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RIIO|ED1

Guide to the RIIO-ED1 electricity distribution price control

GUIDE

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Overview:

This is a guide to the RIIO-ED1 price control review.

RIIO is Ofgem's framework for setting price controls for the monopoly network companies. In the RIIO-ED1 review we set the revenues the companies who run the distribution (lower voltage) networks can earn between April 2015 and March 2023. This document provides background to the sector, explanations of policies, and how the price control will be implemented and monitored over the RIIO-ED1 period.

This is a summary of policies, decisions and legislation. It is not a legally binding document. Any decision or legal requirement should be referenced from its original source.

Associated documents

Strategy Decision for RIIO-ED1 – Overview
https://www.ofgem.gov.uk/publications-and-updates/strategy-decision-riio-ed1-overview

Final determinations for the slow-track DNOs – Overview
https://www.ofgem.gov.uk/ofgem-publications/92249/riio-ed1finaldeterminationoverview-updatedfrontcover.pdf

Decision to fast-track Western Power Distribution
https://www.ofgem.gov.uk/ofgem-publications/86375/fast-trackdecisionletter.pdf

Assessment of RIIO-ED1 business plans and fast-tracking
https://www.ofgem.gov.uk/ofgem-publications/84600/assessmentofriio-ed1businessplansletter.pdf

Timing of decision on DNOs' revenue for 2015-16
https://www.ofgem.gov.uk/ofgem-publications/86768/ed1revenuechangedecision.pdf

Decision on our methodology for assessing the equity market return for the purpose of setting RIIO-ED1 price controls
https://www.ofgem.gov.uk/publications-and-updates/decision-our-methodology-assessing-equity-market-return-purpose-setting-riio-ed1-price-controls

RIIO-ED1 guidance documents
https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-guidance-documents

Handbook for implementing the RIIO model
https://www.ofgem.gov.uk/sites/default/files/docs/2010/10/riio_handbook_0.pdf

Contents

Executive Summary

In November 2014 we published the final determinations for the RIIO-ED1 price control review. This was the culmination of a three-year review process. It set the revenues that the operators of the 14 electricity distribution networks could earn over the next eight years.

RIIO-ED1 was the first time that we had used the RIIO framework in electricity distribution. We were able to learn from the RIIO-T1 and GD1 reviews we had run in the transmission and gas distribution sectors two years earlier.

In the review we determined the efficient amounts the companies needed to operate their networks, and what they needed to deliver in return. These outputs include levels of network reliability, customer service, environmental impact, conditions for new connections and assistance for vulnerable customers.

The amounts the companies can earn are recalculated annually to adjust for amounts the companies are allowed recover but which couldn't be included in the original assessment. The recalculation also includes any incentive rewards or penalties that the companies have earned.

Both we and the companies will report annually on their performance.

This document gives an overview of all the RIIO-ED1 components. It is a summary, meaning that any decision or legal requirement should be referenced from the original source.

1. Introduction

Why did we produce this document?

1.1. This guide is intended to give stakeholders a better understanding of how RIIO-ED1 works in practice. It brings together and summarises the decisions and explanations we outlined in our strategy decision and draft and final determinations. It is not a legally binding document.

1.2. RIIO-ED1 applies to the 14 distribution network operators (DNOs) in Great Britain. We provide more information on the electricity distribution sector in chapter 2.

The RIIO-ED1 review

1.3. The distribution networks need to be safe and reliable and able to meet the country's environmental challenges. The DNOs need to show consumers that they are getting value for money and that network charges are minimised.

1.4. The RIIO-ED1 electricity distribution price control review was the first review in electricity distribution to use our new RIIO model (Revenue = Incentives + Innovation + Outputs). The RIIO model gives companies strong incentives to meet sustainable energy challenges at lower cost. It puts sustainability alongside consumers at the heart of what network companies do. It provides a transparent and predictable framework that rewards timely delivery.

1.5. RIIO-ED1 replaced the previous price control, called distribution price control review 5 (DPCR5). DPCR5 ended on 31 March 2015. The RIIO-ED1 price control review set revenues the DNOs are allowed to earn and the outputs they have to deliver from 1 April 2015 to 31 March 2023.

Process

1.6. The RIIO model encourages network companies to develop and justify a long-term strategy for delivering network services to their customers. They present this in a business plan for the price control period. Their plans should reflect comprehensive stakeholder engagement.

1.7. In March 2013 we published our strategy decision[1] on the key elements of the regulatory framework for RIIO-ED1. This included the outputs the DNOs need to deliver, the incentive framework and financial parameters. The strategy decision provided the basis for the DNOs to develop their business plans.

1.8. The DNOs submitted their business plans in July 2013 and published them on their websites.

[1] See https://www.ofgem.gov.uk/ofgem-publications/47067/riioed1decoverview.pdf

1.9. Under RIIO, where a DNO submits a realistic and well-justified business plan that clearly provides value to consumers, we may apply lighter touch regulatory scrutiny to elements of the plan. If the plan is sufficiently high quality and provides good value overall, we consider it for fast-tracking. This means we accept the business plan as submitted and conclude the company's price control review early.

1.10. The possibility of being fast-tracked inspired the DNOs. However, after assessing the plans in the round, only WPD's cleared our high hurdle. The other DNOs' plans were strong in some areas but all could be improved.

1.11. The remaining 10 DNOs submitted revised business plans in March 2014. Whereas in the first round we assessed whether the plans in their entirety were acceptable, in the second assessment we were looking at individual components. Where we judged something not to be good value for consumers we proposed an alternative. In July 2014 we consulted on our assessment in our draft determinations. After considering the consultation feedback, we published our final determinations in November 2014.

1.12. The outcome of the price control review is implemented in the DNOs' licences (see paragraph 3.22 onwards). We published WPD's modified licence in May 2014 and the slow-track DNOs' licence modifications in February 2015. All modifications came into effect at the start of the RIIO-ED1 price control period.

1.13. Two companies, British Gas (a supplier) and Northern Powergrid (NPg, a DNO), appealed the slow-track licence modifications to the Competition and Markets Authority (CMA). The CMA published its decision in September 2015. It upheld part of one of BGT's six grounds, and one NPg's three grounds. The BGT decision (on how we had calculated the Information Quality Incentive) applied to all the slow-track DNOs. The NPg decision (on our calculation of the financial savings the DNOs might be able to make from using smart grids tools and techniques) only applied to NPg's two licensees. We included the relevant financial adjustments as part of the 2015 annual iteration process.[2]

1.14. Information on the appeals can be found on the CMA's website.[3] The decisions do not affect the explanations in this document.

1.15. Appendix 2 shows the final DNO allowances and revenues, and how they changed from final determinations.

Stakeholders

1.16. The RIIO-ED1 review affected a wide range of parties. Under RIIO, stakeholders have greater opportunity to influence our decisions and those of

[2] The annual iteration process is explained in chapter 16.
[3] Information on the British Gas appeal is here: https://www.gov.uk/cma-cases/energy-price-control-appeal-british-gas-trading and information on the Norther Powergrid appeal is here: https://www.gov.uk/cma-cases/energy-price-control-appeal-northern-powergrid.

network companies. We expect DNOs to engage with consumers on an ongoing basis. We also worked with stakeholders through a variety of forums – depending on the issues that mattered to each stakeholder group. Both the companies' approach to engagement and our own are discussed below.

Company-led engagement

1.17. We assessed the quality of DNO engagement with their stakeholders, and how this was reflected in the business plans. It was not a 'box-ticking' exercise but was about the DNOs' understanding and, where appropriate, acting on the information that they gathered. DNOs were required to reflect the full range of stakeholder views and show how they balanced contradictory opinions.

1.18. We expect the DNOs to engage with their consumers and wider stakeholders through the period. The quality of their stakeholder engagement is assessed annually as part of the Broad Measure of Customer Service (BMCS) (see chapter 8).

Ofgem-led engagement

1.19. The objectives of our stakeholder engagement for RIIO-ED1 were to:

- ensure that stakeholders were familiar with policy developments so that they could contribute to the review process
- ensure that their views were reflected.

1.20. We used a multi-layered approach to ensure that all affected parties had appropriate opportunities to engage.[4]

1.21. We were also advised by a Consumer Challenge Group (CCG). This was a small group of consumer experts which acted as a critical friend in ensuring that we fully considered the views of consumers in the review.

[4] More information on the various elements is available on our website:
consultation documents: https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model/riio-ed1-price-control
PCRF: https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model/riio-forums-seminars-and-working-groups/price-control-review-forum-riio-ed1
working groups: https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model/riio-forums-seminars-and-working-groups/riio-ed1-working-groups
CCG: https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model/riio-forums-seminars-and-working-groups/consumer-challenge-group

2. Electricity distribution

2.1. Electricity distribution networks carry electricity from the high voltage transmission network to industrial, commercial and domestic users. Some generators (generally smaller scale) are connected directly to the distribution network. Distribution networks are natural monopolies and are owned and operated by private sector companies. As illustrated in figure 2.1 there are 14 DNOs owned by six companies.

2.2. There are also several independent distribution network operators (IDNOs). IDNOs own and operate smaller networks located within the areas covered by the DNOs. IDNO networks are mainly extensions to the DNO networks serving new housing and commercial developments.

How we regulate the network companies

2.3. We regulate the revenues that DNOs can recover from consumers and incentivise them to innovate and improve their efficiency and quality of service. The DNOs' duties and obligations are defined in their licences and legislation. DNOs are expected to deliver a safe and reliable supply and to respond effectively to requests for new connections, complaints and queries.

2.4. The DNOs charge for use of the network (ie electricity flowing through the network) and the cost of connecting new users. They have a common methodology to calculate charges for different types of customers. These are not part of the price control. They are governed by the industry Distribution Connection and Use of System Agreement.[5] The aim is that the different charges reflect the costs of meeting those customers' needs.

2.5. DNOs do not charge customers directly for using the network. They charge suppliers who in turn include the distribution charges in customers' energy bills.[6] Due to the differences in distribution networks across the country, charges in different areas can vary significantly.[7]

2.6. In 2015 distribution costs accounted for about 8% of a typical annual dual fuel bill, or 18% of an electricity bill. This is roughly £100 for a typical household.

2.7. We regulate the amounts that IDNOs can charge their customers by using what is termed a relative price control. This caps IDNO charges at a level broadly similar to the DNO equivalent charge. This means that we do not have a RIIO price control for the IDNOs.

[5] https://www.ofgem.gov.uk/electricity/distribution-networks/charging-arrangements

[6] Our website has more information on charging at https://www.ofgem.gov.uk/electricity/distribution-networks/charging-arrangements

[7] https://www.ofgem.gov.uk/sites/default/files/docs/2015/10/reg_charges_final_master_version_23_october_2015.pdf

Figure 2.1: DNO location and ownership

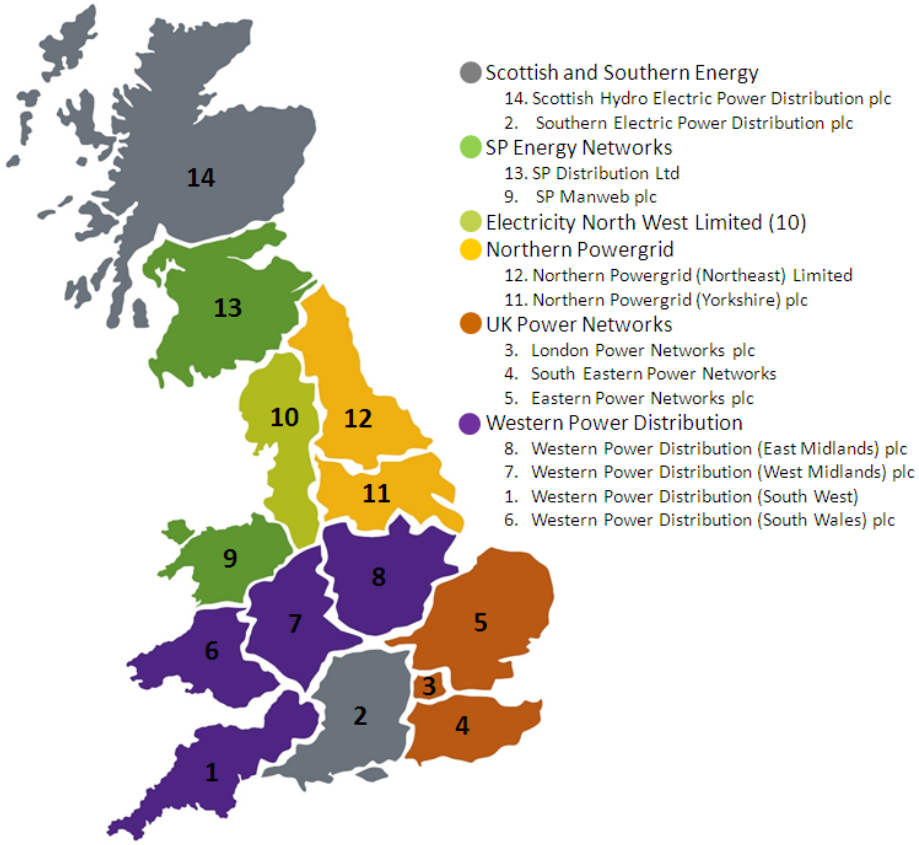


Table 2.1: DNO ownership and acronyms

DNO Group		DNO	
ENWL	Electricity North West Ltd	ENWL	Electricity North West Limited
NPg	Northern Powergrid	NPgN	Northern Powergrid: Northeast
		NPgY	Northern Powergrid: Yorkshire
WPD	Western Power Distribution	WMID	Western Power Distribution: West Midlands
		EMID	Western Power Distribution: East Midlands
		SWALES	Western Power Distribution: South Wales
		SWEST	Western Power Distribution: South West
UKPN	UK Power Networks	LPN	UK Power Networks: London Power Networks
		SPN	UK Power Networks: South East Power Networks
		EPN	UK Power Networks: Eastern Power Networks
SPEN	SPEN Energy Networks	SPD	SPEN Energy Networks: Distribution
		SPMW	SPEN Energy Networks: Manweb
SSEPD	Scottish and Southern Energy Power Distribution	SSEH	Scottish and Southern Energy Power Distribution: Scottish Hydro Electric Power Distribution
		SSES	Scottish and Southern Energy Power Distribution: Southern Electric Power Distribution

3. What is a price control?

Components of a price control

3.1. Since the DNOs are natural monopolies we regulate how much they can earn, using price controls. We do this by setting the maximum revenue a DNO can collect from customers. This is called a revenue cap.

3.2. At fixed periods we conduct a price control review to set the revenues for the DNOs over the next period. This is a form of ex ante regulation,[8] and means that the DNOs have clearly defined objectives for the price control period.

3.3. Historically price control periods lasted for five years. Under RIIO, price controls last eight years – in RIIO-ED1 we set allowed revenues for the period from 1 April 2015 to 31 March 2023.

3.4. The DNO's allowed revenue comprises:

- base revenue - the core amount of money that a network company can earn on its regulated business in order to recover the efficient costs of carrying out its activities (the includes the amount it has to fund, or is allowed to keep, for any over- or under-spend against its allowance).
- mechanisms for funding elements we could not set upfront (uncertainty mechanisms – see chapter 15) and
- incentive rewards or penalties for over- or under- delivery of the outputs it must deliver.

3.5. The majority of the DNOs' allowed revenue is fixed upfront. We publish how we will calculate or determine the remainder in the licence or associated documents.

3.6. RIIO is an incentive based model. This means that companies get rewards or penalties for over- or under-delivering the defined outputs. They are also allowed to keep a proportion of any savings they make over the period. This efficiency incentive encourages them to reduce their costs. We consider these new costs when setting the allowed revenues for the next period.[9]

3.7. RIIO has six groups of outputs which customers want network companies to deliver. These cover safety, reliability, environmental impact, customer service, connections service and social considerations. We ensure the companies deliver

[8] In contrast, ex post regulation covers a range of approaches in which no firm price control is specified upfront and reliance is placed instead on other rules or mechanisms to constrain the prices and behaviour of network companies, with regulatory intervention if there is a breach.
[9] Further information on the development of the RIIO framework is available on our website at https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model/background-%E2%80%93-rpi-x20-review. Further information on the development of RIIO-ED1 is available on our website at https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model/riio-ed1-price-control.

these elements using a range of licence requirements and financial and non-financial incentives. Some of these will be in this price control period while others will be covered by adjustments to the next price control. We discuss outputs further in chapters 5 to 10.

3.8. In a review we set price control revenues on a real basis. For RIIO-ED1 we set revenues in 2012-13 prices. The allowed revenues are updated annually in line with the Retail Prices Index (RPI).

3.9. The DNOs' allowed revenues are updated annually in two ways. First, the licence contains a formula that calculates the annual allowed revenue – including any incentive rewards or penalties, inflation adjustment and changes arising from certain uncertainty mechanisms. Second, there is an annual iteration process (explained in chapter 16) where we determine a modified base revenue using the price control financial model (PCFM). There is more information on the PCFM later in this chapter.

Scope of the price control

3.10. Allowed revenues are the revenues DNOs are allowed to collect from all customers via distribution use of system (DUoS) charges. They do not cover directly remunerated services or ancillary revenues.

3.11. DNOs are allowed to charge the customer directly for services that are specific to that customer (for example, a new connection). These services are called directly remunerated services.[10] They are not covered by the price control but the licence includes rules about how the charges must be calculated. The DNOs are allowed to earn a margin on certain services. It is not possible to separate all the costs of directly remunerated services from those in the price control. We therefore have mechanisms to make sure directly remunerated services are not subsidised by DUoS customers.

3.12. Directly remunerated services and ancillary revenues are explained in chapter 12.

What is base revenue?

3.13. Base revenue is the revenue a DNO requires to cover the cost (including financing costs) of delivering its outputs. It includes allowances for the maintenance of, and investment in, capital assets and taxation.

3.14. Base revenue can be described in three categories:

- an allowance for some DNO costs which is set at the time of the price control review. These costs are called totex (see next section and also chapter 12)

[10] These were called excluded services in previous price controls.

- an allowance for depreciation and a fair return which reflects past funding of assets from investors in the network company (see chapter 13)
- tax (which is calculated each year, depending on the DNOs' performance and circumstances) – see chapter 13.

3.15. We also include an allowance for certain other DNO costs which are not fixed up front. This is provisionally based on forecasts and the amounts are updated during the price control period with the actual costs in the annual iteration process (see chapter 16). These costs include some uncertainty mechanisms (chapter 15), historical pension liabilities and legacy items. We include provisional amounts for these items to reduce the volatility of the allowed revenues and DUoS that could result from the annual updates.

Totex

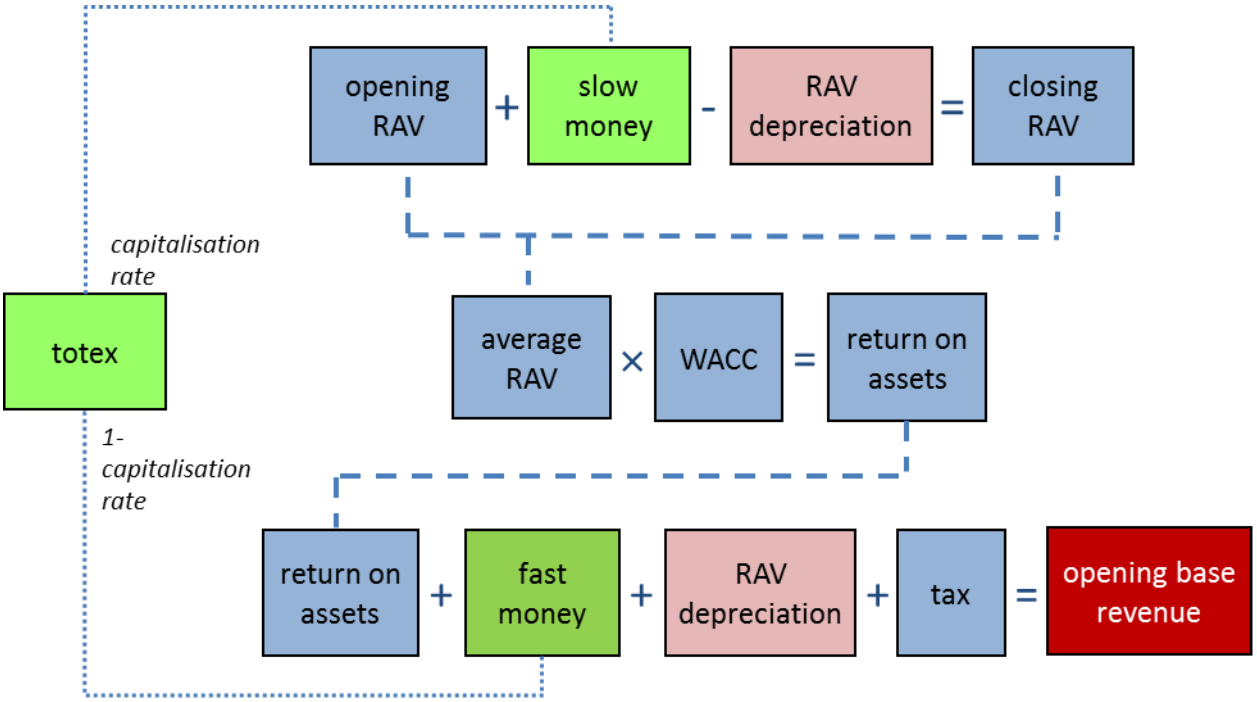
3.16. Totex is short for total expenditure. It is a concept used in the RIIO framework to avoid debate about what is capital expenditure (capex) and what is operating expenditure (opex). Totex is made up of fast money and slow money. Fast money is funded in the year incurred. It is equivalent to opex. Slow money is added to the regulatory asset value (RAV) and is funded over time through allowances for depreciation and return on capital.[11] Slow money is equivalent to capex.

3.17. Historically companies have preferred capex solutions, as the cost was capitalised and increased the RAV. Under the totex approach, when companies spend money on a solution, the same percentage is capitalised irrespective of whether that solution involves opex or capex. This means that the companies are more likely to use the overall cost-effective solution. For example, the totex approach might encourage the companies to use maintenance to avoid replacing an asset, or use demand-side management to avoid installing new capacity. We divide totex into fast money and slow money using the totex capitalisation rate. The capitalisation rate is a percentage, and is fixed for each DNO for the total RIIO-ED1 period.[12]

3.18. Figure 3.2 shows how we calculate base revenues from totex at the start of the price control.

[11] In previous price controls the RAV was depreciated over 20 years. In RIIO-ED1 we have changed this to 45 years for new assets – with a transition from 20 to 45 years over the RIIO-ED1 period. Existing assets are still depreciated over 20 years.
[12] One DNO, SSES, has a capitalisation rate which changes during RIIO-ED1. This is to ensure that the effect of including certain costs for the energy supply on Shetland, which had previously been funded as fast-money only, in totex is neutral.

Figure 3.2: Components of opening base revenue



Volatility and predictability of charges

3.19. Unpredictable changes in network charges may result in higher bills for energy customers. Suppliers have told us that when offering fixed price contracts to customers they include a risk premium to cover the risk associated with unexpected changes in network charges. This can also affect suppliers' cash-flow, the cost of entry to the supply market, and administration costs such as the frequency of bill changes. Customers on flexible price contracts value stability in network charges.

3.20. One potential driver is volatility in DNOs' allowed revenues. We designed RIIO-ED1 to improve the predictability of charges resulting from the price control settlement.[13] RIIO-ED1 incentives operate with a two-year lag so that performance in one year will be reported in the next, and the reward or penalty will feed into allowed revenues (and therefore charges) the year after. Revenues from uncertainty mechanisms are treated in the same way. This gives everyone advance notice of likely changes.

3.21. We also took account of the potential step change in allowed revenues, and therefore charges, from one price control period to the next. Given that we published final determinations in November 2014, if revenues for 2015-16 had been set on that basis, suppliers would not have had much notice to price the resulting network charges into the contracts that they offer electricity consumers.

[13] Decision on measures to mitigate network charging volatility arising from the price control settlement; 17/10/2012 available at http://www.ofgem.gov.uk/Networks/Policy/Documents1/CV_Decision.pdf

3.22. We therefore set 2015-16 revenues for the DNOs remaining in the process based on the draft determinations we published in July 2014. We included the revenue differences for 2015-16 between draft and final determinations in the base revenues for the remaining years of RIIO-ED1.

3.23. The DNOs proposed profiles for the revenues over the period. Most requested a flat profile, or a steady increase. When applying the differences above, we used the DNO's requested profile for the remaining years.

The price control in the licence

3.24. Conditions in the DNOs' licences implement the outcome of the price control review.[14] There are two types of licence condition in electricity distribution licences: standard licence conditions and charge restriction (or special) conditions. We have included a list of all the licence conditions in appendix 3.

Standard licence conditions (SLCs)

3.25. SLCs set out duties and obligations for all holders of an electricity distribution licence. They are grouped into two sections. Section A applies to all electricity distributors (ie DNOs and IDNOs). Section B applies only to DNOs. SLCs do not cover the DNOs' allowed revenue – this is done through the charge restriction conditions.

Charge restriction conditions (CRCs)

3.26. CRCs apply specifically to each licensee (ie each DNO has its own set). However, many conditions are identical across the DNOs. Broadly, CRCs place obligations on companies that affect their allowed revenue.

3.27. The CRCs include both fixed values (such as opening base revenues) and formulas for calculating financial values during the period (such as incentive rewards or penalties).

ED1 Price Control Financial Model and Handbook

3.28. We calculate updated base revenues for the DNOs annually (in the annual iteration process). This enables us to include automatic adjustments and to reflect where a company has over or under-spent its allowance. As part of this we recalculate the RAV and tax. It would be too complicated to include a formula for this in the licence. Instead, the licence gives legal standing (equivalent to a licence condition) to the PCFM and Price Control Financial Handbook. The PCFM models the companies' base revenues, and the Handbook governs how the updated revenues are calculated and implemented. We explain the PCFM, Handbook and annual iteration process in more detail in chapter 16.

[14] These can be found on our website: https://www.ofgem.gov.uk/licences-codes-and-standards/licences/licence-conditions

Associated documents

3.29. The licence also refers to a number of associated documents. These provide instructions and guidance for reporting, or for participating in the RIIO-ED1 schemes. These include the network innovation competition, the losses discretionary reward and the stakeholder engagement incentive. Our website has links to the latest versions of all the guidance documents: https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-guidance-documents.

4. Key challenges for RIIO-ED1

4.1. We developed the RIIO-ED1 framework thinking about the challenges DNOs face over the RIIO-ED1 period and beyond. In particular, ensuring that the networks can connect and manage the new low carbon technologies and generation required for Great Britain to meet its carbon targets, while maintaining network reliability and keeping prices affordable.

Managing the transition to a low carbon energy sector

4.2. One of the key issues for RIIO-ED1 is way the transition to a low carbon future will impact the networks. DNOs will need to allow potentially large volumes of local generation (such as solar and wind) and low carbon demand (such as electric vehicles and heat pumps) to connect efficiently and quickly. Distribution networks were not designed for these types of load, and accommodating them could be a big driver of future investment. Adding to the challenge is the uncertainty around the take-up of these technologies, in terms of timing, volume and location as well as what impact they will have on the network.

4.3. The DNOs need to connect customers without delays or service disruptions, while avoiding investing in assets that may be redundant (connections are discussed in chapter 9). Similarly they need to deal with increasing loads from electric vehicles and heat pumps without overloading the network (causing interruptions) and without increasing network capacity unnecessarily or at high cost. This may require a move away from traditional investment to newer, more flexible solutions offered by smart grid technologies and different contractual arrangements with demand and generation customers.

4.4. We have a three-fold role in ensuring the DNOs address these challenges.

1. Helping industry and stakeholders understand DNOs' role, and regulatory and policy implications.
2. Facilitating an industry-wide understanding of the costs and benefits of smart grid solutions, potential barriers to their implementation and how to resolve them.
3. Creating a package of outputs, incentives and financing for RIIO-ED1 that encourages DNOs to accommodate these new loads efficiently.

The role of DNOs

4.5. Many DNOs and stakeholders have raised questions about what networks will need to look like in the future, the potential structure of the industry and the impact of this on the regulatory framework for RIIO-ED1. Some of the changes to how networks need to be designed and managed are well understood. These changes fit with the current framework, and already underway in RIIO-ED1. Others are less certain or longer term. These require further thinking and potentially changes to the regulatory and commercial framework. For example, there are questions around the extent to which, and how, DNOs could contribute to an efficient electricity system with a more active role in managing supply and

demand on their networks. DNOs might equally need to change the way in which they interact with the overall system operator, National Grid.

4.6. Other questions include how the use of flexible resources, such as demand side response (DSR) or storage, by different parties, can be combined to deliver an efficient system. Different entities (eg suppliers, transmission operators, DNOs and the system operator) may all want to use flexibility resources for different purposes at different, or even the same time. It is important that the value of flexibility is maximised across the entire value chain.

4.7. Work by the Smart Grids Forum (SGF)[15] concluded that the regulatory framework does not prevent commercial arrangements in the market. This includes DNOs using third parties to help provide services such as storage. Our work on flexibility is looking at what more needs to be done to support efficient use of flexible resources across the system. This includes consideration of the legal and commercial status of storage, and the future roles of DNOs. We also continue to look at options for the development of smart grids, particularly in terms of customer engagement. This engagement could take a number of different forms, ranging from customers being able to respond to price signals to a more automated response.

Smart grid solutions

4.8. Smart grid technology and contractual arrangements with customers and generators may offer DNOs a more cost effective way of removing constraints on the network than investing in more assets. They may also provide the DNOs with more flexibility, especially where they are unsure of longer term demand.

4.9. As part of the SGF, DECC created four scenarios on the potential take-up of low carbon technologies. All scenarios met the 2030 4th Carbon Budget[16] but assumed different volumes of electric heat and transport and carbon credits. They indicated that, other than solar PV, the take-up of technologies is unlikely to be significant until the second half of RIIO-ED1. However, the take-up will vary geographically, and DNOs translated the scenarios for their areas.

4.10. The SGF also looked at possible benefits from rolling out smart grids solutions en masse (ie through a coordinated top-down approach). Cost benefit assessments and the uncertainty around low carbon technology take-up indicated that a more incremental approach to smart grids is appropriate during RIIO-ED1.

RIIO-ED1 package

4.11. The RIIO-ED1 package of outputs and incentives should drive DNOs to respond to changes in how energy is generated and used while still meeting the needs of customers. For example:

[15] A forum of knowledgeable stakeholders, including industry, consultants and academics. It is co-chaired by Ofgem and the Department of Energy and Climate Change (DECC).
[16] http://www.decc.gov.uk/en/content/cms/emissions/carbon_budgets/carbon_budgets.aspx

4.12. The interruptions incentive scheme (IIS) encourages companies to anticipate the increased loads from low carbon technologies, so that they do not overload the network assets and cause interruptions (see chapter 11).

4.13. The efficiency incentive (see chapter 12) ensures that the DNOs do not over-invest to avoid interruptions. It incentivises the companies to look for the most cost efficient solution, which will drive the DNOs to adopt smart solutions, including DSR, in many cases.

4.14. The package of connections incentives (time to connect incentive, customer satisfaction and connection engagement) encourages the DNOs to consider the needs of customers connecting low carbon technologies and distributed generation (DG). These are described in chapter 9.

4.15. The innovation stimulus package to encourage the DNOs to try new operational, technical, commercial ad contractual arrangements in their business (explained in chapter 14).

4.16. Uncertainty mechanisms (re-openers) will help to manage the uncertainty over the timing and take up of low carbon technologies. If load related expenditure is 20% higher or lower than set in the price control, we or the DNOs can trigger a reassessment (see chapter 15).

4.17. We asked DNOs to show how they have considered using smart grid solutions as part of their core business in their business plans. While they included some savings in their plans we concluded that they had not fully considered all the benefits. Therefore some DNOs have additional savings included in their settlements. This will give them a strong incentive to use smart grid solutions and ensure that customers get full value from their investment in the innovation trials.

Smart meters

4.18. The majority of the government's mandated installation of smart meters in domestic and small non-domestic premises will take place well before the end of RIIO-ED1. DNOs need to realise the benefits of these meters – such as providing better interruption and usage data - to operate their networks more efficiently.

4.19. The DNOs will need to address privacy concerns to access some of the smart meter data. They will need the individual customer's consent or demonstrate they have alternative arrangements to protect the data from being associated with an individual household.

4.20. The DNOs will face costs from both the smart meter roll-out and the use of the data. We have provided funding, where appropriate, for these costs.

4.21. DNOs will pay a fixed cost to access smart meter data (a licence fee) and variable costs per transaction. We assumed that the benefits to the DNOs of using the data will cover the variable costs. We are allowing the DNOs to reclaim ("pass through") the fixed costs up to the end of 2019. While some of the benefits will start coming through during the roll-out period, we expect that DNOs will be able

to realise the full benefits from this data by 2019. Beyond this point, DNOs have to fund the fixed costs from the benefits realised. Our assessment of the level of savings which DNOs can deliver through smart grids took account of the fixed and variable data costs required to deliver those savings.

Assessing DNO progress in adopting smart grid solutions

4.22. As part of their annual environmental reports (see chapter 7), DNOs will report on the smart grid solutions they have deployed and the savings they have delivered for customers. These reports will be published and will allow stakeholders and us to assess DNOs' progress against the smart grid savings in their settlements. This will also provide us with evidence for assessing the potential level of smart grid savings achievable in RIIO-ED2.

4.23. The evidence in the environmental report will also help us assess how DNOs are learning from the smart grid trials funded through the LCN Fund and its successor, the electricity Network Innovation Competition (NIC). As we explain in chapter 14, we plan to review the level of funding available to DNOs under the NIC in 2016. If DNOs do not demonstrate clear evidence of how emerging learning will be used there may be a strong case for removing, or reducing, NIC funding for DNOs post 2016. We will also consider whether DNOs should have to demonstrate how they are deploying smart grids solutions in their business as part of the NIC qualification.

Smart grids - charging

4.24. The use of low carbon technologies can have a significant impact on the local network. In theory DNOs should charge the customers who cause the need to increase the capacity of the network. However, the DNOs are often unable to identify these customers at the domestic level. In the RIIO-ED1 strategy decision, we said if more network capacity is needed for increases in load or generation from existing domestic customers that it should be funded through DUoS charges.

4.25. In March 2015 we approved modifications to the DNO's common charging methodology implement this decision.[17]

4.26. We recognise that our decision, to effectively socialise reinforcement costs, may insulate existing domestic and small business customers from the financial consequences of their actions. Ideally, a charging framework would actively encourage customers to properly manage their demand. However, we can see no practical alternative to our decision until sufficient smart metering data is available. This should enable DNOs to identify existing customers who caused the need to increase network capacity and incentivise them to manage their consumption at peak times. We will then be able to revise our policy.

[17] https://www.ofgem.gov.uk/publications-and-updates/distribution-connection-and-use-system-agreement-dcusa-dcp205-and-dcp205a-recovery-costs-due-load-and-generation-increases-existing-customers-riio-ed1

Strategic investment

4.27. Strategic investment occurs when a DNO expands the network in anticipation of the needs of customers who may connect to the network. There is an issue over who should bear the risk (and cost) of the assets if this demand does not appear.

4.28. We allowed DNOs to submit cases for strategic investment in their business plans, on a project by project basis which appropriately shared this risk between themselves, connecting customers and DUoS customers. UKPN demonstrated in its business plans that a strategic approach to a number of investment schemes in London would deliver benefits to DUoS customers.

4.29. We have seen dramatic growth in the number of distributed generation installations seeking a connection. This growth is fast consuming spare capacity on parts of the network and this is driving up connection costs and timescales in these areas. Sometimes customers can move to other locations where there is more capacity. We encourage this as it means the network is being used more efficiently, which reduces costs for us all. But sometimes, when large parts of a network are full, a DNO has to take action.

4.30. In our work on quicker, more efficient connections[18] we are trying to find out how we can help DNOs strike the right balance between helping future customers get connected and the risk of building infrastructure this is not fully used. In the first instance this should be through getting more out of the capacity that already exists. Various innovation trials that we've supported are demonstrating that smart solutions do exist and can be made to work – these need to become business as usual.

4.31. Sometimes new network infrastructure is required. In our quicker, more efficient connections work we are working with stakeholders to find ways of enabling more 'low regret' investment in anticipation of new connections.

Distributed generation

4.32. During the RIIO-ED1 price control period we will probably see more (largely renewable) generation needing to connect to the distribution network. As customers of the DNOs, DG developers should get good service and pay for the least amount of work that's required to connect them.

4.33. The RIIO-ED1 package incentivises good customer service and efficient investment which will provide low cost connections and reduce network charges. This package should enable DNOs to respond appropriately to demands from DG customers, in terms of volume of connections, the associated cost, and service requirements. We also believe that this will encourage DNOs to find innovative alternatives to connect customers without installing more network capacity.

[18] https://www.ofgem.gov.uk/publications-and-updates/quicker-and-more-efficient-connections-next-steps-0

Customers

4.34. One of customers' primary concerns is the reliability of their electricity supply. DNOs will continue to face strong incentives to manage interruptions. As we explain in chapter 11, we have reduced the time a customer is off supply before they get a payment from 18 hours to 12. From the start of the price control, these payments will increase in line with inflation and be available to all customers in all areas. DNOs will make this payment automatically to vulnerable customers on the Priority Service Register (PSR). For interruptions caused by severe weather, we increased the amount of the payment. We also kept the mechanism that encourages DNOs to address those customers deemed most affected by poor network reliability (called "worst served" customers).

4.35. Most customers do not have direct contact with the DNO. Under RIIO-ED1 DNOs must take a more active approach with their customers. This includes identifying vulnerable customers and providing them with more help when a power cut occurs or enabling other parties to provide assistance when customers are struggling with issues, such as fuel poverty, that are beyond the immediate gift of the DNO to control.

4.36. The Broad Measure of Customer Satisfaction (BMCS) (described in chapter 8) encourages improvements in all aspects of DNOs' customer-facing performance. This includes the service they provide to customers, how effectively they manage complaints and how they engage with stakeholders.

4.37. The DNOs have a key role in identifying fuel poor and vulnerable customers, and working with others to deliver solutions. We recognise that to fully realise their role DNOs will need to undertake a major cultural and behavioural shift. The stakeholder element of the BMCS allows us to specifically assess and reward the steps DNOs take in response to social challenges. We describe this further in chapter 10.

5. Ensuring output delivery

Introduction

5.1. Under the RIIO model, we committed to providing clear and comprehensive outputs that the network companies must deliver. These outputs, and the incentives to encourage the companies to deliver them, should ensure that the companies provide value for money for current and future consumers while helping to develop a sustainable energy sector.

5.2. The RIIO framework has six primary output categories. Against the categories, the behaviours we want to encourage for RIIO-ED1 are:

- Safety: ensuring the provision of a safe network in compliance with Health and Safety Executive (HSE) safety standards.
- Environment: encouraging companies to play their role in achieving broader environmental objectives, namely the reduction in carbon emissions, as well as minimising the narrow environmental impact of the company's activities by managing their own carbon footprint, visual amenity and pollution.
- Customer satisfaction: maintaining high-levels of customer satisfaction and improving service where required. Undertaking effective stakeholder engagement and reflecting stakeholders' views in the day-to-day operation of their business.
- Connections: connecting customers in a timely and efficient way, including responding to different customers' specific needs, while enabling competition.
- Social obligations: taking a strategic approach and adopting a coordinating and partnership role with other networks, suppliers and agencies so data and knowledge is used more effectively to help vulnerable consumers.
- Reliability and availability: providing long-term reliability, minimising the number and duration of interruptions and ensuring adaptation to climate change.

5.3. The outputs framework comprises both primary outputs and secondary deliverables. Primary outputs make a material contribution to the outcomes we are seeking. Secondary deliverables enable us to monitor companies' performance and are leading indicators to ensure long-term delivery and value for money.

5.4. Each primary output category is discussed further in following chapters.

Targets

5.5. For many of the outputs we have set levels (or targets) that the companies need to deliver. We set these based on the costs and benefits to consumers.

Incentive mechanisms

5.6. For each output category, we considered a range of incentive mechanisms to encourage DNOs to deliver the primary outputs and secondary deliverables in

ways which provide value for money to current and future consumers. These incentives include financial rewards and penalties and reputational incentives. We wanted to create a streamlined and balanced package of outputs and incentives which are clear to DNOs. The total incentive package should ensure that those DNOs delivering for consumers earn an attractive rate of return, whereas those that demonstrably not doing so will earn low returns.

5.7. The incentive design is specific to the output. This includes whether there is the same upside as downside, and how we have calculated the value of the reward or penalty. If a DNO earns a reward, it increases the amount of revenue it is allowed to raise from customers, and increases the amount the DNO is allowed to keep. Conversely a penalty means it earns less money.

5.8. We have not included financial incentive mechanisms for all output measures. An example is safety, where DNOs need to comply with legal obligations If they fail they are subject to Health and Safety Executive (HSE) enforcement action.

5.9. We have designed the incentives taking into account the status of competition. This is particularly relevant for connections, where independent providers can provide connections services as well as DNOs. Where effective competition exists we have made sure the DNOs do not have incentives that are not available to these independent providers.

5.10. The DNOs are incentivised to deliver the outputs at efficient cost. The price control settlement is based on our assessment of efficient costs for the companies. The efficiency incentive provides an ongoing incentive for them to seek out lower cost solutions and manage the cost of output delivery. (The efficiency incentive is described in more detail in chapter 12). We expect that in many cases innovation, including using smart grids techniques (such as demand side response), should enable DNOs to deliver outputs at lower costs than conventional solutions.

Caps and collars

5.11. For some outputs and incentives we have set upper and/or lower limits on the revenue adjustment. These limits are dependent on:

- the extent to which we think consumers should pay for more or less of an output compared to what was assumed when the price control was set
- the extent to which there is useful information on the outputs' value to consumers
- the robustness of the information that is available - both to set targets and measure performance against them.

5.12. Where we use caps and collars we designed them to limit the risk of creating perverse incentives and aimed to make them as simple as possible.

5.13. We set caps and collars as fixed £m, derived from a consistent potential DNO shareholder return from the incentive (the return on regulatory equity, RORE).

Recovery of incentive rewards or penalties

5.14. In the RIIO-ED1 review we recognised the concerns of some stakeholders about the volatility of network charges and the lack of advance warning (see paragraphs 3.18 to 3.12). Therefore incentives are funded with a two-year lag so that performance in one year will be reported in the next, and the reward or penalty will feed into allowed revenues (and therefore charges) the year after. Uncertainty mechanisms, such as volume drivers and pass-through items are funded in the same way

6. Safety

6.1. The DNOs must operate safe networks. The Electricity Safety, Quality and Continuity Regulations, 2002 require the DNOs to (among other things) ensure their equipment is safe and protected, and that the public are aware of any dangers. The DNOs are also subject to general health and safety legislation.

6.2. These are enforced and regulated by the Health and Safety Executive (HSE).[19]

6.3. Therefore, in the RIIO framework, the primary output for health and safety is compliance with the relevant legislation. There is no financial incentive as we do not want to duplicate the HSE's functions.

6.4. We have secondary deliverables on asset health, criticality and composite risk which also include elements of safety performance. (These are described further in chapter 11). These ensure that the DNOs do not take decisions in RIIO-ED1 that risk their compliance with safety requirements in the future.

6.5. Parts of the distribution networks are controlled by switching points called link boxes. Link box safety has become a high profile issue following a small number of incidents involving explosions under pavements, mostly in the UKPN area. UKPN requested additional funding for an extensive inspection and replacement program for RIIO-ED1. We recognised that this is an important and high profile safety issue, but believed that there was not enough robust evidence to set a credible funding plan for an eight-year period. We decided to give UKPN an allowance for the first two years of RIIO-ED1 and to work with the DNOs and the HSE to monitor progress in developing cost effective ways of dealing with the problem. We will review UKPN's costs and DNO proposals to resolve the issue in a re-opener in 2017 (re-openers and other uncertainty mechanisms are explained in chapter 15).

[19] The HSE's Electricity sector strategy 2012-15 is available at http://www.hse.gov.uk/aboutus/strategiesandplans/sector-strategies/electricity.htm

7. Environmental impacts

Relevant licence conditions:

Standard condition 47. Environmental Reporting
Standard condition 49. Electricity Distribution Losses Management Obligation and Distribution Losses Strategy

Special condition CRC 2G. The Losses Discretionary Reward
Special condition CRC 3J. Allowed expenditure on Visual Amenity Projects

7.1. Under the RIIO framework we require companies to reduce the environmental impact of their business (the narrow environmental objective) as well as contribute to meeting the country's environmental targets (the broader environmental objectives).

7.2. In RIIO-ED1 the narrow environmental objective includes managing or reducing:

- electricity losses on the distribution network
- electricity theft
- the business carbon footprint (BCF)
- sulphur hexafluoride (SF_6) emissions
- leakages from fluid filled cables and
- equipment noise

7.3. We give the companies an allowance to bury cables in areas of outstanding natural beauty,[20] national parks,[21] and national scenic areas.[22] We also require them to produce an environmental report on all their activities.

Electricity losses on the distribution network

7.4. When electricity is transported through wires some is lost. Since electricity is mainly generated using fossil fuels, reducing this electricity lost will reduce greenhouse gas (GHG) emissions. Losses are the largest component of a DNO's carbon footprint.

7.5. DNOs do not pay for lost electricity, as the cost is borne by customers. DNOs therefore have no inherent incentive to manage losses efficiently. We believe that a strong incentive is required to ensure that DNOs focus on reducing losses. We recognise there can be a trade-off between cost efficiency and loss reduction. For example a highly utilised line loses more electricity than multiple lightly loaded lines – but costs less to install and operate. We need to ensure that the companies understand and evaluate these trade-offs in their decision making.

[20] http://www.landscapesforlife.org.uk/
[21] http://www.nationalparks.gov.uk/
[22] http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/nsa/

7.6. Currently we cannot accurately measure network losses. Losses are calculated as the difference between volume of electricity entering the network and the volume of electricity leaving it. Until smart meters are rolled out, we cannot objectively measure the electricity leaving the distribution network.

7.7. Historically we incentivised DNOs to reduce losses against a target. Unfortunately there were major problems with the data and we had to remove the mechanism for DPCR5.

7.8. In RIIO-ED1 we have a losses reduction mechanism consisting of four components: licence obligation, losses strategies, annual reporting and discretionary reward. These components will combine to provide a strong incentive for DNOs to manage losses efficiently.

Licence obligation

7.9. We have an included an obligation in the DNOs' licence requiring them to design, build and operate their networks to ensure that losses are as low as reasonably practicable. This sits alongside the DNOs' overarching obligation to develop and maintain an efficient, co-ordinated and economical distribution system. We will enforce these conditions in the same way as for any other breach of licence.

7.10. Where a DNO has the right to recover the value of any electricity theft, the licence requires it to try to recover that value as long as the costs of doing so are not likely to exceed the sums recovered.

Losses strategies

7.11. Each DNO must have a losses strategy. It must keep an up-to-date version on its website, identifying any changes from the previous version and the reasons for them.

7.12. The strategy should explain the DNO's overall approach to managing losses. It should also identify specific projects or actions, with timescales, deliverables, costs and benefits. Actions should be justified with the associated benefits (eg carbon abatement) using a "whole life costing" approach and cost benefit analysis (CBA). We expect the DNOs' actions to consist of more than just complying with the EU eco design directive requiring the use of "low loss" transformers.[23]

7.13. DNOs' strategies should demonstrate they understand best practice, as well as how they propose share it across the industry. We plan to introduce a losses incentive for RIIO-ED2 and we expect the DNOs to include proposals for establishing a reliable losses baseline during RIIO-ED1. They should consider how power system modelling, innovative approaches, sharing of best practice and shared initiatives could help.

[23] http://ec.europa.eu/growth/industry/sustainability/ecodesign/index_en.htm

Annual reporting

7.14. We require DNOs to report annually on their activities to reduce losses during the year. This includes annual and cumulative improvements and actions planned for the following year, accompanied by cost benefit analysis.

Losses discretionary reward

7.15. RIIO-ED1 includes a discretionary reward for loss reduction activities. This is for actions in addition to those in the DNOs' strategies. Up to £8m will be awarded in 2016-17, £10m in 2018-19 and £14m in 2020-21. The DNOs receiving awards will be able to recover them in allowed revenues in the following year.

7.16. The criteria for the awards are included in the Losses Discretionary Reward Guidance Document.[24]

Electricity theft

7.17. Electricity theft is dealt with under various mechanisms, depending on the circumstances. We expect DNOs to at least maintain their current levels of support for suppliers in identifying and resolving theft. They should also take all reasonable cost-effective steps to resolve any cases of electricity theft from their distribution systems.

7.18. The core elements of the approach are listed below.

- Where possible the link between the supplier and the customer should be maintained. DNOs are required to tackle theft where a supplier is not responsible.
- DNOs are required to act where someone makes an illegal connection, restores a disconnected supply, or where a supply has never been registered.
- Where DNOs have the right to recover the value of electricity taken, they must take reasonable steps to do so without incurring disproportionate costs. They must also seek to recover the associated costs and share any funds recovered with customers.
- DNOs must regularly report on their actions to deal with electricity theft and publish information on these actions.
- Suppliers' licences have been amended to strengthen their obligation to investigate, detect and prevent electricity theft.
- Electricity suppliers have also been directed to implement, by February 2016, a central service to assess the risk of electricity theft at consumer premises. This will help target theft investigations.

[24] https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-guidance-documents

Business carbon footprint

7.19. The DNOs are incentivised to manage the emissions (total CO_2 equivalent, kgC02e) from their operations. The BCF mechanism is a reputational scheme based on a league table of each DNO's annual BCF reduction against a baseline.

7.20. DNOs report their BCF under the GHG protocols framework.[25] They report on all Scope 1 and Scope 2 emissions on an operational control basis. This means the DNO has to report all emissions from those operations where it has authority to implement its operating policy. They also report on a subset of Scope 3 emissions (ie business travel and external contractors) to ensure that the reporting captures all the emissions arising from their distribution system, regardless of the legal entity carrying out each activity. They should use the World Business Council for Sustainable Development and the World Resources Institute GHG protocol Scope 3 guidelines.[26]

7.21. The DNOs are required to clearly identify any specific assumptions and deviations from the protocols in their reports. We have improved the instructions in the Regulatory Instructions and Guidance (RIGs) so that the DNOs make the same assumptions and categorise emissions in the same way.

7.22. The league table includes details of actions taken by DNOs to reduce their emissions. The DNOs can apply for their baseline to be reset once during the eight year RIIO-ED1 period.

Sulphur hexafluoride

7.23. DNOs use SF_6 gas as an insulator in switchgear. It is a greenhouse gas, meaning they report SF_6 emissions as part of the BCF. However, due to its potency, we also require DNOs to report on SF_6 separately. In RIIO-ED1 the DNOs have to include forecasts and explanations in the RIGs. This will help us understand how much SF_6 is in use, the level of emissions and changes over time.

Fluid filled cables

7.24. Some underground cables are fluid (oil) filled. There is a risk that these cables will leak, and oil will get into groundwater sources. This risk is reducing as more eco-friendly insulating materials are now used.

7.25. The DNOs and the Environment Agency have an operating code which guides the DNOs' management of the impact of fluid filled cables on the environment. It includes a risk based approach to strategic replacement and aims to benchmark current environmental performance and sets improvement targets and milestones. We concluded that for RIIO-ED1, this would drive the right behaviour, and that no further incentive was required.

[25] http://www.ghgprotocol.org/about-ghgp
[26] http://www.ghgprotocol.org/standards/scope-3-standard

7.26. The DNOs have to report annually on fluid filled cables in the RIGs.

Noise reduction

7.27. DNOs are sometimes asked to address public concerns regarding noise generated by their assets. We require the DNOs to report the cases where they have acted after requests from the public.

Undergrounding

7.28. The electricity network is mainly overhead cables, which are very visible and can be intrusive in the landscape. The objective of the undergrounding scheme is to ensure the DNOs protect the landscape (called visual amenity) in certain designated areas. It is a non-mandatory scheme that funds the DNOs to bury overhead lines in areas of outstanding natural beauty, national parks and national scenic areas in Scotland. This includes any areas that are designated during the RIIO-ED1 period.[27]

7.29. The scheme is based on stakeholders proposing projects for undergrounding to the DNOs. We expect the DNOs to have appropriate mechanisms and policies for engaging with their undergrounding stakeholders and for assessing and ranking the proposals.

7.30. The scheme does not cover a DNO's entire undergrounding programme. The DNO (or a customer) may choose to underground lines for other reasons and fund this from alternative sources. We encourage parties to cooperate to seek alternative funding for projects outside the scheme.

Undergrounding allowance

7.31. Table 7.1 shows the undergrounding allowance by DNO. This is based on the total length of overhead lines in the qualifying areas, the number of customers in the DNO's region and customers' willingness to pay for undergrounding.

Table 7.1: Undergrounding allowance by DNO

DNO	Number of customers	Total km of overhead lines in designated areas	Allowance £m
ENWL	2,364,446	3,217.0	9.0
NPgN	1,581,420	3,611.8	7.9
NPgY	2,266,464	1,007.9	6.0
WMID	2,462,123	3,947.2	10.2
EMID	2,623,103	662.3	6.3
SWALES	1,103,465	2,329.3	5.3

[27] The scheme ensures DNOs protect visual amenity in line with statutory obligations including Electricity Act 1989 Schedule 9; National Parks and Access to Countryside Act 1949 (as amended by Environment Act 1995); Countryside and Rights of Way Act 2000.

DNO	Number of customers	Total km of overhead lines in designated areas	Allowance £m
SWEST	1,551,046	6,409.9	11.4
SPN	2,247,823	4,567.3	10.5
EPN	3,537,357	1,853.6	9.7
SPD	1,994,241	427.5	4.7
SPMW	1,487,412	3,449.3	7.5
SSEH	745,907	3,122.2	5.5
SSES	2,952,565	2,737.7	9.6
Total	**29,184,812**	**39,355.0**	**103.6**

NB Since LPN's network is mainly underground it is not eligible for the scheme

7.32. While the funding for undergrounding is capped for the eight year RIIO-ED1 period, there are no rules on when DNOs should spend the allowance, or if it is all spent. We encourage stakeholders to let us know if they think a DNO is not properly using its allowance or is not adequately engaging with them.

7.33. Each DNO is allowed to use up to 10% of its undergrounding allowance for work that may lie just outside the boundary of a designated area. This is to encourage flexibility and cooperation with the scheme.

Implementation

7.34. We expect DNOs to develop policies for assessing potential undergrounding projects and to make these policies available to stakeholders. We expect them to engage with, and support relevant stakeholders as necessary. We also expect DNOs to continue to work together and share best practice.

7.35. DNOs will report their progress on undergrounding in the environment report (see below) which DNOs will publish annually on their websites. We will monitor their progress.

Environment report

7.36. We have introduced a reputational environment reporting requirement (standard condition 47 of the DNOs' licence). The environment report should be a transparent and public account of DNOs' commitment to address environmental matters and the DNOs' role in the low carbon transition. It reports on all the elements in this chapter, plus the DNO's work on smart grids, innovation and facilitating the low carbon transition.[28]

7.37. The report should provide a holistic overview of environmental activities, a clear rationale for actions and details of actual benefits to customers. It should explain each DNO's approach and progress towards the integration of activities into everyday business.

[28] The environmental report guidance is here: https://www.ofgem.gov.uk/sites/default/files/docs/notice_-_environment_report_guidance_2.pdf

8. Customer service

Relevant licence conditions:

Special condition CRC 2C. Broad Measure of Customer Service.

8.1. For most customers, a good service from the DNO means receiving a safe and reliable electricity supply. Other customers however, have (or require) a more significant interaction with the DNO, meaning specific incentives are needed.

8.2. Our customer incentives aim ensure that customers that require a new connection, seek information from the network in the event of an interruption or make a general enquiry get good customer service. DNOs should also deal with complaints quickly and effectively. Finally, we want the DNOs to engage with a wide range of stakeholders and use the information and insight gained to shape how they run their business.

8.3. The Broad Measure of Customer Service (BMCS) has three components: (i) a customer satisfaction survey (ii) a complaints metric and (iii) a reward based on an assessment of each DNO's stakeholder engagement and consumer vulnerability activities.

8.4. The BMCS was introduced in DPCR5. For RIIO-ED1 we increased the total maximum reward or penalty from +/- 1% in DPCR5 to +/- 1.5% of base revenues in RIIO-ED1.[29] This is to ensure that DNOs are sufficiently incentivised to improve performance in activities involving customer contact over a longer-term price control period. In particular, this will provide a stronger incentive to improve the service provided to connections customers. It also means DNOs have a stronger incentive to engage with stakeholders, with a specific focus on their role in addressing consumer vulnerability.

8.5. Table 8.1 below sets out the different elements of the BMCS and the level of financial exposure that will be associated with DNO performance.

Table 8.1: Broad Measure of Customer Service

BMCS incentive		**maximum reward/penalty (% of annual base revenue)[30]**
customer satisfaction survey	connections	+0.5/-0.5
	interruptions	+0.3/-0.3
	general enquiries	+0.2/-0.2
complaints metric		0/-0.5

[29] This is set as a £m figure in each DNOs' licence, calculated from the base revenues and return on equity in their settlement.
[30] As above, set as a £m figure in the licence.

stakeholder engagement and consumer vulnerability incentive	+0.5/0
Maximum penalty/reward exposure	**+1.5/-1.5**

Customer satisfaction survey

8.6. DNOs are required to conduct an annual customer satisfaction survey. The questionnaire format is common across all DNOs and the survey is conducted by the same independent market research company, to ensure consistency.[31] The survey covers three categories of customer:

- connection customers
- customers experiencing an interruption[32]
- customers making a general enquiry.

8.7. All DNOs have the same targets, across all categories of customer. We believe that customers should receive a similar quality of good service, regardless of their location or the type of service provided. The DNOs' targets are based on the customer service achieved across a range of different industries, including retail, banking and other utility services.[33] This means we only reward companies that are considered good when their customer service is compared with other competitive industries. The financial penalty or reward a DNO can receive for its performance in the customer service survey is capped.[34] This means that a DNO's service has to be significantly better or worse than in other industries to receive the full reward or penalty amount.

Table 8.2: Customer satisfaction survey target and maximum reward/penalty scores

maximum penalty score	target	maximum reward score
6.8	8.2	8.9

8.8. During supply interruptions, DNOs receive calls from customers asking when their supply will be restored. During large outages, the number of calls a DNO has to deal with can suddenly increase. Customers that are unable to reach the DNO during these periods (eg calls ended by the DNO or abandoned by the customer in the queue) are not interviewed as part of the customer satisfaction survey because they have not engaged with the DNO. However we think it is important that DNOs answer customer calls quickly and minimise the number of calls that are 'unsuccessful'. In calculating performance under the customer satisfaction survey, we therefore factor in the number of unsuccessful calls from customers experiencing an interruption. For the interruption category of the

[31] The survey asks customers about the service provided and they are asked to score the DNO out of 10. Only the answer to the final question ('overall, how satisfied were you with the service provided') is used to measure performance for the purpose of this incentive.
[32] Historically this only included customers that contacted the DNO by telephone to request information. In RIIO-ED1 it includes customers who have experienced an interruption and received relevant information from the DNO via new communication channels such as email or Twitter.
[33] We used data from the UK Customer Service Index to inform our approach.
[34] The maximum reward or penalty of +/-1% of base revenue.

survey a DNO's overall performance score will deteriorate the more calls it fails to answer.[35]

8.9. The survey of connections customers only includes those that have required a 'minor' (lower voltage, metered demand) connection. Separate incentives apply for the service DNOs give to customers requiring a 'major' (higher voltage metered demand, unmetered, distributed generation) connection. These are not included in the BMCS. This reflects concerns raised about the viability and suitability of a survey, given the small number of these customers and the more complex nature of their relationship with the DNOs. More detail on our approach for these connections customers is provided in chapter 9.

Complaints metric

8.10. The complaints metric measures performance against four key indicators to assess the quality of the DNOs' complaints handling procedures. Performance against each indicator is weighted to calculate an overall complaints metric score (see table 8.3 below).

Table 8.3: Complaints metric indicators and weightings

indicator	weighting
The percentage of total complaints outstanding after one day	10%
The percentage of total complaints outstanding after 31 days	30%
The percentage of total complaints that are repeat complaints	50%
The number of Energy Ombudsman (EO) decisions that go against the DNO as a percentage of the total complaints	10%

8.11. Our approach here is broadly the same as in DPCR5. However, we have changed the methodology used to assess Energy Ombudsman (EO) decisions that go against the DNO; these will now be expressed as a percentage of total complaints (instead of a percentage of EO decisions). This reduces the risk of a DNO facing disproportionately large penalties for a small number of EO decisions. We reduced the weighting on this element from 20% to 10%, and added 10% to the percentage of total complaints outstanding after 31 days. This is an area where we believe DNOs can, and should, improve significantly.

8.12. In a commercial environment companies stand to lose customers and revenue by handling complaints badly but they would not necessarily gain customers and revenue by handling complaints well. The incentive is therefore penalty-only.

8.13. The maximum amount of this penalty is capped. The target is based on the average performing DNO during 2012-13 and the maximum penalty score is based on the worst performing DNO during 2012-13. This approach ensures that

[35] For the interruption element of the customer satisfaction survey, DNOs will be penalised 0.02% of annual base revenue for each 1% of calls to the DNO that are unsuccessful.

DNOs performing below average (at the time the target was set) have a strong incentive to improve.

Table 8.4: Complaint Metric targets and maximum penalty score

target	maximum penalty score
8.33	14.84

Stakeholder engagement and consumer vulnerability incentive

8.14. This incentive encourages DNOs to engage effectively with a wide range of stakeholders and use their insight in planning and running their business. This should help ensure that network companies deliver a consumer focused, socially responsible and sustainable energy service.

8.15. DNOs have to submit a report on their stakeholder engagement and consumer vulnerability activities annually. We assess all reports against a set of minimum criteria to ensure that they are eligible for this scheme. The companies that meet our minimum criteria (ie those that have developed a comprehensive stakeholder engagement strategy, engaged with a broad range of stakeholders and used feedback to inform decision making) are forwarded to an independent expert panel. To help the expert panel assess performance, an independent consultant also undertakes an in-depth assessment of how well the DNOs are addressing consumer vulnerability.

8.16. The independent panel of stakeholder engagement experts assess the companies against a set of predetermined criteria and awards an overall score for each licensee. The financial reward is based on this score. This reward is up to 0.5% of each licensee's allowed base revenue. There is detailed information about how we assess the submissions in the Stakeholder Engagement Incentive Guidance document.[36]

8.17. We increased the value of the stakeholder engagement reward for RIIO-ED1. This was to encourage DNOs to maximise their role in addressing issues relating to consumer vulnerability. Our expectations of the role DNOs should play in addressing consumer vulnerability are outlined in chapter 10.

[36] https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-guidance-documents

9. Conditions for connections

Relevant licence conditions:

Standard condition 15. Standards for the provision of Non-Contestable Connection Services
Standard condition 15A. Connection Policy and Connection Performance
Standard condition 25A. Distributed Generation Connection Guide

Special condition CRC 2C. Broad Measure of Customer Service
Special condition CRC 2E. Incentive on Connections Engagement
Special condition CRC 2F. Time to Connect Incentive
Special condition CRC 2K. Margins on licensee's Connection Activities
Special condition CRC 2F. Revenue adjustment in respect of performance failures
Special condition CRC 5G. Net to gross adjustment for Load Related Expenditure

9.1. Under the Electricity Act 1989, DNOs have to offer a connection to any customer that wants to connect to their network.[37] A customer seeking a connection has to pay towards the cost of the connection. The amount a customer has to pay is calculated using a standard methodology across all DNOs. It depends where the connection is located, and the maximum voltage required. It covers the cost of assets solely for the connectee's use, and a proportion of the cost of reinforcing the network, if needed. (Further information on how to get a connection is available on our website.[38])

9.2. DNOs need to deliver a service that meets the requirements for all connections customers. The type of services a customer requires may depend on the type (or size) of connection they seek and this in turn may affect how performance should be measured and incentivised. For connections at the lower voltages (minor connections) the connections process can be reasonably straightforward. For connections at higher voltages and generation/unmetered connections (major connections) their requirements are often more complex.

9.3. We have a package of incentives to promote improvements in the connections service provided for RIIO-ED1. This package includes:

- the connections component of the customer satisfaction survey (described in chapter 8)
- a Time to Connect incentive
- an Incentive on Connections Engagement (ICE)
- the Connections Guaranteed Standards of Performance
- a licence requirement to provide specified standards of performance for non-contestable activities
- a licence requirement to produce a Long Term Development Statement and a DG Connection Guide
- rules on how customer contributions should be treated in certain cases

[37] except in very limited circumstances
[38] https://www.ofgem.gov.uk/ofgem-publications/89438/ofg538webhowtoleaflet4.pdf

9.4. In RIIO-ED1 we increased the value of the connections incentives to focus DNOs' attention on this area. The connections incentives are summarised in table 9.1.

Table 9.1: Maximum revenue exposure for RIIO-ED1[39]

scope	Incentive/ measure	maximum reward exposure (per cent of base revenue)	maximum penalty exposure (per cent of base revenue)
Minor connections customers	Customer satisfaction survey	+0.5	-0.5
	Time to Connect incentive	+0.4	0
Major connections customers	Incentive on Connection Engagement (ICE)	None	Up to -0.9
	Total Penalties/Rewards	+0.9	-0.5 to -1.4
All connections customers	Guaranteed Standards of Performance (see appendix 1)	None	100 RORE basis points across RIIO-ED1 period

Time to Connect incentive (for minor connections customers)

9.5. This incentivises the DNOs to reduce connection times for minor connections. The time is an annual average across all minor connections. Connection time is measured from the DNO receiving the initial application to them issuing a quotation and the time from the customer accepting the quotation to the connection being completed.

9.6. DNOs are measured against common targets. For the first four years of RIIO-ED1 the target is based on the upper quartile performance across the DNOs (at the time that the target was set). The maximum reward score is based on performance 30% above the industry average (at the time that the target was set). The target and maximum reward score for the first four years of RIIO-ED1 are outlined in table 9.2 below.

Table 9.2: Time to Connect target and maximum reward score

connection process	connection size	target (working days)	maximum reward score (working days)
time to quote	Single service low-voltage connections (LVSSA)	8.21	6.4
	Small project demand connections (low-voltage) (LVSSB)	11.73	10.12
time to connect	LVSSA	42.08	32.47
	LVSSB	52.70	39.91

[39] This is set as a £m figure in each DNOs' licence, calculated from the base revenues and return on equity in their settlement.

9.7. The incentive is reward only to ensure that the overall connections package is balanced. The maximum reward is 0.4% of base revenue per annum, per distribution licensee. The size of reward is smaller than the customer satisfaction survey exposure to ensure that the DNOs are primarily incentivised to meet customers' requirements.

9.8. We will revise the target and maximum reward score for the final four years of RIIO-ED1. We will calculate the new targets and maximum reward score based on DNO performance during the first few years of RIIO-ED1.

Incentive on Connections Engagement (for major connections customers)

9.9. We designed the ICE to ensure DNOs meet the needs of major connections customers (unmetered, generation and higher-voltage connection customers). These customers are listed in the table below:

Table 9.3: Relevant market segments

metered demand connections	Low Voltage (LV) Work: LV connection activities involving only LV work, other than in respect of the Excluded Market Segment
	High Voltage (HV) Work: LV or HV connection activities involving HV work (including where that work is required in respect of connection activities within an Excluded Market Segment).
	HV and Extra High Voltage (EHV) Work: LV or HV connection activities involving EHV work.
	EHV work and above: extra high voltage and 132kV connection activities.
metered DG connections	LV work: low voltage connection activities involving only low voltage work.
	HV and EHV work: any connection activities involving work at HV or above.
unmetered connections	Local Authority (LA) work: new connection activities in respect of LA premises.
	Private finance initiatives (PFI) Work: new connection activities under PFIs.
	Other work: all other non-LA and non-PFI unmetered connections work.

9.10. Under the ICE, each DNO publishes a Looking Forward report at the start of the regulatory year. This report presents the DNO's high-level strategy for engagement, a workplan of activities and key performance outputs for the forthcoming year. At the end of the year the DNOs must publish a Looking Back report which outlines how well they performed against each of the elements in the Looking Forward report.

9.11. The reports have to cover all market segments and all types of customer (eg metered demand, DG, and unmetered).

9.12. At the end of the regulatory year we assess how well each DNO has performed. A DNO will be penalised if it fails to meet minimum requirements for a specific market segment (ie that it has not implemented its engagement strategy,

it has not delivered a comprehensive workplan to meet stakeholder's requirements and it has not met key performance outputs). For more information on our assessment process please refer to the ICE Guidance Document.[40]

9.13. We will continue to engage with stakeholders across the price control period to identify key issues and gather feedback on DNO performance throughout RIIO-ED1. We will use this information to inform our assessment of the DNOs' submissions.

9.14. The ICE is a penalty-only incentive. This reflects the fact that in a competitive environment companies would lose customers if they are unable to meet their needs. A penalty-only regime also ensured that there was no financial incentive for companies to fail the DPCR5 Competition Test process.[41] The maximum penalty under the incentive will be 0.9% of base revenue, per annum, per licensee. The penalty is split equally across all nine Relevant Market Segments (listed in table 9.3). We place equal value on engagement with connection customers in each market segment.

9.15. The penalty does not apply to market segments where we consider there is effective competition (ie where the DNO has passed the Competition Test). The ICE still applies to these segments, but only assesses the DNOs' provision of non-contestable activities and without imposing a financial penalty where we find poor performance.

Connections Guaranteed Standards of Performance

9.16. Statutory regulations[42] set minimum standards of performance for connections. Customers are entitled to claim a fixed payment from the DNO if these standards are not met. The Connections Guaranteed Standards of Performance (GSOPs)[43] cover a range of activities, from the issuing of a budget estimate through to the energisation of a connection.

[40] https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-guidance-documents

[41] At DPCR5 we introduced new regulatory arrangements to further facilitate competition in connections. Previously, DNOs were prevented from earning a margin on their connection activities. In DPCR5 DNOs were required to apply a regulated margin of four per cent on contestable connection services in market segments where competition was considered to be viable. This was intended to create headroom to allow new entrants to compete against the DNO. In addition, DNOs were required to submit Competition Notices demonstrating the extent to which effective competition existed in each market segment. Where we found evidence of effective competition we lifted the price regulation and allowed DNOs to charge an unregulated margin. This was referred as the 'Competition Test'. DNOs had until the end of 2013 to 'pass' this test.

[42] The Electricity (Connection Standards of Performance) Regulations 2015 Statutory Instrument (SI) No. 698 http://www.legislation.gov.uk/en/uksi/2015/698/contents/made

[43] When we refer to the Connections GSOPs we also include DG connection customers that are not within the scope of SI 698, but are within the scope of our DG Standards Direction https://www.ofgem.gov.uk/publications-and-updates/distributed-generation-standards-direction-guidance-document

9.17. The GSOP payment values have been updated to reflect inflation.[44] Payments are rounded to the nearest £5; which is simpler for both customers and DNOs.

9.18. We have summarised the GSOPs in table A1.1 in appendix 1. For the legal requirements, including caveats, exemptions and definitions please refer to the statutory instrument and the DG direction.

Connections-related licence conditions

Non-contestable standards of service

9.19. DNOs have a licence obligation to provide minimum standards of service for non-contestable connection activities (eg responding to connection design submissions or making a connection "live" so that it can receive electricity).[45] If a DNO fails to provide the minimum standard of service on 90 per cent of occasions annually, then that DNO will be in breach of its licence.

Long Term Development Statement and DG Connections Guide

9.20. DNOs have a licence obligation to produce a Long Term Development Statement (LTDS) per licensee area. The statement provides an overview of network data, forecasts and commentary for the local distribution network (at the higher voltages). The LTDS allows existing and potential connection customers to identify and assess opportunities for them to make new or additional use of our distribution system.

9.21. DNOs also have a licence obligation to produce a DG Connections Guide. The DG Connections Guide is a set of documents that provide guidance on the connection process for potential DG customers. We expect this document to be easy to find and easy to read.

Treatment of customer contributions[46]

9.22. Historically, the more costs a DNO recovers via connection charges (over what was forecasted at the time of setting the price control), the better it performs against its allowed revenue, and the more it benefits via the efficiency incentive. At the same time, the current connection charging arrangements prevent DNOs from recovering costs in respect of assets provided in advance of any connection via connection charges. The combination of these two factors may incentivise DNOs to wait for customers to request a connection before undertaking significant reinforcement.

[44] Using the forecast inflation amount to 2018-19.
[45] Standard condition 15. Standards for the provision of Non-Contestable Connection Services
[46] Costs recovered from connecting customers via connection charges.

9.23. At the end of RIIO-ED1 we will true-up the difference between the value of relevant expenditure forecast to be funded by connection customers and the actual amount that is contributed. This means we will either allow the DNO more funding or subtract funding, depending on whether the difference is in its favour or not. The true-up will be carried out across the load-related expenditure as a whole, rather than just the connection cost categories. As a result, DNOs should be financially neutral between recovering costs via connection and DUoS charges. This is called the net to gross adjustment in condition 5G of the licence.

10. Social obligations

Relevant licence conditions:

Standard condition 8. Safety and Security of Supplies Enquiry Service
Standard condition 9. Arrangements for access to premises
Standard condition 10. Special services

Special condition CRC 2C. Broad Measure of Customer Service

10.1. DNOs have an important role to play in helping consumers in vulnerable situations. We describe below the type of activities and behaviours they will need to undertake to fulfil this role. This should be read alongside other measures we are taking to improve current arrangements. For instance, we are introducing arrangements to ensure vulnerable customers automatically receive any payments due under the guaranteed standards for supply interruptions.[47]

10.2. Our Consumer Vulnerability Strategy[48] provides an overarching framework for how we will consider issues affecting vulnerable consumers. Our objective is to take a more sophisticated approach to understanding vulnerability within the energy market. We want to encourage DNOs to maximise their role in understanding, identifying and dealing with consumers in vulnerable situations. There will need to be a major cultural and behavioural shift in DNOs if they are to fulfil this role.

10.3. Specifically we want DNOs to:

- Improve the quality of information they have access to about vulnerable consumers and how it is used so that these consumers get the support and services they require.
- Engage with a wide range of stakeholders such as local authorities, devolved administrations, health providers, suppliers, other energy distributors (both gas and electricity), other utility providers and community groups. This engagement should consider how best to use the information they collectively hold on consumers in vulnerable situations.
- Publicise the benefits that are offered through their Priority Service Register (PSR), ensure that their PSR captures all of the customers that should be included and describe what assistance these customers may receive. This assistance may be provided directly by the DNO or by other agencies.[49]
- Use relationships and build partnerships with other stakeholders to identify and deliver solutions (both energy and non-energy) for affordable energy.
- Embed their strategy for addressing consumer vulnerability in their systems and processes and how they manage customer interactions.

[47] See chapter 4 for further information.
[48] https://www.ofgem.gov.uk/ofgem-publications/75550/consumer-vulnerability-strategy.pdf
[49] DNOs have a licence condition to maintain a PSR. This condition is in place to ensure DNOs identify and provide support to customers that may be especially vulnerable in the event of a supply interruption.

10.4. The stakeholder engagement and consumer vulnerability element of the BMCS will ensure that the DNOs have an incentive to do this (see chapter 8).

Implementation

10.5. DNOs will get a more mature understanding of the broader role they can play in helping vulnerable customers by using consumer data more effectively and by establishing better partnerships with stakeholders. This could include, for example, enabling access to affordable energy.

10.6. This should not result in a DNO assuming responsibility for solving issues that extend beyond the scope of its business. This is about DNOs recognising the potential that is afforded by their function; specifically their ability to interact with consumers, their role in a community, the information they have access to and their scope to form partnerships with others.

10.7. A DNO may provide direct assistance. Alternatively it may signpost to the services provided by third parties or refer customers directly to other agencies.

10.8. In some instances the DNOs' activities may reveal benefits for the broader base of network users. For instance, measures enabling more efficient use of energy for fuel poor households (through alternate heating technologies or in-home measures) might offset the need for wider network reinforcement.

10.9. Alternatively, a DNO may identify off-gas grid fuel poor customers and could help in the delivery of additional assistance. This could involve liaising with a gas network to enable a connection to the gas grid, or helping to identify alternative electric heat technologies or household efficiency improvements and linking in with government schemes or other forms of assistance that could support their delivery.

Framework for funding

10.10. Many of the activities that could help address fuel poverty and consumer vulnerability do not require additional expenditure.

10.11. However, during the course of RIIO-ED1 some DNOs may identify activities with social benefits that also require additional investment. We believe that there are already mechanisms to accommodate this:

- The efficiency incentive[50] drives DNOs to seek out lower cost solutions and manage the cost of output delivery. This should ensure DNOs undertake schemes to work with customers to manage their electricity usage and offset the need for network reinforcement. For example it may drive DNOs to undertake energy efficiency initiatives in local households, rather than reinforce the local network.

[50] The efficiency incentive shares any over- or under-spend against the company's allowed revenues between the company and the customer.

- The Network Innovation Allowance and Network Innovation Competition (see chapter 14) provides funding to trial innovative solutions that may provide broader network benefits (providing the scheme meets the relevant criteria).

Framework for reporting and reward

10.12. DNOs will have to significantly change their approach if they are to deliver a strategy that ensures they play a full role in this area.

10.13. We have increased the maximum level of reward available under the stakeholder engagement and consumer vulnerability element of the BMCS to ensure there is sufficient incentive for DNOs to make this change. This enables us to assess and reward the steps they are taking in response to the above challenges and the impact of their actions.

10.14. As part of the BMCS stakeholder engagement and consumer vulnerability incentive, we will assess how well DNOs are addressing consumer vulnerability issues. Specifically, DNOs will be assessed on their strategic understanding and commitment to the role that network companies can play in tackling consumer vulnerability issues, and how well they embed this in their systems, processes and customer interactions. We will also review their use of data and partnerships to understand and identify effective solutions for vulnerable consumers (in particular those on the DNOs' Priority Service Register). Where we see good practice, we will reward it and ensure it is highlighted to other network companies (both DNOs and gas distribution network operators), and stakeholders more widely.

11. Reliability and availability

Relevant licence conditions:

Standard condition 51. Network Asset Indices Methodology

Special condition CRC 2D. Adjustment of licensee's revenues to reflect interruptions-related quality of service performance
Special condition CRC 3H. Allowed expenditure on improving services to Worst Served Customers
Special condition CRC 5D. Assessment of Network Asset Secondary Deliverables

Introduction

11.1. Customers want a reliable supply. We have a number of measures in RIIO-ED1 to ensure the DNOs achieve this.

- Interruptions incentive scheme (IIS) – DNOs are incentivised on the number and length of their network supply interruptions.
- Guaranteed standards of performance – customers can claim set amounts where a DNO fails to deliver specified minimum levels of performance.
- Allowance for worst served customers – we fund the DNOs to improve the reliability for a subset of customers whose supply is repeatedly interrupted.
- Health and load indices – indicators in the form of secondary deliverables designed to tie price control network investment to reducing in-period risk around asset condition and loading.
- Resilience - the ability of the electricity distribution networks to continue to supply electricity to customers during disruptive events, such as floods or severe storms.

Interruptions incentive scheme

11.2. The IIS comprises:

- targets for the frequency and duration of both planned and unplanned interruptions
- the amount the DNO gets rewarded or penalised if it betters or fails to hit these targets.

Targets

Planned interruptions

11.3. We categorise interruptions as planned or unplanned. DNOs need a certain level of planned interruptions so that they can work on the network. Planned, or pre-arranged, outages are less of an inconvenience to customers as long as DNOs give sufficient notice. We therefore have different incentive mechanisms for planned and unplanned interruptions, with planned interruptions having an incentive rate that is half that of unplanned interruptions.

11.4. DNOs have annual targets for planned outages. These are calculated as the average number of interruptions and minutes lost over the previous three years. There is a two year lag on the years used in setting the target. The target for 2015-16 is the average annual performance over the 2011-12 to 2013-14 period. The three-year average performance rolling target is updated annually. DNOs are rewarded or penalised depending on the difference between their actual performance and the target.

Unplanned interruptions

11.5. Each DNO has separate targets for customer interruptions (CIs) and customer minutes lost (CMLs).

11.6. The targets were calculated by benchmarking across the DNOs and looking at each DNO's historical performance. We set the targets using data up to 2012-13 and applied improvement factors based on industry-wide historical improvements. These improvement factors took account of the gap between the data used and the start of the price control period (2015-16). They also mean that the targets get tighter year by year across the period.

11.7. Some DNOs proposed tougher targets (see below) than those calculated from our methodology. We accepted these proposals, and included improvement factors.

- WPD included tougher targets in its business plan which we evaluated as part of our fast-track assessment.
- SSEPD proposed tougher targets for SSEH to reflect the fact that we included funding to improve the service experience by a group of worst served customers.
- UKPN proposed tougher targets for LPN to reflect the fact that we included funding for its central London strategy.

Excluded items

11.8. The IIS does not include certain items which we deem outside the DNO's control, or not suitable for the scheme. These are exceptional events, cut-out failures and short interruptions.

11.9. It is hard for DNOs to prevent some major interruptions, for example as a result of a severe storm. DNOs can apply to us to have an event classified as a severe weather exceptional event or a one-off exceptional event. These exceptional events are excluded from the DNOs' annual performance figures in order to reduce the volatility and impact of these occurrences on their performance (and future target setting).

11.10. A severe weather exceptional event is where more than eight times the average daily fault rate has occurred within a 24 hour period at higher voltages directly as a result of bad weather. One-off exceptional events have a single cause outside the DNO's control which results in a significant interruption. To be considered a one-off event, it must result in more than 25,000 customers off supply and/or more than two million customer minutes lost.

11.11. We expect the DNOs to be fully prepared for exceptional events. Our reports on the DNO performance during the winter storms of 2013-14 highlighted a number of learning points[51] which the DNOs need to address. The one-off exceptional event mechanism requires a DNO to demonstrate to us that they have taken sufficient preventative and mitigating actions prior to and during the event.

11.12. We do not include interruptions resulting from faults in the equipment that links the DNO network and the internal wires in a property (the cut-out). This is primarily due to concerns over the quality of the relevant historical data and its suitability for setting targets. We have improved the reporting so we can look at including these failures in the IIS in RIIO-ED2.

11.13. We do not incentivise the reduction of short interruptions (those lasting less than three minutes). This is based on our research on customer willingness to pay, and the potential for adverse interactions and overlaps between a scheme to reduce short interruptions and the IIS. DNO actions to reduce incentivised interruptions may reduce short interruptions at the same time.

Incentive rates

11.14. In RIIO-ED1 we aligned the IIS incentive rates with the RIIO-T1 Energy Not Supplied incentive. The IIS incentive calculation also includes the efficiency incentive (explained in chapter 12).

11.15. There are symmetrical caps and collars on the rewards and penalties under the IIS. This means there is a maximum reward or penalty available in each year of RIIO-ED1. This protects customers from the DNOs earning excessive returns under the IIS.

Reliability Guaranteed Standards of Performance

11.16. Statutory regulations[52] set guaranteed standards of performance on reliability. Customers are entitled to claim a fixed payment from the DNO if their supply has been interrupted for a certain period.

11.17. We have summarised the Reliability Guaranteed Standards of Performance (GSOPs) in table A1.2 in appendix 1. For the legal requirements, including caveats, exemptions and definitions please refer to the statutory instrument.

11.18. For RIIO-ED1 we removed the DNO exemption from paying out for one-off exceptional events and exemptions for the Highlands and Islands.

[51] https://www.ofgem.gov.uk/publications-and-updates/stage-two-review-christmas-2013-storms-impact-electricity-distribution-customers
[52] The Electricity (Standards of Performance) Regulations 2015, Statutory Instrument (SI) No. 699, http://www.legislation.gov.uk/uksi/2015/699/pdfs/uksi_20150699_en.pdf

11.19. We expect DNOs to make automatic payments to customers on the PSR (rather than these customers needing to request payment). This is because, as part of their PSR obligations, DNOs will be aware of who these customers are, and when and for how long they have been without power.

11.20. DNO systems are currently unable to identify which premises are impacted by specific interruptions. Non-PSR customers will therefore still need to apply to their DNO for payments. Until smart meters are rolled out we do not think it is appropriate to expect DNOs to make payments to these customers automatically.

11.21. We expect DNOs to inform their customers of their eligibility for claiming payment, as well as raising their awareness of the GSOPs. Under the licence the DNOs incur a penalty interest rate on unpaid compensation to ensure payments are made.

Worst-served customer mechanism

11.22. The DNOs have a use-it-or-lose-it allowance to improve network reliability for customers who have a significantly worse than average service.

11.23. We provided an overall allowance of £76.5m across the DNOs in line with the number of qualifying customers in each region. The qualification criteria were designed with the DNOs. There is a limit on expenditure per customer covered by the scheme. The DNOs have to demonstrate that they have delivered a set level of service improvement to these customers in order to receive the funding.

11.24. SSEH is excluded from this mechanism, as we allowed it ex ante funding for a number of schemes to improve resilience for worst served customers.

Secondary deliverables

11.25. A DNO could in theory under-invest in its network for some time without any increase in interruptions. By the time the interruptions occur (and the DNO is penalised), the network could have significant problems which are expensive to fix. Therefore we have indicators in the form of secondary deliverables for reliability. These are the health, criticality and load indices. They give early indications of whether the DNOs are investing in their networks, and ensure that they are not making efficiency savings at the expense of the network condition.

Load Index

11.26. The load index (LI) measures the loading of the primary network substations.[53] It is possible to operate substations with high loadings for limited periods without causing problems. However if loading remains high over longer

[53] These are 33kV and 11kV substations.

periods, the substation can be damaged. The LI ties the DNO's investment funding to the delivery of a particular level of loading at the end of the period.

11.27. The DNOs proposed the funding that they need to deliver a specific level of loading across their substations in their business plans. We used these LIs to inform our assessment of what efficient funding was needed.

11.28. We did not set LI targets in the RIIO-ED1 review because further work needs to be done to see how they interact with our assessment of efficient costs (chapter 12), smart grid savings (chapter 4) and the load related reopener (chapter 15). We plan to set out further details on the LI deliverables early in the RIIO-ED1 period. We are also keen to consider the impact of DG and the use of data from smart meters, when it becomes available, to extend the use of LIs onto the secondary networks.

Health, criticality and monetised risk

11.29. We use health and criticality indices and the calculation of monetised risk to assess changes in the condition of DNOs' networks in over time.

11.30. The health index is a composite measure of asset age, condition, fault history and probability of failure. Criticality is a measure of the financial consequence of an asset failing. The health and criticality scores for relevant assets are combined to calculate a value of monetised risk on each DNO's network. This covers asset replacement, refurbishment and relevant high value projects.

11.31. In the RIIO-ED1 review, DNOs provided forecasts of their asset health and criticality positions "with intervention" (ie investment) and "without intervention". We used these forecast positions to create targets, or deltas, of improvement in asset health, criticality and monetised risk. We set target deltas for the middle and end of RIIO-ED1. We will measure the DNOs' progress against these deltas on a total, rather than asset by asset basis. This allows us to measure the total improvements over time while giving DNOs flexibility to manage individual assets in the most appropriate way for their networks. DNOs will be able to trade risk between different groups of assets, as long as they deliver the total level of risk improvements they have been funded for.

11.32. At the end of RIIO-ED1 any material over- or under-delivery of monetised risk will be subject to a reward or penalty. This incentive mechanism contains two elements. If a DNO has not delivered the agreed total level of monetised risk and does not have a reasonable justification for doing so, their RIIO-ED2 allowed revenue will be reduced. This reduction will be based on the avoided cost associated with the under-delivery. The DNO will also incur a penalty of 2.5% of the value of the under-delivery.

11.33. Where a DNO has delivered more than the agreed total level of monetised risk, and this improvement has been justified, we will increase their RIIO-ED2 allowed revenue in line with the incremental costs associated with the over-delivery. The DNO will also receive a reward of 2.5% of the value of the over delivery.

11.34. This incentive combines with the efficiency incentive (explained in chapter 12) to ensure the DNOs adopt good asset management practices.

11.35. The DNOs are currently working together to develop a common methodology to standardise their asset health, criticality and monetised risk metrics.[54] Once this methodology is in place, we will convert the RIIO-ED1 targets to the new methodology.

11.36. We will update the target deltas following certain re-openers or the mid period review of outputs where the DNOs receive additional funding for assets.

11.37. Over the course of RIIO-ED1 we plan to extend asset health, criticality and risk metrics to all network assets. We will also work with the DNOs to look at widening the reporting framework to include other risk to the assets such as damage from vegetation, storms, flooding or third-parties.

Resilience

11.38. DNOs are required to design and operate their networks in accordance with relevant legislation, codes and standards (such as Engineering Recommendation P2/6). In the RIIO-ED1 review we allowed the DNOs funding for improving network resilience. This covers flood protection, black start (actions necessary to restore electricity supplies following total or widespread shutdown of the transmission system) and the protection of overhead lines.

11.39. We will track the DNOs' performance in improving resilience against the level of risk reduction we allowed in their settlements.

Climate change adaptation

11.40. Climate change is likely to have an increasing influence on both average conditions and the frequency and severity of extreme weather in the UK. If risk management measures are not in place this could adversely affect the DNOs' safe and reliable operation of their networks. This is particularly true for assets which DNOs expect to be using for several decades.

11.41. For electricity networks, the main climate change factors are:

- hotter average and extreme temperatures, particularly in summer
- more rain in winter and more extreme downpours all year – leading to a greater risk of flooding
- rising sea levels and greater storm surges – leading to a greater risk of coastal flooding.

[54] https://www.ofgem.gov.uk/publications-and-updates/dno-common-network-asset-indices-methodology

11.42. The potential impacts of these changes are described in more detail in the Energy Network Association's (ENA) 'Energy Networks Climate Change Adaptation Report' (2011).[55]

11.43. The DNOs assessed the risks to their networks from extreme weather (such as flooding) and climate change in their business plans. They also explained how they plan to manage climate risks to make sure that new and existing schemes are sustainable. Our cost benefit analysis approach enabled DNOs to justify extra investment if it was the best strategy to save money and protect services in the future.

[55] http://www.defra.gov.uk/environment/climate/sectors/reporting-authorities/reporting-authorities-reports/

12. Ensuring efficient costs

Relevant licence conditions:

Special condition CRC3B. Determination of PCFM Variable Values relating to actual Totex expenditure for Totex Incentive Mechanism Adjustments
Special condition CRC5C. Directly Remunerated Services

12.1. As we explained in chapter 3, base revenue divides into four different categories:

- an allowance for DNO expenditures, which is set at the time of the price control review, and which are then subject to the efficiency incentive (totex)
- an allowance for DNO expenditures, which is provisionally set at the time of the price control review then updated (including operating costs the DNOs cannot control, historical pension liabilities and directly remunerated services)
- an allowance for a fair return to investors in the network company
- tax.

12.2. We explain the first two bullets in this chapter, and the last two points in chapter 13.

Totex

12.3. There are a number of ways we encourage DNOs to make sure their costs are efficient:

- the opportunity to be fast-tracked
- our assessment of efficient costs in the slow-track DNOs' business plans
- the IQI efficiency incentive.

Fast-track

12.4. As noted in chapter 1, under the RIIO framework, if we judge a DNO's business plan to be particularly high quality and value for money, we can fast-track it. This means the DNO's settlement is finalised early.

12.5. This provides a strong incentive for companies to present their best view of forecast costs in their business plans. It also gives us the opportunity to give feedback to the non-fast-tracked companies on areas of their plans that appear inefficient.

Slow-track

12.6. The DNOs remaining in the process (slow-track) submit revised plans taking into account the feedback from the fast-track assessment. In the slow-track assessment we calculate our view of efficient expenditures. The DNOs are incentivised to submit their best view of efficient costs in their slow-track plans by

the information quality (IQI) mechanism. This rewards or penalises them depending on how close they are to our view.

Assessment of efficient costs

12.7. Under the RIIO framework, the onus is on the DNOs to demonstrate that their business plans are cost efficient and give long-term value for money. We expected the DNOs to explain in their plans:

- the costs of delivering the outputs and secondary deliverables
- cost projections in the context of historical performance
- proportionate cost benefit analysis and other justification for their expenditure
- the processes and tools they used to determine their efficiency; external benchmarking evidence; evidence of market testing and clear demonstration of consideration of their longer-term cost and output requirements.

12.8. We used a toolbox approach to assess the costs. This recognised that there are many ways of assessing what is appropriate. It included using statistical analysis on totex, and also analysing costs by cost type. We also assessed some elements qualitatively – including scheme justifications.

12.9. We benchmarked the companies against each other, but set the benchmark based on the upper quartile of efficiency (rather than the most efficient). This recognised that we did not have perfect information.

Information quality incentive mechanism

12.10. We use the information quality incentive (IQI) to encourage slow-track DNOs to create business plans that reflect best available information about future efficient expenditure requirements. It has three elements:

- DNOs receive a financial reward or penalty depending on their forecast relative to our assessment of efficient expenditure.
- DNOs that submit better forecasts (ie closer to our view of efficient cost) receive a higher efficiency incentive rate (sharing factor). This reduces the risk of companies gaming the price control settlement by inflating their forecasts and then significantly underspending.
- Allowed expenditure is based 75% on our benchmark view and 25% on the DNOs forecasts (called interpolation).[56]

12.11. The three components combine to ensure that a DNO maximises its overall payoff by forecasting its expected level of expenditure. This allows us to have confidence in using the data for comparative benchmarking and determination of cost allowances.

12.12. We do not expect companies to deliver the exact line by line detail of its plan. They should assess the best way of delivering on an ongoing basis, taking

[56] This recognises that we do not have perfect information.

account of new information, learning and potential changes in circumstances. The IQI efficiency incentive encourages DNOs to reduce their expenditures during the price control period by allowing them to retain a proportion of any savings they make.

12.13. We stated in the strategy decision that any company that was fast-tracked would receive an upfront financial reward of 2.5% in lieu of the IQI reward, and a 70% efficiency incentive rate. This was therefore applied to WPD.

Efficiency incentive rate (called Totex Incentive Mechanism in the licence and PCFM)

12.14. The efficiency incentive rate is used to calculate the revenue adjustment the DNO receives as a result of over-spend or under-spend versus its allowed expenditure. It is symmetric and fixed for the duration of the price control period. The higher the efficiency incentive rate, the more of any over-spend is borne by the company and the more of any under-spend is retained by them.

12.15. For example, if a DNO's efficiency incentive rate is 60%, its investors will earn £60 profit (before tax) for each £100 that the company saves during the price control period and bear £60 of each additional £100 the company spends. The remainder will be passed on to consumers through lower or higher network charges.

12.16. The efficiency incentive is about risk-sharing. Investors and consumers share the benefits when the company delivers outputs for less money than we envisaged when setting the price control. Similarly, investors and consumers will share the additional costs if the company spends more money than envisaged. The incentive is a strong driver for the companies to deliver efficiently. We can then use the new, efficient costs in the next price control review.

12.17. The IQI is applied at a DNO group level to ensure that companies do not game the mechanism. If we set the efficiency incentive by DNO rather than by group, the DNO may be able to move certain costs (particularly overheads) between the companies, depending on which DNO had the most beneficial efficiency incentive rate.

Pensions

12.18. We included ongoing pensions costs, such as scheme administration and pension protection fund levy costs, as part of our totex assessment.

12.19. We provide for the repair of established pension scheme deficits through a separate cycle of reviews. These pension schemes were in place before the gas and electricity privatisations in the 1980s and early 1990s. They are all currently in deficit and have been closed to new members.

12.20. We review the funding of these deficits every three years following actuarial valuations prepared on behalf of the schemes' trustees. We set provisional allowances to fund the deficits and then adjust for the deficit funding

amounts companies actually pay. This ensures companies do not profit from the pension deficit allowances.

12.21. We completed a review for all network companies in late 2014.[57]

Directly remunerated services

12.22. As noted in chapter 3, the price control reviews cover all aspects of a DNO's business that are included in DUoS charges. It doesn't include directly remunerated services. There are different categories of DRS, including connections services, asset diversion costs, competitive metering services, and the rechargeable costs of the smart meter rollout.

12.23. For most of these services (DRS 1,2,3,4 and 7), the DNO should charge a fee to cover the additional costs it has incurred in delivering the service. DNOs are allowed to earn a reasonable margin on some of the services (DRS 5 and 9 and 1 in certain circumstances). An example is contestable connections, where independent providers can also bid for the work.

12.24. In RIIO-ED1, top-up and standby charges[58] are only directly remunerated if they relate to an agreement for the recharge of direct expenditure. All other expenditure that might be attributable to top-up and standby is in general totex and funded through allowed revenues. This means that most top-up and standby income will be in DNOs' allowed revenues.

12.25. There is no restriction on charging for competitive metering services (DRS 6) because this service is fully competitive. Similarly, value added services (DRS8, services that use existing assets for commercial, non distribution purposes such as telecoms or advertising) are subject to commercial negotiation between the DNO and the commissioning party. However, because the costs of the assets associated with these services have been funded by consumers under the core price control, any profit earned is shared with consumers.

12.26. We deducted forecast net revenues (ie forecast revenues less forecast marginal costs) for value added and miscellaneous directly remunerated services (DRS8 and DRS9) from opening base revenues. This encourages companies to maximise the income from these services, thereby offsetting the costs paid by DUoS customers.

12.27. DNOs also have ancillary revenue categories which are separate from DRS. These relate to:

- legacy metering equipment and data services
- metering point administration services

[57] https://www.ofgem.gov.uk/publications-and-updates/2014-pensions-reasonableness-review
[58] DNOs provide top-up and standby services to consumers to 'top-up' their on-site generation or on a 'standby' basis when their main connection (or generation) is not available.

- out of area[59] distribution network operation
- de minimis[60] activity and
- recoveries in respect of the theft of electricity.

12.28. If a DNO receives any revenue not covered by the core price control provisions, the DRS provisions or the ancillary categories referred to above, it is required to report the amount as a reconciling item in its regulatory accounts.[61]

Disposals

12.29. We encourage DNOs to optimise their net investment expenditures, taking expenditure on assets and proceeds from asset disposals together. Accordingly, we treat proceeds from asset disposals as a deduction from totex for the calculation of incentives under the totex incentive mechanism.

12.30. The DNOs' licences contain safeguards to help ensure asset disposals do not have material adverse impacts on future network development and to ensure that any disposals to related parties are made on an arm's length basis on normal commercial terms.

[59] A DNO's licence authorises activity throughout Great Britain, but services provides outside its Distribution services Area are subject to relative price control against the incumbent DNO's charges.
[60] Any business conducted by the DNO or related company that is not distribution business or business that Ofgem has given consent to the DNO to operate.
[61] Regulatory accounts are financial statements prepared on the same basis as the DNO's statutory financial statements, but to a common 31 March year end.

13. Financing efficient delivery

Relevant licence conditions:

Special condition CRC3C. Specified financial adjustments

Making sure DNOs can finance their operations

13.1. We are legally required to protect the interests of existing and future energy consumers. We also have a duty 'to have regard to the need to secure that licence holders are able to finance the activities which are the subject of obligations on them'. This means that efficient network companies should be able to secure financing in a timely way and at a reasonable cost to support the delivery of their regulatory obligations. It is also in the interests of consumers. However, it is important that the regulatory framework does not provide excessive returns, reward inefficiency or bail-out a company in financial distress as a result of its own behaviour.

13.2. We ensure that efficient companies are able to finance themselves (both through debt and equity). The RIIO model provides clear, up front rules and principles to ensure that network expenditure can be effectively financed. These include:

- a longer-term view of financeability reinforced by regulatory commitment
- risks to be allocated appropriately between companies and consumers
- allowed return based on the real, weighted average cost of capital (WACC) with an annually updated cost of debt based on a long-term trailing average
- a capitalisation policy that avoids distorting expenditure decisions
- financeability assessment to be informed by a number of sources, including relevant equity and credit rating considered over the long term
- an onus on companies to manage short-term requirements and to provide equity where necessary, and
- using return on regulated equity (RORE) analysis to check that the overall incentive package gives strong incentives without over-rewarding the DNOs or exposing them to too much risk.

13.3. This gives certainty to investors, companies, ratings agencies and consumers without unduly constraining our ability to react to future events.

13.4. Under the RIIO model the regulatory package is calibrated so that those companies that deliver for consumers earn good rates of return, while those that don't, earn low returns on regulated equity.

Allowed return

13.5. Our assessment of the DNOs' base revenues includes an allowed return on investment. This has two main roles. First, it provides a fair return to investors and second it is the value which allows a company needs to finance its cash-flow. Under the RIIO model, we set the allowed return on the basis of the WACC.

13.6. The WACC comprises two elements, an allowance for the cost of debt and an allowance for the cost of equity. Companies can finance themselves in two ways – by taking out loans (debt) on which they pay interest, or by selling shares in the business (equity) and paying the shareholders dividends. The cost of debt is the interest payable on loans and the cost of equity is the dividends paid to shareholders.

13.7. Companies normally have a mixture of debt and equity. The ratio of a DNO's debt to its RAV is called its gearing. For RIIO-ED1 we used a notional gearing of 65% for all DNOs.[62] This is the same level as DPCR5. It is for the DNOs to choose their actual financial structure and they (and their investors) bear the risks associated with the choice made. The regulatory framework is about identifying an appropriate allowed return, reflecting an assumed notional gearing.

Cost of debt

13.8. The cost of debt assumption included in the allowed return is based on the historical average cost of debt for a broad range of companies. It is calculated as the trailing average of a cost of debt index,[63] and the DNOs' revenues are updated in the Annual Iteration Process (AIP – see chapter 16) to reflect changes in the index.

13.9. As part of its fast-track settlement, we accepted WPD's proposal to adopt a cost of debt index based on a 10-year trailing average of the iBoxx series. For the other DNOs, we use a trailing average period that increases by an extra year each year, from 10 years to 20 years. This provides a better fit with DNOs' practice of issuing debt with maturities of around 20 years.

Cost of equity

13.10. Historically we assessed the cost of equity assuming that the most objective evidence for future market returns is the level of returns achieved by equity market investors over the longer term. We then adjusted this market level to estimate the returns for network businesses by looking at the level of risk in network businesses relative to the market as a whole.

13.11. In RIIO-ED1 we reviewed this methodology following a ruling by the Competition Commission.[64] We concluded that the cost of equity is likely to be more sensitive to current market conditions than we had previously assumed, even with a relatively stable equity market return. We therefore changed our methodology to give greater weight to current market conditions.

[62] This is seen as a reasonable level, and good mix of lower cost and higher risk.
[63] The index is the iBoxx non-financials 10+ maturity series for a range of broad 'A' and broad 'BBB' credit ratings.
[64] https://www.ofgem.gov.uk/sites/default/files/docs/decisions/decision_on_equity_market_return_methodology.pdf

13.12. WPD's settlement includes an allowance for a cost of equity of 6.4%, while the slow-track DNOs have 6%. As part of the fast-track assessment, we judged that WPD's proposed cost of equity was more than offset by the value of other elements in its business plan.

Capitalisation

13.13. Network companies' expenditure in each price control period is funded, in part, from revenues raised from consumers during that price control period and, in part, from revenues to be raised from future consumers during subsequent price control periods. The RAV provides a commitment on the revenues to be raised from future consumers during subsequent price control periods. For example, while the company pays for an asset up front, it gets revenue allowances (for depreciation and return) over the nominal life of that asset.

13.14. As explained in chapter 3, under the RIIO model, companies have a fixed percentage of their total network costs capitalised into the RAV (slow money) and the rest is funded in the year (fast money). We set a capitalisation percentage for each DNO for the duration of RIIO-ED1. Our aim was for a fair balance between existing and future consumers in light of the nature of the expenditure expected over the price control period (eg by looking at the amount of capital expenditure submitted in a company's business plans).

13.15. The DNOs proposed capitalisation rates ranging from 68 to 80% in their business plans. We accepted their proposals. We allowed ENWL to make a small adjustment to the capitalisation rate it originally proposed to facilitate more efficient financing. We also adjusted SSEH's capitalisation rate to reflect a change in our treatment of its interim costs associated with supplying energy on Shetland.

Asset life and depreciation

13.16. Asset lives determine the period over which the deferred recovery for the cost of assets (depreciation) takes place. Changing the length of the asset life changes the balance between the amounts that existing and future consumers pay. If changes enable lower cost financing while still providing a fair allocation of costs over time, this may benefit consumers, taking both existing and future consumers together.

13.17. Under the RIIO model the asset life (and therefore depreciation rate) reflects the average expected economic life of the asset base. In this way, the interests of existing and future consumers are fairly balanced. For RIIO-ED1 we set an average expected economic asset life of 45 years for new electricity distribution assets, with straight-line depreciation. The new asset life only applies to new investments. Existing assets will continue to have a 20-year asset life.

13.18. For RIIO-ED1 we have allowed the DNOs transition arrangements for asset lives from 20 to 45 years in equal steps over the eight years of RIIO-ED1 to assist financeability.

Assessing financeability

13.19. In the RIIO framework, we assess the financeability of the price control package. As long as the allowed return, depreciation profile and capitalisation policy are set appropriately and there is consistency in future determinations, the notional company should be financeable.[65]

13.20. We generally assume that a DNO will be financeable if it can maintain an investment grade credit rating. We test to see whether our decisions will make it unduly difficult for a DNO to do this.

13.21. The DNOs' licence protects consumers, lenders and bondholders. Among other protections, licences require DNOs to take all appropriate steps within their power to maintain an investment grade rating. They do not guarantee financeability, but they do guard against a DNO making imprudent financing decisions or distributing inappropriate amounts to its shareholders.

13.22. We set price controls so that a prudently-financed licensee is reasonably resilient when facing adverse outcomes. This approach, combined with the protections built into DNO licences, limit the risk of fundamental financeability problems. They help ensure that the DNO can correct any company-specific issues and create a safe environment for debt finance providers.

Tax

13.23. Each DNO's settlement includes a provision for tax. Tax is calculated each year, as part of the AIP (chapter 16). It is modelled based on a notionally geared company, with assumptions about the allocations of expenditure to tax pools that we set in the review. We have signalled that we intend to roll the RIIO-ED1 tax pools forward on a notional basis into RIIO-ED2. In this way, we ensure consumers benefit from tax relief in respect of all expenditure they have funded.

13.24. If DNOs receive additional tax relief from gearing above our notional gearing level, this additional income is deducted from their allowed revenue in the AIP. If the tax regime changes, this is reflected in the PCFM and allowed revenue calculation using the tax trigger uncertainty mechanism (see chapter 15).

[65] In its recent report on Bristol Water the Competition Commission took a similar approach, '...the duty...to secure that companies can finance ...their functions is fulfilled by ensuring that opex and capex projections and the cost of debt and equity (and therefore WACC) are reasonable.'

14. Encouraging innovation

Relevant licence conditions:

Standard condition 48. The Innovation Strategy

Special condition CRC 2H. Network Innovation Allowance
Special condition CRC 2J. Low Carbon Networks Fund
Special condition CRC 3D. The Innovation Roll-out mechanism
Special condition CRC 5A. The Network Innovation Competition

14.1. As explained in chapter 4, DNOs face significant challenges over the coming years to support the transition to the low carbon economy while maintaining network reliability and keeping prices affordable. To meet these challenges, DNOs will have to try new operational, technical, commercial and contractual arrangements within their business.

14.2. Many elements of the RIIO price control framework are designed to encourage innovation. The eight-year price control period provides companies with more certainty of the rewards for successful innovation. The IIS (see chapter 11) should encourage DNOs to anticipate the impacts of new loads. The efficiency incentive (see chapter 13) should incentivise DNOs to implement innovative solutions within their business, where they are more efficient than conventional approaches.

14.3. The DNOs were also able to highlight in their business plans where they proposed to roll out innovation for longer-term benefit. If the cost was more in the RIIO-ED1 period than the business as usual approach, a DNO could provide a longer-term business case and commit to relevant outputs in its business plan, and we would consider allowing it in our assessment of their efficient costs.

14.4. Some innovation projects are speculative with uncertain commercial returns. In addition, the innovation benefits may not flow to the DNOs. This means that the companies may not have a strong motivation to innovate.

14.5. In DPCR5 we introduced the LCN Fund to encourage the DNOs to sponsor projects which trial innovative technological, operating and commercial arrangements to facilitate the transition to a low carbon future. There is broad recognition that the LCN Fund has significantly improved the DNOs' attitude to innovation, knowledge sharing and collaborative working with third parties. We expect to see the results of learning from LCN Fund projects being rolled out in the DNOs' businesses.

14.6. The RIIO model includes a time-limited innovation stimulus package to provide additional funding for innovation initiatives that can benefit consumers but that companies would be unlikely to undertake in its absence. This builds on the LCN Fund, and supplements the existing incentives. In RIIO-ED1 the funding is intended to change the DNO cultures. Our aim is that they have the ethos, internal structures and third party contacts to facilitate innovation as part of business as usual.

14.7. The innovation stimulus package consists of an annual competition, a limited funding allowance and a mechanism to fund the roll-out of successful innovation trials. A key requirement of these mechanisms is that the projects funded generate learning for all the companies and that this learning is shared. DNOs and partners have to provide at least 10% of project funding.

14.8. We expect DNOs to collaborate with other parties and leverage external funding where possible.

Network innovation competition

14.9. The network innovation competition (NIC) is an annual competition for larger-scale innovative projects that have the potential to deliver carbon or other environmental benefits to consumers. It adopts many of the principles established in the LCN Fund, such as partnership working and shared learning. Other network licensees[66] can apply for project funding.

14.10. The electricity NIC started in April 2013 as part of the transmission price control, RIIO-T1. The DNOs became eligible for the electricity NIC at the start of RIIO-ED1. In 2015-16 and 2016-17 the electricity NIC can fund up to £90m each year.[67] [68] The amount of funding available is the maximum and we do not have to award any funding if projects are not good enough.

14.11. We will set the electricity NIC funding for 2017-18 onwards based on an evaluation of completed LCN Fund projects. This revised amount, which could be profiled, will be at least £28m pa (the amount set for transmission in RIIO-T1). We will consult on any proposed changes to the governance arrangements and on the level of NIC funding for the remainder of RIIO-ED1 in autumn 2016. We intend to publish our decision by the end of 2016, so that any changes can be in place for the 2017 competition.[69]

14.12. The funding for electricity NIC projects is recovered through Transmission Use of System Charges (which form part of the consumer's bill from suppliers). The National Electricity Transmission System Operator passes the revenues collected from customers to the party running the project.

Network innovation allowance

14.13. We fund a limited amount of innovation in the network innovation allowance (NIA). This funds small innovation projects. The DNOs self-certify projects against published criteria.

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[66] Offshore transmission operators and IDNOs.
[67] Flat in real terms, set in 2011-12 prices and inflated by RPI.
[68] There is a lag between when the competition is held and when funding is recovered, ie the first competition including distribution was held in 2015, with the funding recovered the following year from April 2016.
[69] https://www.ofgem.gov.uk/publications-and-updates/reviewing-benefits-low-carbon-networks-fund-and-governance-network-innovation-competition-and-network-innovation-allowance-0

14.14. The size of each DNO's NIA was set based on the quality of the innovation strategies they provided in their business plans. The innovation strategy describes a DNO's approach to innovation during RIIO-ED1 and beyond. The DNO has to publish the strategy on its website, and keep it updated.

14.15. The RIIO-ED1 NIA percentages are listed in table 14.1.

Table 14.1: RIIO-ED1 NIA amounts

DNO	RIIO-ED1 NIA amount (% of base revenue)
ENWL	0.7
NPg	0.6
WPD	0.5
UKPN	0.5
SPEN	0.5
SSEPD	0.5

Innovation roll-out mechanism

14.16. There are strong incentives for DNOs to roll-out successful innovation projects. They included savings from innovation in their business plans, and we set their allowances based on additional savings which we judged are achievable. During the price control period, where innovation projects prove that a new technique or practice can lower costs or help the DNO better meet its outputs, the efficiency incentive encourages DNOs to realise these savings and share the benefits with consumers.

14.17. We recognise that there may be occasions where successful innovation does not provide sufficient benefits for the company to fund its roll-out, even though it would provide wider environmental benefits. The innovation rollout mechanism (IRM) lets companies apply for additional funding during the RIIO-ED1 period to roll-out proven innovation that has carbon or other environmental benefits and provides long-term value for money.

14.18. The IRM is a re-opener uncertainty mechanism (see chapter 15). DNOs can apply for funding in two windows during the price control period. The funding required has to be material and the DNO has to provide outputs or other end products against which the roll-out will be assessed. The IRM cannot be used to recover innovation roll-out costs that have already been incurred.

LCN Fund

14.19. The final LCN Fund competition was held in 2014. The funding awarded is collected from consumers in 2015-16. The LCN Fund also includes discretionary funding to reward:

- Projects that have been well managed and delivered to the expected standard
- The delivery of an exceptional portfolio of small projects
- Exceptional large projects

14.20. As some LCN Fund projects will not be completed until after the start of RIIO-ED1, if any discretionary reward is allocated it will be recovered during RIIO-ED1.

15. Uncertainty and risk

Relevant licence conditions:

Special condition CRC 2A. Restriction of Allowed Distribution Network Revenue
Special condition CRC 2B. Calculation of Allowed Pass-Through Items
Special condition CRC 3C. Specified financial adjustments
Special condition CRC 3D. The Innovation Roll-out mechanism
Special condition CRC 3E. Smart Meter Roll-out Costs
Special condition CRC 3F. Arrangements for the recovery of uncertain costs
Special condition CRC3G. Revising the allowed level of Load Related Expenditure
Special condition CRC 3K. Rail electrification adjustments (WPD only)
Special condition CRC 3L. Arrangements for the recovery of Moorside Costs (ENWL only)

15.1. There are always uncertainties about what will happen during the price control period. The RIIO framework includes a number of elements to help deal with uncertainty. In order of likelihood, these are:

- uncertainty mechanisms built into the price control
- a mid-period review of output requirements, if needed
- the potential for the price control to be adjusted in extreme circumstances.

15.2. We asked the DNOs to explain in their business plans the uncertainties they face, and how they proposed to address them. We assessed whether the DNOs' proposals had an appropriate balance of risk between themselves and customers. This included how well they justified their forecast of the volume of low carbon technologies in their areas in comparison to the DECC scenarios (described in chapter 4).

15.3. We also required the DNOs to analyse the residual risk they face (after any mechanisms to address uncertainty), and explain how they were mitigating them. In assessing this we looked at how well the DNOs explained how they might move between their chosen low carbon technology scenario and any other scenario that could arise.

15.4. The efficiency incentive, which shares any variations between actual and forecast expenditure between the DNOs and consumers, also helps to reduce the impact of uncertainty. (The efficiency incentive is discussed in chapter 12.)

What are uncertainty mechanisms?

15.5. Uncertainty mechanisms allow a DNO's allowed revenues to change to reflect specific unforecastable elements during the price control period. We expect companies to bear their own business risk. Therefore uncertainty mechanisms are only used where action is required due to changes outside the companies' control which could significantly affect costs.

15.6. The RIIO framework calls for:

- a clear justification of the need for each uncertainty mechanism
- design of each mechanism to mitigate the potential downsides
- a coherent approach across uncertainty mechanisms.

15.7. In the RIIO-ED1 strategy decision we proposed a number of uncertainty mechanisms. DNOs presented their proposals for managing the uncertainty and risk they could face over RIIO-ED1 in their business plans. This included proposing additional uncertainty mechanisms if they thought they would help manage risk and bring benefits for consumers.

15.8. Types of uncertainty mechanism include:

- indexation - the adjustment of an economic variable so that the variable rises or falls in accordance with a defined index
- pass-through items - elements where any changes in costs are recovered fully from customers
- volume drivers - which link revenue allowances to a significant change in volumes
- re-openers - provisions to re-set the revenue allowances (or the parameters that give rise to revenue allowances) for qualifying costs at a specific date and/or upon crossing a specified threshold
- Trigger – where a mechanism is re-opened or reviewed if a certain event happens, such as legislation change.

RIIO-ED1 uncertainty mechanisms

15.9. The RIIO-ED1 uncertainty mechanisms are listed in table 15.1. These fall into two categories – those that are calculated automatically (mechanistic), and those that require a determination by Ofgem (assessed). The assessed mechanisms often have fixed windows when DNOs can submit their proposals.

15.10. Some mechanisms are specific to certain DNOs.

Table 15.1: Summary of uncertainty mechanisms for RIIO-ED1

type	uncertainty mechanism	frequency	licence condition
Mechanistic			
index	RPI indexation of allowed revenues Cost of debt	annual	CRC 2A CRC 3C
pass through	Business rates Ofgem licence fees DCC fixed costs Transmission connection point charges Smart meter IT costs Ring fence costs Shetland variable energy costs (SSEH)	annual	CRC 2B
volume	Smart meter roll-out costs	annual (above a	CRC 3E

type	uncertainty mechanism	frequency	licence condition
driver		defined threshold)	
Assessed			
re-opener	Subsea cables (SSEH)	2016	CRC 3F
	Link boxes Shetland uncertain energy costs (SSEH) Shetland competitive process (SSEH)	2017	CRC 3F
	Street works Enhanced physical site security High Value Projects Rail electrification (all except WPD)	2019	CRC 3F
	Innovation roll-out mechanism	2017, 2019	CRC 3D
	Load related expenditure	2017, 2020	CRC 3G
	Pension deficit repair mechanism	2016, 2019, 2022	CRC 3C
	Rail electrification (WPD)	at any time	CRC 3K
	Moorside (ENWL)	at any time	CRC 3L
trigger	Tax	at any time	CRC 3C

15.11. The mechanisms are explained in more detail in table 15.2.

Table 15.2: RIIO-ED1 uncertainty mechanism explanations

uncertainty mechanism	description
RPI indexation	The DNO base revenues (set in 2012-13 prices) are inflated in the Retail Prices Index (RPI), as published by the Office for National Statistics to provide protection against economy-wide inflation.
Cost of debt	The cost of debt is adjusted each year based on the iBoxx non-financials 10+ maturity series for a range of broad 'A' and broad 'BBB' credit ratings (see chapter 13).
Business rates	An adjustment of the up-front allowance to the actual costs incurred, subject to the relevant valuation agency revaluing any of the licensee's assets for the purposes of setting business rates and the DNO demonstrating that it has taken appropriate actions to minimise the valuations.
Ofgem licence fees	To recover the actual cost of Ofgem licence fees
DCC fixed costs	Smart meter Data Communications Company (DCC) fixed costs are costs/fees that will be charged to the DNOs for use of the DCC services. These are called Smart Meter Communications Licensee costs in the licence. (See chapter 4).
Transmission connection point charges	The charges from a transmission licensee for the connections between the DNO's network and the transmission system for assets installed prior to the RIIO-ED1 price control, refurbishment or any work not resulting from a DNO requirement.
Smart meter IT costs	Efficient information technology costs to enable the DNO to use smart meter data on its network.

uncertainty mechanism	description
Ring fence costs	Costs incurred as a direct result of complying with the additional regulatory requirements referred to in the Authority's letter dated 1 February 2013 entitled "Modifications to the ring fence conditions in network operator licences"
Shetland variable energy costs (SSEH)	Fuel costs for the Shetland power station, including for any contingency arrangements (mobile generation), plus environmental permit costs, less income from units purchased by suppliers
Smart meter roll-out costs	Cost of DNO call-outs that are caused by the roll-out of smart meters.
Subsea cables (SSEH)	Additional costs if SSEH is required to bury subsea cables rather than laying them on the seabed.
Link boxes	Cost of mitigating the risk of link boxes exploding under pavements. For UKPN, this includes a review of the efficient expenditure for the first two years. For all DNOs, we will determine an efficient level of expenditure for the remainder of RIIO-ED1. (See chapter 6).
Street works	Additional costs associated with permitting schemes and other street works legislation not included as part of the front allowance
Enhanced physical site security	Costs in addition to the up front allowance to enhance the security of DNO sites which have recently been designated by the Centre for the Protection of National Infrastructure
High Value Projects	Individual schemes of £25m or more not included as part of ex ante allowance, based on clear outputs, forecast costs and a needs case.
Rail electrification	For all DNOs except WPD, the costs of diverting lines associated with Network Rail's electrification programme, should it be decided that these costs be borne by energy consumers. For WPD, a deduction of the costs of diverting lines associated with Network Rail's electrification programme which were included in its ex ante allowance, should it be decided that these costs will be borne by a party other than energy consumers.
Innovation roll-out mechanism	Funding to roll-out a proven innovation which meets defined environmental criteria (see chapter 14).
Load related expenditure	Funding the investment required to accommodate new and changing patterns of customers' electricity use (load related expenditure) above or below what was included up front.
Pension deficit repair mechanism	To reset allowances for the established pension deficit following a reasonableness review every three years (see chapter 12).
Moorside (ENWL)	Reinforcement (and associated) costs ENWL might face

uncertainty mechanism	description
	depending on which option National Grid chooses in order to connect Moorside nuclear power station.
Shetland uncertain energy costs (SSEH)	Cost of the Sullom Voe power purchase agreement plus contingency costs (if applicable); Shetland power station capital and operating costs; cost of integrating solutions from the NINES project.
Shetland competitive process (SSEH)	Outstanding cost of running the Shetland generation competitive process.
Tax	Changes to or interpretation of tax legislation or rates of corporation tax or capital allowances outside the licensee's control (see chapter 13).

15.12. To reduce potential volatility of network charges, we ask the companies to forecast pass-through costs. Subject to them being reasonable, we include them in the allowance, and then adjust them each year (in the AIP – see chapter 16) to match the actual costs.

Mid-period review of outputs

15.13. There is a chance that outputs may need to change significantly during the eight-year price control period. The RIIO framework therefore includes a mid-period review of output requirements. We recognise this risks undermining the purpose of setting a longer price control period. Consequently, we have restricted the scope for the mid-period review to changes to outputs that can be justified by clear changes in government policy and the introduction of new outputs that are needed to meet the needs of consumers and other network users. It is not an opportunity for either us or the DNOs to conduct a mini price review or re-open decisions taken in the RIIO-ED1 review.

15.14. We will use a qualitative assessment to decide whether there is a material change that requires a mid-period adjustment to outputs. In making our decision, we will consider the risks and downsides of potential changes. Examples could include instability of the outputs, reducing incentives to improve output performance or the administrative cost of changing the scheme.

15.15. The review process will begin with an open letter consultation in January 2018. Any changes arising from the mid-period review will be implemented from 1 April 2019. We will ensure that our decision on proposed changes to output requirements (if any), is published in time for DNOs to give adequate notice of changes to their charges.

Disapplication of the price control

15.16. Our aim in setting a price control is to allow a DNO a revenue stream that will be sufficient for it to meet its statutory and regulatory obligations if it is operating efficiently. We recognise that there may be circumstances where an efficiently managed company's allowance is not enough to enable it to finance its regulated activities. In such cases we will consider requests from that company for amendments to its price control. This process is a way of managing the impact

of highly significant, but unpredictable, events which could occur. We expect the use of this mechanism to be rare.

15.17. We explain the disapplication process in our 'Arrangements for responding in the event that an energy network company experiences deteriorating financial health' document.[70]

[70] https://www.ofgem.gov.uk/sites/default/files/docs/2009/10/guidance-doc-%28decision-doc%29---final_0.pdf

16. Implementing the price control

Relevant licence conditions:

Standard condition 44. Regulatory Accounts
Standard condition 45. Data Assurance requirements
Standard condition 46. Regulatory Instructions and Guidance
Standard condition 50. Business Plan Commitment Reporting

Special condition CRC 2A. Restriction of Allowed Distribution Network Revenue
Special condition CRC 3B. Determination of PCFM Variable Values relating to actual Totex expenditure for the Totex Incentive Mechanism Adjustments
Special condition CRC 3C. Specified financial adjustments
Special condition CRC 4A. Governance of ED1 Price Control Financial Instruments
Special condition CRC 4B. Annual Iteration Process for the ED1 Price Control Financial Model

Monitoring output delivery, reporting and governance

Regulatory Instructions and Guidance

16.1. We will monitor and evaluate the DNOs' performance over RIIO-ED1. The Regulatory Instructions and Guidance (RIGs) provide a common framework for DNOs to give us relevant performance data and financial and cost information. They enable us to monitor DNOs' financial performance and their performance delivering outputs.[71]

Data assurance

16.2. The DNOs are responsible for ensuring the integrity of data they submit to us. They have to comply with the Data Assurance Guidance (DAG). This requires them to demonstrate the risk of reporting errors associated with different data elements and the assurance mechanisms they have in place.

Regulatory governance

16.3. Historically network companies have published annual regulatory accounts. However these accounts have not provided an accurate picture of the regulatory financial status of the companies at the time of their publication and are narrow in their focus. Stakeholders expect regulated companies to have a high quality of corporate governance, consistent with the UK Corporate Governance Code.

16.4. We are working with the network companies and their stakeholders to develop RIIO accounting requirements as a replacement for the regulatory

[71] The RIGs and DAG documents are on the following page of our website: https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-guidance-documents

accounts.[72] This is a framework for companies under RIIO price controls to report on their regulatory financial position, performance and corporate governance. RIIO accounts will provide more relevant, authoritative and timely information on how the companies are governed.

16.5. We expect this framework will help investors and other stakeholders understand the main features of the companies' governance arrangements, internal control and risk management systems.

Stakeholder information

16.6. We are currently developing the performance reporting requirements for RIIO-ED1.[73] This includes the information the DNOs should publish, the information we will publish and how it should be presented. Our aim is that the DNOs should present and explain their performance each year, while we will present a summary and comparison across the companies.

16.7. The AIP (see later in this chapter) allows us and the DNOs to provide an accurate picture of their financial performance each year.

16.8. We will publish the DNO performance on the 'Network performance under RIIO' page on our website.[74]

Business plan commitments

16.9. The DNOs included commitments to stakeholders in their business plans. Many of these were not specific or measurable or did not have delivery dates. We therefore viewed them more as ambitions rather than outputs that we could hold the companies to. The DNOs have to publish an annual report on their progress on delivering the commitments in their plans. This gives them a reputational incentive to deliver on their commitments. We expect that stakeholders will engage with the DNOs on their performance.

Future changes to allowed revenues

16.10. Several components of the RIIO-ED1 price control are updated or revised during the period. Some of these are set as calculations in the licence. This means that the DNOs can calculate their allowed revenues without needing a decision by us. Others require us to do further calculations or assessment.

16.11. The automatic adjustments include

[72] https://www.ofgem.gov.uk/publications-and-updates/decision-consult-further-riio-accounts-reporting-framework
[73] https://www.ofgem.gov.uk/publications-and-updates/how-we-report-electricity-distribution-company-performance-next-steps
[74] https://www.ofgem.gov.uk/network-regulation-riio-model/network-performance-under-riio

- output incentive mechanisms (see chapters 5-10)
- the RPI indexation of base revenues
- pass-through costs (these are part of the uncertainty mechanisms described in chapter 15).

16.12. There are also a number of elements which will either be finalised after RIIO-ED1 begins or are set independently.

- The price control settlements include uncertainty mechanisms where we recognise it is not appropriate to set allowances up front (see chapter 15).[75]
- There are incentives and other adjustments relating to the previous price control, DPCR5, which are not finalised until DPCR5 had ended. This is so that we could use the reported data for the regulatory year from April 2014 to March 2015.[76]
- The funding of pension deficits is determined using a separate review (see chapter 12).

Annual updates

16.13. Under RIIO we update the companies' base revenues annually in the annual iteration process (AIP). This allows us to reflect the changes listed above. It avoids the situation in previous price controls where the companies incurred certain costs that couldn't be reflected in the revenues until the end of the price control period. This meant that stakeholders did not have a true view of the companies' performance during the price control period.

16.14. In the RIIO-ED1 review we set the opening base revenue allowances. These are stated in the licence. These opening allowances are then updated each year by a "MOD" term calculated in the AIP. In simplified terms, this is:

Base Demand Revenue for year t =
Opening Base Revenue Allowance for year t + MOD for year t

16.15. We calculate MOD using the PCFM. This is an MS Excel© model of the each DNO's base revenues. (There is a PCFM per DNO). It is subject to a formal change control and avoids the need for complex algebra within the licence.

16.16. The ED1 Price Control Financial Handbook governs the AIP, the methodologies involved, and how MOD is calculated and implemented. It also describes how we will assess and calculate any uncertainty mechanisms that aren't detailed in licence calculations. The handbook forms part of the licence, and is subject to formal change control processes.

[75] We included forecasts for many of these elements in the final determinations. This was in order to reduce potential fluctuations when the mechanisms are applied, and actual data reflected.
[76] We included indicative numbers for these elements in our final determinations.

16.17. We publish the latest versions of the PCFM and handbook on our website.[77]

PCFM operation

16.18. The PCFM is designed to be as user friendly as possible. Our aim is that it will be useful to licensees and other stakeholders as:

- a tool for revenue sensitivity and associated analysis
- a source of information on key price control values such as indicative RAV values and projected totex amounts.[78]

16.19. The PCFM is in constant 2012-13 prices.[79] Inflation indexation is applied in the formula for the licensee's Base Demand Revenue, which combines the Opening Base Revenue Allowance with the value of MOD.

16.20. The handbook includes terms of reference for an ED1 Price Control Financial Model Working Group of licensee representatives to work with us on any future development of the PCFM.

The annual iteration process

16.21. In each AIP we use the PCFM to produce a value for the term MOD. The value of MOD can be positive or negative.

16.22. The calculation of MOD for a regulatory year normally takes place by 30 November in the previous year. This reflects the time needed to process information submitted by the DNO (most RIGs data is submitted by 31 July) and the DNO requirements to publish indicative use of system charges for the coming regulatory year.

16.23. MOD consolidates all revisions made since the preceding AIP. The effects of revisions for prior regulatory years are subject to a time value of money adjustment (at the DNO's RIIO-ED1 WACC).

16.24. Once a value for MOD has been directed for a particular regulatory year it cannot be revised in subsequent AIPs. Instead, any changes are included in a future calculation of MOD.

[77] https://www.ofgem.gov.uk/network-regulation-riio-model/price-controls-financial-model-pcfm/riio-ed1-financial-model

[78] Information in the PCFM should always be considered together with information in the licence and in price control decision documents to obtain a full picture.

[79] Except for some internal tax value calculations which use a form of nominal pricing based on RPI forecast values embedded in the PCFM.

Appendices

Index

Appendix 1 – Guaranteed Standards of Performance

1.1. Table A1.1 contains a summary of the connections GSOPs. For the legal requirements, including caveats, exemptions and definitions please refer to the statutory instrument and the DG direction.

Table A1.1: Summary of connections GSOPs

Guaranteed standard	period	amount
Provision of budget estimate <1MVA	10 working days	£65
Provision of budget estimate >1MVA	20 working days	£65
Provision of single phase LV quotation	5 working days	£15
Provision of small project LV quotation	15 working days	£15
Provision of other LV demand quotation	25 working days	£65
Provision of HV demand quotation	35 working days	£135
Provision of EHV demand quotation	65 working days	£200
Contact customer (post acceptance) about scheduling <5 LV service connections	7 working days	£15
Contact customer (post acceptance) about scheduling other LV demand connections	7 working days	£65
Contact customer (post acceptance) about scheduling HV demand connections	10 working days	£135
Contact customer (post acceptance) about scheduling EHV demand connections	15 working days	£200
Commence LV, HV & EHV demand works on customer's site	Timescale agreed with customer	£25
Complete service connection works		£35
Complete LV works*		£135
Complete HV works*		£200
Complete EHV works*		£270
Complete LV energisation works*		£135
Complete HV energisation works*		£200
Complete EHV energisation works*		£270
Emergency Fault Repair response	2 hours	£65
High Priority Fault Repair – Traffic Light Controlled	2 calendar days	£15
High Priority Fault Repair – non Traffic Light Controlled	10 working days	£15
Multiple unit fault repair	20 working days	£15
Single unit fault repair	25 working days	£15
Provision of a quotation – New Works order (1-100 units)	25 working days	£15
New works order – completion of works on a new site	Commence and complete in timescales agreed with the customer	£15

Guaranteed standard	period	amount
New works order – completion of works on adopted highways	35 working days	£15
Quotation accuracy review scheme challenge single LV single phase service connection	N/A	£335
Quotation accuracy review scheme challenge small LV projects	N/A	£670
Where a Distributor fails to make a payment under the regulations	10 working days	£65

** including phased works*

1.2. We have summarised the reliability, or performance, GSOPs in table A1.2. Again, for the legal requirements, including caveats, exemptions and definitions please refer to the statutory instrument.

Table A1.2: Summary of performance GSOPs

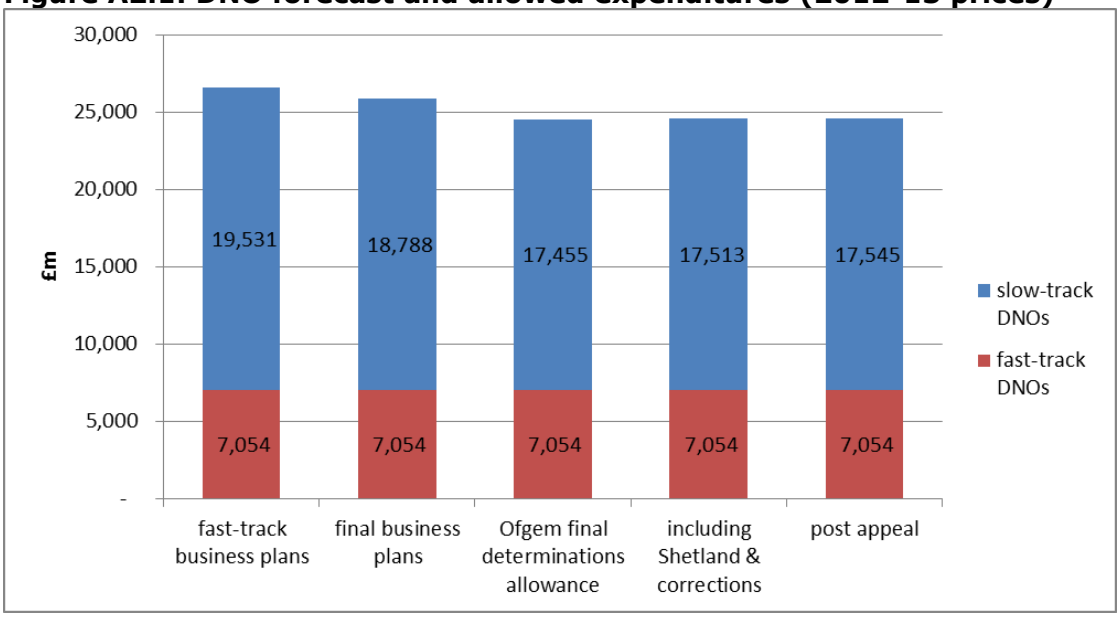
reporting code	service	amount
EGS1	Responding to failure of distributor's fuse (Regulation 12)	£30 for domestic and non-domestic customers
EGS2	Supply restoration - normal conditions (Regulation 5)	£75 for domestic customers, £150 for non-domestic customers, £35 for each further 12 hours
EGS2A	Supply restoration: multiple interruptions (Regulation 11)	£75 for domestic and non-domestic customers
EGS2B	Supply restoration - normal conditions (5,000 or more premises interrupted) (Regulation 6)	£75 for domestic customers, £150 for non-domestic customers, £35 for each further 12 hours up to a cap of £300
EGS2C	Supply restoration – rota disconnections (Regulation 8)	£75 for domestic customers, £150 for non-domestic customers
EGS4	Notice of planned interruption to supply (Regulation 14)	£30 for domestic customers, £60 for non-domestic customers
EGS5	Investigation of voltage complaints (Regulation 15)	£30 for domestic and non-domestic customers
EGS8	Making and keeping appointments (Regulation 19)	£30 for domestic and non-domestic customers
EGS9	Payments owed under the standards (Regulation 21)	£30 for domestic and non-domestic customers
EGS11 (EGS11A, EGS11B, EGS11C)	Supply restoration: severe weather conditions (Regulation 7)	£70 for domestic and non-domestic customers, plus £70 for each further 12 hours up to a cap of £700 per customer

Appendix 2 – RIIO-ED1 allowances

1.1. We have updated the allowed expenditures and revenues that we published in our final determinations. The figures below include subsequent corrections and the results of the two CMA appeals. They also include the figures for the fast-tracked company WPD.

1.2. The final total allowed expenditure for RIIO-ED1 was £24.6bn. This was a £2bn (7%) reduction on the expenditure forecasts in the DNOs' original business plans. The slow-track DNOs reduced their original expenditure forecasts by £1.3bn (7%) in their resubmitted plans. This expenditure movements are shown in figure A2.1.

Figure A2.1: DNO forecast and allowed expenditures (2012-13 prices)



1.3. The final opening base revenues £39.2bn, compared to £39bn in final determinations. The differences are shown in table A2.1 and explanations for the changes included as footnotes.

Table A2.1.DNO base revenues (£m, 2012-13 prices)

	ENWL	NPg	WPD	UKPN	SPEN	SSEPD	Total
Final determinations[80]	2,892	4,599	10,414	10,027	5,156	5,864	38,953
Including updated pensions deficit funding[81]	-5	-39	246[82]	65	94	-3	358
Corrections and updates[83]	0	0	40[84]	1	10	-5	46
Adjustments arising from appeals[85]	-11	-7		-36	-19	-21	-94
Final base revenues[86]	**2,876**	**4,552**	**10,700**	**10,057**	**5,241**	**5,836**	**39,262**

[80] For WPD we published these figures in Table 1.1 of Appendix 2 of the Decision to fast-track Western Power Distribution https://www.ofgem.gov.uk/sites/default/files/docs/2014/02/fast-track_decision_letter.pdf, and for the slow-track companies we published them in table 1.1 of the slow-track final determinations https://www.ofgem.gov.uk/sites/default/files/docs/2014/11/riio-ed1_final_determination_overview_-_updated_front_cover_0.pdf.

[81] We included the updated pension deficit amounts in the slow-track final determinations document (table 5.2) but did not include them in the headline numbers – since they are not strictly part of the price control, and would make comparison with draft determinations difficult. It should be noted that the numbers in table 5.2 had to be profiled, which increased the overall amount by £2.5m.

[82] We updated the pensions deficit funding for WPD as part of the updates carried out under CRC4C of its licence. We explained this in the table in paragraph 5 of the Notice https://www.ofgem.gov.uk/sites/default/files/docs/2015/02/crc4cnotice.pdf. As a result of WPD's response, we amended the figure by a further £3m in WPD's licence.

[83] We published corrections to the slow-track final determinations on 17 December 2015 https://www.ofgem.gov.uk/publications-and-updates/corrections-elements-riio-ed1-final-determinations-suite-documents-slow-track-dnos. We made further corrections to ENWL and NPG which we included in the statutory consultation of the slow-track licence https://www.ofgem.gov.uk/sites/default/files/docs/2014/12/crc_stat_con_notice_1.pdf.

[84] We updated certain of WPD's numbers, as required under CRC4C of its licence https://www.ofgem.gov.uk/sites/default/files/docs/2015/02/wpd_crc3a_modification_notice_feb2015_0.pdf.

[85] The documents can be found here https://www.ofgem.gov.uk/publications-and-updates/cma-orders-following-british-gas-and-northern-powergrid-riio-ed1-appeals. The BGT appeal applied to the slow-track DNOs and NPg's appeal applied to the two NPg licensees. Therefore WPD was not affected.

[86] The term PU (opening base revenues) in the DNO licence.

Appendix 3 - DNO licence conditions

The following is a list of the DNOs' licence conditions.

SECTION A: STANDARD CONDITIONS FOR ALL ELECTRICITY DISTRIBUTORS
Chapter 1: Interpretation and application
1. Definitions for the standard conditions
2. Interpretation of this licence
3. Application of Section B of the standard conditions
Chapter 2: General obligations and arrangements
4. No abuse of the licensee's special position
5. Licensee's payments to the Authority
6. Provision of Information to the Authority
6A. Smart Metering Systems and Provision of Information to the Secretary of State
7. Determinations by the Authority
Chapter 3: Public service requirements
8. Safety and Security of Supplies Enquiry Service
9. Arrangements for access to premises
10. Special services and complaints procedure
10A. Smart Metering – Matters Relating to Obtaining and Using Consumption Data
11. Reporting on performance
Chapter 4: Arrangements for the provision of services
12. Requirement to offer terms for Use of System and connection
13. Charging Methodologies for Use of System and connection
13A. Common Distribution Charging Methodology
13B. EHV Distribution Charging Methodology
13C Recovery of Reinforcement Costs arising in respect of Relevant Customers
14. Charges for Use of System and connection
15. Standards for the provision of Non-Contestable Connection Services
15A. Connection Policy and Connection Performance Requirement to offer terms for the connection of Metering Equipment
17. Requirement to offer terms for the provision of Metering Point Administration Services
18. Provision of and charges for Metering Point Administration Services
19. Prohibition of discrimination under Chapters 4 and 5
Chapter 5: Industry codes and agreements
20. Compliance with Core Industry Documents
21. The Distribution Code
21A The Smart Energy Code
22. Distribution Connection and Use of System Agreement
22A. Governance and change control arrangements for Relevant Charging Methodologies
23. Master Registration Agreement
Chapter 6: Integrity and development of the network
24. Distribution System planning standard and quality of performance reporting
25. Long-Term Development Statement
25A. Distributed Generation: Connections Guide and Information Strategy
26. Disposal of Relevant Assets and restrictions on charges over Receivables
27. Theft, damage, and meter interference
28. Application of statutory powers
Chapter 7: Financial and ring-fencing arrangements

CRC 2K. Margins on licensee's Connection Activities
CRC 2L. Revenue adjustments in respect of performance failures
CRC 2M. Adjustment of licensee's revenues for the residual distribution losses incentive
CRC 2N. Assistance for high-cost distribution areas for SSEH [SSEH only]
CRC 2P. Shetland Variable Energy Costs Pass-Through Items [SSEH only]
CRC 2Q. Arrangements for the recovery of costs for an integrated plan to manage supply and demand on Shetland [SSEH only]

Chapter 3: Annual Iteration Process – Adjustments to the revenue restriction

CRC 3A. Legacy price control adjustments
CRC 3B. Determination of PCFM Variable Values relating to actual Totex expenditure for Totex Incentive Mechanism Adjustments
CRC 3C. Specified financial adjustments
CRC 3D. The Innovation Roll-out mechanism
CRC 3E. Smart Meter Roll-out Costs
CRC 3F. Arrangements for the recovery of uncertain costs [ENWL, NPgN, NPgY, SPD, SPMW, SSES only]
CRC 3F. Arrangements for the recovery of uncertain costs [LPN, EPN, SPN only]
CRC 3F. Arrangements for the recovery of uncertain costs [SSEH only]
CRC 3G. Revising the allowed level of Load Related Expenditure
CRC 3H. Allowed expenditure on improving services to Worst Served Customers
CRC 3I. Not used
CRC 3J. Allowed expenditure on Visual Amenity Projects
CRC 3K. Not used
CRC 3L. Arrangements for the recovery of Moorside Costs [ENWL Only]

Chapter 4: Price Control Financial Instruments

CRC 4A. Governance of ED1 Price Control Financial Instruments
CRC 4B. Annual Iteration Process for the ED1 Price Control Financial Model

Chapter 5: Other revenue restriction related conditions

CRC 5A. The Network Innovation Competition
CRC 5B. Restriction of charges for the provision of Legacy Metering Equipment
CRC 5C. Directly Remunerated Services
CRC 5D. Assessment of Network Asset Secondary Deliverables
CRC 5E. Charging outside the Distribution Services Area
CRC 5F. Treatment of income from recovery in respect of Relevant Theft of Electricity
CRC 5G. Net to gross adjustment for Load Related Expenditure
CRC 5H. Not used
CRC 5I. Not used
CRC 5J. Not used
CRC 5K. Disapplication

Appendix 4 – Glossary

A

Administrative burden

Things that business must do or other administrative costs that businesses sustain due to a requirement from regulation. This may include keeping records or responding to information requests.[87]

Allowed revenue

The amount of money that a network company can earn on its regulated business and recover from customers through the distribution use of system charges. Allowed revenue comprises base revenue, incentive rewards or penalties and allowances from uncertainty mechanisms.

Asset Replacement

The removal of an existing asset and installation of a new one. This may be due to poor asset condition, obsolescence or environmental or safety liabilities.

The Authority/Ofgem/GEMA

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

B

Base revenue

The core amount of money that a network company can earn on its regulated business in order to recover the efficient costs of carrying out its activities.

Benchmarking

The process used to compare a company's performance (e.g. its costs) to that of other companies.

Better regulation and better regulation principles

Established principles of better regulation state that regulation should be transparent, accountable, proportionate, consistent, and targeted only at cases where action is required.

Ofgem has interpreted better regulation to mean only regulating where necessary whilst designing rules that support competition and protect the customer. As part

[87] http://www.berr.gov.uk/whatwedo/bre/policy/simplifying-existing-regulation/administrative-burdens/page44061.html

of our better regulation work Ofgem develops an annual Simplification Plan to help reduce the burden of administration while ensuring consumer protection.[88]

Black Start

The series of actions necessary to restore electricity supplies to customers following a total or widespread partial shutdown of the GB transmission system. Black Start requires distribution substations to be re-energised and reconnected to each other in a controlled way to re-establish a fully interconnected system.

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.

Broad Measure of Customer Service (BMCS)

A composite incentive consisting of a customer satisfaction survey, a complaints metric and a stakeholder engagement and consumer vulnerability incentive. It was introduced for DPCR5 and is designed to drive improvements in the quality of the overall customer experience by capturing and measuring customers' experiences of contact with their DNO across the range of services and activities the DNOs provide.

C

Capital Asset Pricing Model (CAPM)

A theoretical model that describes the relationship between risk and required return of financial securities.

Capital expenditure (capex)

Expenditure on investment in long-lived assets.

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. Also called Business Carbon Footprint (BCF).

[88] Further details can be found at the following link: http://www.ofgem.gov.uk/About%20us/BetterReg/Pages/BetterReg.aspx

CI- Customer interruptions

The number of customers interrupted per year (CI). This is the number of customers whose supplies have been interrupted per 100 customers per year over all incidents, where an interruption of supply lasts for three minutes or longer, excluding re-interruptions to the supply of customers previously interrupted during the same incident.

CI/CML Schemes

Any discretionary schemes primarily aimed at improving CI and/or CML performance.

CML- Customer minutes lost

The duration of interruptions to supply per year (CML). This is the average customer minutes lost per customer per year, where an interruption of supply to customer(s) lasts for three minutes or longer.

Competition and Markets Authority (CMA)

The CMA was created by the Enterprise and Regulatory Reform Act 2013 and has replaced the Competition Commission and the OFT.

Competition Test

The Competition Test involves an assessment of whether there is effective competition in a relevant market segment. It is set out in Distribution Price Control 5 Final Proposals – Incentives and Obligations. More information can be found on our website.[89]

Connection Boundary

The connection charging boundary describes the split of connection costs between the DNO and the connecting customer. The costs allocated to the connecting customer are recovered via a connection charge and the costs allocated to the DNO will be recovered from all network users via use of system charges.

Connection Quotation

The notice required to be given by an electricity distributor in accordance with section 16A(5) of the Electricity Act 1989.

Consumer

In considering consumers in the regulatory framework we consider users of network services (for example generators, shippers) as well as domestic and business end consumers, and their representatives.

[89] https://www.ofgem.gov.uk/electricity/distribution-networks/connections-and-competition/competition-connections

Consumer Challenge Group

The consumer challenge group comprised of members appointed by Ofgem on the basis of their expertise in the interests of present and future consumers and energy sector knowledge. They provided Ofgem with advice on consumer priorities for the price control

Contestable Activities

Connections activities that can be carried out by a non-affiliated third party with relevant accreditation.

Cost of capital

This is the minimum acceptable rate of return on capital investment. It includes both the cost of debt to a firm, 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.

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 (e.g. 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 from financial history and current assets and liabilities. There are three major credit rating agencies (Standard & Poor's, Fitch and Moody's) who use broadly similar credit rating scales, with D being the lowest rating[90] (highest risk) and AAA being the highest rating (negligible risk). The companies regulated by Ofgem typically have a credit rating of BBB, BBB+, A- or A.

Critical National Infrastructure (CNI)

Sites designated as category 3 or above on DECC's criticality scale.

Customer Contributions

Revenue recovered from specific customer for individual services via relevant charges.

Cut-out

A piece of electrical equipment that links the DNO network and the internal wires in a property. It is usually located next to the electricity meter.

[90] The lowest credit rating on Moody's scale is C.

D

De minimis

Any business conducted or carried on by the licensee, or by an Affiliate or a Related Undertaking of the licensee in which the licensee holds shares or other investments, other than:

- the Distribution Business
- any other business or activity to which the Authority has given its consent under paragraph 4 of standard condition 29 (Restriction of activity and financial ring-fencing of the Distribution Business).

Demand side management (DSM)

Demand side management (or load management) is any mechanism (both social and mechanical) that allows a customer's demand to be intelligently managed in response to events on the power system. Such events would include lack of network capacity or insufficient generation.

Department of Energy and Climate Change (DECC)

Depreciation

Depreciation is a measure of the consumption, use or wearing out of an asset over the period of its economic life.

Design Life

The period over which an asset is designed to last.

Distributed Generation (DG)

Generation which is connected to the distribution network (rather than the transmission system).

Distributed Generation (DG) Connections Guide

A common set of documents produced by the DNOs and approved by the Authority that provides guidance on:

- The details of the statutory and regulatory framework (including health and safety considerations) that apply to DG connections
- The likely costs, charges, and timescales involved in the application process.
- The details of the arrangements and opportunities available for competitive activity in the provision or procurement of a connection.
- Engineering and other technical matters relevant to the commissioning, energisation, and maintenance of such connections.

Distributed Generation (DG) Forum

A series of annual regional events held by Ofgem since to discuss explore the experience of connecting distribution generation to the distribution network.

Distribution network

The distribution system is a network of wires, transporting electricity from the transmission system or distribution connected generation to domestic, commercial and industrial electricity consumers.

The electricity distribution network 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.

Distribution network losses

See Losses.

Distribution Network Operators (DNOs)

Holders of electricity distribution licences. Licences are granted for specified geographical areas in Great Britain. Currently there are 14 DNOs owned by six different groups.

Distribution Price Control Review 3 (DPCR3)

The price control review for the electricity distribution network operators covering the period from 1 April 2000 to 31 March 2005.

Distribution Price Control Review 4 (DPCR4)

The price control review for the electricity distribution network operators covering the period from 1 April 2005 to 31 March 2010.

Distribution Price Control Review 5 (DPCR5)

The price control review for the electricity distribution network operators covering the period from 1 April 2010 to 31 March 2015.

Draft determinations

Consultation on the proposed DNO settlements for the price control period. In previous price control reviews, draft determinations were called Initial Proposals.

E

Economic Life

The period over which an asset performs a useful function.

Efficiency incentive

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.

EHV (Extra High Voltage)

Voltages equal to or greater than 22kV but less than 132kV.

Energy Ombudsman/Ombudsman Services (EO)

Ombudsman Services provides an independent dispute resolution service for the communications, energy, property and copyright licensing sectors.

Excluded Market Segment

Any of the excluded market segments that are described in or determined in accordance with Appendix 1 of CRC 2K. Margins on licensee's Connection Activities. In DPCR5 Final Proposals Ofgem considered that competition was not viable in these market segments at that time or in the foreseeable future.

F

Fault

Any incident arising on the licensee's distribution system, where statutory notification has not been given to all customers affected at least 48 hours before the commencement of the earliest interruption (or such notice period of less than 48 hours where this has been agreed with the customer(s) involved).

Final determinations

Documents containing the final DNO settlements for the price control period. In previous price control reviews, final determinations were called Final Proposals.

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 regulated asset value (RAV) under the proposed price control. This financeability is assessed using a range of different financial ratios.

Financial structure

The way in which a company finances its assets, for example through short-term borrowings, long-term debt and shareholder equity.

Fuel poverty

A fuel poor household is defined as one that needs to spend 10% or more of their household income on all fuel use in order to maintain a satisfactory heating regime. DECC's latest fuel Fuel Poverty review (Hills Fuel Poverty Review) recommends that any household that requires fuel costs above the median level and, if they were to spend that, are left below the official poverty line, should be defined as fuel poor.

G

Gas and Electricity Markets Authority (GEMA)

(See the Authority/Ofgem)

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).

General Reinforcement

Work carried out on the network in order to enable new load growth (both demand and generation) which is not attributable to specific customers.

Generation connection

A new or modified connection that enables the electricity distribution system to receive a supply of electricity from the premises.

Gigawatt Hour (GWh)

Equal to one million Kilowatt Hours.

Greenhouse gas (GHG)

A collection of gases which absorb infrared radiation and trap its heat in the atmosphere.

Guaranteed Standards of Performance

A set of service levels that must be met by each distribution company. These standards have been set to guarantee a level of performance that is reasonable to expect companies to deliver in all cases.

If the distribution company fails to meet the level of performance required, it must make a payment to the customer subject to certain conditions.

There are two sets of Guaranteed Standards of Performance, one for connections and one for reliability.

Payments under the guaranteed standards compensate for the inconvenience caused. They are not designed to compensate customers for subsequent financial loss.

H

Health Index (HI)

The Health Index (HI) is a framework for collating information on the health (or condition) of network assets and for tracking changes in their condition over time. HIs are part of the suite of Network Asset Indicators.

The Health and Safety Executive (HSE)

A public body responsible for regulating health and safety in Great Britain with the primary function to secure the health, safety and welfare of people at work and to protect others from risks to health and safety from work activity.

High Impact Low Probability (HILP)

These are extreme events that could result in the prolonged loss of supply to localities that have a high gross [economic] value added (GVA). HILP activity relates to increasing the security of supply, to localities that have a high GVA, to levels that exceeds P2/6 recommended levels.

High Value Projects (HVPs)

High value schemes specified and agreed with individual DNOs to be undertaken during price control period and specified in the final determinations.

HV (High Voltage)

Voltages over 1kV up to, but not including, 22kV.

I

IDNO (Independent Distribution Network Operator)

Any Electricity Distributor in whose Electricity Distribution Licence the requirements of Section B of the standard conditions of that licence have no effect (whether in whole or in part).

Independent Connection Providers (ICPs)

A person or body with sufficient accreditation to carry out all or part of the contestable work related to a connection.

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.

Interconnector

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

Interruption

The loss of supply of electricity to one or more customers due to an incident. This excludes voltage quality and frequency abnormalities, such as dips, spikes or harmonics.

Interruptions Incentive Scheme (IIS)

Scheme which provides financial incentives to DNOs with respect to the average quality of service they provide in terms of:

- the number of interruptions to supply (measured in CI)

- the duration of interruptions to supply (measured in CML)

K

Kilowatt Hours (KWh)

A unit of energy equal to the work done by a power of 1000 watts operating for one hour.

L

Licence conditions (obligations)

An obligation placed on the network companies under the Electricity Act to meet certain standards of performance. The Authority (GEMA) has the power to take appropriate enforcement action in the case of a failure to meet these obligations.

Load Index (LI)

The Load Index (LI) is a framework for collating information on the utilisation of network assets and for tracking changes in their utilisation over time. LIs are part of the suite of Network Asset Indicators.

Load Related Expenditure (LRE)

Expenditure relating to the development of the network to accommodate more load.

Logging up

A type of uncertainty mechanisms, logging up is a provision that a company will be compensated for all, or part, of its actual expenditure on a particular activity or area, through the revenue allowance set at the next price control review.

Long Term Development Statement

A document that sets out the use and likely development of the distribution network and the distribution network operator's plans for modifying the distribution system for the following two years. The document should also cover the parts of the distribution system that are likely to reach capacity during the next five years, the distribution network operator's plans to reduce any shortcomings in operation/capacity and (where applicable) how actual developments have compared to the distribution network operator's plans under the previous statements. All distribution network operators must produce and maintain a LTDS.

Losses

The electricity "lost" between electricity entering and exiting the network. Caused by the physics of electricity distribution, theft, or measurement inaccuracies.

Low carbon economy

An economy which has a minimal output of greenhouse gas emissions.

Low Carbon Networks Fund (LCN Fund)

A mechanism introduced under the fifth distribution price control review to encourage the DNOs to use the forthcoming price control period to prepare for the role they will have to play as the country moves to a low carbon economy. The fund will see up to £500m made available for DNOs and partners to innovate and trial new technologies, commercial arrangements and ways of operating their networks.

LV (Low Voltage)

Voltages of 1kV and below.

M

Market segment

See Relevant Market Segment

Megawatt Hours (MWh)

Equals 1,000 kilowatt hours.

Metered Connection

A connection that has a meter to measure consumption of electricity

Modern Equivalent Asset Value (MEAV)

The current replacement value of an asset.

N

National Grid Electricity Transmission (NGET)

The electricity transmission licensee in England & Wales.

National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS)

As referred to in the electricity Transmission Licence Standard Conditions C17 and D3, this is the standard in accordance with which the electricity transmission licensees shall plan, develop and operate the transmission system.

Net Present Value (NPV)

NPV is the discounted sum of future cash flows, whether positive or negative, minus any initial investment.

Network Asset Indices

Indices relating to asset health, criticality and risk, as defined for the RIIO-ED1 period in Standard Condition 51 (Network Asset Indices Methodology) of the electricity distribution licence. In DPCR5, RIIO-T1 & GD1 these are called Network Output Measures (NOMs).

Network Asset Secondary Deliverables

Secondary Deliverables relating to asset health, criticality and risk, as defined for the RIIO-ED1 period in Standard Condition 51 (Network Asset Indices Methodology) of the electricity distribution licence.

Network Assets

Operational network assets (excluding metering related costs) recorded in balance sheet as fixed assets, which are subsequently sold/disposed.

Network charges

These are charges set for the use of network services.

Network Innovation Allowance (NIA)

A set, use-it-or-lose-it allowance for each DNO to fund small-scale innovative projects as part of their price control settlement.

Network Innovation Competition (NIC)

A single annual competition for electricity transmission and distribution network companies to apply for funding to trial large-scale, innovative projects with low carbon or other environmental benefits. Companies can apply to have a maximum of 90% of the project costs funded through the NIC.

Network users

Companies along the gas and electricity supply chain (i.e. producers/generators, transmission and distribution networks, and energy suppliers).

O

Operating Expenditure (Opex)

The costs of the day to day operation of the network such as staff costs, repairs and maintenance expenditures, and overhead.

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 the DNOs' control or because they have been subject to separate price control measures.

Price control (control)

The control developed by the regulator to set targets and allowed revenues for network companies. The characteristics and mechanisms of this price control 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.

Priority Service Register

A register of all customers in an electricity distribution area that are of pensionable age, disabled, chronically sick, require special communication needs, depend on electricity for medical reasons, or require certain information and advice about supply interruptions. The electricity distribution network operator must provide all customers on their PSR with prior advice and information about planned interruptions and appropriate information and advice about what precautions to take in the event of an unplanned supply interruption.

Q

Quality of Service

See Interruptions Incentive Scheme.

R

Real Price Effects (RPE)

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 distribution or (as the case may be) transmission 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)

The collection of documents that instruct the DNOs how to complete the reporting requirements for the price control. The RIGs are governed by the electricity distribution licence.

Regulatory Year

The 12 month period from 1 April to 31 March.

Relevant Market Segments

Any of the relevant market segments that are described in or determined in accordance with Appendix 1 of CRC 2K. Margins on licensee's Connection

Activities. In DPCR5 Final Proposals Ofgem considered that competition is viable in these market segments. In Relevant Market Segments that have passed the Competition Test, DNOs are able to charge an unregulated margin on contestable services. In Relevant Market Segments that have not passed the Competition Test DNOs currently charge a 4% margin on contestable services.

Re-openers

A process undertaken by Ofgem to re-set the revenue allowances (or the parameters that give rise to revenue allowances) under a price control before the scheduled next formal review date for the relevant price control.

Retail Prices Index (RPI)

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

Return on Regulatory Equity (RORE)

The financial return achieved by shareholders in a licensee during a price control period from its out-turn performance under the price control. The return is measured using income and cost definitions contained in the price control regime (as opposed to accounting conventions) and is expressed as a percentage of (share) equity in the business. Importantly, in the calculation the gearing (proportions of share equity and debt financing in the RAV) and cost of debt figures used are those given as the 'assumed' levels in the relevant price control final proposals. The aim of the RORE measure is to provide an indication of the return achieved by the owners of a licensee which can be compared to the cost of equity originally allowed in the price control settlement and to the return achieved by other licensees on an equivalent basis.

Revenue driver

A means of linking revenue allowances under a price control to specific measurable events which are considered to influence costs. An example might be to allow a specified additional revenue allowance for each MW 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.

RIIO-ED1

The price control review for the electricity distribution network operators, following DPCR5. This price control will run from 1 April 2015 to 31 March 2023.

RIIO-GD1

The price control review for the gas distribution network operators, following GDPCR. This price control runs from 1 April 2013 to 31 March 2021.

RIIO-T1

The price control review for the electricity and gas transmission network operators, following the TPCR4 rollover. This price control runs from 1 April 2013 to 31 March 2021.

RPI-X

The form of price control currently applied to network monopolies. Each company is given a revenue allowance in the first year of each control period. The price control then specifies that in each subsequent year the allowance will reduce by 'X'% in real terms.

RPI-X@20

Ofgem's comprehensive review of how we regulate energy network companies, announced in March 2008. Its conclusions published in October 2010 resulted in the implementation of a new regulatory framework, known as the RIIO model.

S

Secondary deliverables

Indicators of performance which may be used in support of the companies' required primary outputs

Settlement data

Data arising through the Balancing and Settlement Code (BSC) settlement processes.

Severe weather 1-in-20 events

Events which gives rise to more than 42 times the mean incidents at HV and above, give rise to more than the threshold for customer interruptions or customer minutes lost.

Smart grid

An electricity network that can intelligently integrate the actions of all the users connected to it - generators, consumers and those that do both - in order to efficiently deliver sustainable, economic and secure electricity supplies.

Stakeholder

Stakeholders are those parties that are affected by, or represent those affected by, decisions made by network companies and Ofgem. As well as consumers, this would for example include Government and environmental groups.

Storage

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).

Straight line depreciation

Straight line depreciation depreciates the asset value in a linear fashion throughout its useful life. It is calculated by dividing the Gross Book Value of an asset by its expected useful life.

Sulphur Hexafluoride (SF_6)

A potent greenhouse gas frequently used in electrical equipment.

Supply chain

Refers to all the actors involved in the delivery of electricity and gas to the final consumers - from electricity generators and gas shippers, through to electricity and gas suppliers.

Sustainable development

Refers to economic development which 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 which promotes security of supply over time; delivers a low carbon economy and associated environmental targets; and delivers related social objectives (e.g. fuel poverty targets).

System Mapping

The activity of mapping of the network and operational premises of the network to geographical locations.

System Operator (SO)

NGG as the gas system operator has responsibility to construct, maintain and operate the NTS and associated equipment in an economic, efficient and co-ordinated manner. NGET as the electricity system operator has responsibility to construct, maintain and operate the NETS and associated equipment in an economic, efficient and co-ordinated manner. In their roles as SOs, NGG and NGET are responsible for ensuring the day-to-day operation of the transmission systems.

T

Technical Life

The estimated length of time from the date of commission to a point in time when on average the assets fall below minimum acceptable and / or safety performance levels.

Terawatt (TWh)

Equals one thousand Gigawatt hours.

Third Package (Third Internal Energy Market Legislative Package)

The third package is a package of EU legislation for harmonising EU gas and electricity markets. It is a key step in implementation of an internal EU energy market. It recognises the need for better co-ordination between European network operators and continuing co-ordination between regulators at that level. It continues many of the internal market principles identified above in relation to the earlier First and Second Packages.

Traffic Management Act (TMA)

Introduced in 2004 to tackle congestion and disruption on the road network. The TMA Act places a duty on local traffic authorities to ensure the expeditious movement of traffic on their road network and those networks of surrounding authorities. It gives authorities additional tools to better manage parking policies, moving traffic enforcement and the coordination of street works

Total expenditure (Totex)

Totex generally consists of all the expenditure relating to a licensee's regulated activities; with the exception of some specified expenditure items. It can be seen as the aggregate net network investment, net network operating costs and indirect costs, less the cash proceeds of sale of assets and scrap.

Transmission Owners (TO)

Companies which hold transmission owner licenses. Currently there are three electricity TOs; NGET, SPTL and SHETL. NGG NTS is the gas TO.

Transmission system

The system of high voltage electric lines providing for the bulk transfer of electricity across Great Britain.

Transmission System Operator (TSO)

See System Operator

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. Examples include revenue triggers and volume drivers.

Undergrounding

The replacement of overhead power cables with buried electricity distribution cables.

Unmetered Connection

A connection where the charges for electricity consumption are not measured via a meter. The Electricity (Unmetered) Supply Regulations 2001 describe the circumstances in which a supply of electricity may be unmetered, for example small electricity loads that have predictable consumption.

Upper Quartile (UQ) Cost Benchmarking

For the purposes of this document UQ cost benchmarking refers to the approach of setting a benchmark at the 25th percentile (ie the lowest) of DNO costs. This approach has typically been proposed for areas of expenditure where there is a high degree of commonality across different DNOs' expenditure.

V

Vanilla Weighted Average Cost of Capital (Vanilla WACC)

The weighted average cost of capital using a pre-tax cost of debt and a post-tax cost of equity.

Visual Amenity

The justification for undergrounding.

W

Weighted Average Cost of Capital (WACC)

The weighted average of the cost of equity and the cost of debt, where the weighting is provided by the gearing ratio. This represents the cost to a company of raising the funds for its activities (specifically, its capex programme). As part of the price control process, Ofgem sets an allowance for the expected WACC that its regulated companies pay.

Worst Served Customers (WSC)

Customers experiencing more than a defined (high) number of unplanned interruptions in a year.