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RIO-2 at a glance

Revenues = Incentives + Innovation + Outputs

RIO is our approach to ensuring the monopoly companies who run our gas and electricity networks have enough revenue to run a network that delivers what customers need at an efficient cost.

We are now consulting on proposed changes to the framework for the next price control, called RIO-2.

Our proposals will enable the networks to meet the needs of current and future consumers, but will be more challenging than previous price controls. We expect a lower cost of capital and challenging cost allowances and performance targets.

The key changes we want to make are outlined here. This consultation is your opportunity to tell us what you think of our proposals.

Giving consumers a stronger voice

Our energy needs are changing. Companies have to understand and show how they are responding to these changes in their plans for RIO-2.

We will give consumers a stronger voice in the process of setting the price control. Consumers and experts will test and challenge these plans and tell us if they meet their future needs.

Responding to changes in how networks are used

Network companies have to help enable the energy system transition, but we also have to guard against the uncertainty that these changes bring.

We will design RIO-2 so that companies develop their networks to respond to the changes happening across the energy system, but we will put controls in place to protect consumers from the risk that the future could turn out differently to what we currently think.

Simplifying the price controls

Price controls are complex, but there are ways we can simplify them.

RIO-2 has to be underpinned by good-quality business plans and we are consulting on ways to encourage these.

We are clarifying and simplifying the way we set outputs, incentives and cost allowances; and making price controls more transparent and easier for people to understand.

Ensuring fair returns

The returns that companies earn should be fair for consumers and investors.

We will set this at a level that reflects the low level of risk these companies face because of our stable and predictable regulatory framework. We will offer additional rewards for companies that deliver great service at low cost, and penalties for those who do not.

We are also proposing new measures that will provide more protection for consumers against companies earning higher than expected returns.

Driving innovation and efficiency to benefit consumers

Innovation and competition can help to reduce costs and deliver better value for consumers.

In RIO-2 we want companies to think smarter and innovate, drawing on third parties to deliver the energy system transition. We also want to see competition more widely where this can deliver benefits.

Foreword

Our energy networks transport gas and electricity from where it is produced to where it is consumed in homes and businesses across the country. Three decades ago, when we first started regulating these networks following privatisation, electricity was mostly produced by burning coal in power stations, and gas was mostly produced in the North Sea and used for domestic heating and industry. Most households and businesses had a single monopoly supplier.

Over these three decades, the energy sector has transformed. There is now competition in the wholesale and retail markets, with households and businesses able to choose from a range of suppliers and products. Electricity is now mostly produced using natural gas or through renewable energy sources like the sun and wind. This has required heavy investment in the networks, to connect new sources of generation and to upgrade local networks to improve reliability.

Since privatisation, network companies have invested over £100bn¹ in maintaining and upgrading the networks. This investment has seen a substantial improvement in service quality, with the number and length of power cuts almost halving since 2002. We have achieved this through our incentive-based approach to setting price controls, in which investors profit by companies' spending less and delivering more. Under our price controls, the cost of transporting a unit of electricity around Britain has fallen by 17% since the mid-1990s. Our electricity network charges per unit are now lower than those in Germany or France. Meanwhile, the gas networks have seen significant investment of over £20bn since the iron mains replacement programme began in 2002, to improve the safety of the network. Local gas grid companies are currently replacing over 3,500km of mains every year. Our price controls have ensured that costs to consumers of paying for this investment have risen by less than 1 per cent per year. Since 2008, the local gas grid companies have improved customer satisfaction by 17% and have connected almost 100,000 new customers under our Fuel Poor Network Extensions Scheme to provide households with a cheaper heating solution.

Looking ahead to the next decade, we will see further changes in how these networks are used. We are likely to see an increasing uptake of electric vehicles and electric or renewable heat. How consumers interact with the networks will also change. Nearly one million homes already have solar panels, generating electricity both for their own use and to sell to others. Through our Regulatory Sandbox² we are supporting trials of peer-to-peer local energy trading platforms. The rollout of smart meters will enable consumers to track more closely how and when they use energy. New services will emerge to help them find the best deals. Batteries (including those in electric vehicles) could increasingly provide flexible and inexpensive storage to smooth out peaks in demand during the day. The development of new markets and technologies and better use of network

¹ Unless otherwise stated, all the numbers quoted in this document are expressed in real terms, using the retail price index to convert nominal values ("money of the day") into constant prices.

² <https://www.ofgem.gov.uk/about-us/how-we-engage/innovation-link>

infrastructure means that building new pipes and wires may not always be the best response to increasing demand.

This is an exciting prospect, but setting network company revenues becomes more challenging in a world that is rapidly changing. This is the backdrop to RIIO-2, the next round of energy network price controls.³

We first used the RIIO framework in 2013. We wanted network companies to respond to the changing needs of their consumers. We wanted them to deliver outputs that consumers valued, such as improved reliability or better customer service. We wanted companies to be innovative and to deliver these outputs in the most efficient way, giving the same attention to technological or operational solutions, as they traditionally gave to capital investments. We wanted to reward those that did all of this, so that investors and consumers both benefitted from safe, reliable and low cost networks.

In the majority of these respects, RIIO has worked well. The networks are now more reliable and consumers are highly satisfied with the service provided by local network operators. The innovation stimulus has raised research and development spending and should result in significant benefits for consumers from nationwide rollout of successful schemes. Our framework has encouraged greater deployment of lower cost operational solutions and competition is starting to take shape in the onshore sector.

At the same time, we have learned some valuable lessons. Returns across companies have been higher than we expected and do not reflect the low level of risk these companies face. We have also learnt that assumptions, that seemed reasonable at the time we set the control, have not always played out as expected. If we do not have mechanisms to correct the price control when things change, companies can earn additional profits when these turn out in their favour.

We will continue to use the RIIO framework to set price controls. We believe the most appropriate way of regulating these companies is to incentivise them to deliver the outputs that consumers' value at the most efficient cost. We are however proposing to enhance elements of the framework to apply lessons from RIIO-1, and to meet the challenges that lie ahead.

When companies profit from delivering excellent service or finding new and innovative ways of reducing costs, consumers benefit too because the gains are always shared and they get better service. But if companies profit from other factors (such as forecasting errors), then nobody benefits, other than shareholders. The long-term sustainability of both the industry structure and how we regulate depends on the public being confident that the regime is protecting their interests. It is for these reasons that we are proposing measures to ensure fair returns, including a review of tax arrangements within the price control. We will also continue to ensure our broader regulatory and ring fencing arrangements are fit for purpose.

This will be a tougher price control for network companies. We will set targets that reward those that deliver great customer service at lower cost, and penalise those that do not. We will put consumer engagement at the very heart of our price controls, and amplify their voice in demanding improved service and lower

³ RIIO is our approach to setting price controls and stands for Revenue = Innovation + Incentives + Outputs

costs from the networks. We will strengthen the use of competition, and support innovation into providing the intelligent, flexible networks of the future.

We believe that with these enhancements, we will have the right framework in RIIO-2 to deliver the energy networks consumers require. We have considered how to meet future consumers' requirements, while protecting the bills of today's consumer (and vice versa). We have sought to maintain an attractive environment for investors, but investors should prepare for returns that properly reflect the low level of risk that they face because of our stable, predictable regulatory framework.

We look forward to your support and input in helping us assess, develop and implement these proposed enhancements.

Dermot Nolan

Chief Executive Officer, Ofgem

1. Summary of proposals

What are we consulting on?

- 1.1. We set price controls for the companies that operate the gas and electricity networks in Great Britain using the **RIIO framework**. RIIO involves setting **R**evue using **I**ncentives to deliver **I**nnovation and **O**utputs.
- 1.2. We think the RIIO framework works well and is the most appropriate way of meeting consumers' needs. We will continue to incentivise companies to deliver the outputs that consumers value at the most efficient cost.
- 1.3. We have identified ways we can enhance the RIIO framework. These build upon learning from the first round of RIIO price controls and address challenges that lie ahead.
- 1.4. These proposals will ensure companies work with stakeholders to deliver the networks that will support our future energy needs, at a fair cost to consumers. Our proposals will set returns to reflect the low levels of risk that these companies face. As a result, returns in RIIO-2 should be lower than they were in RIIO-1, but still attractive to investors.
- 1.5. This consultation is your opportunity to provide us with your views on our proposals.

Our proposals

- 1.6. A price control is complex and covers a range of issues. This consultation covers a similarly broad landscape, but we have broken it into five key topics with a chapter on each. Our key proposals are:
- 1.7. **Chapter 3: Giving consumers a stronger voice**
 - We are introducing different models for enhanced stakeholder engagement for the distribution and transmission sectors in RIIO-2. In distribution, companies will be required to set up a Customer Engagement Group. This Group will provide us with assurance that companies' plans address needs and preferences of local users and consumers as to access, service quality, reliability and willingness to pay. In transmission, companies will be required to set up a User Group to provide input and challenge to their business plan. We will set up an independent RIIO-2 Challenge Group to assess proposals in both sectors. Where these groups disagree with company proposals, we propose to hold Open Hearings to hear arguments in favour or against company proposals. The outputs from this process will inform our assessment of the business plans.

1.8. Chapter 4: Responding to how networks are used

- We are proposing to set a **price control length** of five years as a default for each sector, but challenge the companies to make a compelling case for some allowances to be set for longer if this could deliver benefits for consumers.
- We propose to focus on the levers within the price control that could support the delivery of **whole system outcomes** across the energy system, but do not consider it necessary to align the start of the electricity transmission and electricity distribution price controls to achieve these outcomes.
- We are minded to separate the **electricity System Operator's (SO) price control** from National Grid Electricity Transmission's (NGET's) Transmission Owner (TO) control and are consulting on potential remuneration approaches. We are not currently proposing any changes to the broad framework for the **gas SO** arrangements, either in terms of arrangements for separation or remuneration, but we are seeking views on this.
- We want to ensure that networks are **efficiently utilised and appropriately invested in** to meet current and future needs, and we are seeking views on how this can be achieved at lowest cost.
- We are also considering the potential role network operators, including system operators, could play in encouraging **end-use energy efficiency**.

1.9. Chapter 5: Driving innovation and efficiency

- We intend to transition more **innovation** spending to business as usual using the incentives framework. We propose to continue to provide an innovation stimulus where projects can demonstrate long-term value to consumers but are at higher risk of under-delivery by the core RIIO-2 framework, and we seek views of the form of funding this could take. We propose to target this support more towards critical issues associated with the energy transition and coordinate with other public sector innovation schemes where this is in the interest of network consumers. We propose enabling increased third party engagement and exploring the potential for direct access to funding.
- We propose to extend **competition** across the sectors (electricity and gas, transmission and distribution), where it is appropriate and provides better value for consumers. In particular, we will continue to develop late models of competition for building new assets and we will further consider the potential for earlier stage competitions for ideas and solutions to network problems.

1.10. Chapter 6: Simplifying the price controls

- We describe our approach to setting **outputs** and any associated financial incentives. We also explain our general approach to setting **cost allowances** to reduce the risk of forecasting error, including greater use of indexation. We invite views on our approach to both these topics.
- We are consulting on different options to enhance the devices we use to get better information from the network companies. Option 1 proposes to retain but amend the Information Quality Incentive (**IQI**) and this could apply in all sectors. Option 2 proposes to retain **fast-tracking** in distribution, but not transmission. In option 3 we propose

to remove both the IQI and fast-tracking in distribution and having a **single business plan incentive** to reward high quality plans. We do not propose to apply option 3 in transmission. Options 1 and 2 are not necessarily mutually exclusive, for example we could retain the IQI in all sectors (option 1) and fast-tracking in distribution (option 2), or replace the IQI and fast-track in distribution with a single business plan incentive (option 3). We also describe other methods we will use to improve information quality in the transmission sector.

1.11. Chapter 7: Fair returns and financeability

- We are consulting on options to improve our approach to setting the **cost of debt**.
- We are consulting on our proposed methodology to set the RIIO-2 **cost of equity**, with an indicative range of cost of equity for RIIO-2 of 3% – 5% were the price controls to be set under today’s market conditions. We are also interested in views on the appropriateness of indexing the cost of equity.
- To ensure a lower baseline allowed return does not affect the **financeability** of companies, we are consulting on three options, (i) Adopting a nominal return instead of a ‘real’ return; (ii) Doing nothing/putting the onus fully on the companies; and (iii) Protecting the companies’ ability to make debt payments.
- We are consulting on three options for the treatment of **tax**. These are (i) continue with the current approach of calculating a notional tax allowance, (ii) using tax values paid to HM Revenue and Customs, or (iii) taking the lower of either option (i) or option (ii). We would also like to hear alternative views from stakeholders.
- On **inflation**, we propose to move away from retail price index (RPI) and invite views on this.
- We are also consulting on new mechanisms to ensure **fair returns** for both companies and investors.

1.12. In each chapter, we describe the associated issues for RIIO-2 and any amendments to the framework that we think are necessary. We have then set out the key questions that we would like you to consider.

1.13. This is a consultation on the RIIO framework. The framework will apply to the sectoral price controls for gas distribution, and gas and electricity transmission companies. It will subsequently also apply to the electricity distribution network companies. For some of our proposals we intend to make a decision in the summer as part of this Framework review. In other areas, we will make our decision within the sector-specific price control. In **chapter 8**, we provide an overview of the decisions we will make in the framework and the decisions we will make in the sector-specific price controls. We also provide an overall timeline for RIIO-2 and we invite you to give your views on the key issues that could be relevant for the sector-specific price controls.

How you can get involved

- 1.14. As noted above, in each chapter we are asking specific questions regarding the price control framework. We provide a complete list of these questions in **Appendix 3**.
- 1.15. We welcome written comments on these questions, or any other issues you believe we should consider, by **2 May 2018**. Please email responses to RIIO2@ofgem.gov.uk. Unless clearly marked as confidential, we will publish responses on our website shortly after the response deadline.
- 1.16. To find out more about what this framework means for you please join us at our events in London and Glasgow.
- 1.17. We will use these events to show you what we have learned from RIIO-1 and outline the main proposals of this consultation. Following a discussion on the proposals we will then open up for question and answer sessions. You will then have an opportunity for debate and deeper discussion at the breakout sessions, which will cover more detailed aspects of the price control.

Event location and timings

London: Thursday 22 March 2018, 09:30-13:30
One Birdcage Walk, Westminster SW1H 9JJ

Glasgow: Thursday 19 April 2018, 09:30-13:30
The Lighthouse, 11 Mitchell Lane, Glasgow G1 3NU

- 1.18. If you would like to book for these events please contact us at stakeholders@ofgem.gov.uk.
- 1.19. **Cardiff:** We will also be hosting a Chairman's Lecture on The Future of Local Energy in Cardiff on Wednesday 14 March 2018. Representatives from the RIIO-2 programme will be available to speak to before and after the lecture. For more details, or to register please click [here](#).⁴
- 1.20. Make sure you get 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](#)'.⁵

⁴ <https://www.eventbrite.co.uk/e/ofgems-future-of-local-energy-cardiff-tickets-42936940545>

⁵ <https://dotmailer-surveys.com/af1qcbd5-b7nlaf1>

Associated documents

CEPA Report on baseline allowed returns for RIIO-2

CEPA Review of the RIIO Framework and RIIO-1 Performance

Ofgem Consumer First Panel, Year 9, Wave 2, Consumer Involvement in the Price Control Process

2. Introduction

Network companies and price controls

- 2.1. As consumers, we rely on gas and electricity to heat, light and power our homes and businesses. A network of pipes and wires spans Great Britain that transports energy from its place of generation, or point of injection. Private companies own and operate these networks, and we all pay for them through our energy bills.
- 2.2. These companies operate in regions where they largely have a monopoly on network services.⁶ That is why we cap the revenues they can recover. Our role is to ensure that 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 the companies to recover revenues that reflect the efficient costs incurred by them in doing so.

The RIIO framework

- 2.3. We use the RIIO framework as our approach to running the price control. RIIO involves setting **R**evue 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.
- 2.4. The first round of RIIO price controls (for companies operating electricity and gas transmission and gas distribution networks) began in 2013. In 2015, we set price controls for electricity distribution. Under these controls, network companies will recover revenues of around £96bn⁷ over an eight-year period to provide safe, secure, reliable, low carbon and smarter network services.

⁶ Network extensions and where appropriate reinforcements can be competed for; Independent Network Operators (electricity) and Independent Gas Transporters (gas) compete with incumbent distribution network companies for the construction and operation of new networks (for instance to new housing estates, business parks etc).

⁷ Based on estimated allowed revenue in 2015/16 prices following the Annual Iteration Process 2016.

Preparing for RIIO-2

- 2.5. In setting the next round of RIIO price controls (RIIO-2), we want to learn from our experience to date and ensure that networks can deliver the network services that consumers will require in the future. In July 2017, we issued an open letter inviting views on our approach to RIIO-2.
- 2.6. We have considered all of the responses that we received and have met with stakeholders including consumer representatives, network operators, generators, suppliers, investors and large consumers. We have held workshops on key topics to explore certain issues in more detail. We have also commissioned consultants to advise us and drawn upon our own assessment of performance in RIIO-1.

Managing the Energy transition

- 2.7. The energy system is evolving, especially with regard to the services and flexibility that network and non-network companies can provide and offer one another and the system. There are also major changes expected on the demand side, with increasing uptake of technologies such as electric vehicles and smart meters. The boundaries between transmission and distribution, network and non-network and even producers and consumers, including beyond the consumers' meters, are blurring.
- 2.8. Going forward, we need to ensure that the critical infrastructure and right regulatory framework is in place to facilitate this transition. This framework consultation provides details on some of the proposals and issues we are considering to ensure that the RIIO-2 price controls remain adaptable to a rapidly changing environment. The framework should support companies in proactively managing and shaping the significant changes that are occurring across the energy system in the long-term interests of consumers.
- 2.9. **Chapter 4** in particular describes how the framework can facilitate and encourage network companies to consider the future challenges associated with the energy transition, and how they will need to adapt their business to response to the challenges. This includes seeking early views on how the framework can support the delivery of whole system outcomes as well as ensuring the networks are efficiently utilised and appropriately invested in to meet current and future needs. **Chapter 5** also highlights our broad proposed approach to encouraging innovation with a particular emphasis on how this can be better aligned to supporting the energy transition.
- 2.10. Given the broad nature of the RIIO-2 programme, it is unsurprising that there are numerous links and dependencies with our other areas of work. RIIO-2 interacts with a number of activities identified in our draft forward

work programme⁸ as well as some of the priority areas outlined in our strategy for regulating the future energy system.⁹

- 2.11. In particular, our work developing the RIIO-2 framework has links to the following (Appendix 1 – Energy transition related Ofgem work).
- 2.12. **Electricity Networks Access Project** is considering access arrangements and forward-looking charges with the aim of delivering more efficient use and development of electricity networks.

Electricity Targeted Charging Review (TCR) is considering how the residual and cost recovery charges are set for the electricity network with the aim of reducing harmful distortions and ensuring system users receive fair treatment.

Smart Systems and Flexibility work is delivering actions around the removal of barriers to new technology, support for smart homes and businesses and the delivery of markets that work for flexibility. Ongoing work also includes considering how to support improved coordination between the SO and network companies to drive efficient whole system outcomes as well as the potential future distribution system operation roles.

Future Electricity System Operator (ESO) work will look to create a legally separate ESO from National Grid's electricity transmission business to ensure that it is better placed to undertake its important role in the energy transition.

Future Supply Market Arrangements is exploring whether the supplier hub model is still fit for purpose or whether we should consider changes as the energy system evolves.

Gas Charging Review is supporting industry in taking forward the conclusions of the Review with the aim of ensuring that the Transmission Operator changes for access to and use of the gas network are compliant with EU law and provide the right incentives to market participants.

Innovation Link supports innovators by providing fast, frank feedback on the regulatory framework and the regulatory sandbox helps to remove barriers to innovation by providing the potential to trial innovative services.

Half Hourly Settlement is being taken forward to facilitate a smarter, more flexible energy system and to empower consumers to take an active role in the energy system transition as the sector decarbonises.

- 2.13. These projects, including RIIO-2, all support our broader aim of ensuring that the regulatory framework drives innovation and supports the transition to a low carbon energy system. This will deliver benefits for

⁸ <https://www.ofgem.gov.uk/publications-and-updates/forward-work-programme-2018-19-consultation>

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

consumers in the context of a rapidly changing technological, commercial, financial and political environment. In developing RIIO-2, we will continue to consider the impact and direction of travel of these projects and work with stakeholders to deliver price controls which can sufficiently meet the current and future challenges.

Performance in RIIO-1

- 2.14. Although we are only part of the way through the RIIO-1 price controls, there are clear indications that, by and large, network companies are delivering well for consumers and providing the services they need:
- Since 2015, 6.7GW of new generation has connected to the distribution networks. More than a quarter of all generation is now connected to these lower voltage networks
 - Since 2015, the number of interruptions to consumers on the electricity network, and the duration of these interruptions have both reduced by over 11%
 - Customer satisfaction with local networks continues to be extremely high. In gas, satisfaction has improved by 17% since 2008, and has continued to rise since the introduction of RIIO
 - Since 2013, more than 50,000 consumers experiencing fuel poverty have been able to get a connection to the mains gas grids so they can get cheaper energy
 - Electricity network companies have reduced the carbon footprint of their networks in the past two years by 850,000 tCO₂e.
- 2.15. Alongside this, most companies are making double-digit, or close to double-digit returns in real terms. Some of this is because of greater efficiency, good performance against targets, or companies innovating to cut costs. These innovations include the use of demand-side response contracts to defer traditional reinforcement scheme, and using LiDAR¹⁰ to focus tree cutting where it is most needed.
- 2.16. However, the returns these companies are earning are high, compared to the low risks that they face.
- 2.17. Companies are also benefitting as actual prices of labour and materials have not increased by as much as forecast when the price control was set. In some cases, demand for connections to the networks has also been lower than expected, further reducing companies' costs. In other cases, the need for some projects that were assumed to be required did not arise.
- 2.18. Through the RIIO model, we require network companies to share savings with consumers and we have mechanisms that adjust revenues to reflect changes in requirements. This has resulted in handing back over £5bn to consumers in the form of lower network charges on bills.
- 2.19. In addition, many network companies making higher than expected returns have voluntarily taken actions worth over £650m to consumers.

¹⁰ Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth.

This is important because the profits earned by companies need to be legitimate.

What does this mean for the RIIO-2 framework?

CEPA review of RIIO-1 framework

2.20. We commissioned Cambridge Economic Policy Associates (CEPA) to review the RIIO-1 price controls and provide us with recommendations for RIIO-2. We have provided its report as an associated document.

2.21. In summary, CEPA concludes that RIIO-1 has been successful at incentivising companies to deliver better returns through strong performance. In particular, drawing from our RIIO annual reports, CEPA notes:

- Customer satisfaction scores have been improving and companies appear to have improved their engagement with stakeholders
- Network reliability has improved across sectors
- All companies are on track to meet safety targets
- With the exception of NGGT, all companies have reduced their business carbon footprint, and reduced emissions and network losses
- All but one of the gas distribution network (GDN) operators are on track to meet or exceed their targets for connecting households who qualify as 'fuel poor' to the gas grid¹¹.

2.22. However, CEPA found that the returns the companies earned did not reflect their overall risk exposure and the cost of these performance improvements was higher than it needed to be. CEPA concludes that this was because:

- The framework was ambitious and complex, and we operated at an information disadvantage to companies. This led to issues with how we implemented the framework
- We exposed network companies to risks that were outside of their control, and some of these turned out in their favour.
- Given the information advantage that network companies have over us, and the complexity of the framework, the overall balance of risks is likely to be in favour of the networks.

2.23. CEPA makes two sets of recommendations for us to consider for RIIO-2. These are:

Better application of the principles/objectives of the RIIO framework, including:

¹¹ The Fuel Poor Network Extension Scheme (FPNES) provides assistance to households that may struggle to afford to heat their property.

- *Stakeholder engagement* - specifying the areas of the price control where stakeholders are best placed to shape the settlement and the forms of engagement that would be most effective
- *Output incentives* - reviewing output targets in light of revealed performance/most recent data and not locking these down until as late as possible in the price control review. Where appropriate we should consider setting localised targets based on consumers' preferences, or using relative targets
- *Relationship between output targets and total expenditure (totex) allowances* - setting allowances for totex more clearly linked to the delivery of outputs or specific projects/activities. More clearly distinguishing between revenue allowances for activities and output rewards to avoid any 'double counting' (funding companies to deliver an investment and then rewarding them when that investment contributes to improved performance). Ensuring allowances reflect efficient cost
- *Long-term view on costs* - where the cost profile of work spans multiple price controls (such as for the gas mains replacement programme), we should take a long-term view of average cost in setting allowances. This is to avoid companies bringing forward lower value work to achieve underspend in one control and then requesting higher allowances for more expensive work in future control periods
- *Dealing with uncertain investment* - using uncertainty mechanisms to minimise the reliance on forecasts and/or using competition more extensively, where cost/scope of work is uncertain.

Amending the framework to achieve a lower target risk/reward balance in RIIO price controls

In RIIO-1, network companies faced risks that were outside of their control, and have earned added returns when these risks have turned out in their favour. In resetting this balance, we should consider our approach to:

- Proportionate assessment, including fast-tracking and early settlement
- The scope of outputs and how to encourage whole system thinking
- Totex allowances and the Information Quality Incentive (IQI)
- Dealing with uncertainty, particularly for Real Price Effects
- The length of the price control.
- Introducing a "failsafe" mechanism to calibrate returns, recognising that a price control is complex and we cannot anticipate all events that can affect out-turn performance.

Our response to CEPA recommendations

2.24. We have carefully considered CEPA's recommendations and these have informed many of our proposals. The table below is a guide to how our proposals align to CEPA's recommendations, and where in this document you will find more information.

Table 1 – A guide to our response to CEPA recommendations

CEPA recommendations	our response
CEPA Recommendation 1: Better application of the principles/objectives of the RIIO framework	
Stakeholder engagement	In chapter 3, we describe our approach to enhanced engagement.
Output incentives	In chapter 6, we describe our approach to setting outputs and associated financial incentives.
Relationship between output targets and totex allowances	In chapter 6, we describe our approach to setting outputs and associated financial incentives. We also explain how we intend to set cost allowances.
Long-term view on costs	In chapter 4, we describe our approach to setting the length of the price control, including the option of setting some allowances over longer periods.
Dealing with uncertain investment	In chapter 6, we describe how we intend to set cost allowances to reduce forecasting risk, including the need for greater indexation.
CEPA Recommendation 2: Amending the framework to achieve a lower target risk/reward balance in RIIO price controls	
Fast-tracking and early settlement	In chapter 6, we describe options for information-revealing devices, and we propose changes to the fast-track process.
Outputs and how to encourage whole system thinking	In chapter 4, we describe how the framework will support the delivery of whole system outcomes. In chapter 6, we describe our approach to setting outputs.
Totex allowances and the IQI	In chapter 6, we explain how we intend to set cost allowances and propose changes to the IQI
Dealing with uncertainty	In chapter 6, we intend to set cost allowances to reduce forecasting risk.
The length of the price control	In chapter 4, we describe our approach to setting the length of the price control.
Introducing a "failsafe" mechanism	In chapter 7, we describe options to mitigate the risk of higher than expected returns.

3. Giving consumers a stronger voice

Chapter summary

We are introducing different models for stakeholder¹² engagement for distribution and transmission. We intend to work with industry to set up these groups immediately.

Distribution:

Companies will be required to establish an independently chaired **Customer Engagement Group** to challenge the companies. This Group will provide a report to us on how the company has reflected the needs and preferences of local users and consumers, including on outputs, service quality standards, and willingness to pay in their plan.

Transmission:

Companies will be required to establish an independently chaired **User Group** to provide input and challenge to their business plan. They will provide a report to us on areas of agreement or disagreement with the companies.

We will also set up an independently chaired **RIIO-2 Challenge Group** that will assess the business plan proposals in both the sectors and will provide a report to us on their findings. We will provide this group with secretariat support and access to any technical and financial assistance they may require.

Once we are in receipt of business plans, we are also considering the potential to hold **Open Hearings** to hear arguments in favour or against company proposals. The focus of these sessions could be informed by any topics of particular contention that have been identified by the Customer Engagement, User and RIIO-2 Challenge Groups.

Consultation questions: In this chapter we ask whether there are ways to improve these models to enhance further the engagement process. We welcome early responses on this point to enable the early set-up of the Groups.

Background

- 3.1. The RIIO framework puts greater emphasis on the need for companies and us to understand and respond to the changing requirements of its stakeholders. To encourage this we stated that, among other things, any company that wanted to be fast-tracked would need to demonstrate that it had engaged effectively with its stakeholders in developing its business plan.
 - 3.2. As a result, in RIIO-1, we saw companies put significant resource into engaging with a wide range of stakeholders to get their input to the
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¹² These can be individuals, organisations or communities that are impacted by the activities of the network company and also include future consumers. They may have a direct or indirect interest in the company's business whether occasionally or on a regular basis.

business plans. Companies used different ways of segmenting their stakeholder base and different techniques to engage with each group. Overall, we felt the quality of engagement was an improvement on previous price controls and we did not disqualify any company from being fast-tracked because of the quality of engagement informing their plan. We currently reward companies through an incentive scheme to maintain ongoing effective engagement with their stakeholders throughout the price control period. As a result, within RIIO-1, each company has established enduring arrangements for engagement to inform their ongoing activities.

- 3.3. Other regulators have also introduced arrangements that enhance the role that stakeholders play in their price control process. For instance, Ofwat requires companies to establish a Customer Challenge Group to evaluate the quality of engagement underpinning the company business plans. The Civil Aviation Authority (CAA) requires Heathrow Airport Limited to engage with airlines in the development of their plan through a process called 'constructive engagement'. The regulator for the Water Industry Commission in Scotland has introduced a negotiated settlement arrangement, in which stakeholders have the ability to agree parts of the plan, instead of this being a decision for the regulator. The regulator however still plays a key role in this arrangement in providing technical assistance to stakeholder groups.
- 3.4. In our open letter, we asked for ways we could enhance the engagement process for RIIO-2.

Stakeholder views

- 3.5. Respondents to the open letter did not support a move to a negotiated settlement-type arrangement, believing that Ofgem has to retain responsibility for the final decision.
- 3.6. Respondents, particularly network companies, did not want Ofgem to impose rules on how they should engage, and with whom. Some respondents identified the benefits of introducing independent scrutiny of each company's approach to ensure consistency (in quality, if not methodology) and of creating some form of consumer challenge group. There was some interest in constructive engagement-type models on specific topics at the transmission level.
- 3.7. Since issuing the open letter, we have held two workshops with stakeholders to seek their views and involvement in the development of stakeholder engagement process for RIIO-2.¹³ We have used these workshops as an opportunity to present our thinking on the type of models we could employ for RIIO-2 and get their input to develop the purpose and design of these arrangements.

¹³ RIIO-2 Framework review workshops <https://www.ofgem.gov.uk/publications-and-updates/riio-2-framework-review-workshops>

Need for change

- 3.8. Although we encouraged companies to engage with stakeholders in the preparation of their RIIO-1 business plan, we did not specify how the companies should engage, and with whom. We also did not describe how we would assess the quality of engagement. Each company employed a range of techniques but we did not have independent assurance of the approach they took. As a result, comparing the quality of engagement across companies was challenging. Although we were satisfied that in general engagement had improved, we placed only limited weight on proposals for additional costs or different output targets, where the company justified these as reflecting stakeholder needs.
- 3.9. We believe that enhanced stakeholder engagement can help to put more pressure on companies to improve the quality of their business plans. We also believe it can help to rebalance the information advantage network companies have in assessing future network requirements. In the transmission sector, we face the additional challenge of only having a small number of companies carrying out comparable activities. This limits our ability to benchmark companies to drive down costs and weakens other incentives that use competition between companies to improve the quality of business plans. To ensure stakeholders apply challenge to the business plans robustly and consistently, we will need a more common structure to the process of engagement in each of the sectors.
- 3.10. We therefore 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. That should in turn assist our assessment of these plans.
- 3.11. We have also conducted deliberative research with our Consumer First Panel¹⁴ to understand how consumers could be involved in the price control process. The research was carried out by Revealing Reality, an independent research agency. Our panellists initially told us that they believed the consumer voice and opinion would be valuable in ongoing price control discussions. This was particularly true in areas that were more tangible to them, such as reliability or safety. However, when going into further detail on all the different aspects of price controls, they generally became less confident in their ability to be involved in the process. Many concluded that independent, expert knowledge was required to represent consumer needs in RIIO-2.
- 3.12. In its review of the RIIO framework, CEPA recommended that we:
- Set out the specific purpose of stakeholder engagement, consider minimum standards for engagement and specify the form of engagement we want companies to use

¹⁴ The Consumer First Panel is our primary qualitative research tool. Each year, we recruit about 80 everyday energy consumers from across GB, and meet with them 3-4 times a year to discuss key energy issues.

- Consider using an external body to test whether our policies, which may be well intentioned on their own, do not have a combined effect that results in perverse outcomes for consumers.

Options considered

- 3.13. We considered retaining the same approach used in RIIO-1. Companies now engage reasonably effectively with stakeholders and use this to inform their plans across a range of activities. Companies have further developed their engagement strategies and the ongoing incentives on engagement (and other consumer-facing incentives) have encouraged the adoption of best practice. If we retained the RIIO-1 approach, we could be reasonably confident that stakeholders would be involved in the development of business plans for RIIO-2. However, we think that the existing approach would limit our ability to assess whether the engagement undertaken has been sufficiently challenging, and we would not have a meaningful way of incorporating the products of engagement into the determination decisions. We do not propose this option.
- 3.14. We considered a pure 'negotiated settlement' approach, where stakeholders would have the ability to negotiate and agree the business plans with companies, either completely or in part. As we cannot delegate our decision-making powers, it is not appropriate to devolve our responsibility for making the final decision on the settlement to a third party. For this reason, we do not propose to pursue this option.

Models for RIIO-2

- 3.15. The different models we are introducing build upon the arrangements already in place and support the RIIO framework philosophy of stakeholders being at the heart of decision-making.
- 3.16. We will have different arrangements for distribution and transmission that reflect the different characteristics of network users in each sector.
- In distribution, companies can engage directly with end-consumers and gather information on their changing requirements for network services. More generally though, users of distribution networks have diverse requirements and are less able to challenge companies on whether their business plans are appropriate and will meet their future needs
 - In transmission, users of the network are generally more knowledgeable, better resourced and more motivated to participate in the price control process and provide input to company business plans.
- 3.17. The model for **Distribution** is as follows:
- We require each company to establish an independent Customer Engagement Group to provide challenge to the company and assurance to us
 - We expect the group to consider proposals from the companies for output performance targets and incentives (including local consumer

priorities, needs, preferences and willingness to pay); totex budgets (including level of cost efficiency improvements); uncertainty mechanisms; and more strategic issues, such as the future of gas and implications for network services associated with the energy system transition. We do not expect the group to discuss or review finance topics such as the cost of capital or financeability

- An independent Chair will head this group, and the group will provide a report that we will receive alongside each business plan
- The company will recruit the Chair for the group. We will ratify the appointment. The Chair will then work with the company to recruit members to the group with sufficient skills and knowledge (for example in non-traditional business models, fuel poverty, community energy, innovation, consumer research etc) to provide the right level of challenge to the companies
- This group should not act as a proxy for engagement or simply as an audit of engagement. This group should scrutinise and challenge the business plan of the company and test whether they have properly explored key issues with relevant parties.

3.18. The model for **Transmission** is as follows:

- We require each company to establish a **User Group** to provide independent input and challenge to the transmission company's business plan and independent assurance to us
- The focus of the User Group should be on outputs, incentives and expenditure forecasts, company proposals for uncertainty mechanisms and an assessment of whether the capital projects put forward by the companies have/do not have their support. We do not expect the User Group to discuss or review finance topics such as the cost of capital or financeability
- An independent Chair will head this group, and the group will provide a report that we will receive alongside each business plan
- The company will recruit the Chair for the group. We will ratify the appointment. The Chair will work with the company to recruit members to the group. We expect membership to be drawn from shippers, suppliers, generators, distribution networks, large users and from new business models that challenge and provide an alternative to traditional network functions.

3.19. Throughout the process, we will meet periodically with the Chairs of all of these groups. This will allow us to receive updates on progress, to provide direction and support, where necessary, to assess the consistency of approach taken by different companies and encourage best practice.

3.20. The gas and electricity transmission and gas distribution companies will need to submit their RIIO-2 business plans to us in 2019 (more detail is provided in **chapter 8** on the overall timetable for RIIO-2). Companies therefore need to put these models for engagement in place as early as possible to ensure that stakeholders can play an effective role in the process. To support this we have engaged extensively with a range of

different stakeholders in establishing the need for and design of these arrangements. We will continue to work with industry so these models for enhanced engagement can be adopted as soon as possible.

RIIO-2 Challenge Group

- 3.21. We will also establish a single **RIIO-2 Challenge Group** across the transmission and distribution sectors.
- 3.22. The purpose of this group is to look at the business plan from a different perspective to that of users and local stakeholders. This group will assess the plans from the point of view of existing and future end-consumers, with a focus on sustainability, affordability and the protection of vulnerable consumers.
- 3.23. We will appoint an independent Chair to lead this group. This group will review and challenge the business plans of both distribution and transmission companies. We expect this group to meet with the Companies both during the preparation of business plans and on receipt of their submission to us. This group will provide us with a report on their views of each company's business plan.
- 3.24. We intend membership of this group to comprise senior level experts in strategic energy issues, consumer advocacy or regulation. This could include Citizens Advice, ex-regulators, academia, ex private sector and ex-government.
- 3.25. We will provide the secretariat support for this group. We will also ensure it has access to the resources and technical and financial information to enable it to play its role effectively. We will be available to provide it with any analytical assistance it requests from us.
- 3.26. As well as challenging aspects of the individual company business plans, we also want this group to consider how companies might behave once we have set the overall price control framework. This will help us to understand if any aspects of our framework could give rise to unintended consequences. We would want them to consider this as we are developing the sector specific methodology, and before it has been finalised.
- 3.27. We will publish initial guidance on the role of all of the above groups in March 2018. This will include more detail on the scope and output from each group and how we intend to engage with them throughout the process. We will update the guidance as the process evolves and will keep the stakeholder engagement process under review as it is developed.

After business plans have been submitted

- 3.28. In both sectors, we are also considering potentially holding **Open Hearings** once we have received the business plans and the reports from User Groups in transmission, the Customer Engagement Group in distribution and the RIIO-2 Challenge Group. These hearings might focus on areas of particular contention that have been identified through the process and we could invite both the companies and the Chairs of the

various groups to present arguments and evidence. We could also give any other stakeholders who wish to offer evidence in support or in opposition to the plans an open opportunity to participate.

How we will use the outputs from enhanced engagement

- 3.29. Each of these groups will provide additional ways to encourage stakeholders to input into the business plans and challenge the companies on their proposals. We expect the output from the process to highlight where there is agreement and disagreement between stakeholders and companies, or between different stakeholders. We will use this information, among other relevant information to inform our assessment of the companies' business plans.
- 3.30. We intend to focus on areas of agreement and contention highlighted by the various groups to inform our assessment of the business plans. We will also use the assessment of the plans by these groups, among other relevant information, to inform our ultimate decisions on any potential rewards for the quality of business planning.
- 3.31. These groups are not decision-making bodies. The assessment and determinations on the business plans is for us to decide, taking into consideration all relevant information, including the outcomes of the stakeholder engagement.

Giving consumers a stronger voice - questions

Q1. How can we enhance these models and strengthen the role of stakeholders in providing input and challenge to company plans?

- ➔ What are your views on the proposal to have Open Hearings on areas of contention that have been identified by the Groups?

4. Responding to changes in how networks are used

Chapter summary

Technological change, consumer preferences and the need to reduce carbon emissions is changing the way energy is produced, generated, transported, stored and supplied. The energy system is becoming increasingly integrated and the traditional boundaries of distribution and transmission, and gas and electricity, are starting to blur.

This will change how energy networks are used and the roles that network companies and system operators will need to play in managing and adapting to future challenges. While these changes have the potential to create significant benefits, there is also uncertainty and risk, which can make it difficult to forecast future revenue and output requirements.

In light of this uncertainty and the evolution of the energy network system:

- Our preferred position is to set the length of the price control on a five-year basis, but with the flexibility to set allowances for some activities over a longer timescale, where companies make a compelling case, such as on innovation or efficiency grounds
- We do not propose to align the start dates for the electricity transmission and distribution price controls in order to deliver whole system outcomes. Instead we will focus on the various levers within the price control that can support the delivery of these outcomes
- We propose to have a separate price control for the electricity SO given its enhanced separation from NGET as transmission owner, and are considering whether our approach to SO remuneration remains appropriate
- We intend to set a price control which assesses whether the network companies have rigorously tested the need for new investment while at the same time ensuring they can efficiently meet the network access needs of users in a changing system
- We are seeking views on the potential role of network operators, and system operators, in encouraging end-use energy efficiency, particularly in relation to reducing future network costs of heat decarbonisation

Consultation questions: In this chapter we ask for views on our proposals for the length of the price control, whole system outcomes, System Operator price controls, network utilisation, stranding and investment risk, and end-use energy efficiency.

Introduction

- 4.1. The energy system is in transition to a lower carbon, more decentralised, flexible, dynamic and responsive system. We can see this in the increasing uptake of electric vehicles, the dramatic growth in new forms of generation connecting to the network, new technologies allowing the efficient storage of energy and new market entrants seeking different ways to engage with the energy system. The scale and pace of the change is causing traditional boundaries to break down between network and system operators and other market participants; even between consumers, producers and suppliers of energy. This creates new and exciting possibilities, but it also makes it challenging to forecast longer-term costs and outputs for network companies.
- 4.2. For RIIO-2, this means we need to ensure companies are acting in a way that benefits the whole system, and not just their own network. To support this, we also need to ensure that the framework used to regulate the parties that operate the system is appropriate to their shifting roles and best incentivises them to deliver the required services. We must also take care that we mitigate the risk, where possible, that consumers pay for costly infrastructure that becomes significantly underutilised or even made redundant due to advances in smarter, more flexible technologies or changes to how the networks are used.
- 4.3. In this chapter, we describe how our approach to RIIO-2 will support changes in how consumers will use networks. This includes the **length of the price control**; how we will enable **whole system outcomes**; our approach to setting price controls for the **system operators**;¹⁵ how we can incentivise efficient **network utilisation**; and the potential role network operators, and system operators, could play in encouraging **energy efficiency**, particularly in relation to reducing the future network costs of heat decarbonisation.

Length of the price control

Background

- 4.4. When we developed the RIIO framework, we wanted network companies to focus on the long-term when considering what outputs they should deliver and how they should deliver them. This reflected the challenge of delivering a sustainable energy sector, the long-lived nature of network assets, and the uncertainty of how to meet the needs of existing and future consumers. We introduced a range of measures to support this, including long-term primary outputs and secondary deliverables, enhanced engagement, an innovation stimulus and a longer price control period of eight-years. Previously we had set price controls for a five-year period.

¹⁵ Here we are explicitly referring to the current national electricity and gas system operators. Elsewhere in this document we note the potential for future distribution system operation roles.

- 4.5. Since RIIO-1 commenced, we have seen a number of companies across gas distribution and electricity transmission sectors earn double-digit returns. These returns have largely been driven by a high baseline cost of equity and underspend against allowances. In electricity distribution we have seen a wider range of returns with only one company forecasting double-digit returns at this stage. This has been driven by a combination of underspends against allowances and outperformance against output targets.
- 4.6. Underspends against allowances reflect, to some extent, newfound efficiencies. Some of those efficiencies are arguably a direct result of the change to an eight-year price control period. These savings offer immediate and enduring benefits to consumers. RIIO is designed to incentivise this, so that companies and consumers share the underspend in the existing price control and we use the revealed efficiencies to set lower allowances in future periods. Other benefits flowing from the move to a longer price control period may not yet be visible as we are only part way through RIIO-1.
- 4.7. However, our analysis has identified that one of the main reasons why we are seeing higher than expected returns is because assumptions we made for some cost categories, although reasonable at the time, did not reflect the actual costs that companies subsequently incurred. These include:
- Input price inflation (called Real Price Effects (RPEs)) running lower than the forecast used to inform allowances.
 - Assumptions on the scope and requirement for certain activities being higher than actual requirements.
- 4.8. Our RIIO-1 annual reports and the CEPA review of the RIIO framework provide more detail on the above points.
- 4.9. Although the same issues could have arisen regardless of the length of the control, the move to a longer price control period meant that the impact of these issues affect consumers for an extended period before we can intervene to correct them.
- 4.10. In our open letter, we asked for views on the length of the price control.

Stakeholder views

- 4.11. With the exception of one company who supported moving back to a five-year period, network companies wanted to retain the eight-year price control period. This was largely to support planning over a longer-term horizon. However, companies provided us with only limited evidence on the benefits they had realised because of the longer control period that they could not achieve within a shorter one.
- 4.12. In follow-up discussions, most networks were generally more in favour of a shorter period, than a longer period with a more extensive Mid-Period Review (MPR).

- 4.13. Other stakeholders were generally in favour of either shorter periods or a flexible approach that reflected the higher uncertainty/certainty for different activities.

Options

- 4.14. We considered retaining the current arrangements. This would involve setting the price control for an eight-year period and forecasting revenues in anticipation of the work required for that period. Any price control that involves setting revenues in advance runs a risk that some of the underlying forecasts or assumptions will prove incorrect. Our current approach allows us to adjust revenues where circumstances change from forecast through either uncertainty mechanisms or an MPR.
- Where we can anticipate specified elements deviating beyond a prescribed point, we can use uncertainty mechanisms to adjust revenues automatically, or reopen the control. Although appropriate in some instances, too many mechanisms can add complexity to the framework and make it unwieldy to operate. These arrangements are only effective if we have correctly identified at the outset the activities and costs that are subject to change.
 - In the existing RIIO framework, we use an MPR to focus on any step-changes in the primary outputs that companies need to deliver (for example if legislation was introduced resulting in a significant change in the uptake of electric vehicles). Under our current scope for an MPR, we would not expect to review past expenditure, financial assumptions or output delivery.
- 4.15. In RIIO-1, we have seen significant differences between what was assumed and what was actually required. We did not anticipate these variances in the design of uncertainty mechanisms and we are not able to use the MPR to adjust revenues without broadening its scope. We do not in general wish to broaden the scope of the MPR as any short-term benefits to consumers could easily be eroded, if the added regulatory uncertainty adds to the long-term cost of capital for the networks.
- 4.16. The uncertainty surrounding network activity in the future, and 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. 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.
- 4.17. We think that this risk is too high to justify retaining the current arrangements.
- 4.18. We also considered a period shorter than five years. We believe that a shorter period may mean companies are unlikely to get sufficient benefit to warrant trialling, and investing in, new ways of operating their networks. A shorter period will also limit the amount of data that we have available to us to use as the basis for the following price control. This may restrict our ability to drive down costs/improve service quality over time.

- 4.19. In its review of the RIIO framework, CEPA highlights the need to balance the higher efficiencies that should result from companies being able to plan for the longer-term, against the risk that actual outcomes will diverge from company forecasts. CEPA describe options that could be considered, but does not make a recommendation on the length of the price control.

Our proposals

- 4.20. We are proposing to set the RIIO-2 price controls over a **five-year period**. However, if networks make a **compelling case** for setting the allowances for activities, projects or programmes over a longer timescale, such as through greater efficiencies or innovation, we will consider having a multi-track arrangement (ie setting some allowances for five years and some for longer). Similarly, it may be appropriate to set some allowances over a **shorter timescale**.
- 4.21. We believe a five-year period provides a sufficient timescale for companies to respond to incentives to seek out innovation and efficiency improvements to reduce cost, or to improve service quality.
- 4.22. A longer period is most likely to be appropriate where the scope of work is relatively predictable in the long-run, such as asset replacement programmes, or for specified innovation projects that have longer payback periods than a five-year control would allow. Where there is significant uncertainty on future cost requirements, a period even shorter than five years may be appropriate. We provide more explanation on our approach to setting allowances where there is uncertainty in **chapter 6**.
- 4.23. In deciding whether to set allowances for longer periods, we will consider a number of factors. These will include the strength of evidence, the need for consistency across companies, the potential for disruption this could cause to other elements of the price control framework, and the impact on the setting of future price controls.
- 4.24. We will continue to encourage longer-term thinking through other aspects of the price control. Later in this document, we set out proposals on how we can encourage companies to facilitate whole system outcomes while securing the long-term health of their assets. We also describe how we will continue to support a culture of innovation and enhance the engagement across the industry. These proposals should help to maintain a longer-term planning horizon.
- 4.25. Alongside our preferred position, we have identified one viable alternative. This alternative option would see us **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. We may also use such an expanded MPR to potentially clawback any returns that could not be justified.

Length of price control - Questions

Q2. Do you agree with our preferred position to set the price control for a five-year period, but with the flexibility to set some allowances over a longer period, if companies can present a compelling justification, such as on innovation or efficiency grounds?

- What type of cost categories should be set over a longer period?
- How could we mitigate the potential disruption this might cause to the rest of the framework?
- What additional measures might be required to support longer-term thinking among network companies?
- Do you instead support the option of retaining eight-year price controls with a more extensive Mid-Period Review (MPR)?
- What impact might the alternative option of an eight-year price control with a more extensive MPR have on how network companies plan and operate their businesses?

Whole system outcomes (including alignment of price controls)

Background

4.26. The energy transition will necessitate changes in how the system operates, how the network is developed, and how users interact with energy. It is also likely to shift where investment is needed on the network and, additionally, blur the boundaries between traditionally distinct sectors (eg transmission and distribution networks). Given we expect this transition to require significant network development and ongoing investment, it will be important to ensure that the energy system as a whole is effectively coordinated to deliver best value for consumers¹⁶ ('whole system outcomes').

4.27. The price control should not create unnecessary barriers to whole system outcomes, and should actively facilitate these outcomes where this is in consumers' interests. There may exist coordination failures or spillover effects between parts of the energy system, linked to structural features of the current price control, or potentially the regulatory or statutory framework. This may lead to companies either not being incentivised, or not able to deliver optimised solutions, which are lowest cost for the system as a whole.

4.28. Potential barriers to optimised whole system outcomes could relate to processes (eg information sharing, consistency of scenario use, distinct planning investment processes) or incentives (eg company-specific financial packages linked to specific network outputs). In this way, the

¹⁶ Consistent with our principal objective and general duties.

framework incentivises companies to focus on optimising their own network, but this may not lead to more fully optimised coordination.

- 4.29. At this stage, we have considered this problem in its broad sense, ie that there may be gaps in system optimisation that changes to the price control framework can seek to address. We have set out areas to consider below and are seeking initial views on these.
- 4.30. For our sector-specific methodologies, it will be important to clarify a firmer definition of what is meant by the term 'whole system' for the purposes of setting the RIIO-2 price controls. We are considering now how to define this and how it links across sectors (eg energy, heat, transport etc).
- 4.31. We are seeking views on how we should best practically consider this definition. We are considering this both in terms of what can be achieved in the RIIO-2 period, as well as any practical limits of this definition.
- 4.32. We need to ensure that investment and operational decisions taken by one network company consider as fully as possible the impact these could have on other parts of the system. In setting the RIIO-2 price control, the removal of barriers and the enhanced facilitation of whole system outcomes will affect, among other things, the preparation, content and our assessment of business plans, the output and incentive packages and routes for funding. For example, if, in addressing a local network issue, a company is driving up the overall cost of running the whole system then that may be the wrong outcome. Equally, an output identified by one network operator might be better met by investment on a different part of the network – or through a market-based solution.
- 4.33. We have particularly considered the question of whether we need to align the price control timings. At present, we are due to reset the price controls for electricity transmission, gas transmission and gas distribution in 2021. In contrast, we will reset the price control for electricity distribution in 2023. Given the significant implementation requirements and lead times that would be involved, at this framework stage we have principally considered the need to align the starting dates for the electricity transmission and distribution controls. Alignment may help us ensure that incentives on each are consistent, as well as supporting better coordination of sector system planning, but it is not the only tool available. We have set out a minded-to decision on this and are seeking views on our proposal.
- 4.34. This issue of ensuring whole system outcomes links to a central pillar of our draft forward work programme 2018-19¹⁷ that is responding to and facilitating changes in the energy system. This includes for example our work on Future Supply Market Arrangements, our Innovation Link, our thinking on managing flexibility and distribution system operation roles, future SO roles and incentives, future electricity charging and access

¹⁷ Draft Forward Work Programme 2018-19
https://www.ofgem.gov.uk/system/files/docs/2017/12/ofg_forward_work_programme_2018_brochure_web.pdf

arrangements, our approach to competition, and wider links to the future uncertainty around electric vehicles, heat decarbonisation etc (see Appendix 1).

Stakeholder views

- 4.35. In responding to our open letter, some but not all network companies felt alignment of electricity distribution and transmission price controls would support the delivery of whole system outcomes. Others were unconvinced it was necessary, and considered that we could achieve these outcomes without the need for shifting price control timings. Gas companies were also keen to align gas and electricity sectors, although there was less interest in this from the electricity side.
- 4.36. Some stakeholders identified a need for new incentives and responsibilities on companies to identify whole system solutions and to create, and/or further develop, markets for flexibility (eg using storage or demand side response to address network constraints without the need for new investment in additional capacity). Potential approaches presented included, for example, incentives for saving transmission spend, and the requirement of joint cost benefit analyses between transmission and distribution companies before making investments.
- 4.37. Gas companies and several other stakeholders were emphatic that gas networks should play a role in decarbonising heat as part of delivering whole system outcomes and wanted us to support this through the price control framework.
- 4.38. Some stakeholders felt there were only weak incentives to encourage whole system outcomes and we needed to move towards alignment of market-based approaches and regulatory mechanisms for system development. Others cautioned against allowing network companies to intrude into new markets, given their incumbent position and the potential for conflicts of interest.

Options

- 4.39. We consider there are potential consumer benefits to be unlocked from facilitating development of the system through a holistic, whole system approach. We have previously set this out in our strategy for regulating the future energy system (see Appendix 1) as well as in our joint work with Department for Business, Energy and Industrial Strategy (BEIS) on the Smart Systems and Flexibility Plan.¹⁸
- 4.40. Network companies already have duties and incentives which drive them to make efficient and active use of innovative and alternative system solutions where these offer benefits. They are also required to coordinate with each other in developing their networks. We have been engaging with

¹⁸ 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>

network companies and undertaking work within RIIO-1 to consider how fully the current framework facilitates this approach, or whether it might be a constraint.

- 4.41. Closely linked to this, following the Smart Systems and Flexibility Plan, we are working across a number of areas to facilitate more broadly a whole system approach to system development, including, for example, our work on the role and framework for distribution system operation, markets for flexibility, storage, and demand side response, among others.¹⁹ The industry is continuing to make progress in opening up network requirements to the market and improve coordination, for example through the Energy Network Association's (ENA) Open Networks Project.²⁰
- 4.42. Given the potential for further consumer benefits, we consider that it would be in consumers' interests to take action to ensure, where possible, that the full range of benefits can be realised in the future system. In the sector-specific methodology stage, we propose to carry out a comprehensive cross-sectoral review of the key price control areas and touchpoints²¹ that might facilitate or impede whole system outcomes. We will need to assess the obligations, processes and broad incentives on companies, across sectors. In this way, we intend to develop the drivers on companies to optimise investment and operational decisions across party interfaces.
- 4.43. In our view, this approach would best target this issue at its root cause, ie at the component structural elements of the price control framework. We will likely want to further target and prioritise specific areas/touchpoints within this review to ensure we focus on those elements that maximise benefits for consumers.
- 4.44. Beyond the broad assessment above, as part of our framework development, we have specifically considered the case for alignment of price control timings, principally the electricity transmission and electricity distribution price control start dates. This could be achieved through transitional measures such as extending/rolling-over the current electricity transmission price control or by creating an interim electricity transmission price control (achieved either through a two-year price control or as part of a longer control that is 'trued-up' after two years) to ensure that these price controls started at the same time in 2023.
- 4.45. In the table below we have considered the advantages and disadvantages of alignment as compared to the status quo – assuming both cases incorporate undertaking a future review of price control touchpoints.

¹⁹ See Appendix 1: Energy transition related Ofgem work

²⁰ <http://www.energynetworks.org/electricity/futures/open-networks-project/>

²¹ Including, but not limited to: business planning processes, output and incentive packages, routes for funding, allocation of ongoing liabilities etc.

Table 2: Advantages and disadvantages of electricity transmission and distribution price control start date alignment

Advantages of alignment	Disadvantages of alignment
Should facilitate better coordination of planning processes, and more easily allow aligning of timing windows for potential uncertainty mechanisms	Would create significant challenges in current price control development timings, simultaneously developing both the framework/detailed methodologies for the RIIO-2 sectors, as well as transitional measures for RIIO-ET1/ET2
Could be a more holistic approach to managing whole system outcomes	Would create a significant resource constraint for the industry, creating a large peak for stakeholders (and for Ofgem), given the relative size of the electricity distribution price control compared to the other price controls ²²
Not aligning might create a risk of policy gaps as well as locked-in investment for the earlier price control	Potential transition options could generate significant additional costs and risks, including delaying the resetting of the current price control arrangements. Depending on the approach taken these include: <ul style="list-style-type: none"> • Perpetuating the impact of forecasting and implementation issues seen in RIIO-1, if changes to current arrangements for transitional period are limited • Increased implementation costs and risks associated with setting two RIIO-ET price controls within two years • Potential implementation risks around ensuring any 'true-up' mechanisms are robust and effective
This may reduce reliance on robustness of uncertainty mechanisms in electricity transmission price control	Alignment may conversely separate electricity and gas coordination, as ET would be split from GT and GD timings
	Staggering of price controls might better enable lessons learned from earlier sectors to be implemented for RIIO-ED2

4.46. It is our assessment (as set out in paragraph 4.39) that further addressing whole system outcomes in the price control will be valuable for consumers, and that this will require a 'root and branch' review of the structural elements of the price control that can facilitate or hinder these. This will also allow us to best ensure that wider Ofgem workstreams, such as those outlined in paragraph 4.41 and Appendix 1, can be fully incorporated into achieving the desired outcomes.

4.47. We consider that alignment of the electricity transmission and electricity distribution start dates could provide some whole system benefits, but that this would not achieve these benefits in isolation and would need to be in

²² In terms of base revenue, for example, RIIO-ED1 represents 43% of the total cross-sector revenue (RIIO-ED1 base revenue is £41.5bn, compared to total across sectors of £96bn, in 2015-16 prices).

addition to any comprehensive review. However, from comparing the advantages and disadvantages set out in Table 2, we believe that it is unlikely that the potential incremental benefits of alignment would outweigh the potential costs/risks, and would therefore not be in consumers' interests.

Our proposals

- 4.48. **As part of our sector-specific methodologies, we intend to articulate further what is meant by the term 'whole system', particularly in relation the RIIO-2 price controls, and review those areas that are likely to have a material impact on enabling whole system outcomes.** We are seeking further stakeholder views on how the price control can best support whole system outcomes (across all sectors), both in the specific areas we should review and how we can best prioritise these areas to maximise the impact of this review.
- 4.49. With regard to the question of aligning price control timings – **we have not at this stage identified a clear case to justify re-scheduling the electricity distribution and transmission price control start dates.** Alignment in isolation would not necessarily deliver whole system outcomes – we would still need to consider how to manage the various touchpoints and key areas together with identifying the tools we might use within the price control to do so.
- 4.50. In our view, the potential incremental benefits of aligning the electricity transmission and distribution price controls are unlikely to outweigh the potential associated costs, in particular the potential additional risks and costs of creating a roll-over or interim price control (see Table 2).
- 4.51. We consider that many of the challenges associated with aligning start dates (for example the stakeholder resourcing constraints) would be applicable to the alignment of the price control end dates (to align the controls for RIIO-3) and would require a shift away from our preferred option around the length of the price controls. Given the interlinkages with the length of the price controls, we have not set out a firm view on this.

Whole system outcomes - Questions

Q3. In what ways can the price control framework be an effective enabler or barrier to the delivery of whole system outcomes?

- ➔ If there are barriers, how do you think these can be removed?
- ➔ What elements of the price control should we prioritise to enable whole system outcomes?

Q4. Do you agree with our minded-to decision to retain the current start dates for the electricity transmission and electricity distribution price controls, and not align them?

Q5. In defining the term 'whole system', what should we focus on for the RIIO-2 period, and what other areas should we consider in the longer-term?

- ➔ Are there any implementation limits to this definition?

System Operator price control

Background

- 4.52. As part of the setting of the next price control, we will need to put in place the future regulatory regime for the System Operator (SO) in both gas and electricity sectors.
- 4.53. The SO has a number of different roles, from the day-to-day operation of the system, through to managing new network connections and longer-term network planning. The electricity SO (ESO) role is currently carried out by National Grid Electricity Transmission plc (NGET), which is also the owner of the electricity transmission network in England and Wales. NGET is part of the wider National Grid plc group. The gas SO role is currently carried out by National Grid Gas plc (NGGT), which is also the gas transmission owner in Great Britain, and part of the wider National Grid plc group.
- 4.54. In recent years, we have undertaken various projects to develop the role and institutional framework for the ESO, in response to changes in the electricity landscape. These have included:
- Implementing new functions for the ESO as part of Government's wider Electricity Market Reform
 - Developing and enhancing the ESO's role through our Integrated Transmission Planning and Regulation project²³
 - Working with BEIS to consider the potential for a fully independent SO and ultimately driving enhanced separation of the ESO from NGET TO
 - Reviewing and creating a new incentive framework for the ESO's external costs (which covers the ESO's role in balancing the system).
- 4.55. The pace of change has not been as fast in the gas sector and to date we have not seen the same level of perceived or real conflicts of interests that would necessitate such a review for the gas SO.
- 4.56. Currently the ESO is funded through two separate mechanisms: 1) a framework of incentives to provide services such as balancing the system at lowest cost, and 2) a budgetary settlement which covers the ESO's internal costs (such as overheads, administration, staffing and establishment costs) and forms a component of NGET's price control.
- 4.57. The result is that, although its function is very different from the TO (operational, service provision, with a focus on procurement of market-based solutions, as opposed to more capital-intensive delivery and operation), the ESO receives substantial remuneration in a similar manner

²³ <https://www.ofgem.gov.uk/electricity/transmission-networks/integrated-transmission-planning-and-regulation>

to a TO, via a return on the Regulatory Asset Value (RAV) through a combined price control.

- 4.58. We are driving the ESO to take a more active approach to managing the energy transition and to supporting system planning (and whole system outcomes), which is one of the core enduring roles we have identified for it. Furthermore, as we are seeking to promote the role of competition in networks (and more widely), we expect the ESO to support this. This forms one of the main roles we have identified, in conjunction with the ESO, as part of a long-term vision for its role.²⁴
- 4.59. We are considering potential changes to the ESO's price control framework, given its shifting role, its enhanced separation from NGET TO,²⁵ as well as our review of its new incentive regime. Given these drivers, we are considering what might be the most effective methodology for remuneration of ESO internal costs, as the SO transitions into a separate, asset-light, service-focused organisation. We are considering whether this has any crossover implications for the gas SO.
- 4.60. We have intentionally focused this section of the consultation on the framework for the national electricity and national gas SOs. Beyond this, we are considering how system operation is evolving at distribution level, and how we will need to address this 'DSO transition' in RIIO-2. We have highlighted links to DSO roles more broadly in this document.
- 4.61. We are undertaking a range of wider works to consider this further (see Appendix 1). We expect this to be a specific focus area in RIIO-ED2 and our sector-specific methodology for this.

Stakeholder views

- 4.62. In general, most stakeholders in response to our open letter felt that separate price controls for the ESO and NGET TO seemed a sensible approach, given delineation of institutions and responsibilities.
- 4.63. Some stakeholders noted that whatever the final arrangements, these should be designed to best facilitate whole system outcomes in network operation and development, and to allow for sufficient flexibility in these activities.

Our proposals

Electricity SO

- 4.64. **Our minded-to decision is to separate the ESO price control from NGET's TO price control**, and to drive a more unified package across the ESO's price control and the ESO's wider incentives. We will produce a

²⁴ <https://www.nationalgrid.com/uk/about-grid/our-role-industry/future-electricity-system-operator>

²⁵ <https://www.ofgem.gov.uk/electricity/transmission-networks/electricity-so-reform>

separate sector-specific methodology for the ESO and expect a separate business plan to be submitted following this. We are seeking stakeholder views on this.

- 4.65. Given the enhanced separation of the ESO, its shifting role as well as our review of its new incentive regime and our intention to separate the ESO and TO price controls, **we consider this is a prudent opportunity to review what the appropriate remuneration model might be for the SO's internal costs. We are asking open questions on this, and have not at this stage set out a minded-to position on it.**
- 4.66. We are considering two broad approaches:
- Option 1: A RAV-based model
 - Option 2: Alternative models where revenue is not capitalised.
- 4.67. In option 2, we could move away from providing a return on RAV (more applicable to capital-intensive companies that build and operate assets) and could instead move towards remuneration for reasonable costs (ex ante costs of service provision, overheads etc) plus a profit margin (that emerges from delivering services to lower cost than budget). This revenue would likely not be capitalised but instead provided as cash/'fast money'.
- 4.68. There may also be other alternative models to this example, where revenue is similarly not capitalised (which might be better suited to incentivise a company with a small asset base, and a large focus on provision of services).
- 4.69. We invite stakeholders to send us their views on whether there is a need to consider alternative remuneration models for the SO, and to submit their suggestions on the best approach to take.
- 4.70. We expect to confirm whether there should be a separate ESO price control in our summer decision on the RIIO-2 framework. We will engage with stakeholders to gather views on a narrowed range of potential remuneration models and will decide on a final model and further develop the detail of this through a separate methodology for the ESO.

System Operator price control - Questions

Q6. Do you agree with our view that National Grid's electricity SO price control should be separated from its TO price control?

Q7. Do you agree that we should be considering alternative remuneration models for the electricity SO?

➔ If so, do you have any proposals for the types of models we should be considering?

Gas SO

- 4.71. We currently expect that the gas SO price control will not be separated from the gas TO price control. At this stage **we propose no change to**

the broad framework for the gas SO arrangements, both in terms of separation arrangements and remuneration. We believe this is an appropriate approach given the different context, different institutional separation, and reduced scale of change (to date) for the gas SO as compared to the ESO.

4.72. However, we are seeking stakeholder views on this, including whether we should be considering potential changes that could be more appropriate for the gas SO than current arrangements.

4.73. As the gas system adapts and transitions over the coming years and as our framework develops, we may need to revisit our current position, on both separation as well as remuneration, if it is in consumers' interests.

System Operator price control - Question

Q8. Should we consider alternative remuneration models for the gas SO?

→ If so, why and what models?

Network utilisation, stranding and investment risk

Background

4.74. The energy system transition creates uncertainty in the future demand for both gas and electricity. New technologies, shifts in consumer behaviour, the creation of new markets and changes to government policy (eg around heat) could have a fundamental impact on how the energy networks are used. This could mean a need for new infrastructure, but could also mean that some costly infrastructure proves to be underutilised, or not used at all.

4.75. We have already taken steps in RIIO-1, in the gas distribution sector, to address this concern by setting a specified payback period for new discretionary repx investment²⁶ and by front-loading depreciation. Using a shorter payback period in our investment appraisal for these costs encouraged companies to consider more opex-based solutions and to justify fully the need for this investment. Front-loading depreciation can reduce the risk of increasing consumer charges (on a per unit basis) if the network was utilised less than planned. There are other arrangements in place more widely which help to ensure that network investment is efficient, these include electricity transmission user commitments²⁷ and

²⁶ For RIIO-GD1, our approach was to consider a 24-year payback period (from the start of GD-1, ie until 2037) for appraising non-mandatory mains and services replacement.

²⁷ Network users enter into a connection agreement with the ESO when looking to connect to the electricity transmission system and as part of this may be required to provide a pre-commissioning User Commitment. This places a liability on the user to financially secure the cost of investment works and protect network users.

gas transmission capacity auctions.²⁸ In addition, potential policy proposals under the Electricity Targeted Charging Review (see Appendix 1) may reduce inefficient load reductions and the risk of underutilised network investment.

- 4.76. Our focus for RIIO-2 is ensuring that network companies choose investments that maximise the long-term value for consumers and not just short-term profits, considering what overall investment is required to meet consumer needs now and preparing to adapt to meet future needs. In particular, we want to protect consumers from having to pay for costly new investment in network infrastructure that is not used, or needed in the future due to changes in demand or technology. We will be considering this issue in more detail at the sector-specific methodology stage as the approach for managing this issue is likely to be different for different sectors given the nature of the potential energy transition changes. However, we want to seek early views now on what options we may want to explore during this stage.

Stakeholder views

- 4.77. In general, stakeholders in response to our open letter did not think that asset stranding would pose a significant risk within the RIIO-2 period although there was some recognition of the future uncertainty (eg Government policy).
- 4.78. On the electricity side, stakeholders supported the need to consider alternative, flexible, least regret solutions, such as active network management, to minimise the risk of stranding. Some also recognised the role that distribution system operation could play in supporting this.
- 4.79. On the gas side, many stakeholders saw a continued role for the gas network in supporting the decarbonisation of heat through the use of alternative fuels.

Need for change

- 4.80. Over the past 13 years, the network asset base (which drives consumer bills) has been rising while demand has been falling. The rate of any future decline is contingent on policy and technological variables that show a great range of uncertainty in the medium to long term, particularly on the gas side.
- 4.81. On the electricity side, future demand is likely to continue to be affected by increased generation at a local level and more self-sufficiency because of new technologies and falling costs (although the level of this type of generation may be reduced if, for example, the costs of offshore wind fall significantly). This decline may be offset by the uptake of electric vehicles

²⁸ The gas SO operates a number of entry capacity auctions for users to secure access to the gas transmission system. These auctions offer capacity for sale for both the long and short term and allow users to trigger the release of incremental entry capacity to secure additional capacity at the transmission system entry points.

and increased electrification of heat and transport, but the extent of it will depend on the uptake of relevant technologies and the decarbonisation pathway.

- 4.82. On the gas side, the future demand is highly dependent on the direction of travel for heat policy, and whether there is an increased focus on the electrification of heat, or the repurposing of the network to accommodate alternative fuels (eg hydrogen).

Our proposals

- 4.83. We cannot be sure on the timing and extent of changes associated with the energy transition and a whole range of future scenarios could be plausible. We want to take steps within RIIO-2 to help minimise the negative impacts on consumers of this demand uncertainty. We want to ensure that the price control and network companies can adapt to a range of different demand scenarios. This not only includes minimising the risk of inefficient and expensive investment, but also ensuring that sufficient and timely investment is made to meet the changing requirements of the system.
- 4.84. New investment agreed through RIIO-2 could have an asset life of over 45 years. We should take steps in RIIO-2 that minimises the risk that consumers pay for new investment to create or refurbish assets that are not utilised, or significantly underutilised in future.
- 4.85. Potential reforms to electricity network access and forward-looking charges could provide more information about the demand for, and the value that users place on new capacity, as well as ensuring that capacity is allocated more efficiently. This will help network companies make better investment decisions. RIIO-2 should encourage network companies to take full consideration of what investment needs are required in the future. However, they will need to balance and justify the need for new investment while ensuring that they can efficiently meet the needs of network users in a changing system.
- 4.86. Such a robust justification could include requirements for network companies to demonstrate how they have considered various alternative solutions (including non-build solutions and delivery by other sectors). We may look to strengthen the existing gas arrangements for the payback period for certain types of new investment (for example decreasing the payback period) and extending these to other costs or sectors if that was appropriate.
- 4.87. We will consider how we can improve incentives around system planning and operation and the delivery of whole system outcomes (for example clarifying funding routes between parties) and will consider the use of uncertainty mechanisms to approve investment nearer the time of need.
- 4.88. We would also like to explore whether it may be appropriate for certain types of investment (with greater uncertainty around their long-term need) to have different risk arrangements. This could include having an ongoing incentive to ensure reasonable utilisation of assets – this could consider the physical load level but more broadly is likely to be linked to the economic value of the asset over its proposed lifetime. As an analogy, we

operate a developer-led regime for interconnection assets where developers take the risk of low income (likely to be linked to low utilisation) within a cap and floor band, earning a higher return on equity if demand matches or exceeds their forecasts, but a lower return where it fails to do so. Any incentive like this must be carefully balanced with the need to ensure that reasonable connection requests are efficiently delivered.

- 4.89. Regulatory depreciation and economic asset lives for RIIO-2 are being considered under the broader finance workstream (see **chapter 7** – other finance issues). As mentioned above, in RIIO-1, gas distribution assets already have a front-loaded depreciation profile to help manage problems relating to the under-utilisation of assets. We are not currently proposing changes at a price control framework level to these policies, but we will review stakeholder feedback and consider whether any changes are required in relation to the specific issue of under-utilisation.

Network utilisation, stranding and investment risk - Question

Q9. What options, within the price control, should be considered further to help protect consumers against having to pay for costly assets that may not be needed in the future due to changing demand or technology, while ensuring companies meet the reasonable demands for network capacity in a changing energy system?

End-use energy efficiency

- 4.90. Aligned with the need to ensure that the energy system is appropriately sized to meet current and future demand, is the need to ensure future network investment is delivered cost-effectively. Heating our homes, businesses and industry accounts for nearly half of all energy use in the UK and a third of our carbon emissions.²⁹ To meet legally binding carbon reduction targets set out in the Climate Change Act 2008, it is likely that the heat sector will need to be almost completely decarbonised.
- 4.91. The optimal path for heat decarbonisation is far from certain. Scenarios could involve, for example, greater use of alternative fuels such as hydrogen and/or biogas, or the establishment of heat networks³⁰ or with the electrification of heat. All options will require significant additional investment in networks, for which gas and electricity consumers will need to pay.
- 4.92. We might be able to reduce the cost of the total future network investment required for decarbonisation by reducing the total demand for heat, for example through increasing the heat retention in buildings.

²⁹ Clean Growth Strategy <https://www.gov.uk/government/publications/clean-growth-strategy>

³⁰ A heat network (sometimes called 'district heating') supplies heating and hot water from a central source to multiple homes through a network of insulated pipes. This replaces the need for a boiler in each home.

- 4.93. As part of a call for evidence, BEIS is currently considering a range of potential solutions in response to market barriers to energy efficiency investment.³¹ This includes demand-side measures (eg low interest loans, direct subsidies) in addition to examining the potential role of Distribution Network Operators (DNOs) and Gas Distribution Networks (GDNs) in delivering energy efficiency savings and how this could be further incentivised.³²
- 4.94. We would like to hear your views on the role that networks could play in encouraging measures to reduce end-use energy demand to deliver a reduction in long-term network costs, particularly, but not exclusively limited to, the costs associated with heat decarbonisation.

End-use energy efficiency - Question

Q10. In light of future challenges such as the decarbonisation of heat, what should be the role of network companies, including SOs, in encouraging a reduction in energy use by consumers in order to reduce future investment in energy networks?

➔ What could the potential scale of this impact be?

³¹ Demand side barriers to market growth include low awareness of energy efficiency measures and benefits, high upfront cost and the disruption factor of installing energy efficiency measures.

³² Building a market for energy efficiency call for evidence
<https://www.gov.uk/government/consultations/building-a-market-for-energy-efficiency-call-for-evidence>

5. Driving innovation and efficiency

Chapter summary

Increased innovation and opening up network activities to competition have the potential to drive down costs and enable the transformation of the energy system.

To support this we propose to:

Innovation

- Drive the transition of more innovation to business as usual (BAU) using the incentives framework.
- Where it can be clearly justified on innovation grounds, we will explore setting allowances for some activities over longer timescales to enable greater flexibility.
- Continue to provide an innovation stimulus where projects demonstrate long-term value to consumers but which might not otherwise be delivered by the core RIIO-2 framework (eg where network companies are required to collaborate, or where the benefits accrue to parties beyond the innovator itself).
- Consider three broad areas for reform of the innovation stimulus:
 - Targeting this funding more towards critical issues associated with the energy transition.
 - Coordinating this funding and support with other wider public sector innovation schemes where this is in interest of GB network consumers.
 - Enabling increased third party engagement and exploring the potential benefits and challenges of direct access to funding in light of future sources of transformative and disruptive innovation.

Competition

- Extend the role of competition (for the market)³³ where it is appropriate and provides better value for consumers.
- Apply our criteria for identifying projects suitable for competition to projects in all sectors (electricity and gas, transmission and distribution).
- In addition to the above proposals, we are also seeking views on the development of competition models, ranging from 'late'³⁴ models to the potential development of 'earlier'³⁵ competitions for ideas or solutions.

Consultation questions: In this chapter we ask for views on our proposals for innovation funding and competition.

³³ 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.

³⁴ 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.

³⁵ 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.

Introduction

- 5.1. Network companies need to innovate in order drive down costs and meet the needs of a more complex energy system. RIIO provides incentives for companies to innovate. However, these incentives may not be strong enough to deliver the amount of innovation required, or within the required timescales; particularly if the innovation undertaken by one company is unlikely to deliver benefits back to that company within a price control period.³⁶ Therefore, RIIO also provides a stimulus funded by consumers to support investment in certain types of innovation. The questions for RIIO-2 are whether this stimulus is still required and, if it is, how it can be used to best effect.
- 5.2. Opening up the activities of monopoly network companies to competition has the potential to drive down costs, bring in new entrants and innovative approaches, and identify new, alternative solutions to network issues. Based on the benefits we have seen from competition (such as through the Offshore Transmission Owner (OFTO) regime), in RIIO-2 we want to consider what further role competition could play.
- 5.3. In this chapter, we set out our high-level approach to innovation in RIIO-2 and our broad approach to enabling competition.

Innovation

Background

- 5.4. Additionally, the framework includes specific mechanisms aimed at stimulating innovation which are described in the table below. Before the RIIO Framework, Ofgem introduced the Innovation Funding Incentive (IFI) in Distribution Price Control Review (DPCR) 4 to support testing of new equipment, and the Low Carbon Networks Fund (LCNF) in DPCR 5 to trial new technologies. It represented Ofgem's response to the consistent decline in research and development investment by Distribution Network Operators (DNOs) since 1990.³⁷
- 5.5. Under the RIIO framework, innovation was put at the heart of what network companies do. Incentives in the RIIO framework, such as the totex incentive mechanism and the customer satisfaction incentives, promote certain forms of innovation. Additionally, the framework includes specific mechanisms aimed at stimulating innovation which are described in Table 3 below.

³⁶ Regulating energy networks for the future <https://www.ofgem.gov.uk/ofgem-publications/51952/et-innovationpdf>

³⁷ Regulating energy networks for the future: RPI-X@20 – innovation in energy networks https://www.ofgem.gov.uk/sites/default/files/docs/2009/07/rpi-x20-innovation-working-paper-final-draft_0.pdf

Table 3: RIIO-1 Innovation Stimulus Package

	Network Innovation Competition (NIC)	Network Innovation Allowances (NIA)	Innovation Roll-out Mechanism (IRM)
Purpose of scheme	To fund large flagship development and demonstration projects	To fund smaller research, development and demonstration projects	To facilitate the roll-out of proven innovations that meet certain requirements into BAU only when such a roll-out cannot be financed under other mechanisms in the price control or does not give commercial benefits to the network company during the current price control period
How funding is awarded	Companies submit bids and compete for project funding	Allowance set at the start of the price control based on the quality of the company's own innovation strategy	Companies submit applications to Ofgem
Funding available each year	£70m for electricity networks for 2017-2021 £20m for gas networks	Between 0.5% and 0.7% of network companies' allowed revenue in RIIO-1	Two application windows throughout price control period

5.6. Our intention has always been that the innovation support introduced for RIIO should be time-limited.³⁸ We want to foster a culture within the network companies where innovation becomes business as usual (BAU) over time and there is no need for specific funding mechanisms. For RIIO-2, we have to consider whether companies have incorporated learning from innovation into BAU and, ultimately, whether separate innovation mechanisms are required. Consumers should not fund innovative measures that companies should undertake as a matter of course.

5.7. In our open letter, we asked stakeholders for their views on whether the current arrangements should be continued or changed for RIIO-2. In this document we set out our proposals to retain innovation funding, and identify broad areas for reform to be further developed at the sector-specific methodology stage.

³⁸ RIIO: A new way to regulate energy networks – final decision
<https://www.ofgem.gov.uk/ofgem-publications/51870/decision-docpdf>

Stakeholder views

- 5.8. Most network companies supported retaining the innovation stimulus, particularly to enable collaboration across the companies and the energy system. One company suggested that after 13 years of access to innovation funding for DNOs, it may now be appropriate to re-focus support towards larger-scale, whole-system orientated projects. Under this proposed approach, companies would share more risk in terms of funding projects provided that stronger incentives were in place to reward good performance.
- 5.9. Other stakeholders suggested ring-fencing the funding of innovation that might otherwise be commercially unviable but that is likely to lead to consumer benefits. Some wanted a regime where other stakeholders had the chance to propose alternative solutions and collaborate in the delivery of load-related investment in particular.

Need for change

- 5.10. The low carbon energy transition means that we need significant levels of innovation. Future challenges relate to larger volumes of consumer data, enabling consumers to shift patterns of demand, and identifying those consumers in vulnerable situations.³⁹ As more generation connects to local networks, network companies must deal with different flows of energy, and manage the growth in electric vehicles and its impact on the network. All of this will require network operators to think differently about how they operate and develop their networks. In addition, decarbonising the gas network will require GDNs to test how substitutes for natural gas work in the existing network.
- 5.11. Given the potential scale of the energy transition, the innovation that would be required to meet future challenges, and informed by the views of our stakeholders, we believe that there is likely to be a benefit to consumers from network companies having access to dedicated innovation funding. However, we believe this should be limited to innovation projects that can demonstrate long-term value to consumers but which might not be otherwise delivered under the core RIIO-2 framework, including the package of outputs and incentives. In the medium to long term, the challenge is acute around system operability, whole system coordination and decarbonisation and companies may have fewer natural incentives to innovate in these areas (for example due to the need cooperate or due to the benefits accruing to wider parties).

³⁹ Dermot Nolan speech : <https://www.ofgem.gov.uk/publications-and-updates/dermot-nolan-s-speech-sustainability-first-s-project-inspire-report-launch-event>

Proposals

- 5.12. We will drive the transition of more innovation to BAU using the incentives framework. Where it can be clearly justified on innovation grounds, we will explore setting allowances for some activities over a longer timescale to enable greater flexibility.
- 5.13. We will continue to provide an innovation stimulus where projects demonstrate long-term value to consumers but are at higher-risk of under-delivery by the core RIIO-2 framework (eg where network companies are required to collaborate, or the benefits accrue to parties beyond the innovator itself). We believe that aspects of the current innovation stimulus are in need of reform. We seek stakeholder views on the following potential changes which are described at a high-level below:
- Increased alignment of funds to support critical issues associated with the energy transition
 - Greater coordination with public sector innovation funding and support where 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 opportunities.

Innovation - question

Q11. Do you agree with our proposal to retain dedicated innovation funding, limited to innovation projects which might not otherwise be delivered under the core RIIO-2 framework?

Q12. Do you agree with our three broad areas of reform: i) increased alignment of funds to support critical issues associated with the energy transition challenges ii) greater coordination with wider public sector innovation funding and support and iii) increased third party engagement and (including potentially exploring direct access to RIIO innovation funding)?

Increased alignment of funds to support critical issues associated with the energy transition

- 5.14. There needs to be greater focus on those areas that are most important to the energy transition. Consumers should not fund innovative measures that companies should ostensibly undertake as a matter of course. As the draft Electricity Network Innovation Strategy makes clear, projects exploring commercial business model evolution and consumer behaviour will require a greater focus in future as consumers change their interaction with the energy system.⁴⁰ In addition, the Australian Energy Regulator

⁴⁰ Following the 2016 Network Innovation Reviews, network companies are required to work together and to engage relevant stakeholders to develop separate strategies for gas and electricity. The 2017-18 strategies are expected to be published by the end of March 2018. Draft strategies can be accessed here:

<http://www.energynetworks.org/electricity/futures/network-innovation/electricity-networks-innovation-strategy.html>

(AER) has implemented a targeted innovation mechanism towards certain types of innovation projects.⁴¹

- 5.15. Where there has been significant innovation activity to date, and where projects could now be considered as BAU, network companies should be undertaking certain aspects of innovation as BAU. For example, in some areas of innovation relating to network performance and monitoring we should see a move in this direction. This is backed by a review of projects funded under the Low Carbon Network Fund (LCNF) that observed all DNOs have developed their capability to extend enhanced network monitoring to 11kV feeders, secondary substations and low voltage feeders.⁴² The flexibility to set allowances for some activities over a longer timescale, where this can be clearly justified on innovation grounds, could be used support the transition of innovation to BAU.
- 5.16. Beyond the areas of innovation that companies should be undertaking as BAU, we propose to take a more targeted approach to the innovation stimulus in RIIO-2 by considering how funding can best contribute to some of the critical issues associated with the energy transition, identified above. This may include using the network innovation strategies to help identify priority areas according to themes. We seek stakeholder views on what the potential priority areas of focus for innovation funding might be as well as options for mitigating the risk of creating bias towards certain types of innovation because of increased targeting.

Greater coordination with wider public sector innovation funding and support

- 5.17. There are a range of innovation support schemes operating in the GB energy sector and Government has significantly increased its investment in low carbon innovation with more than £2.5bn in research, development and demonstration allocated between 2015 and 2021.⁴³ This includes up to £505m from Department for Business, Energy and Industrial Strategy BEIS' Energy Innovation Programme and up to £1.2bn of funding from UK Research and Innovation, in addition to up to £620m from a range of other Government departments and the Industrial Strategy Challenge Fund (ISCF).
- 5.18. Where it aligns with our duties, and is in the interest of GB network consumers, it is essential that any support we provide forms part of a strategic and coordinated approach. The launch of a new Energy Innovation Board in 2016, bringing together representatives from across the Government, Ofgem, UK Research and Innovation, aims to increase alignment of these public investments.
- 5.19. Alongside greater coordination with wider public sector innovation funding, we also need to consider the impact of a range of other tools that support

⁴¹ <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/demand-management-incentive-scheme-and-innovation-allowance-mechanism>

⁴² A Review and Synthesis of the outcomes from low carbon networks fund projects <http://www.ukerc.ac.uk/publications/a-review-and-synthesis-of-the-outcomes-from-low-carbon-networks-fund-projects.html>

⁴³ <https://www.gov.uk/government/publications/clean-growth-strategy>

innovation. These include Ofgem's Innovation Link and Regulatory Sandbox⁴⁴ (which can provide some dispensation from some rules to enable tests and trials) as well as institutional reform and the RIIO outputs and incentives framework itself.

- 5.20. We seek views on the range of innovation funding sources and support (including those identified above) and how any dedicated funding through RIIO-2 could best dovetail with these, to better target innovation support.

Increased third party engagement and access

- 5.21. We have re-visited our approach to third-party engagement and direct access to innovation funding periodically throughout RIIO-1. Most recently, we consulted on measures to increase third party involvement and potential third-party direct access following the 2016 Network Innovation Review.⁴⁵
- 5.22. As a result of this review we decided not to provide direct access but instead introduced measures to increase third party involvement. This included implementing a new requirement on network companies to issue an annual call for ideas from third parties for bids submitted to the NIC.
- 5.23. The review recognised the challenges associated with providing direct access including a requirement for primary legislation to enable direct third party access in addition to the ongoing licence monitoring requirements. Other challenges included the regulatory burden associated with having to apply for an innovation licence potentially deterring third parties from participating directly.⁴⁶
- 5.24. We have previously cited the potential benefits of providing direct access, particularly where this relates to circumstances in which third parties might be discouraged from bidding if it was necessary to collaborate with network companies.⁴⁷ Innovations that push more disruptive change to network operations may mean network companies have little (and potentially opposing) incentive to progress these. In addition, data from the Innovation Link shows 6% of business models engaging with the Link relate to the performance of networks and nearly half of those approaching the Innovation Link come from outside of the energy sector.
- 5.25. Given the increasing scope and range of potentially transformative and disruptive new business models and innovative solutions (even since 2016), we want to seek views on ways in which we can build on the

⁴⁴ <https://www.ofgem.gov.uk/about-us/how-we-engage/innovation-link>

⁴⁵ Network Innovation Review – our policy decision
<https://www.ofgem.gov.uk/publications-and-updates/network-innovation-review-our-policy-decision>

⁴⁶ https://www.ofgem.gov.uk/system/files/docs/2016/12/minutes_13_october_2016.pdf

⁴⁷ <https://www.ofgem.gov.uk/publications-and-updates/open-letter-consultation-non-network-company-access-innovation-stimulus>

increased third party engagement brought about by the Innovation Review and explore the potential for direct access to funding.

Innovation - question

Q13. What are the key issues we will need to consider in exploring these options for reform at the sector-specific methodology stage, including:

(i) What the critical issues may be in each sector and how we can mitigate the bias towards certain types of innovation through focusing on these issues?

(ii) How we can better coordinate any dedicated RIIO innovation funding with wider public sector funding and support (including Ofgem initiatives such as the Innovation Link and the Regulatory Sandbox)?

(iii) How we can enable increased third-party engagement and what could be the potential additional benefits and challenges of providing direct access to third parties in light of the future sources of transformative and disruptive innovation?

5.26. The nature and size of any future innovation stimulus package will need to be considered in more detail at the sector-specific methodology stage. We would welcome any early views on what form future innovation funding might take based on an assessment of the current innovation mechanisms (NIC, NIA and IRM) and in light of the proposed areas of reform identified above.

5.27. We also request feedback on how we can further encourage the transition of innovation to BAU in the RIIO-2 period and how we can develop our approach to the monitoring and reporting of benefits arising from innovation.

Innovation – question

Q14. What form could the innovation funding take.

➔ What would be the advantages and disadvantages of various approaches?

Q15. How can we further encourage the transition of innovation to BAU in the RIIO-2 period? How can we develop our approach to the monitoring and reporting of benefits arising from innovation?

Competition

Background

5.28. The Authority's principal objective includes protecting existing and future consumers '...wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with...' the transportation of gas and the transmission and distribution of

electricity.⁴⁸ This is reflected in our regulatory stances, which we consider when developing our policies.

- 5.29. In this regard, we have sought and are continuing to seek (where appropriate) to promote effective competition in the development and management of the energy system, to drive better value for consumers.

Current price controls

- 5.30. As part of current price controls, we already utilise competition 'in the market' in several ways (eg fast-tracking, comparative benchmarking) as well as competition 'for the market' (OFTOs, competition for connections, independent network operators).
- 5.31. We have observed significant benefits from this application of competition 'for the market', such as under our OFTO tender rounds (TRs) where we have observed net present value (NPV) savings for the projects in TR1 of £244m-£469m, projects in TR2 of £326m-£595m, and for projects in TR3 of £102m-£154m (2014-15 prices).⁴⁹
- 5.32. We set out in our RIIO-T1 Final Proposals⁵⁰ that certain projects, not yet funded as part of the baseline, could be subject to third party delivery where this is in the interests of consumers. This policy was further refined through our Integrated Transmission Planning and Regulation (ITPR) project,⁵¹ and our policy development to extend competition in onshore transmission, often referred to as 'Extending Competition in Transmission' (ECIT).⁵² We have developed this further in relation to our recent minded-to position⁵³ on NGET's Hinkley-Seabank project and our accompanying proposals⁵⁴ for models that will be considered for future electricity transmission projects that meet our criteria for competition during the remainder of RIIO-T1. We estimate that using the 'competition-proxy'

⁴⁸ This is set out in Section 4AA(1B) of the Gas Act 1986 and Section 3A9(1B) of the Electricity Act 1989. Section 4AA(1C) of the Gas Act 1986 and Section 3A(1C) of the Electricity Act 1989 provide that, before seeking to promote competition, Ofgem must consider to what extent the interests of existing and future consumers would be protected and whether there is any other manner in which Ofgem could better protect those interests.

⁴⁹ <https://www.ofgem.gov.uk/publications-and-updates/evaluation-of-to-tender-round-2-and-3-benefits>

⁵⁰ NGET and NGGT: <https://www.ofgem.gov.uk/publications-and-updates/riio-t1-final-proposals-national-grid-electricity-transmission-and-national-grid-gas-%E2%80%93-overview> SPT and SHET: <https://www.ofgem.gov.uk/publications-and-updates/riio-t1-final-proposals-sp-transmission-ltd-and-scottish-hydro-electric-transmission-ltd>

⁵¹ <https://www.ofgem.gov.uk/electricity/transmission-networks/integrated-transmission-planning-and-regulation>

⁵² <https://www.ofgem.gov.uk/electricity/transmission-networks/competition-onshoretransmission>

⁵³ Hinkley-Seabank: Minded-to consultation on delivery model, January 2018: <https://www.ofgem.gov.uk/publications-and-updates/hinkley-seabank-minded-consultation-delivery-model>

⁵⁴ Update on competition in onshore electricity transmission, January 2018: <https://www.ofgem.gov.uk/publications-and-updates/update-competition-onshore-electricity-transmission>

approach⁵⁵ we are minded to use for NGET's Hinkley-Seabank project, will deliver NPV savings of over £100m (2016-17 prices).

Going forwards

- 5.33. We are seeking to facilitate and promote market-based approaches to managing the energy system and to driving whole system outcomes (see **chapter 4**). This includes through our work on system flexibility and facilitating procurement of market-solutions to meet System Operator (SO) and Distribution System Operator (DSO) requirements, as well as our wider development of potential future electricity network access arrangements. While we have not focused on DSO roles and potential flexibility markets in this document, we are undertaking a range of wider workstreams that are considering this further, and expect this to be an area of specific focus in our sector-specific methodology for Electricity Distribution (RIIO-ED2).
- 5.34. For RIIO-2, we believe that extending the scope of competition has the potential to deliver benefits for consumers, and to facilitate the energy system transition. We have set out proposals on how to approach this, and are seeking stakeholder views on these.

Stakeholder views

- 5.35. Respondents to our open letter acknowledged the potential value of extending the role of competition. They noted that competition already played a role in the price control, and some highlighted the potential for DSO-led flexibility markets which could drive competitive pressure more generally across the system, not just through our proposals on competition 'for the market'. Some respondents said it is important to carefully consider potential benefits, challenges and risk allocation associated with competition for the market.
- 5.36. Additionally, an independent review into the 'Cost of Energy', by Dieter Helm, was recently published. Helm advocates a significantly increased role for competition in pricing electricity network services.⁵⁶ In our response⁵⁷ to BEIS' call for evidence on this review, we set out a number of views on our approach to driving competition in network regulation, our approach to the evolution of system operation roles and how this links to the findings presented in the review.

Our proposals

- 5.37. We propose to continue to use our full range of regulatory tools to bring competitive pressure to all network development, ranging from benchmarking of costs and assessment of company procurement

⁵⁵ 'Competition-proxy' aims to replicate the outcome of an efficient competitive process.

⁵⁶ Cost of Energy Independent Review <https://www.gov.uk/government/publications/cost-of-energy-independent-review>

⁵⁷https://www.ofgem.gov.uk/system/files/docs/2018/02/ofgem_cost_of_energy_review_response.pdf

processes, through to running tenders for holistic delivery of certain projects. We also intend to use information revealed by competitive markets to inform appropriate regulatory financial parameters and unit costs.

5.38. We propose to extend the role of competition (for the market), where it is appropriate and provides better value for consumers.

We propose to consider the role of this type of competition in two broad ways: i) the scope of which assets/projects are subject to late models of competition; and ii) when competitions are run and what they are for.

5.39. Under i), we propose to expand the scope of projects to which late models of competition may be applied. In electricity transmission, the criteria used to identify projects suitable for competition are 'new', 'separable' and 'high value' (£100m+):

- **New** – a completely new transmission asset or a complete replacement of an existing transmission asset
- **Separable** – the boundaries of ownership between these assets and other (existing) assets can be clearly delineated⁵⁸
- **High value** – a threshold set at £100m of expected capital expenditure of a project at the point of our initial assessment of whether the project should be subject to competition.⁵⁹

5.40. We propose to continue applying these criteria to electricity transmission, and our preferred position is to further apply them across all the network sectors (electricity and gas, transmission and distribution) to identify projects suitable for competition. We are seeking early stakeholder views on this and on whether there are any sector-specific reasons why these criteria might not be universally applicable across the sectors. For example, these could include differences in types of projects and potential delivery pipeline, technical or interfacing differences across sectors etc.

5.41. Under ii), **we propose to develop a range of models for competition, ranging from late models (which have been our focus to date within electricity transmission), to the potential development of earlier competitions for ideas or solutions to solve network issues.** We will consider the role of system operators (at both the transmission and distribution levels) in enabling or implementing such competition models.

⁵⁸ Transmission assets do not need to be electrically contiguous or electrically separable from other assets to be considered separable. However, the SO may on a case-by-case basis propose electrical separability at project interfaces, if the SO considers there is a cost-benefit justification for this.

⁵⁹ The £100m threshold will be a fixed nominal value and not indexed to a reference year, and assessed in the price base of the year of the assessment.

- 5.42. In our view these earlier models could have the potential to better facilitate whole system solutions (eg where parties may be able to propose new and innovative solutions beyond those being proposed by incumbents within a specific sector), but could also present additional challenges which would need to be further considered. These could include, for example, managing significant changes in scope of requirements and project need, changes in costs if there is a long period between the results of a competition and project delivery, as well as how to fairly compare and evaluate very different bids. We are seeking stakeholder views on this position, particularly on what models we should be considering and how to address any potential challenges associated with them – this builds on previous work⁶⁰ undertaken through the ECIT project and a related industry group⁶¹ to consider both late and early forms of competition.
- 5.43. As we get more clarity on different competitive and market-based models, including early models and DSO procurement models, we expect to review whether our criteria for competition are appropriate and necessary for these types of competition. More generally, as set out in our January 'update on competition in onshore electricity transmission',⁶² we intend to balance the benefits of maintaining consistency in our competition criteria with the need to keep the criteria under review to ensure that they continue to produce favourable outcomes for consumers. In all cases, we propose that the criteria should reflect circumstances where competition could provide better value for consumers.
- 5.44. We will further consider whether there are wider opportunities to introduce competitive pressure into the price control, as our framework develops.

Competition - questions

Q16. Do you agree with our proposal to extend the role of competition across the sectors (electricity and gas, transmission and distribution)?

→ What are the trade-offs that will need to be considered in designing the most efficient competitions?

Q17. Do you consider there are any reasons why our new, separable and high value criteria might not be applicable across all four sectors?

→ If so, what alternative criteria might be suitable?

Q18. What could the potential models be for early stage competitions (for design or technical solutions)?

→ What are the key challenges in the implementation of such models, and how might we overcome them?

⁶⁰ Extending competition in electricity transmission: tender models and market offering, August 2016: <https://www.ofgem.gov.uk/publications-and-updates/extending-competition-electricity-transmission-tender-models-and-market-offering>

⁶¹ <https://www.ofgem.gov.uk/electricity/transmission-networks/forums-seminars-and-working-groups/extending-competition-transmission-industry-group>

⁶² Update on competition in onshore electricity transmission, January 2018: <https://www.ofgem.gov.uk/publications-and-updates/update-competition-onshore-electricity-transmission>

6. Simplifying the price controls

Chapter Summary

By clarifying our approach to setting outputs and cost allowances, we hope to simplify these aspects of the framework. We believe arrangements to encourage good business plans are too complex and can be simplified, and removed in some cases.

In RIIO-2, we will continue to use **outputs and incentives** to drive improvements that consumers' value. We will not reward activities that companies deliver in line with their licence or baseline assumptions.

Where we can confidently **forecast costs**, then we will continue to provide incentives on companies to outperform. Where we cannot, then we will use indexation or other mechanisms to protect consumers against paying costs that turn out not to be required.

We do not believe that in its current form the **Information Quality Incentive (IQI)** works in the way intended. We are consulting on whether we should retain the IQI and **fast-tracking** arrangements in RIIO-2 or replace or modify them. We believe reputational and financial rewards for high quality plans have the potential to drive down costs, but only in sectors where there is sufficient competition between companies. We do not believe fast-tracking is suitable for the transmission sector.

Consultation questions: In this chapter we ask for views on our proposals for setting outputs, information-revealing devices, and annual reports/reporting.

Introduction

- 6.1. A price control is complex. The 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, we have built into the framework additional features to protect consumers and investors from undue risk. These are necessary features, but inevitably add to the complexity of operating a price control.
- 6.2. 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 this can result in consumers paying more than they need to.
- 6.3. Complexity also comes from the different tools and mechanisms (**information-revealing devices**) that we use to encourage companies to provide us with high quality business plans and costs that most closely reflect the expenditure they expect to make. We present alternatives that can simplify these arrangements and make them more effective.

- 6.4. Finally, we produce **annual reports** to gauge the performance of companies within our price controls. These add complexity, both for companies to prepare the data needed for these reports and for us, in presenting information in a meaningful way to stakeholders. We are interested in views on how we can improve the process and form of these reports.

Our approach to setting outputs

- 6.5. We use outputs to define the consumer-facing outcomes that we expect network companies to deliver.
- 6.6. In the simplest possible price control 'contract', the regulator (on behalf of current and future consumers) would specify the consumer-facing outcomes that the company must achieve in exchange for revenue allowances over the price control period. For instance, the licence might specify that customer interruptions (or power cuts) do not exceed a maximum frequency. It could then allow the company to recover sufficient revenues from consumers to cover the capital and operating expenditure necessary to achieve this outcome. If the company was able to achieve this outcome for lower cost than the allowance, it could keep some of the savings as increased profit, and share the rest with consumers. If it did not achieve the outcome, then it would incur penalties that reflect the associated inconvenience to consumers (for instance, the value of lost load). This would be a simple price control with incentives aligned between consumers and companies.
- 6.7. Although we designed RIIO with this simplicity in mind, we were aware from the outset that there would need to be some additions to the simple structure presented above. For instance, it is frequently in the interests of consumers to encourage companies to improve service quality rather than just meeting a minimum standard (eg to cut the incidence of power cuts over time). But improvements in service quality require additional effort (beyond the baseline), which means a financial incentive mechanism is needed to reward the additional effort. Such financial incentive mechanisms need careful calibration to ensure that the cost of providing the incentive is at an efficient level and does not exceed its value to the consumer.
- 6.8. Sometimes network companies deliver services in response to a specific requirement for new infrastructure or from external changes, such as in government policies rather than a demand from energy consumers. For instance, network companies may need to invest in network reinforcement to enable the electrification of rail services in an area as mandated by government policy. Such activities do contribute to a consumer-facing outcome of maintaining a reliable network. But if government policy subsequently changes and the activity is no longer required to achieve the outcome, does it follow that network companies should keep the 'savings'? A simple outcomes-based price control is not able to make such adjustments without adding some complexity.
- 6.9. Finally, the revenue-funded activities sometimes deliver consumer-facing outcomes after, instead of during, the current price control. A good example of this arises in the case of asset maintenance and replacement

programmes. In a pure outcomes-based contract, companies may claim that increased allowances are necessary for additional asset management (eg to replace ageing transformers), but then choose not to make the replacements since the effect on network reliability does not become visible until well after the end of the price control period. For this reason, we have introduced network output measures (NOMs), which can provide a more real-time measure (during a price control period) of the likelihood and impact of asset failure, so we can adequately hold companies to account. Inevitably, this adds complexity.

Network Output Measures (NOMs)

Network assets can have very long lifetimes, with many lasting for well over 40 years. What we fund companies to do within one RIIO period can have an impact over a much longer period. It is important that network companies manage these assets appropriately so that both current and future consumers benefit from good decision-making in the present day. If price controls only focused on the delivery of services provided in the short term, network companies might aim to achieve these at the lowest cost possible, regardless of the impact on the long-term health of the assets.

In previous price controls, we introduced the NOMs as a means of assessing the longer-term impact of asset management practices. They are a set of forward-looking measures reflecting the future impact achieved by asset management.

In RIIO-1, we link NOMs to regulatory funding for network asset management including maintenance, refurbishment and replacement. We fund networks to deliver quantifiable reductions in levels of risk and where appropriate we reward or penalise if they deliver a different level. We have been working with network companies during the RIIO-1 period to develop NOMs further, including the monetisation of long-term risks, both as a way of assessing performance and as an important input to regulatory arrangements.

For RIIO-2, we expect network companies' investment plans, as well as our regulatory arrangements, to be driven more explicitly by the balance between cost of asset intervention and the developed output measures that reflect long-term consumer value.

- 6.10. Our experience in RIIO-1 has shown that a move towards a simple outcomes-based framework is inadvisable for the reasons set out above. However, we think a move in RIIO-2 towards greater *clarity* and *consistency of treatment* between consumer-facing outputs that companies must deliver is desirable. These **licence obligations** include company-specific deliverables with specific funding attached to them - **price control deliverables**, and service improvements that we want to incentivise - **output delivery incentives**.
- 6.11. In their review of the RIIO framework, CEPA recommend that we build into the price control a sense check to ensure that incentive targets are set in a way that does not reward network companies for performance improvements that are also funded through totex. CEPA also recommend that we review targets in light of companies' revealed performance in RIIO, and that we consider relative targets along with localised targets where appropriate.

6.12. In RIIO-2, we propose to continue to specify outputs as a set of consumer-facing outcomes that we expect regulated licensees to deliver. We are likely to build upon the six categories specified in RIIO-1 (see Figure 1), although we have not yet assessed whether these are still all applicable (or equally relevant) across the different sectors.

Figure 1: The six output categories used in RIIO-1

Output categories		
<p>Customer satisfaction</p> <p>Satisfaction of consumers, including a broad spectrum of network users, with network services</p>	<p>Reliability and availability</p> <p>Aspects of reliability and availability of network services that consumers are concerned with (eg number and duration of outages, constraints costs)</p>	<p>Safety</p> <p>Compliance with Health and Safety Executive safety standards</p>
<p>Conditions for connection</p> <p>The process for new/enhanced connections to the network</p>	<p>Environmental impact</p> <p>Impact of network operations on the environment (including noise/visual impacts) and contribution to environmental targets</p>	<p>Social obligations</p> <p>Services to fuel poor and vulnerable consumers in line with Government requirements</p>

6.13. In doing so we will specify **licence obligations** that companies must meet. 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.

6.14. There will be no direct funding for these licence obligations. Companies should meet these obligations through a combination of different activities. The totality of the price control settlement should enable companies to fulfil their licence obligations.

6.15. In addition to these licence obligations, we propose that the framework should also specify how we will treat certain company-specific deliverables, (outputs and input activities called '**price control deliverables**'). 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).

6.16. For these price control deliverables, we would expect to provide a revenue allowance 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.

- 6.17. We recognise the importance of balancing the above with giving sufficient freedom to companies to find ways of reducing costs to benefit consumers. For instance, where companies can make a satisfactory case that an expensive deliverable is no longer necessary, because they have found a much more inexpensive solution, the framework will detail how the gains will be shared between companies and consumers. However, if we have good reason to consider that the deliverable was never necessary in the first place, or there has been a material change in circumstances since the allowances were originally set, we will set out in the framework measures to ensure companies refund consumers.
- 6.18. For output areas where service quality improvements beyond the minimum standard may be in the interests of consumers, we propose to set financial incentives (**output delivery incentives**) to reward companies for delivering the necessary improvements. We would not seek to specify these service quality improvements as licence obligations; instead, we would rely on the incentive mechanisms.⁶³ However, we will take care to ensure that the overall cost of such financial incentives is at an efficient level and does not exceed the value of service improvements to consumers.
- 6.19. Our enhanced engagement framework for RIIO-2 will be an important tool in this regard. We will also examine if some of these incentive mechanisms would 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). For instance, it may be more appropriate to reward companies for improving stakeholder engagement and customer satisfaction scores on a relative rather than absolute basis. We would reward companies that exceed the sector benchmark (eg the sector average) and penalise those that lag behind.
- 6.20. 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.
- 6.21. 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. For instance, a gas network might reduce the amount of gas lost in transportation (shrinkage) through its mains replacement programme, which consumers fund through base revenues. Where this is the case, we would expect any incentives for

⁶³ These would be set out in the licence and would enable annual revenue adjustments.

reducing shrinkage only to apply to targets that exceed this level of improvement.

- 6.22. 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.
- 6.23. Our approach to output delivery incentives may link to our proposals for new arrangements to protect against higher than expected returns described in **chapter 7**.
- 6.24. In addition to the above, we may also assign **reputational incentives** to some output activities. We would use these for aspects of a company's operation, or the impact on others of a company's activities, where greater focus is required, but where the data available does not support setting financially-incentivised targets. There would be no financial rewards/penalties associated with performance and there would be no associated licence conditions specifying consequences of non-delivery.

Our approach to setting outputs - questions

Q19. What views do you have on our proposed approach to specifying outputs and setting incentives?

- ➔ When might relative or absolute targets for output delivery incentives be appropriate?
- ➔ What impact would automatically resetting targets for output delivery incentives during a price control have? Which outputs might best suit this approach?

Our approach to setting cost allowances

- 6.25. We use the RIIO framework to incentivise companies to beat cost and output targets. If they spend less and deliver more they get to earn a higher return. Consumers benefit because they share the benefits in the current price control and we can set lower allowances and more stretching targets for the next period. Our experience in RIIO-1 however has highlighted that we need to ensure we protect consumers from paying for costs that were assumed to be required, which then do not materialise.
- 6.26. We see this in the case of Real Price Effects (RPEs). These are the costs of inflation (over and above the Retail Price Index) affecting certain cost categories, such as labour, materials etc. In RIIO-1, we provided a fixed and upfront allowance for these additional costs. However, during the period, price inflation has been lower than expected and this has had a material impact on companies' costs and returns.
- 6.27. In their review of the RIIO framework, CEPA recommend that we make better use of cost uncertainty mechanisms, by using them to fund a larger share of uncertain costs rather than including such uncertain costs in baseline allowances. CEPA also highlight how more competition *for* the market can address risks associated with cost uncertainty.

Uncertainty mechanisms allow changes to a network company's allowed revenues to be made in light of what happens during the price control period. We use the term 'uncertainty mechanisms' to cover a range of mechanisms and provisions for adjusting the maximum revenue that a network company is allowed to collect. These include: volume drivers, revenue triggers, specific reopeners, and pass-through costs.

6.28. For RIIO-2, we propose to draw on the following to protect consumers from forecasting risk:

- Where appropriate, we propose to use competition rather than company forecasts to set prices for new, separable and high value investment projects (see **chapter 5, Competition**)
- We propose to improve the quality of company forecasts by using simplified incentives to reward well-justified, ambitious and high quality business plans (see **chapter 6, Information-revealing devices**)
- We propose to index uncertain costs where possible. Specifically, we propose to **index RPEs** rather than set an upfront allowance figure. However, we will need to undertake further work to identify an appropriate set of indices in each sector. We will also examine the potential to set RPEs to a zero value if the evidence indicates that deviations in costs from general inflation indices have not been (or are not expected to be) material
- Where unit costs are stable but quantities difficult to predict (eg due to load uncertainty in the future), we propose to use **volume drivers** to enable revenue allowances to automatically adjust to changes in circumstances
- Where there is uncertainty over the scope of work and the potential costs are significant for consumers, we do not propose to set upfront allowances from the outset of the price control. Instead, we propose to either use **revenue drivers** or within-period mechanisms, such as the **strategic wider works** approach, used in RIIO-T1 for all the sectors. We would consult on appropriate thresholds for such mechanisms at the sector-specific stage.

6.29. Where we continue to set upfront baseline allowances, we will incentivise companies to drive down costs. RIIO-1 will provide us with a valuable set of benchmark costs. To the extent that companies will undertake similar activities and deliver similar outputs in RIIO-2, we will expect them to demonstrate how they intend to reduce these costs through efficiency and innovation. We will assess the quality of business plans on this basis. But 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.
- 6.30. The above conditions are most likely to apply to 'repeatable' cost activities, such as opex, asset replacement or refurbishment and some capital investment.
- 6.31. 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. This could be where we set a work profile or allowances over a longer period than other costs (see **chapter 4** for more information on our proposed approach to the **length of the price control**). We will want to maintain incentives on companies to seek an efficient profile of work, but avoid companies deferring more expensive work that they have been funded to deliver in one price control, and then seeking a new funding allowance for the same work in the next period.
- 6.32. In setting cost allowances, company forecasts can influence our view of efficient costs. This carries the risk that companies use this advantage to gain generous allowances that they can easily outperform. One way to mitigate this risk would be for certain cost allowances to be reset automatically during the price control period, for instance at the revealed upper quartile level of unit cost performance in a sector. We are interested in stakeholder views on this approach, which we propose to develop and consult on as part of our sector-specific methodology.

Our approach to setting cost allowances - questions

Q20. What views do you have on our general approach to setting cost allowances?

Q21. What views do you have on our intention to index RPEs?

Q22. What impact would resetting cost allowances based on actual cost performance (eg benchmarked to the average, upper quartile or best performer) during a price control have? Which cost categories might best suit this approach?

Information-revealing devices

Background

- 6.33. One indicator of a successful price control is where companies respond to incentives to beat genuinely efficient cost allowances and stretching output targets.
- 6.34. This is challenging, as we place reliance upon information drawn from each company's business plan proposal and each company knows more than us about how it can best achieve cost savings and targets. Companies can try to use this 'information asymmetry' to receive more generous allowances and softer targets to increase their prospect of high returns.

- 6.35. In RIIO-1, we used two tools designed to incentivise companies to submit forecast costs that were not inflated and better quality business plans: the **Information Quality Incentive (IQI)** and **fast-tracking**.
- 6.36. The IQI provided a financial incentive for companies not to inflate their cost forecasts. That is why it is based on the ratio of the 'company view' of efficient costs (as set out in their business plan) to the 'Ofgem view' of efficient costs (as set out ultimately in our final determination of allowed costs). The higher this ratio, the more inflated we judged business plans to be. We rewarded companies that achieved low IQI ratios (through additional income and higher incentive rates) and penalised those with high IQI ratios (through penalties and lower incentive rates).
- 6.37. In addition, we used 'fast-tracking' (or early settlement) to encourage companies to submit well-justified business plans, so that we could focus our scrutiny on the less well-justified components. Fast-tracked companies received additional upfront income as well as higher incentive rates, compared to slow-tracked companies.
- 6.38. We are consulting on whether we should retain these arrangements in RIIO-2 or replace or modify them. Our experience from RIIO-1 has raised the following concerns:
- It may not be appropriate (and may be unduly costly for consumers) to use two separate mechanisms to provide incentives for the same outcome (a well-justified business plan)
 - There is little evidence that the IQI sufficiently influences company behaviour to submit business plans that reflect the best estimate of their likely efficient expenditure
 - We have found that fast-tracking or early settlement has the potential to drive improved business plans, but only in sectors where there is adequate diversity of ownership and comparability between the companies. Early settlement also has other costs not previously appreciated, including the risk of making process errors and providing insufficient scrutiny of business plans.
- 6.39. Our approach to addressing information asymmetry will also need to be consistent with any measures we take to enhance stakeholder engagement (see **chapter 3**) and ensure fair returns (see **chapter 7**). Some of the options we are considering to ensure fair returns would change how we reward high quality plans and how we could use efficiency incentives to constrain returns. We have kept these separate for the purpose of this document, but in taking forward options, we will need to consider them together as a package.

Stakeholder views

- 6.40. Although most networks were in favour of keeping fast-track, albeit with a smaller reward, some did not feel it was helpful and had given rise to unanticipated benefits (to the fast-tracked company) and consequences for others.

- 6.41. There was some support for retaining the IQI arrangements, although a number of companies made little comment here. Elsewhere there were several comments highlighting the need for an incentive on companies to submit aggressive business plans and that we should distinguish more clearly between company performance. Some respondents were unconvinced of the effectiveness of the IQI.
- 6.42. Many other stakeholders had few comments on these arrangements. Some questioned the need for fast-tracking if the IQI already encouraged efficient business plans.

What is the IQI?

The information quality incentive – or IQI – is an incentive scheme to encourage companies to provide more accurate forecasts of expenditure in their business plans. Companies have incentives to submit inflated forecasts because if these are used to set budgets, companies can subsequently profit from underspending against them.

Ofgem originally introduced the IQI scheme as a sliding scale mechanism for capital expenditure forecasts in DPCR4. In subsequent price controls, we expanded it to both operating and capital expenditure (or totex) forecasts.

Under the model we used in RIIO-1, companies were offered a range of combinations of allowed expenditure (the budget), efficiency incentive rates (ie a share of underspends or overspends against budget), and an additional income or penalty (as a proportion of the budget). We set allowed expenditure based on a weighted average of our view and the company's forecast. We set the efficiency incentive rates and additional income/penalties based on how close the company's forecasts came to our view of efficient costs. The closer a company was to our view of costs (or the further below it), the higher the incentive rate and additional income rewards it would receive. As a corollary, the more inflated a company's forecasts were compared to our view, the less it could hope to profit from such inflation, because we would set it lower incentive rates and impose an income penalty.

In submitting a particular expenditure forecast therefore, the company was asked to choose one of these combinations of allowed expenditure, incentive rates and additional income/penalty. We designed the scheme to be 'incentive-compatible' – the choice of options that maximised the company's expected profit coincided in principle with the choice that best reflected its beliefs about its future costs. As a result, we expected that the IQI would encourage accurate forecasts from companies.

- 6.43. There are three elements to the reward under the IQI: the agreed allowance for the price control period, the efficiency incentive and an additional reward or penalty. We set these for a company at the start of the price control with reference to the ratio of the company's forecast view of expenditure compared to our view (known as the IQI ratio). The incentive is set such that through a combination of these three elements, profits are maximised when a company submits a truthful forecast in its business plan. The IQI should allow us to improve our assessment of the costs of other companies by incentivising companies to reveal the truth about their expected expenditure.

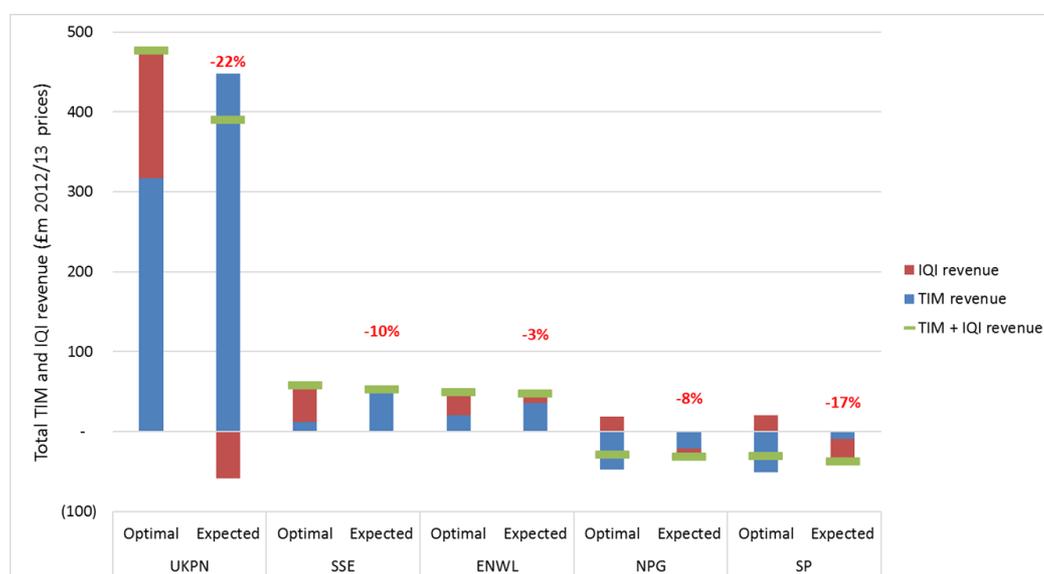
- 6.44. However, the IQI is complex to understand and operate. This means it is difficult to measure how it affects company behaviour, and may lead to financial rewards for companies that are not matched by commensurate benefits for consumers.
- 6.45. We said at the start of RIIO that the IQI would at best bring “incremental” benefits⁶⁴ to the quality of information that companies submit in their business plans. This is because to be effective in practice, two conditions must be in place. First, that our assessment of a company’s costs needs to be entirely independent of that company’s plan. In reality, our assessment of the baseline costs can be influenced by forecasts from the companies. Secondly, companies must respond in a purely rational way to the incentive and seek to maximise profits by revealing their most accurate assessment of the costs they believe they will incur. If these are below our view of costs then their allowances will be set at a higher level and they will benefit both through an IQI reward and through the share of the underspend they will achieve. We think that other factors (such as risk aversion, management incentives to beat targets rather than maximise profits and a belief that their forecast can influence our view of costs) can outweigh the power of the IQI. Despite the reward it offers, companies may still want to inflate costs above their expected level of expenditure.
- 6.46. We cannot know what the outcome of RIIO-1 would have been in the absence of the IQI. However, in RIIO-1, companies received an IQI reward for the forecasts they submitted on the basis that these reflected the costs they genuinely expected to incur. Companies subsequently underspent to a significant degree against these forecasts. Given the scale of underspend, it is very hard to conclude that the IQI was effective in its primary purpose of getting companies to reveal their best view costs, despite the incentive that it offered.
- 6.47. We estimate that non-fast-tracked companies in the electricity distribution price control (RIIO-ED1) could have made roughly £100m more revenue through Totex Incentive Mechanisms (TIM) and the IQI had they provided forecasts that more accurately reflected the costs they incurred. This is equal to 25% of their expected TIM and IQI revenue.
- 6.48. We have also observed that companies have systematically given forecasts that turn out to be significantly above their actual costs. For example, non-fast-tracked companies in RIIO-ED1 submitted forecasts that on average were higher by 15% than the totex they are on course to spend. For the gas distribution price control (RIIO-GD1) this figure is even higher and stands at over 20%.⁶⁵
- 6.49. This suggests that companies did not seek to maximise profit through the IQI by providing us with forecasts that would be more likely to represent their subsequent expenditure. Instead, companies may have considered the gains from inflated forecasts (and their potential influence on our

⁶⁴ RIIO Handbook <https://www.ofgem.gov.uk/ofgem-publications/51871/riiohandbookpdf>

⁶⁵ Data on companies’ totex forecasts at the outset of the price controls taken from RIIO-ED1 and RIIO-GD1 November 2017 Price Control Financial Models. Data on companies’ totex actual spending and forecasts for the remaining of the price controls taken from ED1 and GD1 annual reports 2016-17.

baseline view of costs) would be greater than any foregone IQI rewards. This is demonstrated in Figure 2 in which DNO groups received a substantially lower IQI reward due to providing overestimated forecasts.

Figure 2 : IQI analysis for electricity distribution – expected vs. optimal⁶⁶ revenues from totex incentive mechanism (TIM) and IQI



6.50. We therefore think that it is plausible that the rewards and penalties given to companies under the IQI do not sufficiently influence companies to submit business plans that reflect the best estimate of their likely efficient expenditure.

6.51. We also note remarks from First Economics in their Review of Recent UK Price Review Innovations for the CAA.⁶⁷

"We encounter more mixed views around the energy network industry on the worth of Ofgem's IQI. The Competition and Markets Authority recently described schemes of this type as "complicated regulatory mechanisms that are vulnerable to misinterpretation."⁶⁸

This reflects our own experience working with companies, and suggests that there is some tension between any desire to use an IQI and a desire to place greater responsibility in the hands of Boards."

Information-revealing devices - question

Q23. Do you agree with our assessment of IQI?

⁶⁶ In this instance, optimal refers to the combined reward that could have been available through the TIM and IQI based on expenditure actually incurred.

⁶⁷ <https://publicapps.caa.co.uk/docs/33/Regulatory%20innovations.pdf>

⁶⁸ CMA (2015), Bristol Water plc price determination – provisional findings <https://www.gov.uk/cma-cases/bristol-water-plc-price-determination>

Fast-tracking

- 6.52. In RIIO-1, we intended to allocate a company to one of three categories following our initial assessment of its business plan.⁶⁹ The category would determine the level of scrutiny the plan would be subject to and those in the top category would receive an early settlement. We described this process as fast-tracking.
- 6.53. We said that any fast-track company would receive the maximum efficiency incentive available and procedural or operational benefits from being able to settle the price control early. We fast-tracked two companies in RIIO-T1 and one in RIIO-ED1. We did not fast-track any gas network companies.
- 6.54. In the case of the transmission companies, we approved resubmitted business plans. In RIIO-ED1, we approved the fast-track company's business plan as submitted.
- 6.55. The transmission companies received no direct financial reward for being fast-tracked however, business plans were finalised eight months earlier than the slow-tracked company. For RIIO-ED1, we said that each company that we fast-tracked would receive upfront additional revenue of 2.5% of totex,⁷⁰ in lieu of an IQI reward. This was £173m for the fast-tracked company who also received other benefits arising from the difference between our fast-track and slow-track assessments. These were that:
- It received a higher cost of equity than we subsequently allowed for non-fast-tracked companies (6.4% compared to 6.0% in slow-tracked companies)
 - Further work on cost assessment between fast-track and slow-track meant that if that company had been in the slow-track process it would have received lower allowances.
- 6.56. In our Final Determinations for the slow-track companies in RIIO-ED1, we said that we calculated that the financial benefit of being fast-tracked would be around £250m.⁷¹ The above factors meant that the fast-track company received greater benefit than we had anticipated. The CEPA review of the RIIO framework provides more detail on this. They estimate that benefits of being fast-tracked were around £510m.
- 6.57. We recognise that there is a risk that the fast-track process can result in benefits to companies being higher than we anticipate. We note that some respondents to the open letter challenged the level of reward provided.

⁶⁹ <https://www.ofgem.gov.uk/ofgem-publications/51871/riiohandbookpdf>

⁷⁰ RIIO-ED1 Strategy Decision, Annex: Outputs, Incentives and Innovation https://www.ofgem.gov.uk/sites/default/files/docs/2013/02/riioed1decoutputsincentives_0.pdf

⁷¹ RIIO-ED1 Slow-Track Final Determinations <https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-final-determinations-slow-track-electricity-distribution-companies>

6.58. It is important to note though that the fast-tracking process also led to significant benefits for RIIO-ED1, including:

- Better quality initial business plans as companies sought to be fast-tracked, creating a competitive dynamic
- More pressure put on slow-track companies to lower costs in their revised submissions, based on the information revealed by the most efficient company
- More information to enable us to benchmark the slow-track companies, resulting in lower allowances given to companies.

6.59. Based on analysis undertaken by CEPA in their review of the RIIO framework, we consider that in RIIO-ED1 these benefits probably outweighed the costs of fast-tracking. These benefits depend on there being enough companies in a sector to generate a competitive dynamic that results in each submitting a better quality business plan (either lower cost and/or higher service quality) than they might have otherwise.

6.60. In addition, we think fast-tracking is most likely to bring benefits where we can use the information gained through the fast-tracking process to put pressure on companies to reduce the costs underpinning their initial submission. For this to work, companies must be sufficiently similar to allow for meaningful benchmarking.

6.61. We think these conditions exist in both electricity and gas distribution. However, we do not think that this is the case in transmission because:

- The small number of companies' means there is limited competition (there is only one gas transmission company)
- In electricity transmission, the relative size the Scottish transmission operators compared to NGET means that competitive pressures are reduced
- There is less comparability between electricity transmission companies due to geographic differences. This limits the benefits of obtaining information through the fast-track process
- The transmission companies' larger capex programme and evidence of outperformance in the transmission price control (RIIO-T1) suggests all transmission operators should be scrutinised more than fast-track allows.

Information-revealing devices – question

Q24. Do you agree with our assessment of fast-tracking?

Options for reform

6.62. Based on our assessment of how the IQI and fast-track worked in RIIO-1, we have identified three different options for information-revealing devices in RIIO-2. These are as follows in each sector:

- Option 1 – retain but amend the IQI
- Option 2 – retain fast-tracking
- Option 3 – single business plan incentive

6.63. We may apply these differently across distribution and transmission and we are interested in views on the different approaches we should consider in each sector.

Distribution

Option 1 - Retain but amend the IQI

6.64. We could retain the IQI in its current form in all sectors on the basis that it may have had a more meaningful impact on company behaviour than we have been able to measure.

6.65. However, there is a risk that companies receive a financial benefit under the IQI, but continue to outperform forecasts at the levels they have done in RIIO-1. As we have little evidence that the IQI sufficiently influences companies to submit the best and most efficient estimate of their forecasts, there might be benefit in recalibrating the IQI matrix, for example by making the incentive stronger. This might outweigh the other factors that influence companies to overestimate their plans.

6.66. Alternatively, we could retain the IQI as an incentive for companies to reveal truthful information but simplify the way it is calculated. We could do this by setting allowed revenue equal to our view of costs, rather than using a combination of our view and the companies' view. This would reduce the elements we need to calibrate in the IQI from three to two. To retain the same incentive properties as in RIIO-1, we would need to adjust the other factors. Companies would receive a larger additional reward or penalty and/or a higher efficiency incentive as a result, and this would increase the transparency of the IQI mechanism. This may simplify the mechanism and make it easier to understand whether or not it represents value for money for consumers.

Option 2: Retain fast-tracking

6.67. As set out above, we consider that there were benefits to the competitive dynamic created by the fast-track process in distribution and one option would be to retain it as a feature of the framework but for distribution companies only. Under this option, we would continue to provide a procedural and financial benefit to companies who were fast-tracked, with plans settled earlier than those companies who were slow-tracked.

6.68. However, we consider there are two problems associated with this option:

- There is a risk that the level of financial benefit of fast-tracking ends up being higher than expected
- The fast-track process puts additional resource and time pressure on us and there may be greater benefit for consumers for using this additional resource to carry out further assessment of the plans rather

than focusing it on settling some plans early. Early settlement creates a risk of process errors, which can ultimately lead to costs for consumers.

- 6.69. We have therefore considered an alternative option for distribution below (option 3). This explores whether the potential for a financial reward could establish sufficient competitive dynamics to get the benefits of fast-tracking without having to settle plans early.

Option 3: Single business plan incentive

- 6.70. We consider that the competitive dynamic created by fast-tracking in distribution resulted in benefit to consumers. We also believe that we should retain the approach taken under the IQI that companies who submit more efficient plans should receive an efficiency incentive that allows them to share in a greater proportion of outperformance.
- 6.71. A single business plan incentive could combine features of both fast-tracking and the IQI. A single incentive could be simpler and more transparent and avoid potentially rewarding companies twice for the same behaviour. It could also be simpler to integrate with our approach to ensuring fair returns.
- 6.72. Our initial thinking is that we would judge companies on the overall quality of their plans, including both qualitative (such as strength of consumer engagement) and quantitative factors (such as efficiency of costs).
- 6.73. Under the single business plan incentive, we would provide higher incentive rates for lower costs plans so that companies have a strong incentive to submit ambitious and efficient business plans.
- 6.74. We are also considering whether to have an explicit financial and reputational reward for the 'best' plan. We could express this in a number of ways, eg in terms of RoRE (as an increase on the baseline allowed return) or as a percentage of totex. We would need to consider this further as we designed the mechanism, along with an appropriate value for the incentive and the interaction with arrangements for ensuring fair returns (**chapter 7**).
- 6.75. Under option 3, we would not settle companies' plans early, but we would retain a proportionate approach to our assessment. That means the scrutiny of companies submitting high quality, efficient plans would be lower than those companies whose plans are of lower quality or are less efficient. We expect to give companies an early indication of the quality of their plans, and then give them an opportunity to resubmit some or all of those plans in order to maintain the competitive dynamic through the process.
- 6.76. In this consultation, we are asking for your views on this approach. We consider that this method has benefits in distribution over retaining the separate IQI and fast-tracking approach used in RIIO-1. We therefore intend to develop the detail of how this approach could work in practice over the coming months. We plan to hold workshops with stakeholders to

get further input on this approach and use this information, alongside the responses to this consultation, to make a decision on the way forward in the summer.

Transmission

Option 1 - Retain but amend the IQI

6.77. As for distribution, we could retain the IQI in its current form in transmission. Alternatively, we could retain the IQI but simplify the way it is calculated.

Option 2: Retain fast-tracking

6.78. **We propose to remove fast-tracking in transmission.** This is because, as set out above, we do not consider that fast-tracking can be effective in this sector. Without sufficient competition between companies, we do not see a justification for providing an upfront procedural or financial reward, based on the quality of one company's plan relative to its peers. We set out below the range of measures that we believe will help to incentivise high quality plans from transmission companies.

6.79. In RIIO-1, the fast-track process requires companies to submit their business plan to us for our assessment of whether any should be fast-tracked. Those that were not fast-tracked were then required to resubmit their plan following our initial assessment. **If we remove fast-tracking in transmission, companies in this sector will only make one submission of their business plan to us.**

6.80. Although we are not proposing an explicit upfront financial or procedural reward for business plans in the transmission sector, we will consider the way we set efficiency incentive rates in order to incentivise companies to submit more efficient business plans (option 1 above), alongside our approach to ensuring fair returns (see **chapter 7**).

6.81. We also consider a number of features of the proposed RIIO-2 framework will support better quality plans in transmission. We are designing the enhanced engagement arrangements in transmission to ensure more scrutiny of plans by informed stakeholders (see **chapter 3**).

6.82. Our proposals to extend the use of competition for transmission assets will help to reduce information asymmetry. Our approach to setting outputs and cost allowances, including the use of uncertainty mechanisms should also reduce the impact of forecasting risk (see **chapter 6, our approach to setting cost allowances**).

Information-revealing devices - questions

Q25. What are your views on the options we have described?

➔ How might these apply in the different sectors?

➔ Should we retain the IQI, amend it or replace it entirely?

Q26. What factors should we take into account when assessing plans for example, under fast-tracking (option 2) or a single business plan incentive (option 3)?

Q27. Do you have any views on the factors we should take into account when deciding how to differentiate efficiency incentives for companies if we do not use the IQI?

Q28. Is an explicit upfront financial reward required to incentivise companies to submit high quality business plans, in addition to differential incentive rates or sharing factors?

Q29. Do you have any views on our proposal to remove fast-tracking for transmission?

Q30. Do you have any views on how we propose to incentivise better business plans from transmission companies, including removing the prospect of an upfront financial or procedural reward and placing greater reliance on user and consumer engagement and scrutiny?

Annual reports/reporting

- 6.83. We produce annual reports to gauge the performance of companies within our price controls. We acknowledge that the process of annual reporting could be made simpler for companies to participate in, and the outputs of annual reporting could be made simpler for stakeholders to understand and assess.
- 6.84. In this regard, we have already taken steps to improve our strategic understanding of the key drivers of performance across all four RIIO sectors, focussing attention and efforts on the presentation of clearer strategic insights. This work continues in conjunction with our development of RIIO Accounts where we are considering improved information requirements for licensees on all aspects of their financial performance.
- 6.85. To further develop the reporting requirements, some responses to the open letter suggested we:
- Identify duplication in requested data, and streamline or rationalise reporting across the suite of reporting requirements
 - Provide consistent data definitions, formats, methodology and templates
 - Ensure better transparency between expenditure and outputs, potentially providing a standardised outline to present crucial data in a short, simple and visual way for stakeholder consideration
 - Establish a working group to work collaboratively in the improvement of the reporting process
 - Ensure that we only request data which is eventually utilised, and help networks to understand the purpose behind these data requests.

- 6.86. We think it is important that our annual reports tell the story of overall network performance in a clear and accessible way, showing trends over time and making comparisons across the companies where feasible. Our reporting requirements must strike a balance between securing a sufficient breadth and depth of information for us and stakeholders to be able to engage with the networks' performance, and an efficient reporting process that minimises the burden on networks.

Annual reports/reporting - questions

Q31. How can we best improve the suite of annual reporting requirements to be as efficient and useful as possible?

Q32. How can we make the annual reports easier for stakeholders to understand and more meaningful to use?

7. Fair returns and financeability

Chapter Summary

Our approach to setting the baseline allowed return must ensure investors in an efficiently run company can earn a reasonable level of return and we are consulting on changes to our methodology that will deliver this. We will continue to incentivise companies to find new, efficient ways of operating to earn higher returns, but we are consulting on new measures to reduce the risk of higher than expected returns.

Allowed return, financeability, tax and other finance issues

We are consulting on our methodology for setting allowances for **debt** and **equity** costs. For debt, we set out our policy objectives, the analysis we intend to do, and the initial work done so far. For equity, we indicate that we expect equity costs could be between 3% and 5%. We also set out the methodology we plan to use and consult on the appropriateness of indexing the cost of equity. Overall, we expect to allow a lower allowed return for RIIO-2. We are consulting on options to address any **financeability** issues arising. We set out our intention to review **tax** arrangements to ensure consumers do not overcompensate companies and we discuss a number of **other finance issues**.

Ensuring fair returns

We are consulting on potential new backstop mechanisms to ensure fair returns. These are:

- A hard cap/floor
- Discretionary adjustments
- Constraining totex and output incentives
- A RoRE sharing factor
- Anchoring returns

Consultation questions: In this chapter we ask for views on our proposals for cost of debt, cost of equity, financeability, corporation tax, other finance issues, and ensuring fair returns.

Introduction

- 7.1. 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 the return we estimate equity and debt investors expect from an efficiently run company. A company's actual return (ex post) can be higher or lower than the baseline allowed return, depending on how well the company performs against incentive mechanisms for delivering outputs at a lower cost. We expect high performing companies that cut costs should earn above the baseline allowed return, while poorly performing companies that overspend should earn less than the baseline.
- 7.2. Our overall aim is to ensure that a well-run company can access the financing it needs while ensuring that consumers pay no more than they need to.

- 7.3. In this chapter, we describe how our proposed approach to setting the **baseline allowed return** for RIIO-2 will result in a fair deal for consumers and investors. Finally, we describe the mechanisms we are considering to **ensure fair returns**.

Baseline allowed return and the cost of capital

- 7.4. 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

- 7.5. We are seeking views on our methodology for setting RIIO-2 allowances for the cost of debt.

Introduction

- 7.6. The cost of debt is a significant driver of the cost of network services to consumers. Unlike the cost of equity, we believe we can estimate, with a high degree of precision, efficient costs for debt on both a historical and prevailing basis. In RIIO-1 we pioneered the use of indexation to determine the cost of debt allowance. This has been successful in significantly reducing forecast error compared to previous price controls, where we tried to forecast the cost of debt. 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.⁷² When we set the allowances for RIIO-1, the financial markets were predicting increases in interest rates: these predictions turned out to be wrong. By indexing the cost of debt, we protected consumers from forecast errors that could have been very costly.
- 7.7. By indexation, we mean our current use of market indices for investment grade debt (the IBoxx indices, published by IHS Markit) to set the allowance for the cost of debt. The indices track the market rate of interest charged by investors for investing in the bonds of non-financial firms. The indices include bonds issued by regulated utilities such as our network companies (such as NGET and WPD), but also other companies in the transport (such as BMW) and telecommunications (such as BT) sectors.
- 7.8. We use a *trailing average* of the cost of debt revealed by these market indices to set the allowance for the cost of debt for network companies. That means, in most cases for RIIO-1, that the allowed cost of debt in any year is based on an average of market rates over the past decade. We do this because we assume that a notionally geared, efficient network company typically borrows over time, issuing long-term bonds as it goes

⁷² We estimate, for illustration only, this is worth about £4 per household each year during the 8 years of RIIO-1, assuming 50% consumption by non-domestics and 30mn domestic meterpoints.

along. So in any given year, its balance sheet will contain debt issued over many previous years, in addition to the new debt it might issue to finance that year's activities. Therefore, the best approximation for an efficient company's cost of debt is likely to be a trailing average of market rates.

7.9. The use of indexation with trailing averages means there can be differences between the cost of debt actually incurred by an individual company and the allowance calculated by the index. That potential difference should be an incentive on companies to raise finance in the most efficient manner.

7.10. We propose to analyse the current approach to consider if we can enhance it. We seek views on:

- The policy objectives and relevant principles
- The relevant analysis
- Options for consideration.

Policy objectives and relevant principles

7.11. We propose the following principles should guide our methodology:

- 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.

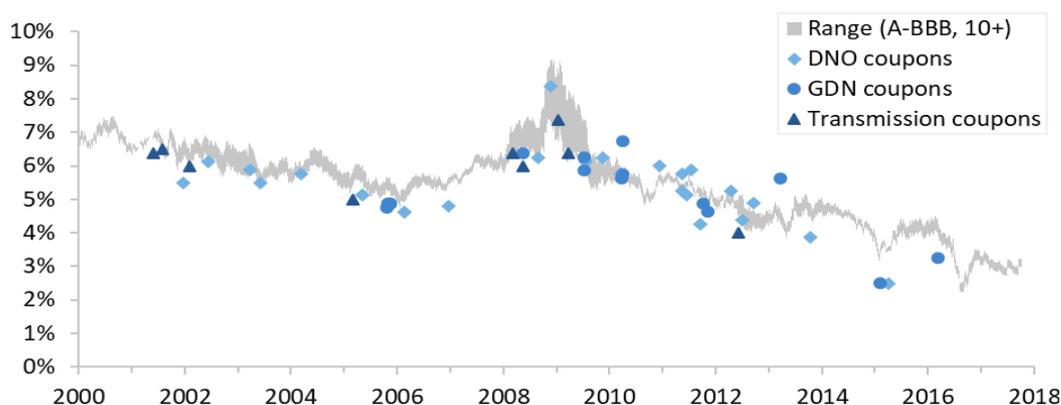
7.12. We think that the indexation of the cost of debt has worked well in RIIO-1. There is a high bar of evidence that would need to be met before we might be persuaded to alter our existing methodology. However, we acknowledge that the construction of the index could be improved – for instance, for RIIO-ED1 we used a different index construction⁷³ compared to the gas distribution and transmission price controls. There may be a case for harmonising our methods across the sectors. Equally, other regulators such as Ofwat have proposed alternative methods, while some network companies have argued in favour of adopting a pass-through approach. We would therefore like stakeholder views on these options and evidence of their merits.

⁷³ The so-called "trombone". The trailing average extends each year by 1 year up to a 20-year trailing average.

Initial analysis

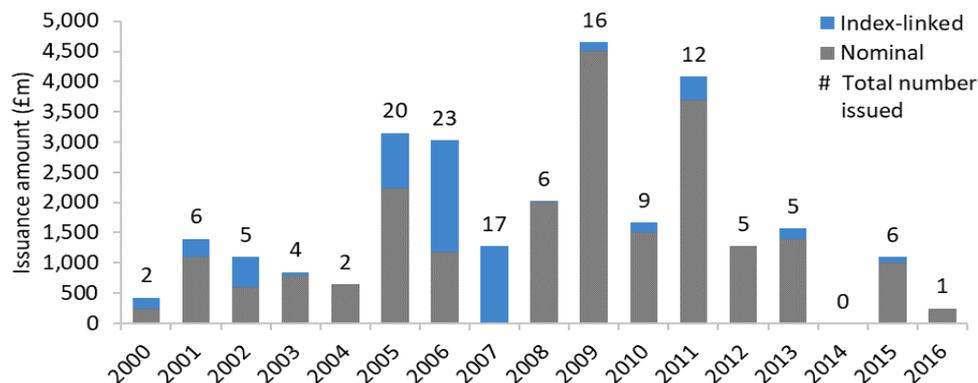
7.13. Figure 3 below provides indicative information about the cost of debt raised by network companies. In most cases, the actual cost of debt is lower, sometimes significantly, than the benchmark index we use for RIIO-1 (the allowance for RIIO-1 is based on the grey line). This is evidence that the RIIO-1 policy could potentially be improved further. However, the variances here are less than those that would have occurred if we had not used indexation as we can see clearly that the grey line has moved in line with bonds issued by the network companies.

Figure 3: nominal bonds issued by network companies compared to indexation allowance



7.14. Figure 4 below provides indicative information on the volume of debt issued over time by network companies. This is important because the RIIO-1 policy assumes that roughly equal tranches of debt are raised over time (ie a fairly constant rate of debt issuance). The data indicates that this is not generally the case. There tends to be peaks and troughs. The implication is that companies that raised large tranches of long-dated debt just before the financial crisis (when interest rates were high) could underperform the index compared to companies that raised large quantities of debt in later years (when rates were lower).

Figure 4: Value and number of bonds issued since 2000



7.15. We propose to analyse further other debt issues including for example:

- The tenor of debt actually issued by companies compared to the tenor of the bonds used to construct the benchmark indices
- The inflation assumption we use for calculating a real cost of debt. We currently use a ten-year inflation assumption but a 20-year assumption would be more consistent with the tenor of the debt in the benchmark indices
- Comparing secondary market debt trades to infer whether the RIIO-1 allowance is upwardly biased. The secondary market reveals how individual company bonds are traded between debt investors. These observations provide us with information that is independent of company costs
- The transaction costs associated with raising debt
- The sensitivity of the trailing averages to increases in market rates. By this, we mean the period over which we average market rates. A shorter (or longer) period of averaging means that allowances will be more (or less) responsive to sharp increases in market rates
- Company specific factors including re-financings and business plans. Company mergers and acquisitions can result in historical debt contracts being refinanced at lower rates. High growth (or low growth) may mean that simple averages of historical rates are inappropriate.

7.16. Our initial analysis suggests therefore that there is scope for improvement in our method of indexation for the cost of debt. We will use the current (unmodified) RIIO-1 approach as the baseline for considering at least three different approaches for the RIIO-2 price control described below.

Options for discussion

Option A: Re-calibrate the RIIO-1 indexation policy

7.17. We could make simple modifications to the RIIO-1 policy in order for it to remain effective for RIIO-2. To do this, we propose to test how the RIIO-1 approach would perform against a range of future interest rate scenarios taking into account the efficient debt we expect would already be on the network companies' books and the debt we expect to be issued in the future. If, in our view, the indexation approach used in RIIO-1 produces a systematic overestimate or underestimate of the efficient cost of debt, we could modify some of the underlying assumptions.

7.18. The analysis could imply that we need to modify assumptions such as:

- Moving to a longer (or shorter) trailing average (eg 20-year trailing average across all the sectors, building on the RIIO-ED1 "trombone" approach)
- Using the A-rated benchmark (rather than the average of A and BBB)

- Weighting the index for individual companies according to Regulatory Asset Value (RAV) growth (as a better proxy for the timing of debt issuance)
- Taking into account the ability of companies to issue at lower rates than the benchmark indices.

7.19. We would seek to understand whether there are material differences between allowances and costs for notionally geared companies and the degree to which such deviations are optimal for consumers.

Option B: A fixed allowance for existing debt plus indexation for new debt only

7.20. CAA and Ofwat both propose to set an allowance for debt costs as the sum of two distinct parts:

- A fixed allowance for the cost of debt issued before the price control period beginning
- An additional allowance (based on IBoxx's market indices) for debt issued during the price control period.

7.21. The proposed approach by CAA & Ofwat means that the allowance for debt costs is a combination of:

- Debt contracted prior to the price control. This is estimated by using public information from (primarily) corporate bonds⁷⁴ that have been issued in the past or are due to be issued prior to the price control beginning. These bonds are a proxy for the debt interest costs due to be paid during the forthcoming price control period as a result of commitments prior to the beginning of the price control. This can also be referred to as 'cost of embedded debt'. CAA & Ofwat will need to quantify this in their final decisions
- Debt due to be contracted during the price control period. A benchmark acts as a proxy for costs of debt interest that are due to be contracted during the forthcoming price control period. This can also be referred to as 'cost of new debt'. CAA & Ofwat will rely on published indices (from IBoxx) to quantify these costs.

7.22. This combination involves an estimation of the weight that needs to be placed on both elements to recognise the expected weighted average of each.

7.23. The principle here is that regulators can observe the actual financing costs for historical (but not future) periods, based on debt issued by companies. Arguably, a market index creates most value by avoiding forecasting errors related to future interest rates, as opposed to being used as a proxy for

⁷⁴ For example by observing the yield at issuance.

the cost of historically issued debt (which is known at the start of the price control period).

- 7.24. We need to consider if this option protects consumers from inefficient issuance if companies believe they obtain a near pass-through for certain years immediately preceding a new price control. Ideally, companies would have a consistently strong incentive from one price control to the next. If companies are only exposed to debt risks at the start of the price control period, they may be more inclined to delay debt issuance or investment until later in the price control, even if investment is needed earlier and/or if debt costs are due to be more expensive later.

Option C: Pass-through allowance for debt

- 7.25. Some companies have argued that they cannot really control the cost of debt, either in terms of the market prices, or in terms of the timing of efficient investment. By 'incentivising' companies with a debt allowance, they argue that consumers could be worse off, relative to the counterfactual of having no incentive at all. For example, under the RIIO-1 approach of indexation, assuming we do not recalibrate for RIIO-2 using any of the methods described for option A, consumers would not benefit from any outperformance. Further, unless all companies raised their debt in exactly the profile assumed by the index, some companies could be over-compensated and others under-compensated without any benefit to consumers.
- 7.26. Under this option, we would treat the cost of debt like an uncontrollable pass-through cost. The cost of debt allowance would exactly match the actual cost of debt to each company (on a notionally geared, efficient basis), and debt outperformance or underperformance would largely disappear from the price controls.
- 7.27. A pass-through of efficient debt costs could work if we could be certain that we can always establish if debt costs are efficient. This is a relatively strong assumption, as companies' financing arrangements are only partially transparent. For example, understanding the net effect of bank loans, intercompany loans and derivative financial instruments (including the use of different currencies) make it a difficult task to quantify the actual cost of debt to network companies and/or whether it has been efficiently incurred.
- 7.28. We are interested in evidence or analysis from stakeholders that could assist us in determining whether we should retain the existing approach for RIIO-2, or alternatively, consider one of the three ways forward discussed above.

Cost of debt - questions

Q33. What are your views on the policy objectives that we have defined with respect to the cost of debt?

Q34. Which option might help to ensure that the approach to updating the cost of debt methodology delivers best value to consumers and why?

Cost of equity

7.29. We are seeking views on the methodology for estimating the cost of equity and the options for setting an (indexed) allowance that is updated with market observations.

Introduction

7.30. Since it tends to be more expensive than the cost of debt, the cost of equity can contribute even more than debt to the cost of network services to consumers. We estimate that each percentage point on the cost of equity will be worth about £0.4bn for each year of RIIO-2.⁷⁵ This would be equivalent to around £7 - £10 per household each year. Unlike the cost of debt however, the cost of equity is an inherently unobservable quantity which requires estimation using some model of investor expectations.

Our methodology to set the cost of equity for RIIO-2

7.31. In 2017, together with other regulators in the UK Regulators Network (UKRN), we jointly commissioned a study on the cost of capital from a team of academics and practitioners led by Professor Stephen Wright of Birkbeck College (the "UKRN Study Group"). The study group was asked to consider the latest academic research and evidence, and advise the regulators on the appropriate methodology for setting the cost of capital in future price control determinations (including RIIO-2). The final report is being published on the UKRN website⁷⁶ alongside this consultation document (the "UKRN report").

7.32. The UKRN report makes ten recommendations (see Appendix 2 for detail on each recommendation alongside our initial thoughts on each). In summary, we agree with these recommendations and propose that eight are incorporated within our RIIO-2 methodology. We need to study two recommendations further before deciding whether or not they should be incorporated explicitly.

7.33. Our proposed methodology to set the cost of equity in RIIO-2 is therefore as follows:

7.33.1. We propose to continue to use the Capital Asset Pricing Model (the 'CAPM')⁷⁷ as the basis for estimating the cost of equity

7.33.2. 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

⁷⁵ Assuming, for illustration only, a RAV of £100bn and gearing of 60%.

⁷⁶ <http://www.ukrn.org.uk/>. A copy of the terms of reference is also included within the report.

⁷⁷ The CAPM is a model grounded in extensive financial theory, originally developed in the 1960s by William Sharpe, winning a Nobel Prize in 1990. It has been the subject of many challenger models and tests in the intervening period.

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*. It measures the relative riskiness of a network company from an investor's point of view.

- 7.33.3. We propose to estimate the risk-free rate by using the current yields on long-dated index-linked government debt. Rather than predicting how such yields might change over the course of the price control (or building in a premium for potential forecast error by "aiming up"), we propose to consider indexing the calculation (see below).
- 7.33.4. We propose to 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. However, we propose 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%⁷⁸ is probably at the top end of reasonable estimates of the expected market return.
- 7.33.5. We propose 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 propose to inform our estimate of beta by making use of sophisticated econometric techniques such as those referenced in the UKRN report to filter out noise from the underlying datasets. We also propose to investigate the appropriate measures of gearing in translating between raw equity betas and notional (asset or equity) betas for the network companies.
- 7.33.6. We propose 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 regulated assets, such as our Offshore Transmission Operator (OFTO) regime.
- 7.33.7. We propose to distinguish the regulatory allowed return from the regulatory expected return. The UKRN report highlights that our expectation of returns can be different from our (ex ante) baseline allowed return as far as we expect companies, individually or collectively, to benefit from other financial incentives (positive or negative). This could include reasonable expectations of outperformance across all the areas of the price control including our incentive mechanisms, the cost of debt, and tax.

7.34. Although the UKRN report also refers to using the CAPM to estimate the cost of debt, we do not propose to do so as we believe the cost of debt is

⁷⁸ Throughout this section, values are expressed in real terms using the Retail Price Index (RPI) unless stated otherwise.

an observable quantity and using one of the methods in the preceding section would be less prone to estimation error. A CAPM-based calculation of the cost of debt can however be an interesting reference point against which to sense check the results of indexation over time.

The CAPM and current evidence on the cost of equity

- 7.35. We appointed Cambridge Economic Policy Associates (CEPA) to advise us on plausible ranges for the parameters of the CAPM model based on current evidence, using a methodology in line with the recommendations from the UKRN report.
- 7.36. We have published CEPA's report alongside this consultation.⁷⁹ Wherever appropriate, we have also referenced recent estimates from other regulators such as Ofwat.⁸⁰

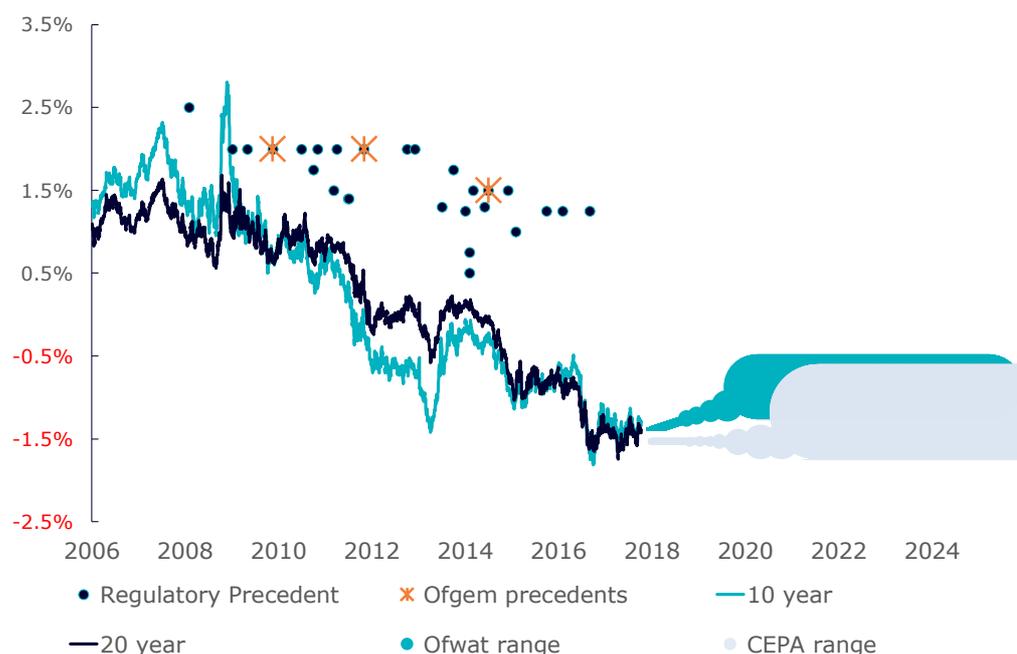
The risk-free rate

- 7.37. As set out above, we propose to estimate the risk-free rate by using the yields on long-dated index-linked government bonds.
- 7.38. The rates for long-term debt (ie ten or 20-years) are currently negative at around -2% (see Figure 5 below). In the past, regulators have tended to assume a positive figure of about 1-2% to take account of any potential reversion of interest rates to positive values as the recovery from the financial crisis proceeds.
- 7.39. Based on current market evidence, CEPA recommends an indicative range of -1.8% to -0.6% for the RIIO-2 period. Rather than "aiming up" to guard against a rise in interest rates in the future, we propose to consider indexation of the cost of equity to ensure the risk-free rate remains in line with financial market conditions (see Figure 5 below).

⁷⁹ CEPA's report contains more detailed information, including, assumptions on inflation and debt beta, the detail behind CAPM calculations and the approach to calculating the values we refer to in this chapter. We have simplified and rounded numbers in places for the purposes of illustration.

⁸⁰ Ofwat published a final methodology in December 2017 for the price review (PR19) water network companies in GB relating to the period 2020 to 2025. See page 16: <https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-12-Risk-and-return-CLEAN-12.12.2017-002.pdf>

Figure 5: Risk-free rates, regulatory precedents, Ofwat methodology and indicative CEPA recommendations



Total Market Return (TMR)

7.40. The total market return is a measure of the return that equity investors expect for the market-average level of risk. It is usually approximated by measuring the historical realised returns from investing in the stock market as a whole. This is known as the *historical ex post approach*. However, alternative approaches are also feasible, including (a) *historical ex ante approaches* (which seek to separate out one-off factors from the historical data), and (b) *forward-looking approaches* (which seek to infer investor expectations from current stock market prices and prospects for dividend growth). Both have been applied recently by the Competition Commission as well as Ofwat and the CAA.

7.41. Equity returns can be highly volatile from year-to-year. Therefore, to estimate the TMR it has been common practice in the past by regulators to use very long-run historical averages of realised returns as the best estimate of investors' future expectations of the TMR. The UKRN report estimates (at Appendix E) that the long-run historical average of the TMR is approximately 5% - 6% based on the period 1899 to 2016.

7.42. Figure 6 below presents realised returns, using data from the Dimson March Staunton 2016 dataset.⁸¹ In recent years, the Competition Commission (in the Northern Ireland Electricity determination in 2014) and Ofwat (in its latest methodology for PR19) have placed more emphasis on contemporary evidence, using a combination of the *historical ex ante* method and forward-looking dividend growth models. One forward-looking

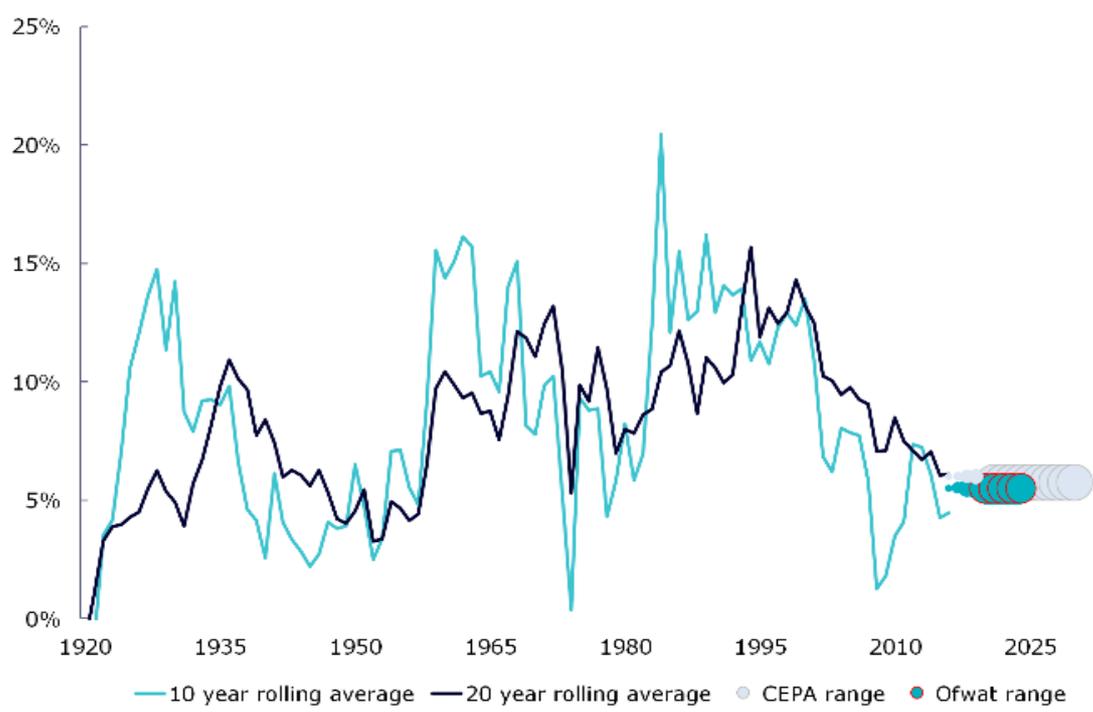
⁸¹ Using a simple average of arithmetic returns, and ignoring (a) any uplift for forecasting future periods or (b) any adjustment for the holding period, volatility or correlation of returns. We note that an updated dataset has very recently become available.

approach, is to consider the present value of future cash flows from corporate dividends, incorporating share buybacks and the estimated growth of these cash flows.

7.43. These inputs can be used within a Dividend Growth or Dividend Discount Model (DGM) to derive a cost of equity. In particular, this model can be used to cross-check the TMR value. CEPA considered the DGM⁸² approach within its indicative recommendations for RIIO-2, estimating a TMR range of 4.4% to 5%. The DGM formed part of an evidence base it considered when recommending a TMR range of 5 to 6.5%. CEPA identified that the DGM can be more suitable for shorter periods such as construction of transmission assets like Hinkley-Seabank.⁸³

7.44. In NIE (2014), the Competition Commission found that an appropriate range for the expected TMR was 5 to 6.5%, and Ofwat has considered forward-looking approaches (alongside other arguments and evidence) to arrive at a range of 4.9% to 6.1%. CEPA broadly concur with this assessment, and recommend an indicative range of 5 to 6.5% for RIIO-2.

Figure 6: Historical equity market returns in the UK (trailing averages, real RPI terms)



Equity beta

7.45. The equity beta measures the relative riskiness of holding shares in network companies, which investors cannot diversify away by holding shares in lots of different firms. CEPA have considered the econometric

⁸² See Annex E and F of CEPA's report for further info.

⁸³ <https://www.ofgem.gov.uk/publications-and-updates/hinkley-seabank-minded-consultation-delivery-model>

evidence and report that – assuming gearing between 50 and 65% - the equity beta value implied for RIIO-1 (of c 0.9) may be too high for RIIO-2. CEPA’s report recommends an indicative range of 0.7 to 0.8 based on beta analysis using Ordinary Least Squares (OLS) regression.

- 7.46. However, the UKRN report makes extensive reference to the calculation of equity beta. There is a recommendation that we examine alternative econometric techniques that can filter out some of the noise from daily share price movements to produce more robust estimates of equity beta. Using one alternative estimation technique (called GARCH),⁸⁴ some of the report’s authors find that equity betas, in the range 0.3 to 0.5, would be ‘econometrically defensible’ ie equity beta could be less than half the value (c 0.9) assumed for RIIO-1. The implication is that network companies are a lot less risky as investments than previously assumed.
- 7.47. The UKRN report identifies in a number of respects that we should use a long-run horizon for all our CAPM parameters, including the estimation of beta. This is a key feature of the GARCH technique. Some of the authors⁸⁵ suggest that using high-frequency daily data over short samples (as is convention and as presented below in Figure 7) may be counter-intuitive if we actually believe that non-diversifiable risk would only change very slowly for the regulated networks.
- 7.48. Some of the authors of the UKRN report (see Appendix G of the report) argue that the equity beta values implied within previous regulatory decisions such as RIIO-1 ‘lie at the upper extreme of plausible ranges’.⁸⁶ Stephen Wright has previously argued that the persistent premium over RAV observed in utility share prices acquisition transactions may reflect an overgenerous cost of equity driven by betas that are set too high.⁸⁷
- 7.49. Regardless of the analysis technique to derive equity beta, there are a number of reasons to expect network company (non-diversifiable) risk to be significantly lower than the market-average (where equity beta = 1). Firstly, the price control regime protects network companies from the risk that energy demand decreases. Secondly, the network companies are protected from inflation risk, including the risk that raw materials increase in price over time, through our approach to RAV indexation and ‘real price’ cost allowances coupled with allowances for real price effects. Third, we have also noticed that network company share-prices can rebound within days of large downward or upward movements, the implication being that there may be noise or auto corrections within the data, and we note from page 153 of the UKRN report that high frequency observations (under both GARCH and OLS) can result in larger estimations of equity beta. Lastly, the network companies benefit from stable cash flows to service debt and

⁸⁴ The generalised autoregressive conditional heteroscedasticity (GARCH) process is an econometric approach developed in 1980s by Robert F. Engle.

⁸⁵ Some authors (eg Stephen Wright) propose regulators should consider alternative techniques while another author (Phil Burns) argues that regulators should use high frequency data in line with practice to date.

⁸⁶ See page 182 of the UKRN report.

⁸⁷ Advice from Stephen Wright and Andrew Smithers in 2014 noted “strong evidence that it [equity beta] is much closer to around one half” than 1. See page 22 here: https://www.ofgem.gov.uk/sites/default/files/docs/2014/02/wright_smithers_equity_mark_et_return.pdf

equity costs and typically stable investment programmes. Therefore, given that the market-average-equity-investment does not benefit from such protections, and that we propose to take a long-run horizon for the CAPM parameters, there is reason to expect that equity beta for regulated network companies should be lower than 1.

Figure 7: Raw Equity betas using the Ordinary Least Squares (OLS) technique



An indicative range for the cost of equity

- 7.50. Based on plausible ranges for the three CAPM parameters set out above, CEPA suggests a plausible range for the cost of equity for RIIO-2 could lie between 3% – 5% if rates were being set today on the basis of the above methodology.
- 7.51. Ofwat’s final methodology⁸⁸ proposes a range for the cost of equity of 3.4% to 4.7%, with a central estimate of 4%, all of which are within the range proposed by CEPA. For comparison, CEPA’s indicative CAPM parameters can be presented alongside the Ofwat proposals as follows:

⁸⁸ <https://www.ofwat.gov.uk/regulated-companies/price-review/2019-price-review-final-methodology/>

Table 4: Ofwat’s final methodology and CEPA’s indicative recommendations

	Ofwat: Low	Ofwat Central	Ofwat: High	CEPA RIIO-2 Low	CEPA RIIO-2 High
Risk free rate	-1.27%	-0.88%	-0.48%	-1.75%	-0.60%
Total Market Returns	4.85%	5.43%	6.13%	5.00%	6.50%
Equity beta	0.76	0.77	0.78	0.71	0.80
Real Cost of Equity	3.41%	4.01%	4.69%	3.07%	5.08%

7.52. We should stress that it is very early in the RIIO-2 process and the final cost of equity parameters will only be determined, at the earliest, in 2020. Further, CEPA’s analysis does not yet take into account, for example, the investigations we propose to commission into the econometric estimation of beta values nor does it reflect any assessment of reasonable expectations of outperformance, as noted above. Based on feedback from stakeholders to this consultation, and results from further work on beta estimates, we propose to present an updated indicative range in our summer 2018 Framework Decision. We will continue to update and narrow this range as we progress further into the sectoral price controls, until we arrive at a point estimate for our initial proposals in 2020.

Evidence from market-to-asset ratios and other transactions including competitive tenders

7.53. Evidence from market-to-asset ratios and the procurement of network assets provides additional information that we can use to cross-check the CAPM parameters.

Evidence from market-to-asset ratios (MARs)

7.54. Over the last ten years, investors acquiring network companies have paid premiums in the range of 5% to 70% above the regulatory asset value (RAV). These premiums may suggest that investor expectations of equity returns may be much lower than returns offered via allowances set by the respective regulators, although we accept that understanding the drivers of valuations is complex and competing explanations are possible.⁸⁹

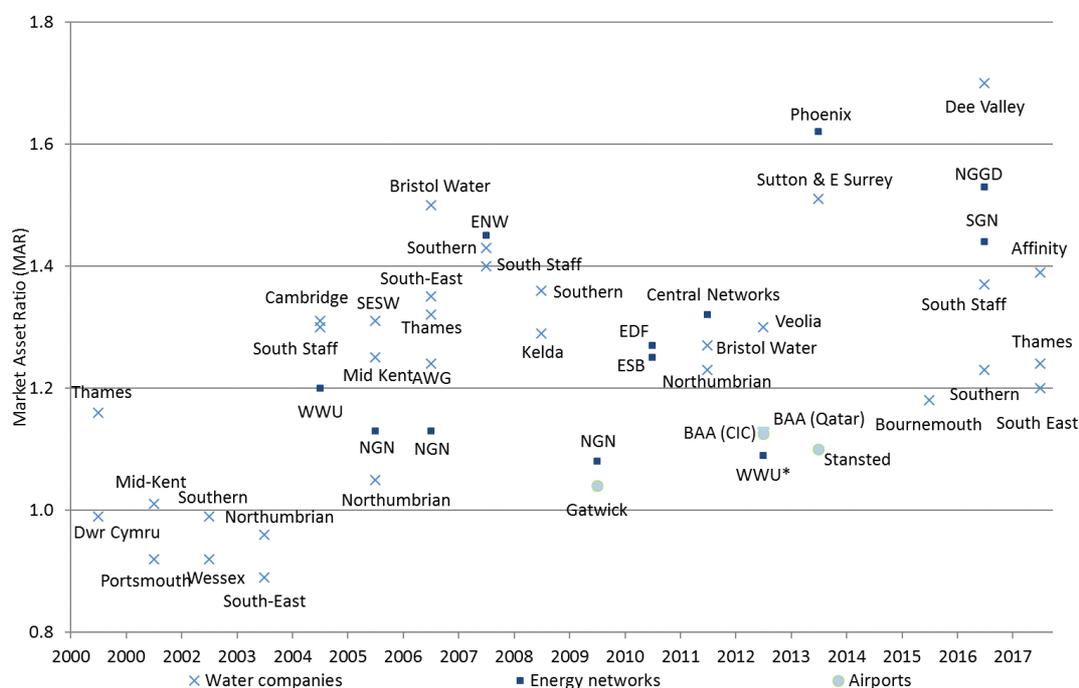
7.55. We can infer that, if we observe persistent premiums, across sectors, and over a sustained period, it is less likely that these are being driven by company-or-regulator-specific factors or individual investor irrationality.

7.56. Figure 8 below presents a record of market transactions in the form of market-to-asset ratios where a value of 1.4 represents a premium of 40% above the RAV. Generally, the higher the premium, the lower the discount rate applied by an investor from a given series of regulated network company cash flows. Our inference is that investor expectations of returns

⁸⁹ See the UKRN report at Appendix J for example.

are lower – and perhaps substantially lower – than the allowances previously set by Ofgem for RIIO-1 and Ofwat for PR14.

Figure 8: Market to asset ratios since 2000



Competitive procurement of network assets.

7.57. Data from competitions that we have run for the ownership of offshore transmission assets and from Ofwat for the Thames Tideway Tunnel (TTT) provides additional information on investor expectations on the cost of equity in regulated assets. Both sources suggest that the cost of equity should be lower during RIIO-2. The TTT cost of equity is estimated to be between 3-5%⁹⁰ and recent tenders for offshore transmission imply a range of 4-5.5%.⁹¹

7.58. This evidence corroborates results from the CAPM model as set out above, although care should be taken when accounting for risk differences between these investments and RIIO-2. There is not in general a direct read-across from OFTO assets, for instance, OFTOs are geared to higher

⁹⁰ See page 5 of CEPA’s report on the TTT. It is important to note that the risk profile of the TTT is quite different from a network company. For example, it is possible to argue that with construction risk, investors should expect higher returns from TTT than from operational regulated assets
http://www.cepa.co.uk/corelibs/download.class.php?source=PB&fileName=sysimgdocs/docs/CEPA-Thames-Tideway-BWACC-briefing-note-final_pb140_1.pdf&file=CEPA%20Thames%20Tideway_BWACC%20briefing%20note_final.pdf

⁹¹ See for example CEPA’s report on ‘cost of capital ranges for new assets’ published 23 Jan 2018 section 7.2.3 (after adjusting for RPI inflation of c3%)
https://www.ofgem.gov.uk/system/files/docs/2018/01/cepareport_newassets_23jan2018.pdf

levels, have longer-term fixed price contracts and are not subject to any construction risk. Price controlled utilities generally have lower gearing (certainly lower notional gearing), face prices that are reset at regular intervals and (in a number of cases) do bear an element of construction risk, although diversified across a portfolio of projects.

Indexing the cost of equity

- 7.59. Evidence from CAPM parameters and market transactions can be difficult to combine or collectively interpret. We highlighted in 2014 that the approach we take to estimating the cost of equity at successive reviews should avoid unnecessary subjectivity.⁹² We noted in particular that we can objectively observe the risk-free rate and that one way of taking account of contemporary market data would be to adjust the allowed cost of equity year-by-year to reflect movements in index-linked gilt yields.
- 7.60. In July 2017, we consulted on the high-level idea of indexing the cost of equity.⁹³ Citizens Advice supported the idea and suggested indexation of the risk-free rate and TMR.⁹⁴ Citizens Advice stated that, in its view, investors' capital should genuinely be at risk of loss.
- 7.61. A number of network companies offered helpful comments in their consultation responses. SPEN referred us to the Bank of England's new DGM as a potential source of independent information but proposed it would be misleading simply to index the risk-free rate, while ignoring the corresponding movement in the risk premium. WWU stated that the returns must reflect the risk it faced and be based on current market indices. NGET stated it was open-minded to exploring the idea further.
- 7.62. We asked CEPA to consider the question of indexation. CEPA shortlisted three options:⁹⁵
- Index risk-free rate only
 - Index risk-free rate with offsetting adjustment for the Equity Risk Premium
 - Index risk-free rate and TMR.
- 7.63. CEPA considered these options against a common counterfactual of fixing the cost of equity in advance of RIIO-2. CEPA concluded that the trade-off between the options is one of accuracy versus simplicity.

⁹² See page 10:

https://www.ofgem.gov.uk/sites/default/files/docs/decisions/decision_on_equity_market_return_methodology.pdf

⁹³ See question 13:

https://www.ofgem.gov.uk/system/files/docs/2017/07/open_letter_on_the_riio2_framework_12_july_final_version.pdf

⁹⁴ See page 6:

<https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Energy%20Consultation%20responses/RIIO-2%20Open%20Letter%20Response.pdf>

⁹⁵ See page 42 of the CEPA report.

- 7.64. One way of indexing the cost of equity calculation would be to treat it as a weighted average of the risk-free rate and the total market return, with the weight equal to the beta factor.⁹⁶ If we then assume that the total market return and beta values remain stable over the life of the price control, then it becomes straightforward to index simply the risk-free rate, and allow (1-beta) times the change in the risk-free rates to feed through into the cost of equity.
- 7.65. Indexation offers consumers an opportunity to benefit when costs of equity are lower, while offering investors the benefit of increased allowances if market rates increase. Overall, the regulatory regime may better serve both consumers and investors if it could avoid undue subjectivity, or undue forecasting errors, at each successive price control review.
- 7.66. We therefore invite stakeholder views on our high-level proposal for indexing the cost of equity as set out above.

Cost of equity – questions

Q35. Do you agree with our proposed methodology to estimate the cost of equity?

Q36. Do you agree it would be desirable to index the cost of equity?

→ Do you have views on our proposal for indexation?

Financeability

Introduction

- 7.67. We have a duty to have regard to network companies' ability to finance their activities. Since network companies are obliged under their licences to take steps to maintain an investment grade credit rating, we have in the past assessed financeability by following the rating methodologies published by rating agencies such as Moody's and Fitch, as applied to a notionally geared, efficient network company. We propose to continue to do so in RIIO-2.
- 7.68. We propose to consider both the qualitative as well as the quantitative metrics that rating agencies make use of when determining a company's credit rating.

⁹⁶ In other words, the cost of equity = (1-beta)*(Risk-free rate) + beta*(Total Market Return)

7.69. We consider that the key equity metrics are:

- Notional RAV/EBITDA⁹⁷
- Regulated Equity/Regulated Earnings

7.70. We consider the key credit rating metrics to be:

- Gearing: Net Debt/RAV
- PMICR:⁹⁸ (Cash From Operations - Capex)/Interest

7.71. We will also consider other metrics including funds from operations (FFO) interest cover and retained cash flow (RCF)/net debt.

7.72. We have been making use of the Return on Regulated Equity (RoRE) analysis as a tool for checking that the potential outcomes from price controls are financeable. The analysis takes a holistic view of all elements of the price control settlement to ensure that together they provide a fair balance of risk and reward for consumers and shareholders. We intend to continue using RoRE analysis to check the overall implications of the regulatory settlement. However, as mentioned later in this chapter, we intend to review whether to broaden the definition of RoRE to include outperformance or underperformance on financial parameters including tax.

7.73. If the credit ratios, taken together with qualitative assessments, are insufficient to meet the requirements for an investment grade credit rating, there are a number of factors that will need to be considered. A variety of adjustments could be made within the price control framework to achieve the desired overall balance. These include the level of notional gearing, the volatility of the cash flows (through amendments to incentive schemes, trigger events etc), levels of equity injection, the period of transition and the cost of equity. A key task for the companies in preparing their business plans will be assessing of all these factors and proposing appropriate responses.

7.74. The changes to the cost of equity described above, combined with a lower cost of debt, as per the market tracking index, are likely to lead to a much lower baseline allowed return for RIIO-2. These changes may make it more challenging to meet the standard financeability metrics. We have conducted initial tests on the impact of the lower cost of equity and assessed the impact that the reduction will have on financial ratios and credit ratings. These tests⁹⁹ indicate that – all else being equal - company performance on financeability metrics may deteriorate since returns, and therefore cash flow, will be lower than that derived from current levels of

⁹⁷ EBITDA is 'earnings before interest, tax, depreciation and amortisation'.

⁹⁸ PMICR is 'post-maintenance interest cover ratio', also known as the adjusted interest cover ratio.

⁹⁹ As set out below, we conduct these tests on a notional basis assuming for example that companies do not outperform or achieve any financial incentives.

allowed return. In this section, we present options to address such issues if they are likely to arise over the course of the price control determination.

Options

7.75. We have identified three high-level policy options for addressing financeability issues:

- Option A: Adopting a nominal return instead of a 'real' return calculation
- Option B: putting the onus on the companies to address financeability through de-gearing or other measures
- Option C: introducing a revenue floor that provides assurance of interest payments on debt on a notionally geared basis.

7.76. Option A and C are new tools that could be used by Ofgem to mitigate directly any financeability concerns. Option B requires companies to undertake mitigating action using existing levers available to them.

Option A: Adopting a nominal return instead of a 'real' return

7.77. One impact of reducing the cost of equity is that a larger proportion of the total return is paid in 'value', rather than 'cash' terms (ie paid later rather than within year). The overall nominal return to a company subject to our price controls is the sum of the following two parts: RAV inflation, and an inflation-stripped 'real' allowed return. This creates an apparent issue because while company income is split between cash (now) and value (later), company outgoings for debt interest costs occur within year (now).

7.78. Option A involves paying the cost of capital on a nominal basis each year. This would eliminate the timing mismatch issue and therefore ease the financeability concerns arising from a lower baseline allowed return. It would increase charges for consumers in the short-term. However, charges would reduce later in the life of the asset resulting in approximate net present value (NPV) neutrality between the two approaches.

7.79. This option would be a significant change to the regulatory framework. Changing the way we pay the return could reduce demand from investors with inflation-linked liabilities (eg pension funds) who are looking for inflation-proof investment opportunities. It could also have an impact on companies that have large inflation-linked liabilities.

Option B: Putting the onus on the companies

7.80. Option B is based on the principle that it is the companies' responsibility to address notional or actual financeability constraints. Implementing this option would require companies to address any potential financeability issues through proposals in their business plans, as far as these are necessary and supported by consumers. Equity injections to reduce actual gearing to notional levels might well be appropriate.

7.81. In addition, we could adopt a similar approach to Ofwat, which is currently permitting operators to address financeability issues by accelerating depreciation and modifying rates of capitalisation (the fast/slow money ratio).¹⁰⁰ However, in our early engagement, the rating agencies have said that they will discount these approaches.

Option C: Introducing a licence-backed revenue floor.

7.82. Option C involves limiting the downside risk of the price control package to give greater assurance that debt costs will be met. This would involve introducing a licence condition that sets a floor below which company revenue would not be allowed to fall. The floor could be set at a level that would allow a notionally geared company to more easily service interest payments equal to the cost of debt allowance.

7.83. Our analysis suggests that this option could secure high value for consumers and is worth exploring further. We think such an approach could allow us to lower charges in both the short and longer term. A positive impact on credit ratings could reduce the rate of interest lenders would require. Similarly, reducing default risk could provide further downward pressure on rates. The trade-off would be that consumers would need to fund a revenue floor for a company in an (extremely unlikely) downside situation during a price control period while recovering this additional revenue once the company's trading position improves.

7.84. The floor could be set at a range of positions of debt cover.

Option C Variant 1: "Maximum penalties"

7.85. Our first variant of option C is to put a maximum on the value of financial penalties for underperformance against ex ante incentives. This 'maximum penalty' would be taken into account when we (and rating agencies) stress test and make quantitative and qualitative assessments of the overall price control package.

7.86. For example, Ofgem could determine that notional equity returns (as measured by RoRE) cannot go below a certain predefined level (eg a RoRE of 1%). The assumption here would be that the policy would only come into effect if overall return to equity was less than 1% (ie 300bps below a 4% baseline equity allowance) and could be tailored to each notional company in terms of maximum annual penalties as a £m value of notional equity RAV.

Option C Variant 2: "Minimum coverage ratios"

7.87. Under this variant, a minimum allowed revenue would come into play at one of a range of levels, for example at notional debt repayment levels, or at a level sufficient to maintain a particular level of a particular ratio such

¹⁰⁰ 2019 Price Review Final Methodology, Ofwat <https://www.ofwat.gov.uk/regulated-companies/price-review/2019-price-review-final-methodology/>

as Adjusted Interest Cover Ratio (AICR) or Adjusted Debt Service Cover Ratio (ADSCR).

Revenue recovery for either variant of Option C

7.88. In either case, the difference between the revenue required to meet debt repayments and the revenue the company would have received without the floor would need to be recovered by consumers from company shareholders over time. We could achieve this in more than one way, for example by a reduction in the value of RAV in the company, or alternatively by a dividend freeze with payments being made to consumers via reduced revenue allowance until recovery was complete.

Financeability - questions

Q37. Do you consider there is merit in removing the indexation of the RAV and adopting a nominal return model in RIIO-2?

→ What would be the benefits and drawbacks?

Q38. Should the onus for ensuring financeability lie with the network operating companies in whole, or in part?

Q39. Do you consider the introduction of a revenue floor, to protect the ability of companies to service debt, to have merit?

Corporation tax

Introduction

7.89. We propose to review the existing arrangements on tax allowances to ensure that consumers do not over-compensate companies during RIIO-2.

7.90. Corporation tax is a highly complex area. Despite this, in simple terms we would expect the allowances made for corporation tax during the price control to be broadly equal to the payments that companies make to HM Revenue and Customs (HMRC) over relatively short time horizons.

7.91. We have arrangements within the price control framework to claw back any reductions in tax liabilities as a result of gearing or change in tax rates. We propose to review if these arrangements are working properly to prevent mismatches between tax allowed and tax paid by companies.

A review of RIIO-1 corporation tax arrangements

7.92. There are a range of issues that we intend to review in more detail to inform final RIIO-2 determinations. These include:

- Calculating the impact of tax costs on incentives and RoRE

- Checking for any tax benefits as a result of financial restructuring¹⁰¹ or irregular accounting adjustments
- Reconciliation between allowances and tax payments, regulatory accounts, RIIO Accounts and HMRC tax returns (CT600s)
- Reviewing company-by-company (or spot checking) group tax relief, and confirming that any intra-group transfers of tax losses between the regulated companies and other group companies are transacted at full economic value
- Historical agreements with HMRC.

Initial options

7.93. We suggest that there are three emerging policy options that will need to be considered for the RIIO-2 determinations.

Option A: Notional allowance with added protections.

7.94. Option A involves a review of the operation of the current notional tax allowance with tax clawback mechanism. The review could consider the introduction of any necessary mechanisms that would enhance the level of protection for consumers in the event of material deviation between allowances and tax payments. We could undertake this review in parallel with an evaluation of options B and C.

Option B – Actual payments to HMRC

7.95. Option B involves using the values paid to HMRC as per regulatory accounts or from CT600 tax returns. This option would ensure that any legally permitted tax optimisation did not lead to allowances being greater than costs.

Option C – The 'double-lock': the lower of notional and actual

7.96. This option involves using the lower tax figure calculated in either option A or option B. The aim is to minimise the variance between the corporation tax allowance and the amount paid to HMRC over the short and long-term.

Corporation tax - questions

Q40. Do you agree that Ofgem should review the causes of any variances between tax allowances and taxes actually paid to HMRC (including the treatment of group tax relief)?

➔ Which of the options described in this consultation may be worth investigating further to address any material variances?

¹⁰¹ In an appendix to the UKRN draft, Frontier Economics refer to tax arbitrage as a potential factor driving RAV transaction premiums, potentially indicating part of the c50% paid by Cadent Gas to National Grid for the four gas distribution licensees.

Other finance issues

Introduction

- 7.97. This section covers certain other financial issues for RIIO-2. These may not affect overall allowed revenue as much as those set out above, but they are nevertheless important as part of a comprehensive review of RIIO financial policies. We invite stakeholders' views and feedback on the following issues.
- 7.98. **RPI/CPI and CPIH.** We propose to move away from RPI to either CPI or CPIH and seek views on how we should do this. Ofwat propose a phased transition, but, we are not convinced phasing is necessary. The issue is discussed in depth in Annex B of the CEPA report accompanying this consultation.
- 7.99. **Regulatory depreciation¹⁰² / economic asset lives¹⁰³** are issues that we discussed extensively in RIIO-1. In RIIO-ED1, they were the subject of an appeal to the Competition and Markets Authority. The adjustments made in RIIO-1 are necessarily long-term in nature and we are currently not proposing changes at a price control framework level. However, we invite stakeholders to submit views or suggestions that they may have on these issues.
- 7.100. **Notional gearing.** We will continue to review notional gearing in light of the riskiness of the overall price control settlement and the corresponding size of the notional equity wedge.
- 7.101. **Capitalisation rates (fast/slow money split).** Our assumptions for the fast/slow money split will be reviewed in the light of operational practice to date and the information in the company business plans (in particular the ratio of capital expenditure to total expenditure). In addition, we will consider the impact of the implementation of IFRS16 – which effectively brings all leased assets on to company balance sheets.
- 7.102. **Notional equity.** We wish to test existing allowances to see if they are reasonable.

Other finance issues – questions

Q41. Do you agree that we should move away from RPI for RIIO-2 (including for the indexation of the RAV if retained as a feature)?

- ➔ If yes, which of the two potential indices – CPI or CPIH – might be most suitable?

¹⁰² This was part of the British Gas Appeal in 2015. See ground 4 as per CMA FD p122 https://assets.publishing.service.gov.uk/media/5609588440f0b6036a00001f/BGT_final_de_termination.pdf

¹⁰³ A report was provided by CEPA, SKM and GL Noble Denton in 2010 to inform RIIO-1 <https://www.ofgem.gov.uk/ofgem-publications/53853/cepa-econ-lives.pdf>

→ Is a phased transition between RPI and the chosen successor index necessary or desirable?

Q42. In the light of our proposal not to amend, at a price control framework level, our policies for depreciation and asset lives set in RIIO-1 do you have any views or suggestions that you wish to put forward?

Q43. We propose to review the fast/slow money split at the business plan submission stage, do you have views that you wish to put forward at this stage?

Q44. Do you think existing mechanisms for providing allowed revenue to compensate for the raising of notional equity are appropriate in principle and in practice?

Ensuring fair returns

Background

7.103. Consumers benefit over time if network companies reduce their costs and deliver better service. RIIO aims to achieve this by incentivising companies to 'beat' cost allowances and output targets. If companies can deliver 'more for less' they can earn a higher return (companies that spend more than forecast or fail to hit targets earn lower returns). A measure of the return that companies earn is the RoRE.

7.104. While companies benefit from outperformance within a price control, consumers also gain from better service and a share of any underspend in the form of lower charges. In the next round of price controls, we use the outperformance to set lower cost allowances and targets that are more ambitious. Higher returns are therefore justified where these reflect companies finding new, more efficient ways of operating their networks.

7.105. This is not always the case. Sometimes we can set allowances assuming certain expenditure will be required and then find the need does not materialise. Because companies gain from outperforming cost allowances and output targets, there is a risk that they will bid for more money or softer targets at the time we set a price control, in order to make it easier to outperform. Companies can also gain by delaying expenditure in order to underspend allowances and increase returns within a price control period, while the effect on outputs may not become apparent until much later.

7.106. We use different tools and techniques to reduce the risk of forecasting errors, or overbidding by the companies. Despite these controls, we continue to see a high level of outperformance across sectors.

7.107. In RIIO-1, underspend against allowances has led to some of these high returns, particularly in the electricity transmission and gas distribution sectors. In electricity distribution, the main driver of higher returns is performance against the interruptions incentive, where companies have beaten targets since the start of the period.

7.108. Some of the underspend is attributable to genuine efficiency and innovation. But some of it is because:

- Input price inflation has run lower than forecast
- Weaker economic conditions and milder winters have led to lower demand for certain work
- Expenditure has been re-profiled and lower value work has been brought forward, with more expensive work being deferred to future periods
- Assumptions on scope for certain work has been higher than actual requirements.

7.109. We worry more about such factors creating high returns as there is no obvious benefit to consumers from such sources of profit for the companies.

7.110. Although costs can also increase against forecast, we believe that companies generally face a greater likelihood that risks will run in their favour than against them. This reflects the necessary caution that might be applied at the time of setting a price control, and the influence on the settlement that the forecasts provided by the companies can have. Given companies' exposure to risk and the inherent asymmetry of information in price controls, the efficiency incentive in RIIO-1, where most companies retained at least 50% of any underspend (and much higher for some companies) may have been too generous to the companies. Although companies are exposed an equal proportion of any overspend they could potentially incur, there may not be the same likelihood of overspend occurring.

Stakeholder views

7.111. Many of the network companies disputed claims that the returns had been higher than expected and felt no changes to current arrangements were required.

7.112. Many network companies felt that RoRE was a partial and incomplete measure of company returns, because it excluded financial outperformance or underperformance on debt and tax.

7.113. Some stakeholders, including some network companies, provided suggestions for how we curb the risks of higher than expected returns. These include:

- Indexing cost categories (such as input price inflation) to avoid forecasting error
- Reducing the share of underspend that companies receive (and increasing the share that goes to consumers)
- Introducing a claw back mechanism to adjust revenues where there has been a forecasting error

- Setting targets based on frontier performance within a sector
- Having caps/collars on incentives that limit the benefits companies can gain from outperformance
- Assessing performance and allocating rewards/penalties on a relative basis. This would involve companies earning more if they perform above the average for a sector, while all others earn less. Consumers would face no additional cost.

The need for change

7.114. Our experience in RIIO-1 and in previous price controls, suggests that however reasonable the basis for a price control is, companies across different sectors may still be able to outperform against baseline assumptions and earn high returns. Some of this could be due to company-initiated efficiency improvement, but sometimes it could also be because of factors that could not be anticipated at the outset.

7.115. The measures we take to mitigate the risk of over-relying on forecasts provide some protection to consumers. To date though, these have not been sufficient to restrict overall returns to a level that is acceptable, in the best interests of consumers. In addressing this, we have to be mindful of the correlation between the strength of the incentive regime and the probability of higher than expected returns. If we reduce incentive rates, it will lessen the prospect of higher than expected returns, but it also blunts incentives to cut costs and improve service.

7.116. For RIIO-2, we intend to update and enhance our existing tools to ensure the price control is set on as solid a base as possible. This means that:

- We will look to index cost categories where feasible
- We will aim to link costs to the delivery of outputs
- We will use uncertainty mechanisms to automatically adjust costs and volumes with changes in the external environment
- Where there is doubt over cost and scope of significant areas of work, we will not set allowances upfront but will wait until we have more certainty
- As set out in **chapter 6**, we will set tough output targets and cost allowances
- In each sector's price control, we will revisit the efficiency incentives used to allocate over and underspend between companies and consumers to better reflect the balance of risks.

7.117. We will also consider whether to apply the efficiency incentive after taking account of any tax payments and which approach would better protect consumer interests.

- 7.118. In addition, we intend to consider whether including financial and tax outperformance in the measure RoRE is appropriate in the context of adjusting companies' returns.
- 7.119. We will not know though whether these will be sufficient to mitigate the risk of consumers paying for higher than expected returns. We believe additional 'failsafe' mechanisms are required to give consumers more protection against higher than expected returns.
- 7.120. In its review of the RIIO framework, CEPA note that given the asymmetry of information between us and network companies, and the asymmetric risk of decisions (eg the safety risk of underinvestment is likely to be of greater concern than companies earning higher than expected returns), it is appropriate to consider what 'failsafe' measures might ensure company returns are not higher than expected.

Options

- 7.121. One way we could guard against these risks would be to remove incentives on outperformance and instead set companies a fixed rate of return. We do not believe this would benefit consumers. Without incentives on the companies to find efficiencies, it will be harder to drive down costs over time or provide the right environment to support the energy system transition. We do not propose to pursue this approach.
- 7.122. We have identified five options that could guard against higher than expected returns, while retaining an incentive-based framework. These are:
- A hard cap/floor
 - Discretionary adjustments
 - Constraining totex and output incentives
 - A RoRE sharing factor
 - Anchoring returns
- 7.123. Within these options, there may be different methodologies we could employ. We have provided a high-level illustration of how they might work to help respondents provide us with useful feedback. We intend to develop more detail on how each might work in practice, following our assessment of responses and through stakeholder working groups. At this time, we welcome views on the benefits and potential impacts of each approach and on any alternatives.

Option 1: Hard cap/floor

- 7.124. Restricting returns from rising above or falling below pre-determined points. Although this would curb the risk of higher than expected returns, it could also greatly diminish the power of incentives as company returns approach the margins. A company that overbids in its plan may be able to reach the cap without having to cut its real costs and would then have no further incentive to improve.

Option 2: Discretionary adjustment

- 7.125. This would involve us using discretionary adjustment mechanisms within the price control, or waiting until the end of the period, to reduce company revenues to account for variations between forecasts and actual expenditure/output performance. This could be used if we had provided initial allowances for costs that the companies did not need to incur. It could also allow us to recover incentive payments if we had set targets for outputs that were too low.
- 7.126. We recognise that we would need to specify in advance the conditions that would need to apply before we would make an adjustment. These could include when returns exceed a predetermined point and the company has not provided evidence that they achieved this through genuine efficiency improvements.
- 7.127. In **chapter 4**, we describe our proposals for the length of the price control. One option is to keep the price control at eight years, but with a mid-period review (MPR) to correct for significant changes in actual spend/performance versus the forecast. Under this option for the length of the price control, the MPR would serve as our in-period mechanism for making adjustments. At the end of the period, we would need to carry out a similar process for any significant post-MPR variations.

Option 3: Constraining totex and output incentives

- 7.128. Under this option, we would pair arrangements to reduce the returns gained through totex outperformance with measures to limit the financial rewards from incentive payments.
- 7.129. 'Sculpting' the efficiency incentive would involve adjusting totex efficiency incentives so that consumers receive a greater share of any underspend the more a company's actual spending deviates from its allowed expenditure. For instance (and for illustration only), a company that underspends its allowance by 5% would face an efficiency incentive of (ie would keep) 50% while a company that underspends its allowance by 10% would face an efficiency incentive of 40%.
- 7.130. While this may weaken incentives on companies to inflate their business plan, it may also weaken rewards for significant, 'step-change' cost efficiencies. In its review of the RIIO framework, CEPA's assessment of 'tapered' incentive rates suggests that they could lead to companies delaying efficiency improvements to maximise their return.
- 7.131. As we have seen in RIIO-1, particularly in electricity distribution, performance against incentives also drives returns. To offset the risk that this leads to higher than expected returns, we could either set zero-sum incentives, or provide a fixed incentive pot for which companies would compete to receive a share. These arrangements would not apply to totex.

Zero sum incentives

7.132. This would involve companies competing against each other to benefit from the associated incentives. Under this arrangement, we would assess the performance of companies within a sector against a target (at the end of a given period, such as a financial year). We would calculate the average performance level for the sector; those that have performed above this point would earn a reward, and those below average would earn a penalty. The net cost to consumers overall would be zero.

Fixed incentive pot

7.133. This would involve companies competing against each other to benefit from the associated incentive reward. Instead of a zero sum arrangement there would be a fixed pot of reward available and we would assess performance against a pre-determined target. Those that exceed the target level will be eligible to receive a share of this pot. Their share will be determined by the level of outperformance and by the number of other companies who exceed the target. Companies that fail to achieve the target will pay 'into' the pot as a penalty, reducing the contribution that consumers would otherwise make.

7.134. In its review of the RIIO-1 framework, CEPA provided a more detailed illustration of how a 'competed' pot of return on output incentives might work.

7.135. Implementing either of these for incentives would require an assessment on the comparability of incentives across different network companies, and the applicability in different sectors.

Option 4: RoRE sharing factor

7.136. This mechanism applies a sharing factor on return levels by adjusting returns when they deviate from the baseline cost of equity. By doing so, it extends sharing factors to include all incentive payments and removes the need for separate sharing factor mechanisms for totex and incentives.

7.137. We would determine the strength of the RoRE sharing factor by the quality of the business plan submitted by companies. A poor quality and uncompetitive plan (ie one where we consider the company has not proposed efficient costs or demonstrated how it has considered stakeholder views) would mean that consumers would get a larger share of the company's return passed back to them. Equally, if a company's return falls below the baseline cost of equity, a high quality plan would mean that we would adjust a company's return upwards towards the baseline cost of equity at a higher rate than a company that submitted a low quality plan.

7.138. This mechanism has the potential to simplify a number of price control arrangements. The sharing factor could serve as the reward, or part of the reward, that would otherwise be available through the fast-track and IQI processes.

7.139. To provide additional insurance against higher than expected returns we might consider 'sculpting' the sharing factor. This would mean that the company would share an increasingly higher proportion of its return the more its return exceeds the baseline cost of equity. In the opposite case where a company's returns falls below the baseline cost of equity, a lower proportion of its underperformance will be borne by it. We note that sculpted sharing factors might affect companies' efficient timing of investment as discussed in para 7.130.

Option 5: Anchoring returns

7.140. Anchoring would see us regulate revenues so that we cap the RAV-weighted average return across a sector at a predetermined level – an anchor point. By way of illustration, the anchor point(s) could be set on the upside at the level corresponding to the long-run return on the stock market and on the downside at the cost of debt. Alternatively, the range could be a more symmetrical cap and floor around the baseline cost of equity.

7.141. When the sector as a whole performs within this band, the returns that individual companies earn will reflect their performance against their own targets and allowances. If the sector average exceeds this band, we would require all companies in the sector to refund consumers in proportion to their RAVs or their regulated equity, so that the RAV-weighted sector average remains at the limit of this range.

7.142. The effect of this arrangement would be to distribute the outturn returns individual companies receive around this anchor point based on their relative performance. So companies that outperformed their sector would still be able to earn returns in excess of the cap, whereas companies that underperformed their sector would earn below the cap. Anchoring would make a downward adjustment to companies' return only to the extent it does not compromise their financeability. We provide more information on our proposals for ensuring financeability earlier in this chapter.

7.143. Table 5 below summarises what we initially consider the main strengths and weaknesses of each option.

Ensuring fair returns – questions

Q45. What are your views on each of the options to ensure fair returns we have described?

Q46. Is RoRE a suitable metric to base return adjustments on?

→ Are there other metrics that we should consider, and if so why?

Table 5: Potential strengths/weaknesses of options to protect against higher than expected returns

	Hard cap/floor	Discretionary adjustment	Constraining totex and output incentives	RoRE Sharing Factor	Anchoring
Strengths	Complete mitigation against high returns at both the sector and company level. Companies will not be able to achieve a cost of equity above a certain point.	Mitigates against drivers of performance that we do not believe warrant additional profits.	Provides more protection against high returns in comparison to RIIO-1. When linked to information-revealing devices, it might provide an incentive to companies to improve quality of business plans.	When linked to information-revealing devices, it might provide an incentive to companies to improve quality of business plans. Combines and simplifies a number of framework elements. Extends protection to include all incentives.	Provides absolute assurance that a sector average RoRE would not exceed a cap. Might increase companies scrutiny on other companies' business plans.
Weaknesses	Eliminates incentives to deliver output improvements and find cost efficiencies when a RoRE cap is breached.	Requires us to define circumstances when we would make an adjustment. Unclear definition of reopening criteria might increase regulatory uncertainty.	The mechanism is not bullet proof to higher than expected returns.	The mechanism is not bullet proof to higher than expected returns.	Under certain circumstances, company returns can be affected by the performance of other companies in the sector and would not be solely based on their own performance. Differences in company size and/or activities may exacerbate the impact of high/low performance by other companies.

8. Next steps on the RIIO-2 framework and developing our sector-specific proposals

Chapter Summary

This is a consultation on the RIIO-2 framework, which will apply to the price controls for gas and electricity network companies. We intend to make a decision on the framework in summer 2018. The process of setting the price control for each of the sectors will extend beyond the timeline for this framework review stage.

We will make our decision on many of the proposals that we make in this consultation within the price control for each sector. As we move from the overarching framework toward the sector controls, we will need to ensure that specific issues are addressed. This chapter provides our early thinking on some of the sector-specific issues for the RIIO-2 price controls.

In this chapter we also set out our proposals for timing and engagement going forward – including our framework decision following this consultation and the development of methodologies we will use to set each sector’s price control.

Consultation questions: In this chapter we ask for views on our proposed next steps for the framework and sector-specific proposals.

From our RIIO-2 framework to sector price controls

- 8.1. This consultation has provided our views on the overarching RIIO-2 framework and proposals for changes we think are necessary. We have also outlined the interlinkages between related components of the price control (for example, between the back stop mechanisms for ensuring fair returns and our financeability duty) and between these policy areas and other workstreams being undertaken within Ofgem (see Appendix 1). We will make our decision on these proposals in summer 2018.
- 8.2. During 2018, we will also develop the methodologies that we will use to set sector-specific price controls. These will be the basis for the individual price controls for gas distribution, gas transmission and electricity transmission network companies. Our RIIO-2 price control for electricity distribution companies will come into effect following the conclusion of their current price control (RIIO-ED1), in 2023.
- 8.3. We are also developing the remuneration and incentive arrangements for the SO, and we will clarify how that sits within our RIIO-2 framework.

- 8.4. As we move from our overarching RIIO-2 framework toward the sectoral price controls, we will need to 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. In this chapter, we highlight some issues that we are likely to consider as we develop our thinking. By providing early sight of these issues, we want to give the opportunity for extensive engagement to inform the methodologies we will use for individual sectors.
- 8.5. The timeline for the development of the sector-specific proposals is also set out below in Figure 9.

Confirming our decisions on issues considered in this consultation

- 8.6. We have set out our proposals for our RIIO-2 framework in this consultation as well as seeking early views on a number of other issues. We aim to reach a decision on the RIIO framework as a package of measures in summer 2018. However, our thinking on the detailed design of the individual price controls will need to be developed further as part of our sectoral proposals.
- 8.7. In our decision on the RIIO-2 framework in summer 2018, we will make a decision on:
- Any enhancements to our models for stakeholder engagement
 - The default length of the price control
 - Our position on alignment of the timing of the price controls, and direction of travel on whole system coordination
 - Whether there should be a separate electricity SO price control
 - Whether we are retaining an innovation stimulus and direction of travel on areas of reform
 - Whether we will extend our criteria for competition to other sectors
 - Our approach to information-revealing devices (IQI/fast-tracking)
 - Our approach to outputs and cost allowances
 - Which options we propose to develop further in setting the cost of debt
 - Our methodology to set the cost of equity, any updates to our indicative range for RIIO-2; and whether or not we propose to take forward the indexation of the cost of equity
 - Which options on addressing financeability issues we propose to take forward

- The outcome of our initial review of tax allowances in RIIO, and which options we propose to take forward
- Whether we propose to index the RAV using CPI or CPIH; and any transition arrangements
- Whether we intend to make any changes to our policies on regulatory depreciation/economic asset lives as part of the framework review
- Which options for ensuring fair returns we will take forward.

8.8. *As we develop the sector-specific price controls, we will then confirm our position on a number of other topics, including issues we have raised in this consultation. Through this process we will consider interlinkages and interactions of a number of policy areas, including:*

Responding to how networks are used

- Decide whether any allowances will be set over different period to the default length of the price control
- Decide what is meant by 'whole system outcomes' in the context of RIIO-2 and how the price control will support the delivery of these outcomes
- Decide the remuneration model we will use for the electricity SO and the gas SO
- Decide the options we will implement to help ensure that the network is appropriately sized to meet the changing demand at lowest cost to consumers including what role network companies might play in reducing overall demand.

Driving innovation and efficiency

- Decide the nature and size of any future innovation stimulus
- Decide our approach to broadening the scope of competition, including where we will further introduce competitive pressure into the price control and our approach to doing so.

Simplifying the price control

- Decide consumer facing outcomes to be delivered through licence obligations, price control deliverables and output delivery incentives
- Decide how we will be setting cost allowances including any methodologies used to index costs as well as our approach to using uncertainty mechanisms
- Design the arrangements to encourage high quality business plans

- Decide our approach to annual reporting.

Fair returns and financeability

- Decide the methodology used to set the cost of debt and decide the sector specific application of the cost of equity methodology
 - Decide our approach to financeability
 - Decide any changes to our treatment of corporation tax
 - Decide our approach to notional gearing, capitalisation rates and supplementary revenues
 - Decide and design the mechanisms we will use to ensure fair returns.
- 8.9. Confirmation of our positions on the above issues will form part of our overall package of proposals to be developed, in conjunction with stakeholders, through the sector-specific stages and beyond. This will consider in more detail: what we expect network companies to deliver; what their role will be in managing the energy transition; how companies will be financed for these activities; and how network companies use the business planning and stakeholder engagement processes to demonstrate how they will deliver at an efficient cost for current and future consumers.
- 8.10. We have outlined some of the interlinkages between related components of price control in this Framework consultation and in developing the price controls we will be considering these interlinkages further to ensure that the impact on network companies, investors and ultimately on consumers are considered based on the whole package of measures. We welcome views on what we have set out so far and what we will need to consider in developing the sector-specific proposals.

Next steps - questions

Q47. Do you have any views on the interlinkages and interactions outlined in this consultation and those that we will need to consider as we develop our sector-specific proposals?

Sector-specific issues and factors to consider

- 8.11. As we develop our proposals for the separate sectoral price controls, we will take into account issues raised and lessons learnt from the RIIO-1 controls. 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.

- 8.12. We have highlighted some issues below that we expect to consider in more detail as we move towards the sector-specific controls. These are an indication of our initial thinking. However, at this stage, it is too early to signal how significant each of these issues may be.
- 8.13. We will also need to assess how our framework, which we will decide upon in the summer, will interact with approach to specific issues as we develop our detailed proposals for each sector.
- 8.14. We are highlighting these issues now to give the opportunity for early discussion on these matters, and to ensure that network companies and stakeholders have visibility of some of the areas we will be looking at. We appreciate any views at this stage on these issues.
- 8.15. This is not an exhaustive list – there will also be other issues that we consider in detail which we have not highlighted below. We would be interested in any views on particular policy issues or price control design aspects that we have not listed below, but that we should consider as we develop our sectoral proposals.

Cross-sectoral

- 8.16. Some of the issues that we will need to take into account when developing our proposals for each price control cut across all sectors. This is because they relate to the overarching RIIO framework, or they reflect how the network sector as a whole can best support the energy transition. Some of these are highlighted below.
 - *Fast-tracking and early settlement:* In **chapter 6**, we noted our concern, based on experience from the RIIO-1 price controls, that fast-tracking or early settlement has the potential to drive improved business plans, but only in sectors where there is adequate diversity of ownership and comparability between the companies. We are proposing not to consider fast-tracking for transmission companies. However, we will need to develop our thinking on the options highlighted for distribution companies. This will form part of our RIIO-2 framework decision in summer 2018 and will then be developed for the sector price controls, as appropriate.
 - *Definitions of outputs, outcomes and other deliverables:* As we have noted in **chapter 6**, we are aiming to simplify and improve the RIIO-2 framework. We have highlighted the need for better clarity and consistency in distinguishing between outputs, the activities that networks undertake to deliver these outputs and how we treat their performance. We will continue to consider this as we reach a decision on the RIIO framework, and in more detail as we develop our sectoral proposals. We would expect to review outputs to ensure they reflect service quality that consumers' value, and we will consider approaches to link these more closely to underlying costs.

- *Improving the quality of information submissions:* Across all sectors we will focus on how we can ensure company submissions (regarding both business plans and ongoing monitoring) are of sufficient quality and reliability, and how to hold network companies to account where information is inaccurate, misleading or of poor quality. This is highlighted in our consideration of IQI and fast-tracking in **chapter 6**. However, this will be an issue that we consider further when developing our detailed proposals for the individual price controls.
- *Considering the value of uncertainty mechanisms:* As we develop detailed proposals for sectoral controls, we will need to consider our broad approach to using price control reopeners and other uncertainty mechanisms. The approach will be impacted by the length of the price control as well as the nature of the uncertainty faced. There will be specific issues related to the relative uncertainty of the different sectors, some of which are described below.
- *National, regional and local targets:* We are considering the extent to which targets for incentives should be set on a national level, or alternatively on a regional or local level. We want to balance an element of competitive pressure for network companies – where this benefits consumers by providing better outcomes – with the need to consider the specific context for different companies, and to focus incentive measures on outcomes that the companies can control. We may expect our proposals on this issue to differ across price controls and across different incentives – however, we will consider this issue holistically in order to reach those positions. In **chapter 3**, we describe how the enhanced stakeholder engagement models could support the setting of regional targets.
- *Whole system issues and strategic context for the sectoral controls:* The energy transition will necessitate changes in how the system operates, how the network is developed, and how users interact with energy. It is also likely to shift where investment is needed on the network, and additionally blur the boundaries between traditionally more distinct sectors (eg transmission and distribution networks). For our sector-specific proposals we will provide further views on whole system issues and outcomes and how the framework will support the delivery of these outcomes.
- *Competition:* In **chapter 5** we have set out our proposals to extend the role of competition, and our criteria for applying competition models, to all sectors. As we confirm our approach, we will need to consider potential interactions with the price control regime, for example with the Strategic Wider Works (SWW) process in whichever form we choose to retain it.
- *Considering capex that falls across price control periods:* In **chapter 4** we have outlined our proposals for potentially having the flexibility to consider setting certain costs over longer time horizons if this can benefit consumers. This is likely to be a particular area of focus for the transmission (electricity and gas) and gas distribution price controls and we will consider the detail of this as we develop our sectoral proposals.

- *De minimis value thresholds for incentive applications:* As we develop the sectoral content, we will give particular consideration to some of the smaller, lower value incentives. We would want to ensure, as a minimum, that the consumer benefit of such incentives outweighs the administrative costs to the network companies and to Ofgem.
- *Data services:* We will continue to review opportunities to make improvements to the way we collect, process and present data on company performance, moving towards the goal of a more automated and user-friendly system and process. We are aware that some companies are actively considering improvements in their own systems which could support this.
- *Cyber security:* When developing our sectoral price control proposals, we will look to clarify our expectations for network companies in relation to ensuring the resilience of their network and information systems, particularly with regard to cyber security. We aim to ensure that, as the energy system becomes smarter, networks take appropriate and proportional measures to ensure consumers are sufficiently protected from any potential adverse cyber security issues. We will consider the extent to which this impacts on detailed proposals within the sector-specific controls.
- *Preparatory forecasts for RIIO-2:* The current Regulatory Instructions and Guidance (RIGs) make provision for the request of cost, workload and output forecasts for the remaining years of the RIIO-1 price control period. In some cases, we also receive information beyond RIIO-1. Where necessary, we will discuss with the network operators in each sector options for augmenting this forecasting information, and any interactions with the existing RIGs process, in preparation for the RIIO-2 price control period.

Electricity transmission

8.17. Some of the specific issues that we will consider as we develop our proposals for electricity transmission include:

- *Strategic Wider Works:* As highlighted above, we will review our approach to uncertainty mechanisms more broadly. For electricity transmission, this will also include specifically considering the Strategic Wider Works process.
- *Reviewing our outputs, outcomes and deliverables:* As with other sectors, we will be considering whether outputs, outcomes and deliverables will continue to be fit for purpose as the industry evolves. For electricity transmission, this will include among other things our approach to environmental outputs (eg visual amenity). It will also involve wider consideration of how we define outputs, in particular within the context of large capital projects.

Gas transmission

8.18. Some of the specific issues that we will consider as we develop our proposals for gas transmission include:

- *Future of gas and heat decarbonisation:* We will provide further views on the implications of the decarbonisation of heat for gas networks (including clarifying the role of network companies in helping to reduce the network costs associated with decarbonisation). In doing so we will consider the future use of the networks and interactions with the electricity system as appropriate.
- *Capacity obligations:* Price controls provide opportunities to assess the outputs the regulated network companies have to deliver and in gas transmission this has included a focus on gas entry capacity baselines. These were last assessed for the TPCR4 review (2007-2012) and remained unchanged for RIIO-T1. We now have a further opportunity to consider whether there is a need to re-assess this going forward.
- *Reviewing our outputs, outcomes and deliverables:* As with other sectors, we will be considering whether outputs, outcomes and deliverables will continue to be fit for purpose as the industry evolves. For gas transmission, this will include the baseline standard of performance consumers expect (including with regard to Network Output Measures). We will also consider the links between output delivery and environmental factors, such as emissions reductions driven by compressor replacement.

Gas distribution

8.19. Some of the specific issues that we will consider as we develop our proposals for gas distribution include:

- *Repex:* Our recent RIIO-GD1 annual report noted that GDNs forecast to underspend repex allowances by 19% over RIIO-GD1. This is a significant driver of overall financial performance. We will consider how to ensure consumers get the best value from repex spend in RIIO-GD2, including looking at how outputs are specified and how allowances are calculated.
- *Future of gas and heat decarbonisation:* As with gas transmission, we will consider how the decarbonisation of heat may affect the future use of the network. This includes the incentives and expectations of GDNs for connections (including fuel poor connections) as well as the role of network innovation and electricity system interactions in the future.
- *Reviewing our outputs, outcomes and deliverables:* As with other sectors, we will be considering whether outputs, outcomes and deliverables will continue

to be fit for purpose as the industry evolves. For gas distribution, this will likely include a review of whether Guaranteed Standards of Performance are fit for purpose, a review of what baseline standard of **performance** consumers expect (including with regard to interruptions).

Electricity distribution

- 8.20. As noted in **chapter 4**, we are proposing to continue to set price controls for the electricity distribution companies on a separate timeline to the other price control sectors. This would mean that the second electricity distribution price control, RIIO-ED2, will commence in 2023.
- 8.21. We will shortly publish our decision on whether to launch an MPR in RIIO-ED1. The MPR is designed to identify potential changes to the outputs DNOs are expected to deliver. Regardless of our decision, we will continue to monitor the delivery of the RIIO-ED1 price control to ensure that the DNOs deliver outputs which provide value for money for GB consumers.
- 8.22. We will ensure stakeholders have the chance to provide views on our proposals ahead of the implementation of RIIO-ED2. At this stage, we are interested in views on whether any of the framework proposals in this consultation would warrant special consideration ahead of RIIO-ED2.

Electricity System Operator

- 8.23. In **chapter 4**, we have noted our proposals to separate the electricity SO price control from NGET's TO control, and to more closely drive a unified package with the ESO's wider incentives.
- 8.24. We expect to confirm whether there should be a separate ESO price control in our summer decision on the RIIO-2 Framework. We also intend to engage with stakeholders this summer to gather views on a narrowed range of potential remuneration models. We will decide on a final model and further develop the detail of this through a separate methodology for the ESO.
- 8.25. We are interested in stakeholder views on any particular issues or challenges that we should consider as part of this process.

Next Steps - Questions

Q48. Do you have any views on the issues highlighted that we will consider as we develop our sector-specific proposals?

Q49. Are there any sector-specific issues or policy areas that we should ensure we review and consider as we develop our sector-specific proposals?

Next steps

Timelines and engagement going forward

- 8.26. This framework consultation runs for eight weeks and closes on 2 May 2018. We will consider responses and aim to make our decision on the RIIO-2 framework in summer 2018.
- 8.27. We are keen to engage with industry and interested parties on the development of the next phase of RIIO-2. We are holding launch events for RIIO-2 specifically in London on 22 March and in Glasgow on 19 April, in addition to being part of a broader event on The Future of Local Energy in Cardiff on 14 March. Interested stakeholders should get in touch with email@ofgem.gov.uk for more information.
- 8.28. We also plan to hold a number of workshops to inform our positions for the sector-specific methodology consultations. More detail on the scope and timing of these workshops will be available in due course.
- 8.29. As we move towards the sector-specific detail, we also plan to engage more directly with companies to confirm expectations regarding the stakeholder engagement processes and the development and delivery of business plans.
- We will provide more detail on our plans for enhanced stakeholder engagement, set out in **chapter 3**, later in March 2018
 - We aim to publish guidance in late spring 2018 on the broad structure and format of the business plans as well as some more detailed guidance on how to treat specific cost areas.
- 8.30. Network companies produced business plans to inform the RIIO-1 settlement. While we will endeavour to maintain a level of consistency with RIIO-1, our guidance on business plans will incorporate the reforms under RIIO-2 and lessons learned from RIIO-1. We will provide more details and guidance on the quantitative and qualitative aspects of business plans in the development of the sector-specific methodologies, so that companies have sufficient time to have these in place for their business plan submission.
- 8.31. We expect to consult on our sector methodologies in Q4 2018. We will consider the issues raised in this chapter, and welcome views from network companies and interested stakeholders on the items we will consider as part of those sectoral consultations. We then aim to issue our sectoral decisions – which will include final business plan templates – in Q2 2019.
- 8.32. Our major milestones as we develop and implement the RIIO-2 price controls are set out below, in Table 6 and Figure 9. In **chapter 6**, we propose to keep fast-tracking or a single business plan incentive in gas distribution, but

remove fast-tracking in transmission. If we decide to do so, then gas distribution companies will be required to submit business plans to us twice. However, transmission companies will only make one submission of their business plan to us. The timing of the milestones set out below is based on this proposal. If we decide to take a different approach, we may need to revisit this programme.

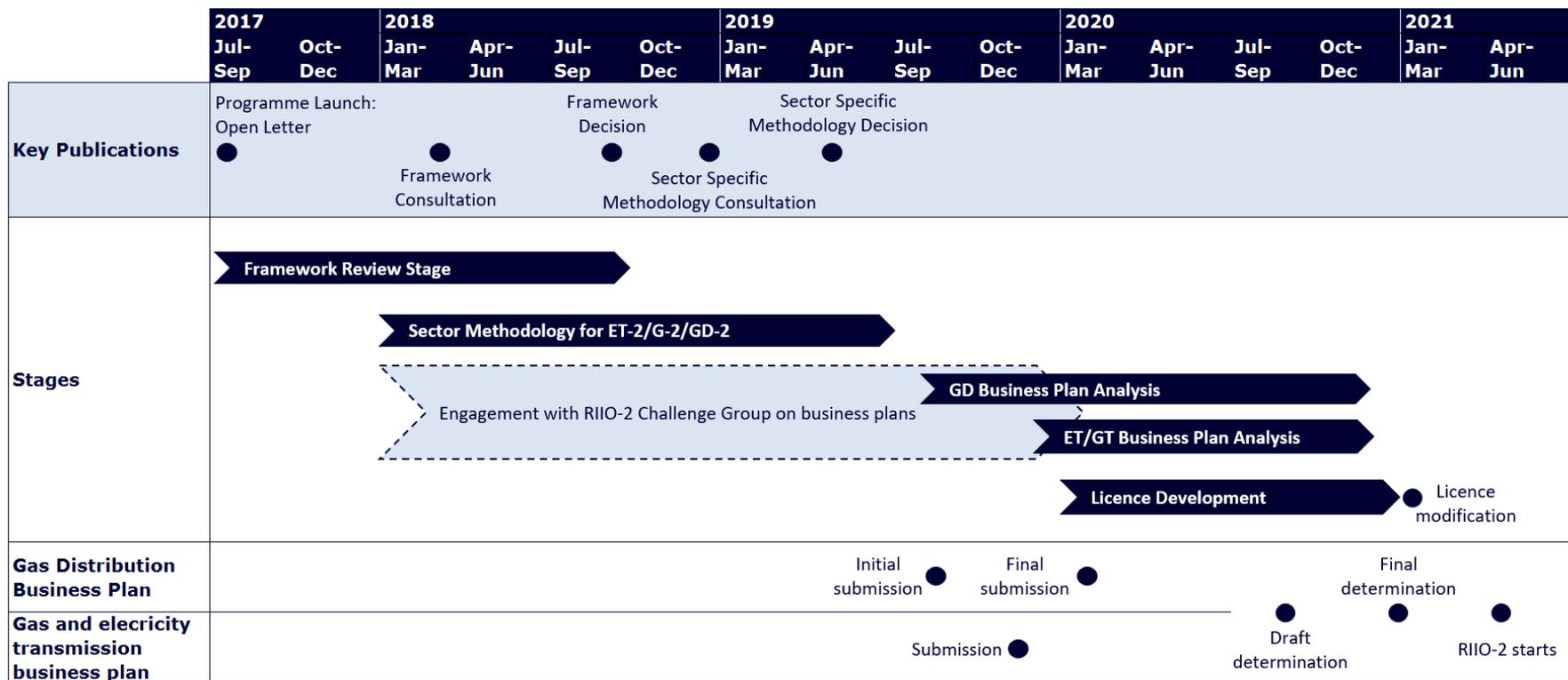
Table 6: Indicative high-level milestones for developing sectoral price controls

	Gas and electricity transmission	Gas distribution
March 2018	Request for views on key framework issues (this consultation)	
Summer 2018	Decision on key framework issues	
Q4 2018	Sector-specific methodology consultation	Sector-specific methodology consultation
Q2 2019	Sector-specific methodology decision	Sector-specific methodology decision
Q3 2019	-	Initial business plan submitted to Ofgem
Q4 2019	Final business plan submitted to Ofgem	-
Q1 2020	-	Final business plan submitted to Ofgem
Q3 2020	Draft Determination	Draft Determination
Q4 2020	Final Determination	Final Determination
Q1 2021	Licence modification	Licence modification
1 April 2021	RIIO-2 price control commences	RIIO-2 price control commences

Question

Q50. Do you have any views on our high-level proposals for timing of RIIO-2 implementation, and on our proposals for engagement going forward?

Figure 9 – RIIO-2 indicative implementation timeline (for gas distribution, gas transmission and electricity transmission price controls)



Appendices

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Appendix 1 – Energy transition related Ofgem work

1.1. In Ofgem’s draft forward work programme¹⁰⁴ we have set out the key activities that Ofgem will undertake over the next year. In particular, it highlights work needed to ensure that network companies deliver for consumers in a changing system and how we can facilitate that change.

1.2. Outlined below is a high-level description of the work areas being undertaken within Ofgem that have the strongest links to RIIO-2.

Electricity Network Access and forward looking charging

1.3. Changes to the location of generation sources, with the emergence of new low carbon and decentralised technologies are already leading to constraints. There is a risk that limits on network capacity could hinder the ability for the system to accommodate new technologies and changing usage patterns. These trends and drivers mean that it is increasingly important that network capacity is allocated and used in a way that reduces the potential costs to consumers as a whole. This includes ensuring differences in the regulatory arrangements at different voltages do not create undue distortions to investment and operational decisions. Our Electricity Network Access project is considering access arrangements and forward looking charges in the round. Our aim is to deliver more efficient use and development of electricity networks and we are exploring options to improve price signals for better use of capacity. This will ultimately reduce network costs going forward. Access reform should provide better information on future network needs for RIIO-2, but could also provide a clearer trigger for new investment.

Electricity Targeted Charging Review (TCR)

1.4. More intermittent and distributed generation and new technology have given rise to a changing distribution of the recovery of the residual costs of operating the electricity network. In order to finance their activities, network companies need to recover the cost of building, operating and maintaining the energy system. The charging framework for recovering these costs was designed for a system with very different characteristics and so the TCR under the TCR Significant Code Review is considering how the residual and cost recovery electricity network charges are set. The focus of TCR is around reducing harmful distortions and ensuring system users receive fairer treatment, while taking account of practical considerations. Potential policy proposals (for example considering capacity rather than volumetric charging) may reduce inefficient load reduction and the risk of underutilised network investment.

¹⁰⁴ <https://www.ofgem.gov.uk/publications-and-updates/forward-work-programme-2018-19-consultation>

Smart Systems and Flexibility

1.5. This joint work with government is delivering actions around the removal of barriers to new technology, support for smart homes and businesses and the delivery of markets that work for flexibility. It includes clarifying the existing obligations on network companies for maintaining economic, efficient and coordinated networks and the application of existing unbundling rules for storage. The work will impact the roles of the network companies and therefore what activities are funded through the price control.

1.6. Ongoing work is considering more widely how to support improved coordination between the system operator and network companies to drive efficient outcomes of the system as a whole, both in the short term and for the longer term. While the focus of this work has been around improving coordination across electricity transmission and distribution boundaries, it will also consider where more coordination between electricity and gas may be more beneficial. This work will also look to ensure that industry parties are clear on their roles and responsibilities and objectives. This includes the potential roles of and institutional arrangements for distribution system operators (DSOs) in the future. For RIIO-2, we will look to build on this work and consider how RIIO-2 can best encourage the delivery of whole system outcomes and take account of the shift in potential roles in setting the price controls.

Future Electricity System Operator (ESO)

1.7. Jointly with BEIS, we have already initiated work to legally separate the ESO from National Grid's electricity transmission business. A new ESO, with its own licence, will be in place by April 2019. Given the expansion in the ESO's role in recent years, the new legally separated ESO will be better placed to undertake its important role in the energy transition while minimising any actual or perceived conflicts of interest between National Grid's ESO function and other business interests. In light of this work, we are consulting on having a separate price control for the ESO for RIIO-2 and will consider how best to align this with the other SO incentive frameworks as well as how the separated ESO may be remunerated.

Future Supply Market Arrangements

1.8. At the time of privatisation, the market was designed with suppliers as the primary interface between energy consumers and the energy system. The role of suppliers as the 'hub' of the market has been entrenched in legal frameworks, licensing arrangements and industry rules. We are now seeing significant opportunities for innovation across the energy system and are now examining the role that traditional suppliers play in the market, and the opportunities for consumers to access and manage their supply in new ways. In this context, we are now exploring whether the supplier hub model is still fit for purpose or whether we should consider changes as the energy system evolves. Any reform options that affect the roles and responsibilities of network operators will have an impact on the design of, and the revenues that flow through, RIIO-2.

Gas Charging Review

1.9. We will continue to support industry in taking forward the conclusion of the Gas Transmission Charging Review. The aim of this work is to ensure that the Transmission Operator charges for access to and use of the gas network are compliant with EU law and provide the right incentives to market participants. In a similar way to the Targeted Charging Review on the electricity side, it also aims to ensure that charges are fair and minimise distortions in light of significant structural changes to the gas network – the impact for RIIO-2 is that it may lead to more efficient pricing signals and therefore more effective investment decisions around need.

Innovation Link

1.10. Our Innovation Link supports innovators by providing fast, frank feedback on the regulatory framework and the regulatory sandbox helps to remove barriers to innovation by providing the potential to trial innovative services without facing the full force of regulation. There are a range of new services, business models, technologies and potential shifts in consumer preferences that may play a part in the future design of the system. Through RIIO-2, we will be considering how best to encourage these types of transformative innovation to deliver benefits to network consumers and will look to how we can best align any innovation support with the Innovation Link.

Half Hourly Settlement (HHS)

1.11. We are taking forward market-wide half-hourly settlement to facilitate a smarter, more flexible energy system and to empower consumers to take an active role in the energy system transition as the sector decarbonises.¹⁰⁵ We want to use smart metering and the settlement arrangements to link suppliers' costs with the consumption of their customer base, exposing the true cost of supply in any given half-hour period. This will put incentives on suppliers and other parties to help consumers to manage their energy use and encourage them to develop new tariffs and innovations.

1.12. The move to market-wide HHS is part of a wider set of reforms looking to facilitate the energy system transition and to improve outcomes for consumers. Market-wide HHS has an important role to play as an enabler for flexibility and facilitator of new and innovative business models. HHS will enable innovation and flexibility in the energy services that network companies deliver. A significant peak demand shift across the electricity system, enable by innovation resulting from HHS, would reduce the investment that network companies would need to make through the RIIO-2 price controls.

¹⁰⁵https://www.ofgem.gov.uk/system/files/docs/2018/02/market_wide_hhs_strategic_outline_case_february_2018.pdf

Appendix 2 – Ten recommendations from the UKRN Study

1.13. We summarise below the UKRN study and our initial thoughts on what it means for the RIIO-2 methodology.

Recommendation	Brief description	Initial thoughts
R1	CAPM remains the best available model.	We propose that CAPM is retained as a prominent source of evidence to inform RIIO-2.
R2	CAPM should be estimated using a long horizon (eg ten years).	We propose to use long horizons in terms of: looking at historical data, forecasting the future, and for our assumptions on investment holding periods.
R3	There is a strong case for regulators choosing a measure of inflation for estimating CAPM that is consistent with HM Treasury and implemented by the Bank of England for inflation targeting.	<p>The UKRN report highlights that when we estimate the Total Market Return (TMR) over a long period, we require a reliable measure of inflation to convert nominal returns into 'real' returns. Ideally, this measure of inflation is calculated consistently over the full period of the relevant TMR dataset eg the 116-year period of nominal returns from 1899 to 2016.</p> <p>The Study Group point out that the calculation of RPI inflation has changed over time, without being back-cast for changes.¹⁰⁶ To increase accuracy, we should base the conversion of nominal returns into real returns using a consistently calculated measure of inflation. In addition, RPI is not used internationally, and therefore deriving real returns from international datasets or comparing real returns internationally would be more complicated in RPI terms. Thus, the Study Group recommend using a consistent measure of inflation for calculating CAPM and, in particular, using a measure of inflation that is chosen by HM Treasury and implemented by the Bank of England for inflation targeting</p>

¹⁰⁶ We have also recognised this point in the past. For example, during the RIIO-ED1 review we adjusted the cost of equity downwards by 0.4% because of a change to data collection methods for clothing items.

		<p>(currently the Consumer Prices Index).¹⁰⁷</p> <p>While we agree that in principle it may be desirable to harmonise the use of inflation measures in the way suggested, we are not currently convinced that this recommendation needs to be incorporated directly into the RIIO-2 methodology at this time.</p> <p>For example, if we attempt to estimate TMR using a measure of inflation that has been calculated consistently, we would also require a method of converting government gilts into the same measure of real returns. However, there is no guarantee that government gilts are issued under the same measure, and indeed, UK government gilts are currently issued in RPI terms.¹⁰⁸ Therefore, we could attempt to remove one estimation issue within CAPM (for the TMR) but simultaneously introduce another (for the risk-free rate). Indeed, there is a potential to introduce a larger estimation error than we solve.</p> <p>However, we will continue to monitor this as the government may not always issue debt in RPI terms. We are currently considering inflation issues as part of this RIIO-2 Framework consultation.</p>
R4	Regulators should use the yield on inflation-indexed gilts to estimate the risk-free rate at their chosen horizon.	We propose to incorporate market rates within our CAPM estimation and to avoid 'aiming up' on the risk-free rate, or other individual CAPM parameters as a means of dealing with estimation or forecasting error.

¹⁰⁷ Note that the Study Group do not explicitly recommend RAV indexation in CPI terms. We also note that they see merit in postponing any decision to change index until there is clarification on whether the measure of prices used for inflation targeting by the Bank of England will be changed. The Study Group also point out that using CPI would be more consistent with both forward looking (given the Bank of England's stabilising remit) and backward looking records of market returns.

¹⁰⁸ In addition, we met with the Debt Management Office who confirmed that there is a greater demand for RPI gilts from investors. We take this as evidence that there is currently a better price for these investments than those based on a different inflation measure.

R5	Regulators should continue to base their estimate of the TMR on long-run averages, taking into account both UK and international evidence.	The UKRN Report identifies a range for TMR of approximately 5% - 6% on an RPI basis. ¹⁰⁹ We propose this range should inform our CAPM estimation alongside consideration of contemporary measures.
R6	Regulators should make more use of robust econometric estimates of equity beta.	The UKRN Report recommends we undertake more work in this area and we propose to do this to inform RIIO-2 in due course.
R7	Regulators should exercise care in allowing for the impact of leverage in deriving asset beta and in 're-gearing' equity betas.	We propose to do more work in this area to understand how we should exercise this care for RIIO-2.
R8	Regulators should adjust cost of debt estimates downwards to account for default risk	<p>The UKRN Report recommends that we should make a downwards adjustment to the observed costs of corporate debt to account for the fact that these costs will include a cost of default. Some of the authors recommend that the allowance for debt should only reflect the <u>return</u> that the debt investor expects to receive. This will be less than the <u>cost</u> that the network company pays for its debt because debt investors will include a premium for default. The report proposes that this adjustment would be less than ten basis points for an A-rated ten-year bond.</p> <p>While we agree with this point, in principle, we currently have a number of reservations. Firstly, our financeability duty is generally interpreted as referring to efficient debt costs (for licensees) even if 'expected returns' (to investors) are less. Secondly, given the special</p>

¹⁰⁹ See Appendix E of the report where the authors present a range in CPI terms of between 6-7%. If we are assuming a forward-looking differential between RPI and CPI of 1%, this results in a re-stated range of 5-6% on a real RPI basis.

		administration regime in place for network companies, we believe the default risk and cost is likely to be quite small. ¹¹⁰
R9	The term 'cost of debt' should be clearly distinguished from the allowed return on embedded debt.	We propose to be clear about the distinctions we make regarding embedded debt.
R10	The term 'WACC' should be restricted to the concept of an expected market return on capital for a given degree of systematic risk.	We propose to carry out further work to understand how best to measure reasonable expectations of outperformance and to use the term Baseline Allowed Return instead of WACC.

¹¹⁰ We caveat this point somewhat because we recognise that the RIIO-1 policy for setting the allowance for debt is partly based on costs for unregulated companies. These unregulated companies would have higher default costs and risks than the RIIO-2 companies. Therefore, we will be mindful of this point while reviewing our approach to the allowance for debt: default risk may be an explanatory factor regarding the ability of network companies to issue debt at a lower cost than the benchmark indices.

Appendix 3 – Consultation questions

Chapter 3 - Giving consumers a stronger voice

Q1. How can we enhance these models and strengthen the role of stakeholders in providing input and challenge to company plans?

- What are your views on the proposal to have Open Hearings on areas of contention that have been identified by the groups?

Chapter 4 - Responding to how networks are used

Length of price control

Q2. Do you agree with our preferred position to set the price control for a five-year period, but with the flexibility to set some allowances over a longer period, if companies can present a compelling justification, such as on innovation or efficiency grounds?

- What type of cost categories should be set over a longer period?
- How could we mitigate the potential disruption this might cause to the rest of the framework?
- What additional measures might be required to support longer-term thinking among network companies?
- Do you instead support the option of retaining eight-year price controls with a more extensive Mid-Period Review (MPR)?
- What impact might the alternative option of an eight-year price control with a more extensive MPR have on how network companies plan and operate their businesses?

Whole system outcomes

Q3. In what ways can the price control framework be an effective enabler or barrier to the delivery of whole system outcomes?

- If there are barriers, how do you think these can be removed?
- What elements of the price control should we prioritise to enable whole system outcomes?

Q4. Do you agree with our minded-to position to retain the current start dates for the electricity transmission and electricity distribution price controls, and not align them?

Q5. In defining the term 'whole system', what should we focus on for the RIIO-2 period, and what other areas should we consider in the longer-term?

- Are there any implementation limits to this definition?

System Operator price controls

Q6. Do you agree with our view that National Grid's electricity SO price control should be separated from its TO price control?

Q7. Do you agree that we should be considering alternative remuneration models for the electricity SO?

→ If so, do you have any proposals for the types of models we should be considering?

Q8. Should we consider alternative remuneration models for the gas SO?

→ If so, why and what models?

Network utilisation, stranding and investment risk

Q9. What options, within the price control, should be considered further to help protect consumers against having to pay for costly assets that may not be needed in the future due to changing demand or technology, while ensuring companies meet the reasonable demands for network capacity in a changing energy system?

End-use energy efficiency

Q10. In light of future challenges such as the decarbonisation of heat, what should be the role of network companies, including SOs, in encouraging a reduction in energy use by consumers in order to reduce future investment in energy networks?

→ What could the potential scale of this impact be?

Chapter 5 - Driving innovation and efficiency

Innovation

Q11. Do you agree with our proposal to retain dedicated innovation funding, limited to innovation projects which might not otherwise be delivered under the core RIIO-2 framework?

Q12. Do you agree with our three broad areas of reform: i) increased alignment of funds to support critical issues associated with the energy transition challenges ii) greater coordination with wider public sector innovation funding and support and iii) increased third party engagement (including potentially exploring direct access to RIIO innovation funding)?

Q13. What are the key issues we will need to consider in exploring these options for reform at the sector-specific methodology stage, including:

(i) What the critical issues may be in each sector and how we can mitigate the bias towards certain types of innovation through focusing on these issues?

(ii) How we can better coordinate any dedicated RIIO innovation funding with wider public sector funding and support (including Ofgem initiatives such as the Innovation Link and the Regulatory Sandbox)?

(iii) How we can enable increased third-party engagement and what could be the potential additional benefits and challenges of providing direct access to third parties in light of the future sources of transformative and disruptive innovation?

Q14. What form could the innovation funding take.

→ What would be the advantages and disadvantages of various approaches?

Q15. How can we further encourage the transition of innovation to BAU in the RIIO-2 period? How can we develop our approach to the monitoring and reporting of benefits arising from innovation?

Competition

Q16. Do you agree with our proposal to extend the role of competition across the sectors (electricity and gas, transmission and distribution)?

→ What are the trade-offs that will need to be considered in designing the most efficient competitions?

Q17. Do you consider there are any reasons why our new, separable and high value criteria might not be applicable across all four sectors?

→ If so, what alternative criteria might be suitable?

Q18. What could the potential models be for early stage competitions (for design or technical solutions)?

→ What are the key challenges in the implementation of such models, and how might we overcome them?

Chapter 6 - Simplifying the price controls

Our approach to setting outputs

Q19. What views do you have on our proposed approach to specifying outputs and setting incentives?

→ When might relative or absolute targets for output delivery incentives be appropriate?

→ What impact would automatically resetting targets for output delivery incentives during a price control have? Which outputs might best suit this approach?

Our approach to setting cost allowances

Q20. What views do you have on our general approach to setting cost allowances?

Q21. What views do you have on our intention to index RPEs?

Q22. What impact would resetting cost allowances based on actual cost performance (eg benchmarked to the average, upper quartile or best performer) during a price control have? Which cost categories might best suit this approach?

Information-revealing devices

Q23. Do you agree with our assessment of IQI?

Q24. Do you agree with our assessment of fast-tracking?

Q25. What are your views on the options we have described?

➔ How might these apply in the different sectors?

➔ Should we retain the IQI, amend it or replace it entirely?

Q26. What factors should we take into account when assessing plans for example, under fast-tracking (option 2) or a single business plan incentive (option 3)?

Q27. Do you have any views on the factors we should take into account when deciding how to differentiate efficiency incentives for companies if we do not use the IQI?

Q28. Is an explicit upfront financial reward required to incentivise companies to submit high quality business plans, in addition to differential incentive rates or sharing factors?

Q29. Do you have any views on our proposal to remove fast-tracking for transmission?

Q30. Do you have any views on how we propose to incentivise better business plans from transmission companies, including removing the prospect of an upfront financial or procedural reward and placing greater reliance on user and consumer engagement and scrutiny?

Annual reports/reporting

Q31. How can we best improve the suite of annual reporting requirements to be as efficient and useful as possible?

Q32. How can we make the annual reports easier for stakeholders to understand and more meaningful to use?

Chapter 7 – Fair returns and financeability

Cost of debt

Q33. What are your views on the policy objectives that we have defined with respect to the cost of debt?

Q34. Which option might help to ensure that the approach to updating the cost of debt methodology delivers best value to consumers and why?

Cost of equity

Q35. Do you agree with our proposed methodology to estimate the cost of equity?

Q36. Do you agree it would be desirable to index the cost of equity?

→ Do you have views on our proposal for indexation?

Financeability

Q37. Do you consider there is merit in removing the indexation of the RAV and adopting a nominal return model in RIIO-2?

→ What would be the benefits and drawbacks?

Q38. Should the onus for ensuring financeability lie with the network operating companies in whole, or in part?

Q39. Do you consider the introduction of a revenue floor, to protect the ability of companies to service debt, to have merit?

Corporation tax

Q40. Do you agree that Ofgem should review the causes of any variances between tax allowances and taxes actually paid to HMRC (including the treatment of group tax relief)?

→ Which of the options described in this consultation may be worth investigating further to address any material variances?

Other finance issues

Q41. Do you agree that we should move away from RPI for RIIO-2 (including for the indexation of the RAV if retained as a feature)?

→ If yes, which of the two potential indices – CPI or CPIH – might be most suitable?

→ Is a phased transition between RPI and the chosen successor index necessary or desirable?

Q42. In the light of our proposal not to amend, at a price control framework level, our policies for depreciation and asset lives set in RIIO-1 do you have any views or suggestions that you wish to put forward?

Q43. We propose to review the fast/slow money split at the business plan submission stage, do you have views that you wish to put forward at this stage?

Q44. Do you think existing mechanisms for providing allowed revenue to compensate for the raising of notional equity are appropriate in principle and in practice?

Ensuring fair returns

Q45. What are your views on each of the options to ensure fair returns we have described in this consultation?

Q46. Is RoRE a suitable metric to base return adjustments on?

→ Are there other metrics that we should consider, and if so why?

Chapter 8 – Next Steps

Q47. Do you have any views on the interlinkages and interactions outlined in this consultation and those that we will need to consider as we develop our sector-specific proposals?

Q48. Do you have any views on the issues highlighted that we will consider as we develop our sector-specific proposals?

Q49. Are there any sector-specific issues or policy areas that we should ensure we review and consider as we develop our sector-specific proposals?

Q50. Do you have any views on our high-level proposals for timing of RIIO-2 implementation, and on our proposals for engagement going forward?

Appendix 4 – 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.

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)

An independent public body which 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).

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 DNOs in GB which are currently 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 runs from 2010 to 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 2015 to 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 co-variance, 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).¹¹¹

¹¹¹https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/576367/Smart_Flexibility_Energy_-_Call_for_Evidence1.pdf

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 currently four GDNs in GB, 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

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, NGGT 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.

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.

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.

Interconnector

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

Intermittent generation

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

L

Licence conditions

A condition 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 and falling into one of six categories: customer satisfaction, reliability and availability, safety, conditions for connection, environmental impact and social obligations.

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.

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 GPCR1. It runs from 2013 to 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 2013 to 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' per cent 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 that are impacted by the activities of the network company and also include future consumers. 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 actors 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.

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.

Note - in this document we are seeking views on how to define the term 'whole system' see chapter 4.

Appendix 5 – 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
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 6 - Licensees subject to RIIO Price Controls

Electricity Distribution Licence Holders	Electricity Transmission Licence Holders	Gas Transporters Licence Holders
<u>UK Power Networks (UKPN)</u> 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
<u>Northern Powergrid (NPg)</u> Northern Powergrid (Northeast) Limited (NPgN) Northern Powergrid (Yorkshire) Plc (NPgY)	Scottish Hydro Electric Transmission Plc (SHETL)	National Grid Gas Plc (NGGT)
<u>Scottish and Southern Energy Power Distribution (SSEPD)</u> Scottish Hydro Electric Power Distribution Plc (SSEH) Southern Electricity Power Distribution Plc (SSES)	SP Transmission Plc (SPT)	Northern Gas Networks Ltd (NGN)
<u>Scottish Power Energy Networks (SPEN)</u> SP Distribution Plc (SPD) SP Manweb Plc (SPMW)		<u>SGN</u> Scotland Gas Networks Plc Southern Gas Networks Plc
<u>Western Power Distribution (WPD)</u> 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)		

Appendix 7 – Feedback on this consultation

We want to hear from anyone interested in this document. Please email responses to RIIO2@ofgem.gov.uk. The closing date for responses is 2 May 2018.

We've asked for your feedback in each of the questions throughout it. Please respond to each one as fully as you can.

You can ask us to keep your response confidential, by clearly marking it confidential and providing reasons, and we'll respect this, subject to obligations to disclose information such as the Freedom of Information Act 2000 or the Environmental Information Regulations 2004. However, we would like to publish as much of your response as we can. To help achieve this goal we would appreciate it if you could provide confidential material in a separate appendix to your main response. This should also be clearly marked as confidential with reasons provided. Unless you mark your response confidential we'll publish it on our website, www.ofgem.gov.uk, and put it in our library.

If the information you give in your response contains personal data under the Data Protection Act 1998, the Gas and Electricity Markets Authority will be the data controller. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000.

General feedback

We believe that consultation is at the heart of good policy development. We are keen to hear your comments about how we've conducted this consultation. We'd also like to get your answers to these questions:

1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?

Please send your comments to stakeholders@ofgem.gov.uk