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# RIIO-ED1 Annual Report 2017-18

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This report outlines our key findings for the Distribution Network Operators' (DNOs) performances in 2017-18. This was the third year of the RIIO-ED1 price control, which runs until 2023.

This report gives an overview of each DNO's performance against their agreed outputs and incentives, innovation schemes, and overall financial performance. It also provides forecasts for the remainder of the price control.

# Associated documents

## DNO Business Commitment reports 2017-2018

**ENWL:** https://www.enwl.co.uk/globalassets/about-us/regulatory-information/documents/business-plan-committments-report/business-plan-commitments-report-2018.pdf
**NPg:** https://www.northernpowergrid.com/asset/0/document/4684.pdf
**WPD:** http://www.westernpower.co.uk/WPD-Business-Plan-Commitments-Report-2017-18
**UKPN:** https://library.ukpowernetworks.co.uk/library/en/RIIO/RIIO-ED1-Commitment-Report/20008_UKPN_ED1+Report+WEB+29.10.18.pdf
**SPEN:** https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Distribution_Report_2018.pdf
**SSEN:** https://www.ssen.co.uk/WorkArea/DownloadAsset.aspx?id=16295

## DNO Environment reports 2017-2018

**ENWL:** https://www.enwl.co.uk/globalassets/about-us/regulatory-information/documents/environment-report/2017-18-report/environment-report-2018.pdf
**NPg:** https://www.northernpowergrid.com/asset/1/document/4580.pdf
**WPD:** https://www.westernpower.co.uk/downloads/14419
**UKPN:** https://www.ukpowernetworks.co.uk/internet/en/about-us/documents/Annual_Environment_Report_2017-18v1.0.pdf
**SPEN:** https://www.spenergynetworks.co.uk/userfiles/file/Environmental_and_Innovation_Report_2017_18.pdf
**SSEN:** https://www.ssen.co.uk/WorkArea/DownloadAsset.aspx?id=16266

## Regulatory Finance Performance

**Regulatory Finance Performance Annex 2017-18:**
https://www.ofgem.gov.uk/publications-and-updates/regulatory-financial-performance-annex-riio-1-annual-reports-2017-18

## Previous Annual Reports

**RIIO electricity distribution annual report 2016-17:**
https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2016-17

**Supplementary data file**
https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2016-17

**RIIO electricity distribution annual report 2015-16:**
https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2015-16

**Supplementary data file**
https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2015-16

# Contents

# Executive Summary

The current price control for the 14 electricity distribution network operators (DNOs) under the RIIO framework runs from 1 April 2015 to 31 March 2023. RIIO focuses on innovation, incentives, and output delivery, as well as the DNOs' total expenditure (totex).

This report outlines our key findings of the DNOs' performance in the third year of the price control (RIIO-ED1), ie, 2017-18. It also outlines totex forecasts for the remainder of the price control.

## Output performance and drivers

A number of incentives within the RIIO-ED1 framework, both financial and reputational (such as public reporting on delivery), encourage strong performance against the output categories. DNOs continue to perform strongly against four of the six categories: reliability and availability, customer satisfaction, social obligations, and safety. There is, however, scope for improvement in the connections and environmental outputs.

Under reliability and availability, DNOs continue to invest in their networks to improve the network performance for customers, and continue to earn rewards under the Interruptions Incentive Scheme (IIS). On average, the number of customer interruptions has fallen by 11% since the start of RIIO-ED1; the duration of interruptions has, on average, reduced by 9% in the same period.

Customer service continues to improve, with all DNOs exceeding their customer service targets. The DNOs continue to actively engage with their stakeholders, and are working to address the needs of their vulnerable customers (ie meet their social obligations); we expect the DNOs to continue to embed proven initiatives and develop new approaches.

At industry level, there have been significant improvements since the beginning of RIIO-ED1 in managing the DNOs' impacts on the environment. All DNOs are on track to meet their targets for Business Carbon Footprint reduction; however, compared to last year, performance against $SF_6$ emissions and oil leakage is mixed. We welcome the DNOs' commitments to achieve their targets by the end of the price control.

The DNOs continue to comply with the standards set by the Health and Safety Executive, and are striving to reduce accident rates.

In regards to connections, despite the potential financial rewards available, six of the 14 DNOs missed their targets for the time taken to connect new customers to the network. While this is an improvement on last year's performance, we expect all DNOs to meet their targets and to learn lessons from those who have. Almost all DNOs met their targets for the time taken to quote customers for a connection.

## Financial performance and drivers

Within RIIO-ED1, the DNOs were set allowances totalling £27.8bn over the price control to deliver their outputs. They are currently forecasting to spend £26.6bn, 5% less than their allowances.

In the first three years of RIIO-ED1, the DNOs have spent £10.2bn managing their networks – 6% less than the allowances. Any underspend against allowed expenditure is shared between the DNO and its customers (reflected in customer bills), through the Totex Incentive Mechanism (TIM). Underspend, both forecast and to date, is lower than in previous price controls.

We present the financial performance of the DNOs using the Return on Regulatory Equity (RoRE) measure. This is the first year we are reporting RoRE values that include the DNOs' financing and tax performances. The forecast eight-year RoRE for each of the DNO groups ranges from 6.51% to 11.63%; the forecast eight-year average RoRE across the industry is 9.15%. This estimate depends on current expenditure forecasts, and future delivery of outputs may change during the remaining years of RIIO-ED1.

For three DNO groups, the biggest contributor to RoRE outperformance against the baseline cost of equity is the financial rewards from the IIS; for two DNO groups, it is due to underspend against allowances, and for the remaining DNO group, it is due to their debt performance.

Totex underspend is driven by two main capex cost categories: replacement and refurbishment of assets, and network reinforcement. Across these two cost categories, some underspend is explained by external factors beyond the DNOs' control (for example, changing economic conditions have dampened the demand for electricity, resulting in lower than forecast growth). Efficiencies achieved by the DNOs (for example, improved working practices and innovation) also contribute, as do timing factors; some expenditure is re-profiled to later in the price control where DNOs expect to be able to negotiate better contracts, embed new delivery strategies, benefit from innovation, and improve both the data and information driving their decision-making.

There are two main areas with relatively high levels of overspend: network faults, and operational support costs. As was the case during 2016-17, external factors such as the impact of weather events (storms) have driven up fault costs; overspend in operational support is in part due to the tight price control settlements, and in part due to investment in operational support to achieve wider totex efficiencies.

It should be noted that these findings are based on three years of an eight-year price control. In addition, the overall underspend by the DNOs against their totex allowances does not account for scheduled reopener mechanisms, which may change DNO allowances and, therefore, the revenue they can collect from customers via bills.

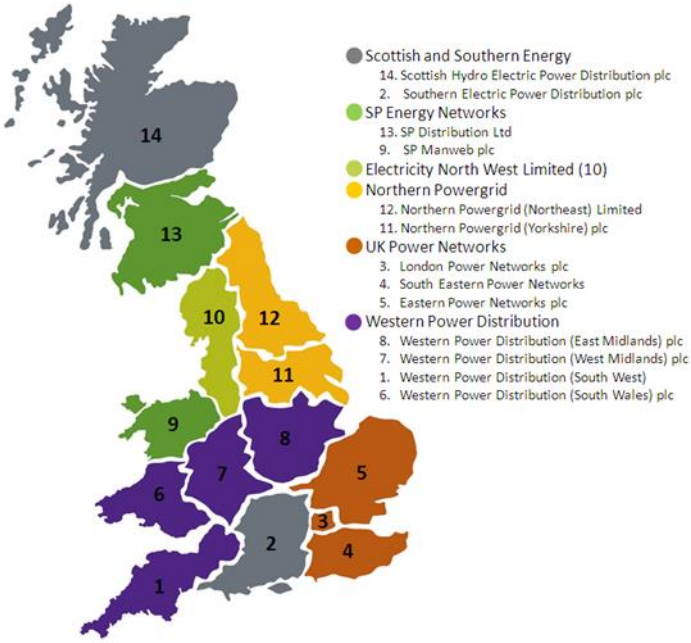
## Customer bill impact

The output and financial performance of the DNOs affects the revenue they can collect through customer bills. The DNOs' performances in 2017-18 will impact allowed revenue, and therefore customer bills, in 2019-20. We estimate that the average domestic customer in Great Britain will pay £87 (in 2017-18 price terms) in 2019-20 to cover electricity distribution network costs, up 2% from £85 in 2018-19 (in real 2017-18 price terms), in return for receiving an improved service.

# 1. Introduction and Context

1.1. This report reviews the activities of the 14 electricity distribution network operators (DNOs) in 2017-18, the third year of the current RIIO-ED1 price control, which runs from April 2015 until March 2023.

1.2. DNOs are responsible for carrying electricity from the high voltage transmission network to industrial, commercial and domestic users. They also distribute energy from generation sources that connect to their networks directly. There are 14 DNOs operating in Great Britain (GB), managed by six companies.




1.3. To ensure value for money for consumers, we regulate DNOs through periodic price controls. These determine the amount of revenue that DNOs can earn, and stipulate the levels of performance the DNOs must deliver in return. To set our price controls we use the RIIO (Revenue = Incentives + Innovation + Outputs) framework.

1.4. We set the baseline revenues that DNOs can earn at the start of the price control. DNOs decide how to spend their baseline expenditure to manage their networks (Chapter 3), and deliver against the set outputs, associated incentives (Chapter 2), and their wider business plan commitments.[1] These revenues are adjusted year-on-year depending on how efficiently DNOs incur expenditure and how effectively they deliver their outputs. We provide detail on what drives expenditure performance in Chapter 4.

1.5. Using data and supporting information submitted by the DNOs, this report reviews the DNOs' output and financial performances. We measure DNOs' financial performance by the Return on Regulatory Equity (RoRE).[2] The RoRE is driven by the level of overspend or underspend against totex allowances (expenditure performance), and the incentives that help deliver some of the primary outputs (output performance).

1.6. Any underspend (or overspend) compared to totex allowances is shared between the DNO and its customers, according to a pre-determined totex efficiency incentive rate.[3] Therefore, efficient spending leads to lower network charges for customers as well as higher returns for investors. Equivalently, any overspend is shared between investors and customers.

[1] The associated documents section of this report provides links to all of the DNOs' Business Plan Commitment Reports.

[2] It is worth noting that we have made changes to the way we report RoRE for 2017-18. Further details are provided in the Finance Annex.

[3] DNOs that submit better forecasts of the costs they expect to incur during the price control (ie closer to our view of efficient costs when setting the RIIO-ED1 price control) receive a higher totex incentive strength rate, meaning DNOs receive more of any underspend.

1.7. To further protect customers, we also ensure that cost efficiencies in one price control are reflected in the baseline allowances in the next. For example, if DNOs can achieve outputs at a lower unit cost in RIIO-ED1, this will inform the benchmark for the next price control, RIIO-ED2, which will start in April 2023.

1.8. This report provides the headlines on the DNOs' performances to date. More detail is in the supplementary data file (Appendix 1). Unless otherwise stated, all financial values in this report are in 2017-18 prices.

**Table 1.1: DNO names and abbreviations**

| DNO Group | DNO | Licensee name |
|---|---|---|
| **Electricity North West Limited (ENWL)** | ENWL | Electricity North West Limited |
| **Northern Powergrid (NPg)** | NPgN | Northern Powergrid (Northeast) Limited |
| | NPgY | Northern Powergrid (Yorkshire) plc |
| **Western Power Distribution (WPD)** | WMID | Western Power Distribution (West Midlands) plc |
| | EMID | Western Power Distribution (East Midlands) plc |
| | SWALES | Western Power Distribution (South Wales) plc |
| | SWEST | Western Power Distribution (South West) |
| **UK Power Networks (UKPN)** | LPN | London Power Networks plc |
| | SPN | South Eastern Power Networks plc |
| | EPN | Eastern Power Networks plc |
| **SP Energy Networks (SPEN)** | SPD | SP Distribution plc |
| | SPMW | SP Manweb plc |
| **Scottish and Southern Electricity Networks (SSEN)** | SSEH | Scottish Hydro Electric Power Distribution plc |
| | SSES | Southern Electric Power Distribution plc |

# 2. Output performance, incentives, and innovation

**Chapter purpose**

This chapter gives a summary of the DNOs' performances in each of the six primary outputs in 2017-18, including red/amber/green (RAG) ratings, and ranking of the DNOs across various measures. More detail is provided in Appendix 2 and the in supplementary data file at Appendix 1.

**Key messages**
DNOs are broadly meeting their outputs by delivering a safe and reliable network while reducing the environmental impact of their operations. However, some DNOs have missed some targets for connecting customers, and there has been a notably mixed performance across the environmental measures.

## Outputs and Incentives

2.1. DNOs must deliver a range of outputs during RIIO-ED1. They are encouraged to do so by various financial and reputational incentives, including public reporting on delivery. Our view of DNO performance against these outputs in the third year of the price control is summarised in Table 2.1.

2.2. After the third year of RIIO-ED1, DNOs continue to perform strongly against four of the six output categories: reliability and availability, customer satisfaction, social obligations, and safety. There is, however, scope for improvement for the connections and environmental outputs.

2.3. Performance against the environmental output is not directly comparable across DNOs, as each committed to different environmental targets and start from different baselines. Progress against these targets is reported in their Business Plan Commitment Reports (see the related documents section).

2.4. Despite the differences in performance and targets, we have included the environment output in Table 2.1 to allow more direct comparison across the DNOs. We present a snapshot of annual performance across three areas – business carbon footprint (BCF), $SF_6$ emissions,[4] and oil leakage from fluid-filled cables.

2.5. Across all incentives, DNOs have earned £200m in incentive payments in 2017-18 (see Table 2.2).

[4] $SF_6$ – sulphur hexafluoride, a gas used to insulate high-voltage circuit breakers, switchgear, and other electrical equipment. It is an inorganic, extremely potent greenhouse gas.

### Table 2.1: DNO output performance, 2017-18

| | Reliability and availability | Connections | Social Obligations | Customer Service[1] | Environment | Safety |
|---|---|---|---|---|---|---|
| ENWL | | | SECV score reduced | | FFC target missed | |
| NPGN | | Missed 3 of 4 connections targets | | | Internal $SF_6$ target missed | |
| NPGY | | | | | | Notice issued by HSE[2] |
| WMID | Missed planned part of targets | | | | | |
| EMID | | | | | | |
| SWALES | | | | | Internal $SF_6$ targets missed | |
| SWEST | Missed CI target and planned part of CML target | | | | | |
| LPN | | | | | | Notice issued by HSE[2] |
| SPN | | | SECV score reduced | | Internal $SF_6$ and FFC targets missed | |
| EPN | | TTC targets missed | | | Oil leakage slightly increased | |
| SPD | | TTC targets missed | | | | |
| SPMW | | TTC targets missed | | | | |
| SSEH | Missed planned part of targets | | | | Overall increase in oil leakage | |
| SSES | | TTC targets missed | | | Mixed $SF_6$ and BCF performance | |

FFC = Fluid Filled Cable; TTC = Time to Connect; TTQ = Time to Quote; CI = Customer Interruptions; CML = Customer Minutes Lost

1. The customer service RAG excludes DNOs' performance under the Stakeholder Engagement and Vulnerable Customer (SECV) incentive, which is reflected in the social obligations output.
2. NPgY received an immediate prohibition notice from the HSE during 2017-18. This was in respect of an isolated incident where work was temporarily halted to address an excavation issue. LPN received an improvement notice to address management arrangements for the replacement of pre-1937 fused neutral cut outs.

### Table 2.2: DNO incentive rewards and penalties, 2017-18 (£m)

| Primary Output | Reliability and availability | Connections | | Customer Service & Social Obligations | Environment | |
|---|---|---|---|---|---|---|
| Incentive | Interruptions Incentive Scheme | Incentive on connections engagement | Time to Connect Incentive | Broad measure of customer service[1] | Losses discretionary reward scheme | Total incentive payments |
| ENWL | 10.9 | - | 1.3 | 1.7 | - | 13.9 |
| NPgN | 9.8 | - | 0.0 | 2.6 | - | 12.4 |
| NPgY | 15.1 | - | 0.1 | 2.9 | - | 18.1 |
| WMID | 19.9 | - | 1.8 | 6.1 | - | 27.7 |
| EMID | 15.9 | - | 1.8 | 6.2 | - | 23.9 |
| SWALES | 2.8 | - | 0.8 | 3.1 | - | 6.7 |
| SWEST | -0.4 | - | 1.3 | 4.3 | - | 5.3 |
| LPN | 14.8 | - | 0.9 | 3.7 | - | 19.4 |
| SPN | 9.8 | - | 1.0 | 3.5 | - | 14.2 |
| EPN | 17.6 | - | 0.5 | 5.0 | - | 23.1 |
| SPD | 9.9 | - | 0.7 | 3.2 | - | 13.8 |
| SPMW | 5.1 | - | 0.7 | 3.3 | - | 9.1 |
| SSEH | 2.1 | - | 0.9 | 2.1 | - | 5.1 |
| SSES | 4.8 | - | 0.9 | 1.7 | - | 7.4 |
| **Total** | **138.0** | **-** | **12.8** | **49.2** | **-** | **200.0** |

1. This reward includes the SECV rewards, which is reflected in the social obligations output.

**Reliability and Availability**

2.6. The strong reliability and availability output performance has been predominantly driven by the Interruptions Incentive Scheme (IIS), which incentivises DNOs to reduce the number and duration of interruptions experienced by their customers.[5]

2.7. In the first three years of RIIO-ED1, network reliability has remained high at around 99.99%. Since the beginning of RIIO-ED1, customer interruptions have fallen by 11%, and the duration of interruptions has fallen by around 9%. On average, in 2017-18 each customer was off supply for around 36 minutes over the course of the year.

2.8. All but one DNO (SWEST) met their IIS targets for unplanned interruptions in 2017-18. DNOs continue to invest in network assets to reduce the number of Customer Interruptions (CIs), as well as improve operational practices (such as locating and repairing faults) to reduce the Customer Minutes Lost (CMLs). While performance overall has continued to improve, some DNOs' performances have deteriorated compared to last year. This is largely due to poor weather conditions, including storms.

2.9. Based on performance in 2017-18 against the targets, DNOs will earn £138.0m under the IIS. This compares with £165.6m in 2016-17. In both years, a number of DNOs reached the cap on rewards that can be earned under the IIS.[6] The reduced rewards reflect not only the poor weather the DNOs faced, but also the fact that the DNOs' targets get tighter over time.

**Connections**

2.10. DNOs are incentivised to connect customers in an efficient and timely manner through the Time to Connect (TTC) incentive. This sets common targets for the time to both quote and connect customers, and resulted in a total payment of £12.8m across all 14 DNOs in 2017-18.

2.11. In 2017-18, there were improvements in the time taken to quote for connections, with the majority of DNOs meeting or outperforming their targets. However, six of the 14 DNOs (NPg, UKPN's EPN licensee, SPEN and SSE's SSES licensee) missed their time to connect targets;[7] this is an improvement on last year, when eight DNOs missed their targets.

2.12. The Incentive on Connections Engagement (ICE) was introduced in April 2015 to ensure the DNOs meet the needs of larger or more complex connections customers;[8] if they fail to do so, the DNO may be subject to a penalty. Overall, we were satisfied with DNOs' performances in the third year of the incentive; no penalties were applied in 2017-18. However, we received concerning feedback in some areas, including around how DNOs

[5] Under the IIS, an interruption is defined as a loss of supply lasting three minutes or longer.
[6] We introduced a cap on rewards at the beginning of RIIO-ED1 so that customers are not exposed to excessive DNO rewards.
[7] The Time to Connect (TTC) incentive measures the time between the date that the customer accepts the connection quotation and the date that the work is completed. We are aware that some delays in connection are caused by issues that are beyond the DNOs' control, and these have been accounted for as part of the targets that were set.
[8] Unmetered, generation, and higher-voltage demand customers.

engaged with stakeholders that use third parties. We expect the DNOs to continue to adapt to the changing needs of their stakeholders.

**Social Obligations and Customer Service**

2.13. The Broad Measure of Customer Service (BMCS) has been a key driver of improvements in customer service. It has three individual mechanisms: a Customer Satisfaction Survey (CSS), the Complaints Metric, and the Stakeholder Engagement and Consumer Vulnerability (SECV) incentive. All DNOs met or outperformed their CSS targets in the third year, building on their performances in RIIO-ED1 to date; the industry average score is 8.7 out of 10. In terms of complaints, all DNOs outperformed their targets, and continued to improve their performances in this area.

2.14. The SECV is designed to encourage DNOs to proactively engage with stakeholders to anticipate their needs and deliver a consumer-focused, sustainable, and socially responsible service. Each DNO's performance is assessed and scored by a panel of independent experts (chaired by Ofgem). Given that the SECV straddles the customer service and social obligations outputs, the DNOs' performances are recorded in the social obligations column of Table 2.1. Four DNO groups increased their score on last year, but two (UKPN and ENWL) scored lower than in 2016-17; all DNOs earned a reward (and therefore received a green RAG status). Further information on the 2017-18 performances are given in our 2017-18 SECV decision letter.[9]

2.15. Combining the outcome of the three components of the BMCS (the SECV, the CSS, and the Complaints Metric) gives a total reward of £49.2m for all DNOs. This compares with £45.7m in 2016-17.

**Environment**

2.16. We put reputational incentives in place to encourage DNOs to manage their overall impact on the environment, including reducing their Business Carbon Footprints (BCF), $SF_6$ emissions, and oil leakage from fluid-filled cables. Since the beginning of RIIO-ED1, there have been significant improvements at industry level.

2.17. All DNOs are on track to meet their own targets for BCF reduction over RIIO-ED1, reducing BCF by 39% in the first three years.[10] Performance against $SF_6$ emissions and oil leakage is mixed across the industry: some DNOs continue to make good progress, but others have suffered isolated incidents that have increased their overall emissions.[11] However, all DNOs have committed to achieving their targets by the end of the price control.

2.18. Electricity losses are an inevitable consequence of transferring energy through electricity networks. As part of RIIO-ED1, we implemented the Losses Discretionary Reward (LDR) to ensure DNOs actively work to manage losses[12]; the second tranche of the LDR

[9] https://www.ofgem.gov.uk/publications-and-updates/decision-stakeholder-engagement-and-consumer-vulnerability-incentive-2017-18-electricity-distribution
[10] This year, we have changed the way we report BCF emissions for DNOs. We now exclude losses and emissions from contractors; this puts the DNOs' BCF values on a common, comparable basis.
[11] Some DNOs have noted that increases in reported emissions, particularly for $SF_6$ and oil leakage, are partly due to changes in reporting approaches.
[12] https://www.ofgem.gov.uk/publications-and-updates/direction-make-modifications-losses-discretionary-reward-guidance-document

made up to £10m (in 2012-13 prices) available for the DNOs in 2017-18. While all six DNO groups intended to demonstrate the progress that has been made since tranche one, we did not consider any DNO provided sufficient evidence showing it met each criterion, and we therefore decided that no DNO qualified for a reward.[13]

**Safety**

2.19. All DNOs continue to be compliant with the standards set by the Health and Safety Executive (HSE), and are striving to reduce their accident rates. However, this year NPg received an immediate prohibition notice from the HSE for their Yorkshire network, and UKPN's LPN network received an improvement notice from the HSE. All DNOs continue to invest in training and engagement to ensure safety performance continues to improve.

# Innovation

2.20. Alongside the Totex Incentive Mechanism (TIM), there are specific RIIO schemes that encourage DNOs to use innovation in the transition to a low carbon economy. There are two main schemes: the Network Innovation Allowance (NIA), and the Network Innovation Competition (NIC).

2.21. The NIA is designed to fund smaller scale research, development and demonstration projects. Each DNO receives an allowance for innovation projects in line with the NIA Governance Document.[14] In 2017-18, the DNOs registered 197 NIA projects worth £21.9m (83% of annual allowances), an increase on last year's £20.3m (65% of annual allowances). If successful, these projects will bring a variety of financial, operational, environmental and safety benefits.

2.22. The NIC is an annual competition that provides funding to a small number of large-scale innovation projects. The aim is to encourage DNOs to innovate in the design, build, development and operation of their networks. These projects will generate learning for all DNOs, which will also be made available to any interested parties. In 2017-18, five projects[15] received a total of £42.5m funding, an increase on the £9.8m awarded in 2016-17. Further information on these projects is available in our funding brochure and the DNOs' full submissions.[16]

2.23. As well as the NIC and NIA, the Low Carbon Networks Fund (LCNF), which was a DPCR5[17] mechanism, continues to drive innovative activities. It was designed to enable DNOs to explore and implement innovative and cost-effective methods of facilitating the low carbon transition. The Second Tier Reward (STR) element of this seeks to imitate the commercial benefits of innovation by rewarding DNOs for exceptional performance in delivering innovation projects which started in DPCR5. We received nine applications in May 2018 for the STR, and we awarded £0.34m (in 2012-13 prices) for one of the nine projects.[18]

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[13] https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-losses-discretionary-reward-decision-tranche-two-2018
[14] https://www.ofgem.gov.uk/publications-and-updates/version-30-network-innovation-allowance-governance-documents
[15] LPN's 'Active Response', SPD's 'LV Engine', EMID's 'EFFS', SSES's 'Transition'; and SPD's 'Fusion'.
[16] https://www.ofgem.gov.uk/publications-and-updates/2018-network-innovation-competitions-brochure and NIC Submissions
[17] DPCR5 was the fifth Distribution Price Control Review, which ran from 2010-2015. The LCNF only considers projects that started in DPCR5.
[18] Decision for the Low Carbon Network Fund's Second Tier Reward 2018

# 3. Financial performance

**Section summary**

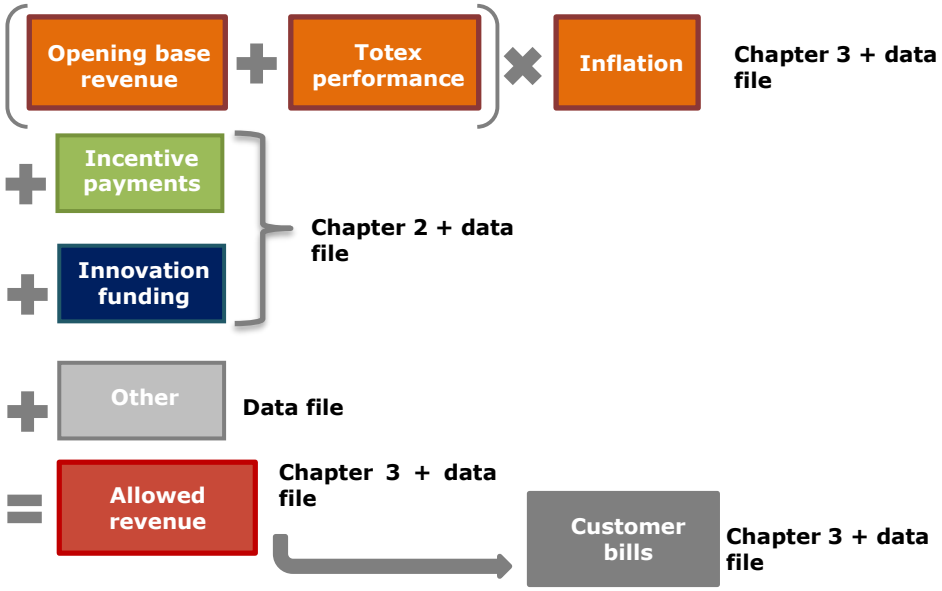
In this chapter we summarise the DNO's total expenditure (Totex) performances for 2017-18, and how their financial performances translate into the actual revenue they can collect via customer bills. We also discuss the DNOs' returns, as measured by the Return on Regulatory Equity (RoRE).

**Key messages**
In the first three years of RIIO-ED1, the DNOs spent £10,242m operating and managing the network; this is 6% (or £684m) lower than their allowances. The companies retained £359m, and the remaining £325m will be returned to customers. We estimate that the DNOs will collect £5.8bn through customer bills in 2019-20 to cover expenditure and reflect incentive performance; an average of £87 per domestic customer per year.

## Introduction

3.1. Each year we calculate the allowed revenue that each DNO can collect from customers through electricity bills. To calculate this, the forecast Opening Base Revenue[19] is adjusted for a number of factors (see Figure 3.1 and the supplementary data file for further detail). The main factors are the DNOs' totex performances (specifically, the share of over or underspend borne by the company), and incentive payments (as discussed in Chapter 2); these factors are also the key drivers of RoRE performance, which is discussed below.

**Figure 3.1: Simplified process for calculating allowed revenue**




[19] This is a best view of the amount of money a DNO needs to earn on its regulated business to recover the efficient cost of carrying out its core activities. It is determined through ex ante forecasts conducted by Ofgem and the DNO prior to the start of the price control.

# Totex performance

3.2. We set the DNOs' allowances for each year of the price control, which makes up their allowed totex.[20] This enables the DNOs to invest in maintaining their networks, accommodate new infrastructure, and deliver their agreed outputs. DNOs must report their actual totex annually, explaining their performance compared with their allowed totex. They are also required to forecast their totex performance to the end of the price control.

3.3. As totex refers to the total controllable expenditure, it comprises both capital expenditure (capex) and operational expenditure (opex). DNOs are incentivised to deliver outputs based on whole-life costs, rather than being driven to prefer either capex or opex solutions.[21] This better incentivises the selection of the best overall solutions for customers. Table 3.1 details the totex expenditure by DNO in 2017-18, cumulative to date (first three years of the price control), and forecast over the price control.

3.4. After the first three years of RIIO-ED1, DNOs spent £10, 242m, £684m (6%) less than allowances. As was the case after two years, only three DNOs have overspent against allowances (three of the WPD DNOs), with the remaining 11 underspending. UKPN's DNOs are underspending by the largest percentage; Chapter 4 and the supplementary data file give more detail on the performance against allowances for specific cost categories.

3.5. The total allowance over the eight years of RIIO-ED1 is £27.8bn. Overall, the DNOs are forecasting to underspend by £1,293m (5%) by the end of the price control; four DNOs expect to slightly overspend (NPGN, WMID, EMID, and SPMW).[22]

3.6. It should be noted that these forecasts have been provided after only three years of an eight-year price control. Future spending performance and economic conditions are uncertain, and we will continue to monitor the DNOs throughout RIIO-ED1 to better understand the key factors driving their performance.

### Totex Incentive Mechanism (TIM)

3.7. The DNOs are incentivised to outperform their totex allowances: DNOs that submit better forecasts of the costs they expect to incur during the price control in their business plans (ie close to our view of efficient costs) receive a higher totex efficiency incentive rate, meaning they get to keep more of any underspend.[23] Therefore efficient spending leads to better returns for investors and lower network charges for customers.

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[20] This includes only the controllable costs; uncontrollable costs, such as business rates and licence fees, are excluded.
[21] Capex solutions have, historically, been preferred as the cost was capitalised, therefore increasing the DNO's regulatory asset value (RAV). Under the totex approach, when a company spends money on a solution, the same percentage is capitalised irrespective of whether that solution involves opex or capex. We also set the same totex incentive rate (the percentage that the licensee bears of an under- or overspend against allowances) for both capex and opex solutions.
[22] All four licensees forecast to overspend by less than 0.7%; forecast overspend is less than £16m per licensee. SPMW are forecasting to overspend by less than 0.1%.
[23] The efficiency incentive rate is used to calculate the revenue adjustment a DNO receives following an overspend or underspend against allowances. It is fixed for the whole of the price control. The higher the rate, the more the company bears of any overspend and retains of any underspend.

3.8. Through the TIM, customers will receive £325m of the £684m (6%) underspend to date; the DNOs will retain the remaining £359m. We believe that a proportion of the underspend achieved to date is due to efficiencies (with the remainder driven by external factors and price control provisions); any efficiencies achieved in RIIO-ED1 will help inform the process for setting allowances for the RIIO-ED2 price control. Further details are provided in Chapter 4.

3.9. Similarly, of the £1,293m (5%) forecast underspend for the whole price control, the DNOs are set to retain £713m (3% of the price control value) through the TIM. The remaining £580m of forecast underspend is set to be returned to customers. This figure is prior to any further adjustments following the close out of the RIIO-ED1 price control.[24]

[24] For context, the close out of the previous price control (DPCR5) returned circa £200m to customers.

**Table 3.1: Totex performance**

| | Annual (2017-18) | | | | Cumulative to date (2015-16 to 2017-18) | | | | Forecast RIIO-ED1 (2015-16 to 2022-23) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Allowance | Actual | Difference | | Allowance | Actual | Difference | | Allowance | Forecast | Difference | |
| | £m | £m | £m | % | £m | £m | £m | % | £m | £m | £m | % |
| ENWL | 258 | 255 | -3 | -1% | 780 | 733 | -47 | -6% | 2094 | 2010 | -84 | -4% |
| NPgN | 189 | 177 | -12 | -6% | 596 | 572 | -24 | -4% | 1457 | 1460 | 3 | 0% |
| NPgY | 251 | 221 | -30 | -12% | 777 | 713 | -64 | -8% | 1942 | 1939 | -3 | 0% |
| WMID | 284 | 282 | -2 | -1% | 871 | 944 | 74 | 8% | 2347 | 2353 | 6 | 0% |
| EMID | 278 | 287 | 9 | 3% | 911 | 942 | 31 | 3% | 2362 | 2377 | 15 | 1% |
| SWALES | 158 | 138 | -20 | -12% | 489 | 444 | -45 | -9% | 1222 | 1168 | -54 | -4% |
| SWEST | 237 | 234 | -3 | -1% | 721 | 741 | 20 | 3% | 1920 | 1874 | -46 | -2% |
| LPN | 258 | 235 | -23 | -9% | 808 | 650 | -159 | -20% | 2006 | 1792 | -214 | -11% |
| SPN | 258 | 214 | -44 | -17% | 783 | 610 | -173 | -22% | 1942 | 1641 | -301 | -15% |
| EPN | 367 | 346 | -22 | -6% | 1127 | 965 | -162 | -14% | 2878 | 2487 | -391 | -14% |
| SPD | 230 | 225 | -5 | -2% | 690 | 648 | -41 | -6% | 1721 | 1721 | 0 | 0% |
| SPMW | 251 | 271 | 20 | 8% | 790 | 790 | 0 | 0% | 1909 | 1909 | 0 | 0% |
| SSEH | 181 | 171 | -10 | -6% | 543 | 512 | -32 | -6% | 1423 | 1336 | -87 | -6% |
| SSES | 341 | 359 | 19 | 5% | 1039 | 977 | -62 | -6% | 2624 | 2486 | -138 | -5% |
| **Total** | **3,541** | **3,415** | **-126** | **-4%** | **10,926** | **10,242** | **-684** | **-6%** | **27,847** | **26,554** | **-1,293** | **-5%** |

**Table 3.2: Totex efficiency incentive rate impact**

| | Totex efficiency incentive rate | Annual (2017-18) £m | | | Three year cumulative (2015-16 to 2017-18) £m | | | Forecast RIIO-ED1 (2015-16 to 2022-23) £m | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Totex performance | Customer share | DNO share | Totex performance | Customer share | DNO share | Totex performance | Customer share | DNO share |
| ENWL | 58% | -3 | -1 | -2 | -47 | -20 | -27 | -84 | -35 | -49 |
| NPgN | 56% | -12 | -5 | -7 | -24 | -11 | -13 | 3 | 1 | 2 |
| NPgY | 56% | -30 | -13 | -17 | -64 | -28 | -36 | -3 | -1 | -2 |
| WMID | 70% | -2 | -1 | -1 | 74 | 22 | 52 | 6 | 2 | 4 |
| EMID | 70% | 9 | 3 | 6 | 31 | 9 | 21 | 15 | 5 | 11 |
| SWALES | 70% | -20 | -6 | -14 | -45 | -13 | -31 | -54 | -16 | -38 |
| SWEST | 70% | -3 | -1 | -2 | 20 | 6 | 14 | -46 | -14 | -32 |
| LPN | 53% | -23 | -11 | -12 | -159 | -74 | -85 | -214 | -100 | -114 |
| SPN | 53% | -44 | -20 | -23 | -173 | -81 | -92 | -301 | -141 | -160 |
| EPN | 53% | -22 | -10 | -11 | -162 | -76 | -86 | -391 | -182 | -208 |
| SPD | 54% | -5 | -2 | -3 | -41 | -19 | -22 | 0 | 0 | 0 |
| SPMW | 54% | 20 | 9 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSEH | 56% | -10 | -4 | -6 | -32 | -14 | -18 | -87 | -38 | -49 |
| SSES | 56% | 19 | 8 | 11 | -62 | -27 | -35 | -138 | -60 | -78 |
| **Total** | | **-126** | **-55** | **-70** | **-684** | **-325** | **-359** | **-1293** | **-580** | **-713** |

# Financial Performance

3.10. Accompanying this report we have included a regulatory financial performance annex. This sets out our detailed assessment of the network companies' regulatory financial performances,[25] based on the information they submitted using the new Regulatory Financial Performance Reporting (RFPR) process. This provides more targeted, detailed financial information on performance under the RIIO Framework, namely the impact on each company's returns of that company's level of gearing, cost of debt and actual tax payments.

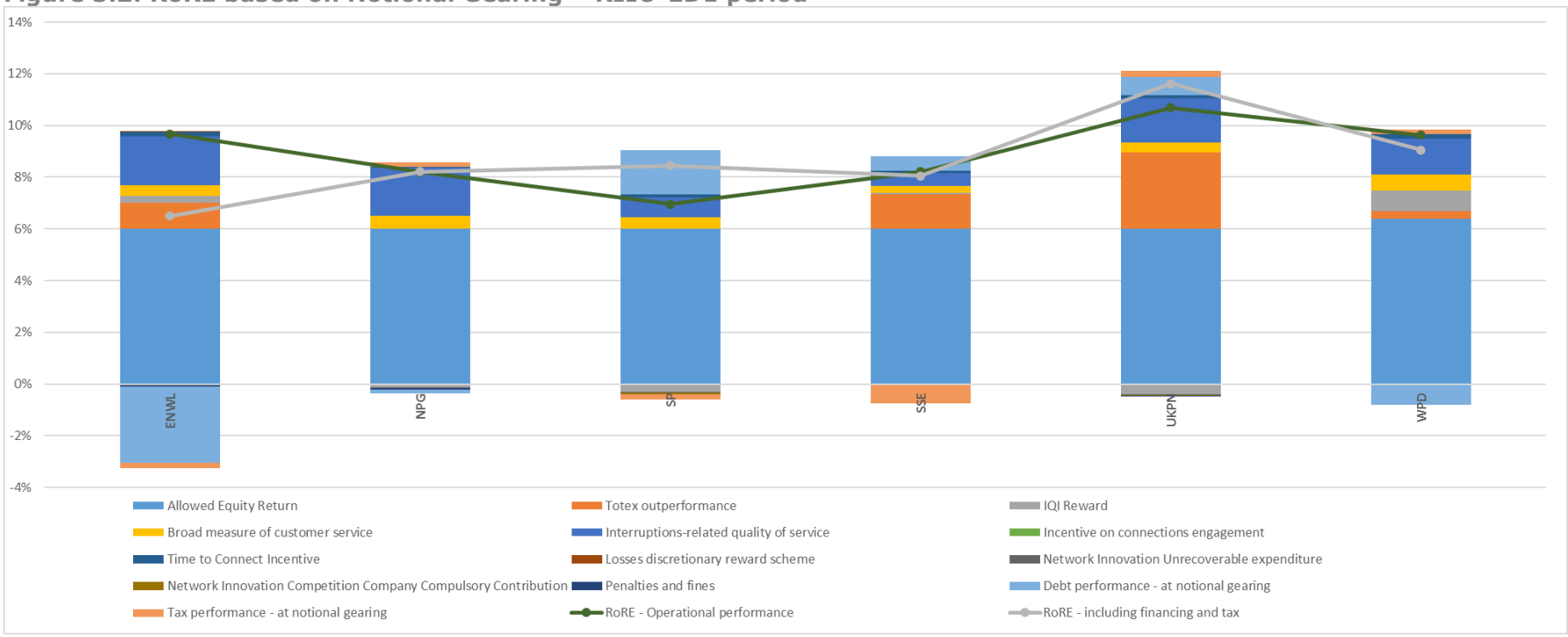
3.11. In that Annex we set out our view of the following:

- RoRE for the RIIO-1 period
- Allowed revenue and the Annual Iteration Process (AIP)
- Gearing and financing
- Regulatory Asset Value (RAV); and

3.12. A summary of DNO group's RoRE performance is shown in Figure 3.2, and further detail is provided in the Finance Annex.

[25] This includes financial performance for all sectors – RIIO-GD1, RIIO-T1 and RIIO-ED1.

**Figure 3.2: RoRE based on Notional Gearing – RIIO-ED1 period**

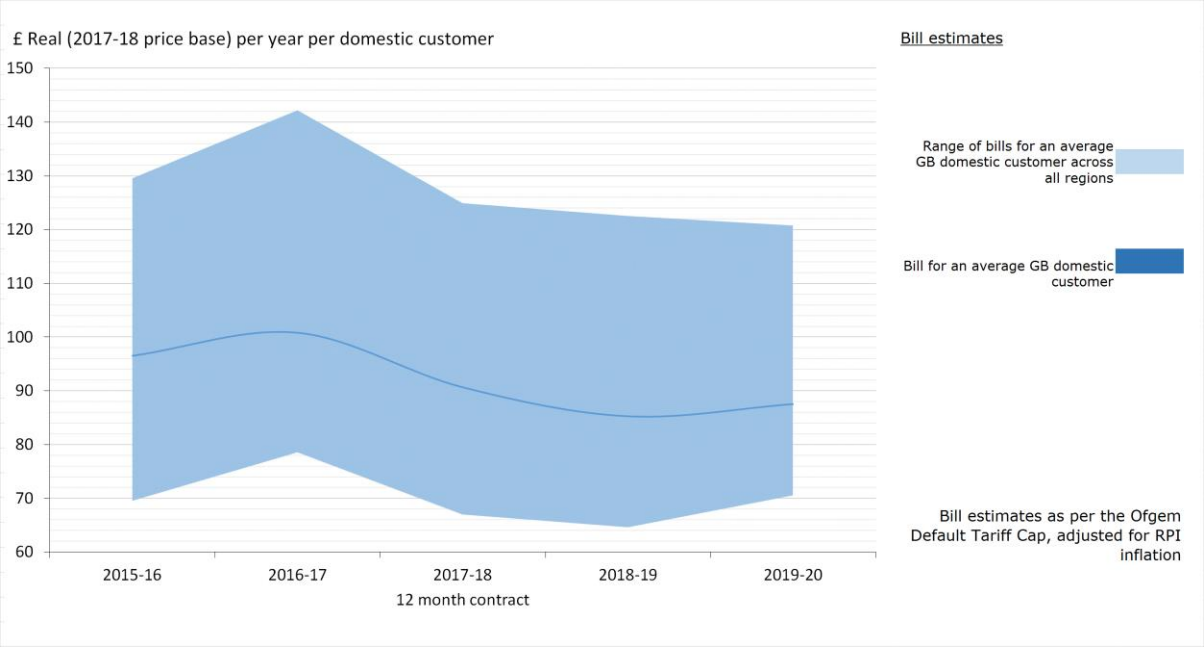


# Customer bill impact

3.13. Our Default Tariff Cap[26] provides an estimate of the overall cost of domestic energy bills. This includes estimates of the proportion of the overall cost of energy which is electricity distribution costs. Our methodology uses an average electricity demand applied uniformly across all regions and over time.[27] Actual customer bills are sensitive to geographic region, consumption volume and the timing and duration of contracts.

3.14. Our latest bill estimates using this methodology are reported in Figure 3.3 and in Table 3.3. We estimate that the average GB customer in 2019-20 will pay £87 per annum in Real 2017-18 price terms for electricity distribution costs. Charges differ considerably depending on the region in which a domestic customer resides: ranging from £71 in East Midlands, Southern and London to £121 in North Scotland, see Table 3.3 for details.

**Figure 3.3: Estimates of typical GB customer costs to meet allowed revenue**




[26] We have used the latest data as per the Default Tariff Cap: https://www.ofgem.gov.uk/publications-and-updates/default-tariff-cap-level-1-april-2019-30-september-2019. This report assumes charges remain unchanged throughout 2019-20. However when the Default Tariff Cap is updated in late summer 2019 it will reflect the latest data available. For this report, the DTC nominal bills have been deflated using RPI data.
[27] Using median domestic consumption behaviour (volume and timing of use) for a 12-month fixed price contract.

**Table 3.3: Regional estimates of typical GB customer cost to meet allowed revenue (£ Real (2017-18 price base) per typical domestic customer)**

| Year beginning | | Apr-14 | Apr-15 | Apr-16 | Apr-17 | Apr-18 | Apr-19 |
|---|---|---|---|---|---|---|---|
| *GB consumer count weighted average* | | *94* | *96* | *101* | *90* | *85* | *87* |
| **Region** | **DNO** | | | | | | |
| North West | ENWL | 101 | 94 | 96 | 79 | 78 | 82 |
| North East | NPgN | 104 | 103 | 101 | 91 | 85 | 88 |
| Yorkshire | NPgY | 87 | 89 | 83 | 76 | 73 | 73 |
| Midlands | WMID | 81 | 84 | 96 | 83 | 80 | 78 |
| East Midlands | EMID | 76 | 80 | 86 | 76 | 71 | 71 |
| South Wales | SWALES | 117 | 102 | 116 | 102 | 98 | 99 |
| South West | SWEST | 118 | 113 | 126 | 113 | 100 | 97 |
| London | LPN | 80 | 70 | 79 | 67 | 65 | 71 |
| South East | SPN | 96 | 91 | 107 | 91 | 81 | 87 |
| East Anglia | EPN | 79 | 81 | 82 | 79 | 76 | 78 |
| South Scotland | SPD | 89 | 102 | 99 | 91 | 91 | 92 |
| Merseyside and N Wales | SPMW | 136 | 128 | 112 | 104 | 99 | 110 |
| North Scotland | SSEH | 140 | 130 | 142 | 125 | 123 | 121 |
| Southern | SSES | 85 | 85 | 90 | 81 | 74 | 71 |

# 4. Totex performance drivers

**Section summary**

Here we report on what is driving DNOs' expenditure performances to date. We consider whether efficiencies, external factors, the RIIO-ED1 settlement and/or timing issues are responsible for totex over- or under-performance.

**Key messages**
Total underspend to date is £684m (6%) less than allowances. External factors (those outside of the price control) continue to be the most significant drivers of underspend, followed by expenditure timing (ie re-profiling to later in the price control). Overspend on certain cost categories is also largely driven by external factors, as well as a particularly challenging price control settlement in respect of operational support costs.

## Introduction

4.1. This chapter looks in more detail at drivers of totex performance. It is important to set our views in context, notably that we only have three years of actual data (the remaining five years of data are forecasts).

4.2. Performance varies across the DNOs, with the majority underspending to date; performance to date ranges from an 8% overspend to a 22% underspend. The TIM incentivises DNOs to outperform their RIIO-ED1 allowances, as they retain a share of any underspend, with customers receiving the remainder. Underspend also has the effect of influencing allowances and, therefore, costs as we look to set the next price control. It is worth noting that underspend against allowances to date does not take account of reopener mechanisms where allowances can be adjusted downwards (eg the load-related reopener).

4.3. In seeking to understand the high level drivers of totex underspend or overspend, we have used three categories:

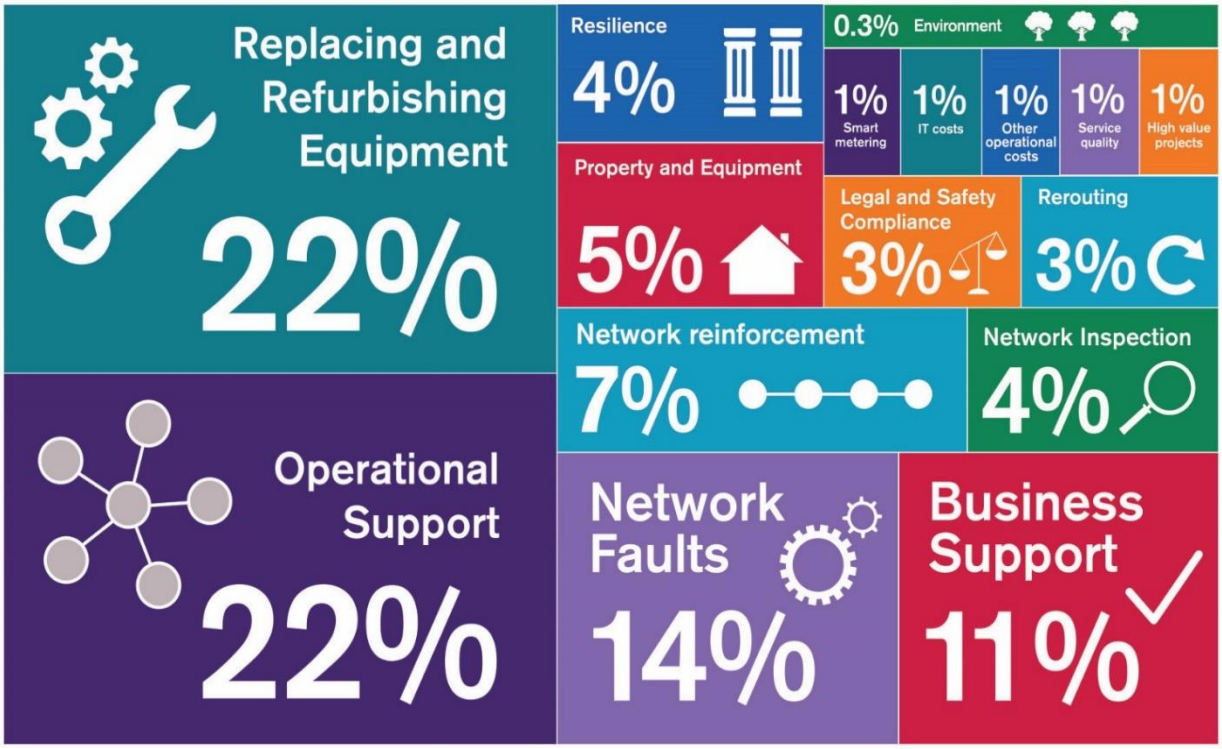
- **Efficiency**: improvements in how things are done, eg resulting from innovation and/or more efficient working practices.
- **External factors**: windfall gains or losses achieved due to external factors outside of the DNOs' control.
- **Provision in price control settlement**: assumptions made within, or at the outset of, RIIO-ED1 that have varied against the actual position.

4.4. It is also worth noting that timing, or the profiling of expenditure, impacts on over- or underspend in the early period of a price control. It is common for projects to be delayed while DNOs re-profile their expenditure and take time to negotiate and implement delivery contracts. In the section below we discuss what we think are the likely drivers in each of the key categories of under or overspend.

# Expenditure categories

4.5. Figure 4.1 provides a breakdown of the expenditure in the first three years of the price control, split into 15 cost categories.

**Figure 4.1: Cost categories of expenditure to date**[28]




4.6. The most significant cost categories are:

- **Operational support:** the cost of supporting direct activity on the network, such as network design, project management, engineering management, clerical support, operational training, call centres and control centres.
- **Replacing and refurbishing equipment:** the cost of maintaining the existing network by replacing and refurbishing assets.
- **Network faults:** the cost of repairing faults on the network.
- **Business support:** the cost of running the DNO business, such as those associated with HR, finance and the CEO, and non-operational training.
- **Network reinforcement:** the cost of managing the load on the network, for example the installation of new assets to accommodate changes in the level and/or pattern of electricity demand and generation.
- **Other operational capex costs.** This combines eight single cost categories detailed in Figure 4.1 - resilience (excluding tree cutting), legal and safety compliance, rerouting, IT, other operational costs, service quality, high value projects and environment.

[28] Due to rounding, the figures do not add to 100%.

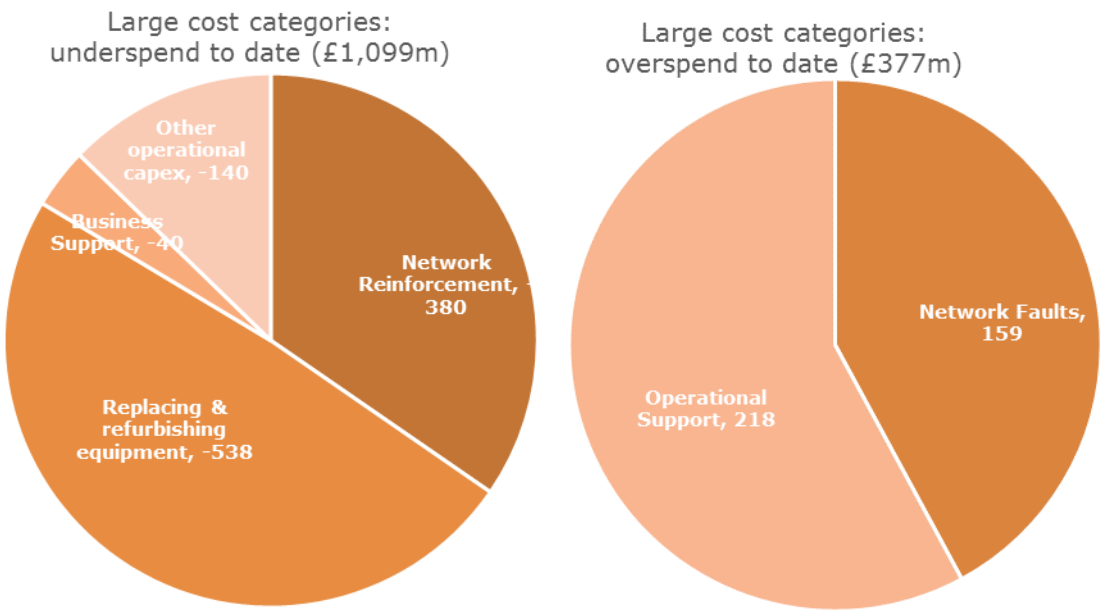
4.7. Collectively, these six cost categories account for 88% of the allowances and 87% of the expenditure to date. The following sections provide further detail on the over and underspend in these areas.

# Drivers of totex underspend and overspend to date

### Drivers of underspend

4.8. The £10.2bn spent to date is £684m less than allowances. Two single cost categories largely drive this underspend: replacing and refurbishing equipment (£538m), and network reinforcement (£380m). A combination of several other operational capex cost categories also makes a significant contribution to the overall underspend (£140m). This is partly offset by overspend in two cost categories: operational support (£218m), and network faults (£159m). The remainder of this section looks at each of the main categories in turn.

**Figure 4.2: Six largest cost categories: underspend and overspend to date**[29]




Asset replacement and refurbishment

4.9. To date, 13 of the 14 DNOs have underspent on replacing and refurbishing equipment; of those 13, five DNOs have underspent by more than 25%. We believe phasing and timing of work are the main drivers of this. Underspend is forecast to fall to 6% by the end of the price control. DNOs have reported a number of reasons for underspending, for example:

[29] This is the collective industry picture of spend. It does not necessarily reflect the expenditure pattern for individual DNOs.

- negotiating and putting in place contracts with strong commercial incentives to deliver efficiencies;
- business plans anticipated that schemes would be completed or in progress at this stage, but have been delayed or deferred, such as some major asset replacement projects;
- challenges around land access, network constraints and resource capacity, particularly 132kV replacement;
- testing innovative techniques before adopting more widely, particularly where they seek to refurbish rather than replace assets; and
- embedding new delivery strategies, for example focusing on regional contracts to deliver asset health.

4.10. Alongside this, DNOs are reporting that some efficiencies are already being realised. This includes negotiating contracts that provide strong commercial incentives to deliver efficiently, and innovative techniques being used to reduce costs. One example of an innovative solution adopted is the use of joint shells in low-voltage lead joints; these provide an extra layer of protection that will reduce the probability of asset replacement.

Network reinforcement

4.11. Eleven DNOs have underspent on network reinforcement to date; of those 11, eight have underspent by more than 25%. External circumstances are likely to be the main driver of this. Economic conditions creating uncertainty in the demand for electricity, a greater impact from energy efficiency measures and lower than expected take up of low carbon technologies have all contributed to underspend. Electric Vehicles (EVs) and heat pumps, for example, have not yet been as widespread as expected when we set the price control; however, DNOs expect EV uptake to be substantial in the remaining years of RIIO-ED1.

4.12. DNOs have also provided evidence of innovation driving efficiencies. For example, the use of non-traditional solutions and flexibility services to alleviate constraints on the network has increased; this includes Active Network Management (ANM) and, in the future, Constrained Managed Zones (CMZ). Another example is the use of dynamic rating techniques for transformers, which has increased the available capacity to supply demand, deferring the need to invest in larger capacity transformers at this time.

4.13. Timing considerations also contribute to underspends. Uncertain economic forecasts, heightened by Brexit, and DNOs ensuring that they have the right skills to identify flexible approaches before committing investment, have resulted in delayed investment.

Other operational capex costs

4.14. Underspend on other operational capex costs is also largely due to timing, for similar reasons to those noted above for replacement and refurbishment and network reinforcement. Forecasts show that underspend in this category will largely diminish by the end of the price control period.

**Drivers of overspend**

4.15. DNOs have overspent on two major cost categories: network faults, and operational support costs.

Network faults

4.16. Eleven DNOs have overspent to date on their allowances for faults, three of those by more than 25%. This is largely due to a number of storms in the first three years of RIIO-ED1. DNOs have invested, and continue to invest, significantly on storm preparedness since the storms in December 2015; this was not accounted for in the baseline allowances. This year, DNOs reported that three storms (David, Hector and Emma) accounted for additional overspend in faults, but did not breach the severe weather exceptional event threshold.[30]

Operational support costs

4.17. Twelve DNOs have also overspent on allowances for operational support, one of those by more than 25%. Cost efficiencies have been more difficult to achieve in operational support. We put this largely down to the tight price control settlement in respect of operational support costs (DNOs have yet to realise the efficiencies they forecasted), and DNOs investing in operational support to achieve wider totex efficiencies.

4.18. Overspend on operational support costs have also been affected by upward pressures on costs, such as implementing regionalisation models and business transformation programmes. These activities are intended to provide wider efficiencies, and therefore overspend in operational support is expected to deliver overall efficiencies in the longer term. Finally, unexpected external factors, including resources deployed to work on the DSO (Distribution System Operator) transition,[31] also have an effect.

4.19. Most DNOs are expecting to make efficiency savings on operational support in the remainder of the price control through, for example, lower pension scheme arrangements as staff are replaced. IT investment early in the price control is also expected to improve cost efficiencies through better data capture, recording, reporting and analysis, in conjunction with changes to organisational structures.

**Areas for future consideration**

4.20. DNOs are forecasting to underspend against their RIIO-ED1 totex allowances by £1,293m (5%); the forecast underspend has increased slightly since 2016-17. Again, UKPN is one DNO group where we see high levels of underspend.

[30] SSEH are an outlier, in that their RIIO-ED1 allowances included funding to deal with the adverse weather conditions historically experienced in the north of Scotland. To date, SSEH have not been affected by storms in the same way as in the past, and are therefore underspending against these allowances.
[31] The transition from DNO to DSO will see the scope of services the DNOs currently provide expand to incorporate areas such as flexibility services and grid resilience improvements.

4.21. DNOs break down these forecasts into cost categories, and we will pay particular attention to those categories, as well as to totex, where material overspend or underspend is expected as this price control progresses.

4.22. Current forecasts show that both asset replacement and refurbishment, and network reinforcement are expected to continue to drive the majority of the underspend at the end of the period, while other operational capex is forecast to be close to allowances. Business support costs are expected to play a greater role in the underspend than they have to date. As they account for 10% of totex allowances, we will be working with the DNOs to better understand this. At this stage, we consider that underspend against business support costs is most likely the result of the price control settlement.

4.23. Finally, as we move further through RIIO-ED1, we will have more data to test our assumptions when setting the next price control. We intend to re-run our modelling in the coming years to better understand the role that forecasting errors in setting price control allowances may have played in the overall underspend observed to date. Obvious areas for consideration include the cost assessment drivers (such as customer numbers and MEAV[32]) and the normalisations we make to submitted costs before they are put into our benchmarking models.[33]

## Protecting customers from excessive underspend and overspend

4.24. In addition to the TIM and adopting learning for RIIO-ED2, we have additional mechanisms to protect customers in relation to particular cost categories to ensure underspend or overspend is not excessive or unjustified.

4.25. For network reinforcement, we have a reopener mechanism, which allows us to effectively 'reopen' that part of the price control at the end of the period where any material levels of underspend can be returned to customers.[34] This is similar to the mechanism we had for the previous price control (DPCR5) where we returned approximately £70m to customers where load demand on the networks did not materialise.[35] Similarly, if there is material overspend, allowances can be adjusted upwards to fund appropriate investment carried out by the DNOs in meeting the demands on the network.

4.26. For asset replacement and refurbishment, while we do not have a similar reopener mechanism, investment here is linked to the health index Network Asset Secondary Deliverables.[36] Through the Common Network Asset Indices Methodology (CNAIM), each DNO has a target to deliver a risk delta on their network through the replacement or refurbishment of network assets. We will continue to monitor output

[32] MEAV, modern equivalent asset value, is the value of a modern asset with the same service capability. Combining all asset values gives a value of all assets on a DNO's network.
[33] Our draft and final determinations on our expenditure assessment provide more detail. https://www.ofgem.gov.uk/publications-and-updates/riio-ed1-draft-determinations-consultation-slow-track-electricity-distribution-companies
[34] This is an area that is difficult to predict at the start of a price control so there need to be protection for customers (and companies) if actual costs are materially lower or materially higher than allowances.
[35] https://www.ofgem.gov.uk/system/files/docs/2017/09/dpcr5_closeout_decision_0.pdf
[36] Network Asset Secondary Deliverables are equivalent to Network Output Measures (NOMs) in the other sectors: Electricity Transmission, Gas Transmission and Gas Distribution.

performance during the price control and we expect DNOs to appropriately manage network risk over RIIO-ED1.

4.27. At the end of the price control, there will be a process to evaluate actual outturns for the entire period, with the potential for all DNOs to be financially rewarded or penalised depending on the levels of risk reduction they deliver and the extent to which levels of risk reduction are judged to be in customers' interests.

4.28. We also periodically analyse asset management decisions taken by the DNOs over RIIO-ED1. The Network Output Measures incentive assessment process will assess whether, if a DNO has materially over- or under-delivered against their targets, that delivery was justified, and the incentive adjustment will be calculated accordingly." For example, we may pick a number of asset categories and require DNOs to describe the decisions taken (eg justifying asset refurbishment over replacement), review scheme papers and undertake site visits with our engineers.

# Appendices

**Index**

# Appendix 1 – Supplementary data file

A1.1. This supplementary data file provides detailed information on expenditure and performance. Its contents and the associated chapter is provided below, it can be found: https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2017-18

| Chapter title | Tab in data file | Contents |
|---|---|---|
| Chapter 1 Introduction and context | No data included | Contents |
| | | One-pager |
| | | Guide & Drivers |
| | RAG and ranking | Reliability RAG, Customer satisfaction RAG and ranking, SECV RAG and ranking, Connections RAG and ranking, and Safety ranking |
| Chapter 2 Output performance, incentives and innovation | Ch2 – incentive payments | Incentive payments for Interruptions Incentive Scheme (IIS), Broad Measure of Customer Service (BMCS), Incentive on Connections Engagement (ICE), Time to Connect Incentive (TTC) and Losses Discretionary Reward (LDR) |
| | Ch2 outputs – reliability | Interruption Incentive Scheme (IIS), Guaranteed Standards of Performance (GSoP), Worst Served Customers, and Resilience |
| | Ch2 Network Asset SDs | Network Asset Secondary Deliverables |
| | Ch2 outputs – connections | Distributed Generation (DG), Time to connect incentive, Connections Guaranteed Standards of Performance (GSoP) |
| | Ch2 outputs – cust sat | Customer satisfaction survey, Complaints metric, Stakeholder Engagement and Consumer Vulnerability Incentive, Broad Measure of Customer Service (BMCS) |
| | Ch2 outputs – environment | Losses Discretionary Reward (LDR), Business Carbon Footprint (BCF), Sulphur hexafluoride emissions ($SF_6$), Leakages from fluid-filled cables, Undergrounding in designated areas, Distributed Generation, Electric Vehicles, and Noise complaints |
| | Ch2 - innovation | Network Innovation Allowance (NIA), Network Innovation Competition (NIC) |
| Chapter 3 Financial performance | Ch3 – financial performance | Total controllable expenditure (totex) , Allowed revenue Incentives, Customer Bills Impact, Regulatory Asset Value (RAV), Distribution of allowances and expenditure per cost category, Distribution of overall allowances and expenditure, and Baseline allowances and actual expenditure by cost category |
| Chapter 4 Totex performance drivers | Ch 4- expenditure drivers & Ch 4- expenditure drivers 2 | Distribution of allowances and expenditure per cost category, Distribution of overall allowances and expenditure, and Baseline allowances and actual expenditure by cost category |

# Appendix 2 – Detailed output performance

**Appendix summary**

Here we provide more detail on the output performance of the DNOs across the six primary output categories. We provide red, amber and green (RAG) ratings and rank where appropriate. Details on how we assign RAG ratings and rank DNOs can be found in the supplementary data file.

## Reliability and availability

*GB customers continue to benefit from reduced interruptions: since the beginning of RIIO-ED1, Customer interruptions have fallen by 11% and the duration of interruptions has fallen by 9%. However, since last year the average duration of interruptions has slightly increased to 36 minutes. Most DNOs have delivered continued performance improvements, while others' performance has worsened since the beginning of RIIO-ED1.*

### Interruption Incentive Scheme (IIS)

A2.1. The IIS sets targets for the number of customers interrupted (CIs) and duration (CMLs) of both planned and unplanned interruptions. DNOs are rewarded if they meet or exceed these targets and are penalised if they fail to meet them.[37]

A2.2. DNOs continue to perform well under the IIS in the third year of the price control. However, a number of DNOs missed individual elements of their targets: SWEST missed their overall CI target (as well as the planned element of their CML target) resulting in an overall penalty. The data file provides the targets.

**Table A2.1: Interruptions Incentive Scheme performance, 2017-18**

| | Customer Interruptions (CIs)[1] | Customer Minutes Lost (CMLs)[2] | | Customer Interruptions (CIs)[1] | Customer Minutes Lost (CMLs)[2] |
|---|---|---|---|---|---|
| ENWL | 33.23 | 34.63 | LPN | 14.22 | 16.74 |
| NPgN | 51.82 | 44.63 | SPN | 46.69 | 37.57 |
| NPgY | 48.13 | 36.40 | EPN | 48.52 | 41.79 |
| WMID | 55.64 | 31.02 | SPD | 41.31 | 31.19 |
| EMID | 46.94 | 24.07 | SPMW | 30.50 | 32.99 |
| SWALES | 48.47 | 28.41 | SSEH | 57.35 | 55.24 |
| SWEST | 62.04 | 42.78 | SSES | 55.13 | 47.56 |

1. CIs are the number of customer interruptions per 100 customers on the network.
2. CMLs are the average length of time customers are without power per interruption.

A2.3. Based on performance against targets, DNOs earned £138m in 2017-18; this compares with £166m in 2016-17. This year, three DNOs reached the cap on revenue that can be earned under the IIS; the number of DNOs reaching this cap is lower than in

[37] See the RIIO-ED1 Annual Report 2015-16 for detailed information on how IIS targets for interruptions are calculated, https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2015-16.

previous years.[38] Several DNOs missed individual elements of targets, particularly for planned interruptions and, for the first time in RIIO-ED1, one DNO (SWEST) received an overall penalty under the IIS.

### Guaranteed Standards of Performance (GSoP)

A2.4. Statutory regulations set GSoP for the reliability of supply.[39] They specify a minimum level of service expected of the DNOs in a range of circumstances. If a DNO fails those standards they must make an inconvenience payment to each affected customer. In 2017-18, DNOs paid out just over £2m under the GSoP. Mandatory payments averaged around £66 per affected customer, and voluntary payments averaged around £68.

A2.5. Performance against the GSoP is strong overall and DNOs are, in the majority of cases, making the required payments if any standards are not met; in some cases, however, performances against GSoP requirements differ from our expectations. We are working with all DNOs to clarify our expectations, and ensure consistency of reporting.

### Worst-served customers

A2.6. DNOs have a use-it-or-lose-it allowance to improve network reliability for customers who have a significantly poor service.[40] For RIIO-ED1, we provided an allowance of £79m across the DNOs in line with the number of qualifying customers in each region. DNOs have to demonstrate that they have delivered a set level of service improvement to these customers in order to receive the funding. [41]

A2.7. The DNOs have spent £1.5m on improving service provision for worst-served customers in 2017-18, a significant decrease from £2.6m from the second year of the price control. DNOs have spent a total of £5.4m since the beginning of the price control. As eligibility for funding can only be determined once improvement schemes have been completed, we are not yet in a position to state how much of the DNOs' expenditure will be funded through the price control.

### Resilience

A2.8. DNOs are required to design and operate their networks in accordance with relevant legislation, codes and standards. They were provided allowances at the beginning of RIIO-ED1 to improve network resilience covering flood protection, black start,[42] physical site security, and the protection of overhead lines through tree cutting.

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[38] We introduced a revenue cap at the beginning of RIIO-ED1 to protect customers from excessive rewards.
[39] 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
[40] In RIIO-ED1, a worst-served customer is one who experiences 12 or more higher voltage unplanned interruptions over a three year period, with at least three higher voltage interruptions each year
[41] Each scheme has to result in an agreed percentage reduction in power cuts (25% for slow-track DNOs and 20% for fast-track). Expenditure is provided on the basis of a cap per worst-served customer affected (£1,000 for slow-track DNOs except SSES for whom it is £2,000 and £800 for fast-track DNOs – all Figures in 2012-13 prices).
[42] This is the cost of restoring electricity supplies to customers following a total or widespread partial shutdown of the GB Transmission System.

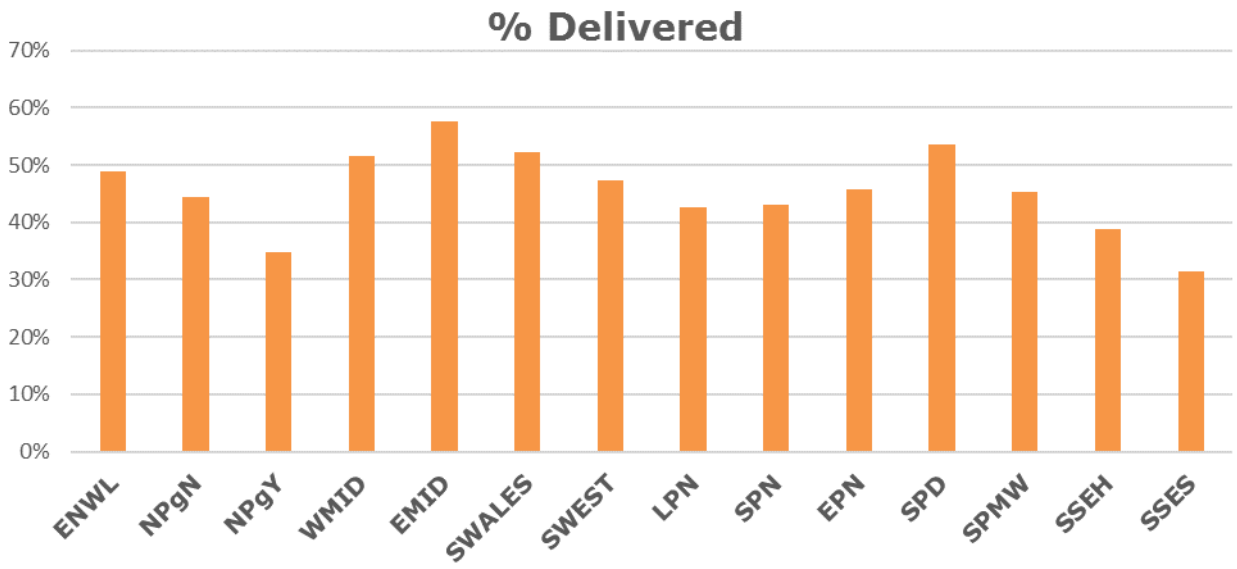
A2.9. DNOs spent £136m of the 2017-18 allowance for resilience (which was £151m), and a total of £421m of the £464m allowance in the price control to date. Overall, there was a £3m (18%) underspend in total flood protection across all DNOs (four DNOs overspent against allowances) in 2017-18, compared to a 46% underspend last year. Since the start of RIIO-ED1, DNOs have invested in measures to mitigate flood risk at 266 sub-station sites across GB, doubling the amount of sites from last year. Investment in flood protection measures are partly in response to severe weather events, as well as in response to updated mapping of flood zones in GB.

A2.10. Overall, tree cutting expenditure decreased to £109.4m in 2017-18, with only three DNOs overspending against allowances. This reflects investment in LiDAR[43] and other tree cutting programmes that are allowing DNOs to generate cost efficiencies both now and later in the price control. Factors external to the DNOs are, in many cases, driving overspends in tree cutting to date.

**Network Asset Secondary Deliverables**

A2.11. DNOs have committed to deliver by the end of the RIIO-ED1 period agreed outputs in respect of reductions in monetised risk to the health and criticality of their assets; there are no annual targets. Nevertheless, after the third year, all DNOs have made considerable progress towards meeting these targets , and have delivered levels of monetised risk as a percentage of their total ED targets of between 32% (SSES) and 58% (EMID) (see figure A2.1). SSES and NPgY are slightly behind the straight-line level representing 3/8$^{th}$ of the target; we will continue to monitor this throughout the remainder of the price control.

**Figure A2.1: Delivery of monetised risk as percentage of RIIO-ED1 target**




[43] LiDAR is a surveying method that measures distance to a specific target using lasers. It helps DNOs identify distance of trees to overhead lines, limiting the need for ground inspections.

# Connections

*Many connection customers are not receiving connections within target timeframes. While all DNOs met their time to quote targets for 2017-18, challenges remain in meeting the targets for time to connect.*

A2.12. Getting a new connection to the local distribution network is crucial; it allows new businesses to begin trading, electricity to be supplied to new homes and renewable energy to start producing and exporting to the grid.

A2.13. In 2017-18, DNOs completed a total of 187,698 distribution network connections, charging connection customers £536m for completing this work. Both the number of connections and the total amount charged to customers in 2017-18 is higher than last year.[44] The amount charged to customers depends on the type of connection and the amount of work required to make the connection. A different mix of connection requirements naturally leads to different costs.

A2.14. During 2017-18, 1,695 megawatts (MW) of generation was connected to the distribution network. This is a decrease in MW volume from 2016-17, when approximately 3,193 MW of generation was connected.

### Time to Connect (TTC) and Time to Quote (TTQ) incentive

A2.15. The TTC incentive was introduced for RIIO-ED1 to encourage DNOs to reduce connection times for smaller and less complex connections. Connection time is measured from the point at which a DNO receives the initial application, to them issuing a quotation and the time from the customer accepting the quotation to the connection being completed.

A2.16. Since the target was set, the average time to connect has improved by almost eight working days for LVSSA connections, and by almost nine working days for LVSSB connections.[45] Since last year, the average time to connect has improved by around five and six working days for LVSSA and LVSSB connections respectively. Six DNOs did not meet all their targets in 2017-18; the remaining eight DNOs met or outperformed both their TTQ and TTC targets for both LVSSA and LVSSB connections, reflected in their green RAG status. This marginally improved on last year, when just six DNOs met or outperformed their TTQ and TTC targets.

A2.17. DNOs are still making significant improvements in the time taken to quote for LVSSA and LVSSB connections. Collectively they are now issuing quotations in half the

[44] Information on the total of connections and total amount charged to customers in 2016-17 can be found here: https://www.ofgem.gov.uk/system/files/docs/2017/12/riio-ed1_annual_report_2016-17.pdf
The total number of metered, generation and unmetered exit points connected during DPCR5 can be found in the 'CH3 DPCR5 Delivery' tab of the DPCR5 performance report 2010-15 data tables, which can be found here: https://www.ofgem.gov.uk/sites/default/files/docs/dpcr5_performance_report_2010-2015_data_table.xlsx

[45] LVSSA means a single, low voltage, single-phase demand connection to a single premises. LVSSB means a demand connection to a low-voltage circuit of less than 100 amperes, connecting a development scheme of fewer than five domestic properties (each with a single phase connection) or a single premises with a two- or three-phase connection.

amount of time compared to when the target was set in 2013; compared to last year, however, performance has marginally declined this year.

A2.18. The total incentives payments for connections in 2017-18 across all 14 DNOs was £12.8m (see Table 2.2).

**Table A2.2: Time to Quote and Time to Connect performance, 2017-18 (working days)**

| | *LVSSA[1]* | | *LVSSB[2]* | | | |
|---|---|---|---|---|---|---|
| | **Average Time to Quote** | **Average Time to Connect** | **Average Time to Quote** | **Average Time to Connect** | ***RAG*** | ***Rank*** |
| ENWL | 3.70 | 31.72 | 8.25 | 34.28 | Green | 6 |
| NPgN | 7.99 | 53.75 | 15.90 | 63.01 | Red | 14 |
| NPgY | 7.84 | 47.07 | 16.81 | 55.51 | Red | 13 |
| WMID | 4.14 | 28.08 | 4.47 | 40.28 | Green | 3 |
| EMID | 3.51 | 28.16 | 4.91 | 35.42 | Green | 1 |
| SWALES | 3.30 | 28.35 | 4.93 | 38.51 | Green | 2 |
| SWEST | 4.87 | 25.73 | 5.40 | 29.92 | Green | 3 |
| LPN | 5.73 | 40.98 | 7.37 | 45.04 | Green | 7 |
| SPN | 5.75 | 36.51 | 9.80 | 46.03 | Green | 10 |
| EPN | 7.24 | 43.23 | 11.46 | 49.01 | Amber | 11 |
| SPD | 3.21 | 58.94 | 7.01 | 69.57 | Amber | 8 |
| SPMW | 4.79 | 44.72 | 10.09 | 65.88 | Amber | 11 |
| SSEH | 4.22 | 27.84 | 9.02 | 28.76 | Green | 5 |
| SSES | 3.41 | 45.71 | 9.28 | 64.01 | Amber | 9 |
| Industry Average | **4.98** | **38.63** | **8.91** | **47.52** | - | |
| Target | **8.2** | **42.1** | **11.7** | **52.7** | | |

1. A LVSSA connection is a very small, low voltage (LV) demand connection (ie approximately the size of a single domestic household).
2. A LVSSB connection is a small, LV demand connection (ie approximately the size of two to four domestic households).

### Connections Guaranteed Standards of Performance

A2.19. Statutory regulations set minimum standards of performance for connections.[46] The Connections GSoP covers a range of activities, from issuing a budget estimate through to energising a connection.[47] Customers are entitled to a fixed payment from the DNO if these standards are not met.

A2.20. All DNOs performed well under the Connection GSoP in 2017-18. All DNOs have met or exceeded our annual report target of 98% compliance, receiving a green RAG status (although it should be noted that the licence requires only 90% compliance). DNOs paid out a total of £255,735 to customers under the Connections GSoP in 2017-18, an increase from the amount paid in 2016-17 (£189,340).

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

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

**Table A2.3: Connections GSoP, 2017-18**

| | % of total cases when standard not met | Rank | | % of total cases when standard not met | Rank |
|---|---|---|---|---|---|
| ENWL | 0.30% | 9 | LPN | 0.09% | 6 |
| NPgN | 0.49% | 11 | SPN | 0.22% | 7 |
| NPgY | 0.60% | 12 | EPN | 0.22% | 8 |
| WMID | 0.00% | 1 | SPD | 0.39% | 10 |
| EMID | 0.00% | 1 | SPMW | 0.63% | 13 |
| SWALES | 0.00% | 1 | SSEH | 0.09% | 5 |
| SWEST | 0.00% | 1 | SSES | 0.64% | 14 |

**Incentive on Connections Engagement (ICE)**

A2.21. The ICE was introduced in April 2015 to ensure DNOs meet the needs of larger or more complex connections customers (unmetered, generation and higher-voltage demand customers).

A2.22. Under the ICE, each DNO publishes a 'Looking Forward' report at the start of the year, presenting their high-level strategy for engagement, work plan of activities and key performance outputs for the forthcoming year. At the end of the year they publish a 'Looking Back' report evaluating their performance. We then seek feedback from customers on the 'Looking Forward' reports and the DNOs' efforts in delivering against this. If a DNO fails to demonstrate that they have engaged with stakeholders or delivered their work plan or performance outputs, we can apply a penalty.[48]

A2.23. This is the third year of the incentive. Overall, we were satisfied with the quality and detail of ICE submissions, but had some concerns across a range of topics. These covered: how DNOs had delivered their commitments; whether they had engaged sufficiently with their customers; and whether they incorporated stakeholder feedback.[49] We consulted on these concerns and, following additional evidence from stakeholders and the DNOs on specific areas, we deemed that all DNOs had met the assessment criteria.[50] However, we did note some areas where more could have been done to address stakeholder needs.

A2.24. We are pleased to see that the majority of stakeholders consider that the DNOs' quality of services and engagement are leading to improvements in their connection services. Nevertheless, it is important that the DNOs continue to ensure they are engaging with and meeting the needs of a broad and inclusive range of stakeholders and that they continue to respond as stakeholders' needs evolve.

[48] More information on how the ICE works can be found in the ICE guidance document.
[49] https://www.ofgem.gov.uk/publications-and-updates/consultation-penalties-distribution-network-operators-under-incentive-connections-engagement
[50] https://www.ofgem.gov.uk/system/files/docs/2017/10/outcome_of_our_assessment_under_the_2017_riio-ed1_incentive_on_connection_engagement.pdf

# Social Obligations

*Over the course of RIIO-ED1, there have been steady improvements in the DNOs' work to address vulnerability and engage with their stakeholders. There is still work to do for some DNO groups, but the sector as a whole is making progress.*

### Stakeholder Engagement and Consumer Vulnerability (SECV) Incentive

A2.25. The SECV incentive encourages DNOs to engage effectively with a wide range of stakeholders, and use this to inform business planning. This should help ensure that DNOs deliver a customer-focused, socially responsible and sustainable energy service. DNOs also have an important role to play in helping customers in vulnerable situations. As part of the SECV incentive, DNOs are required to show evidence of the work they are doing to address consumer vulnerability issues.

A2.26. DNOs have to submit annually a report on their SECV activities. We assess all reports against a set of minimum criteria to ensure they are eligible for the incentive. The DNOs that meet the minimum criteria progress to the next stage, where they are assessed by an independent expert panel. The Panel awards an overall score for each DNO, which determines the financial reward (up to 0.5% of each DNO's allowed base revenue). Detailed information about how the submissions are assessed is in the SECV incentive document.[51]

A2.27. In 2017-18, scores ranged from 5.50 and 8.75 out of 10, with just one DNO group (WPD) scoring above 8. Two DNOs' scores worsened from last year, and the remaining four DNOs' scores improved on last year. The Panel noted that, at this stage in the incentive, they expect network companies' activities to be in various stages of development and implementation, and that it would be beneficial for the companies to explain more clearly how they have progressed since the previous year.

A2.28. As a result, a consultation and decision was published on guidance changes to the SECV Incentive and will take effect from April 2019.

**Table A2.4: SECV performance, 2017-18**

| *DNO Group* | *Score (out of 10)* | *Rank* |
|---|---|---|
| ENWL | 5.75 | 5 |
| NPg | 7.50 | 2 |
| WPD | 8.75 | 1 |
| UKPN | 7.25 | 3 |
| SPEN | 6.35 | 4 |
| SSEN | 5.50 | 6 |

[51] https://www.ofgem.gov.uk/publications-and-updates/decision-stakeholder-engagement-and-consumer-vulnerability-incentive-2016-17-electricity-distribution

# Customer Service

*Customer service has continued to improve with all DNOs exceeding the target scores for customer satisfaction and customer complaints, resulting in an industry reward of £49.2m. Customer satisfaction and complaints scores improved marginally in 2017-18 compared to 2016-17.*

A2.29. For most customers, good service from the DNO means receiving a safe and reliable electricity supply. Other customers have more interaction with their DNO, meaning specific incentives are needed.

A2.30. Our customer service incentives aim to ensure that customers requiring a new connection, making general enquiries, or receiving information in the event of an interruption receive good customer service. DNOs are also driven to deal with complaints quickly and effectively, as well as to engage with a wide range of stakeholders and use the information and insight gained to shape how they run their businesses.

### Broad Measure of Customer Service (BMCS)

A2.31. The BMCS is in place to drive the DNOs to deliver good customer service. It aims to replicate the measures typically used by customer-facing businesses in a competitive market. The BMCS has three components:

- A customer satisfaction survey that incorporates the views of customers who have made a general enquiry, experienced an interruption or required a connection;
- A complaints metric, measuring the DNOs' effectiveness in resolving complaints; and
- A reward based on an assessment of the DNO's stakeholder engagement and activities to support vulnerable customers.

A2.32. The total maximum reward or penalty is equivalent to +/- 1.5% of annual base revenues in RIIO-ED1. In 2017-18 each DNO received a reward. Combining the outcome of the three components gives DNOs a total reward of £49.2m in 2017-18.

### Customer satisfaction survey

A2.33. The customer satisfaction survey is intended to capture customers' experiences of the interruption, minor connection and general enquiry services delivered by the DNOs.

A2.34. All DNOs met or exceeded the industry-wide target of 8.2 out of 10, with scores ranging from 8.34 (SSES) to 9.03 (SWALES). Nine of the 14 DNOs improved their customer satisfaction scores in 2017-18. SWALES is the first DNO to score above 9 in the customer satisfaction survey.

**Complaints metric**

A2.35. 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 score.[52]

A2.36. In a commercial environment, DNOs risk losing customers and revenue by handling complaints badly, but they would not necessarily gain customers and revenue by handling complaints well. Therefore, the incentive is penalty-only; DNOs can be penalised up to 0.5% of base revenue for poor performance.

A2.37. A low score is a good score. All DNOs were below the target of 8.33 in 2017-18 and therefore no penalties were applied. However, performance varied significantly across the DNOs, with WMID achieving the lowest complaint metric score of (1.35) and NPgN scoring the highest (5.08). These DNOs were in the same position among the industry last year, though the scores this year have improved.

A2.38. Table A2.5 shows the DNOs' scores and ranks for the complaints metric and customer satisfaction surveys. The third element of the BMCS – the SECV incentive - is discussed under the social obligations output above.

**Table A2.5: Customer service performance, 2017-18**

| | Customer satisfaction | | Complaints | |
|---|---|---|---|---|
| | Score (out of 10) *Target: minimum score of 8.2* | Rank | Score (out of 10) *Target: no greater than 8.33* | Rank |
| ENWL | 8.47 | 13 | 2.29 | 6 |
| NPgN | 8.72 | 10 | 5.08 | 14 |
| NPgY | 8.56 | 12 | 4.64 | 13 |
| WMID | 8.91 | 2 | 1.35 | 1 |
| EMID | 8.90 | 3 | 1.50 | 2 |
| SWALES | 9.03 | 1 | 2.53 | 7 |
| SWEST | 8.90 | 4 | 1.93 | 4 |
| LPN | 8.75 | 6 | 4.34 | 12 |
| SPN | 8.74 | 8 | 4.15 | 11 |
| EPN | 8.73 | 9 | 3.65 | 10 |
| SPD | 8.70 | 11 | 2.09 | 5 |
| SPMW | 8.75 | 7 | 2.71 | 8 |
| SSEH | 8.85 | 5 | 1.60 | 3 |
| SSES | 8.34 | 14 | 2.77 | 9 |
| Average | **8.74** | | **2.90** | |

[52] The weighting is as follows: % of total complaints outstanding after one day makes up 10%; % of total complaints outstanding after 31 days makes up 30%; % of total complaints that are repeat complaints makes up 50%; the number of Energy Ombudsman (EO) decisions that go against the DNO as a % of the total complaints makes up the final 10%.

# Environment

*Since the beginning of RIIO-ED1, there have been environmental improvements at the industry level with reductions in BCF, $SF_6$ emissions and oil leakage from fluid-filled cables. At a company level however, performance is mixed. Future performance may vary due to changes in how DNOs are reporting/recording different indicators.*

### Business Carbon Footprint (BCF)

A2.39. BCF, ie the amount of carbon emitted as a result of the DNOs' business operations and the operations of their contractors, has decreased at an industry level since the first year of the price control. In 2017-18, there was a notable improvement across all DNOs. Currently, SSEH has the highest BCF (relative to company size), and SPD and SPMW the lowest. The majority of DNOs are on track to deliver RIIO-ED1 commitments on BCF.

### Sulphur hexafluoride ($SF_6$)

A2.40. $SF_6$ is used in the electricity industry as an electrical insulator for high-voltage circuit breakers, switchgear and other electrical equipment, but it is an inorganic and extremely potent greenhouse gas.

A2.41. The amount of $SF_6$ reported in 2017-18 suggested there has been a decrease during RIIO-ED1; however, the total amount of $SF_6$ emitted has actually increased since the start of the price control. This is mainly due to WPD changing their reporting methodology to now include missing $SF_6$ from scrapped units. This has increased the total $SF_6$ emissions across all DNOs to 1,049kg this year, compared to 903kg reported last year. SSE noted that changes in their data collection and reporting practices have contributed to the increase in values reported; however, they are confident they will deliver against their target for RIIO-ED1.

### Leakages from fluid-filled cables

A2.42. DNOs use oil-based fluids as electrical insulators on older types of higher voltage cables (33kV and above). Any leakage from these cables can be detrimental to the environment.

A2.43. The total amount of oil leakage has reduced since the start of the price control, although there was a significant increase recorded in 2017-18 compared to the previous year. Like in BCF and $SF_6$ emissions, there are differences across DNOs, with seven DNOs (ENWL, EMID, SPN, EPN, SPMW, SSEH and SSES) now recording increases in oil leakage since the start of RIIO-ED1.

A2.44. For all three metrics, we will continue to publish the DNOs' annual performances to build up a picture as the price control progresses of both absolute and relative DNO performance.

**Table A2.6: Environment performance – change since end of DPCR5 baseline**

| | BCF (excl. losses and contractors) (tCO2e) | | $SF_6$ emissions (kg) | | Oil leakage (litres)[53] | |
|---|---|---|---|---|---|---|
| | 2017-18 | Change since 2015-16[1] | 2017-18 | Change since 2014-15 | 2017-18 | Change since 2014-15 |
| ENWL | 14,147 | -10.0% | 54 | 50.3% | 67,398 | 138.0% |
| NPgN | 9,163 | -12.3% | 36 | 123.3% | 12,124 | -23.7% |
| NPgY | 12,111 | -16.9% | 62 | -21.7% | 17,438 | -38.0% |
| WMID | 20,832 | -20.6% | 187 | 201.6% | 12,771 | -35.2% |
| EMID | 19,571 | -12.5% | 57 | 302.8% | 9,630 | 3.5% |
| SWALES[2] | 12,145 | -9.2% | 104 | -26.7% | 270 | N/A |
| SWEST | 15,183 | -10.9% | 121 | -6.0% | 687 | -64.4% |
| LPN | 12,807 | -9.9% | 7 | -64.3% | 114,723 | -30.6% |
| SPN | 15,607 | -12.4% | 36 | 135.8% | 72,233 | 1.3% |
| EPN | 24,848 | 5.1% | 93 | 44.7% | 55,978 | 19.3% |
| SPD | 7,853 | -25.5% | 37 | -41.5% | 20 | -45.9% |
| SPMW | 6,291 | -25.3% | 67 | -45.7% | 4,420 | 24.3% |
| SSEH | 22,623 | 13.9% | 2 | -88.9% | 3,440 | 112.0% |
| SSES | 25,766 | -4.5% | 186 | 82.6% | 31,857 | 69.4% |
| **Total** | **218,947** | **-9.3%** | **1,049** | **19.1%** | **402,989** | **-1.9%** |

1. RIIO-ED1 BCF data is not comparable to data collected in previous price controls; therefore, the end of the previous price control cannot be used as the baseline. This year we have excluded the performance of contractors in measuring DNOs' BCF performances; therefore, values in this table may not be comparable with previous annual reports.
2. SWALES had zero oil leakage in 2014-15.

[53] Leakages from fluid-filled cables (litres) are measured as the amount of fluid used by DNOs to top up cables in their network as a percentage of oil in service in cables. Top up is a proxy for oil leakage.

**Table A2.7: Environment performance**

| | BCF (excl. losses) | | SF6 emissions | | Oil leakage | |
|---|---|---|---|---|---|---|
| | BCF as % of size[1] | Rank | SF6 emissions as % of SF6 bank[2] | Rank | Oil leakage as a % of oil in service | Rank |
| ENWL | 12.6% | 5 | 0.37% | 9 | 6.1% | 12 |
| NPgN | 11.3% | 3 | 0.22% | 4 | 0.9% | 4 |
| NPgY | 11.4% | 4 | 0.32% | 8 | 1.6% | 5 |
| WMID | 16.5% | 10 | 0.76% | 12 | 1.9% | 7 |
| EMID | 13.6% | 7 | 0.25% | 7 | 1.8% | 6 |
| SWALES | 17.6% | 13 | 0.57% | 11 | 0.2% | 1 |
| SWEST | 15.5% | 9 | 0.91% | 14 | 0.3% | 2 |
| LPN | 17.5% | 12 | 0.02% | 1 | 3.5% | 10 |
| SPN | 15.1% | 8 | 0.17% | 3 | 3.5% | 9 |
| EPN | 13.0% | 6 | 0.23% | 5 | 2.6% | 8 |
| SPD[3] | 6.9% | 2 | 0.24% | 6 | 0.0% | - |
| SPMW | 6.9% | 1 | 0.38% | 10 | 0.6% | 3 |
| SSEH | 24.5% | 14 | 0.03% | 2 | 10.5% | 13 |
| SSES | 17.0% | 11 | 0.78% | 13 | 4.9% | 11 |
| **Total** | **14.0%** | **-** | **0.35%** | **-** | **2.9%** | **-** |

1. Network length and customer numbers are used as a proxy for size. This year we have excluded the performance of contractors in measuring DNOs' BCF performances; therefore, values in this table may not be comparable with previous annual reports.
2. $SF_6$ gas is used as an insulator for switchgear and DNOs record the total amount they use in their switchgear. The total amount is known as the $SF_6$ bank.
3. SPD recorded 20 litres of leakage from fluid-filled cables.

**Losses[54]**

A2.45. When electricity is transported through wires, some of the energy is lost. Since a proportion of electricity is generated using fossil fuels, reducing electricity losses will reduce greenhouse gas emissions. Losses are the largest component of a DNO's carbon footprint.

A2.46. The cost of lost electricity is borne by customers; DNOs therefore have no inherent incentive to manage losses efficiently. DNOs are required to produce a losses strategy and report annually on the steps they have taken to manage and/or reduce losses on their network. We also have the Losses Discretionary Reward (LDR), worth up to £32m across all DNO groups, spread over three tranches during RIIO-ED1. Tranche 1 occurred in 2016-17 – the DNOs were rewarded £4.3m of a possible £8m – and Tranche 2 took place in September 2018.

A2.47. The LDR Guidance Document[55] set out our expectations for Tranche 2. The Tranche 2 submissions showed that the DNOs are taking the kind of actions that the LDR is intended to encourage, such as enhanced losses modelling, increased stakeholder engagement, and holistic thinking about how to manage losses. However, we did not consider that any DNOs demonstrated sufficient progress to warrant a reward in Tranche 2.

[54] All rewards given here are in 2012-13 prices
[55] https://www.ofgem.gov.uk/system/files/docs/2017/09/ldr_tranche_2_decision_clean_copy.pdf

### Noise pollution

A2.48. There were 139 noise complaints made against DNOs in 2017-18. We have been working with the DNOs to improve data collection on noise pollution and, for the first time in the price control, now have data from all DNOs.[56]

### Undergrounding

A2.49. Through the undergrounding scheme, DNOs improve the visual amenity in designated areas by undergrounding their overhead lines (OHL). In RIIO-ED1, each DNO (except LPN) is able to recover a defined amount of funding to pay for undergrounding of OHL in Areas of Outstanding Natural Beauty (AONB), National Parks and National Scenic Areas. Approximately 34km of OHL were removed and 41km of underground cables were installed by the DNOs at a total cost of £6.5m in 2017-18. This is slightly reduced on the volume of undergrounding activity in 2016-17.

## Safety

*DNOs continue to ensure they are compliant with the legislation that is enforced and regulated by the HSE. Overall, the DNOs continue to perform well in this area, responding to any notices issued by the HSE.*

A2.50. The DNOs must operate safe networks. The Electricity Safety, Quality and Continuity Regulations (2002) require the DNOs to 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, enforced and regulated by the Health and Safety Executive (HSE).

A2.51. Under RIIO, the primary output for health and safety is compliance with relevant legislation. Ofgem imposes no direct financial incentive as we do not want to duplicate the HSE's functions. We will work with the Energy Networks Association, DNOs, and the HSE to explore comparative measures on safety performance that we may be able to include in future annual reports.

A2.52. The Network Asset Secondary Deliverables on asset health and criticality consider safety as part of establishing risk values. This helps to ensure that the DNOs do not take decisions in RIIO-ED1 that risk their compliance with safety requirements in the future.

[56] 13 DNOs provided comparative figures for 2016-17 and, based on this, noise complaints fell from 148 to 139.

# Appendix 3 – Summary by DNO Group

**Appendix purpose**

Summary of each DNO group's expenditure and output performance in the second year of RIIO-ED1.

**Note:** The output performance in the summary tables for reliability and availability, connections, customer service and safety show the RAG rating for each DNO within the DNO group; under each table we explain the order in which the individual DNOs are represented. The social obligations output is presented at a group level, as the SECV incentive is awarded for the group. Environment is also presented at a group level as it is taken from each DNO's Business Plan Commitment Reports and this is largely reported at a group level.

**Electricity North West (ENWL)**

| Expenditure and financial performance | | | | |
|---|---|---|---|---|
| **2017-18** | **To date** | **RIIO-ED1** | **Totex efficiency incentive rate** | **Forecast 8-year RoRE** |
| Total spent: £255m<br>Underspend: -£3m or -1% of allowances | Total spent: £733m<br>Underspend: -£47m or -6% of allowance | Total forecast: £2,010m<br>Forecast underspend: -£84m or -4% of allowance | 58% | 6.51% |

| Outputs performance | | | | | |
|---|---|---|---|---|---|
| **Reliability & availability** | **Connections** | **Social Obligations** | **Customer Service** | **Environment** | **Safety** |
| ✓ number of interruptions<br>✓ duration of interruptions | ✓ time to quote & connect<br>✓ connections GSoP | ✓ stakeholder engagement | ✓ BMCS<br>✓ complaints | ✓ BCF<br>! oil leakage<br>✓ $SF_6$ Emissions | ✓ compliance with HSE obligations |

| Innovation |
|---|
| Spent all of their NIA allowance and increased the number of projects from 18 to 21. |

A3.1. ENWL spent a total of £733m in the first three years of RIIO-ED1, underspending by £47m (6%) against allowances. This is largely driven by underspend in asset replacement and refurbishment, and network reinforcement. Additionally, ENWL has also underspent in Closely Associated Indirects (CAI)[57], contrary to the trend across other DNOs, mainly due to a continued benefit of resourcing efficiencies at the end of DPCR5.

[57] CAI includes activities such as project management, network design and engineering, call centre/control centre, and operational training, among others.

However, ENWL expect CAI expenditure to increase significantly over the remainder of RIIO-ED1 with the transition to DSO.

A3.2. ENWL forecast it will underspend by £84m (4%) by the end of RIIO-ED1. Customers will see 42% of this returned to them via the TIM.

A3.3. The forecast eight-year average RoRE for ENWL, based on notional gearing and including financing and tax performance, is 6.51%, 0.51% above their allowed cost of equity of 6.0%. ENWL has the lowest forecast RoRE of all six DNO groups.

A3.4. ENWL is performing well against the RIIO primary outputs. ENWL has exceeded all reliability targets in CIs and CMLs, as well as the targets for average time to quote and time to connect (despite increasing on last year's performance). There was a notable reduction in the number of cases where ENWL failed to meet the Connections GSoP.

A3.5. ENWL met all targets set for the BMCS and complaints handling, a further improvement from last year. Environmental performance has continued to improve with BCF emissions reduced by 10.0% from 2014/15 levels. However, ENWL missed their oil leakage from fluid-filled cables target by over 37,000 litres.[58] ENWL are on track to achieve their targets for $SF_6$ emissions, despite currently being above their target levels. The completion of three undergrounding schemes meant 4.9km of overhead line was undergrounded in the year, and ENWL replaced 168 high loss transformers in an effort to reduce losses on the network.

A3.6. In terms of innovation, ENWL spent all of their NIA allowance.

[58] ENWL noted the main driver for this cause was a leakage in Lancaster GSP Broadway Circuit which reached 36,568 litres in the year. The circuit could not be switched out for repair due to operational reasons.

**Northern Powergrid (NPg)**

| Expenditure and financial performance | | | | |
|---|---|---|---|---|
| **2017-18** | **To date** | **RIIO-ED1** | **Totex efficiency incentive rate** | **Forecast 8-year RoRE** |
| Total spent: £398m<br>Underspend: -£42m or -10% of allowance | Total spent: £1,286m<br>Underspend: -£88m or -6% of allowance | Total forecast: £3,399m<br>Forecast underspend: £0m or 0% of allowance | 56% | 8.21% |

| Outputs performance | | | | | |
|---|---|---|---|---|---|
| **Reliability & availability** | **Connections** | **Social Obligations** | **Customer service** | **Environment** | **Safety** |
| ✓✓ number of interruptions<br>✓✓ duration of interruptions | ✖✖ time to quote & connect targets<br>✓✓ connections GSoP | ✓ stakeholder engagement | ✓✓ BMCS<br>✓✓ complaints | ✓✓ BCF<br>✓✓ oil leakage<br>!✓ $SF_6$ Emissions | ✓! compliance with HSE obligations |

| Innovation |
|---|
| Spent all their NIA allowance and increased the number of projects from 18 to 26. |

**Note: the symbols for output performance represent the DNOs in the group as follows: NPgN then NPgY.**

A3.7. The two NPg DNOs spent a total of £1,286m in the first three years of RIIO-ED1, underspending by £88m (6%) against allowances. The underspend is largely due to load and non-load related expenditure, as well as the different profiles of allowances and expenditure. Re-profiling some activities to later in the price control allows re-design and re-tendering of activities; savings generated here are expected to be used elsewhere by the end of the period.

A3.8. The forecast eight-year average RoRE for NPg, based on notional gearing and including financing and tax performance, is 8.21%, 2.21% above their allowed cost of equity of 6.0%. NPg sits in the middle of the RoRE figures of the six DNO groups.

A3.9. NPg is performing well against most RIIO output categories. Both licensees met all reliability and customer service targets, showing notable improvements in complaints handling and SECV (where they moved up to second place). However, NPg missed most elements of the targets in connections, in part due to the volume of customers requesting long-duration connection times. NPgY also received a notice from the HSE, but NPg are on track to deliver their 'headline' commitment to halve their accident rate by the end of RIIO-ED1.

A3.10. There have been further environmental improvements in all categories. NPg surpassed all of their targets for 2017/18 for both BCF and oil leakage, with the exception of $SF_6$ emissions missed by its NPgN licensee, although at DNO level met their target. However, they remain on track to reduce their carbon footprint by 10% by 2023, having achieved a 15% reduction during RIIO-ED1 to date. There is a continued focus on reducing $SF_6$ emissions through the use of thermal imaging technology to detect leaking switchgear. NPg have increased their commitment to replacing OHL in National Parks and AONB with cable by 2023, from 100km to 120km and met their target in 2017/18.

A3.11. In terms of innovation, NPg spent all of their NIA allowance, increasing the number of projects from 18 to 26.

**Western Power Distribution (WPD)**

<table>
<tr><th colspan="6">Expenditure and financial performance</th></tr>
<tr><td>2017-18<br><br>Total spent: £942m<br><br>Underspend: -£16m or -2% of allowance</td><td>To date<br><br>Total spent: £3,072m<br><br>Overspend: £80m or 3% of allowance</td><td>RIIO-ED1<br><br>Total Forecast: £7,772m<br><br>Forecast underspend: -£78m or -1% of allowance</td><td>Totex efficiency incentive rate<br><br>70%</td><td>Forecast 8-year RoRE<br><br>9.05%</td></tr>
<tr><th colspan="6">Outputs performance</th></tr>
<tr><td>Reliability & availability<br><br>✓✓✓!<br>number of interruptions<br><br>✓✓✓✓<br>duration of interruptions</td><td>Connections<br><br>✓✓✓✓<br>time to quote & connect targets<br><br>✓✓✓✓<br>connections GSoP</td><td>Social Obligations<br><br>✓<br>stakeholder engagement</td><td>Customer service<br><br>✓✓✓✓<br>BMCS<br><br>✓✓✓✓<br>complaints</td><td>Environment<br><br>✓✓✓✓<br>BCF<br><br>✓✓✓✓<br>oil leakage<br><br>✓✓✖✖<br>$SF_6$ Emissions</td><td>Safety<br><br>✓✓✓✓<br>compliance with HSE obligations</td></tr>
<tr><th colspan="6">Innovation</th></tr>
<tr><td colspan="6">Spent 86% of their NIA allowance and increased the number of projects from 22 to 33.</td></tr>
</table>

**Note: the symbols for output performance represent the DNOs in the group as follows: WMID, EMID, SWALES, SWEST**

A3.12. WPD's four DNOs spent a total of £3,072m in the first three years of RIIO ED1, overspending by £80m (3%). This is down from a 5% overspend in the first two years of the price control; WPD is the only DNO group that has overspent to date.

A3.13. Overspend to date has been driven by higher CAIs costs, which are predominantly labour costs. WPD also overspent on operational training due to additional recruitment into engineering trainee roles. High demand for skilled tree clearance operatives is driving contract prices higher for tree cutting. Inspections costs have increased due to changes in the frequency of low voltage (LV) link box inspection, additional conditional data collection, and assessment of LV overhead line clearance across roads.

A3.14. Based on this year's data, WPD are forecasting to underspend by £78m (1%) by the end of the price control period; customers will receive 30% of this underspend in future years.

A3.15. The forecast eight-year average RoRE for WPD, based on notional gearing and including financing and tax performance, is 9.05%. This is 2.65% above their allowed cost of equity of 6.40%, and WPD has the second highest RoRE figure of all six DNO groups.

A3.16. WPD is performing very well against most outputs. Overall, they have exceeded all of their reliability targets, however SWEST received an overall penalty for missing

most of the elements of its IIS targets. WPD noted they experienced a series of storms, five of which did not meet the exceptional event criteria but had a detrimental impact on their overall performance. All WPD licensees met all connections targets, and recorded no failures against the Connections GSoP. As previously, WPD maintained the highest scores for all elements of the BMCS, including maintaining the highest ranking under the SECV incentive and increasing the score from last year.

A3.17. Environmental performance remains strong, although $SF_6$ targets were missed in both SWALES and SWEST. WPD have pledged to invest in four infrared $SF_6$ detection cameras which will enable them to source leaks more efficiently. Initiatives, such as reducing emissions from operational transport, have been put in place to improve overall BCF performance. To date, WPD have replaced 16.7km of overhead lines in National Parks and AONBs with underground cables.

A3.18. The group spent 86% of its NIA allowance and was successful in securing £2.9m of NIC funding.

**UK Power Networks (UKPN)**

| Expenditure and financial performance | | | | |
|---|---|---|---|---|
| **2017-18** | **To date** | **RIIO-ED1** | **Totex efficiency incentive rate** | **Forecast 8-year RoRE** |
| Total spent: £795m<br>Underspend: -£88m or -10% of allowance | Total spent: £2,225m<br>Underspend: -£493m or -18% of allowance | Total Forecast: £5,921m<br>Forecast underspend: -£905m or -13% of allowance | 53% | 11.63% |

| Outputs performance | | | | | |
|---|---|---|---|---|---|
| **Reliability & availability** | **Connections** | **Social obligations** | **Customer Service** | **Environment** | **Safety** |
| ✓✓✓ number of interruptions<br>✓✓✓ duration of interruptions | ✓✓! time to quote & connect targets<br>✓✓✓ connections GSoP | ✓ stakeholder engagement | ✓✓✓ BMCS<br>✓✓✓ complaints | ✓✓✓ BCF<br>✓!! oil leakage<br>✓!✓ $SF_6$ Emissions | !✓✓ compliance with HSE obligations |

| Innovation |
|---|
| Spent 93% of their NIA allowance and increased the number of projects from 22 to 46. |

**Note: the symbols for output performance represent the DNOs in the group as follows: LPN, SPN, EPN.**

A3.19. The three UKPN DNOs spent a total of £2,225m in the first three years of RIIO-ED1, underspending against allowances by £493m (18%); this is the largest underspend of all DNO groups. This is mainly driven by significant underspends in replacing and refurbishing equipment, and network reinforcement. As last year, several factors have delayed investment on major asset replacement projects. Again, as noted last year, there has been a significant underspend on network reinforcement because the forecast level of loading on the network has not materialised.

A3.20. UKPN is forecasting the largest underspend on allowances over RIIO-ED1 of £905m (13%), a reduction from last year's forecasts; customers will receive 47% of any underspend.

A3.21. The forecast eight-year average RoRE, based on notional gearing and including financing and tax performance, for UKPN is 11.63%, 5.63% above their allowed cost of equity of 6.0%. It is again the highest RoRE of all DNO groups.

A3.22. UKPN is performing well against most RIIO outputs. All licensees exceeded all reliability targets, and continued to perform well against the BMCS. However, their SECV score reduced slightly on last year, moving UKPN down to third place. Performance against the TTC and TTQ targets has improved on last year, although EPN missed one TTC target. LPN received an improvement notice from the HSE, but UKPN have recorded their lowest number of Lost Time Incidents[59] since the start of RIIO-ED1.

A3.23. Environmental performance remains good, with all three licensees on track to deliver the RIIO-ED1 commitment to reduce their BCF by 1%, having continued to reduce emissions this year. $SF_6$ emissions reduced in LPN and EPN, but doubled on last year's values in SPN; despite this, all licensees remain on track to deliver their RIIO-ED1 commitment to maintain leakage at less than 0.2% of bank. Oil leakage only reduced in LPN, with increases in EPN and SPN due to a small number of higher than average fluid loss events. To date, UKPN has removed 8.5km in overhead lines in SPN and 3.5km in EPN.

A3.24. The group spent 93% of its NIA allowance increasing the number of projects from 22 to 46. This year, UKPN has been awarded £13.8m of NIC funding for 1 project.

[59] A Lost Time Incident is an incident that results in a worker being unable to return to work.

**SP Energy Networks (SPEN)**

| Expenditure and financial performance | | | | |
|---|---|---|---|---|
| **2017-18** | **To date** | **RIIO-ED1** | **Totex efficiency incentive rate** | **Forecast 8-year RoRE** |
| Total spent: £496m<br>Overspend: £15m or 3% of allowance | Total spent: £1,438m<br>Underspend: -£42m or -3% | Total forecast: £3,630m<br>Forecast underspend: £0m or 0% of allowance | 54% | 8.45% |

| Outputs performance | | | | | |
|---|---|---|---|---|---|
| **Reliability & availability** | **Connections** | **Social Obligations** | **Customer Service** | **Environment** | **Safety** |
| ✓✓ number of interruptions<br>✓✓ duration of interruptions | !! time to quote & connect targets<br>✓✓ connections GSoP | ✓ stakeholder engagement | ✓✓ BMCS<br>✓✓ complaints | ✓✓ BCF<br>✓✓ oil leakage<br>✓✓ $SF_6$ Emissions | ✓✓ compliance with HSE obligations |

| Innovation |
|---|
| Spent 64% of their NIA allowance and increased the number of projects from 22 to 39. |

**Note: the symbols for output performance represent the DNOs in the group as follows: SPD then SPMW.**

A3.25. SPEN's two DNOs spent a total of £1,438m in the first three years of RIIO ED1, underspending by £42m (3%) against allowances, despite overspending by £15m (3%) this year. Underspend to date has been driven by asset replacement and refurbishment, and network reinforcement. After the third year of RIIO-ED1, the majority of schemes identified in their Business Plan have been technically approved and are due to be completed in the price control. Both licensees have overspent on IT and Telecoms, mainly due to investment in a new asset management system. SPEN is forecasting it will spend in line with its allowance by the end of the price control.

A3.26. SPEN's forecast eight year RoRE, based on notional gearing and including financing and tax performance, is 8.45%, 2.45% above their allowed cost of equity of 6.0%. SP is in the middle of the RoRE figures for all six DNO groups.

A3.27. SPEN is performing well against most RIIO outputs. Both licensees met all reliability targets, and continue to perform well against the customer satisfaction, complaints metric, and SECV elements of the BMCS. As with most DNOs, performance against connections targets remains an area to improve, particularly for TTC where SP's licensees were ranked 13$^{th}$ and 14$^{th}$ this year.

A3.28. SPEN continues their good environmental performance overall. Oil leakage has reduced in SPMW, but increased slightly in SPD. It is worth noting that SPEN's targets for oil leakage have changed from an intention to reduce leaks by 50% to a commitment to reduce leaks during RIIO-ED1. BCF has also continued to reduce overall, though there was an increase in SPMW. This is partly due to a move to direct observation, rather than estimations, for both licensees. $SF_6$ emissions have, however, notably increased in 2017/18 in both licensees. SPEN is still committed to undergrounding 85km of overhead lines in AONB by 2023. There is still a risk that this target will not be achieved.

A3.29. In terms of innovation, SPEN has a number of ongoing projects but only spending 64% of its NIA allowance. This year, SPEN has been awarded £12.6m of NIC funding for 2 projects.

**Scottish and Southern Electricity Networks (SSEN)**

<table>
<tr><th colspan="6">Expenditure and financial performance</th></tr>
<tr><td>2017-18<br><br>Total spent: £530m<br>Overspend: £9m or 2% of allowance</td><td colspan="2">To date<br><br>Total spent: £1,488m<br>Underspend: -£94m or -6% of allowance</td><td>RIIO-ED1<br><br>Total forecast: £3,822m<br>Forecast underspend: -£225m or -6% of allowance</td><td>Totex efficiency incentive rate<br><br>56%</td><td>Forecast 8-year RoRE<br><br>8.04%</td></tr>
<tr><th colspan="6">Outputs performance</th></tr>
<tr><td>Reliability & availability<br><br>✓✓ number of interruptions<br>✓✓ duration of interruptions</td><td>Connections<br><br>✓! time to quote & connect targets<br>✓✓ connections GSoP</td><td>Social Obligations<br><br>✓ stakeholder engagement</td><td>Customer Service<br><br>✓✓ BMCS<br>✓✓ complaints</td><td>Environment<br><br>!✓ BCF<br>! ! oil leakage<br>✓! $SF_6$ Emissions</td><td>Safety<br><br>✓✓ compliance with HSE obligations</td></tr>
<tr><th colspan="6">Innovation</th></tr>
<tr><td colspan="6">Spent 48% of their NIA allowance and increased the number of projects from 30 to 32.</td></tr>
</table>

**Note: the symbols for output performance represent the DNOs in the group as follows: SSEH then SSES.**

A3.30. The two SSEN DNOs spent a total of £1,488m in the first three years of RIIO ED1, underspending by £94m (6%) against allowances. SSEN expect to reduce their expenditure further through operating and investment efficiencies following the reorganisation of the business at the start of RIIO-ED1. As with other DNOs, underspend this year is largely driven by asset replacement and refurbishment, and network reinforcement. SSE have, however, overspent on operational support following a restructure of parts the business. SSEN forecast it will underspend by £225m (6%) by the end of RIIO-ED1, higher than forecast last year; customers will see 44% of any underspend returned to them via the TIM.

A3.31. The forecast eight-year average RoRE, based on notional gearing and including financing and tax performance, for SSEN is 8.04%, 2.04% above their allowed cost of equity of 6.0%. SSEN has the second lowest RoRE of all the DNO groups.

A3.32. SSEN is performing well against most RIIO outputs. Both licensees met their targets for unplanned interruptions, but SSEH missed both targets for planned interruptions. Customer satisfaction scores continue to improve for SSEH, and while they have reduced slightly over time for SSES, remain above the target. Both licensees have further improved their performance in relation to complaints handling, and SSEN's SECV score improved on last year, closing the gap to the next DNO. Both DNOs met their TTQ targets, but SSES missed its TTC target.

A3.33. Environmental performance remains slightly mixed. There was a reduction in BCF for SSES, but a larger increase for SSEH resulting in an overall increase in BCF for SSEN. By contrast, $SF_6$ emissions reduced in SSEH but significantly increased in SSES. Finally, oil leakage for both licensees increased notably, though SSEN note that the increase was largely due to two incidents. Despite these, SSEN are confident they will be able to reduce oil leakage over the remainder of the price control.

A3.34. The group spent 48% of its NIA allowance and increased the number of projects from 30 to 32. To date, SSEN has been awarded £13.1m of NIC funding for 1 project.