calculations we have used to inform our assessment of the impact of these decisions and our conclusions. We also indicate what impacts we are likely to need to assess as we develop the methodology and set the price control for each of the energy sectors.
- 1.17 Only when this work is complete will we be able to assess fully the impact of the RIIO-2 Framework in the round. We will therefore assess the impacts of our future decisions as part of our development of the sector specific methodologies.
- 1.18 Our approach to assessing the impacts of RIIO-2 is provided in Appendix 5.

Next steps

- 1.19 In Chapter 7 of this document we provide more detail on our programme of work to develop each sector specific methodology and to finalise any outstanding elements of the framework that will apply across sectors. We will publish a consultation on the sector specific methodologies in December 2018.
- 1.20 In addition, we will publish an initial business planning working paper in August 2018. We expect this paper to provide a general timeline of our work towards the publication of final business plan guidance in Q2 2019 (calendar year). This paper will set out some of the work we intend to undertake, in consultation with networks and stakeholders, on changes to the business planning process. This will draw from lessons we learned through RIIO-1 and from changes required to accommodate new policies in RIIO-2.
- 1.21 Also in August, we will issue an open letter in relation to Annual Reporting. We want to ensure our reports provide a timely, transparent, accurate, comprehensive, and accessible account of company performance in the price controls. Through this open letter, we will inform stakeholders of our proposed approach.
- 1.22 We published our initial guidance document on Enhanced Engagement in April 2018. We will update this as and when required. We will notify stakeholders before a change is made.

Find out more

- 1.23 You can receive the latest information on the RIIO-2 programme and other key energy updates and upcoming events from Ofgem by subscribing to our 'alerts and briefings'.¹¹

¹¹ <https://www.ofgem.gov.uk/subscribe-our-news-and-communications>

2. Giving consumers a stronger voice

Chapter summary

This chapter outlines the enhanced engagement models we will use for RIIO-2. We are introducing different models for stakeholder engagement for distribution and transmission. We will establish a central RIIO-2 Challenge Group for all sectors. We will also hold open public hearings on areas of disagreement or contention identified by stakeholders and to invite any other evidence in support of, or against, company business plans.

Introduction

- 2.1 We believe that enhancing the approach taken to stakeholder engagement in RIIO-2 will further improve the engagement process of companies with their stakeholders. This should result in an improved quality of the business plans that we receive. In turn this should help us assess them.

Summary of March proposals

- 2.2 We described the arrangements for stakeholder engagement that we expected for RIIO-2. These included:
- A requirement for distribution companies to each set up a Customer Engagement Group and for transmission companies to set up a User Group. All of these groups are to be independently chaired. They will provide us with a public report on their views on the companies' business plans from the perspective of local stakeholders (in distribution) and network users (in transmission). Companies will provide secretariat support for these groups, and provide any technical support that they may require.
 - Ofgem will set up a central RIIO-2 Challenge Group which will also be independently chaired. They will provide us with a public report on companies' business plans from the perspective of end consumers. Ofgem will provide the secretariat for this group, and any technical support that they may require.
- 2.3 These company-led groups are expected to supplement, rather than substitute, the stakeholder engagement that companies must undertake to develop their plans. For instance, the Customer Engagement Group will consider whether companies have properly reflected local stakeholder requirements. They will not be the means of identifying those local requirements. Companies will still need to engage with local stakeholders.
- 2.4 We asked for views on how these arrangements could be enhanced, and whether we should hold open hearings. We envisaged that these would occur after we have received business plans and would focus on areas of contention raised by the above groups.

Stakeholder views

- 2.5 The vast majority of stakeholders supported our approach to enhancing engagement for RIIO-2. There was a general recognition that much has to happen in a short space of time, in order for these to be effective. Many respondents therefore wanted more detail on the role, process and membership of the various groups.

- 2.6 Some respondents raised the prospect of stakeholder fatigue, or highlighted the additional demand these groups would place on stakeholders with an interest in multiple sectors. Many other stakeholders requested representation on the various groups.
- 2.7 With the caveat that respondents wanted more detail on exactly how the open hearings process would work, most stakeholders supported our proposal to introduce this into the framework. A few questioned the need for this additional round of stakeholder representation, believing that by this stage the onus should be on Ofgem to decide between conflicting views.

Decision

- 2.8 **Our decision is to confirm our approach to enhanced engagement.** This includes the requirement for all transmission companies to establish a User Group and for gas distribution companies to establish a Customer Engagement Group. In addition, we will establish a central RIIO-2 Challenge Group.
- 2.9 We will hold open public hearings prior to our final determination to focus on areas of disagreement or contention raised by the various groups and to invite any other evidence in support of, or against, company business plans.
- 2.10 The Gas and Electricity Markets Authority (GEMA) retains ultimate responsibility to make initial and final determinations, using, among other things, evidence from the enhanced engagement process as a key input.

Reasons for decision

- 2.11 These enhanced engagement arrangements should lead to a stronger voice for network users, consumers and consumer advocates in the price control process. We expect the systematic challenge from these groups to produce better quality business plans from companies that are more reflective of the needs of their local stakeholders and ultimately, existing and future end consumers.
- 2.12 The publication of the reports from the various groups, together with the introduction of open hearings to hear evidence of areas of contention, will significantly increase the transparency of the price control process.

Next steps

- 2.13 We have noted the broad level of stakeholder support we have received for our proposals for enhanced engagement. We recognise that for these to be fully effective, we need to provide more detail on the timetable, scope and composition of these groups.
- 2.14 Following the March consultation, we published an initial guidance document for Enhanced Engagement. This document provided more detail on how the groups should be established and how the process would work. We signalled that this would be a live document that we would update periodically and in line with the overall programme requirements.
- 2.15 We will update this guidance document in due course to reflect various stakeholder requests for clarity on the process and suggestions for improvement.

3. Responding to changes in how networks are used

Chapter summary

We are adapting the RIIO framework to ensure that it can support network companies in maximising opportunities and managing the future challenges associated with the energy transition. This chapter sets out our decisions on the various topics that we clustered under the theme of “responding to changes in how networks are used”. These decisions are:

- **To set the default length of the price control at five years.** We will assess any proposals we receive from companies for allowances for certain activities to be set over a longer-term. We will require evidence of significant net benefits to consumers relative to a five-year period.
- **Not to align the start or end dates for the electricity transmission and electricity distribution price controls.** We will carry out further work to reform various elements of the price control to support the delivery of whole-system outcomes.
- **To have a separate price control for the Electricity System Operator (ESO).** At this stage, we will not make any structural changes to the Gas System Operator price control framework. We will carry out further work on potential regulatory and remuneration models for the ESO and engage with industry on potential options later in summer 2018.

We intend to ensure that company business planning processes subject new investment proposals to tests around the risks of stranding. We will carry out further work on refining existing aspects of the price control to manage the risk of inefficient network investment and utilisation.

We will undertake further work with Government to consider the role network companies may play in energy efficiency.

Length of the price control

Introduction

- 3.1 The uncertainty surrounding network activity in the future makes it difficult to predict the allowances necessary for a range of different activities. We think that this risk is too high to justify retaining the current arrangements of setting price controls for eight years, with a limited scope for a mid-period review (MPR) to recalibrate elements (as was the case with RIIO-1).

Summary of March proposals

- 3.2 We proposed to set the RIIO-2 price controls over a five-year period. However, if networks make a compelling case for setting the allowances for certain activities, projects or programmes over a longer timescale, such as through greater efficiencies or innovation, we said we would consider having a multi-track arrangement (ie setting some allowances for five years and some for longer).
- 3.3 We identified one viable alternative to the above proposal. This would retain the eight-year price control, but with an expanded scope for an MPR. We would use this to reset cost and output targets if these had significantly deviated from what was assumed for the price control.

Stakeholder views

- 3.4 Respondents overwhelmingly supported the proposal to shorten the length of the price control to five years. This was seen to be a sensible precaution at a time of high uncertainty. Western Power Distribution was the one network company opposed to any change to the current arrangements. It believed we should wait until the end of RIIO-ED1 before forming a view on the impact of the current price control period. Stakeholders with an interest in visual amenity were also against shortening the price control period. They wanted to retain the longer period, highlighting that schemes to underground network infrastructure typically took longer than five years to deliver.
- 3.5 There was less consensus on whether to set certain allowances for a longer period. Some felt this could drive greater cost efficiencies (in areas such as repex and asset health expenditure) or help to promote innovation. Others felt this would add unnecessary complexity and disrupt our ability to benchmark companies.

Decision

- 3.6 **Our decision is to set the default length of price control at five years.**
- 3.7 We will consider proposals we receive from companies in their business plans to set allowances for certain activities for a longer-term. For these to be justified, we will need to see evidence of significant net benefits to consumers relative to a five-year period.

Reasons for decision

- 3.8 In RIIO-1, we have already observed that things have turned out differently from the assumptions made at the time of setting the price control. Some cost allowances were set too high in hindsight, and some performance targets were set too low. This forecast risk is inherent in ex ante regulation. However, extending the price control to eight years with only a limited scope for an MPR, limits our ability to reset certain cost allowances and output targets.
- 3.9 The uncertainty surrounding network activity in the future, even within the next 5-10 years, means it is extremely difficult to predict the allowances necessary for a range of different activities. Forecasts could be wrong to a significant degree and this could harm consumers, or investors. Our experience with RIIO-1 suggests that it may not be possible to anticipate all of the areas where this will arise. As a result, we may not be able to put in place a complete set of uncertainty mechanisms.
- 3.10 We think that this risk is too high to justify retaining the current arrangements.
- 3.11 A significant majority of stakeholders that commented on this topic have confirmed our view that shortening the period over which we set allowances/targets is a sensible way to manage this risk over RIIO-2.
- 3.12 We believe that setting allowances over a five-year period, still provides incentives on companies to plan and develop their networks to meet future demands, and to find innovative ways to reduce cost and improve performance. We do not believe that five-year price controls will necessarily affect schemes (such as undergrounding) that may take longer to progress through the planning process. There are many examples of projects that have been initiated in one price control

and completed in another. It is also possible – within the framework of a five-year control – for us to set allowances for certain projects over a longer period.

- 3.13 We believe that the option to retain an eight-year price control period with an extended MPR is not likely to drive more long-term thinking and greater innovation than a five-year control. Stakeholders agreed with our concern that a wide-ranging MPR will instead create two mini price control periods. A number of network companies identified risks with moving to a control period shorter than five years, particularly around certainty of investment and ability to innovate effectively.

Next steps

- 3.14 We have not seen compelling evidence at this stage to support setting certain allowances over a longer period. We are aware that a multi-track arrangement could disrupt our ability to benchmark companies, and introduce new opportunities for companies to shift the allocation of costs to maximise returns. However, if companies bring forward evidence that there may be significant benefits to consumers of this approach, then we will consider this further.
- 3.15 As we develop sector specific methodologies, we will consider any issues associated with investments that may span multiple price control periods (such as undergrounding schemes).

Whole-system outcomes (including alignment of price controls)

Introduction

- 3.16 Network companies and System Operators will need to ensure that the energy system as a whole is effectively coordinated to deliver best value for consumers. The price control for companies in individual sectors should not create unnecessary barriers to those companies being able to take actions that lead to improvements elsewhere in the energy system (such as in another sector, or in how the system operates), that ultimately benefit energy consumers. This is what we mean by whole-system outcomes – striving for the optimal outcomes for the energy system as a whole. Although there may be some advantages to aligning the electricity transmission and electricity distribution price controls, we do not believe this is necessary to achieving the desired outcomes.

Summary of March proposals

- 3.17 In our consultation, we sought views from stakeholders to determine how the price control framework can enable or prevent the delivery of whole-system outcomes:
- We sought views on a practical definition for the term whole-system, particularly whether this term should stretch beyond the electricity and gas networks and their system operators
 - We considered whether it would be beneficial to align the start dates of the electricity transmission (ET) and electricity distribution (ED) price controls, using a transitional price control framework, to achieve better coordination across the electricity networks. We thought the incremental benefits of alignment were unlikely to outweigh the costs and risks of this approach

- We proposed instead to focus on reviewing the framework components (such as outputs, planning processes etc) that might materially impact the aim of delivering whole-system outcomes, as part of the sector specific methodology stage of the RIIO-2 development timetable.

Stakeholder views

Definition of whole-system

- 3.18 There was a consensus on the need for a clear definition of the meaning of whole-system in order to effectively identify barriers and incentivise delivery of whole-system outcomes in the context of RIIO-2. However, there were varying views on what the definition should focus on. For example, several stakeholders suggested a definition should focus on lowest cost for consumers; others suggested the definition should include interactions across certain sectors (eg coordination across transmission and distribution, across gas and electricity, inclusion of heat and transport and potentially encompassing energy generation and beyond-the-meter considerations).
- 3.19 Stakeholders acknowledged that a pragmatic approach was needed, but largely did not comment on how this might be achieved. Many stakeholders acknowledged that there may be legislative barriers that restrict our ability to fully consider these wider sectors, and for managing electricity and gas interactions.

Price control alignment

- 3.20 Stakeholders broadly agreed with our minded-to decision not to align the ET and ED price control start dates. There was a consensus that coordination across networks and system operators can be managed without alignment, and that the price control framework already had tools (eg uncertainty mechanisms) to do this. Respondents recognised the risks and challenges of alignment, particularly the risk of resource peaking for industry and Ofgem, and the need to roll-over the existing transmission control for another two years.
- 3.21 Most network companies agreed alignment was unnecessary. Although some network companies saw merit and additional consumer benefits from alignment, they still recognised the challenges this raised. DNOs noted that we would need to consider and manage any interactions with the ED sector when we are developing the ET control. For instance, some respondents advised that we should approach investment decisions in ET-2 with caution, if there was a chance that developments in the ED sector (such as decentralised generation or local storage) may render such investment unnecessary.
- 3.22 Wider stakeholder groups, including Centrica and Citizens Advice, agreed that alignment of the ET and ED controls was not necessary to ensure good whole-system outcomes.

Delivering whole-system outcomes

- 3.23 All stakeholders supported the emphasis we placed on whole-system outcomes, and most considered it essential as an enabler of the energy system transition. In general, they considered that our proposal to review the framework and provide targeted reform was sensible. They acknowledged that some of the current efficiency incentives already support this approach, but that more intervention was needed to remove barriers to whole-system outcomes.

- 3.24 To achieve good whole-system outcomes, stakeholders individually put forward a number of matters for the RIIO-2 price controls to focus on, these included:
- Outputs and incentives
 - Investment planning (including scenarios and the potential for whole-system cost-benefit analysis)
 - Innovation funding
 - Funding routes (ie how costs in one sector can be paid for in another sector if that sector has received some of the benefits)
 - Enabling coordinated and technology-neutral flexibility markets (especially at a local level)
 - Enhanced engagement and how the various engagement groups can challenge company thinking and investment proposals in this area
 - Data access
 - Links to price signal reform (eg Access and Charging Reviews) that could help the market determine the best use of network capacity and could have implications for how flexibility is obtained.
- 3.25 Some specific wider interest groups took a much broader definition of whole-system, and emphasised the need for demand reduction and energy efficiency to drive optimised whole-system outcomes.
- 3.26 Beyond these areas, network companies also discussed the role of the ESO and of DSOs as a critical component of delivering whole-system outcomes. They referenced the work of the ENA's Open Networks project¹² as being particularly relevant for this policy area. Network companies also highlighted that uncertainty mechanisms would be a useful tool to manage this issue. UK Power Networks (UKPN) made a more detailed proposal for addressing specific whole-system issues through a designated funding pot.
- 3.27 Consumer groups, together with some network companies, noted that any reforms around cost transfer provisions (eg where a network company in one sector is paid to undertake work by companies in another sector) needed to carefully manage the risk of individuals who are consumers of both companies paying twice for the same thing.

Decision

- 3.28 **Our decision is not to align the start or the end dates for the electricity transmission and electricity distribution price controls.**
- 3.29 We will undertake further work to investigate if any enabling reforms need to be introduced – or regulatory barriers removed – within the price control framework to support the delivery of whole-system outcomes. We intend to clarify the term whole-system in a way that is meaningful in the context of the next price controls.

¹² The Open Networks Project is a major energy industry initiative that brings together nine of UK and Ireland's electricity grid operators, respected academics, NGOs, Government departments and Ofgem. (<http://www.energynetworks.org/electricity/futures/open-networks-project/>). One of its core aims is to take a whole energy system approach to designing solutions by consulting with a wide range of stakeholders, including the gas networks, through an Advisory Group.

Reasons for decision

- 3.30 The main decision we are taking in this area is around the alignment of the price control. In making this decision, we considered two main options; 1) aligning the ET and ED start dates, 2) maintaining the status quo start dates.
- 3.31 To align the ET and ED start dates we would need to commence the RIIO-ET2 and RIIO-ED2 price controls at the same time in April 2023. This would need a two-year delay to the current assumed start of RIIO-ET2, which is due to reset in April 2021.
- 3.32 In order to manage this delay, we would need to create a transitional arrangement for the RIIO-ET1 price control between 2021 and 2023. This could take one of two forms: a roll-over (extending the RIIO ET-1 price control for two years); or an interim price control (creating a new two-year framework for ET from 2012-23). Appendix 1 sets these transitional arrangements out in more detail and considers further the pros and cons of these arrangements.
- 3.33 Broadly, we consider there to be major risks and downsides to price control alignment. These relate to implementation and resource requirements, but also a likely consumer detriment from rolling-over the current price control (where companies are making higher than expected returns), or from trying to rapidly turn around an interim price control.
- 3.34 To support the delivery of whole-system outcomes, we will carry out further work to consider whether reform of the various elements of the price control is necessary. These will include establishing whether enabling reforms need to be introduced or existing regulatory barriers removed.
- 3.35 We believe we have the tools available to support the delivery of whole-system outcomes without major structural changes to price control timings. Responses to the consultation agreed with this position.
- 3.36 We also do not believe it is appropriate to align the ET and ED end dates. This takes into account our decision to set a default price control length of five years, the resourcing challenges associated with aligning the ET and ED price controls (together with a loss of alignment between other sectors) and the fact that alignment alone will not achieve optimal outcomes for the whole-system.

Next steps

- 3.37 We intend to clarify the term whole-system in a way that is meaningful in the context of the next price controls, and the appropriate role of network companies in supporting the energy transition. We will also continue to consider any clarifications or changes to support whole-system outcomes as part of operating efficient networks in the near term, as signalled in our Smart Systems and Flexibility plan, joint with BEIS.¹³
- 3.38 We will review the various elements of the price control, taking on board stakeholder feedback around which areas to consider, and prioritise reform in those areas that have the potential to deliver the greatest benefits in relation to facilitating whole-system outcomes.
- 3.39 We will continue to consider and assess the evolution of system operation at both transmission and distribution level. We will assess the required tools and enablers,

¹³ Upgrading our energy system – smart systems and flexibility plan <https://www.ofgem.gov.uk/publications-and-updates/upgrading-our-energy-system-smart-systems-and-flexibility-plan>

including the appropriate level of data management and sharing, to realise system coordination and deliver whole-system outcomes. This will include analysis of the case for new or changing roles for network companies, assessment of Distribution System Operator (DSO) functionalities, coordination between transmission and distribution operation, and the implications that this may have on policy development in this area.

End-use energy efficiency

Introduction

- 3.40 End-use energy efficiency and permanent demand reduction not only brings social and environmental benefits, but also have the potential to reduce future network investment, particularly when considering the challenges associated with the decarbonisation of heat. There may therefore be an argument that network companies could play a greater role in encouraging energy efficiency measures.

Summary of March proposals

- 3.41 We sought views on whether network companies had a role in encouraging permanent demand reduction from consumers, particularly in reducing costs associated with heat decarbonisation. We also asked what the potential scale of the impact could be. In addition, we noted Government's role in energy efficiency policy and highlighted BEIS' call for evidence that considered a range of potential solutions in response to market barriers to energy efficiency investment.

Stakeholder views

- 3.42 There was a variety of responses on this topic. A number of network companies commented that they are already working with delivery partners to provide energy efficiency advice and support. Some of them had carried out research through innovation projects in this area, for example the Energywise¹⁴ and Power Saver Challenge.¹⁵
- 3.43 However, other stakeholders considered network companies should focus on operating efficient energy networks. These stakeholders believed network companies possessed neither the expertise nor the direct customer relationship required to install energy efficiency measures, such as loft insulation. Some noted that if network companies were obliged to do so they would have to procure the services of a third party to carry out the work. They were also concerned at the prospect of network charges being used to fund activities that deliver wider societal benefits, believing that these should be funded through general taxation, rather than a cross-subsidy on energy bills.
- 3.44 There was greater support from stakeholders on the potential for energy efficiency measures to be treated as an alternative to traditional network investment. These could sit alongside other flexibility measures such as storage and demand side response and help reduce the need for network investment, while also supporting the delivery of whole-system outcomes.
- 3.45 There were some advocates for network companies having a much stronger role in delivering energy efficiency measures, including the Regulatory Assistance Project (RAP) and National Energy Action (NEA). Both these responses focussed on the

¹⁴ Which investigated how DNOs, in collaboration with other parties including suppliers, can support residential customers struggling with their fuel bills to better manage their energy usage.

¹⁵ Which looked at avoided investment, saving customers' money and extending the life of the substation by rewarding customers for reducing electricity usage.

use of energy efficiency measures to defer or prevent the need for electricity network reinforcement. NEA noted that on the gas side, the current Fuel Poor Network Extension Scheme (FPNES) could be extended to include the installation of insulation alongside primary heating. Cadent said it believed GDNs are well placed to undertake a wider role and noted that they had already identified the extent to which energy efficiency of off-gas grid homes would reduce the number of households living in fuel poverty. Cadent stated that this work can be broadened to include both non-domestic properties and on-gas grid properties.

- 3.46 Some stakeholders were sceptical of the direct impact of increased energy efficiency measures in reducing the need for network reinforcement. One stakeholder noted that many of the easy installation options (such as cavity wall insulation) had already been carried out.

Further work

- 3.47 We will undertake further work with Government to consider the role network companies may play in energy efficiency. However, we intend to create a level playing field between demand and supply side solutions to deal with network constraints. We will also design the price controls for the distribution sectors with sufficient flexibility to respond to changes in the role of networks in this space. This may be in response to Government policy, but could also be in the wider context of the design of the future energy market.

Reasons why we are undertaking further work

- 3.48 While many stakeholders questioned whether network companies had the expertise or customer interaction necessary to carry out energy efficiency measures, there was broad recognition that there may be some role for network companies to play. Where energy efficiency, alongside other supply-side options, has the potential to defer or mitigate the need for network investment, then there should be no barriers to network companies pursuing this solution.
- 3.49 BEIS is working on developing solutions to reduce the market barriers to energy efficiency. We want to work with them to ensure that we consider the network companies' role in light of this wider consideration of options.
- 3.50 Network companies are already doing some work in this space, for example working with partners to help deliver energy efficiency advice and conducting research through innovation funding. We want to consider whether the framework is creating unnecessary barriers to network companies taking a broader role in supporting the delivery of energy efficiency measures.
- 3.51 We will undertake the work described above as part of the sector specific methodology stage. We will continue to work closely with BEIS.

Network utilisation, stranding and investment risk

Introduction

- 3.52 The future demand for both electricity and gas is uncertain. New technologies and markets, as well as shifts in consumer behaviour and Government policy (eg around heat) could have a significant impact on how the energy networks are used. In RIIO-2, network companies must choose investments that maximise the long-term value for consumers, considering what investment is required to meet consumers' needs now while preparing to adapt to future needs.

- 3.53 In our consultation we outlined that rapid changes in consumer behaviour and energy technology, together with the associated uncertainty arising from these, could result in inefficient network investment and utilisation. We expect these inefficiencies may arise if:
- There is investment in new networks to meet an expected long-term demand that does not emerge, or
 - Existing infrastructure is underutilised.
- 3.54 In both cases, the upward impact on consumer bills could encourage some customers to reduce their use of the networks (or go completely off-grid). This would leave those remaining with a higher share of costs. Faced with increasing network costs, some of those remaining customers may then subsequently seek to reduce their use of the network. This situation could lead to a spiral of grid defection.
- 3.55 While we expect to consider these issues in more detail during the sector specific methodology stage, we sought views in the March consultation on what options should be explored further.

Stakeholder views

- 3.56 A number of stakeholders agreed that network companies should face higher thresholds in justifying investment in network build. These include greater consideration of alternative options, demand forecast scenarios and broader consideration of whole-system outcomes. Some respondents cautioned that raising hurdles to investment should not prevent network companies from making sensible, innovative and cost-effective investments in networks, particularly in an environment of uncertainty.
- 3.57 Some stakeholders advocated a more market-focused approach, whereby new network build is competed for and bidders hold the risk of future underutilisation.
- 3.58 Stakeholders also broadly agreed that the stranding and utilisation risk could be managed through improvements to existing mechanisms including: the use of uncertainty mechanisms; enhanced stakeholder engagement to assess the needs case and alternative options; incentives on efficient utilisation of assets; and an expansion of the Network Options Assessment (NOA¹⁶) model to other sectors.
- 3.59 Some stakeholders strongly encouraged the adoption of an incentive around network utilisation. More broadly however, there were mixed views as to whether network companies should face network utilisation risk. Concerns centred around whether this would increase risk for network companies, or dampen incentives on network companies to make long-term investments.
- 3.60 There were also mixed views on changing the depreciation schedule for new network assets. Some noted that this would just shift risk between current and future users, while others said that shorter depreciation schedules for network options may improve the competitiveness of non-network options for addressing constraints.
- 3.61 Some stakeholders thought that stranding is a more significant risk for gas networks in the near-term, but gas network companies thought that the risk in

¹⁶ The NOA is published by National Grid (ESO). The purpose of the NOA is to make recommendations to transmission owners across Britain as to which projects to proceed with to meet the future network requirements as defined in the Electricity Ten Year Statement (ETYS).

RIIO-2 was minimal. They observed that the gas network still had an important role to play in supporting the future decarbonisation of heat. On the electricity side, some stakeholders noted that differences in charges faced by customers on independent networks (IDNOs) and private wire networks could increase the number of customers seeking out these arrangements. This would drive up the portion of costs faced by customers remaining on the DNO networks.

Further work

- 3.62 **We intend to ensure that company business planning processes subject new investment to higher hurdles** (particularly testing network reinforcement options against alternative options such as demand-side measures and storage) while recognising the need to ensure that sufficient and timely investment is made to meet the changing requirements of the system.
- 3.63 We will carry out further work on refining existing aspects of the price control at a sector level to manage the risk of inefficient network investment and utilisation. We will consider whether it may be appropriate for certain types of investment to have different risk allocations.

Reasons why we are undertaking further work

- 3.64 In an environment of increasing uncertainty around the volume, location and nature of future demand and supply for energy, there is broad recognition that we need to consider the risks of asset stranding and underutilisation through RIIO-2.
- 3.65 Placing higher hurdles on the investment in new network assets is a low-regrets approach to ensuring future risks and consumer benefits are explicitly considered. We may be able to achieve this by requiring network companies to undertake an enhanced cost benefit analysis. This could demonstrate how they have considered alternative solutions and how they have engaged with stakeholders on these alternatives. We could consider this before we allow costs associated with new investment to be recovered. We could also test proposals for network reinforcements against non-network solutions, such as demand-side response and storage.
- 3.66 We want to explore how aspects of the price control can help to manage the potential risks around network utilisation and stranding. This might include the use of uncertainty mechanisms, volume drivers, depreciation schedules, risk allocation etc. Given the sector specific nature of the risks, we will consider these as we develop the methodologies for each sector.
- 3.67 In addition to the further work outlined above, there are other Ofgem workstreams that may improve signals for efficient use and development of the network. As detailed in our March consultation, there are two main areas of reform that may be relevant here; the Targeted Charging Review and Network Access and Forward-Looking Charging Reform.
- 3.68 The former aims to reduce harmful distortions in the recovery of charges – this would help mitigate the potential spiral associated with consumers reducing their load or coming completely off-grid in order to avoid network charges. The latter is considering reform options which could deliver more efficient use and development of electricity networks and improve the use of capacity. It may also provide better information and potentially clearer price signals around future investment needs.

System Operator (SO) price control

Introduction

3.69 The Electricity System Operator (ESO) role is changing. We see it taking a more active approach to managing the energy transition and supporting system planning. With the ESO's separation from National Grid Electricity Transmission (NGET)¹⁷, we want to review how we set price controls for it, to establish whether the current approach remains appropriate.

Summary of March proposals

- 3.70 We set out a minded-to decision to separate the ESO price control from NGET's price control. This would involve producing a separate sector methodology for the ESO control, receiving a separate ESO business plan, and setting separate ESO price control revenues, outputs and incentives.¹⁸
- 3.71 We also thought this is a good opportunity to review what an appropriate remuneration model might be for the ESO. We asked stakeholders whether we should consider alternative models. In particular, we noted that a traditional RAV-based model, as we currently use for the TOs, may not be appropriate for the ESO, which as a separate entity is expected to be a more asset-light and service-focused organisation. We asked stakeholders for proposed alternative models.
- 3.72 There is a different context for the Gas SO (GSO). The GSO currently remains part of National Grid Gas's (NGG) organisation that combines the transmission and system operation business. In gas, there has been much less change (to date) in how the system operates, compared to electricity. We therefore proposed no change to the broad framework for the GSO's separation and price control arrangements. However, we said that we may need to consider whether any proposals for the ESO are appropriate for the GSO as well, where we have identified improved ways of regulating system operation functions. We also noted there may be a need to consider changes more generally as the gas system evolves.

Stakeholder views

Electricity System Operator

- 3.73 All stakeholders who commented (including the ESO) supported the need for a separate ESO price control (rather than continuing a combined approach with NGET TO), given the enhanced legal separation already under way. They noted that this was a necessary and logical consequence of this legal separation. Several stakeholders also said that this would improve transparency and help manage conflicts of interest.
- 3.74 Some stakeholders suggested the ESO should have its own enhanced engagement group that mirrors those we proposed for the gas and electricity transmission network companies.
- 3.75 There was broad support on our proposal to consider alternative remuneration models for the ESO, with many stakeholders citing the different characteristics of

¹⁷ Future arrangements for the electricity system operator: Response to consultation on SO separation <https://www.ofgem.gov.uk/publications-and-updates/future-arrangements-electricity-system-operator-response-consultation-so-separation>

¹⁸ While we did not commit to a specific proposal for how the ESO should engage in enhanced engagement, in subsequent discussions with the ESO, we have also agreed that it should also follow a similar approach to the proposals we set out for TO enhanced stakeholder engagement.

the organisation as compared to a traditional network operator function. While there were a number of suggestions of alternative models, none provided detail on specific arrangements.

- 3.76 Notably, Northern Powergrid did not support our proposals and argued that there were risks with any form of separation of asset ownership and system operation functions around accountability, risk allocation, strength of cost incentives and conflicts of interest. However, these views relate to policy decisions beyond those within this price control, ie to the previous decisions made to legally separate the ESO from NGET TO.
- 3.77 DNOs indicated clearly that while they supported the proposals for the ESO arrangements, these should not necessarily create a read-across to future Distribution SO (DSO) arrangements. In their view, any consideration of institutional business separation at the distribution level was distinct (and less viable). Some other stakeholders however held the opposite view, considering that there would be a need for DSO separation to resolve similar conflicts of interest to those in the electricity transmission sector.

Gas System Operator

- 3.78 There was a broad agreement (among those who responded) that we should retain the current overarching gas framework and not make structural changes to the current GSO arrangements at this stage. Some noted that we should keep this under review.

Decision

- 3.79 **Our decision is to have a separate price control for the Electricity System Operator. At this stage, we do not propose a separate gas SO price control.**
- 3.80 We may need to consider whether any proposals for the ESO are appropriate for the GSO as well, where we have identified improved ways of regulating system operation functions. We also note there may be a need to consider changes more generally as the gas system evolves.
- 3.81 We will carry out further work on potential regulatory and remuneration models for the ESO and engage with industry on potential options later in summer 2018.

Reasons for decision

- 3.82 Given our previous decision to separate the ESO from NGET TO, we consider that a necessary consequence of this is a need to separate price controls. As noted by numerous responses, this will enhance transparency and effective decision-making and help to reduce the potential for real or perceived conflicts of interest.
- 3.83 Given the asset-light and service-focused nature of the ESO, in contrast to traditional network asset owners, we consider it prudent to assess potential alternative remuneration models for it. We will assess any such models in terms of the consumer benefit they may deliver, beyond the current model.
- 3.84 In the gas sector, in contrast to the electricity sector, there is no clear driver for structural price control change at this time. However, if circumstances significantly change we will consider carefully whether the arrangements for the Gas SO are appropriate.

Next steps

- 3.85 We intend to reach a firm preference on a regulatory model for the ESO, which we plan to consult on as part of our sector specific methodology consultation.
- 3.86 To note, in general we expect that any default positions we are taking elsewhere in this decision document should be assumed to apply to the ESO as well as the other network companies, eg approach to enhanced engagement. However, given the potential shifts in the regulation/remuneration framework, we will need to retain some flexibility in applying these only where they are appropriate and in consumers' interests.
- 3.87 Further detailed development of the GSO's price control will form part of the setting of the gas transmission (GT) sector methodology. We will consider if there are any crossover implications for the GSO from our ESO framework development, as part of this process.

4. Driving innovation and efficiency

Chapter summary

Innovation and competition can drive down costs for consumers and support network companies in driving the energy transition. This chapter sets out our decisions to increase competition and encourage network companies to innovate to adapt to the future challenges. These decisions are:

- To retain an innovation stimulus package, limited to innovation projects that might not otherwise be delivered under the core RIIO-2 framework. We will carry out further work on three broad areas of reform i) increased alignment to energy transition challenges ii) greater coordination with wider public funding and iii) increased third party engagement (including potential direct access).
- To extend the role of competition (for the market) where it is appropriate and provides better value for consumers, including using the criteria for competition applied in ET (new, separable and high-value) to identify projects suitable for competition in other sectors. We will carry out further work on how we might apply competition within a given sector in addition to developing the range of models for late¹⁹ competition and consideration of early²⁰ models (initially prioritising the implementation of late models).

Innovation

Introduction

4.1 The RIIO framework puts innovation at the heart of what network companies do. RIIO rewards companies for reducing costs and improving service. This should drive companies to innovate and find more efficient and effective ways of operating and developing their networks. Additionally, RIIO introduced an innovation stimulus package comprising the Network Innovation Allowance (NIA), the Network Innovation Competition (NIC) and the Innovation Roll-Out Mechanism (IRM). For RIIO-2 we want to continue to encourage innovation, with network companies delivering more innovation through the broader framework and using dedicated funding to support critical areas of innovation.

Summary of March proposals

- 4.2 We proposed to retain dedicated innovation funding but limit it to projects that might not otherwise be delivered under the RIIO-2 framework. We want companies to be innovating as part of their business-as-usual (BAU) activities.
- 4.3 We also sought views on what form the innovation funding could take, how we could further encourage the transition of innovation to BAU and how our approach to monitoring and reporting on the benefits of innovation could be improved.
- 4.4 We consulted on three broad areas for reform:
- Increased alignment of funds to support critical issues associated with the energy transition

¹⁹ We define 'late' models as those where a competition is run later in a project's lifecycle, ahead of construction and operation, or post-construction and ahead of operation.

²⁰ We define 'early' models as those where a competition is run earlier in a project's lifecycle, before a specific solution has been designed and consented (then constructed and operated). We define 'very early' models as those where a competition is run ahead of any detailed thinking on the type of idea or solution that might solve the original specified issue.

- Greater coordination with public sector innovation funding and support where it is in the interest of GB consumers
- Enabling increased third party engagement and exploring the potential benefits, and challenges, of direct access to funding in light of future innovation challenges.

Stakeholder views

Dedicated funding

- 4.5 The vast majority of stakeholders that commented on this topic agreed that there should be some form of dedicated funding for innovation through the price control. Exceptions included the University of Exeter, which felt that innovation would be better incentivised by getting the institutional framework right, implemented via performance based regulation output incentives. It felt that innovation projects to date had been poor quality and cited a lack of take up of roll-out funding as signalling that the innovation stimulus had not been successful. It noted however, that if dedicated funding was retained, improvements could be made by increasing the network companies' contribution and allowing third parties to lead bids.
- 4.6 Many stakeholders, particularly network companies, were concerned that by limiting funding to innovation which might not be delivered by the core framework we may be unnecessarily constraining the innovation that could take place in RIIO-2. On the other hand, many other stakeholders were supportive of the need to ensure that companies were undertaking more innovation as BAU.

Broad areas of reform

- 4.7 The majority of stakeholders supported our proposals to align dedicated innovation funding to the energy transition challenges facing the network companies in the future. Some suggested that a portion of innovation funding should still be available for projects that improved network company performance and could benefit consumers, but that may not be delivered through BAU.
- 4.8 There was broad support from stakeholders on the need for greater coordination with other public innovation funding, in particular recognising the benefits of having a broad joint strategy and ensuring that there was no duplication or gaps in the funding. However, there were concerns at introducing more formal arrangements to join up the funding (eg joint funding pots), particularly if different objectives or timescales associated with different funding sources would make it difficult for projects to be supported.
- 4.9 While the vast majority of responses were supportive of increasing third party engagement in innovation funding projects (or at least maintaining the current enhanced participation), most network companies, and a number of other stakeholders did not feel that direct access was appropriate. Network companies believed that only they had the knowledge of what would work on a live system and that direct access for third parties could compromise their ability to maintain a safe and reliable network.

Form of innovation funding, transition to BAU and monitoring and reporting

- 4.10 While there was broad support for some form of dedicated innovation funding, there were various suggestions from stakeholders as to what form the funding might take. There was more support for keeping the Network Innovation Allowance, with several respondents noting that it had encouraged collaboration. There were more mixed responses about the Network Innovation Competition, with some stakeholders highlighting the declining appetite for the use of that fund. Some stakeholders questioned whether there was a need for an Innovation Roll-out Mechanism under a five-year price control. This is because, under a shorter price control, it is more likely that innovation roll-out funding can be captured as part of the next price control business plans without loss of significant benefits.
- 4.11 A number of stakeholders noted that other proposed framework reforms (the return adjustment mechanisms in particular) may reduce the incentives on network companies to innovate and collaborate. However, some stakeholders (for example Centrica) noted that return adjustment mechanisms that increase the competitive dynamic between companies could also encourage more innovation.
- 4.12 There was broad support for ensuring that the benefits of innovation were monitored and tracked, and the learning shared more widely and transparently. However, some stakeholders cautioned that this process should not be overly bureaucratic and onerous.

Decision

- 4.13 **We will retain an innovation stimulus package, limited to innovation projects that might not otherwise be delivered under the core RIIO-2 framework.**
- 4.14 We will carry out further work on the three broad areas of reform; i) increased alignment to energy transition challenges ii) greater coordination with wider public funding for innovation, and iii) increased third party engagement (including potential direct access to available funding).

Reasons for decision

- 4.15 When considering whether dedicated innovation funding mechanisms are needed in RIIO-2, we need to establish:
- Whether learning from innovation from previous price controls has been incorporated into business as usual (BAU)
 - What types of innovation are being, or should be, delivered through BAU processes
 - What innovation challenges companies will face going forward
 - Whether the incentives inherent to the RIIO model are sufficient to encourage this innovation.
- 4.16 Based on the responses received and from the previous Pöyry study²¹ of the benefits of the Low Carbon Network Fund (LCNF) there appears to be some evidence that innovation is now taking place as BAU. Many stakeholders welcomed

²¹ An independent evaluation of the LCNF
https://www.ofgem.gov.uk/system/files/docs/2016/11/evaluation_of_the_lcnf_0.pdf

moves to fund more innovation this way, rather than through a separate funding stream.

- 4.17 However, there may remain challenges associated with high-risk innovation projects, or where the benefits of the innovation may accrue to other parties, that may limit the extent to which these will be delivered through BAU. Other framework decisions such as the length of the control, the strength of incentives, and the potential design of a return adjustment mechanism could also impact the amount of innovation undertaken as BAU.
- 4.18 The potential scale of the energy transition and the innovation likely to be required also supports maintaining dedicated innovation funding. Numerous stakeholders supported an increase in the funding made available to support the energy transition.
- 4.19 While there were some stakeholders who thought that innovation should be purely incentivised through the framework, we feel the broad areas of reform, coupled with an intent to move more innovation to BAU, aims to shift the incentivisation of innovation in that direction. Our aim is that direct funding is available only for those areas of innovation that could deliver benefits to consumers, but are at risk of not being delivered through the routine incentive mechanisms in the price control. For example, because some projects are too risky, have too long a payback period, or the benefits accrue to those other than the regulated companies.
- 4.20 There was general support for all three broad areas of reform proposed in our consultation, we therefore want to explore these further, taking due consideration of the concerns highlighted in the responses.

Next steps

- 4.21 The best innovation ideas may come from non-network companies, which could provide transformative and disruptive new business models and solutions. We want to explore whether there are ways to encourage greater third party participation in our innovation programme, either by providing innovation funding directly to third parties, or indirectly through network-led innovation projects. Our focus will be on innovation relating to price-controlled network activities. Other sources of funding are more appropriate for third party innovation related to wider energy sector issues.
- 4.22 We will develop our thinking on what the innovation stimulus package should look like, including the balance of direct allowance versus competition, and the level of funding. This will consider the impact of the design of the core incentives package and potential differences across the different sectors.
- 4.23 We will consult on our approach in the sector specific methodology.

Competition

Introduction

- 4.24 Our principal objective is to protect the interests of existing and future consumers. Wherever appropriate. We should do so by promoting effective competition²² as reflected in our regulatory stances.²³

Summary of March proposals

- 4.25 We proposed to extend the role of competition (for the market)²⁴ where it is appropriate and provides better value for consumers.
- 4.26 We proposed to expand the scope of projects to which late models²⁵ of competition may be applied. In RIIO-1 we set out that Strategic Wider Works projects within the electricity transmission (ET) sector could be subject to a competitive process and potentially delivered by a third party. Subsequently through the Integrated Transmission Planning and Regulation (ITPR) and Extending Competition in Transmission (ECIT) projects we developed our criteria for identifying projects that were suitable for competition: New (completely new or complete replacement), separable (clear delineation of ownership boundaries although not necessarily electrically separate), and high-value (above £100m capex value).
- 4.27 We proposed to continue applying these criteria to identify projects in ET and to further apply them across all network sectors (ie extending to gas transmission and gas/electricity distribution). We asked stakeholders if they agreed with our proposals to extend where we might apply competition, and whether the criteria were appropriate for other sectors.
- 4.28 We further proposed to develop not only late models of competition but also to consider earlier models²⁶, noting some of the key challenges associated with these.

Stakeholder views

Extending the role of competition and applying our criteria

- 4.29 The majority of stakeholders supported the proposal to extend the role of competition where it is appropriate and provides better value for consumers. However, many stakeholders, particularly network companies, emphasised that we needed to undertake more analysis to justify the benefits case.
- 4.30 Additionally, network companies in particular noted that there may be reduced opportunities for competition for the market to deliver benefits in other sectors

²² This is subject, however, to the Authority having considered whether carrying out its functions in another manner would better protect consumer's interest. The Authority also has to have regard to a number of other considerations in carrying out its duties.

²³ 'Promoting effective competition to deliver for consumers' and 'Driving value in monopoly activities through competition and incentive regulation': <https://www.ofgem.gov.uk/publications-and-updates/ofgems-regulatory-stances>

²⁴ Where the monopoly 'market' is bounded and competed for, as opposed to competition 'in the market' where companies can directly compete for market share or similar benefits.

²⁵ We currently apply late models of competition in offshore electricity transmission (OFTOs). These competitions are run later in a project's lifecycle, ahead of construction and ongoing operation, or post-construction and ahead of operation.

²⁶ Early models of competition are run at an earlier stage in a project's development, before a specific solution has been designed, or even ahead of any detailed thinking about the type of idea or solution that might solve the original issue.

beyond ET. This could be as a result of a smaller pipeline of projects that meet the criteria proposed, as well as the existence of alternative competitive approaches²⁷ and markets for flexibility services that could erode the benefits case for introducing this type of competition.

- 4.31 Respondents broadly agreed that our criteria for identifying projects that are suitable for competition were suitably generic and could be extended to other sectors.
- 4.32 Some suppliers and consumer groups considered that we could lower our high-value threshold to capture the benefits of competing more projects. UKPN however were concerned at lowering this value purely to capture more projects, without sufficient evidence and justification beyond the work we undertook to justify this criterion as part of our ECIT project. The ESO noted that it would be preferable to keep the criteria consistent across sectors, especially for their purposes in delivering the Network Options Assessment (NOA) process.
- 4.33 With respect to whole-system outcomes, several stakeholders (including consumer-representative bodies) suggested that more competition may disincentivise collaboration among network companies at a time when it is most needed. Others suggested that competition might enable short-term benefits but might not deliver optimised long-term whole-system outcomes.

Earlier competition models

- 4.34 There was broad agreement on our proposed direction of travel, to consider early and very early competition models as part of RIIO-2. Some stakeholders stressed that this should be developed in the longer-term. Their view was that we should only roll these out once we have established late models, and gained experience both from these as well as from outturn findings of emerging flexibility markets.
- 4.35 Some respondents also cautioned that increased competition could lead to a reduction in collaboration and coordination across the industry.
- 4.36 Some respondents noted that there may be benefits from earlier models, including increased deployment of innovation, and better delivery of whole-system outcomes.
- 4.37 However, stakeholders also noted various challenges for earlier models, including defining the scope of works for the competition, meaningful price comparison and bid evaluation, managing uncertainty, and risk allocation. There was a firmer appetite for earlier models of competition in ET, especially from network companies, in order to facilitate whole-system outcomes.

General views on competition

- 4.38 Beyond our proposals, many stakeholders set out wider views on the merits of competition, reiterating many points raised as part of previous consultations under the ITPR and ECIT projects. Most of these views highlighted some of the risks of introducing competition. This was particularly true of network companies, who wanted to see further evidence and justification for our proposals, as well as the use of project-specific Impact Assessments for decisions to tender individual projects.

²⁷ Independent distribution network operators (IDNOs) and Independent Gas Transporters (IGTs).

- 4.39 Network companies also set out their view that our Offshore Transmission Owner (OFTO) regime did not represent a clear comparator for any onshore competition in terms of potential savings. They asserted that the offshore regime is different in terms of how risk is managed, the financial structures of the OFTOs and the physical characteristics of the offshore network.
- 4.40 Regarding competition models, some stakeholders (NGET, SSE, SGN) were not comfortable with our use of the competition proxy or the Special Purpose Vehicle models and noted a preference for any competitive regime to be fully backed by legislation (eg the Competitively Appointed Transmission Owner (CATO) regime).²⁸
- 4.41 In addition, some DNOs raised concerns about the IDNO regime. They indicated that IDNO companies face different obligations to DNOs and may not provide the same level of service to consumers, or face the same risks. Some suggested a need to review this framework.

Decision

- 4.42 **We intend to extend the role of competition** (for the market) where it is appropriate and provides better value for consumers, including using the criteria for competition applied in ET (new, separable and high-value) to identify projects suitable for competition in other sectors.
- 4.43 We will carry out further work on how we might identify projects and apply competition within a given sector, in addition to developing the range of models for late and early stage competition.
- 4.44 We expect the new, separable and high-value criteria we have proposed are likely to be applicable across the sectors. In line with our previous stance for ET, we will continue to keep these under review as we develop our policy.

Reasons for decision

- 4.45 Our duties and regulatory stances provide a clear mandate for our broad proposals to extend the role of competition where this will provide better value for consumers. Our previous analysis under the ITPR and ECIT projects (developed in the context of ET) also supports this position.
- 4.46 We previously developed our criteria for where we think competition could provide net benefits for consumers, both in the short-term (cost savings), and the long-term (new entrants, innovation, access to new finance, revealing new information and new benchmarks). While we originally developed these in the context of ET, the underlying principles behind the criteria were broad. We consider they are likely to be applicable across all the sectors.
- 4.47 We expect there to be a net positive case for opening up competition for projects that meet the criteria (new, separable and high-value) to the other network sectors:
- This is likely to widen the project pipeline and therefore the opportunity for cost savings for consumers and users of the system. It will also provide enhanced benchmarking information for use in setting future price controls
 - It may bring some additional costs and risks but we do not expect these to outweigh the benefits.

²⁸ Quick guide to the CATO regime
https://www.ofgem.gov.uk/system/files/docs/2016/11/quick_guide_to_cato_-_nov_16.pdf

- 4.48 We also consider that there could be major benefits from developing earlier forms of competition, especially in how these might unlock optimised whole-system outcomes. For these reasons, we want early forms of competition to be a feature of the RIIO-2 price controls.

Next steps

- 4.49 We will conduct further work on our analysis of the net benefits of competition in each of the sectors and develop policy options as part of setting each sector specific methodology. In particular, we will need to consider how we might specifically apply competition in a given sector, including:
- Further analysis and refinement of the detailed criteria definitions
 - Setting out our process for identifying and determining whether specific projects are suitable for late model competition. We expect this to build on the process we created for the ET sector in RIIO-1 including: the role of the system operators and the NOA in project identification; the principles around bundling, splitting and repackaging of projects; and the assessment of the merits of different models of competition on a case-by-case basis
 - Fully exploring and managing interactions with existing or future alternative forms of competition within the sectors, including how these impact on project pipelines.
- 4.50 We note the concerns raised by stakeholders that early models face inherent risks associated with uncertainties at both an energy system and project level. While we intend to focus on late-model implementation in the near term, we will continue to develop earlier models of competition as the price control progresses.
- 4.51 Through this process, we will provide information on what investment opportunities may be open to this earlier form of competition; how such investment opportunities will be identified; which parties should undertake this type of competition and how this type of competition could be implemented. In doing so, we will use the lessons learned from both late competition models and the development of flexibility markets. We will also consider the potential role of system operators in driving competitive solutions to network constraints.

5. Simplifying the price controls

Chapter summary

We want to clarify and simplify our approach to setting outputs and cost allowances. We believe arrangements to encourage good business plans can be simplified, and removed in some cases. We believe the process of annual reporting can be simplified and we want to take steps to improve reporting. This chapter sets out our decisions on these topics.

In RIIO-2, we will continue to use **outputs and incentives** to drive improvements that consumers value.

Where we can confidently **forecast costs** using independent benchmarks or historical information, then we will continue to provide incentives on companies to outperform. We will use indices where appropriate to reduce the reliance on forecasts. Where we cannot forecast with confidence, then we will use mechanisms to protect consumers against paying for costs that are subsequently not required.

We do not believe that in its current form the **information-revealing devices** (IRDs) we use to improve the quality of information in companies' business plans (the Information Quality Incentive (IQI) and fast-tracking) work in the way intended. We believe reputational and financial rewards for high quality plans have the potential to drive down costs. We do not believe that early settlement is suitable for the transmission or gas distribution sectors.

We have decided to defer the formal implementation of audited RIIO Accounts until at least the start of the RIIO-2 period. Instead, we will immediately begin a programme of improvements to our system of **annual reporting**.

Our approach to setting outputs and cost allowances

Introduction

- 5.1 The RIIO framework intends to capture and incentivise the efficient delivery of all of the activities that energy network companies undertake. Since it is essential that consumers continue to receive the right network services in a changing environment, and because the costs involved are significant, the RIIO framework has additional features to protect consumers and investors from undue risk. These add to the complexity of operating a price control.
- 5.2 We use outputs to specify what it is we want networks to deliver. By clarifying how we expect these to be set and how we want to incentivise improvements in performance, we can simplify this part of the price control. We also use forecasts to set cost allowances. By simplifying our approach to setting cost allowances, we aim to minimise the risk that can result in consumers paying more than they need to.

Summary of March proposals

- 5.3 We described the broad approach to setting outputs and costs for RIIO-2. This was a clarification of our existing approach and a signal of our direction of travel for further reform. Companies are able to earn additional returns through incentives linked to their performance against cost and output targets. If these output targets are set too low, or revenues include allowances for costs that are not within companies' control, then this can harm consumers. We summarise below what we said in our March consultation.

- 5.4 For outputs we proposed to continue to specify outputs as a set of consumer-facing outcomes that we expect network companies to deliver. We signalled that we would distinguish between **licence obligations**, specific deliverables with funding attached (**price control deliverables**), and service improvements that we want to incentivise (**output delivery incentives**).
- 5.5 For licence obligations, we will set minimum standards and these will be imposed as a condition of the licence. Failure to meet these standards could lead to enforcement action and penalties. We will use our enhanced engagement framework to help us determine what the output categories and minimum service standards should be. These licence obligations are not directly linked with specific funding.
- 5.6 Price control deliverables will capture what are directly associated with baseline funding. These could include:
- Outputs or input activities to be delivered to a stated standard, for example in response to government policy or Ofgem direction
 - Output or input activities that are significant and/or high value (eg a list of large capital projects to a stated specification, budget and timing).
- 5.7 For these, we would expect to provide relevant revenue allowances in the price control to enable delivery. In addition, the framework should provide a clear methodology of what happens if an output or input activity is not delivered, is delivered late, or is delivered to a lower or different specification.
- 5.8 Output delivery incentives will apply where service quality improvements beyond the minimum standard may be in the interests of consumers. We will rely on incentive mechanisms to reward or penalise performance.²⁹ The overall cost of such financial incentives will not exceed the value of service improvements to consumers.
- 5.9 Some of these incentive mechanisms may operate better on the basis of relative performance (ie as compared with other companies' performance) rather than absolute performance (ie set at a particular level).
- 5.10 Even where we set absolute targets for output delivery incentives, we propose to set stretching targets for individual companies, taking full account of their historical performance, in absolute terms and relative to their peers. We will, in general, seek to set targets based on the information that is available at the time of our final determination, and consult on mechanisms (at the sector level) that allow targets to be automatically recalibrated to stretch levels based on achieved performance during the price controls.
- 5.11 Where we provide funding through base revenues for expenditure that also leads to performance improvements, we will not additionally reward that improvement through incentive payments.
- 5.12 Companies that have performed poorly in the current price control, despite having sufficient funding to achieve better service quality, should be required to improve their performance without additional revenues in RIIO-2.
- 5.13 For costs, we described the measures we will take to protect consumers against from forecasting risk. These were:

²⁹ These would be set out in the licence and would enable annual revenue adjustments.

- Where appropriate, we propose to use competition rather than company forecasts to set prices for new, separable and high value investment projects
 - We proposed to improve the quality of company forecasts by using simplified incentives to reward well-justified, ambitious and high quality business plans
 - We proposed to index uncertain costs where possible, including for labour and construction cost inflation (to the extent evidence suggests this is different from general consumer price inflation). These type of inflation-linked costs are called Real Price Effects (RPEs)
 - Where unit costs are stable but quantities difficult to predict we propose to use volume drivers
 - Where there is uncertainty over the scope of work and the potential costs are significant for consumers, we did not propose to set upfront allowances from the outset of the price control. Instead, we proposed to either use revenue drivers or within-period mechanisms, such as the Strategic Wider Works approach.
- 5.14 Where we continue to set upfront baseline allowances, we will incentivise companies to drive down costs. In assessing whether to set allowances on this basis, we will consider whether:
- The costs are within the control of the company
 - We are able to benchmark allowances against historical performance and relevant industry comparators
 - We are able to use outperformance in this cost category to set lower allowances in future price controls or, if it is a stand-alone investment, we can immediately return benefits to consumers.
- 5.15 Where the cost profile of work spans multiple price controls (such as for the gas mains replacement programme), we will consider taking a long-term view of costs in setting allowances.
- 5.16 We will also consider resetting certain cost allowances automatically during the price control period.

Stakeholder views

- 5.17 The majority of responses we received on these subjects came from network companies. Generally, respondents accepted the broad approach we described to distinguishing between different categories of output, and the associated consequence of not delivering.
- 5.18 Network companies were largely resistant to using relative performance targets, which they felt would not be practical or would harm cross-sector collaboration. They also thought that resetting output targets within the period could affect investment decision-making. UKPN, however, suggested a rolling incentive approach that updated targets each year based on performance across the preceding four years.
- 5.19 Centrica was keen on resetting targets and having zero-sum, relative incentives. Other, non-network stakeholders were more cautious; Sustainability First advised setting absolute targets where we could measure the customer benefit delivered, but relative arrangements where this was not possible.
- 5.20 Although many network companies agreed with the use of uncertainty mechanisms to guard against forecasting errors, some expressed concern at

extending the current arrangements. They highlighted that volume drivers and indexation, including for RPEs, effectively transfer risk from companies to consumers. They advised that we should only apply these where there is high uncertainty. All network companies were strongly against the idea of resetting cost allowances within the period. They highlighted the potential for companies at different points in their investment cycles to impact on the allowances of others, and the disruption this would cause to investment decision-making, and ultimately companies' financeability.

Decision

- 5.21 **We will set costs and outputs through the approach we described in the March consultation.** A summary of our approach is set out below.
- 5.22 We will specify outputs as a set of consumer-facing outcomes that we expect network companies to deliver.
- 5.23 We will set minimum standards and these will be imposed as a condition of the licence. We will use the enhanced engagement framework to inform network companies' licence obligations.
- 5.24 We will establish price control deliverables where appropriate. For these, we will provide a revenue allowance to enable delivery. In addition, the framework will set out a clear methodology of what happens if an output or input activity is not delivered, is delivered late, or is delivered to a lower or different specification. Where deliverables are no longer needed due to a change in circumstances, we will put in place mechanisms for consumers to be automatically refunded.
- 5.25 We will apply output delivery incentives where service quality improvements beyond the minimum standard may be in the interests of consumers. Some of these incentive mechanisms may operate better on the basis of relative, rather than absolute performance. We will establish output targets that are stretching and are up to date when the price control begins, and remain current throughout.
- 5.26 Where we provide funding through base revenues for expenditure that also leads to performance improvements, we will not additionally reward that improvement through incentive payments.
- 5.27 Companies that have performed poorly in the current price control, despite having sufficient funding to achieve better service quality, will be required to improve their performance without additional revenues in RIIO-2.
- 5.28 In addition to the above, we may also assign reputational incentives to some output activities. There would be no financial rewards/penalties associated with performance and there would be no associated licence conditions specifying consequences of non-delivery.
- 5.29 For costs, these are the measures we will take to protect consumers against from forecasting risk:
- Where appropriate, we will use competition to set prices for new, separable and high value investment projects
 - We will improve and simplify incentives to improve the quality of company forecasts
 - We will index uncertain costs where possible, including for labour and construction cost inflation (to the extent evidence suggests this is different from general consumer price inflation)

- We will use volume drivers where unit costs are stable but quantities difficult to predict
 - Where there is uncertainty over the scope of work and the potential costs are significant for consumers, we will not set upfront allowances. We will instead use either revenue drivers or within-period mechanisms.
- 5.30 Where we continue to set upfront baseline allowances, we will incentivise companies to drive down costs, where:
- The costs are within the control of the company
 - We are able to benchmark allowances against historical performance and relevant industry comparators
 - We are able to use outperformance to set lower allowances or return benefits to consumers.
- 5.31 Where the cost profile of work spans multiple price, we will consider taking a long-term view of costs in setting allowances.
- 5.32 We will also consider resetting certain cost allowances automatically during the price control period.

Reasons for decision

- 5.33 We want to signal to industry our broad direction of travel. In setting price controls for each sector, we want to ensure that incentives on outputs and costs only reward companies for genuine performance improvements. The performance of companies can be influenced by factors outside of their control, or they may use their information advantage to set budgets/output targets that are easy to beat. We will introduce measures to offset these factors. Automatic resets could be one way of mitigating this risk.

Next steps

- 5.34 We note the concerns that stakeholders have raised over the use of relative output targets and resetting output and cost targets. However, we want to continue to consider the use of these techniques, and the role of uncertainty mechanisms, in the specific context of each sector.
- 5.35 The March consultation did not seek views on the type of outputs companies should deliver. Many respondents suggested the output categories that would be applicable in each sector. We will consider these further as we develop each sector specific methodology.
- 5.36 In considering the potential to index RPEs will explore, among other things, whether to set these to zero if the evidence suggests that deviations in wage and construction-linked inflation from general consumer price inflation are not material.

Information-revealing devices

Introduction

- 5.37 At the outset of price controls, we require companies to submit information that will enable us to set the price control. This information includes cost forecasts and their output delivery plans. We assess these submissions alongside our own view of expenditure requirements and output delivery.

- 5.38 We use information-revealing devices (IRDs) to incentivise companies to bring forward plans that are ambitious and high quality. Our RIIO-1 suite of IRDs consisted of two elements:
- The Information Quality Incentive (IQI): this is intended to maximise the rewards companies get the closer their expenditure forecasts are to their actual expenditure
 - Fast-tracking: this provides a combination of financial, procedural³⁰ and reputational rewards for companies that submit high-quality and well-justified business plans.

Summary of March proposals

- 5.39 We gave our view that the IQI had not been fully effective in influencing companies to submit business plans that reflect the best estimate of their likely expenditure. We identified that over successive price controls network companies had systematically forecasted expenditure requirements that were higher than the costs they subsequently incurred. This was despite the fact that network companies would have earned higher rewards through the IQI if their forecasts had been a more accurate reflection of their actual expenditure. We asked for stakeholders' views on our assessment.
- 5.40 We also asked stakeholders about their views of fast-tracking and its ability to incentivise high-quality and ambitious business plans. Our questions focused on the need for the early settlement feature of fast-tracking in all sectors, and our proposal to remove it in the transmission sector.
- 5.41 We also introduced the option of a Single Business Plan Incentive. This would categorise companies according to both their totex forecasts and the quality of their business plan submissions. The assigned category would determine the reward or penalty for each company. We asked stakeholders for their views on this incentive.

Stakeholder views

IQI

- 5.42 Nearly all network companies were in favour of retaining the IQI, maintaining that our evaluation of IQI in RIIO-1 did not take into account specific factors that led to forecasts being higher than actual costs. They suggested improvements that could make it more effective. This included publishing the IQI matrix in advance of business plans submissions, simplifying the current matrix into broader categories, and strengthening parameters so that rewards better differentiate across companies.
- 5.43 Two network companies argued that we should replace the IQI with a fixed sharing factor.
- 5.44 Other stakeholders agreed with our assessment that the IQI in its current form does not serve as an effective incentive, and that rewards under the RIIO-1 IQI matrices have been too generous. Citizens Advice wanted more detail on alternatives to IQI ahead of taking a view. Another stakeholder cautioned that a

³⁰ This is also referred to as 'early settlement', whereby companies that are fast-tracked get their price control settled ahead of companies that are slow-tracked.

stronger IQI might lead companies to take less risk in delivering their plan, if they believed they would be penalised if they spent less than their submitted plan.

Fast-tracking

- Network companies differed in their views on the different elements of fast-tracking. While some companies argued to retain fast-tracking, other companies favoured amending or replacing it.
 - In the transmission sectors, companies mostly favoured removing early settlement, as long as there was an alternative approach for rewarding high-quality business plans in place. There was recognition that competition among companies to achieve an early settlement may have been limited in this sector. This was due to the concentrated ownership structure and the limited comparability between companies.
 - In the gas distribution sector, two network companies favoured removing early settlement. They highlighted that the concentrated ownership structures within the sector may limit the extent to which companies could compete against each other to gain an early settlement. They also raised concerns that retaining early settlement as an incentive would require an earlier submission of business plans than might otherwise be required. This would limit the extent to which stakeholders could input and scrutinise plans through the enhanced engagement process. One GDN wanted to retain early settlement. It believed it was an effective incentive as it offered the fast-tracked company more time to dedicate to the delivery of their business plan.
- 5.45 In the electricity distribution sector, all companies saw benefits in having some form of an upfront reward for ambitious and high-quality business plans. However, a number of companies wanted the scale and scope of the fast-tracking reward in RIIO-ED1 to be reviewed. With respect to early settlement, one company wished to retain it, and the associated prospect of having more time to focus on the delivery of their business plan.
- 5.46 Network companies were broadly supportive of the idea of a single business plan incentive as long it is set out upfront and is not associated with a return adjustment mechanism. Some companies stated rewarding business plans only through a higher share of outperformance (via the totex sharing factor) may be ineffective. If a company that submits an ambitious plan is less likely than its peers to outperform, the value of an incentive on outperformance is diminished. Some highlighted a concern that a competed-for pot of reward for business plans may not be effective as companies would not know the benefit they would receive in choosing to submit an ambitious plan.
- 5.47 Two network companies argued for a more mechanistic and less subjective assessment of business plans.
- 5.48 Other stakeholders mostly agreed with removing fast-tracking (the entire reward package) from the transmission sectors, mentioning the lack of comparators as a main reason, but also the potential incompatibility with the enhanced engagement process. However, Citizens Advice and another stakeholder wanted to understand what alternatives to fast-tracking were available. Two suppliers cautioned that the combination of IQI and the financial reward element of fast-tracking might result in companies benefiting twice on the basis of having efficient costs in their business plan.

Decision

- 5.49 **Our decision is to rule out early settlement (a component of fast-tracking) for the electricity transmission, gas transmission and gas distribution sectors.** The option to use early settlement (or fast-tracking) will remain for RIIO-ED2 and will be considered as part of the process of setting the methodology for that sector.
- 5.50 We will develop alternative incentives for business plans, including the role of IQI, as part of the work on the sector specific methodologies.

Reasons for decision

- 5.51 In the March consultation, we sought views on fast-tracking and the need for early settlement in all sectors, with a proposal to remove this for the transmission sector. Further to consultation, we have decided to rule out early settlement in the gas distribution sector, as well as for gas and electricity transmission sectors. The reason for this decision are set out below.
- 5.52 **Concentrated ownership structures:** The benefits of early settlement rely upon a number of companies competing against each other to submit a high-quality plan. This competitive dynamic should improve the quality of all submissions, and we can then use the information this reveals to improve our scrutiny of slow-track companies. We believe the concentrated ownership of companies in gas and electricity transmission does not lead to a sufficient level of competition necessary to make this an effective incentive. Gas transmission is a single company sector. In electricity transmission, NGET owns over 70% of the total sector RAV. Although there are four companies operating networks in gas distribution sector, some stakeholders, including some gas distribution network companies, raised similar concerns over the ownership structures in this sector. Cadent owns nearly 50% of the total sector RAV and SGN nearly 30%.
- 5.53 We have considered this and have decided that the competitive dynamic that is necessary for the fast-tracking process to work effectively may not be sufficient within the gas distribution sector. Should the larger companies elect not to compete for early-settlement, then the process may be only partially beneficial at revealing information we can use to improve the quality of all submissions. We note that in RIIO-GD1, no gas distribution company was fast-tracked. We therefore believe that the early settlement as a component of the fast-tracking process should also be removed from that sector.
- 5.54 **Lack of comparability between network companies:** in electricity transmission, there are differences between some of the network activities the network companies undertake. As a result, information revealed by one network company is less applicable to others and is harder to use for benchmarking.
- 5.55 **Incompatibility with enhanced engagement:** Enhanced engagement is a mechanism that will help improve the quality of business plans that we receive. For early settlement to apply in the transmission sectors and in gas distribution, we would require business plans to be submitted by Quarter 3 2019. This timetable would limit the ability for stakeholders to scrutinise and challenge the business plans before they are submitted to us. This was a concern raised by several stakeholders.
- 5.56 For the reasons given above, we do not believe that early settlement would be an effective IRD in the gas and electricity transmission, and gas distribution network

sectors. We also note that operating to a timetable that allows for the option of early settlement, would limit the extent to which the enhanced engagement process could improve the quality of business plans.

- 5.57 We recognise the need for alternative incentives on companies to submit high-quality business plans. We note the comments from some stakeholders that early settlement can be an effective incentive, as it offers the fast-tracked company an attractive reward. However, we believe there are a range of tools that we can consider that may be more effective in encouraging high-quality business plans. Along with enhanced engagement, these might include one-off rewards (or penalties) and higher (or lower) sharing factors based on the quality of plan submitted. These are less reliant on the composition or type of companies in a sector. They are also more likely to complement, rather than curtail the enhanced engagement process. We will provide more detail on how we will assess and incentivise business plans in the December sector specific methodologies.
- 5.58 Clarity on when business plans will be submitted is central to the timetable for the process of setting the price control. We believe that making this decision now is essential, so that we can confirm the timetable for the remainder of the price control process.
- 5.59 We note that the level of competition is much higher in the electricity distribution sector. The option to use early settlement (or fast-tracking) will remain on the table for RIIO-ED2 and will be considered as part of the process of setting the methodology for that sector.

Next steps

- 5.60 At the sector specific methodology stage, we will consult on alternative ways we could incentivise high-quality business plans. We provide more detail on our early thinking on different options for totex-related IRDs in Appendix 3.

Annual reports/reporting

Introduction

- 5.61 Every year, we publish a report on the performance of network companies in the price controls, based on data we receive from the companies. We recognise that it is important for stakeholders – whether they are investors or consumer advocates – to have a timely, transparent, comprehensive, accurate and accessible account of how much money network companies are making relative to how well they are performing for consumers.
- 5.62 We acknowledge that our annual reports could be improved. We consider it a strength of our reporting system that companies report on both their historical performance to date, but also their forecast for performance to the end of the price control. However, arguably our annual reports present a partial view of company financial performance. For instance, they do not include performance on the cost of debt and tax allowances, and the effects of the ways in which companies actually finance themselves relative to our notional assumptions in the price control. Similarly, they do not take account of the extent to which revenues may be clawed back or returned to companies for enduring value adjustments.³¹

³¹ Enduring value adjustments are the establishment of sustained long-term value to the regulatory network or to its operation. For example uncertainty mechanisms or whether companies have delivered against the outputs set for them, or not. This would include a judgement on close-out mechanism, eg network output measures (NOMs).

- 5.63 We want to take steps now to improve reporting and increase transparency for all stakeholders. Alongside this, we have been considering how companies should report their financial performance in regulatory accounts. We have been engaging with stakeholders in examining the merits of requiring companies to move to a new system of regulatory accounts called RIIO Accounts, under which we would ask companies to fairly present their performance, signed off by their auditors.

Summary of March proposals

- 5.64 We sought views on how we could improve the process of collecting, assessing and presenting information on network company performance. These, drew on our recent work to improve our understanding of company performance.

Stakeholder views

- 5.65 Stakeholders wanted us to publish the right information in a timely and consistent way, while ensuring that reporting processes remained efficient, both for Ofgem and for the network companies. Most network companies suggested that the current reporting requirements are resource intensive and create a significant regulatory burden. They provided some evidence of duplication (with the same information collected multiple times for different purposes). Consumer groups recognised some of these constraints, but generally endorsed the existing approach. They were concerned that a reduction in the data collected and published may reduce their ability to assess how companies were performing.
- 5.66 Many respondents suggested that we carry out a review to understand better the volume of data that we collect, and how it is used.

Our RIIO Accounts decision

- 5.67 We no longer think improvements to annual reporting are best achieved via full audited RIIO Accounts. We instead propose to require the network companies to report more targeted detailed financial information on their RIIO performance. This information would be made publically available and we would distil the key additional information into our annual reports so that there is consistent reporting across the sector. This will provide a timely, transparent, accurate, comprehensive and accessible account of company performance in the price controls. We will retain the option to move to audited RIIO Accounts for the start of RIIO-2, if the network companies do not provide the improved information we are seeking through this route.

Reasons for our decision

- 5.68 The purpose of RIIO Accounts was to help stakeholders (investors as well as consumer representatives) form a timely, transparent, accurate, comprehensive and accessible account of company financial performance. The intention was that RIIO Accounts published by the companies would compensate for the partial financial coverage provided by our annual reports, and that auditors could assure us (and stakeholders) that network companies were presenting a fair picture of their performance.
- 5.69 It has become clear that stakeholders want a single version of reporting from a source they can trust and rely on. It would be unhelpful and confusing if the performance reported in our annual reports were in conflict with companies' RIIO accounts. We would prefer that in the first instance, the annual reports we publish met the standard desired by stakeholders, and in particular are more comprehensive in their coverage of company financial performance.

- 5.70 We are persuaded that while auditors could be very helpful in ensuring that historical data are accurately reported to the regulator, they would be far less effective in holding management to account for the quality of their forecasts. For historical data, we can already require companies to confirm that their submissions reconcile with their audited accounts. For forecasts for the remainder of the price control, we consider it would be more effective if we work with the companies to agree a common reporting framework for this, and establish best practice standards in this area. We could continue to require Director level assurance that the forecasts represent the best estimates of the company given the information available at the time. Given this, it is not evident that the benefits of introducing an additional audit through RIIO Accounts would justify the incremental costs.
- 5.71 For these reasons, we have decided not to implement RIIO Accounts at this time, but will reconsider for the RIIO-2 period if we do not get the improved information we are seeking.
- 5.72 Throughout the remainder of RIIO-1, we will continue to strengthen and improve our annual reporting programme to produce a timely, comprehensive, transparent, accessible and accurate measure of network company performance. As a minimum, we expect this to include performance on financial parameters such as tax and finance, and operational performance, including totex, incentives and innovation.
- 5.73 We expect that the improvements introduced into our annual reporting over this period will provide a strong platform for improved performance reporting for the RIIO-2 price control period. Once this programme of improvements is complete, we will consider if there is still merit in moving to audited RIIO Accounts for RIIO-2.

Next steps

- 5.74 Improvements to the existing annual performance monitoring programme will be introduced through the remainder of the RIIO-1 period.
- 5.75 We will issue an open letter in August 2018 providing further detail on our proposals in this area.
- 5.76 As part of this programme of improvements, we will also take the opportunity to explore opportunities to improve the efficiency and effectiveness of data collection, analysis, and reporting, including opportunities for better use of technology. We will aim to ensure that:
- The same information is only collected once
 - The information we do collect has a clear purpose
 - We make maximum use of standardisation, automation and technology to improve the speed and ease of data collection, and (where possible) the processing of data and presentation as outputs.

6. Fair returns and financeability

Chapter summary

This chapter sets out our decisions and the further work we will do on the main financial issues for RIIO-2. In summary, these are:

- We will use the cost of debt principles set out in the March consultation (set out below)
- We are ruling out the full debt pass-through option for setting the cost of debt (option C from the March consultation)
- We will use CAPM for estimating the cost of equity and for setting its key parameters
- We are not ruling out indexing the cost of equity
- We are ruling out a nominal RAV for financeability
- We intend to use CPIH instead of RPI when calculating RAV and allowed returns
- We intend to maintain the existing depreciation policy of using economic asset lives
- We are ruling out one of the return adjustment options (hard cap and floor).

As we signalled in the March consultation, we will also be undertaking a review of taxation to inform our decisions in this area. We will continue to analyse our policy on capitalisation rates and further consider what the level of funding for equity issuance might be.

Introduction

- 6.1 The price control allows companies to recover the costs of running their networks, including the cost of financing their activities. Investors in a network company expect to receive a return on their investment. The baseline allowed return is our estimate of the return that equity and debt investors expect from an efficiently run company, ie a company that spends in accordance with its allowances, and performs in line with the baseline performance targets set in the price control. A company's actual return can be higher or lower than the baseline allowed return, depending on how well it performs against incentive mechanisms for delivering better services and/or lower costs. We want to ensure the overall returns earned are fair for both consumers and investors.

Baseline allowed return and the cost of capital

- 6.2 Consistent with our past regulatory practice, we will set the baseline allowed return in RIIO-2 to ensure that an efficient, notionally geared company is able to finance its regulated activities through both debt and equity. We take each of these in turn below.

Cost of debt

Introduction

- 6.3 The cost of debt is a significant component of allowed returns and the cost of network services to consumers.
- 6.4 The current RIIO-1 price control sets an allowance for debt using a published benchmark. We refer to this approach as indexation. To date this policy has worked well. Based on our high-level initial analysis, we estimate it is likely to

save consumers around £2bn over the RIIO-1 period for all four network price controls. There is a high bar of evidence that would need to be met before we would materially alter our existing methodology. Nevertheless, we are considering whether and how we could make further improvements for RIIO-2.

Summary of March proposals

- 6.5 We defined a set of cost of debt principles to help guide our methodology in this area. These were:
- Consumers should pay no more than an efficient cost of debt
 - The cost of debt allowance should be a fair and reasonable estimate of the actual cost of debt likely to be incurred by a notionally geared, efficient company
 - Companies should be incentivised to obtain lowest cost financing without incurring undue risk
 - The calculation of the allowance should be simple and transparent while providing adequate protection for consumers.
- 6.6 We proposed in the March consultation to analyse other debt issues, including assumed tenor, inflation assumptions, secondary market trades, transaction costs, trailing averages and company-specific factors.
- 6.7 The RIIO-1 approach protected consumers from forecast errors that could have been very costly. There is a high bar of evidence that would need to be met before we would materially alter our existing approach. However, we said we would consider alternative approaches.
- 6.8 We therefore proposed three preliminary options for consultation:
- Option A: Re-calibrate the RIIO-1 index (we call this full indexation)
 - Option B: Introduce a fixed allowance for existing debt, but index new debt raised during the price control (we call this partial indexation)
 - Option C: Move to a full pass-through of the actual cost of debt incurred by companies.
- 6.9 In the March consultation we set out an initial assessment of the pros and cons of these different options. We asked for views on:
- The principles that should guide our approach to setting the cost of debt in RIIO-2 (as set out above)
 - Which option(s) would best deliver against those principles.

Stakeholder views

- 6.10 Stakeholders broadly supported the principles we had outlined. Networks (three DNOs, two GDNs, two SO/TOs), four suppliers and three other respondents agreed with these principles. Citizens Advice argued for asymmetric sharing of debt (with consumers sharing in any outperformance but with no reciprocal sharing of underperformance). Cadent argued that risk should be allocated to those best placed to manage it and that this should not result in asymmetric incentives. SGN wanted to extend the principles to include the recovery of efficiently incurred historical debt, the recovery of transaction costs and to exclude Cadent from such arrangements, as Cadent's debt profile is atypical (the debt costs for Cadent

reflect the recent change of ownership with the associated low cost debt refinancing in 2016).

- 6.11 Option A was the most popular option, with seven network companies in favour and three against. Citizens Advice said it was difficult to distinguish between the options, but at this time preferred option A. Those who supported this option believed we had calibrated the current index well, though National Grid suggested a 20-year trailing average would be more reflective of the average age of networks' debt, refinancing profiles and the life of network assets, and should be applied to all network price controls. Opponents to option A considered that it leads to short-term funding for long-life assets. WWU referred to windfall gains and losses for individual companies because of timing differences: because the allowance for debt is based on a simple average of an historical period of between 10 and 20 years, whereas actual debt costs may not reflect this average. ENWL referred to the timing differences being due to luck rather than efficiency or inefficiency. The greatest opposition to our existing approach came from companies with large amounts of long-term debt that had been raised in times of high interest rates.
- 6.12 Some stakeholders (Innogy and three DNOs) saw merit in option B, without it being their first preference. Centrica also preferred option B, proposing that it allowed a distinction between embedded and new debt, thereby allowing a shorter trailing average to be used for new debt.
- 6.13 Most stakeholders were more familiar with option A than option B (option A is a recalibration of the status quo, whereas option B is more novel and, as yet, has not been applied in other UK regulated sectors). In general, option B attracted fewer comments and less strong or detailed views than option A or option C.
- 6.14 Both option A and option B could each be applied using: a one-size-fits-all; or a company-by-company approach. Most stakeholders recognised that this was a key issue. NGET and Cadent proposed a one-size-fits-all approach, giving the same allowance for all companies. However, NPG, WWU and ENWL said that a generic policy will not work for all companies. In general, these comments reflect how each company expects to perform against a one-size-fits-all policy – NGET and Cadent expect to have lower costs than average whereas NPG, WWU and ENWL may have higher costs than sector peers.
- 6.15 There was some indication that option B could be more easily tailored than option A, for example by using company specific allowances, rather than using a sector average allowance, for embedded debt. However, option A could also be company specific by applying an adjustment to the market index, on the basis of expected outperformance, for the combined cost of debt (embedded and new).
- 6.16 For option C, four network companies were in favour while seven were against. Other stakeholders were also against this option (including Centrica and Citizens Advice). Stakeholders did not favour this option, which they saw as having poor incentive properties. However, two network companies, WWU and ENWL were strongly in favour of option C. Both of these network companies proposed that they have debt costs above the trailing average (forecasting that this would prevail beyond RIIO-1). Therefore, both WWU and ENWL prefer option C (full pass-through) because it could provide each company with an allowance that fully reflected their higher embedded debt costs.

Decision

- 6.17 We confirm that we will use the principles for setting an allowance for the cost of debt, as set out in the March consultation. These are:
- Consumers should pay no more than an efficient cost
 - The cost of debt allowance should be a fair and reasonable estimate of the actual cost of debt likely to be incurred by a notionally geared, efficient network company
 - Network companies should be incentivised to obtain lowest cost financing without incurring undue risk
 - The calculation of the allowance should be simple and transparent while providing adequate protection for consumers.
- 6.18 Our decision is to rule out the full debt pass-through option for setting the cost of debt (option C). We will continue to examine the remaining options: option A - recalibration of current model (full indexation); and option B - move to partial indexation. We will consult on our preferred way forward in December, as part of our sector specific methodology consultation.
- 6.19 We note the importance of considering the implications of this approach for individual companies as we develop the methodologies for each sector.

Reasons for decision

- 6.20 Given the general agreement with the debt principles from most stakeholders, and our desire to incentivise companies in line with RIIO principles, we have decided to maintain our debt principles.
- 6.21 We were not persuaded by the proposals by SGN for extension or modification: these are unlikely to lead to better outcomes for consumers. The suggestion by SGN to explicitly recognise historical costs, would be akin to a pass-through, and would presume that consumers should be exposed to the timing of debt issuance. This may not necessarily be in consumers' best interests, and would increase risks on consumers for RIIO-2. SGN did not present any evidence that an explicit increase should be made for transaction costs: this seems to be an attempt to estimate an efficient allowance rather than establish principles. Further, the proposal by SGN to exclude Cadent, which has low debt costs, contradicts SGN's own proposal to recognise historical costs.
- 6.22 The proposal from Citizens Advice regarding asymmetric sharing of debt performance does not need to be an explicit principle in itself and we propose to consider this as part of the development of options.
- 6.23 A complete pass-through of actual debt costs, regardless of the circumstances, would be contrary to the principle that companies should be incentivised to obtain the lowest cost financing. We wish to ensure this incentive remains in RIIO-2.
- 6.24 At this stage, we believe that there is sufficient evidence to rule out the pass-through allowance of debt (option C). This is due to its poor incentive properties on companies to seek efficient debt financing and the potential cost it may create for consumers.
- 6.25 It has been argued that pass-through would remove the scope for windfall gains and losses in the sector. However, we do not consider that any gains or losses that occur over time against a transparent market-based index should be considered windfalls. Network companies should be incentivised to manage their

financial affairs in a way that allows them to match or beat the index, in the same way that we incentivise them to reduce totex costs against allowances.

- 6.26 Other respondents shared our concerns. Citizens Advice “consider option C to be inherently risky for consumers” though they noted that increased transparency of reporting could help address our concerns about the complexity of understanding each company’s existing and future debt portfolios.
- 6.27 For these reasons, we have decided not to pursue the full pass-through of the cost of debt. We will however consider whether there is any merit in introducing a sharing factor into company performance on the cost of debt, in the same way as we apply to network expenditure, so that consumers share in outperformance or underperformance against the cost of debt. This would maintain good incentive properties, although there are challenges in evaluating the actual cost of debt faced by companies. If we take this forward, we will consult on it as part of our proposals on the design of the incentive mechanisms for RIIO-2 in the sector specific methodologies.

Next steps

- 6.28 By December, we will develop the remaining two options (full and partial indexation), including the ability to share under/outperformance with consumers. We believe that potential concerns of individual firms can still be addressed through refinement of how we apply either option A or option B. Therefore, if individual companies such as ENWL and WWU make a robust case that adjustments are justified, the remaining options are sufficiently flexible to be tailored accordingly.

Cost of equity

Introduction

- 6.29 The cost of equity capital is also an important element of the price setting decision. The RIIO-1 price control assumed a cost of equity capital between 6.0% (electricity distribution) and 7.0% (electricity transmission). Using the Price Control Finance Model (PCFM) we estimate that each 0.1% on the cost of equity will be worth c. £190m over the course of the RIIO-2 price controls.

Summary of March proposals

- 6.30 We sought views on the methodology for estimating the cost of equity and the options for setting an allowance that is updated with market observations (an indexed allowance).
- 6.31 We proposed a methodology to set the cost of equity as follows:
- To use the Capital Asset Pricing Model (the CAPM) as the basis for estimating the cost of equity. The CAPM computes the cost of equity as the weighted average of a risk-free rate and the expected return on the stock market as a whole. The less risky it is for investors to own the shares in a network company relative to investing in the stock market as a whole, the greater the weight placed on the risk-free rate and the lower the weight placed on the expected market return. The weighting factor is called equity beta.
 - To estimate the risk-free rate by using the current yields on long-run index-linked government debt. Rather than predicting how such yields might change over the course of the price control we proposed to consider indexing the calculation (see below).

- To estimate the expected Total Market Return (TMR) by considering the historical long-run average of market returns as the best objective estimate of investors' expectations of the future. We proposed to take full account of the findings of the Competition Commission in Northern Ireland Electricity (2014) as well as the forward-looking approaches indicated recently by regulators such as Ofwat and CAA, all of which suggest that 6.5% is probably at the top end of reasonable estimates of the expected market return.
 - To estimate forward-looking betas by looking at historical correlations between the share prices of regulated utilities and a stock market index such as the FTSE All Shares Index. We proposed to inform our estimate of beta by making use of sophisticated econometric techniques such as those referenced in the UKRN report³² to filter out noise from the underlying datasets. We also proposed to investigate the appropriate measures of gearing in translating between raw equity betas and notional (asset or equity) betas for the network companies.
 - To sense-check the results of the CAPM calculation against evidence from Market to Asset Ratios (MAR) and returns bid by investors in competitions run by Ofgem, such as our Offshore Transmission Operator (OFTO) regime.
 - To distinguish the regulatory allowed return from the regulatory expected return. The UKRN report highlighted that our expectation of returns can be different from our (ex ante) baseline allowed return, in so far as we expect companies, individually or collectively, to benefit from other financial incentives (positive or negative).
- 6.32 We also published a report by CEPA, a consulting firm, alongside the March consultation. This set out ranges for the parameters of the CAPM model based on evidence available at the time, using the methodology proposed in our consultation document.³³ Based on this, CEPA suggested a plausible range for the cost of equity for RIIO-2 of 3% to 5%.³⁴
- 6.33 We made a specific proposal to index the cost of equity. To strike a balance between simplicity and accuracy, we suggested that indexation could assume a relatively stable total market return and equity beta over the RIIO-2 period.³⁵ This would create a simple indexation mechanism, where only changes in the risk-free rate would impact the baseline allowed return.
- 6.34 In the March consultation, we asked for views on whether respondents:
- Agreed with our proposed methodology to estimate the cost of equity
 - Agreed it would be desirable to index the cost of equity, and if so whether they had any views on our proposed method for indexation.

Stakeholder views

- 6.35 In general, stakeholders were supportive of the methodology we described to set the cost of equity. However, many argued about how precisely such a methodology should be used to derive a cost of equity estimate. Most stakeholders that responded on these issues supported the use of CAPM for

³² Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018. <http://www.ukrn.org.uk/wp-content/uploads/2018/03/2018-CoE-Study.pdf>

³³ Review of Cost of Capital Ranges for Ofgem's RIIO-2 for Onshore Networks. CEPA, February 2018. https://www.ofgem.gov.uk/system/files/docs/2018/03/cepa_report_on_baseline_allowed_returns_for_riio-2.pdf

³⁴ *Ibid*, Para. 5.1.4.

³⁵ In other words, the cost of equity = (1-beta)*(Risk-free rate) + beta*(Total Market Return) where only the risk-free rate changes.

- estimating the cost of equity. Only a minority supported cross-referencing the implied costs of equity from competitive tenders for electricity assets (eg OFTO tenders).
- 6.36 Network companies agreed that we should use a long-run history to estimate TMR but proposed that the implied values were higher than the values referred to by the CMA and CEPA. For example, National Grid referred to a TMR of 7.0% and Cadent referred to a TMR of 6.5% (both values in RPI terms). Centrica and Citizens Advice supported investigating equity beta issues further, although National Grid said that there are strong grounds for not making changes to the established methods generally used in previous price controls. Northern Gas Networks (NGN) said that using a spot risk-free rate was not appropriate and that the figure would be distorted. Most stakeholders did not comment on the proposal to distinguish between regulatory allowed returns and regulatory expected returns.
- 6.37 All responses from the network companies (including the Energy Networks Association (ENA)) argued that the cost of equity range identified by CEPA was too low, although there was support from Citizens Advice, suppliers and other respondents. Network companies submitted multiple consultancy studies that critiqued our approach in considerable detail, including papers on inflation and equity beta. These are published on our website as annexes to the responses of the network companies and the Energy Networks Association to the March consultation.³⁶
- 6.38 There was a mix of views about whether the cost of equity should be indexed. The majority of network companies opposed the idea.
- 6.39 Those that opposed the indexation of the cost of equity allowance raised three concerns:
- Indexation could increase volatility, compared to a fixed ex ante allowance set for the price control period
 - Constructing an appropriate index for the cost of equity (unlike the cost of debt) could be difficult
 - Given a potential move to a shorter-term price control of five years (rather than the current eight), there was already the ability to reset the cost of equity every five years to keep it up to date.
- 6.40 National Grid showed some support for the possibility of equity indexation, but with a request that we provide more detail on how it would work. Centrica and Citizens Advice gave more unqualified support to the proposal. NGN and UKPN referred to the inverse relationship between the risk free rate and the ERP, and advocated that Ofgem should reflect this. NGN emphasised that if it was introduced, it should cover both the risk-free rate as well as the risk premium, since these could move in opposite directions. NGN supported the option identified by Ofgem, to treat the cost of equity as a weighted average of an indexed risk-free-rate and stable TMR with the weight equal to the fixed beta factor. UKPN also proposed that if indexation is introduced it should assume a fixed TMR and assume a perfectly negative risk-free-rate and Equity Risk Premium relationship.

³⁶ <https://www.ofgem.gov.uk/publications-and-updates/riio-2-framework-consultation>

Decision

- 6.41 We will use CAPM as the approach for estimating the cost of equity. We confirm the approach to key parameters for CAPM as set out in the March consultation as follows:
- We will estimate the risk-free rate by using the current yields on long-run index-linked government debt
 - We are not ruling out cost of equity indexation at this stage and will develop our proposed method (as set out in paragraph 6.33) further
 - We will estimate the expected market return by considering the historical long-run average of market returns as the best objective estimate of investors' expectations of the future. We will take full account of the findings of the Competition Commission in Northern Ireland Electricity (2014) as well as the forward-looking approaches indicated recently by regulators such as Ofwat and CAA
 - We propose to investigate further issues involved in the estimation of beta for network companies, based on issues highlighted in the UKRN report. We will also look deeper at the relationship between gearing and beta risk
 - We will distinguish between the regulatory allowed return and the regulatory expected return.
- 6.42 We will cross-check the outcome of the CAPM calculation against Market to Asset ratios (MAR) and returns bid by investors (eg against OFTOs).

Reasons for decision

- 6.43 The CAPM is a model grounded in extensive financial theory and the recent UKRN report confirmed that it remained the dominant model for calculating an assumed cost of capital. It concluded that investors behave as if CAPM is their benchmark model and economic regulators should continue to use it as the basis for estimating the cost of capital.
- 6.44 We have accepted the recommendations from the UKRN study in respect of the estimation of risk-free rates and total market returns. For the latter, we will aim to be consistent with (and take full account of) recent determinations from competition authorities and other regulators. However, we need to carry out further work on how to estimate equity beta for network companies.
- 6.45 We will make a decision on the appropriate cost of equity in the round, taking account of both the baseline return and the incentive package in shaping overall investor expectations of return. We think it is sensible to check the results obtained from the CAPM model with data on investor expectations of returns from regulated assets in the real world. We can infer these expectations for instance when regulated companies are bought or sold, from the premiums (or discounts) to the regulated asset value paid by acquirers. We can also observe such expectations from the results of competitions we run, such as the returns bid by equity investors for operating offshore transmission assets.
- 6.46 Any forecast of risk-free rates has the potential to be wrong. This can result in consumers paying more than is necessary, or investors can earn lower returns than they should. To avoid the need for us to forecast how risk-free rates will move in RIIO-2, we want to explore the use of indexation so that revenues adjust as the rate changes.

Next steps

- 6.47 We are currently reviewing all available evidence, including the material received in the consultation responses, to inform the future methodology for assessing the cost of equity. For this reason, we are not updating the cost of equity range at this stage. In December, we will publish our consultation on the sector specific methodologies, in which we will update the estimated range for the cost of equity.

Financeability

Introduction

- 6.48 We have a duty to have regard to the need to secure that licence holders are able to finance their regulated activities. Most regulated utilities finance themselves by issuing bonds in the capital markets. We require them to take all appropriate steps within their power to maintain at all times an investment grade credit rating as a licence condition. These ratings are issued by firms called rating agencies. An investment grade credit rating signals a high probability that the company will be able to meet its liabilities and keeps the cost of debt low for networks. This keeps network charges low for consumers.
- 6.49 Rating agencies publish a methodology for how they determine credit ratings. Among other things (including the stability and predictability of the regulatory regime), rating agencies use certain financial ratios (or credit metrics) to rate companies. One type of credit metric for instance is the interest cover ratio, which measures the cash flow available to companies to make interest payments to bondholders. All else being equal, a high interest cover ratio implies a company can comfortably service its debt, and deserves a strong credit rating.
- 6.50 If the cost of debt and the cost of equity moved in step together, there should in principle be little impact on credit metrics. But if the cost of debt falls more slowly than the cost of equity (for instance, because of historical contracted liabilities), then the reduction to company cash flows due to a lower cost of equity, may affect their ability to make interest payments. In the absence of some offsetting action from the companies or ourselves, this could impact on their credit rating.
- 6.51 A sharp reduction in the cost of equity in RIIO-2 therefore could, in the absence of some offsetting action from the companies or ourselves, make it more challenging for some regulated companies to maintain strong credit ratings.

Summary of March proposals

- 6.52 We set out three options for how financeability issues could be addressed through offsetting action:
- We could stop indexing the regulatory asset value (RAV). This would increase the cash flow to companies to service debt in the short to medium term
 - We could require companies to take appropriate action, for instance by de-gearing
 - We could introduce a revenue floor to provide assurance to bondholders that interest payments on debt (at the level of the cost of debt on a notionally geared basis) would always be met.
- 6.53 We noted that other policy decisions in RIIO-2 may also have a material bearing on financeability including the level of notional gearing, the rate of depreciation of the RAV, and the measure of inflation used to index the RAV.

6.54 In the March consultation we asked for views on which options we should pursue.

Stakeholder views

6.55 There was strong opposition from most stakeholders for removing the indexation of the RAV and moving to a nominal return model (option A). The reasons for not adopting this model included:

- it would lead to a significant increase in bills for current consumers (relative to future consumers), raising issues of intergenerational equity³⁷
- to the extent that investors value inflation protection, there is a potential that the cost of capital would increase if investors sought greater remuneration overall
- to the extent that some companies have inflation-indexed liabilities, such a move could improve financeability in the short-term, but introduce mismatches between assets and liabilities.

6.56 Both National Grid and Citizens Advice were less absolute in rejecting this as an option. National Grid stated that it could be one of a suite of options to address financeability, although they felt better options existed. Citizens Advice wanted more evidence on the consumer impact before taking a position.

6.57 A key issue for stakeholders in relation to option B was establishing where the responsibilities lay (between Ofgem and the companies), on companies remaining financeable. Centrica and Citizens Advice considered that responsibility lay solely with the network companies. The majority of networks considered that the onus should be on Ofgem. All other respondents, including some network companies, believed that the burden should be shared, or lie primarily with network companies.

6.58 Some stakeholders (such as Centrica and three network companies) were cautiously supportive of the third option of a revenue floor. They suggested there could be merit in this approach in specific and limited circumstances. Other network companies did not support the idea. National Grid, for example, argued that this approach “would move the regulatory regime away from an incentive-based approach towards a pass-through fixed return approach, at least in part”. They also highlighted that Moody’s believed that while such a mechanism could support operating companies’ credit quality it could be credit negative for holding companies due to potential reductions in distributions.

6.59 However, nearly all respondents felt that there was insufficient detail on how a revenue floor would operate to be able to assess the option properly at this stage. They requested further clarity from Ofgem.

Decision

6.60 **Our decision is to rule out a move to a nominal RAV (option A) for financeability.**

6.61 We will carry out further work to develop the two remaining options. These are option B, which places the onus on companies to address issues through their business plans, and option C, which establishes the concept of a debt floor.

³⁷ The principal that different generations of consumers should pay network charges broadly in proportion to the value of network services they receive.

Reasons for decision

- 6.62 A move to a nominal RAV (option A) would be a considerable change to the regulatory framework. This is likely to have a significant impact on the perceptions on the stability of the regulatory regime. Respondents generally rejected this option.
- 6.63 We agree that implementing such a proposal at this stage would be disruptive and place a significant immediate burden on existing consumers.
- 6.64 At this stage, we do not have sufficient grounds to rule out any of the remaining options. We propose to consider the financeability of notional companies in-the-round considering all price control assumptions. As a proxy for the financeability of the actual companies, we will stress test the notional company base case. However, we do not intend to replicate individual company financial structures in detail. This would imply, retrospectively, that customers are exposed to actual company financing choices.
- 6.65 We agree with respondents that more work needs to be done on how a revenue floor would operate (and the benefits and risks of this for consumers). A revenue floor that preserves the incentive properties of the price control, but allows companies to maintain strong ratings despite a low cost of equity could have significant value to consumers.

Next steps

- 6.66 We propose to explore the remaining options during the next stage of the process and provide stakeholders with details of possible implementation in the sector specific consultation we will issue in December. In particular, notional gearing and capitalisation rates (fast/slow money split) are potential levers for addressing financeability and we will consider these during this stage of the process.
- 6.67 In general, each financial policy decision can have potential impacts on financeability. As companies must be able to finance their regulated activities, a set of financial policies must be evaluated in the round. We will conduct further work in this area.

Corporation tax

Introduction

- 6.68 We provide allowances within the price control for companies to pay corporation tax to HMRC. We expect the allowances to be broadly equal over time to the payments made to HMRC.
- 6.69 Our existing price control framework includes mechanisms to claw back any reductions in tax liabilities due to gearing or change in tax rates. We are reviewing these arrangements to see if they are working properly to prevent any significant mismatches between tax allowed and tax paid by network companies.

Summary of March proposals

- 6.70 We said that we intend to review a number of areas in more detail. We wanted to determine if there are material variances between tax allowed and tax paid that persist over time. If there are, we wanted to understand the reasons for this.
- 6.71 If there are large, persistent variances, we said that there were three policy responses that we could consider further:

- Option A: to build in additional clawback mechanisms (depending on the reasons for the persistent variances)
- Option B: to pass-through the actual tax paid to HMRC
- Option C: to introduce a double-lock, so that consumers pay the lower of a capped allowance, and the actual tax paid to HMRC.

6.72 We asked if stakeholders agreed that we should review the causes of any variances between tax allowances and taxes actually paid. If so, which of the options described should we investigate.

Stakeholder views

6.73 Respondents generally agreed that we should review the causes of variances between tax allowances and taxes actually paid to HMRC.

6.74 Three network companies argued that such a review would be resource intensive. They felt that Ofgem needed to provide further justification on why this would be an area of concern. Two network companies argued that differences between allowances and taxes actually paid are not necessarily problematic for a number of reasons. ENWL's response set these out comprehensively. In summary, they highlighted:

- Many operators are members of UK tax groups and HMRC payments are typically made on a group basis
- The net HMRC payment is an aggregate of the tax payable by all member companies and may be significantly different to the tax payable by the regulated entity. This is due to a range of items, including group tax relief
- Variances between allowances and HMRC payments are often driven by longer-term timing differences. For example, fair value movements on financial instruments may not unwind until maturity, which could be in excess of twenty years. Capital allowance timing differences may only reverse at the end of depreciable lives
- The settlement for a given tax period can take years and items can remain under dispute by either parties for a very long time. Adjustments to tax charges could therefore delay the close-out of a regulatory period for an extended period
- The tax charge in a regulated entity will include the taxable income/loss associated with activities outside of the scope of the price control, or outside of the scope of the allowance regime, such as tax payable in respect of mark-to-market movements on certain debt and derivative positions.

6.75 Scottish and Southern Energy Networks made reference to the Fair Tax Mark. It said they were the first FTSE-listed company to achieve such recognition. It explained that "a business with the Fair Tax Mark is certified as paying the right amount of tax in the right place at the right time and applying the gold standard of tax transparency". SSE believes that Ofgem should include this in considering options in this area. It felt consumers would value such transparency.

6.76 Six network operators supported retaining the RIIO-1 approach, although there was a recognition of the benefits of a move towards simplification and transparency. For example, ENWL stated that it "...considers it important that variances between tax allowances and taxes paid are understood by Ofgem and

other stakeholders." Stakeholders were willing to work with Ofgem on reviewing and developing the options. UKPN stated that "...Ofgem should review whether there has been a material deviation between the tax allowances and tax paid before it attempts to devise mechanisms to resolve any perceived issue, recognising that the situation may vary across sectors."

- 6.77 Non-network respondents all supported the initiative but differed in their views on which of the three emerging policy options they preferred. There was some support for each.
- 6.78 Where respondents commented on option A, they were generally positive. National Grid stated that the option was worth investigation, but considered that additional disclosures were more appropriate than new financial mechanisms. Citizens Advice also supported option A.
- 6.79 A number of respondents claimed that option B would be resource intensive. NPG and Cadent both argued that it may not produce different results to the current approach. SGN also highlighted the length of time and complexity involved in reconciling actual tax payments.
- 6.80 National Grid stated that option B was also worth investigating, but that it could adversely affect risk allocation and weaken incentives. NGN and SGN also raised this point. SSE supported option B in the absence of more transparent tax policies.
- 6.81 None of the network companies were supportive of option C. Their objections included:
- Option C was asymmetric (ie companies would only be penalised for tax management)
 - It would systematically produce lower allowances due to differences in the timing of reporting for tax and regulatory purposes
 - It would risk missing inter-group factors and non-regulated activities
 - Option C would dilute incentives.
- 6.82 UKPN suggested that whichever option we pursued, there should be a dead-band approach attached to it to prevent unnecessary work for tiny sums of money.
- 6.83 A few respondents also made general comments about the treatment of corporation tax:
- WWU argued that there are examples of unfairness in the current tax clawback rules
 - NGN argued that group relief is irrelevant if Ofgem sets allowances for stand-alone entities. This is a reference to an Ofgem assumption that NGN operates independently from other companies, including other companies outside the ring-fence that may actually have the same ultimate owners as NGN. The term group relief is a term used by HMRC in its Company Taxation Manual.³⁸

³⁸ "Group relief is a relief from Corporation Tax. The basic idea of group relief is to tax the economic unit that gives rise to profits over a corresponding period. Of course, some groups of companies carry on quite diverse businesses but, as with an individual with many sources of income, it makes sense to tax the aggregate results of the activities. In the most straightforward case a company with profits of £1000 wholly owns a subsidiary which has losses of £100. In economic terms there is one profit-making unit (the group) and it has profits of £900. Group relief is designed to ensure that the group pays tax on £900." HMRC, Company Taxation Manual. <https://www.gov.uk/hmrc-internal-manuals/company-taxation-manual/ctm80105>

NGN stated that it would be supportive of Ofgem spot-checking that tax payments represent full economic value.

Decision and reasons

6.84 We will review the approach to setting allowances for taxation. We will not rule out any options at this stage, since information is insufficient, but we note that the approach in RIIO-1 provides a favourable starting point in this area. We will focus on identifying any material defects in the current approach.

Next steps

- 6.85 We have launched a comprehensive review of company financial arrangements including tax (called the ring-fence review). This review seeks to understand the ways in which companies finance themselves; organise their group structures and tax affairs; and set up inter-company arrangements involving the licensed entities. We will also seek to establish whether these have any implications for the prices that consumers pay for network services, and the resilience of network companies against financial failure. From this review, we hope to determine whether any regulatory action needs to be taken to protect consumer interests, either through reform of the price control framework in RIIO-2; or more broadly through our regulation of network utilities.
- 6.86 We intend to consult on any proposals arising from this work in the sector specific methodology in December.

Indexation of RAV and calculation of allowed revenue

Introduction

- 6.87 We currently use the Retail Prices Index (RPI) to index the RAV and to set allowed revenues in real terms.
- 6.88 However, RPI is no longer seen as a credible measure of inflation. The Office of National Statistics has now adopted CPIH (the Consumer Price Index including imputed housing costs) as their headline measure of consumer price inflation.
- 6.89 The ONS also publish a second measure without imputed housing costs – called simply the CPI. CPI is used by many other regulators including Ofcom, the ORR and WICS. HM Treasury currently sets the inflation target for the Bank of England in terms of the CPI.
- 6.90 For PR19, Ofwat have signalled a phased move away from RPI towards CPIH.

Summary of March proposals

- 6.91 We proposed to move away from RPI to either CPI or CPIH and asked whether we should make the change immediately at the start of RIIO-2, or in a phased manner across the RIIO-2 period.

Stakeholder views

- 6.92 Network companies were divided between moving away from RPI and not doing so but studying the matter further (for example in a joint working group). National Grid supported a move away from RPI, provided that we do so in a way that is present-value-neutral. NGN did not have any objection in principle, but requested that we add a premium to the cost of equity on the basis that there is an investor preference for RPI-linked assets. There was support for an immediate (non-

phased) switch from the start of RIIO-2 onwards from Northern Powergrid, NGN and National Grid.

- 6.93 Cadent and WWU suggested that a pre-requisite for any change should be the emergence of a liquid bond and gilt market for assets linked to the new index.
- 6.94 Respondents other than network operators, including British Gas, Citizens Advice and the Energy Intensive Users Group, were overwhelmingly supportive of a move away from RPI. Citizens Advice felt there would need to be a compelling reason to justify any phased transition.

Decision

- 6.95 We intend to move away from RPI to CPIH for inflation measurement in calculating RAV and allowed returns.
- 6.96 We note the consequences in terms of the immediate impact on consumers relative to long-term benefits. We will carry out further work on whether phasing is necessary for the transition and if so, what form it could take. We will make our final decision when we set the methodology for each sector.

Reasons for decision

- 6.97 An accurate measure of inflation is important to ensure an accurate price control settlement. RPI is upwardly biased and has lost its credibility as an accurate measure of inflation.
- 6.98 The numerical difference between CPI and CPIH is (currently) very small. Choosing between them comes down to trading off the comprehensiveness of CPIH with the practical advantages of using CPI:
- CPIH is seen as the more comprehensive measure of inflation in the household sector. It is also the inflation index that Ofwat has chosen for its next price control PR19 on the basis that water consumers would see CPIH as more legitimate
 - CPI is independently forecast by the Office of Budget Responsibility; there is an existing market for financial products linked to CPI (with the pensions industry now moving in this direction), and reliable long-run time series data for CPI are already available (unlike CPIH).
- 6.99 We have decided to move towards CPIH as it is the more comprehensive measure of household inflation.
- 6.100 CPI or CPIH tend to be about 100 basis points lower than RPI. So the practical effect of changing the index to CPIH will be:
- To reduce the rate at which the RAV grows (and therefore to reduce depreciation allowances over time)
 - To increase return allowances in the short-term, but to reduce them in the longer term (as a CPIH indexed RAV starts at the same value but is inflated by a lower rate, it therefore becomes increasingly lower than an RPI indexed RAV over time). We illustrate this concept at Appendix 2. We demonstrate the cash flows for a hypothetical asset using an RPI framework and compare these to the cash flows using a CPIH framework.
- 6.101 We estimate that the move away from RPI will, if introduced without any transition period, result in network charges being about 5% higher (about £15 per

domestic consumer) for the first five years before becoming lower (after about 20 years). Overall, consumers and investors as a whole will be neither better nor worse off in net present value terms.

Next Steps

6.102 We intend to move to CPIH. Prior to implementation in our initial determinations in summer 2020, we will consider a number of factors, including:

- Whether or not CPIH remains the ONS lead measure of inflation
- Whether a suitable historical dataset on CPIH emerges to enable its use in price controls
- The prospects for the emergence of CPIH-linked financial assets.

6.103 We will carry out further work to determine whether we need to phase the transition from RPI to CPIH, and set out further proposals in the sector specific methodology consultation in December.

Regulatory depreciation and economic asset lives

Introduction

6.104 Our existing policy is to depreciate the RAV at a rate that broadly approximates to the useful economic life of the network assets.

6.105 It is important to understand that, following the introduction of the totex approach in DPCR5/RIIO-1, the RAV no longer precisely corresponds to physical assets. Rather, the RAV represents simply the balance of unrecovered financial investment in the networks.

6.106 A return is paid on the RAV through the cost of capital allowances; and the RAV is repaid through depreciation allowances.

6.107 In this light, the rate of depreciation should be set so that different generations of consumers pay network charges broadly in proportion to the value of network services they receive. If we assume the current network will continue to deliver useful service over the next 50 years, then the RAV should be depreciated over 50 years. If we are concerned that networks may cease to be as useful sooner, then the RAV should be depreciated faster.

6.108 In RIIO-GD1, we noted that there was sufficient uncertainty surrounding the future use of the gas distribution networks and that this decision should be reviewed again for RIIO-GD2. We made some changes regarding how the 45-year life was applied – instead of assuming an equal depreciation in each year, we assumed a certain amount of front loading. The intention of this approach was to reduce the risk of asset stranding. We reaffirmed these decisions as part of our RIIO-GD1 Final Proposals.

Summary of March proposals

6.109 We did not propose any changes at a price control framework level. Instead, we invited stakeholders to consider how the policy above might be applied in different sectors that are going through very different types of technological change

Stakeholder views

6.110 None of the network companies suggested that they expected a significant departure from the RIIO-1 policy.

6.111 Some raised the potential to use depreciation as a tool to aid financeability, and suggested we should wait until initial determinations before considering any proposals in respect of depreciation allowances in the round.

6.112 A key concern expressed by some stakeholders was the potential stranding of gas network assets. This would be in the event the power sector is completely de-carbonised without a role for gas; and the heating sector is electrified.

Decision

6.113 We will maintain the existing depreciation policy of using economic asset lives as the basis for depreciating the RAV.

6.114 We will carry out further work on what this means for each of the sectors and set out any sector specific proposals in December.

Reasons for decision

6.115 The adjustments made in RIIO-1 were necessarily long-term in nature. In the consultation, we proposed not to make changes to the framework of the price control. We did not receive any responses that suggested changing our existing policy.

6.116 At a sector-level, if companies are able to produce compelling evidence of changes in the useful economic life of network assets from that assumed in RIIO-1, we will assess these in detail.

6.117 We will consider triggers within the price control period that allow us to review (and if necessary, reset) depreciation allowances in the gas sector in the event these may be required due to changes in demand prospects for the gas network.

Next steps

6.118 We will carry out further work in relation to the calculation of specific economic asset lives in each of the sectors. As part of this, we will consider how to address concerns around the potential for network asset stranding in the future.

Capitalisation rate

6.119 Capitalisation rate refers to the speed that company expenditure is paid for by consumers. For example, a higher capitalisation rate means a larger proportion of total spend is paid for by consumers in the future, rather than now.

Summary of March proposals

6.120 We asked stakeholders for their views on our proposal to review the fast/slow money split at the business plan submission stage.

Stakeholder views

6.121 All those who responded to the question in the consultation supported the proposal.

Further work

6.122 We will continue to analyse our policy on capitalisation rates and reassess the issue after we have received company business plans.

Notional equity costs

Summary of March proposals

6.123 This refers to the cost of issuing new equity during a price control period.

6.124 In the March consultation, we asked stakeholders if they thought existing mechanisms are appropriate in principle and in practice.

Stakeholder views

6.125 This did not attract many responses. One operator considered that the current allowance of 5% was too low, while another thought that 3% as recommended by CEPA³⁹ was an appropriate rate.

Further work

6.126 We intend to maintain funding for equity issuance and to consider further what the level of funding might be.

Ensuring fair returns

Introduction

6.127 In the March consultation, we indicated that companies are earning returns in RIIO-1 that do not align with the level of risks they are exposed to.

6.128 We noted that we could make specific reforms to the RIIO framework to guard against higher than expected returns. However, we were clear that we did not think these would be sufficient to provide the protection that consumers may require, given a rapidly changing energy sector. Therefore, we signalled our intention to develop failsafe mechanisms called Return Adjustment Mechanisms (RAMs).

Summary of March proposals

6.129 We asked stakeholders for their views on five different mechanisms for adjusting returns:

- **A hard cap and floor:** restricting returns from rising above or falling below pre-determined points
- **Discretionary adjustments:** ex post review of return levels when predetermined materiality levels are breached
- **Constraining totex and output incentives:** applying sharing factors on totex that decrease as the levels of underspend increase, coupled with incentives linked to the relative performance of companies against each other
- **A RoRE sharing factor:** applying a sharing factor on RoRE (incorporating both performance on incentives and totex) that reduces returns the further they deviate from the baseline cost of equity
- **Anchoring returns:** adjusting companies' returns when the sector average return breaches a predetermined cap and floor, so that the sector average returns to align with the cap or the floor.

³⁹ Review of cost of capital ranges for new assets for Ofgem's Networks Division, 23 January 2018 www.ofgem.gov.uk/ofgem-publications/127844 Page 47, para 6.4.

6.130 We also consulted on a suitable metric on which to base any RAMs.

Stakeholder views

6.131 We received 29 responses on RAMs, of which around half were from network companies.

6.132 Seven network companies, along with two other stakeholders, thought RAMs were unnecessary. They felt we should focus instead on using our existing tools to manage the risk of higher than expected returns. These include addressing the specific issues that give rise to outperformance in RIIO-1, better use of uncertainty mechanisms and information-revealing devices. Companies argued that all options would erode incentives on performance, introduce complexity, and break the link between the value consumers assign to outputs and the incentives companies have to deliver these outputs.

6.133 A number of stakeholders, such as Citizens Advice and all suppliers and generators that responded, supported the idea of introducing a measure that could limit companies' returns. There was no consensus on which of the options presented would be most effective. Citizens Advice thought it did not have enough information to be able to form a firm view at this stage.

6.134 Amid the general resistance from network companies to the idea of RAMs, two network companies argued that RAMs could be beneficial in restoring legitimacy and favoured the option of a sculpted RoRE sharing factor or sculpted totex sharing factor. Additionally, six other network companies also regarded sculpted RoRE/totex sharing factors as the least worst options.

6.135 None of the network companies supported any of the other RAMs options. They most strongly opposed to any form of relative performance measure such as anchoring returns or relative incentives. Their objections centred on potential adverse consequences on collaboration across the sector, investment decision-making and increased risks affecting the cost of capital and companies' financeability. Companies also thought this type of mechanism could be unfair as it might expose them to factors outside of their control, such as the performance of other companies, or flaws in either their own, or other companies', price control settlement.

6.136 Companies differed in their views as to whether RoRE should be used as a metric for RAMs. Some did not provide a view at all, as they regarded the introduction of RAMs as fundamentally undesirable. Four companies believed that RoRE in its current form⁴⁰ is the best available metric for RAMs, but two companies argued that RoRE could be used if financial performance on debt/tax or pensions is included. Among companies that argued that RoRE should not be used in the context of RAMs, two suggested alternative metrics in the form of the return on assets/RAV. They felt this would better reflect the asset intensive nature of the industry. One company was concerned that a RoRE based adjustment might be volatile, especially when approaching the close-out process of price controls.

6.137 Other than network companies, only four other stakeholders addressed the question on the RAMs metric. Three of them indicated that RoRE in its current form might be the most suitable metric. One mentioned that any metric should take into account the effect of uncertainty mechanisms.

⁴⁰ Reflecting solely performance on totex and output incentives.

Decision

6.138 We have decided to rule out the option of a hard cap and floor as a return adjustment mechanism option. We will continue to explore the applicability of other options in each sector (discretionary adjustments, constraining totex and output incentives, a RoRE sharing factor, anchoring returns).

Reasons for decision

6.139 In our view, the option of a hard cap and floor does not represent a good balance between the impact of higher than expected returns on energy bills and maintaining incentives on companies to deliver outputs and cut costs for consumers. While the hard cap and floor provides absolute assurance against higher than expected returns, it has a potentially distortive effect on incentives. When a company reaches the cap the power of positive incentives is completely eliminated as a company cannot earn any higher. When companies reach the floor, it removes responsibility from companies to take mitigation action to prevent any further decline in performance.

6.140 The other options we have identified, have the potential to represent a better balance between the impact of higher than expected returns, while maintaining incentives on companies to deliver outputs.

Next steps

6.141 We will continue to develop options for Return Adjustment Mechanisms. In Appendix 4, we provide further information on how the different mechanisms might work.

6.142 We will assess and develop the impact of the remaining four options (discretionary adjustments, constraining totex and output incentives, a RoRE sharing factor and anchoring returns) and will consult on this in the sector specific methodology consultation.

7. Next steps

Timeline for developing RIIO-2 sector specific price controls

Electricity transmission, gas transmission, gas distribution and electricity system operator

- 7.1 Following this decision on the RIIO-2 framework, we will develop the methodologies that we will use to set sector specific price controls during the remainder of 2018 and early 2019. These will be the basis for the individual price controls for electricity transmission, gas transmission, gas distribution, and the electricity system operator.
- 7.2 As we move from the framework stage toward the sector specific methodologies we will ensure that we address specific issues arising from RIIO-1 as well as understanding how the energy transition challenges may impact each of the sectors directly. The design of the sector specific methodology consultations will include further consideration of consumer vulnerability, environmental issues and visual amenity. We will also consider how the energy transition challenges will impact each of the individual sectors, and how best to ensure that the sector specific methodologies can adapt to meet those challenges. This will help to ensure that the RIIO-2 price controls are delivered effectively.
- 7.3 Accordingly, we plan to consult on the methodologies for the following sectors in December 2018:
 - Electricity transmission (ET)
 - Gas transmission (GT)
 - Gas distribution (GD)
 - Electricity system operator (ESO)
- 7.4 We may publish supporting documents on certain cross-sector areas where this is appropriate.
- 7.5 Table 1 below is a high-level timeline for developing sectoral price controls. Please note, in line with our decision to remove early settlement for these sectors, we will only require one formal submission of business plans.

Table 1: Indicative high-level milestones for developing sectoral price controls for electricity transmission, gas transmission, gas distribution and electricity system operator

Indicative high-level milestones ET, GT, GD and ESO	
March 2018	RIIO-2 framework consultation
April 2018	RIIO-2 enhanced engagement guidance
July 2018	RIIO-2 framework decision
December 2018	Sector specific methodology consultation
May 2019	Sector specific methodology decision
Q4 2019 ⁴¹	Companies Business Plan formal submission to Ofgem (along with RIIO-2 CCG and user group reports on Business Plan to Ofgem)
Q1/2 2020	Open hearings
Q2 2020	Draft determination
November 2020	Final determination
December 2020	Statutory Licence consultation
February 2021	Licence decision
1 April 2021	Start of RIIO-2 price control for ET,GT,GD and ESO

Electricity distribution

7.6 Our RIIO-2 price control for electricity distribution companies will come into effect following the conclusion of that sector's current price control (RIIO-ED1) in 2023. Our suggested forward workplan for the development of RIIO-ED2 is below in Table 2.

Table 2: Indicative high-level milestones for developing Electricity Distribution price control

Indicative high-level milestones for ED	
Q3 2019	ED Open Letter
Q1/Q2 2020	ED Sector methodology consultation
Q3/Q4 2020	ED Sector methodology decision
TBC	Business Plan submission, analysis and determinations (Note that timetable for this stage will be determined through the earlier consultation and decision processes. It will be dependent on policy decisions in relation to fast-tracking and enhanced engagement)
Q4 2022	Statutory Licence consultation
Q1 2023	Licence decision
1 April 2023	Start of RIIO-2 price control for ED

7.7 An indicative plan including all sectoral price controls for RIIO-2 is provided at Figure 1.

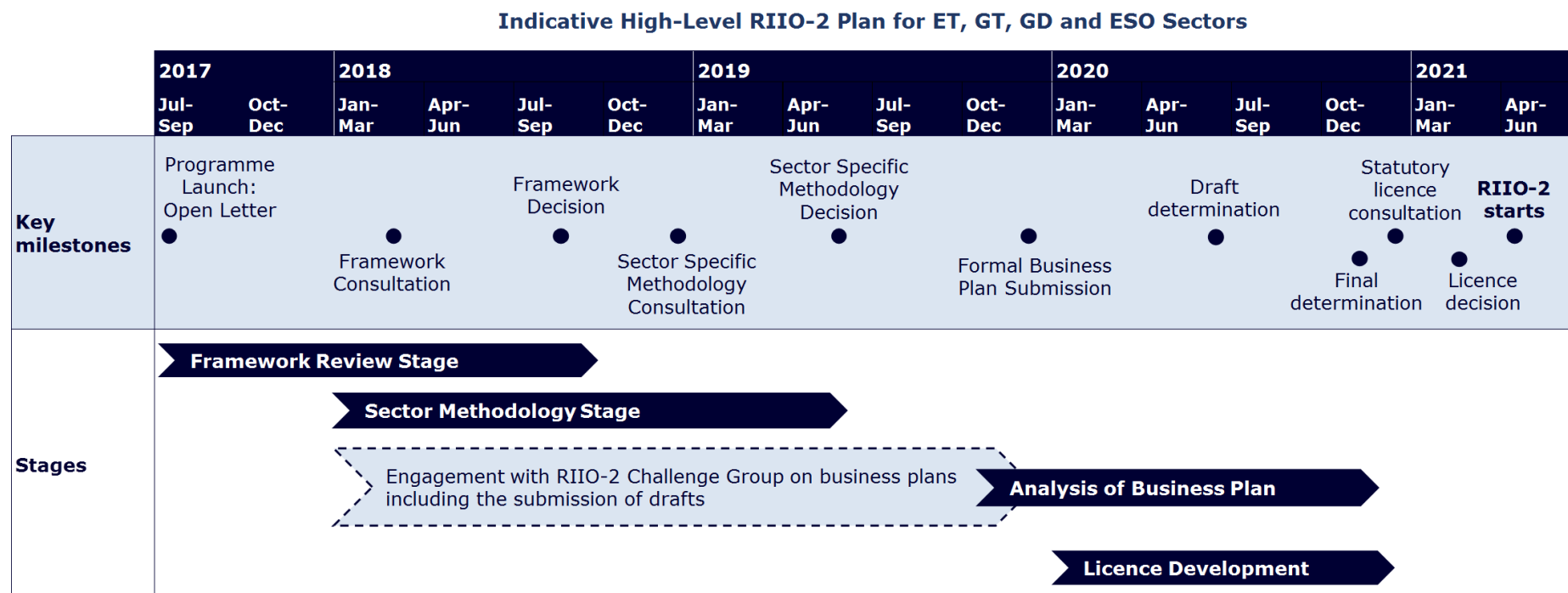
⁴¹ Prior to this formal submission to Ofgem, we expect network companies to have submitted draft versions of their business plans to the RIIO-2 CCG and provide Ofgem with sight of these drafts.

Stakeholder engagement

- 7.8 We will engage with stakeholders to support our development of the RIIO-2 price controls.⁴² Each sector will individually engage with stakeholders regarding their sector specific issues, while we will also collectively engage with stakeholders on cross-sector issues.
- 7.9 Before confirming the stakeholder working groups that will be set up, we are reviewing the effectiveness of the working groups that were established for RIIO-1. We also need to consider how they will interact with the new enhanced engagement arrangements. We may have separate working groups considering sector specific issues, such as our approach to setting outputs and incentives, while cross-sector working groups will consider issues such as innovation.
- 7.10 We will provide more detail on the planned working groups as part of the business planning working paper, that we will publish in August 2018. In due course, we will also aim to publish full details, including timings, for the working groups on our website and directly contact licensees and other stakeholders to confirm arrangements.
- 7.11 We published our initial guidance document on Enhanced Engagement in April 2018. We will update this as and when required. We will notify stakeholders before a change is made.

⁴² This builds upon the RIIO-2 stakeholder engagement plan published on 4 October 2017; https://www.ofgem.gov.uk/system/files/docs/2017/10/riio2stakeholder_engagement_plan_0.pdf

Figure 1: RIIO-2 indicative implementation timeline (for gas distribution, gas transmission, electricity transmission and electricity system operator)



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Appendix 1 – Assessment of options for price control alignment

In this appendix we provide more detail on how we have assessed the pros and cons of aligning the electricity transmission (ET) and electricity distribution (ED) price controls.

Options for price control timing

We have considered two main options: 1. Alignment of the ET and ED start dates; and 2. Maintaining current start dates for ET and ED.

Option 1. Align ET and ED start dates

Under this option we would commence the RIIO-ET2 and RIIO-ED2 price controls at the same time in April 2023.⁴³ To achieve this, we need to create a transitional arrangement for the RIIO-ET1 price control between 2021 and 2023.⁴⁴ This could take one of two forms:

- A roll-over – not resetting the RIIO-ET1 price control, and instead extending it for two years, out to 2023. This would involve reassessing and extending allowances for the two-year extension, as well as using uncertainty mechanisms to manage unforeseen requirements. In assessing this approach, we have assumed that we would retain the current RIIO-1 cost of capital for the extended period.
- An interim price control – creating a new, interim two-year control to run from 2021-2023, ahead of RIIO-ET2 starting in 2023. This would need to include a similar level of detail to any other, longer price control, but could allow us to review and change the cost of capital for the period.

Option 2. Maintaining current start dates for ET and ED

Under this option, we would not make any adjustments to the currently staggered start of the RIIO-ET2 and RIIO-ED2 price controls. Instead, we would focus on wider reforms to relevant price control framework components to facilitate whole system outcomes. We would also rely on current tools, such as the use of uncertainty mechanisms to manage the coordination of investment planning and funding across the sectors.

Assessment of Options

Coordination across ET and ED

Option 1 should allow for greater coordination of investment planning across the ET and ED price controls. This could include coordination of information and inputs to forecast scenarios, coordination of stakeholder engagement by the network companies to develop investment proposals, as well as improved ability to compare and contrast solutions across networks (build and non-build solutions) that might solve constraints. Option 1 could reduce the risk of locking-in investment in RIIO-ET2 that could be inefficient compared to future solutions coming forward as part of RIIO-ED2. However, we are already intending to review our approach to business planning and investment

⁴³ The electricity SO's (ESO) price control is also due to reset in 2021, having previously formed part of RIIO-ET1. As part of our Framework decision, we have decided to separate this from the ET price control. If we were to align the ET and ED price controls, we would need to further consider whether we would commence the separate ESO price control in 2021 with the RIIO-GT2 and RIIO-GD2 price controls, or whether we would also delay the start of the ESO's price control until 2023.

⁴⁴ The Impact Assessment on the ED1 Mid-Period Review analysed the costs that may arise from the uncertainty created by bringing forward RIIO-ED2 to align with RIIO-ET2. It was not considered a viable option in light of these potential cost and that the limited available timeframe could undermine the quality of the price control. https://www.ofgem.gov.uk/system/files/docs/2018/04/riio-ed1_mid-period_review_impact_assessment.pdf

assessment, the enhanced engagement that supports this, and our use of uncertainty mechanisms. These will sit alongside other drivers that incentivise companies to seek efficient network development approaches.

We consider that we have appropriate tools within the framework, particularly uncertainty mechanisms, to ensure a joined up approach to planning, to limit the locking-in of investments. These tools also allow us to ensure that we fund investment as the need becomes clear and efficient proposals are brought forward.

Aligned policy development

There is a risk under option 2 that policy in relation to the delivery of whole-system outcomes is developed and locked-down during the earlier price controls, without sufficient consideration of impacts on RIIO-ED2. However, we believe we can manage this through the enhanced engagement and the consultative process. Indeed, there may be benefits in staggering price controls, in order to use the lessons learned from the earlier price controls to inform the development of RIIO-ED2.

Links to other sectors

Option 1 risks creating greater misalignment between the electricity and gas sectors. Currently the ET (and electricity SO) price control runs in parallel with the GT and GD price controls. If we were to delay the start of RIIO-ET2 until 2023, this would create a split between the gas and electricity transmission price control start dates, potentially reducing the ability for cross-sector whole-system outcomes to be facilitated.

Resourcing implications

Option 1 may create significant timing challenges for Ofgem, in terms of simultaneously developing both the framework and sector specific methodologies for RIIO-2, as well as transitional measures for the ET sector.

In addition, option 1 would create a significant resource constraint for the industry. There would be a large peak in workload for stakeholders and for Ofgem at the time of developing both the delayed RIIO-ET2 and the RIIO-ED2 price controls. The ED price control is the largest of the price controls that we oversee.⁴⁵

Costs

Critically, the use of transitional measures in option 1 could perpetuate issues with the RIIO-1 price controls that may lead to higher costs to consumers than would otherwise be the case. For example, retaining the current RIIO-1 cost of capital under a roll-over arrangement rather than moving to a new cost of capital, could limit consumer savings from potential reductions to the cost of equity. Similarly, if we were to set an interim price control in a relatively short space of time, this may result in a less thorough review of costs (including financing costs). This could result in revenue allowances that may not reflect efficient levels of cost.

To provide a broad quantification of this detriment, we have undertaken rudimentary analyses of the two options.

⁴⁵ In terms of base revenue, for example, RIIO-ED1 represents 42% of the total cross-sector revenue (£41.6bn compared to total across sectors of £96bn, in 2016-17 prices).

Roll-over

To analyse the quantification of a two-year roll-over of RIIO-ET1, we calculate the consumer detriment of holding over the greater cost of capital from RIIO-ET1 for two years, rather than reducing it as we indicated in our March consultation:

- The cost of equity under RIIO-ET1 is 7.0%. For every percentage point this is reduced, the return to the 2022 RAV⁴⁶ reduces by around £80m per year. If the cost of equity differential between RIIO-1 and RIIO-2 is around 2-4% lower, this would bring savings to consumers of around £150-300m per year.
- Therefore, if there is a potential reduction in the cost of equity for RIIO-2 by 2-4%, a two-year roll-over could lead to a potential consumer loss of £300-600m (presuming a reduction in cost of capital).

Interim price control

Instigating a two-year interim price control would primarily generate two forms of cost; the direct costs of planning and establishing the associated licences, and the loss of efficiency that comes from a shorter price control.

Although the direct costs of running and establishing a price control are difficult to determine exactly, we estimate the cost of setting a price control is between £5-10m. This is based on Ofgem budgets and estimates from Ofwat and ORR.

In addition to these direct costs, there are the lost efficiencies of a shorter price control. In a sector with long-life assets, in which the pay-off period for efficiency and innovation spending is in the medium to long-term, a two-year price control is likely to result in an inefficient period of network operation and investment. The consequences of this may be felt in subsequent price controls. In addition, the overall efficiency of the price control may be undermined by increased regulatory uncertainty, the increased risks of information asymmetry and the difficulty in facilitating enhanced engagement.

Assessment conclusion

We consider there to be major risks and downsides to price control alignment (option 1). These include implementation and resource requirements, but also consumer detriment from rolling over the current price control (where companies are making high returns), or consumer detriment from trying to rapidly turn around an interim price control. While option 1 could better facilitate coordination and therefore increase the potential to realise the benefits of any intervention to facilitate whole system outcomes, it is not clear that the scale of the incremental benefits it provides over option 2 would outweigh the potential costs.

⁴⁶ For simplicity, we assume the asset base is equal to the combined total across the three electricity transmission owners, based on the forecasted asset base at the commencement of RIIO-ET2. We further assume that it does not grow during the roll-over period. We assume the 2022 ET RAV as £15.5b

Appendix 2 – Illustrative example of RAV indexation

This appendix considers the life of a hypothetical asset over a 45-year life. This is in order to illustrate the impact of indexing the RAV to CPIH versus RPI.

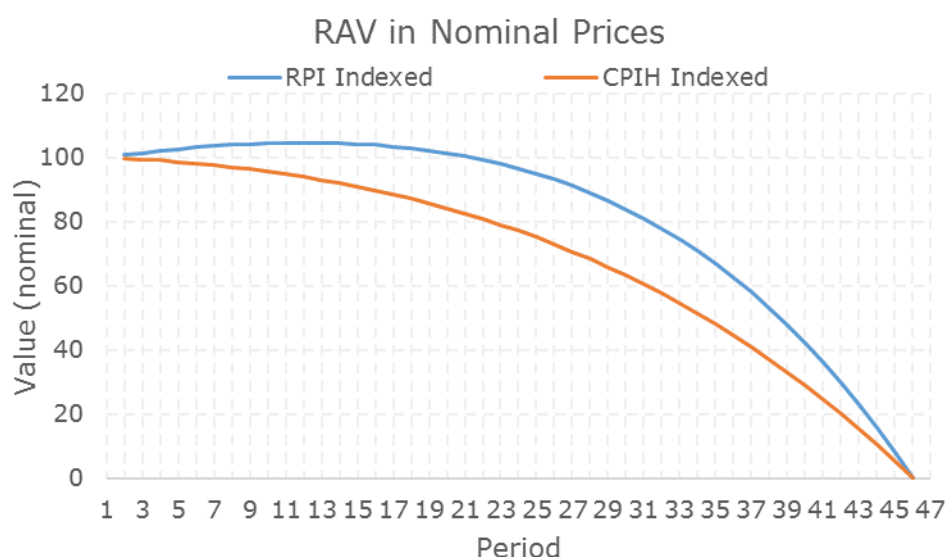
Key Terms

- **Nominal (prices):** A value expressed in pounds of the day, or the current value of a pound at the time it is expressed. Nominal contrasts to **real**, where the prices are adjusted for a general rate of inflation over time
- **Cost of capital:** The minimum acceptable rate of return to investors on capital investment based on the rate of return that could have been earned by putting the same money into a different investment with equal risk. It includes both the cost of debt and the cost of equity. This may be expressed in annual % **real** or annual % **nominal**
- **Depreciation:** a measure of the consumption, use or wearing out of an asset over the period of its economic life. This value is paid to the network owner annually.

We assume indexing the RAV to CPIH rather than RPI reduces the nominal RAV going forward due to the difference between CPIH and RPI, which is roughly 1%.

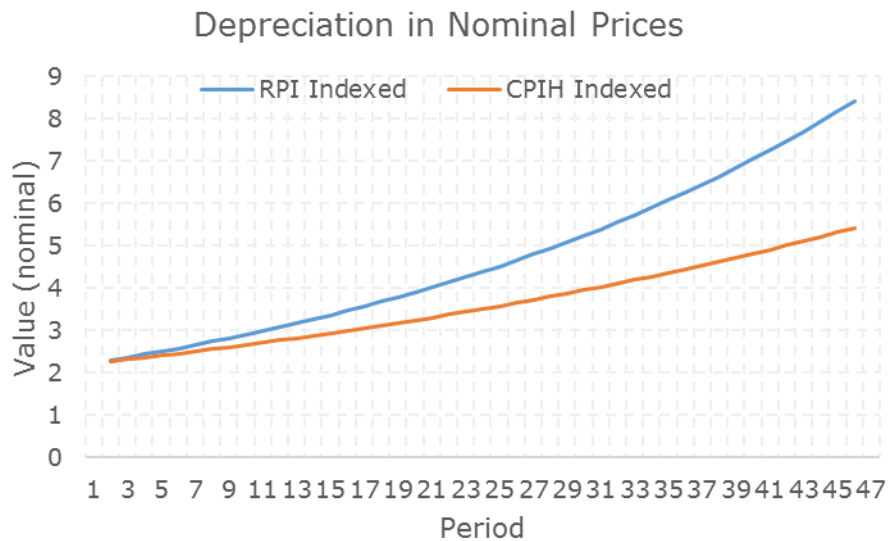
Figure 2 illustrates this evolution of the nominal RAV for a single asset with a straight line depreciation over 45 years. This assumes a hypothetical 3% RPI inflation rate and a CPIH inflation rate of 2%.

Figure 2: RAV in Nominal Prices



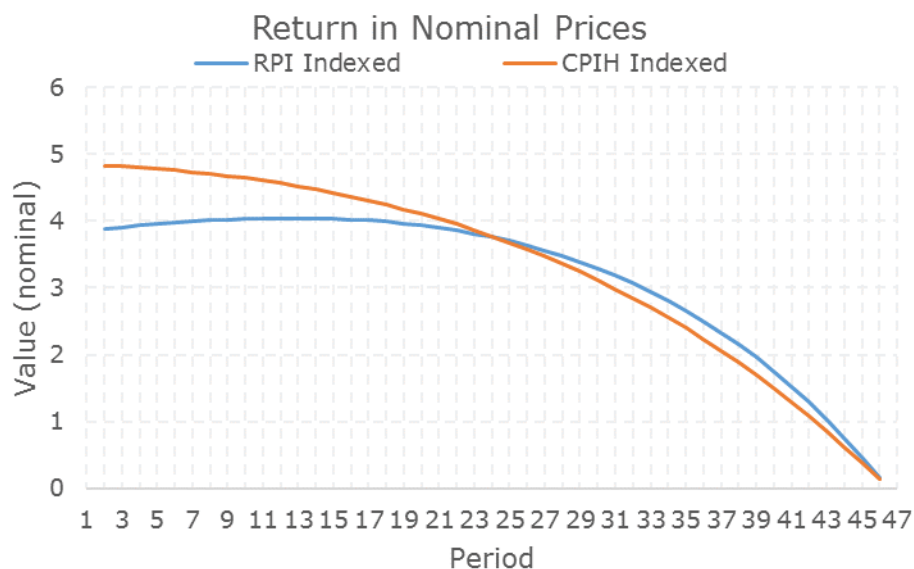
A change in indexation affects both the depreciation and return allowances.

For a higher rate of inflation, the depreciation will be larger and increasingly so as we go further into the future. This is shown graphically in Figure 3.

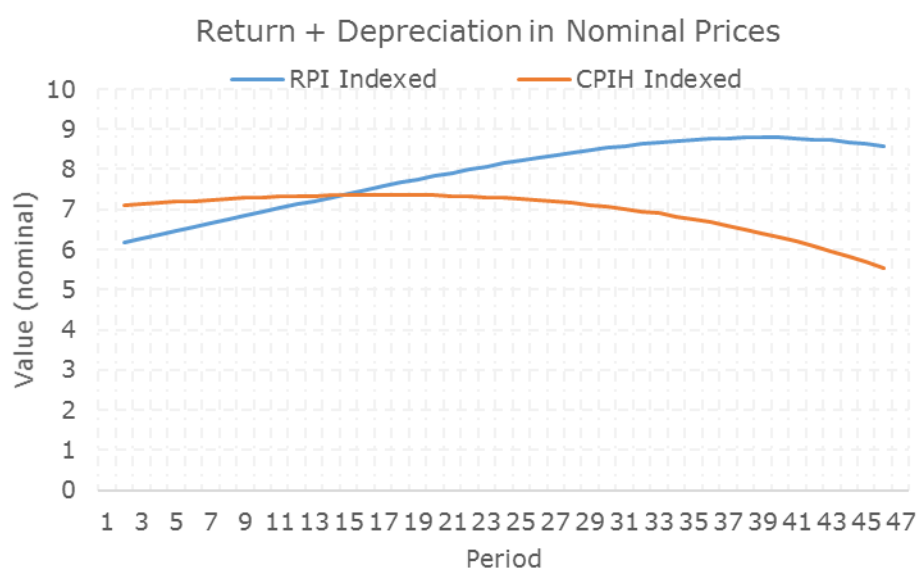
Figure 3: Depreciation in Nominal Prices

On the other hand, the annual real cost of capital is calculated by deflating the nominal cost of capital by the inflation rate.

So this means that the annual real cost of capital will be higher under CPIH or the early periods, where the RPI and CPIH nominal RAV is relatively similar. As the difference between the RAV values grows over time, the nominal return under CPIH will become less than RPI.

Figure 4: Return in Nominal Prices

In summary, assets indexed to CPIH will earn a higher return in the shorter-term, but lower depreciation allowances (as RAV is relatively less in nominal terms). Figure 5 compares the total allowances on the asset (return + depreciation). Nominal returns are lower after 12 years in this example.

Figure 5: Return + Depreciation in Nominal Prices

When discounted at the nominal cost of capital, the present value for the CPIH indexed allowances and RPI indexed allowances are the same.

Note that where investments occur every year, the crossover point is delayed as each new investment would receive a relatively higher return in the early part of the asset life.

For RIIO-2 and subsequent price controls, a switch to CPIH is expected to result in lower bills after around 20 years.

Appendix 3 – Totex-related information revealing devices options

In this appendix we provide more information on different options for totex-related IRDs.

Options for totex-related IRDs

Option 1: modifications to the existing IQI

This option introduces a number of changes to reduce the complexity of the IQI. Some of the changes we are considering, and will develop further for consideration at the strategy stage, are as follows:

- Removing the interpolation rule: the rule prescribes that allowed totex is calculated as a weighted average of our forecast and a company's forecast.⁴⁷ The interpolation rule may give the appearance that a company that submits a higher forecast than our view of efficient cost could benefit through receiving a totex allowance that incorporates an element of their inflated forecast. In practice though, the IQI mechanism offsets any gains companies could make in this manner through the interpolation rule. This ensures that companies are always better off by submitting an accurate forecast.⁴⁸ The removal of the IQI interpolation rule is purely presentational and would not affect the revenue companies' receive for performance against their totex allowance.
- Amplifying IQI: by changing the parameters of IQI so that: i) the *differentiation* in penalties and rewards between companies that submit accurate and inaccurate forecast will be sharpened, and ii) diminish the IQI additional payment more sharply the more a company's forecast diverges from our forecast.⁴⁹
- Publishing the IQI matrix in advance of business plans submissions.

Option 2: Ofwat PR19 cost sharing incentive mechanism

The Ofwat matrix gives companies a higher sharing factor the lower their view of totex is in comparison to Ofwat's view. In doing so, it aims to incentivise companies to submit stretching cost forecasts. Another feature of the Ofwat mechanism is that it applies different incentive rates on over and underspend so that companies that submit a low forecast share a higher proportion of any overspend with consumers.⁵⁰ An extract of the Ofwat cost sharing matrix is shown in Figure 6 below.

⁴⁷ The weighting used in RIIIO-1 assigned 75% on our forecast and 25% on companies' forecast.

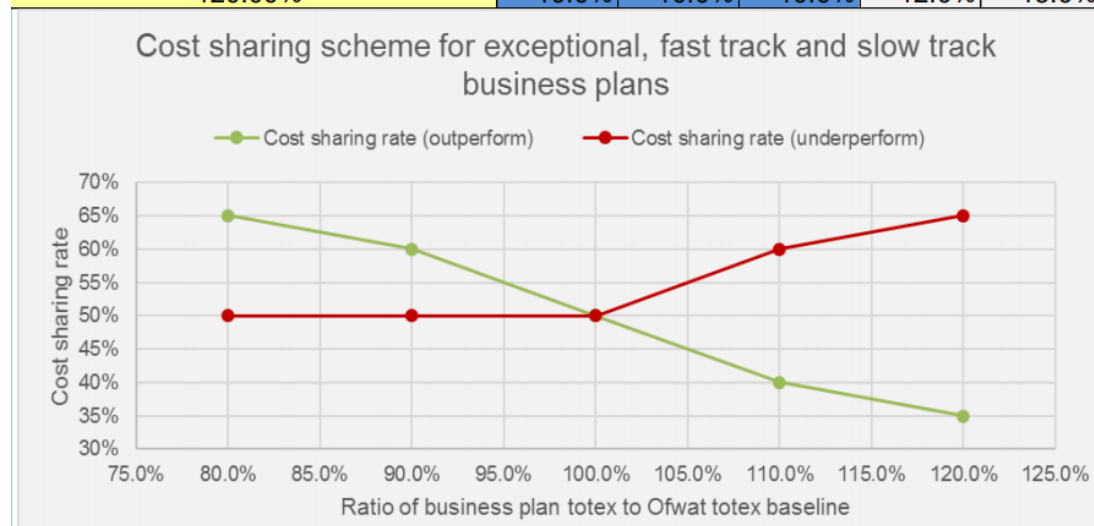
⁴⁸ This is done by mechanistically decreasing the IQI payment (or increasing the IQI penalty) the further away companies forecasts are from our forecast.

⁴⁹ This is often referred as the 'IQI breakeven point' and represents the totex ratio above which a company that submits an accurate forecast (forecast equals to actual expenditure) is subjected to penalties. For example, in ED1 this point was at a totex ratio of around 102, meaning that a company would be penalised if it submitted a forecast above 102 (compared to our view of 100) and then spent the amount it forecast.

⁵⁰ This overspend sharing factor is capped at 50% when companies submit a lower forecast than Ofwat's to prevent companies from submitting unrealistic forecasts.

Figure 6: an extract of the Ofwat PR19 cost sharing matrix

Business plan totex %	80.0%	90.0%	100.0%	110.0%	120.0%
Ofwat totex baseline %	100.0%	100.0%	100.0%	100.0%	100.0%
Cost sharing rate (outperform)	65.0%	60.0%	50.0%	40.0%	35.0%
Cost sharing rate (underperform)	50.0%	50.0%	50.0%	60.0%	65.0%
Actual expenditure:baseline					
80.00%	13.0%	12.0%	10.0%	8.0%	7.0%
90.00%	6.5%	6.0%	5.0%	4.0%	3.5%
100.00%	0.0%	0.0%	0.0%	0.0%	0.0%
110.00%	-5.0%	-5.0%	-5.0%	-6.0%	-6.5%
120.00%	-10.0%	-10.0%	-10.0%	-12.0%	-13.0%



Source: Ofwat PR19 December 2017 publications⁵¹

Interlinkages

The main interlinkages with IRDs are return adjustment mechanisms. These are discussed in Appendix 4.

IRDs and Enhanced Engagement

Our process of enhanced engagement will enable stakeholders to put more pressure on companies to improve the quality of their business plans. As such, it should incentivise companies to reveal better information and justification within their business plans. IRDs aim to achieve a similar outcome. We see IRDs and enhanced engagement complementing each other as we could use inputs from stakeholders when assessing companies' business plans and deciding on associated rewards/penalties.

IRDs and uncertainty mechanisms

In applying IRDs, we will need to consider the potential effect of uncertainty mechanisms on the scope of expenditure included within the totex incentive mechanism.

⁵¹ The matrix is explained in further detail in the Ofwat's final methodology for PR19 (p. 3-7): <https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-11-Cost-efficiency-FM.pdf> and the extract is taken from: <https://www.ofwat.gov.uk/publication/cost-sharing-rates-spreadsheet/>

Appendix 4 – Return Adjustment Mechanisms options

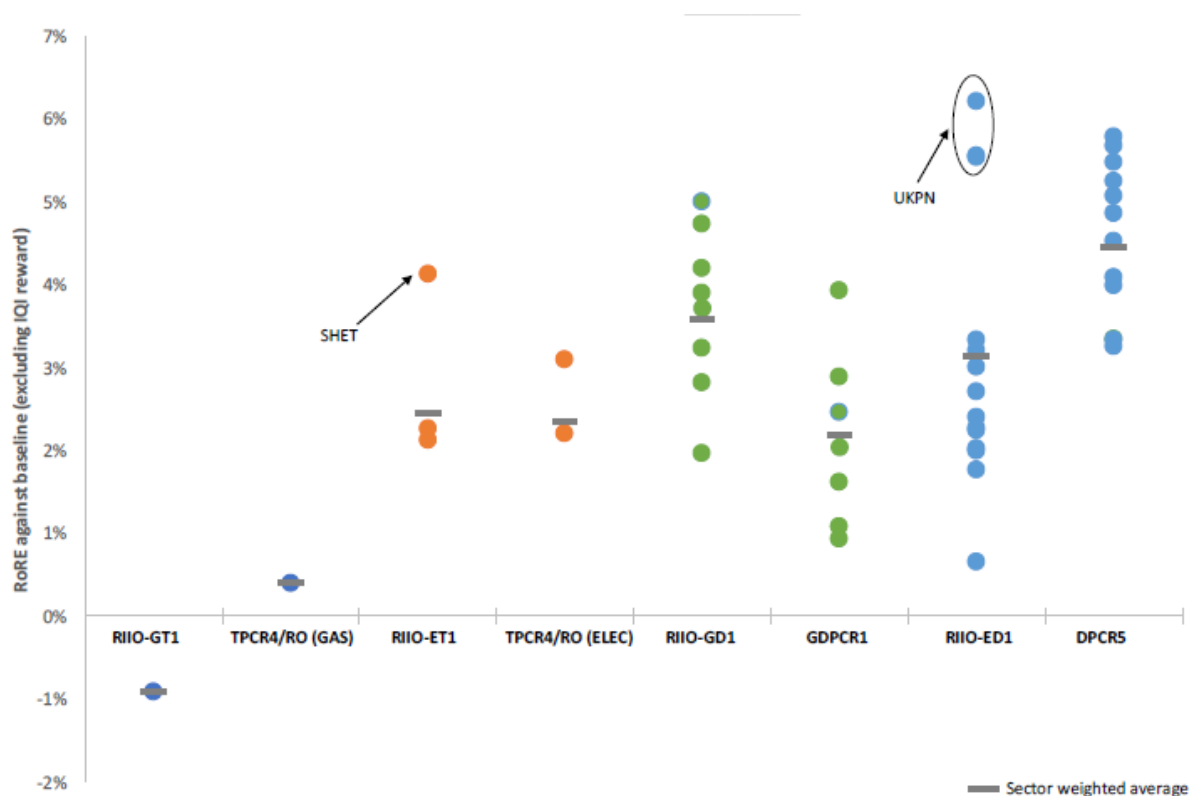
In this appendix, we provide more information on different options for return adjustment mechanisms (RAMs).

Context

In RIIO-1, and in the price controls that preceded it, we set the base cost of equity at a level that reflected the return that an investor in an efficiently-run company in a sector should expect. Companies had the ability to earn returns above, or below this level depending on how well they were able to deliver cost savings and meet output delivery targets.

In the last two sets of price controls, we have observed virtually every company earning above their return on equity, as shown by the CEPA analysis in Figure 7. We recognise this may not reflect the true levels of return when other factors, such as the actual cost of debt incurred or tax paid are taken into account. This does however give us an indication of how companies are performing against incentives to beat cost and output targets. This also illustrates the distribution of returns that we have seen in each sector.

Figure 7: RoRE performance against the baseline (excluding the IQI reward) – RIIO and RPI-X price controls



Source: CEPA analysis⁵²

We recognise that outperformance can reflect the additional value that companies have delivered for consumers. However, this systematic outperformance can also be due to

⁵² https://www.ofgem.gov.uk/system/files/docs/2018/03/cepa_review_of_the_riio_framework_and_riio-1_performance.pdf (p.23)

factors outside the companies' control and/or due to the information advantage that companies have at the time of setting a price control.⁵³

In RIIO-2, we will limit the potential for outperformance caused by factors outside of a company's control, or that is due to flaws in the underlying budget/output target-setting process. We will do this through extending our use of uncertainty mechanisms⁵⁴ and by strengthening IRDs.

However, it may not be practicable or desirable to apply uncertainty mechanisms across the entire price control. Along with increasing complexity, in some instances uncertainty mechanisms may also reduce or eliminate the incentive on companies to manage risks efficiently. Furthermore, we may not be able to anticipate all of the drivers that could lead to outperformance. This is especially relevant in cases where new outputs and incentives are introduced, or where expenditure requirements are uncertain.

We therefore intend to introduce new arrangements that will safeguard consumers from the risk of higher than expected returns. These will apply where other regulatory protections within the RIIO framework may not be sufficient, or where we cannot predict the drivers of outperformance at the outset of the price control.

Options for RAMs

In the March consultation we sought stakeholders' views on five proposed options for RAMs, these were:

- Hard cap and floor
- Discretionary adjustment
- Constraining totex and output incentives
- RoRE Sharing Factor
- Anchoring returns

We note that the options are not mutually exclusive, and we might introduce more options or variants in different sectors. We will assess and consult on any information newly introduced in the sector specific strategy consultations.

Option 1: Hard cap/floor

A Hard Cap and Floor would restrict individual company returns from rising or falling above a pre-determined point. The return cap and floors could be set symmetrically around the base cost of equity or set asymmetrically (eg using cost of debt as a floor and total market return as a cap). **For reasons described in Chapter 6, we have decided not to consider this option for any of the sectors.**

Option 2: Discretionary adjustment

Under a discretionary adjustment mechanism, there would be a review of performance initiated by predetermined triggers. Those could be (but not limited to) when we observe that:

⁵³ Companies' informational advantage in utility regulation has been widely acknowledged by academic literature, especially in ex ante price regulation regimes. A review of literature on the underlying theory of information asymmetry in the context of utility regulation is provided in a publication by Joskow: <http://www.nber.org/chapters/c12566.pdf>

⁵⁴ For details the uncertainty mechanisms available within the RIIO framework refer to the RIIO handbook, chapter 11: <https://www.ofgem.gov.uk/ofgem-publications/51871/riiohandbookpdf>

- returns are above or below a certain threshold
- underspending/overspending of totex is beyond a certain threshold
- incentive rewards/penalties are beyond a certain level (eg as a % of RoRE or totex)

In our review, we might consider factors such as events beyond the control of a prudent management team. We may also evaluate whether management decisions at the time they were made were adequate. If we were to find that a company has not acted in an appropriate manner, we may seek to make adjustments to their revenues.

A discretionary adjustment mechanism could share similarities with Ofwat's substantial effect mechanism.⁵⁵ This mechanism allows Ofwat to consider adjusting price limits where there have been other changes in circumstances, the net present value of which are greater than a different, higher, materiality threshold of 20% of a company's turnover.

Option 3: Constraining totex and output incentives⁵⁶

Constraining totex and output incentives would involve applying a sculpted sharing factor to totex. This means the share of benefits to consumers arising from a totex underspend increases the more a company underspends its budget. Equally, the more a company overspends, the greater the portion of that overspend is borne by consumers. We provide an illustration of how this might work below.

We have not yet established options for applying similar sculpting to output-linked incentives. One way we might extend this sculpting approach to outputs could be to apply the sculpted sharing factor associated with totex to output-linked incentives. This would be similar to our application of a sharing factor equal to the totex sharing factor on certain incentives in the RIIO-1 framework.⁵⁷

Another option for constraining earnings through output-linked incentives is the use of competed incentives, in the form of a sum of money distributing a predetermined amount based on companies' relative performance.⁵⁸

⁵⁵ Refer to Ofwat's decision from 2014-15 for more details:

https://www.ofwat.gov.uk/wp-content/uploads/2014/02/pap_pos20140211tmssfe.pdf

⁵⁶ Excluding relative performance incentives which will be assessed at the sector consultations.

⁵⁷ A sharing factor currently applies on: Reliability Incentive in Respect of Energy Not Supplied (ET), SF6 Emissions Incentive (ET), Interruptions Incentive Scheme (ED), Environmental Emissions Incentive (GT), Shrinkage Roller Incentive (GD).

⁵⁸ Also referred as 'pot' or 'zero sum' incentives.

Illustrative example - sculpting sharing factor on totex

This example shows the different sharing factors that could apply depending on the level of under or overspending as percentage of totex. In this example, the base sharing factor is 50%.

	Over/underspend as % of totex	Sharing factor
Overspend	<-15%	12.5%
	-15% to -10%	25%
No change	-10% to 10%	50%
Underspend	10% to 15%	25%
	>15%	12.5%

The following illustrates the sculpted sharing factor that would apply if the company in this example underspent its totex by 15%.

- The company will have a sharing factor of 50% for any underspend between 0-10%
- The company will have a sharing factor of 25% for any underspend between 10% to 15%
- The company will have a sharing factor of 12.5% for any underspend above 15% of its totex.
- The *effective* sharing factor for the company in this example would be:
 $10/15 \times 50\% + 5/15 \times 25\% = \mathbf{41.7\%}$

Option 4: RoRE sharing factor

This option would involve implementing a sculpting sharing factor on the Regulatory Return on Equity (RoRE) ratio. Under this option, companies would share part of their earnings when they perform above the base cost of equity and bear less of their underperformance when performing below the cost of equity. The sculpting element means a company would share an increasingly higher proportion of its return with consumers the more its return exceeds the baseline cost of equity.

Similar to the totex sharing factor described in option 3, the decrease or increase in sharing factors would only apply to incremental deviations from the base cost of equity and not on their entire earnings.

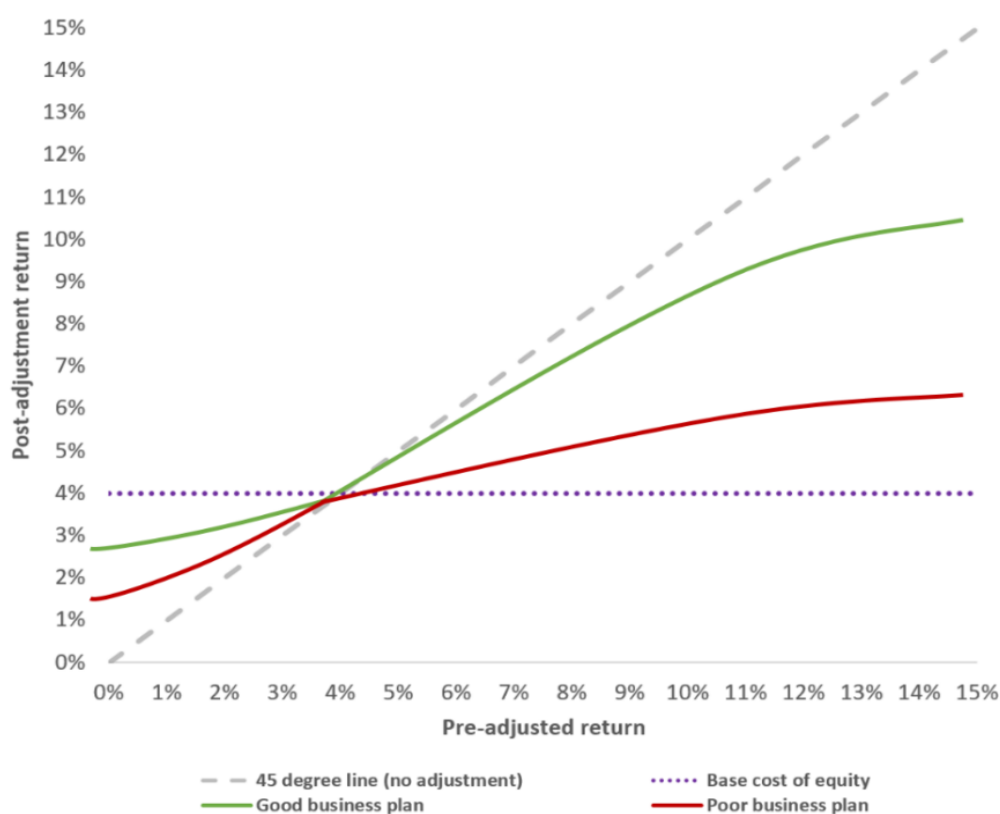
We note that the application of the RoRE mechanism would remove the need to apply a sharing factor on totex and/or any measures to constrain earnings from output-linked incentives.

As part of the RoRE sharing factor, we could also incorporate an IRD that would change the levels of sculpting (ie the rate of decrease or increase in sharing factors) depending on our assessment of each company's business plan. In some respects this would be similar to the Ofwat PR19 totex cost sharing mechanism.

We could also introduce an asymmetric sharing factor – one that differs between over and under performance. This case is illustrated Figure 8 where the slope of the red and green lines (representing the sharing factor rate on RoRE) sees a step change depending on whether a company over or underperforms against its base cost of equity.

Figure 8 also illustrates how the level of sculpting could be determined based on our assessment of the quality of business plan submissions. We compare three cases: pre-adjusted return (grey dotted line), returns for companies submitting good business plans (green line) and returns for companies submitting poor business plans (red line). The ability to differentiate sculpting of sharing factors across companies will depend on the implementation of a combined assessment scheme. This would grade companies' submissions at the outset of the price controls both on the cost elements (eg totex) and on the overall quality of their business plan (including quality of engagement and proposed outputs).

Figure 8: Illustration of sculpted RoRE sharing factor around a 4% cost of equity



Option 5: Anchoring returns

Anchoring triggers an upward or downward adjustment to companies' RoRE based on the regulated asset value (RAV) weighted average return across a sector. We could base the level of adjustment on either:

- A symmetrical collar around the base cost of equity, or
- A collar in which its upper bound corresponds with the long-run return on the stock market and a lower bound equal to the cost of debt.

When the sector as a whole performs within the collar, the returns that individual companies earn will reflect their performance against their own targets and allowances.

If the sector RoRE average falls outside the collar, we would make adjustments to the revenues of companies in the sector to refund consumers in proportion to their RAVs or their regulated equity, so that the RAV-weighted sector average aligns with upper or lower bounds of the collar.

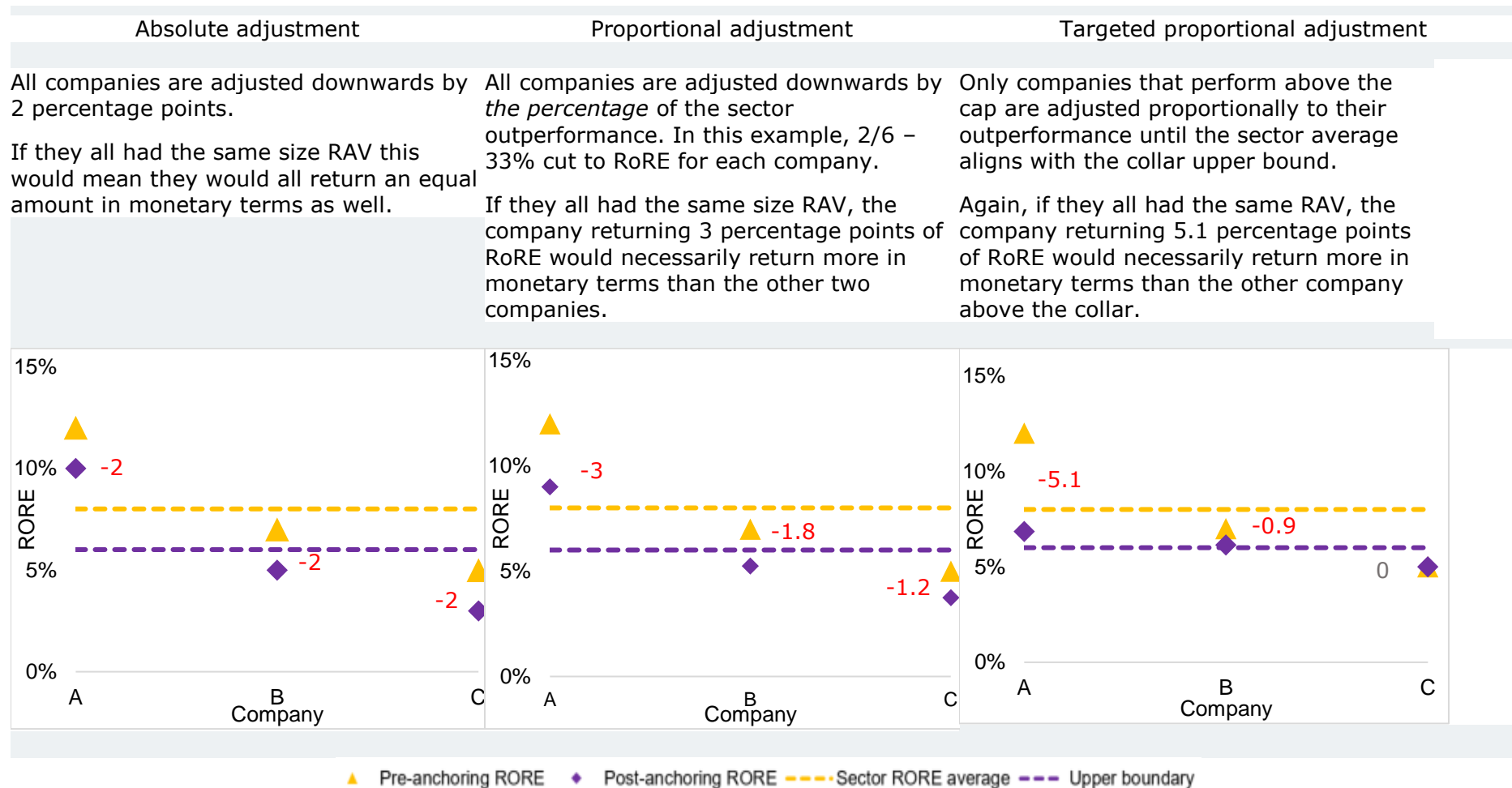
We currently envisage there might be three variants of how adjustment to the RoRE sector average could be distributed across companies:

- Absolute adjustment: when RoRE falls outside the collar, each company in a sector would be subject to the same level of adjustment in percentage point terms regardless of individual companies' performance and whether they are within or above the collar.
- Proportional adjustment: adjustments to individual companies would be proportionate to their pre-adjusted return. Hence, a company with a lower return would be subject to a smaller adjustment in percentage point terms. Yet, the *rate* of adjustment will be the same across all companies.
- Targeted proportional adjustment: only companies that perform outside the collar will see an adjustment and this will be proportionate to their pre-adjusted return.

We provide illustrative examples on the next page that compare the three variants.

Illustrative example – Anchoring returns variants

This example assumes sector with three companies, with a 4% base cost of equity and a cap and collar of 2% around this. The sector weighted average RoRE is 8% (outperformance of 2 percentage points above the upper bound of the collar) and there are two companies within the collar and one company outside it.



Interlinkages

RAMs and IRDs

RAMs and IRDs share strong interlinkages as they both directly influence companies' returns. One of our proposed RAMs, the RoRE sharing factor, has the potential to link directly to the quality of information submitted by the network companies. The RoRE sharing factor could reflect our assessment of business plans, with companies submitting higher quality plans retaining a greater share of underspend/lower exposure to overspend.

RAMs and the IQI

The IQI is configured in a way that network companies achieve the best outcome by submitting an accurate forecast.⁵⁹ However, when applying sculpting to returns or totex, this might change.

The IQI has a combination of two types of reward/penalty: a sharing factor on over/underspend, and an additional payment determined at the outset of the price control. If we only apply sculpting to the sharing factor on levels of over/underspend, then this might distort the incentive properties of the IQI for submitting accurate forecasts. Unlike current arrangements, companies may no longer be better-off by submitting the most accurate forecast. The impact of this would depend on the particular IQI matrix and the sculpting parameters.

The current form of the IQI and the RoRE sharing factor option may be potentially incompatible. In order to avoid introducing further complexity, we would not apply a RoRE sharing factor in addition to a totex sharing factor. This leaves open the question of how we might determine the RoRE sharing option. One option could be to determine the RoRE sharing factor using the same totex sharing factor that is generated by the IQI.⁶⁰ However, the IQI applies a single sharing factor to both over and underspend. If we were to design the RoRE sharing factor so that it was asymmetric (a company's share of outperformance may be different from its share of underperformance), then this might affect the incentive properties of the IQI approach.

Anchoring and discretionary adjustments would only be triggered when predetermined thresholds are breached. As such, the IQI could function normally up to those predetermined points. Beyond those points, companies might be subject to adjustments. These adjustments might impact the incentive properties of the IQI.

RAMs and cost of capital

RAMs share interlinkages with the predetermined cost of capital and in particular, the base cost of equity. For example, if RAMs change the possible range of returns, or the ability of investors to anticipate the likely level of return.

Additionally, the baseline cost of equity could determine the design of some of the RAMs, in particular the point at which they would be triggered to adjust returns.

RAMs and financeability

The options for RAMs we have described are symmetrical in that they protect consumers from upside risks of high returns, but at the same time protect companies from the

⁵⁹ Under the assumptions that our forecast is independent and that network companies' decision-making is profit maximising.

⁶⁰ There might be additional factors that will determine the sharing factor, such as the assessment of the quality of the business plan

downside risk of low returns. Theoretically, there could be circumstances where a sector performs on average above the anchoring point,⁶¹ and the resulting downward adjustment could lead to some companies having their revenues reduced to a point that may not be financeable. In the design of any RAMs we will need to ensure consistency with our duties to ensure companies are able to finance their activities.

⁶¹ Those include absolute anchoring and proportional adjustment

Appendix 5 – Approach to assessing the impacts of RIIO-2

Introduction

This appendix describes our approach to assessing the potential impact of RIIO-2.

We want to use the framework to reduce the cost to consumers of financing, operating and developing energy networks. We also want it to incentivise companies to deliver the network services that consumers require. We want the framework to deliver benefits to existing consumers and to ensure that the interests of future consumers will be protected. For instance, a reduction in costs to existing consumers should not come at the expense of the service quality that future consumers receive.

We will only be able to assess fully the impact of RIIO-2 when we have confirmed the methodology and associated revenues that will apply in each sector. However, there are some decisions on the framework that we need to make at this time. These are relatively separable decisions and need to be taken now to shape the price control framework and to provide clarity and set direction for the remainder of the process

The relevant sections of this document and the March consultation should be referred to for the reasoning, evidence, assumptions and calculations we have used to inform our assessment of the impact of these decisions and our conclusions.

As our work on developing RIIO-2 continues and having set this cross-sectoral framework, we will consider the impacts of our decisions on remaining design issues in the round and at a sectoral level. We will use the RIIO-2 objectives and our regulatory stances⁶² to establish an assessment framework. This will also require us to identify the key interlinkages that exist between policy areas. We will use this analysis to identify which option/combination of options achieves the best balance overall.

We will assess impacts in accordance with the Ofgem Impact Assessment Guidance⁶³, and where appropriate the HM Treasury Green Book.⁶⁴

We will aspire to apply quantitative assessment where practicable and meaningful. Given the nature of many of the decisions, our assessment is also likely to rely on qualitative techniques.

Objectives for RIIO-2 and regulatory stances

Our objective for RIIO-2 is to ensure network companies deliver the value for money services that both existing and future consumers want and need. In particular that the price controls:

- Give due attention to mitigating the impact of networks on the environment
- Are designed so that networks play a full role in addressing consumer vulnerability issues.

To do so, they should develop and maintain a reliable, safe and secure network that is flexible in supporting the transition to a low-carbon future.

⁶² https://www.ofgem.gov.uk/system/files/docs/2016/12/ofq930_ofgems_regulatory_stances_document_web.pdf

⁶³ Ofgem (2016) Impact Assessment Guidance:

https://www.ofgem.gov.uk/system/files/docs/2016/10/impact_assessment_guidance_0.pdf

⁶⁴ HM Treasury (2018) The Green Book: appraisal and evaluation in central government:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

We aim to achieve this objective by:

- Giving consumers a stronger voice in setting outputs, shaping and assessing business plans;
- Allowing network companies to earn returns that are fair and represent good value for consumers, properly reflecting the risks faced in these businesses, and 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;
- Simplifying the price controls by focusing on items of greatest value to consumers.

In achieving this, we will align our approach with our Regulatory Stances.⁶⁵ The primary Regulatory Stance that is relevant for RIIO-2 is to “**drive value in monopoly activities through competition and incentive regulation**”. This regulatory stance describes how we will:

- Use good evidence to understand how consumers value outputs, prices and risk, including inter-generational issues
- Engineer our price control processes, incentive mechanisms and reporting requirements to:
 - ensure the governance of monopoly companies and the development and delivery of their strategies are aligned with the interests of consumers, including maximising the benefits that go to consumers
 - manage uncertainty facing network companies and Ofgem, including information asymmetry, by considering all available tools
- Promote competition where it is efficient to do so and the benefits of introducing competition will outweigh the costs (such as transaction costs or network effects). We use comparisons and rivalry when we regulate and, where beneficial, competitions for the right to provide monopoly services. This ensures we have best quality ex ante information about the efficient level of costs.
- Implement incentive mechanisms that hold companies to account for delivering value for money against those benchmarks, taking account of both outputs (the service they provide and the service capability of the assets they hold) and costs.

We will also develop and assess policy so that we are consistent with our Regulatory Stances to “**support innovation in technologies, systems and business models**” and “**protect the interests of consumers in vulnerable situations**”.

Framework for assessment

We describe below the high-level framework for assessment that we will apply in assessing each sector.

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https://www.ofgem.gov.uk/system/files/docs/2016/12/ofg930_ofgems_regulatory_stances_document_web.pdf

Impacted stakeholders

We consider that the following different stakeholder groups could be impacted by our RIIO-2 decisions (we recognise that there may be other stakeholders that are also affected by certain decisions and will extend this list as appropriate):

- Existing and future consumers (including vulnerable consumers)
- Network companies
- Generators and suppliers – indirectly through network charges
- Flexibility service providers – such as demand response aggregators
- Government and regulators, including Ofgem, BEIS and HMRC

Our assessment of impact will take account of intended impacts and, as far as possible, any potential risks, unintended consequences and wider implications of the proposals identified on the various stakeholders. This will include any distributional impacts.

Categories for assessing impacts

We will consider the type of impacts that may arise in each policy area using the following broad categories:

- Short-term impacts
- Long-term impacts
- Implementation (costs and practicalities)

The short/long-term impacts are likely to be captured in terms of the immediate impact on consumer bills, company revenues and in the range and quality of network services the companies deliver. We will distinguish between those impacts that may be immediately apparent, and those that may not be discernible until future price controls.

Sectoral considerations

In assessing the impact of our decisions, we will take into account the characteristics of each sector, in so far as these are relevant to the options under consideration. The sectoral characteristics could include:

- The number of companies within sector and their relative sizes
- The degree of comparability across companies within a sector
- Nature and type of investments required within each sector
- The outputs companies are required to deliver in each sector
- The level of change and uncertainty that companies are exposed to within each sector
- Historical performance within different sectors.

Type of evidence we will consider

We describe, at a high level, the type of evidence we may consider as we progress through the sector methodology stage to further assess the impact of our various policy options and decisions.

As stated earlier, for the decisions we have taken to date, the relevant sections of this document and the March consultation, should be referred to for the reasoning, evidence,

assumptions and calculations we have used to inform our assessment of the impact of these decisions and our conclusions.

We intend to consult with stakeholders and use the information they provide to further inform our assessment of impacts.

The following tables illustrate how we will consider the different impacts that could arise in the round, taking the different elements of the price control package together. They are not intended to be a comprehensive list of all of the evidence that we may ultimately take into account.

Giving consumers a stronger voice

Enhanced engagement		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Quality of business plans in terms of cost efficiency • Quality of business plans in terms of delivery of value-for-money network services that consumers value • Costs of supporting enhanced engagement process 	<ul style="list-style-type: none"> • Alignment of network development to changing requirements of consumers • Delivery of whole system outcomes arising from broader range of stakeholder input 	<ul style="list-style-type: none"> • Ease of identifying and recruiting appropriately qualified representatives to support the process • Time available for enhanced engagement prior to setting of price control

Responding to how networks are used

Length of price control		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Potential reduction in forecast errors, for which revenues cannot be adjusted for, prior to the next price control reset • Potential reduction in need for uncertainty mechanisms • Costs associated with more frequent price controls 	<ul style="list-style-type: none"> • Greater reflection of the requirements of the changing energy system and prevailing market conditions in the cost allowances, outputs and incentives • Impact on innovation delivered through business as usual 	<ul style="list-style-type: none"> • Activities, projects or programmes with longer timescales (if approved) may require additional regulatory controls to be in place

Whole system outcomes		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Potential reduction in overall network costs • Costs associated with establishing processes and system to enable whole-system outcomes • Potential increase in revenues linked to performance against whole-system outcome delivery incentives • Potential reduction in system operation costs 	<ul style="list-style-type: none"> • Impact on the development of flexibility markets • Impact on cost of generation 	<ul style="list-style-type: none"> • Interaction with uncertainty mechanisms • Visibility/quality of data to enable third parties and networks to identify whole-system requirements and solutions • Regulatory reform potentially required for certain options

End-use energy efficiency		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Costs associated with energy efficiency activities undertaken by networks • Benefits to network users of these activities and potential distributional effects 	<ul style="list-style-type: none"> • Potential reduction in overall demand may lead to reductions in long-run network investment costs 	<ul style="list-style-type: none"> • Needs to align with government policy in this area

Network utilisation, stranding and investment risk		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Costs and complexities associated with funding options to mitigate stranding risk • Impact on business planning process, and transaction costs of new investment and timescales for delivery • Potential benefits of reduced risks of inefficient network investment and utilisation 	<ul style="list-style-type: none"> • Impact on efficient anticipatory investment • Impact on uneconomic load and grid defection. 	<ul style="list-style-type: none"> • Interaction with other RIIO-2 policies (eg, competition, finance, etc). • Interaction with various reform programmes (Access Reform and TCR), including implementation timetables

Driving innovation and efficiency

Innovation		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Associated costs of dedicated innovation funding package, including costs associated with reform options • Potential benefits of more focussed and coherent innovation strategies 	<ul style="list-style-type: none"> • Impact on innovation delivered through BAU • Potential greater long-run innovation outcomes resulting in better value for money • Potential benefits from avoiding duplication and misalignment with Government policy • Potential benefits from increased scope of innovation ideas • Potential benefits of supporting innovation culture 	<ul style="list-style-type: none"> • Coordination with other government innovation may introduce additional complexities • Regulatory reform potentially required for certain options

Competition		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Potential benefits from lower cost, or higher value-for-money, delivery of network services • Associated costs of developing and running effective competitive processes • Associated system operator costs depending on its involvement 	<ul style="list-style-type: none"> • Potential benefits of improved benchmarking and revelation of actual costs through competitive and quasi-competitive processes • Costs associated with increased number of regulated companies • Potential benefits of increased flexible services and impact on whole system outcomes 	<ul style="list-style-type: none"> • Effective uncertainty mechanisms and project identification criteria needed to manage implementation of competition throughout price control • Regulatory reform may be required for certain options

Simplifying the price controls

Setting outputs and cost allowances		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> Value of incentive payments linked to improvements in performance Potential reduction in overall costs through automatic refunds process Associated costs/savings to consumers through increased use of uncertainty mechanisms/indexation 	<ul style="list-style-type: none"> Potential increase in long-term, higher-value-for money network services Impact on collaboration and innovation (under relative/zero-sum options for output incentives) Impact of cost/output resets on investment decision-making 	<ul style="list-style-type: none"> Consideration of interlinkages between output setting and other policies under RIIO-2 Establishing uncertainty mechanisms/indexation / automatic resets

Information-revealing devices (IRD)		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> Quality of business plans in terms of costs/service quality outputs In assessing the effectiveness of different options, we will consider likely aversion to risk/loss and the sensitivity of the options to external influence over our forecasts 	<ul style="list-style-type: none"> Impact of IRDs on incentives to make long-term investments 	<ul style="list-style-type: none"> Compatibility with other elements of the regulatory framework Relative complexity of the different options

Annual reporting		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> Costs associated with reporting requirements Potential benefits from more accurate and accessible view on company performance 	<ul style="list-style-type: none"> Potential longer-term benefits from improvements in network data 	<ul style="list-style-type: none"> Ability to gather information in a consistent and timely manner

Fair returns and financeability

Ensuring fair returns		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Impact on anticipated company returns • Impact on companies' risk profile 	<ul style="list-style-type: none"> • Impact on cross-sectoral collaboration • Impact on company incentives to invest in order to deliver long-term benefits 	<ul style="list-style-type: none"> • Ability to calibrate incentives on performance (both on totex and outputs) and compatibility with other regulatory tools • Ability to apply competitive/relative arrangements within a sector

Finance and financeability		
Short-term impacts	Long-term impacts	Implementation
<ul style="list-style-type: none"> • Costs of enabling companies to access efficient financing • Extent to which companies remain financeable • Investor confidence in regulatory regime 	<ul style="list-style-type: none"> • Long-term stability of financing regime 	<ul style="list-style-type: none"> • The calculations of financial parameters must be undertaken through a robust and fair methodology

Appendix 6 – Summary of responses

The following summarises a number of aspects of the 87 responses received to the March consultation and key points raised through subsequent bilateral meetings. We have expanded on the detail of certain responses in the main body of this decision document.

Giving consumers a stronger voice

- There was widespread support across stakeholder groups for our engagement proposals. This included the use of open hearings although a small number of respondents felt that by this stage in the process the onus would be on Ofgem to make a decision.
- Many stakeholders, and in particular network companies, wanted more detail on how the process would work. This included timetables for when we expected companies to present their initial plan to the central RIIO-2 Challenge Group, and how we would run the open hearings. Although all network companies were positive, many highlighted the tight timescale they were operating within and the challenge of establishing these groups.
- Some network companies cautioned against having a hierarchy across the various groups, with some more able to influence policy than others. There was also a concern that representation on the groups could be biased towards certain categories of stakeholders.
- Citizens Advice wanted more information on how the quality of engagement would inform our assessment of business plans. They were also keen for more clarity on how we would incentivise good quality engagement on an on-going basis. Sustainability First felt we should have put more emphasis on a requirement to have the consumer voice represented on Company Boards.
- Citizens Advice Scotland suggested establishing a research coordination group that would link together Citizens Advice, Ofgem and network company research.
- Although many were wary of stakeholder fatigue, a common feature of non-network responses was a request for representation on the various groups. The various responses from those with an interest in visual amenity had this as a common theme.

Responding to changes in how networks are used

- The vast majority of respondents agreed with our proposals to set price controls for a default period of five years. The only stakeholder group that disagreed were those with an interest in visual amenity issues; they complained that undergrounding schemes typically took longer than five years and that these might be compromised by a shorter period.
- Western Power Distribution were the only network company to raise any strong objection to a shorter price control. They did not feel we had demonstrated the need for any change, and that we should wait until the end of RIIO-ED1 before making changes to their price control. No respondent supported keeping an eight-year price control with an extended mid-period review.
- Respondents were split on the proposal to set allowances for specific activities over a longer period than the rest of the control. Some felt this would be necessary to promote innovation and drive down repeatable costs. Others warned

against the opportunities this might create for companies to game the allocation of costs and could disrupt our ability to benchmark.

- All respondents who commented agreed that RIIO-2 should aim to facilitate the delivery of whole-system outcomes. Some respondents tended to view this as across a system spanning electricity distribution, transmission and system operation. Others saw the system as encompassing electricity and gas. Many other stakeholders wanted us to view the system cutting across energy, heat and transport (and in some instances waste, energy generation and beyond-the-meter considerations as well). Some respondents felt that the best definition should focus on the delivery of lowest cost outcomes for the consumer, without needing to define specific sectors.
- Network companies supported the proposal not to align the start of the electricity transmission and distribution price controls, or at least recognised the practical difficulties for doing so. Generally, non-network stakeholders also supported this position.
- Many stakeholders, including several network companies, supported the development of new outputs and incentives targeting capacity utilisation, including measures on the curtailment of distributed generation. In their view, to support this, we should be more active in developing markets and price signals to enable the utilisation of distributed energy resources, and assess the costs and benefits of investments in relation to their whole-system impact. Other stakeholders wanted us to go further and use the price controls as a tool for delivering government energy policy. Respondents such as Exeter University, Scottish Renewables and Solar Trade Association wanted to see network revenues and incentives directly linked to the achievement of decarbonisation targets.
- Relatively few respondents expressed concern at the risk of asset stranding. Gas companies generally felt we had overstated the risk, and were keen to emphasise the role that the gas network would need to play in a decarbonised energy system. WPD felt that the use of non-network solutions, cross-system coordination and a flexible approach to coordination would help mitigate any residual risk. A number of respondents thought network companies should give broader and more explicit consideration to non-network options when addressing constraints and growth. Others felt that the enhanced engagement arrangements would also be useful to anticipate risks.
- Nearly all respondents who commented supported a separate price control for the electricity system operator, with some respondents also arguing that we should also have a separate price control for DSO activities (although DNOs tended to note that they did not see a definitive read-across to DSO activity separation). There were very few suggestions on the form of the control. Northern Powergrid did not support these proposals and raised concerns around accountability and risk allocation in separating asset ownership from system operation. Another respondent suggested the SO should be run on a not-for-profit basis. Those few respondents that commented on the gas system operator price control agreed with our proposals not to make structural changes to the current arrangements at this time.
- Several respondents cautioned against networks having any role in driving end-use energy efficiency. Enzen were relatively enthusiastic about introducing new incentives in this area as a means of driving decarbonisation. Citizens Advice Scotland felt there could be a role for networks in improving the energy efficiency

of non-domestic customers, but not for domestic consumers with whom they had little interaction.

Driving innovation and efficiency

- Respondents generally agreed with our proposals to retain but reform the innovation stimulus. The majority of those who commented, including Citizens Advice and Centrica, wanted the focus to be on driving the energy system transition. National Energy Action (and Citizens Advice) additionally wanted the focus of innovation to be on maximising benefits of the transition on vulnerable consumers. Against these, a small number of stakeholders including some network companies wanted to retain support for the current, wide scope of projects.
- The majority of those who commented supported aligning with other sources of innovation funding. Many stakeholders were also keen to see easier access to innovation support for third parties, although several network companies were keen that this access should not come direct, and should be in partnership with them. Some of those who supported these elements of our proposed reforms highlighted that we would need to be mindful of some of the negative impacts of aligning with public support and third party involvement. This could be in relation to timing and scope of projects, cross-sector collaboration and the sharing of learning that flows from existing arrangements.
- The majority of stakeholders supported the proposal to extend the role of competition where it is appropriate and provides better value for consumers, and supported the extension of our criteria for identifying projects that are suitable for competition. However, many stakeholders, particularly network companies, emphasised that we needed to undertake more analysis to justify the benefits case, and noted that there may be reduced opportunities in other sectors beyond electricity transmission. Consumer groups and suppliers offered more general support. Network companies highlighted practical difficulties in extending competition and cited a preference for legislation to underpin any changes in current arrangements. There was support for further consideration of early-stage competition, but acknowledgement of the challenges this might present.

Simplifying the price controls

- The vast majority of responses we received on our proposed approach to setting costs and outputs came from network companies. Generally, while they supported our broad approach they were resistant to the use of relative performance targets, which they felt would not be practical or would harm cross-sector collaboration. They also felt that resetting output targets within the period could affect investment decision making. UKPN suggested a rolling incentive approach that updated targets on an annual basis based on performance across the preceding 4 years. Centrica were keen on resetting targets and having relative incentives. Other, non-network stakeholders were more cautious; Sustainability First advised setting absolute targets where we could measure the consumer benefit delivered, but relative arrangements where this was not possible.
- Although many network companies agreed with the use of uncertainty mechanisms to guard against forecasting errors, some expressed concerns at extending the current arrangements. They highlighted that volume drivers and indexation, including for RPEs, effectively transfer risk from companies to consumers. They advised that we should only apply these where there is high

uncertainty. All network companies were strongly against the idea of resetting cost allowances within the period. They highlighted the potential for network companies at different points in their investment cycle to impact on the allowances of others, and the disruption this would cause to investment decisions and companies' financeability.

- In relation to the Information Quality Incentive (IQI), ten network companies were in favour of retaining it, maintaining that our evaluation of the effectiveness of the IQI in RIIO-1 did not take into account specific factors. They suggested improvements that could make it more effective. Two companies argued that we should replace the IQI with a fixed sharing factor due to its complexity.
- Other stakeholders agreed with our assessment that in its current form the IQI does not serve as an effective incentive. Citizens Advice wanted more detail on alternatives to IQI (including the single business plan incentive) ahead of taking a view. One stakeholder cautioned that a stronger IQI might lead companies to take less risk, rather than deviate from their submitted plan.
- Network companies differed in their views on fast-tracking. While companies that were fast-tracked in RIIO-1 (WPD, SSE) supported fast-tracking, other companies believed there is scope for improvement. Some companies recommended removing fast-tracking as a whole. However, all companies supported some form of a financial reward based on the quality of business plan submissions.
- Specifically with relevance to the early settlement component of fast-tracking, WWU saw benefits in retaining it, as it could allow fast-tracked companies to focus earlier on the delivery of their business plans. NGN were relatively neutral, but saw little advantage from removing fast-tracking (including the early settlement component) from the regulatory toolkit. Cadent and SGN supported the removal of early settlement to allow more time for companies to dedicate to the preparation of their business plans and a better opportunity for stakeholders to scrutinise companies' business plans through the enhanced engagement process.
- Other stakeholders mostly agreed with removing fast-tracking (the entire reward package) from the transmission sectors, mentioning the lack of comparators as the main reason. However, two stakeholders wanted to understand what alternatives to fast-tracking were available (Citizens Advice, Enzen). Two suppliers cautioned that the combination of IQI and the financial reward element of fast-tracking might result in companies being rewarded twice if their plan was seen to be more efficiently costed (Centrica, Drax).

Fair returns and financeability

- The majority of responses we received in relation to our finance proposals came from network companies. Although several non-network stakeholders responded, their comments were not as comprehensive as those of the operators, which included specially commissioned consultancy studies of various aspects of our proposals. On the cost of debt, many companies (and Citizens Advice) supported retaining, but recalibrating the existing debt index. Other companies however, were emphatic that we should move to pass-through debt. WPD also supported pass-through arrangements. Some network companies also criticised our RoRE measure, stating that as it did not include performance against the debt index it gave a false impression on the profitability of these companies.
- The network companies collectively commissioned a report from Oxera on the cost of equity. Although supporting the use of the CAPM, this report criticised our

methodology for assessing many of the inputs to the model. Supplementary reports were also received from NERA (two relating to Beta, one to Total Market Return, a comprehensive review on behalf of SGN, one relating to the cost of equity and one to financeability on behalf of WPD) and a review of WWU's debt, also from Oxera.

- Seven network companies opposed any use of Return Adjustment Mechanisms (RAMs), believing we should instead focus on using our existing tools to manage the risk of high returns. Companies argued that all options would erode incentives on performance, introduce complexity, and break the link between the value consumers assign to outputs and the incentive rates. Some other stakeholders such as FPSA, and Energy Intensive Users Group also thought RAMs were unnecessary.
- A number of stakeholders, such as Citizens Advice and the suppliers that responded, supported the idea of introducing a measure that could limit companies' returns, however there was no consensus on which of the options presented would be most effective. Citizens Advice felt they did not have enough information to be able to form a view at this stage.
- Two network companies (NGET, Cadent) argued that RAMs could be beneficial in restoring legitimacy and favoured the option of a sculpted RoRE sharing factor or sculpted totex sharing factor. Additionally, six other network companies also regarded sculpted RoRE/totex sharing factors as the least worst options.
- None of the network companies supported any of the other RAM options, with companies most strongly opposing any form of relative performance measure such as anchoring or relative incentives. This was mainly due to potential adverse consequences on collaboration across the sector, investment decision making and increased risks that could potentially affect the cost of capital and financeability. Companies also felt this type of mechanism was unfair as it pitted one company against another, when factors outside of a company's control could affect its performance.

Other issues raised

Alongside responses to our consultation questions, several respondents also raised other issues. The most notable were:

- Citizens Advice, Citizens Advice Scotland, Sustainability First and National Energy Action all highlighted their concern at the limited reference to the role we expect network companies to play in addressing issues associated with consumer vulnerability in RIIO-2. Citizens Advice also wanted legislation to allow consumers to reopen price controls.
- DNOs were concerned that decisions made now for the transmission and gas distribution sectors would apply to electricity distribution. They wanted full opportunity to make representation and for the circumstances of their sector to be taken into account. More generally, many network companies wanted to emphasise their view that RIIO was working well and no changes were necessary to the framework. Some also highlighted the need to review the framework in the round, and that changes to individual elements could have a consequential impact on other parts. Some commented that our focus on returns might lead to us making changes that have a detrimental impact on their ability to innovate and drive the energy system transition.

- Stakeholders, and in particular responses from Trade Unions, highlighted the skills shortage facing the industry. They wanted us to consider the use of workforce resilience and working standards within the outputs framework.
- Several respondents, predominantly those with an interest in visual amenity, wanted more emphasis on sustainability in the RIIO-2 objectives. They wanted reassurance that allowances for undergrounding would be maintained.
- Suppliers were keen to see arrangements that mitigated against the cliff-edge impact on network charges that can occur at the start of the price control (and which they have little ability to price accurately into customer bills). They wanted us to set the price for the first year 18 months in advance and smooth out the difference between this and settlement price over the remainder of the period.
- Some other stakeholders wanted RIIO-2 to drive closer engagement between network operators and local authorities. There were several mentions of the need to align network planning with the delivery of local energy strategies.

Appendix 7 – 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

Baseline Allowed Return

Our estimation of the costs of debt and equity capital assuming no other financial incentives. Based on a weighted average of the pre-tax cost of debt and the post-tax cost of equity. 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.

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.

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 rate of interest, and 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 it is incurred.

Carbon footprint

Total amount of greenhouse gas emission caused directly and indirectly by a business or activity.

Challenge Group (RIIO-2)

In RIIO-2, Ofgem will set up a central RIIO-2 Challenge Group that will be independently chaired. It will provide Ofgem with a public report on companies' business plans from the perspective of end consumers.

Clawback

When a company makes large savings due to spending far less than the revenue that was set at the price control, the regulator may decide to take some of this revenue back ex post ie retrospectively and pass the savings onto consumers. This is known as a clawback.

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.

Consumer

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

Consumer Price 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.

Corporation tax

A UK tax levied on a company's profits.

Cost of capital

This is the minimum acceptable rate of return to investors on capital investment based on the rate of return that could have been earned by putting the same money into a different investment with equal risk. It includes both the cost of debt and the 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 (eg 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

In 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

The reduction or removal of carbon dioxide from energy sources.

Demand side response (DSR)

A method of altering consumption patterns to increase or reduce demand in particular locations and time periods, in response to energy prices and system conditions.

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 bulk transfer of electricity and gas across GB.

Distribution System Operator (DSO) roles

The development of distribution system operator 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.

Dividend Growth Model (DGM)

The Dividend Growth Model is a method for valuing equity securities based on the present value of future dividends that are assumed to grow at a constant rate in perpetuity.

E

Economic Life

The period over which an asset performs a useful function.

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.

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 is the electricity transmission system operator in Great Britain.

End-use 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

Under 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

Financial models are used to determine whether the regulated energy network is capable of financing its necessary activities and earning a return on its regulatory asset value (RAV) under the proposed price control. This financeability is assessed using a range of different 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 said to be fuel poor if it has above-average energy needs, and if it were to spend the amount needed to fully meet its energy needs, it would be left with income below the official poverty line.

In Scotland and Wales, fuel poverty is defined as households which would have to spend 10% of their income to achieve adequate standards of warmth (although their calculating methods differ).

G

Gas Distribution Networks (GDNs)

GDNs transport gas from the National Transmission System to final consumers and to connected system exit points. There are five licensed GDNs that are subject to RIIO price controls. These are owned by four groups.

Gas Distribution Price Control Review (GDPCR)

The review of the price control applying to gas distribution networks. The review led to 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 is gas transmission system operator in Great Britain.

Gas transporter (GT)

The holder of a Gas Transporter licence including GDNs, IGTs, NGG and the NTS SO.

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 Regulatory Asset Value (RAV).

Gilts

A bond issued by the UK government.

I

Incentive rate (also referred to as Totex Incentive Mechanism/Sharing Factor)

The percentage of underspends/overspends against expenditure allowed at the price control review that is kept by the company responsible. The remaining savings/losses are passed through to consumers.

Independent distribution network operator (IDNO)

IDNOs are Electricity Distribution licence holders that own and operate electricity distribution networks that are predominantly extensions to the incumbent networks (eg to serve new housing developments).

Independent gas transporter (IGT)

IGTs are Gas Transporter licence holders that own and operate small local gas networks.

Indexation

The adjustment of an economic variable so that the variable rises or falls in accordance with the rate of inflation.

Inflation index

This is a measure of the changes in given price levels over time. A common example is the Retail Prices Index (RPI), which measures 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.

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.

Information revealing devices (IRD)

Devices used to incentivise network companies to bring forward plans that are ambitious and high- quality. Our RIIO-1 suite of IRDs consisted of two elements (see IQI and Fast-tracking).

Interconnector

Equipment used to link electricity or gas systems, in particular between two EU Member States.

Intermittent generation

Electricity generation technology that produces electricity at irregular and, to an extent, unpredictable intervals, eg wind turbines.

L

Licence conditions

Conditions within the licence granted to network companies to enable them to carry out their regulated activities. The Authority (GEMA) has the power to take appropriate enforcement action in the case of a failure to meet obligations contained within licence conditions.

Load Related Capex

The installation of 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 use the forthcoming price control period to prepare for the role they will have to play as GB moves to a low carbon economy.

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

Negotiated Settlement

In some regulatory regimes the regulated business can negotiate a settlement with its consumers, and other stakeholders potentially, on investment and charges. The regulator may only intervene where there is a concern with the proposed agreed settlement.

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 set for the use of network services.

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 notional company in this context is 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

Consumer facing outcomes that we expect regulated licensees to deliver.

Output delivery incentives

In RIIO-2, output delivery incentives will apply where service quality improvements beyond the minimum standard may be in the interests of consumers. The overall cost of such financial incentives will not exceed the value of service improvements to 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 in the next.

Price control deliverables

In RIIO-2, price control deliverables will reflect:

- Outputs or input activities to be delivered to a stated standard, for example in response to government policy or Ofgem direction;
- Output or input activities that are significant and/or high value (eg a list of large capital projects to a stated specification, budget and timing).

R

Real Price Effects (RPEs)

Expected changes in input prices, eg wages, relative to the Retail Price Index (RPI).

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 RPI in order to allow for the effects of inflation on the licensee's capital stock.

Regulatory burden

A term used to describe the cost – 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 assets to accommodate changes in the level or pattern of electricity or gas supply and demand.

Re-openers

A process undertaken by Ofgem to amend revenue allowances (or the parameters that give rise to revenue allowances) within the price control period.

Repex or replacement expenditure

This is expenditure in relation to the replacement or decommissioning of iron gas mains. A significant component of Repex is the HSE enforced gas mains replacement programme on the gas distribution networks.

Research and development (R&D)

Creative 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 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 eight-year average returns. These returns may not equal the actual returns seen by shareholders.

Revenue driver

A means of linking revenue allowances under a price control to specific measurable events that are considered to influence costs. An example might be to allow a specified additional revenue allowance for each megawatt of new generation connecting to the network. Revenue drivers are used by Ofgem to increase the accuracy of the revenue allowances.

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-Gas Distribution Price Control Review 1 (RIIO-GD1)

The price control review applied to the gas distribution network operators, following GDPCR1. 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.

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.

RPI-X

The form of price control applied to energy network monopolies 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 review 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

Shrinkage

Shrinkage is a term used to describe gas either consumed within or lost from a transporter's system. For example shrinkage can result from gas transmission companies using gas within their transportation systems to fuel gas compressors. Gas leaks from distribution mains are vented by certain types of equipment and shrinkage also occurs when gas is stolen or not charged for in error.

Slow money

Slow money is where costs are added to the RAV and therefore, revenues are recovered slowly (eg over 20 years) from both current and future consumers.

Smart

Something enabled by new technology or new uses of technology, in particular technology (often communications) that enables automatic control.

Smart metering

Advanced gas and electricity metering technology that offers consumers more information about, and control over, their energy use (such as providing information on total energy consumption in terms of value, not only volume), and/or allows automated and remote measurement.

Stakeholder

Stakeholders are individuals, organisation or communities including future consumers that are impacted by the activities of the network company. They may have a direct or indirect interest in the company's business whether occasionally or on a regular basis.

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.

Supplier hub

The supplier hub principle states that the consumers' principle relationship should be with their supplier.

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 development

Refers to economic development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

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

Tendering

The use of a competitive process to select a party to undertake specific projects or deliver solutions to specific outcomes.

Total expenditure (Totex)

Totex includes both capital expenditure (capex) and operating expenditure (opex). 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 Price Control Review 4 (TPCR4) and roll over (TPCR4RO)

The price control review applied to transmission owners (TOs) and the GB system operators from April 2007 to March 2012 with a rollover year to March 2013.

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

In RIIO-2, transmission companies will be required to set up a Customer Engagement Group. This Group will provide Ofgem with a public report on their views and the companies' business plans from the perspective of network users.

W

Whole-system outcomes

Outcomes necessary to ensure that the energy system as a whole is effectively coordinated to deliver best value for consumers in response to the energy transition.

Appendix 8 – Acronyms

ADSCR	Adjusted Debt Service Cover Ratio
AER	Australian Energy Regulator
AICR	Adjusted Interest Cover Ratio
BAU	Business as usual
BEIS	Department for Business, Energy and Industrial Strategy
CAA	Civil Aviation Authority
CAPM	Capital Asset Pricing Model
Capex	Capital expenditure
CBA	Cost-benefit analysis
CCG	Consumer Challenge Group
CEPA	Cambridge Economic Policy Associates
CMA	Competition and Markets Authority
CPI	Consumer Price Index
CPIH	Consumer Price Index (includes a measure of owner occupiers' housing costs)
DECC	Department of Energy and Climate Change (now defunct)
DGM	Dividend Growth Model
DNOs	Electricity distribution network operators
DPCR3/4/5	Electricity distribution price control reviews for 2000-05, 2005-10 and 2010-15
DSOs	Distribution system operators
DSR	Demand Side Response
EBITDA	Earnings before interest, tax, depreciation and amortisation
ECIT	Extending competition in transmission
ENA	Energy Networks Association
ESO	Electricity System Operator
FFO	Funds from operations
FPNES	Fuel Poor Network Extension Scheme
GB	Great Britain
GDNs	Gas distribution networks
GDPCR1	Gas distribution price control review for 2008-13
HMRC	HM Revenue and Customs
HSE	Health and Safety Executive
IDNOs	Independent electricity distribution network operators
IFI	Innovation funding incentive
IFRS	International Financial Reporting Standard
IGTs	Independent Gas Transporters
IQI	Information quality incentive
IRM	Innovation roll-out mechanism
ITPR	Integrated Transmission Planning and Regulation
LCNF	Low Carbon Networks Fund
LiDAR	Light detection and radar
MAR	Market to Asset Ratio
MPR	Mid-period review of RIIO price controls
NIA	Networks Innovation Allowance
NIC	Networks Innovation Competition

NIE	Northern Ireland Electricity Networks
NLR (capex)	Non-load related capital expenditure
NOMs	Network output measures
NPV	Net present value
NTS	National (gas) transmission system
ODIs	Outcome delivery incentives
Ofgem	Office for Gas and Electricity Markets
OFTO	Offshore Transmission Owner
Ofwat	Water Services Regulation Authority
OLS	Ordinary least squares
Opex	Operating expenditure
ORR	Office for Rail and Road
PR14/19	Ofwat's price control review for 2015-20 and 2020-25
RAV	Regulatory asset value
RCF	Retained cash flow
Repex	Iron mains replacement expenditure in gas distribution
RIIO	Revenue = Incentives + Innovation + Outputs
RIIO-ED1	Electricity distribution price control review for 2015-23
RIIO-GD1	Gas distribution price control review for 2013-21
RIIO-T1	Electricity and gas transmission price control review for 2013-21
RoRE	Return on regulatory equity
RPEs	Real price effects
RPI	Retail Prices Index
RPI-X	Retail Prices Index less an efficiency savings estimate (price controls)
RRPs	Regulatory reporting packs
PMICR	Post maintenance interest cover ratio
SO	System Operator
SWW	Strategic Wider Works
TCR	Targeted Charging Review
TIM	Totex Incentive Mechanism
TMR	Total Market Return
TO	Transmission owner
Totex	Total expenditure
TPCR4/RO	Electricity and gas transmission price control review for 2007-12 and its extension for 2012-13
TR	Tender Round
TTT	Thames Tideway Tunnel
UK	United Kingdom
WACC	Weighted average cost of capital
WICS	Water Industry Commission for Scotland
WTP	Willingness to pay

Appendix 9 – Licensees subject to RIIIO price controls

Electricity Distribution Licence Holders	Electricity Transmission Licence Holders	Gas Transporters Licence Holders
UK Power Networks (UKPN) Eastern Power Networks Plc (EPN) London Power Networks Plc (LPN) South Eastern Power Networks Plc (SPN)	National Grid Electricity Transmission Plc (NGET)	Cadent Gas Ltd
Northern Powergrid (NPg) Northern Powergrid (Northeast) Limited (NPgN) Northern Powergrid (Yorkshire) Plc (NPgY)	Scottish Hydro Electric Transmission Plc (SHETL)	National Grid Gas Plc (NGGT)
Scottish and Southern Energy Power Distribution (SSEPD) Scottish Hydro Electric Power Distribution Plc (SSEH) Southern Electricity Power Distribution Plc (SSES)	SP Transmission Plc (SPT)	Northern Gas Networks Ltd (NGN)
Scottish Power Energy Networks (SPEN) SP Distribution Plc (SPD) SP Manweb Plc (SPMW)		SGN Scotland Gas Networks Plc Southern Gas Networks Plc
Western Power Distribution (WPD) Western Power Distribution (East Midlands) Plc (EMID) Western Power Distribution (South Wales) Plc (SWALES) Western Power Distribution (South West) Plc (SWEST) Western Power Distribution (West Midlands) Plc (WMID)		Wales and West Utilities Ltd (WWU)
Electricity North West Limited (ENWL)		