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RIIO-ED1
Annual Report
2015-16

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Overview

RIIO-ED1 is the first electricity distribution price control to use the RIIO price control model. RIIO stands for Revenue = Incentives + Innovation + Outputs.

The price control began on 1 April 2015 and runs for eight years, to 31 March 2023.

This report reviews the activities of electricity distribution network companies in 2015-16. It also covers company forecasts for the remainder of the eight-year period. It reviews company performance on the outputs we set and the costs incurred against allowed revenues.

Context

Electricity distribution networks carry electricity from the high voltage transmission network to industrial, commercial and domestic users. Distribution networks are owned and operated by private sector companies, known as distribution network operators (DNOs). There are 14 DNOs owned by six companies in Great Britain.

To ensure value for money for consumers, we regulate DNOs through periodic price controls that limit the amount by which costs can rise, and that stipulate levels of performance.

To set our price controls we use the RIIO (Revenue = Incentives + Innovation + Outputs) framework. The latest price control lasts for an eight-year period from April 2015 until March 2023.

We set the baseline revenues that DNOs can earn at the start of the price control. These revenues are adjusted year-on-year depending on DNOs' performance against incentive mechanisms. There are outputs associated with baseline revenues that DNOs must deliver. Outputs fall into six categories:

- **Reliability and availability**: providing long-term reliability of supply, minimising the number and duration of interruptions and ensuring adaptation to climate change.
- **Environment**: reducing carbon emissions and the environmental impact of the companys' activities by managing carbon footprint, visual amenity and pollution.
- **Connections**: connecting customers in a timely and efficient way, and enabling competition.
- **Customer satisfaction**: maintaining high levels of customer satisfaction and improving service.
- **Social obligations**: helping vulnerable customers.
- **Safety**: providing a safe network in compliance with Health and Safety Executive (HSE) safety standards.

Using data and supporting information submitted by the DNOs, this report reviews how they are delivering against the financial and output requirements of the price control.

Associated documents

Price control documents

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

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

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

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

Guide to the RIIO-ED1 electricity distribution price control
https://www.ofgem.gov.uk/system/files/docs/2017/01/guide_to_riioed1.pdf

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

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

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

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

DNO reports on their Business Plan Commitment performance

ENWL:http://www.enwl.co.uk/docs/default-source/investors/business-plan-commitment-report-2016.pdf?sfvrsn=0

NPg:www.northernpowergrid.com/downloads/2726

WPD:https://www.westernpower.co.uk/docs/About-us/Stakeholder-information/Performance-reporting-RIIO-ED1/Summary-Report-Business-Plan-Commitments-Report-20.aspx

UKPN:http://www.ukpowernetworks.co.uk/internet/en/about-us/documents/UK%20Power%20Networks%20RIIO-ED1%20Business%20Plan%20Commitment%20Report%202015-16.pdf?pdf=2016-business-plan

SPEN:http://www.spenergynetworks.co.uk/userfiles/file/MAIN_REPORT_ED1_ANNUAL_REPORT.pdf
SSEN:https://www.SSEN.co.uk/WorkArea/DownloadA**sse**t.aspx?id=12083

DNO Environment Reports

ENWL:http://www.enwl.co.uk/about-us/regulatory-information/environment-report

NPg:http://www.northernpowergrid.com/your-powergrid/article/environment

WPD:https://www.westernpower.co.uk/docs/About-us/WPD-Innovation-and-Environment-Report_2015-16.aspx

UKPN:http://www.ukpowernetworks.co.uk/internet/asset/031d6af2-c2ef-4287-9eff-5fb201c7610I/UKPN-Environment-Report-2015-16v1.0.pdf

SPEN: http://www.spenergynetworks.co.uk/userfiles/file/ED1_Environment_and_Innovation_Report.pdf

SSEN:https://www.SSEN.co.uk/Library/StakeholderEngagementPublications/

Contents

Executive Summary

2015-16 was the first year of the RIIO-ED1 price control. In RIIO, the focus is on outputs, incentives and innovation as well as total expenditure (Totex).

This report outlines our key findings of the electricity distribution network operators' (DNOs) performance during 2015-16. It also outlines Totex forecasts for the whole RIIO-ED1 period.

Output performance

We will monitor output performance during the price control and we expect outputs to be fully delivered by the end of RIIO-ED1. After the first year, DNOs are performing well against all of the six output categories: reliability and availability, environment, connections, customer satisfaction, social obligations and safety.

Across all DNOs supply interruptions and the length of time customers were off supply fell in 2015-16, as did the time to connect new customers to the network. There were environmental improvements with business carbon footprint, SF_6 emissions and leakage from fluid-filled cables falling across DNOs. Customer satisfaction scores were up on the last year of DPCR5 and safety standards set by HSE were complied with. Overall, performance varied across DNOs and there is room for improvement for individual DNOs, particularly in customer satisfaction and time to connect.

Expenditure performance

Collectively, DNOs were set allowances of £26bn over the price control to deliver their outputs. They are now forecasting to spend £25bn (3% less than their allowances). Any underspend will be shared with customers. In the first year of RIIO-ED1, DNOs collectively spent £3.2bn managing their network; 9% less than the allowance set at the price control for that year.

Direct expenditure, ie the costs of working directly on the electricity distribution network, across the DNOs was lower than allowances. Indirect expenditure, ie the costs to support network activity, was higher. That is not unusual at the start of a price control. DNOs may re-profile expenditure based on final allowances and put in place contracts for the delivery of work. We typically expect to see increases in direct expenditure over the price control period.

Expenditure on reinforcing the network is almost a third lower than allowances. This area of expenditure is driven by economic conditions, which are uncertain at the time of setting the price control. The underspend is shared with consumers, and there is a re-opener which can allow further recovery for customers of large underspends.

As the price control progresses we will better understand what is driving the Totex underspend: for example, savings through efficiencies and innovation or non-delivery of

work. It is too early to draw conclusions but when we do this will inform our assessment for RIIO-ED2.

Financial performance

The financial performance of DNOs is presented using the Return on Regulatory Equity (RoRE) measure. Based on DNOs' forecast performance for RIIO-ED1, we have calculated that RoRE will range from 7.21% to 11.63%. The forecast eight-year average RoRE across DNOs is 9.03%. This estimate depends on current forecasts and future delivery of outputs and may change during the remaining years of RIIO-ED1.

Customer bill impact

The financial and output performance of DNOs affects the Allowed Revenue that they can collect through customer bills. The performance in 2015-16 will impact on Allowed Revenue, and therefore customer bills, in 2017-18. We estimate that the average GB customer will pay £86 per annum in 2017-18 to cover electricity distribution network costs. This is less than the estimated bill impact in 2015-16 (£87) and 2016-17 (£93).

1. Introduction

1.1. Each year we report on how network companies have performed against the outputs and allowances set under the RIIO price controls. This is part of our annual process of monitoring network companies, and holding them to account for the money they spend and collect from consumer bills. This report is on the performance of electricity distribution companies but there are equivalent reports for gas distribution, gas transmission and electricity transmission.[1]

1.2. In July of each year each electricity distribution network operator (DNO) must submit information to us that outlines the actual costs they have incurred up to 31 March of that year and forecast costs to the end of RIIO-ED1. They also provide a written commentary with further detail behind the costs, including reasons for differences between costs, allowances and forecasts.

1.3. We analyse this information to examine DNO performance against output targets and incentives. We also meet with the DNOs to discuss technical and financial aspects of their submissions.

1.4. This report considers expenditure, output and financial performance in the first year, as well as forecast expenditure performance across the whole price control. The following chapters provide more detail:

- **Chapter 2: Expenditure** – explains the financial aspects of DNO performance. This covers their total expenditure (Totex), Allowed Revenue, Return on Regulatory Equity (RoRE) and the impact on consumer bills.

- **Chapter 3: Outputs** – explains how the DNOs have performed against their outputs in the first year of the price control.

- **Chapter 4: Innovation** – details the projects undertaken and costs incurred for the Network Innovation Allowance (NIA) and Network Innovation Competition (NIC).

- **Chapter 5: Analysis of expenditure** - explains reasons for variances between DNO expenditure compared with what was allowed at the start of the price control.

- **Chapter 6: Summary by DNO group –** sets out, at a high level, how each DNO group is performing.

[1] Gas Distribution - https://www.ofgem.gov.uk/publications-and-updates/riio-gas-distribution-annual-report-2015-16. Gas Transmission - https://www.ofgem.gov.uk/publications-and-updates/riio-gas-transmission-annual-report-2015-16, Electricity Transmission - https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-transmission-annual-report-2015-16

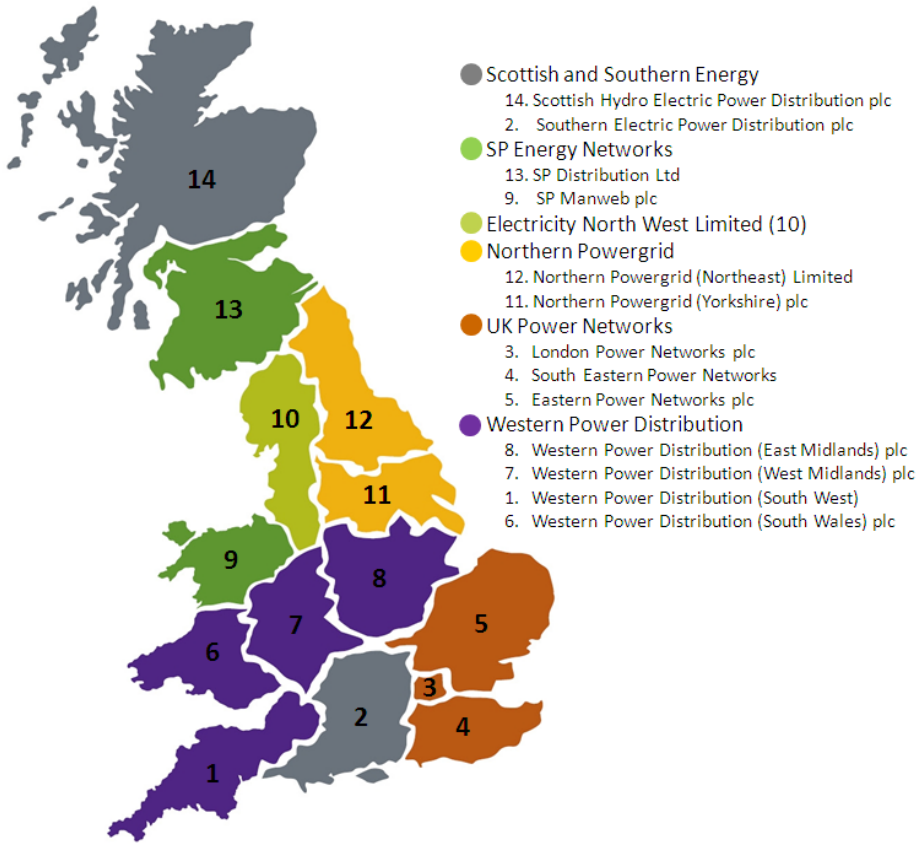
1.5. Unless otherwise stated, all financial values in this report are in 2015-16 prices.

1.6. The DNOs are listed below in Table 1.1 together with the companies that manage them (the DNO group). Figure 1.1 maps the geographic areas covered by the DNOs.

Table 1.1: DNO ownership and names

DNO Group		DNO	
ENWL	Electricity North West Limited	ENWL	Electricity North West Limited
NPg	Northern Powergrid	NPgN	Northern Powergrid (Northeast) Limited
		NPgY	Northern Powergrid (Yorkshire) plc
WPD	Western Power Distribution	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)
UKPN	UK Power Networks	LPN	London Power Networks plc
		SPN	South Eastern Power Networks
		EPN	Eastern Power Networks plc
SPEN	SPEN Energy Networks	SPD	SP Distribution plc
		SPMW	SP Manweb plc
SSEN	Scottish and Southern Electricity Networks	SSEH	Scottish Hydro Electric Power Distribution plc
		SSES	Southern Electric Power Distribution plc

Figure 1.1: DNO location



2. Expenditure, revenue, customer bills and company returns

Chapter Summary

Review of the expenditure and financial performance of DNOs in 2015-16. It includes an explanation of how we determine Allowed revenue that can be collected from network charges. It also details how expenditure by the DNOs impact on customer bills.

Introduction

2.1. For each DNO we report:

- their total controllable expenditure (Totex[2]) on maintaining and improving Great Britain's electricity distribution network infrastructure
- their Allowed Revenue for these activities
- the impact of Allowed Revenue on customer bills, and
- an estimate of the associated Return on Regulatory Equity (RoRE) for investing in the electricity distribution network.

Total controllable expenditure (Totex)

2.2. For each year of the price control, we set DNO cost allowances, their allowed Totex. This is to enable investment to maintain the existing network and accommodate a new generation of network infrastructure, and to deliver agreed outputs. DNOs must report their actual Totex, explaining their performance compared to the allowed Totex and their agreed outputs annually. They are also required to forecast Totex performance to the end of the price control.

2.3. As Totex refers to total controllable expenditure, it comprises both capital expenditure (capex) and operational expenditure (opex). Therefore, DNOs are incentivised to deliver outputs based on total whole life costs, rather than being driven to preferring either capex or opex.[3] This better incentivises them to select the best overall solutions for customers.

[2] Includes only controllable costs, excluding uncontrollable costs such as business rates, and licence fees.
[3] Historically capex solutions have been preferred, as the cost was capitalised and increased their regulatory asset value (RAV). Under the Totex approach a company spends money on a solution, the same percentage is capitalised irrespective of whether that solution involves opex or capex. This means that companies are more likely to use the overall cost-effective solution.

Actual expenditure

2.4. We set a Totex allowance of £26 billion for the full eight years of the price control. The allowance for 2015-16 was £3,475 million and actual expenditure was £3,165 million; underspend of £309 million or 9%.

2.5. Table 2.1 details the Totex expenditure by DNO. Twelve DNOs underspent against their Totex allowances and two overspent (EMID and WMID). The three UKPN DNOs underspent on allowances by the largest percentage. Chapter 5 and the data file (see Appendix 1) give more detail on the expenditure against allowances for specific cost categories.

2.6. DNOs are incentivised to outperform their Totex allowance as part of the Totex Incentive Mechanism (TIM). DNOs that submit better forecasts (ie closer to our view of efficient cost) receive a higher Totex incentive strength rate, meaning a lower Sharing Factor. Through the TIM, any underspend compared to allowed Totex is shared between the DNO and its customers according to the Sharing Factor. Therefore, efficient spending leads to better returns for investors and lower network charges for customers. Equivalently any overspend is shared between investors and customers.

Table 2.1: Pre-tax Totex in 2015-16 (£m)

	ENWL	**NPg**		**WPD**			
	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST
Allowed Totex	251	194	256	276	302	156	228
Actual Totex	244	188	248	312	308	142	223
Overspend / underspend	-6	-7	-8	36	6	-13	-4
Sharing Factor[4]	41.89%	44.16%	44.16%	30.00%	30.00%	30.00%	30.00%
Allowed Totex after sharing[5]	248	191	252	287	304	152	226

	UKPN			**SPEN**		**SSEN**	
	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
Allowed Totex	262	236	353	217	249	170	325
Actual Totex	189	173	281	192	239	151	276
Overspend / underspend	-73	-63	-72	-26	-10	-19	-49
Sharing Factor	46.72%	46.72%	46.72%	46.50%	46.50%	43.53%	43.53%
Allowed Totex after sharing	228	207	319	206	244	162	304

[4] This is the proportion of underspend / overspend the consumer receives (after accounting for tax).
[5] The allowed Totex after sharing is not wholly remunerated in the year it occurs. A minority of the expenditure is funded immediately through the Fast Money part of Base Revenue (see Appendix 3). The majority is added to the company Regulatory Asset Value (RAV), which is paid out over a period that is reflective of the average lifetime of long-term network assets (multiple decades).

Forecast expenditure

2.7. As noted above, the total Totex allowances for the eight-year price control is £26 billion. By the end of the price control, a total underspend of £837 million (3%) is forecast by the DNOs. Eight DNOs expect to underspend, and six expect to overspend.

2.8. It is important to note these DNO forecasts have been provided after only one year of an eight-year price control. Future spending performance and economic conditions are uncertain. We will continue to monitor the DNOs throughout RIIO-ED1 to understand what is driving any over- or underspend.

Figure 2.1: Expenditure relative to cost allowances (%)

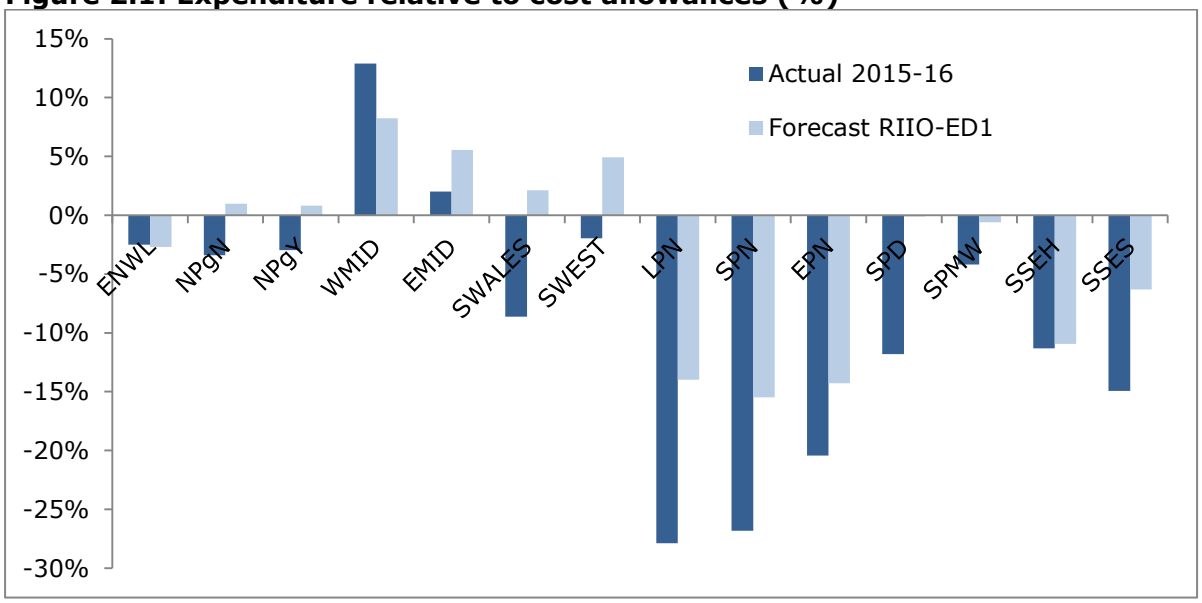


Table 2.2: Expenditure relative to cost allowances

	2015-16				*Forecast RIIO-ED1*			
	Allowance	*Actual*	*Difference*		*Allowance*	*Actual & Forecast*	*Difference*	
	£m	*£m*	*£m*	*%*	*£m*	*£m*	*£m*	*%*
ENWL	251	244	-6	-3%	1,924	1,872	-52	-3%
NPgN	194	188	-7	-3%	1,357	1,370	13	1%
NPgY	256	248	-8	-3%	1,814	1,828	15	1%
WMID	276	312	36	13%	2,233	2,417	184	8%
EMID	302	308	6	2%	2,238	2,362	125	6%
SWALES	156	142	-13	-9%	1,191	1,216	25	2%
SWEST	228	223	-4	-2%	1,818	1,907	89	5%
LPN	262	189	-73	-28%	1,877	1,615	-262	-14%
SPN	236	173	-63	-27%	1,826	1,543	-283	-15%
EPN	353	281	-72	-20%	2,690	2,306	-384	-14%
SPD	217	192	-26	-12%	1,605	1,603	-2	0%
SPMW	249	239	-10	-4%	1,766	1,755	-10	-1%
SSEH	170	151	-19	-11%	1,275	1,135	-139	-11%
SSES	325	276	-49	-15%	2,471	2,315	-156	-6%
Total	**3,475**	**3,165**	**-309**	**-9%**	**26,082**	**25,244**	**-837**	**-3%**

Allowed Revenue

2.9. Allowed Revenue is the total amount of money that DNOs can collect from customers through Distribution Use of System Charges (DUoS). Actual Totex and the TIM both affect the Allowed Revenue a DNO can collect. This is explained in Appendix 2.

2.10. Allowed Revenue for 2017-18 is calculated following our price control Annual Iteration Process (AIP), which was completed on 30 November 2016. The AIP:

- determines the TIM reward/penalty based on the latest available actual expenditure information,
- accounts for changes to other factors that are updated, for example the allowance for borrowing associated with corporate debt, tax and updates through re-opener windows[6],
- determines an annual modification term (the "MOD"), which modifies the Opening Base Revenue (set at the start of the price control).

2.11. Table 2.3 shows Allowed Revenue that DNOs may collect during the price control so far. This is presented in a consistent price base and is exclusive of the reconciliation of the revenue collection correction factor to improve cross-year comparisons of the customer cost for the services provided. Also provided are details of what comprises Allowed Revenue in 2017-18. Note that minor constituent parts of the Allowed Revenue are still subject to uncertainty or are not forecast in advance (these cases are indicated in the table).

[6] Re-opener mechanisms allow a DNO's allowed revenues to change to reflect specific unforecastable elements during the price control period.

Table 2.3: Allowed Revenue

	ENWL	NPg		WPD				UKPN			SPEN		SSEN	
	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
Allowed Revenue[7]	£m 2012-13 prices													
2015-16	374	245	323	409	403	199	286	374	325	497	358	317	203	491
2016-17	384	248	326	391	346	203	292	399	345	473	362	320	266	504
2017-18	366	251	324	425	418	213	297	381	329	503	354	316	261	483
2017-18 Allowed Revenue	£m nominal prices[8]													
Base Revenue	405	276	361	459	461	233	332	429	372	565	388	349	288	531
MOD	-6	-3	-3	-3	-1	-3	-4	-18	-15	-15	-5	-7	-5	-15
Incentive Payments	18	11	18	28	28	9	11	19	18	30	12	12	6	21
Innovation Funding	3	2	2	3	3	1	2	2	2	3	2	2	1	3
Non controllable Costs[9]	-1	1	1	-1	1	3	-1	4	0	-3	-	-	-1	5
DPCR4 Residual Losses[10]	-	-	-8	-	-13	-	-	-	-	-4	-	-	9	8
Correction Factors[11]														
Revenue collection	-11	1	1	-2	-1	3	3	1	-2	3	-8	-10	-1	5
Inflation forecast true-up	-9	-6	-8	-9	-9	-5	-7	-9	-8	-12	-	-	-6	-11
Corrected Allowed Revenue	**399**	**282**	**364**	**474**	**468**	**242**	**336**	**428**	**367**	**567**	**390**	**344**	**292**	**547**
Network Innovation Competition[12]	-	-	-	1.2	1.2	1.2	1.2	1.5	1.5	1.5	-	-	-	-

[7] Allowed Revenue values reported in this section of the Table are exclusive of the "revenue collection" correction factor (licence term: k) and years are reported in a consistent price base, the method of calculation is otherwise identical to the method in the lower part of the table.
[8] This unit of money is our view of 2017-18 prices as of November 2016.
[9] Non-controllable costs are cost items over which the company has no control. Examples include the charge levied on the company to cover the cost relating to Ofgem carrying out its regulation activities and adjustments to business rates, such as tax, that a company cannot influence.
[10] For electricity distribution there remains a DPCR4 legacy revenue adjustment for its Losses Incentive Mechanism ("Direction pursuant to paragraph 7.7 of Charge Restriction Condition (CRC) 7 of the Electricity Distribution licence": https://www.ofgem.gov.uk/sites/default/files/docs/2014/03/ppl_direction_-_march-14_0.pdf).
[11] These reconcile previous years' actual revenue to the Allowed Revenue of those years. These are the differences between actual inflation and our forecast and revenue collection (it is not practical to collect the exact revenue allowed owing to tariffs being set before network usage is known).
[12] This is allowed revenue, but is levied on users of the GB national transmission system, not the distribution systems.

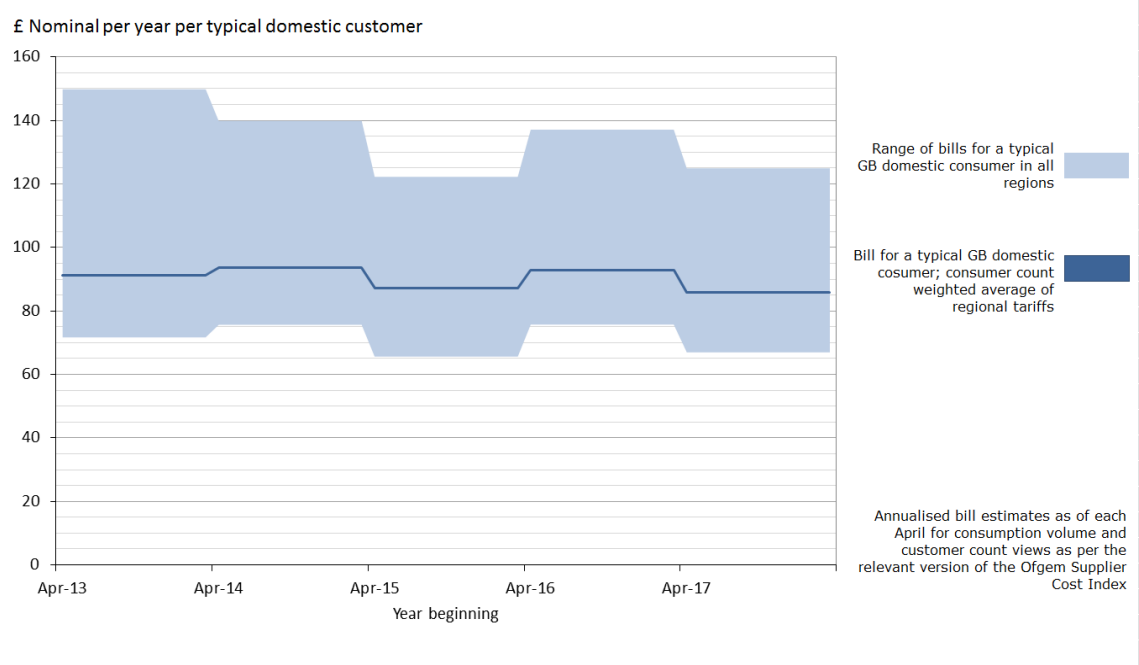
Customer bill impact

2.12. We have used assumptions consistent with those that underpin our Supplier Cost Index (SCI)[13] to provide an estimate of the cost to typical domestic energy bills due to Allowed Revenues for each region of Great Britain.

2.13. Actual customer costs are sensitive to geographic region, meter type, consumption volume and the timing and duration of contracts. Our methodology is based on typical domestic consumption values (the median domestic consumer in GB). Individual customer costs may differ significantly from these values. We report costs on an annualised basis using our latest assumptions[14]. Bill estimates are reported in Figure 2.2 and Table 2.4. Values are reported in nominal prices and so reflect the actual typical bills rather than the real terms cost to customers. The values we report use our published typical domestic consumption values[15]. We have used these values uniformly for all reported years, with no correction made for recent trends in energy consumption.

2.14. We estimate that the typical GB domestic customer will pay £93 in 2016-17 for electricity distribution costs. This is estimated to decrease by 8% to £86 in 2017-18. Charges differ considerably depending on the region that a consumer resides in. For a typical consumer 2017-18 charges are expected to range from £67 in London and up to £125 in North Scotland, see Table 2.4 for details.

Figure 2.2: Estimates of typical GB consumer costs to meet Allowed Revenue



[13] SCI: https://www.ofgem.gov.uk/data-portal/retail-market-indicators
SCI Method: https://www.ofgem.gov.uk/publications-and-updates/supplier-cost-index-methodology
[14] We used the January 2017 version of our Supplier Cost Index model. Note that the SCI uses a consistent view of a typical consumer for all years, in recent years this consumption has been reducing. This and future trends in consumption are not accounted for by this analysis.
[15] https://www.ofgem.gov.uk/gas/retail-market/monitoring-data-and-statistics/typical-domestic-consumption-values

Table 2.4: Regional estimates of typical GB consumer cost to meet Allowed Revenue (£ nominal prices per typical domestic consumer)

£ nominal prices per typical domestic consumer

	Year[16]*:*	*Apr-13*	*Apr-14*	*Apr-15*	*Apr-16*	*Apr-17*
GB consumer count weighted average		91	94	87	93	86
Region	**Licensee**					
North West	ENWL	102	101	89	92	79
North East	NPgN	93	104	97	97	91
Yorkshire	NPgY	81	87	84	80	76
Midlands	WMID	85	81	80	93	83
East Midlands	EMID	75	76	76	83	76
South Wales	SWALES	119	117	96	112	102
South West	SWEST	119	118	107	122	113
London	LPN	77	80	66	76	67
South East	SPN	86	96	86	103	91
East Anglia	EPN	72	79	76	79	79
South Scotland	SPD	90	89	96	95	91
Merseyside and N Wales	SPMW	121	136	121	108	104
North Scotland	SSEH	150	140	122	137	125
Southern	SSES	85	85	80	86	81

Return on Regulatory Equity (RoRE)

2.15. We assess the overall financial performance of DNOs using a measure called the Return on Regulatory Equity (RoRE). RoRE is calculated post-tax and its estimation includes the use of certain regulatory assumptions, such as the assumed gearing ratio of the companies, to ensure comparability across the sector. To eliminate phasing impacts over the course of the price control, we use a mix of actual and forecast performance to calculate eight-year average returns. These returns may not equal the actual returns seen by shareholders.

2.16. For the TIM component of RoRE, we have used forecasts provided by the DNOs for the entire control period.

2.17. As this is the first year of data collection, DNOs have made their own assumptions on the treatment of uncertain expenditure and allowances. We will be working with the companies in the future to standardise some of the assumptions made in forecasting and to align more closely with the various uncertainty mechanisms in RIIO-ED1.

2.18. For the incentive rewards we have used actual post-tax values where known.[17] We have assumed a simple average of known (pre-tax) rewards for the remaining

[16] Data in this table is inclusive of adjustments for a Government rebate surcharge:
http://www.enwl.co.uk/docs/default-source/charging/enwl-notice-to-amend-tariffs---april-2015-(finals).pdf?sfvrsn=2
https://www.westernpower.co.uk/docs/system-charges/Schedule-of-charges-and-other-tables-and-addendums/5rebate.aspx
http://www.ukpowernetworks.co.uk/internet/en/about-us/duos/
http://www.northernpowergrid.com/downloads/system.cfm

[17] Time value of money adjustments and forecast inflation effects have been stripped out of the value of

years, taxed at future Corporation Tax rates. Note that in some cases, holding rewards constant assumes that the underlying performance will increase over time.

2.19. Our RoRE should be compared to the cost of equity allowed at the start of the price control. The four Western Power Distribution DNOs were allowed a 6.4% cost of equity as part of their fast-track settlement. The remaining 10 DNOs have a cost of equity of 6.0%. Each company was also given an ex-ante reward or penalty based on business plan quality.

2.20. Underspending against allowed Totex and incentive outperformance (shaded blue) both increase DNOs' return, while overspending and penalties resulting from underperformance (shaded red) decrease their return.

2.21. Returns are predominately driven by all DNOs performing well against the Interruptions Incentive Scheme (IIS). For UKPN it is also driven by forecast underspends through the TIM.

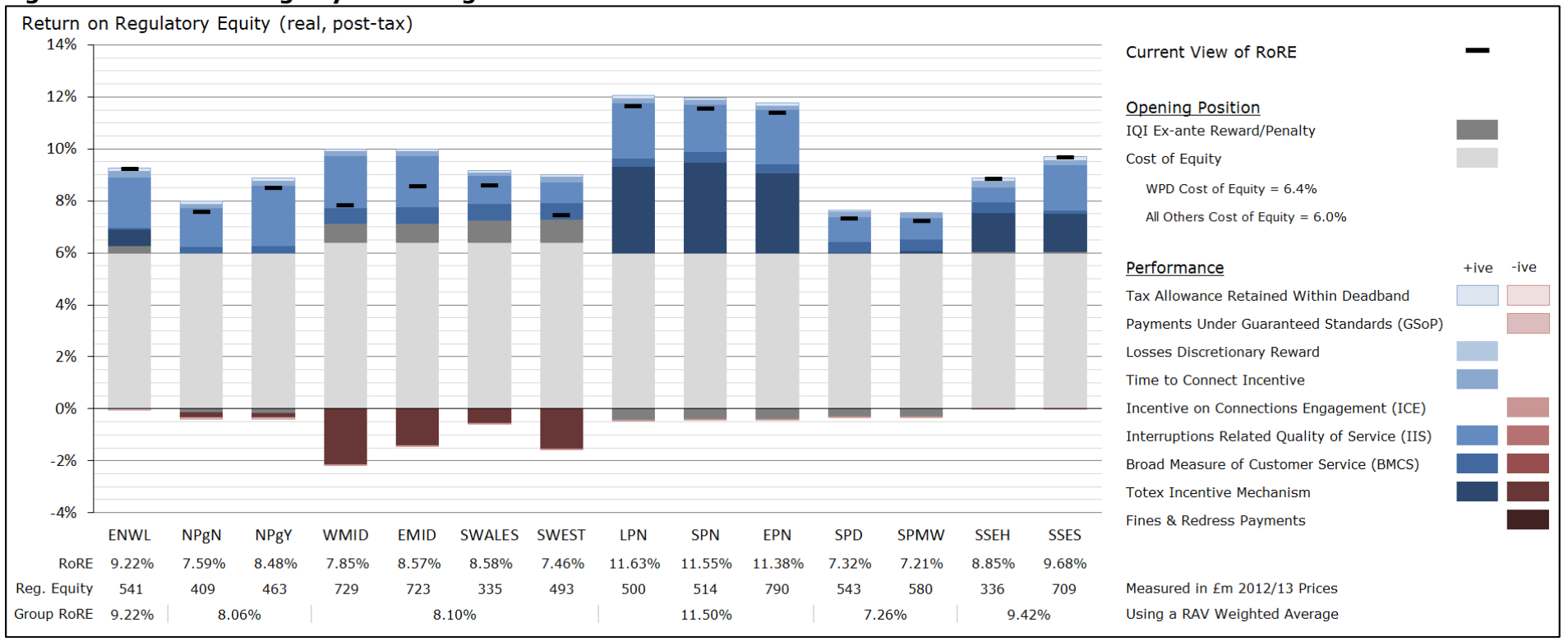
2.22. The RAV-weighted RoRE across the sector is 9.03%. Based on current forecasts, the three UKPN DNOs have the highest RoRE figures. No DNOs are forecast to earn returns below their cost of equity.

2.23. There are a number of factors which are not reflected in our RoRE calculations, but which may affect the return realised by shareholders. The largest of these are the potential end of period clawbacks for under delivery on Secondary Deliverables (see Chapter 3). The methodologies for these are still under development. The current calculation assumes delivery of all RIIO Outputs

2.24. Our RoRE analysis also excludes companies actual debt costs relative to our regulatory assumption, innovation funding, legacy adjustments from prior control periods and unfunded pension deficits. We may include some of these items in the future as we continue to develop our methodology.

incentives. They have been taxed at the actual Corporation Tax rate applicable to the year in which the company recovers the money, which is (usually) two years after the performance.

Figure 2.3: Forecast eight-year average RoRE



	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
RoRE	9.22%	7.59%	8.48%	7.85%	8.57%	8.58%	7.46%	11.63%	11.55%	11.38%	7.32%	7.21%	8.85%	9.68%
Reg. Equity	541	409	463	729	723	335	493	500	514	790	543	580	336	709
Group RoRE	9.22%	8.06%		8.10%				11.50%			7.26%		9.42%	

3. Outputs and incentives

Chapter Summary

Performance of DNOs under each of the six output categories after the first year of RIIO-ED1, including ranking of DNOs across various measures.

3.1. Under the RIIO model, we committed to providing clear and comprehensive outputs that the DNOs must deliver. The aim of these outputs, and the associated incentives to encourage the DNOs to deliver them, is to ensure that the DNOs provide value for money for current and future customers while helping to develop a sustainable energy sector.

3.2. Under RIIO, DNOs must deliver outputs in return for revenues. Outputs fall into six categories: reliability and availability, environment, connections service, customer service, social obligations, and safety.

3.3. Performance against the outputs can be monitored by the performance against a number of incentive measures and Secondary Deliverables. The outputs framework graphic at the start of each output section below summarises these incentive measures and Secondary Deliverables. We then describe 2015-16 performance.

Reliability and availability

Reliability and availability: providing long-term reliability, minimising the number and duration of interruptions and ensuring adaptation to climate change.	
Incentive measure	**Incentive type**
Interruption incentive scheme (IIS): DNOs can receive a financial reward or incur a financial penalty depending on their performance against a target for both the number and length of their network supply interruptions.	Financial: 250 RORE basis points per annum. Supported by monitoring of Secondary Deliverables. Reputational.
Guaranteed Standards of Performance (GSoP): direct payment to customers of fixed amounts if DNO fails to deliver specified minimum levels of performance regarding interruptions.	Financial: payment to customers for failure to meet standards. Reputational.
Health, criticality and monetised risk: DNOs have an obligation to reduce the risk of network assets failing.	Financial: penalty of 2.5% of under delivery or reward of 2.5% of over delivery.
Load index: DNOs have an obligation to reduce risk of network overloading.	Part of business plan commitments.
Worst-served customers: – DNOs have access to funding to improve the reliability for a subset of customers whose supply has been repeatedly interrupted.	Financial: £76.5 million over ED1 (use-it-or-lose-it). Reputational.
Network resilience: proactive network investment for reducing the impact of disruptive events, such as floods or severe storms.	Reputational.

3.4. Electricity customers want a reliable supply. As shown above, we have a number of measures in RIIO-ED1 to ensure the DNOs achieve this.

Interruption Incentive Scheme (IIS)

3.5. The IIS sets targets for the frequency and duration of both planned and unplanned interruptions. The DNOs are rewarded if they meet or exceed these targets or are penalised if they fail to meet these targets.[18]

[18] The annual targets for planned interruptions are calculated as the average number of interruptions and minutes lost over the previous three years. There is a two-year lag on the years used in setting the targets; therefore, the target for 2015-16 is the average annual performance over the 2011-12 to 2013-14 period. For unplanned interruptions, each DNO has separate targets for customer interruptions (CIs) and customer minutes lost (CMLs). The targets are calculated by benchmarking across the DNOs and looking at each DNO's historical performance.

3.6. Interruptions are categorised as planned or unplanned. DNOs need a certain level of planned interruptions so that they can undertake maintenance on the network. Planned outages are less of an inconvenience to customers as long as DNOs give sufficient notice. We therefore have different incentive mechanisms for planned and unplanned interruptions. The incentive rate for planned interruptions is half that for unplanned interruptions.

3.7. Unplanned interruptions are typically due to a fault on the network. Unplanned interruptions can be caused by a variety of reasons including flooding, lightning, metal theft, and corrosion. A list of causes of unplanned interruptions (cost codes) is in the data file (see Appendix 1).

3.8. Between 2014-15 and 2015-16, Customer Interruptions (CIs)[19] decreased by 9%, and Customer Minutes Lost (CMLs)[20] decreased by 12%. For each customer interruption, the average number of minutes lost in 2015-16 was 74, a 3% reduction on the figure for 2014-15.[21]

3.9. All DNOs met or outperformed their IIS targets (combined planned and unplanned targets) for 2015-16 as shown in Figures 3.1 and 3.2. All met or exceeded the targets for unplanned interruptions. Only SWEST failed to meet its targets (for both CIs and CMLs) for planned interruptions. In total the DNOs earned £160 million in rewards under the IIS in 2015-16 (see Table 3.1).

[19] Customer interruptions are the number of customer interruptions per 100 customers on the network.
[20] Customer Minutes Lost are the average length of time customers are without power per interruption.
[21] Since 2002 there has been a 47% reduction in the number of power cuts (ie customer interruptions) and a 58% reduction in the duration of the power cuts (ie customer minutes lost).

Figure 3.1: Number of Customer Interruptions (excluding exceptional events), 2015-16

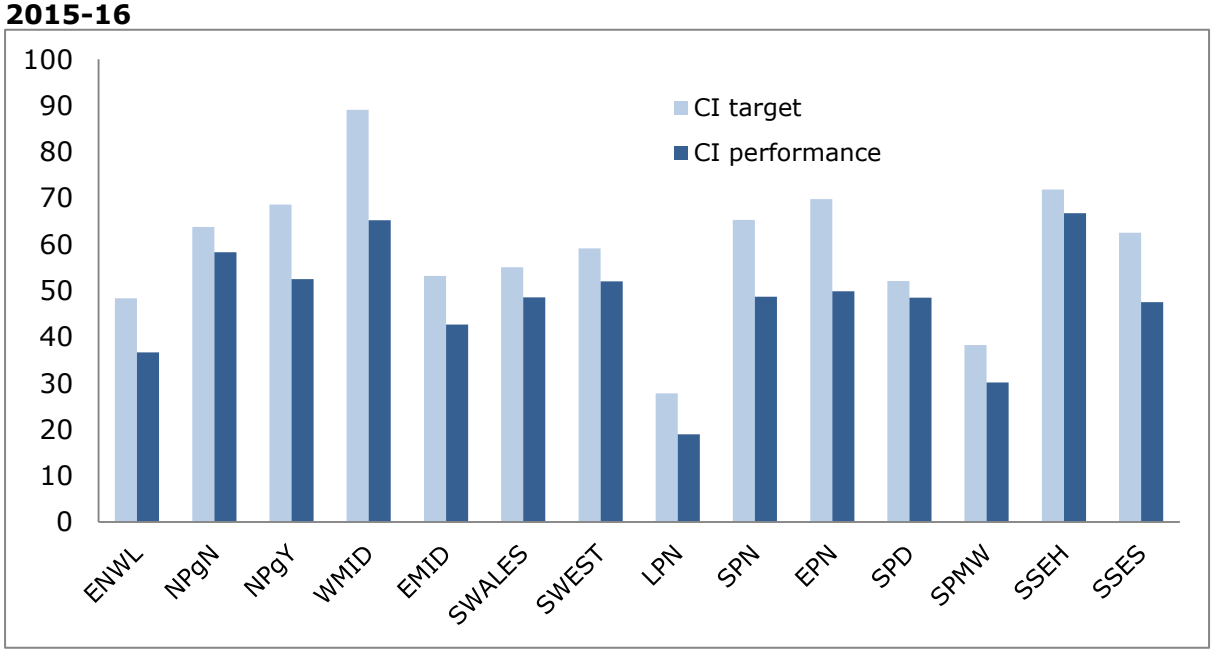


Figure 3.2: Duration of Customer Interruptions (excluding exceptional events), 2015-16

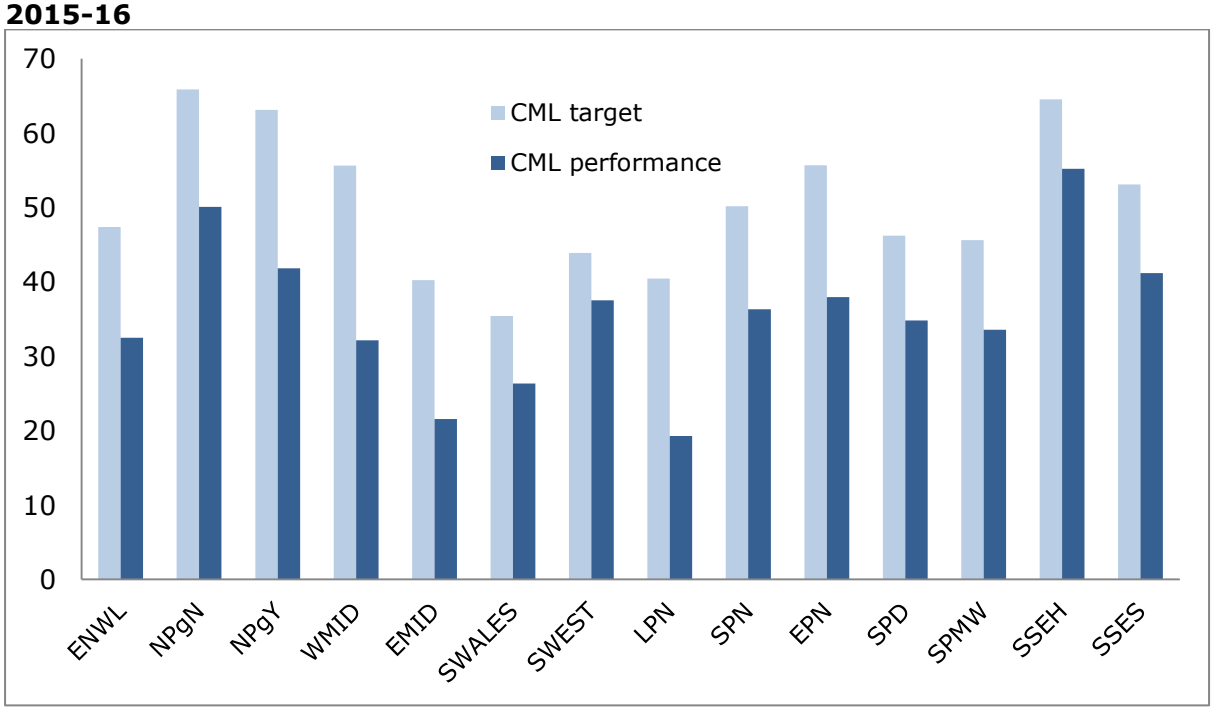


Table 3.1: IIS Performance

	CI reward (£m)	*CML reward (£m)*	*Total Reward***	*Ranking (based on CI performance)*	*DNO ranking (based on CML performance)*
ENWL	3.34	10.20	13.54	3	5
NPgN	0.96	7.00	7.92	12	13
NPgY	4.16	13.55	13.88	11	12
WMID	8.41	20.28	18.77	13	4
EMID	3.92	17.16	18.13	4	2
SWALES	1.03	3.55	4.58	8	3
SWEST	1.60*	3.51*	5.11	10	10
LPN	2.19	12.86	13.80	1	1
SPN	4.10	8.32	12.08	9	9
EPN	7.72	16.79	21.32	5	7
SPD	0.79	6.05	6.86	7	8
SPMW	1.32	4.77	6.12	2	6
SSEH	0.47	1.96	2.36	14	14
SSES	5.17	10.84	15.98	6	11
Total	**45.18**	**136.80**	**160.43**		

*SWEST failed to meet its targets for planned interruptions for both CI and CML. Therefore, its overall reward was reduced by £3,630 for CI and £210,000 for CML. Further breakdown of the reward/penalty for planned and unplanned interruptions for each DNO can be found in the data file (Appendix 1).
**This includes adjustment for Regulation 7 Severe Weather and Normal Weather.

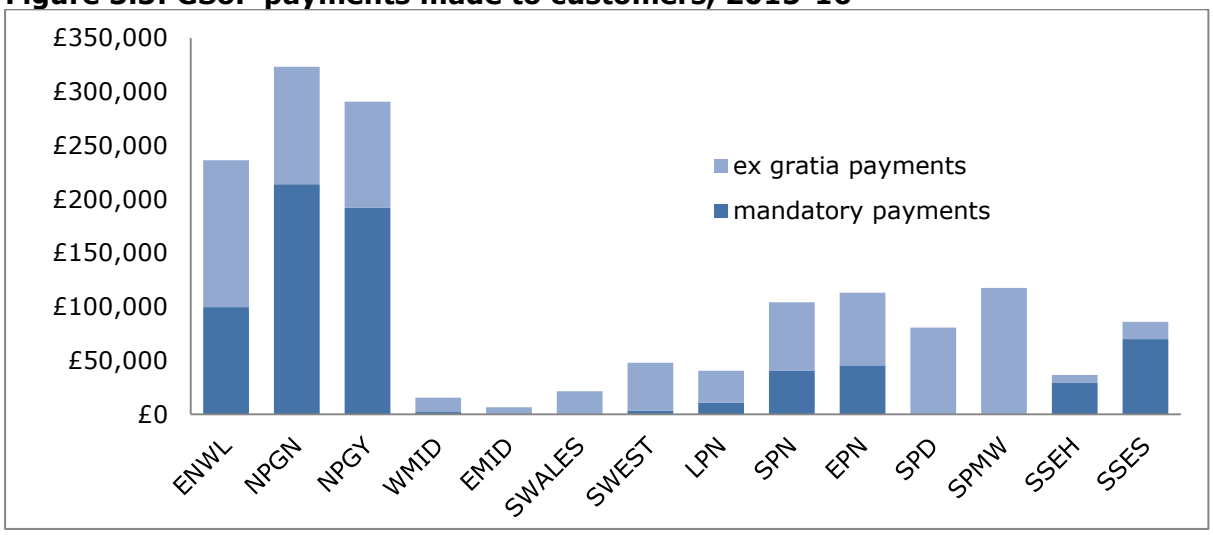
Guaranteed Standards of Performance (GSoP)

3.10. Statutory regulations set GSoP for the reliability of supply.[22] They specify a minimum level of service expected of the DNOs in a range of circumstances, for example severe weather.

3.11. Customers are entitled to a fixed payment from the DNO if their supply has been interrupted for a certain period. A DNO may decide to pay more than they are required to, or make payments even where they have not failed a standard. Figure 3.3 shows both the voluntary payments and mandatory payments made by DNOs to customers.

[22] 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

Figure 3.3: GSoP payments made to customers, 2015-16



3.12. The DNOs paid out just over £1.5 million under the GSoP in in 2015-16. 72% of this total was paid out for interruptions in normal weather conditions and 9% was paid out for interruptions in severe weather conditions.[23] Regardless of weather conditions, we expect DNOs to get customers back on supply as soon as possible. The average payment was around £62 for mandatory payments and £64 for voluntary payments.

Worst-served customers

3.13. The DNOs have a use-it-or-lose-it allowance to improve network reliability for customers who have a significantly worse than average service. For RIIO-ED1, we provided an overall allowance of £74.9 million across the DNOs in line with the number of qualifying customers in each region. The DNOs have to demonstrate that they have delivered a set level of service improvement to these customers in order to receive the funding. Service improvement is measured for each of a DNO's worst-served customer schemes in two ways:

- Each scheme has to result in an agreed percentage reduction in power cuts (25% for slow-track DNOs, 20% for fast-track).
- Each scheme's expenditure cannot exceed a cap per worst-served customer affected (£1,000 for slow-track DNOs except SSES, £2,000 for SSES and £800 for fast-track DNOs – all Figures in 2012-13 prices).[24]

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

[23] The remaining 19% of payments were made through different regulations under the GSoP. For example, failing to give the required notice for planned power cuts.
[24] All DNOs except the four WPD DNOs (WMID, EMID, SWALES and SWEST) are classified as slow-track companies as they were subject to the slow-track assessment. The WPD companies were fast-tracked which means the price control settlements were finished earlier (February 2014) than the settlements for the slow-track companies (November 2014).

3.15. In the first year of RIIO-ED1, the DNOs spent £1.2 million on improving service provision for worst-served customers. As eligibility for funding can only be determined once improvement schemes are complete, we are not yet in a position to state how much of company expenditure will be funded through the price control.

3.16. A similar mechanism existed in DPCR5 and we continue to close out (ie assess funding eligibility) for a number of DPCR5 worst-served customer improvement schemes. In the first year of RIIO-ED1, we closed out 19 DPCR5 schemes, of which three were ineligible for funding (from ENWL, WMID and SWEST). Although these three schemes resulted in some benefits for worst-served customers, they did not result in a 25% or more reduction in service interruptions. As a result, £75,000 has been recovered from these three DNOs.

Resilience

3.17. DNOs are required to design and operate their networks in accordance with relevant legislation, codes and standards (such as Engineering Recommendation P2/6). We allowed the DNOs funding for improving network resilience as part of the price control settlement. This covers flood protection, black start (actions necessary to restore electricity supplies following total or widespread shutdown of the transmission system), physical site security (sites designated as critical national infrastructure by the Department for Business, Energy and Industry Strategy (BEIS)) and the protection of overhead lines through tree cutting.[25]

Table 3.2: Resilience expenditure for all DNOs 2015-16 (£m)

	Allowance	*Actual*
Blackstart	7.6	6.0
Flood Mitigation	21.9	10.3
Physical Security*	1.9	0.2
Tree Cutting	117.7	113.7
Total	**149.1**	**130.2**

*Only four DNOs have an allowance for Physical Security (NPgY, SPN, EPN and SPMW).

3.18. DNOs spent £130 million of the £149 million allowances for resilience in 2015-16.

3.19. Only around half of the flood mitigation allowances were spent. However, DNOs are expecting greater investment in flood defences to comply with changes introduced by BEIS in response to the storms of 2015-16. This includes changes to the definition of a critical site and lowering the flood risk of high risk sites to zero. [26] The Scottish Environment Protection Agency (SEPA) has also made changes in tidal flooding maps placing more substations into flooding prone areas. These will now require protection.

[25] Asset management and expenditure in replacing and refurbishing assets on the network will also improve the resilience of the network. For reporting purposes here we refer only to the four areas of blackstart, flood mitigation, physical security and tree cutting.

[26] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551137/national-flood-resilience-review.pdf

3.20. As the price control progresses we will track the DNOs' performance not only in terms of expenditure allowed in their settlements but also against the level of risk reduction we allowed in their settlements. We require DNOs to report for each site, where flood risk has been mitigated, where flood mitigation is planned or where further detailed study has been undertaken to determine the extent of the risk.

Secondary Deliverables

3.21. Network Asset Secondary Deliverables for reliability include health, criticality and monetised risk, and a load index (LI). They give early indications of whether the DNOs are investing in their networks, and ensure that they are not making cost savings at the expense of the network condition. The Secondary Deliverables complement the IIS as a DNO could in theory under-invest in its network for some time without any increase in interruptions. By the time the interruptions occur (and the DNO is penalised), the network could have significant problems that are expensive to fix.

Health, criticality and monetised risk

3.22. We use health and criticality indices and the calculation of monetised risk to assess changes in the condition of DNOs' network assets over time. The health index (HI) is a composite measure of a number of parameters, for example asset age, condition, fault history and probability of failure. Criticality is a measure of the network performance, environmental, safety and financial consequences of an asset failing. The health and criticality scores for relevant assets are combined to calculate a value of monetised risk on each DNO's network.

3.23. In the RIIO-ED1 review, DNOs provided forecasts of their asset health and criticality positions "with intervention" (ie investment) and "without intervention". We used these forecast positions to create targets of improvement in asset health, criticality and monetised risk. We set targets for the middle and end of RIIO-ED1.

3.24. At the end of RIIO-ED1 any significant over or under delivery of monetised risk will be subject to a reward or penalty. If a DNO has not delivered the agreed total level of monetised risk and does not have a reasonable justification for this, its RIIO-ED2 allowed revenue will be reduced. This reduction will be based on the avoided cost associated with the under delivery. The DNO will also incur a penalty of 2.5% of the value of the under delivery.

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

3.26. This incentive, combined with the Totex Incentive Mechanism (explained in Chapter 2) ensures that the DNOs adopt good asset management practices.

3.27. The 2015-16 data on the DNOs' asset health and criticality positions has only recently been submitted to us (on 30 December 2016). The delay in reporting

performance is due to work early in the RIIO-ED1 period to develop a common methodology to standardise their asset health, criticality and monetised risk metrics.[27] We need time to review DNO submissions in detail before we publish an annex to this report on the performance of DNOs in this area. We aim to do this by April 2017.

Load index (LI)

3.28. The load index (LI) measures the loading of the primary network substations.[28] It is possible to operate substations with high loadings for limited periods without causing problems. However, if loading remains high over longer periods, the substation can be damaged. The LI ties the DNO's investment funding to the delivery of a particular level of loading at the end of the period.

3.29. In the RIIO-ED1 review, we determined an allowed level of funding for LI improvements by using expert analysis of DNO business plans. DNO business plans were based on a specific level of loading across substations.

3.30. Further work needs to be on LI targets to see how they interact with our assessment of efficient costs and smart grid savings. We aim to publish further details on the LI deliverables by the end of 2017.

[27] https://www.ofgem.gov.uk/publications-and-updates/dno-common-network-asset-indices-methodology
[28] These are 33kV and 11kV substations.

Environment

Environment: encouraging DNOs to play their role in achieving broader environmental objectives, namely the reduction in carbon emissions, as well as minimising the narrow environmental impact of the company's activities by managing their own carbon footprint, visual amenity and pollution.	
Incentive measure	**Incentive type**
Obligation to manage losses	Financial: Losses Discretionary Reward of up to £32m across all DNOs, awarded in three tranches. Reputational: publish annual progress and a losses strategy. Licence obligation: to keep losses as low as reasonably practicable.
Business Carbon Footprint	Reputational: publish annual progress.
Limiting emissions of Sulphur Hexafluoride (SF_6)	Reputational: publish annual progress.
Fluid filled cable leakage	Reputational: publish annual progress.
Noise pollution	Reputational: publish annual progress.
Visual impact allowance for undergrounding overhead lines in Areas of Outstanding Natural Beauty (AONB) and National Parks.	Reputational incentive in the context of its performance in the utilisation of a funding pot of £103.6m (split between DNOs)
Environmental report: obligation to inform stakeholders about the activities they have undertaken in relation to environmental matters, including their role in the transition to a low carbon economy.	Licence obligation. Reputational.

Losses

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

3.32. DNOs do not pay for lost electricity, as the cost is borne by customers. DNOs therefore have no inherent incentive to manage losses efficiently. As part of RIIO-ED1 we have a losses reduction mechanism consisting of the following components:

- Licence obligation and losses strategy - Standard Licence condition 49 requires DNOs to keep losses as low as reasonably practicable on their Distribution System.[29] This also requires DNOs to produce a losses strategy and keep it under review.

[29] https://epr.ofgem.gov.uk/Content/Documents/Electricity%20Distribution%20Consolidated%20Standard%20

- Annual reporting – we require DNOs to report annually on their activities to reduces losses during the year.
- The Losses Discretionary Reward - aims to encourage and incentivise DNOs to undertake additional actions to better understand and manage electricity losses.

3.33. These components provide a strong incentive for DNOs to manage losses efficiently.

Losses strategy and annual reporting

3.34. Each DNO must have a losses strategy and keep an up-to-date version on its website. The strategy should explain the DNO's overall approach to managing losses, including managing electricity theft. Their strategies, along with annual reporting to Ofgem, should also identify specific projects or actions, with timescales, deliverables, costs and benefits.

3.35. We would consider this obligation to have been met by DNOs where they annually publish this information within their annual environment reports available on the DNOs websites.[30]

3.36. All DNOs have reported information relating to the various methods deployed to manage losses, for example:

- increasing the number of high loss transformer replacements
- proactively installing larger cross-sectional cables on new and older circuits, and reviewing ongoing studies to inform any policy revisions
- reviewing substation specifications to improve energy efficiency
- using HV and LV network metering and smart metering to identify losses, and
- proactively improving the accuracy of records for unmetered supplies by working closely with customers and settlement stakeholders.

3.37. In their strategies DNOs also set out how they will tackle electricity theft. Standard Licence condition 49 requires DNOs to take all reasonable cost-effective steps within their power to investigate and resolve any cases of electricity theft from their distribution systems.

Losses Discretionary Reward

3.38. The Losses Discretionary Reward (LDR) is worth up to £32 million across all DNOs spread over three tranches during the eight years of the RIIO-ED1 price control. It incentivises DNOs to undertake additional actions over and above their losses licence obligation to better understand and manage electricity losses.

Licence%20Conditions%20-%20Current%20Version.pdf

[30] See the Associated Documents sections in this report for links to all DNO environment reports.

3.39. DNO submissions for the first tranche of funding were received in 2015-16; the decision was made in 2016-17 and funding will be received by DNOs in 2017-18. Table 3.3 shows the reward allocated for tranche one. The tranche one decision document provides further detail and reasons for our decision.[31] As the decision was made in regulatory year 2016-17, this will be discussed further in next year's annual report.

Table 3.3 Reward allocated for tranche one of the LDR (2015-16)

	Reward
ENWL	£736,920
NPg	£371,111
WPD	£169,651
UKPN	£1,001,999
SPEN	£816,444
SSEN	£964,888
Total	**£4,061,013**

Business Carbon Footprint (BCF)

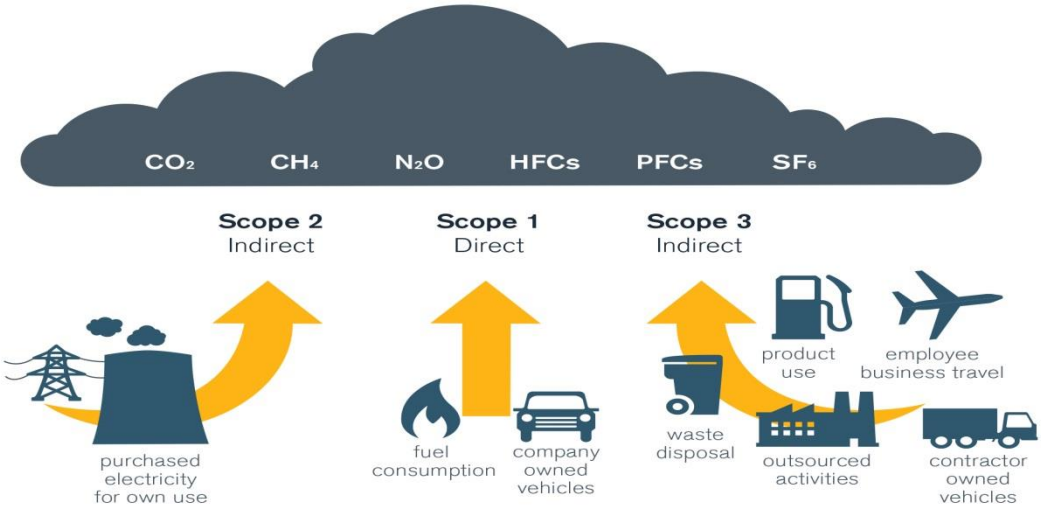
3.40. DNOs are required to report annually on their BCF, ie the carbon emissions from their business operations. Greenhouse Gas (GHG) emissions are categorised into three groups or 'scopes' by the GHG Protocol[32]. Scopes 1 and 2 emissions cover direct emissions sources (ie all emissions from operations that the DNO has full authority to implement, eg fuel used in company vehicles and purchased electricity). Scope 3 emissions cover all indirect emissions from the activities of an organisation (see Figure 3.4).

3.41. DNOs must report on all scope 1 and scope 2 emissions. They must also report on a subset of scope 3 emissions, to ensure that the reporting captures all of the emissions from the development and operation of the DNO's distribution system (see Table 3.4).

31 https://www.ofgem.gov.uk/system/files/docs/2016/07/losses_discretionary_reward_decision_for_2016_0.pdf

32 http://ghgprotocol.org/standards

Figure 3.4: Examples of emission scopes within BCF reporting



3.42. All DNOs have a reduced BCF in the first year of RIIO-ED1 compared to the last year of DPCR5.

Table 3.4: Business Carbon Footprint (excluding losses)

	BCF 2014-15 excluding losses (tCO_2e)	*BCF 2015-16 excluding losses (tCO_2e)*	*Difference (%)*
ENWL	24,415	23,133	-5%
NPgN	22,745	20,888	-8%
NPgY	28,807	27,486	-5%
WMID	29,723	30,371	2%
EMID	30,172	28,893	-4%
SWALES	18,330	17,689	-3%
SWEST	23,753	21,920	-8%
EPN	32,539	27,608	-15%
LPN	19,776	17,401	-12%
SPN	25,025	21,212	-15%
SPD*	24,549	16,720	-32%
SPMW*	26,026	13,114	-50%
SSEH	45,131	22,760	-50%
SSES	39,784	39,390	-1%
Total	**390,777**	**328,585**	**-16%**

* The significant reduction is a result of SPEN changing its reporting methodology from estimations to direct measurements.

3.43. We stated in our Strategy Decision[33] for RIIO-ED1 that we will publish the first league table and baselines of BCF for each DNO as part of this report. However, a meaningful comparison of performance is not possible at this stage as there are

[33] https://www.ofgem.gov.uk/publications-and-updates/strategy-decision-riio-ed1-overview

inconsistencies in the methodologies used by the DNOs in capturing their BCF. This is also why we have not ranked the DNOs on BCF.

3.44. We will work with the DNOs to help align their reporting practices and to restate their 2014-15 baseline position. We are still committed to publishing a league table as part of our annual reporting.

Sulphur hexafluoride (SF_6)

3.45. 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.

3.46. Across all DNOs, the total amount of SF_6 emitted as a percentage of the SF_6 bank has declined since last year, although there are differences in the level of emissions across DNOs. Table 3.5 provides SF_6 emissions as a percentage of the SF_6 bank by DNO in 2015-16.

Table 3.5: SF_6 emissions

	SF_6 emissions 2015-16 (Kg)	*SF_6 emissions as a percentage of the SF_6 bank, 2015-16*	*Change in SF_6 emissions as a percentage of the SF_6 bank, 2014-15 to 2015-16 (percentage points)*	*DNO ranking (based on SF_6 emissions as a percentage of the SF_6 bank, 2015-16)*
ENWL	15	0.10%	-0.21	4
NPgN	24	0.16%	-0.11	5
NPgY	84	0.46%	-0.44	9
WMID	164	0.78%	-0.31	11
EMID	45	0.25%	-0.08	8
SWALES	88	0.53%	-0.87	10
SWEST	100	0.85%	-1.11	12
EPN	10	0.02%	-0.05	2
LPN	18	0.08%	-0.07	3
SPN	67	0.19%	-0.19	7
SPD	1	0.01%	-0.47	1
SPMW	30	0.18%	-0.54	6
SSEH	61	1.11%	-1.26	13
SSES	351	1.37%	-1.37	14
Total	**1,056**	**0.38%**	**-0.41**	**-**

Reducing the environmental impact

Collectively DNOs have reduced their business carbon footprint, SF6 emissions and leakages from fluid-filled cables.

Leakages from fluid filled cables

3.47. DNOs use oil-based fluids as electrical insulators on certain cables. Any leakage from these cables can be detrimental to the environment.

3.48. Table 3.6 shows 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. Only ENWL and SWALES increased their top-up as a percentage of oil in service in 2015-16 from the previous year. Further detail is in the data file (see Appendix 1).

Table 3.6: Leakages from fluid filled cables

	Top up 2015-16 (litres)	*Top up as a % of oil in service 2015-16*	*Change in top up as a % of oil in service 2014-15 to 2015-16*	*DNO ranking (based on top up as a % of oil in service 2015-16)*
ENWL	31,220	2.6%	0.4	11
NPgN	13,021	0.9%	-0.2	3
NPgY	18,732	1.6%	-0.4	7
WMID	8,392	1.0%	-1.3	4
EMID	7,255	1.0%	-0.2	5
SWALES	938	0.6%	0.6	2
SWEST	706	0.2%	-0.4	1
EPN	151,557	4.8%	-0.4	13
LPN	52,446	2.6%	-1.0	12
SPN	37,768	1.9%	-0.4	8
SPD*	NA	NA	NA	NA
SPMW**	13,600	1.9%	-	9
SSEH	410	1.1%	-3.2	6
SSES	14,851	2.6%	-1.1	10
Total	**350,896**	**2.4%**	**-0.5**	

* SPD has no oil filled cables.
** SPMW has no data on oil in service prior to 2015-16.

Noise pollution

3.49. The noise from transformers at substations may generate unwanted noise pollution, causing a nuisance in residential areas. DNOs can incur a cost if noise complaints are a primary driver for particular remedial activities, such as installing sound barrier walls.

3.50. As part of the reporting requirements for RIIO-ED1, we asked DNOs to monitor the total number of noise complaints received as well as commentary on what they are doing to reduce noise pollution. We will be monitoring these for each DNO throughout the price control, however for the first year of RIIO-ED1, not all the networks have in the place the systems to capture the number of noise complaints received. We aim to publish noise pollution figures next year.

Undergrounding

3.51. The objective of the undergrounding scheme is to ensure the DNOs protect the landscape in certain designated areas. In RIIO-ED1, each DNO is able to recover a

defined amount of funding to pay for undergrounding of overhead lines (OHL) in Areas of Outstanding Natural Beauty, National Parks and National Scenic Areas.[34]

3.52. Approximately 32km of OHL were removed and 34km of underground lines were installed by the DNOs at a total of £4 million (Table 3.7). The data file provides further detail (see Appendix 1).

Table 3.7: Undergrounding performance, 2015-16

	Length of overhead lines removed (km)	*Length of underground lines installed (km)*	*Undergrounding net expenditure (£m)*
ENWL	3.79	3.41	0.86
NPgN	9.11	9.07	0.82
NPgY	7.75	7.85	0.40
WMID	4.66	5.03	0.69
EMID	4.16	0.00	0.02
SWALES	0.00	0.00	0.00
SWEST	0.00	0.00	0.05
LPN*	N/A	N/A	N/A
SPN	0.00	7.88	0.34
EPN	0.00	0.14	0.48
SPD	0.00	0.00	0.00
SPMW	1.60	0.00	0.09
SSEH	0.00	0.00	0.00
SSES	1.20	0.80	0.25
Total	**32.27**	**34.17**	**4.00**

*LPN's network is almost entirely underground and is not eligible for the scheme.

3.53. The expenditure and work done in the first year of RIIO-ED1 varies across DNOs. The development of the undergrounding schemes is driven by the location and terrain, and the time to implement a project may vary greatly. For example, a village project with low voltage lines or sites with many habitats or archaeological constraints will normally take longer to implement. For the first year of RIIO-ED1 we have seen a relatively slow uptake of undergrounding activity. This is typical for the first year of a new price control regime whereby DNOs are starting to charge secure new wayleaves and easements as well as renegotiating contracts for work.

3.54. In our RIIO-ED1 Strategy, we outlined that we expect DNOs to develop and make available policies for assessing candidate projects and for interacting and supporting relevant stakeholders as necessary. This should improve stakeholders' understanding of how to access this allowance under RIIO-ED1 and help support them from initial project application to delivery. The DNOs have demonstrated their commitment to engaging with stakeholders through the Undergrounding Steering Group meetings whereby they are able to update stakeholders such as Natural England on undergrounding schemes. Stakeholders are also given visibility on the full list of schemes that are being considered for investment in each designated area. This is published in each DNOs' environment report (see Associated Documents section).

[34] AONB are areas defined in statute and only applicable to England and Wales; National Parks are areas defined in statue and applicable to Scotland, England and Wales; NSAs are areas designated by local authorities – only applicable to Scotland and introduced to this mechanism in 2015.

Annual reporting

3.55. We require DNOs to inform stakeholders about their environmental activities, including their role in the transition to a low carbon economy, by publishing an annual environment report. This should give stakeholders a transparent account of each DNO's commitment to addressing environmental matters and encourage ongoing stakeholder engagement on environmental matters. All DNOs have published an environment report for 2015-16.

Connections

Connections: connecting customers in a timely and efficient way, including responding to different customers' specific needs, while enabling competition.	
Incentive measure	**Incentive type**
Time to Connect Incentive: reward for reducing average time taken to connect smaller and less complex customer connections.	Financial: reward only of up to 0.4% base revenue.
Incentive on Connections Engagement (ICE): penalty where DNOs fail to engage effectively with, and understand requirements of customers seeking larger and more complex connections.	Financial: penalty only of up to 0.9% of base revenue.
Connections Guaranteed Standards of Performance (GSoP): direct payment to customers of fixed amounts if DNO fails to deliver specified minimum levels of performance regarding connections.	Financial: payment to customers for failure to meet standards. Reputational.
Customer satisfaction survey: connection customers are one of three customer types in the Broad Measure of Customer Satisfaction survey[1].	Financial: reward or penalty of 0.5% of base revenue which feeds into the overall reward or penalty under BMCS of +/- 1.5% of base revenue.

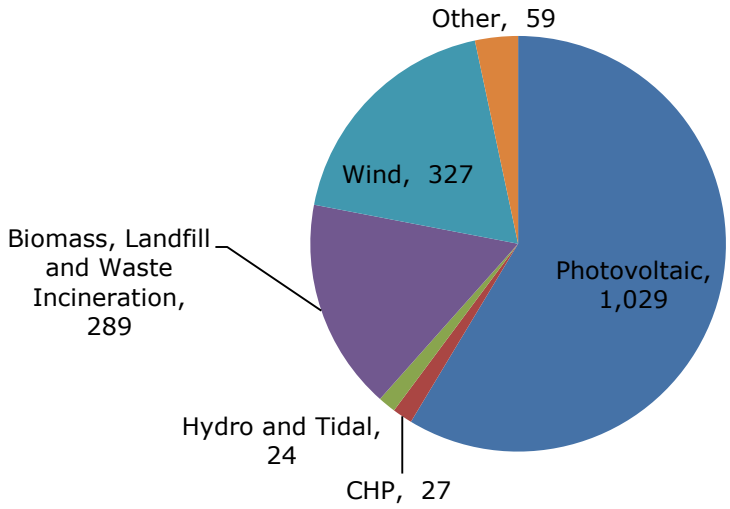
3.56. Getting a new connection to the local distribution network is crucial; it allows new businesses to begin trading, new homes to be inhabited and renewable energy to be generated.

3.57. In 2015-16, a total of 157,379 distribution network connections were completed by the DNOs. The total amount charged to connection customers for completing this work was £395 million. These annual volumes are similar to the number of connections made by the DNOs during 2014-15.[35]

[35] The total number of metered, generation and unmetered exit points connected during DPCR5 can be found in

3.58. During 2015-16 1,765MW of generation was connected to the distribution network. This is a significant decrease from 2014-15 when nearly 4,000MW of generation was connected to the distribution network.[36] This annual variance could be a result of changes to the government renewable schemes. Figure 3.5 provides more information on the type of generation connected to the distribution network.

Figure 3.5: Capacity of generation connected to the distribution network by type, 2015-16 (MW)



3.59. We have a number of incentives to promote improvements in the connections service provided by DNOs in RIIO-ED1. This package includes:

- a Time to Connect incentive
- an Incentive on Connections Engagement (ICE)
- the Connections Guaranteed Standards of Performance (GSoP), and
- the connections component of the customer satisfaction survey.

Time to Connect (TTC) incentive

3.60. The TTC incentive was introduced for RIIO-ED1. The incentive encourages DNOs to reduce connection times for smaller and less complex connections. Connection time is measured from the DNO receiving the initial application, potentially with a minimal amount of information, to them issuing a quotation and the time from the customer accepting the quotation to the connection being completed.

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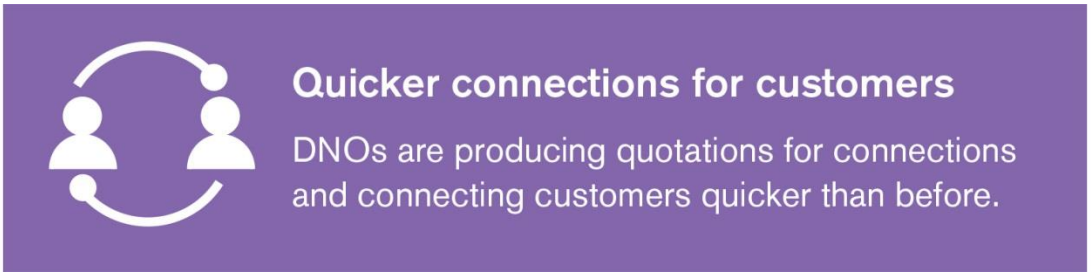
the 'CH3 DPCR5 Delivery' tab of the DPCR5 performance report 2010-15 data tables, which can be found here: https://www.ofgem.gov.uk/sites/default/files/docs/dpcr5_performance_report_2010-2015_data_table.xlsx

[36] See Figure 3.1 in the end of DPCR5 report https://www.ofgem.gov.uk/sites/default/files/docs/electricity_distribution_company_performance_2010-2015.pdf

3.61. The level of reward (if any) a DNO is entitled to receive depends on how they perform against a target. At the time the target was set it represented upper quartile performance across DNOs.[37]



3.62. DNOs made significant improvements in the time taken to quote for all connections. Collectively they are now issuing quotations 46%-49% faster than when the target was set in 2013. Considerable improvement to reduce the time taken from quotation acceptance to connection completion was also made (see Table 3.8).

3.63. The average overall time to connect has fallen by 14.9 working days for LVSSA[38] connections and by 20.9 working days for LVSSB[39] connections since the time when the target was set.

3.64. Details on the performance by DNO are in the data file (see Appendix 1).

Table 3.8: Industry average Time to Connect improvements (from targets), 2015-16 (working days)

Connection type	*LVSSA*			*LVSSB*		
	Time to Quote	*Time to Connect*	*Overall*	*Time to Quote*	*Time to Connect*	*Overall*
2013 performance	9.1	46.4	55.5	14.5	57.0	71.5
2015-16 performance	4.9	35.7	40.6	7.4	43.2	50.6
Improvement	4.2	10.7	14.9	7.0	13.8	20.9
Improvement %	46%	23%	27%	49%	24%	29%

3.65. The DNOs time to quote and time to connect for 2015-16 are in Table 3.9.

[37] We will revise the target and maximum reward score for the final four years of RIIO-ED1. We will calculate the new targets and maximum reward score based on DNO performance during the first few years of RIIO-ED1.
[38] A LVSSA connection is a very small, low voltage (LV) demand connection (ie approximately the size of a single domestic household).
[39] A LVSSB connection is a small, low voltage (LV) demand connection (ie approximately the size of one to four domestic households).

Table 3.9: Time to Connect performance, 2015-16

Connection type	*LVSSA (Average working days)*		*LVSSB (Average working days)*		*Reward (£m)*	*DNO ranking (based on time to quote and connect)*
	Time to Quote	*Time to Connect*	*Time to Quote*	*Time to Connect*		
ENWL	4.0	30.4	7.4	36.9	1.3	1
NPgN	5.7	40.1	9.6	47.1	0.6	12
NPgY	5.9	43.4	8.8	47.9	0.7	13
WMID	4.8	34.3	6.1	44.8	1.4	7
EMID	3.5	31.9	5.2	41.3	1.6	3
SWALES	8.4	30.3	11.1	34.6	0.5	5
SWEST	6.6	32.0	7.9	37.7	1.2	4
LPN	3.6	41.3	4.7	46.8	0.8	11
SPN	4.6	37.7	7.3	45.3	0.9	10
EPN	5.6	42.8	9.7	51.0	1.1	14
SPD	5.2	35.7	7.3	42.4	1.1	8
SPMW	5.6	35.6	6.9	43.5	1.1	9
SSEH	2.5	31.5	5.1	40.0	0.8	2
SSES	2.7	33.2	6.9	45.0	1.5	6
Industry Average	**4.9**	**35.7**	**7.4**	**43.2**	**1.0**	**1.1**
Target	**8.2**	**42.1**	**11.7**	**52.7**		
Maximum reward score	**6.4**	**32.5**	**10.1**	**39.9**		

Incentive on Connections Engagement (ICE)

3.66. 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).

3.67. Under the ICE, each DNO publishes a 'Looking Forward' report at the start of the year. This report presents the DNO's high level strategy for engagement, work plan of activities and key performance outputs for the forthcoming year. At the end of the year the DNOs publish a 'Looking Back' report evaluating their performance against the Looking Forward report. If a DNO fails to demonstrate that it has engaged with stakeholders or delivered its work plan or performance outputs, we can apply a penalty.[40]

3.68. This year was the first year of the incentive. Overall we were pleased with the quality and detail of ICE submissions. We consulted on whether NPg had delivered one of its commitments.[41] Following additional evidence from NPg, we decided that it had sufficiently demonstrated that it had met the minimum criteria.[42] We therefore

[40] More information on how the ICE works can be found in the ICE guidance document.
[41] https://www.ofgem.gov.uk/publications-and-updates/incentive-connections-engagement-open-letter-consulting-northern-powergrid-s-delivery-one-its-commitments-2015-16
[42] https://www.ofgem.gov.uk/publications-and-updates/incentive-connections-engagement-open-letter-explaining-our-decision-not-apply-penalty-against-northern-powergrid

determined that all DNOs met the minimum criteria and did not apply any penalties to any DNOs.

3.69. We were pleased that the majority of stakeholders considered that the DNOs' engagement was leading to improvements in their connection services. Nevertheless, there are still areas that require further work and we published a letter[43] highlighting the areas that we considered required additional focus.

Connections Guaranteed Standards of Performance (GSoP)

3.70. Statutory regulations set minimum standards of performance for connections.[44] Customers are entitled to a fixed payment from the DNO if these standards are not met. The Connections GSoP covers a range of activities, from the issuing of a budget estimate through to the energisation of a connection. [45]

3.71. During 2015-16 the DNOs paid out £252,240 in total to customers under the Connection GSoP. There were significant differences in performance between DNOs, as shown in Table 3.10.

Table 3.10: Connections Guaranteed Standard of Performance, 2015-16

	Total number of cases where the Connection GSoP apply and the standard was met	*Total number of cases where the Connection GSoP apply and the standard was not met*	*Total penalties paid against the Connection GSoP (£)*	*DNO ranking (based on % of total cases when standard not met)*
ENWL	21,541	338	95,505	14
NPgN	25,025	32	4,070	9
NPgY	35,257	29	8,960	7
WMID	36,475	0	0	1
EMID	36,477	3	260	4
SWALES	17,189	0	0	1
SWEST	34,727	1	65	3
LPN	23,103	59	19,950	11
SPN	28,093	106	44,105	12
EPN	48,149	183	46,770	13
SPD	14,518	23	2,530	10
SPMW	17,438	12	9,625	5
SSEH	17,111	16	8,470	8
SSES	50,730	38	11,930	6
Total	**405,833**	**840**	**252,240**	

[43] https://www.ofgem.gov.uk/system/files/docs/2016/10/ice_qualitative_assessment_final.pdf
[44] The Electricity (Connection Standards of Performance) Regulations 2015 Statutory Instrument (SI) No. 698 http://www.legislation.gov.uk/en/uksi/2015/698/contents/made
[45] When we refer to the Connections GSoP we also include DG connection customers that are not within the scope of SI 698, but are within the scope of our DG Standards Direction https://www.ofgem.gov.uk/publications-and-updates/distributed-generation-standards-direction-guidance-document

Customer service

Customer Service: maintaining high levels of customer satisfaction and improving service where required. Undertaking effective stakeholder engagement and reflecting stakeholders' views in the day-to-day operation of their business.	
Incentive measure	**Incentive type**
Customer satisfaction survey: a survey under the Broad Measure of Customer Satisfaction of three customer types (connections, interruptions, general enquiries) to drive DNOs to deliver good customer service.	Financial: reward or penalty of +/- 1% of base revenue which feeds into the overall reward or penalty under BMCS of +/- 1.5% of base revenues.
Complaints metric: part of the Broad Measure of Customer Satisfaction measuring DNOs' complaint handling procedures to drive DNOs to deliver good customer service.	Financial: penalty only of 0.5% of base revenue which feeds into the overall reward or penalty under BMCS of +/- 1.5% of base revenues.
Stakeholder engagement and customer vulnerability. Annual panel assessment with a reward for DNOs who demonstrate strong engagement with all stakeholders and address customer vulnerability issues.	Financial: reward only of 0.5% of base revenue which feeds into the reward or penalty under BMCS of +/- 1.5% of base revenues.

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

3.73. Our customer incentives aim to ensure that customers requiring a new connection, seeking or being provided with information from the DNOs in the event of an interruption, or making general enquiries receive good customer service. DNOs should also deal with complaints quickly and effectively. Finally, we want the DNOs to engage with a wide range of stakeholders and use the information and insight gained to shape how they run their business.

Broad Measure of Customer Service (BMCS)

3.74. The purpose of the BMCS is to drive the DNOs to deliver good customer service. It aims to replicate the sorts of measures typically used by customer-facing businesses in a competitive environment.

3.75. The BMCS has three components:

1. A customer satisfaction survey that incorporates the views of customers who have made a general enquiry, experienced an interruption or required a connection.
2. A complaints metric, measuring the effectiveness of the DNO in resolving complaints.

3. A reward based on an assessment of each DNO's stakeholder engagement and consumer vulnerability activities.

3.76. The total maximum reward or penalty is +/- 1.5% of base revenues in RIIO-ED1.[46]

Customer satisfaction survey

3.77. DNOs are required to conduct a weekly customer satisfaction survey. It is intended to capture customers' experience of the interruption[47], minor connection and general enquiry services delivered by the DNOs. The questionnaire format is common across all DNOs and the survey is conducted by the same independent market research company, to ensure consistency.[48]

3.78. All DNOs have the same targets, across all categories of customer. The DNOs' targets are based on the customer service achieved across a range of different industries, including retail, banking and other utility services.[49] This means we only reward DNOs that are considered good when their customer service is compared with other competitive industries. The financial penalty or reward a DNO can receive is capped.[50]

3.79. The customer satisfaction scores vary between the customer categories: connection customers are the least satisfied with the service provided but have seen a 2% improvement in service from 2014-15 to 2015-16.[51]

[46] This is set as a £m Figure in each DNOs' licence, calculated from the base revenues and return on equity in their settlement.
[47] Historically this only included customers that contacted the DNO by telephone to request information. In RIIO-ED1 it includes customers who have experienced an interruption and received relevant information from the DNO via new communication channels such as email or Twitter.
[48] The survey asks customers about the service provided and they are asked to score the DNO out of 10. Only the answer to the final question ('overall, how satisfied were you with the service provided') is used to measure performance for the purpose of this incentive.
[49] We used data from the UK Customer Service Index to inform our approach.
[50] The maximum reward or penalty of +/-1% of base revenue.
[51] Note that as part of the transition from DPCR5 to RIIO-ED1 we made some changes to the scope of the survey and how the survey was conducted, for further information on these changes please refer to our RIIO-ED1 Strategy Decision.

Table 3.11: Customer satisfaction scores, 2015-16 (out of 10)

Type of Customer	*2014-15*	*2015-16*	*Improvement (%)*
Interruptions	8.62	8.75	1%
Connections	8.16	8.32	2%
General Enquiries	8.73	8.97	3%

3.80. There is a significant difference in the satisfaction scores across the regions for the different categories. The score for three of the categories was lowest for ENWL. SWALES had the highest for customers experiencing an interruption. EMID had the highest satisfaction score for customer connections and customers making a general enquiry. A more detailed breakdown of customer satisfaction for 2015-16 is in Table 3.12.

3.81. For each category in the Customer Satisfaction Survey the DNOs have to meet a target score. The target score is 8.2 for each DNO under each category. DNOs will receive a penalty if they are below this target or a reward if above.

Table 3.12: Annual customer satisfaction score by DNO per category, 2015-16 (out of 10)

	Interruptions	*Connections*	*General Enquiries*	*DNO ranking (based on average score out of 10)*
ENWL	8.08	7.75	8.52	14
NPgN	8.68	8.03	8.93	10
NPgY	8.69	7.95	8.76	12
WMID	8.88	8.70	9.14	4
EMID	8.97	8.79	9.35	2
SWALES	9.14	8.75	9.29	1
SWEST	8.86	8.73	9.18	3
LPN	8.52	8.13	8.86	11
SPN	8.63	8.34	9.12	8
EPN	8.88	8.1	9.16	7
SPD	8.79	8.36	8.84	9
SPMW	8.86	8.43	9.24	5
SSEH	9.06	8.55	8.72	6
SSES	8.39	7.88	8.53	13
Target	**8.2**	**8.2**	**8.2**	

Complaints metric

3.82. 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]

[52] 1. % of total complaints outstanding after one day 10%; 2. % of total complaints outstanding after 31 days 30%; 3. % of total complaints that are repeat complaints 50%; 4. The number of Energy Ombudsman (EO) decisions that go against the DNO as a % of the total complaints 10%

3.83. In a commercial environment, DNOs risk losing customers and revenue by handling complaints badly but 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.

3.84. The incentive aims to encourage DNOs to resolve complaints quickly rather than reducing the volume of complaints received.

3.85. Table 3.13 shows the complaints metric score for each DNO for 2015-16. It varies significantly across the DNOs, but reflects the percentage of complaints outstanding, with WMID having the lowest complaint metrics score.

3.86. The complaints metric score is compared to the industry target of 8.33 for all DNOs to calculate the penalty to be applied, if applicable. For 2015-16, all DNOs were below the industry target therefore no penalties were made.

Table 3.13: DNO complaint metric scores, 2015-16

	Complaints metric score	*DNO ranking (based on score)*
ENWL	7.65	13
NPgN	8.00	14
NPgY	7.19	12
WMID	1.70	1
EMID	1.92	2
SWALES	3.04	4
SWEST	2.41	3
LPN	5.18	9
SPN	6.10	11
EPN	5.60	10
SPD	3.60	6
SPMW	3.37	5
SSEH	4.08	7
SSES	4.65	8
Target	**8.33**	

Stakeholder Engagement and Customer Vulnerability Incentive

3.87. This incentive encourages DNOs to engage effectively with a wide range of stakeholders and use their insight to inform business planning. This should help ensure that DNOs deliver a customer-focused, socially responsible and sustainable energy service.

3.88. DNOs have to submit a report on their stakeholder engagement and consumer vulnerability activities annually. This year was the first year that DNOs were also assessed on their work to address consumer vulnerability issues. We assess all reports against a set of minimum criteria to ensure that they are eligible for the incentive. The companies that meet the minimum criteria are forwarded to an independent expert panel that assesses the companies against criteria and awards an overall score for each DNO. The financial reward is based on this score and is up to 0.5% of each DNO's allowed base

revenue. Detailed information about how the submissions are assessed is in the Stakeholder Engagement and Consumer Vulnerability Incentive document.[53]

3.89. This year has seen a general shift to strategic approaches to engagement, and DNOs are involving stakeholders more in their day-to-day processes and thinking for future challenges. All DNOs passed stage 1 of the process but need to work on demonstrating the benefits they get from their activities, as well as showing how their approaches are being tailored to different geographical areas. The scores and financial reward for 2015-16 are shown in Table 3.14.

Table 3.14: Stakeholder Engagement and Consumer Vulnerability performance, 2015-16

	Score (out of 10)	*Financial reward (£m)*	*DNO ranking (based on score)*
ENWL	6.9	1.0	3
NPg	6.5	1.4	5
WPD	8.8	6.4	1
UKPN	7.5	4.0	2
SPEN	6.8	1.9	4
SSEN	5.7	1.1	6
Total		**15.9**	

3.90. Combining the outcome of the three components - Customer Satisfaction Survey, Complaints Metric and the Stakeholder Engagement and Customer Vulnerability Incentive - gives the total reward/penalty for the BMCS, noted in Table 3.15.

Table 3.15 Broad Measure of Customer Service reward (£m), 2015-16

	Customer Satisfaction Survey reward/penalty	*Complaints Metric penalty*	*Stakeholder Engagement and Consumer Vulnerability reward*	*Broad Measure of Customer Service reward/penalty*
ENWL	-0.59	0	0.99	0.39
NPgN	0.70	0	0.58	1.28
NPgY	0.74	0	0.85	1.59
WMID	3.61	0	2.01	5.62
EMID	3.88	0	2.01	5.90
SWALES	1.84	0	0.91	2.75
SWEST	2.58	0	1.41	3.99
LPN	0.90	0	1.12	2.03
SPN	1.53	0	1.20	2.71
EPN	2.08	0	1.72	3.80
SPD	1.78	0	0.94	2.73
SPMW	2.29	0	1.00	3.29
SSEH	1.46	0	0.37	1.83
SSES	0.22	0	0.76	0.99

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

Social obligations

Social Obligations: taking a strategic approach and adopting a coordinating and partnership role with other networks, suppliers and agencies so data and knowledge is used more effectively to help vulnerable customers.	
Incentive measure	**Incentive type**
Stakeholder engagement and customer vulnerability, as described under customer service.	Financial: reward only of 0.5% of base revenue which feeds into the reward or penalty under BMCS of +/- 1.5% of base revenues.

Consumer vulnerability

3.91. DNOs have an important role to play in helping customers in vulnerable situations. Our Consumer Vulnerability Strategy[54] provides an overarching framework for how we consider issues affecting vulnerable customers. Our objective is to take a more sophisticated approach to understanding vulnerability within the energy market. We want to encourage DNOs to maximise their role in understanding, identifying and dealing with customers in vulnerable situations.

3.92. Specifically we want the DNOs to:

- Improve the quality of information they have access to about vulnerable customers and how it is used.
- Engage with a wide range of stakeholders.
- Publicise the benefits that are offered through their Priority Service Register (PSR), ensure that their PSR captures all of the customers that should be included and describe what assistance these customers may receive. This assistance may be provided directly by the DNO or by other agencies.
- Use relationships and build partnerships with other stakeholders to identify and deliver solutions (both energy and non-energy) for affordable energy.
- Embed their strategy for addressing consumer vulnerability in their systems and processes and how they manage customer interactions.

[54] https://www.ofgem.gov.uk/ofgem-publications/75550/consumer-vulnerability-strategy.pdf

Safety

Safety: ensuring the provision of a safe network in compliance with Health and Safety Executive (HSE) safety standards.	
Incentive measure	**Incentive type**
Compliance with safety obligations set by the Health and Safety Executive (HSE). Supported by monitoring of Secondary Deliverables related to asset health and criticality, which are assessed through Secondary Deliverables.	Statutory requirements (enforcement action under HSE legislation). Financial incentives are imposed by the relevant statutory framework. Financial: Compliance with the HI Secondary Deliverable target on RIIO-ED1 funding through a penalty/reward of 2.5% of the value of any over/under delivery of network replacement outputs.

3.93. 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. These are enforced and regulated by the Health and Safety Executive (HSE).

3.94. Under RIIO, the primary output for health and safety is compliance with the relevant legislation. Ofgem imposes no direct financial incentive as we do not want to duplicate the HSE's functions.

3.95. We have Secondary Deliverables on asset health, criticality and load which help ensure that the DNOs do not take decisions in RIIO-ED1 that risk their compliance with safety requirements in the future. These are described further in the reliability and availability section in this Chapter.

4. Innovation

Chapter Summary

Overview of the DNOs' expenditure in relation to the various innovation schemes in RIIO-ED1.

Innovation Reviews

4.1. The RIIO innovation schemes encourage DNOs to achieve our vision of innovation being central to the transition to a low carbon economy. We set out below DNOs' 2015-16 expenditure and rewards for two innovation schemes: Network Innovation Allowance (NIA) and Network Innovation Competition (NIC).[55] We recently consulted on proposed changes to the governance arrangements of the NIC and NIA.[56] We will issue our decision in the coming months.

Network Innovation Allowance (NIA)

4.2. The NIA was established as part of the RIIO-ED1 price control. It is designed to fund smaller scale research, development and demonstration projects. It gives each DNO an allowance to spend on innovation projects in line with the NIA Governance Document.[57]

4.3. In the first year of RIIO-ED1, all DNOs registered NIA projects. If successful, these projects should bring a wide variety of financial, operational, environmental and safety benefits. DNOs have already begun to develop useful learning from this investment. Details on all the registered NIA projects are on the Energy Network Association's (ENA's) Smarter Networks Portal.[58]

4.4. In the future we want:

- DNOs to explain, as part of the registration process, why their projects are eligible for NIA funding rather than simply stating that they are, and
- provide information on the benefits of rolling out innovative solutions in to business as usual.

[55] There is also the Innovation Rollout Mechanism but for the first year of RIIO-ED1, no DNOs applied for funding under the IRM.
[56] https://www.ofgem.gov.uk/publications-and-updates/network-innovation-review-our-consultation-proposals
[57] https://www.ofgem.gov.uk/publications-and-updates/version-two-network-innovation-allowance-nia-governance-documents
[58] http://www.smarternetworks.org/

Table 4.1: Network Innovation Allowance projects and expenditure, 2015-16[59]

	Number of projects	*NIA allowance spend (£m)*	*% of allowance*
ENWL	18	2.5	97%
NPg	16	1.3	38%
WPD	14	1.5	42%
UKPN	24	2.5	96%
SPEN	21	3.1	86%
SSEN	35	3.1	24%
Total	**128**	**14.0**	**56%**

Network Innovation Competition (NIC)

4.5. The NIC is an annual competition providing funding to a small number of large scale innovation projects. Its aim is to encourage DNOs to innovate in the design, build, development and operation of their networks. If successful, these projects should bring a wide variety of financial and environmental benefits.[60]

4.6. Trials financed through the NIC will generate learning for all DNOs and will be made available to all interested parties. In 2015, two electricity distribution projects were selected by us to receive a total of £17.8 million of funding.

[59] NIA summaries:
http://www.smarternetworks.org/Files/NIA_&_NIC_160727144429.pdf
http://www.smarternetworks.org/Files/NIA_&_NIC_160729154117.pdf
https://www.westernpowerinnovation.co.uk/Document-library/2016/WPD-NIA-Summary-15_16-Final.aspx
http://www.smarternetworks.org/Files/NIA_&_NIC_160831113312.pdf
http://www.smarternetworks.org/Files/NIA_&_NIC_160729173434.pdf
http://www.smarternetworks.org/Files/NIA_&_NIC_160803115257.pdf

[60] https://www.ofgem.gov.uk/publications-and-updates/version-2-1-network-innovation-competition-governance-documents

Table 4.2: Network Innovation Competition projects, 2015-16

Project Title	*Lead company*	*Description*	*NIC funding awarded (£m)*	*Total project costs (£m)**	*Project end date*
Celsius	ENWL	To develop a new way of managing the temperature of substations – increasing their operational capacity and lifespan.	4.7	5.4	2020
ANGLE-DC	SPMW	To increase network capability through converting an existing Alternating Current (AC) circuit between the mainland and Anglesey to Direct Current (DC).	13.1	14.6	2020

*Includes other contributions eg from project partners or the DNO shareholders.

4.7. Further information on these projects can be found in our funding brochure[61] and the DNOs' full submissions which are published on our website[62].

[61] https://www.ofgem.gov.uk/publications-and-updates/2015-innovation-competitions-brochure
[62] https://www.ofgem.gov.uk/network-regulation-riio-model/network-innovation/electricity-network-innovation-competition

5. Analysis of expenditure vs allowance

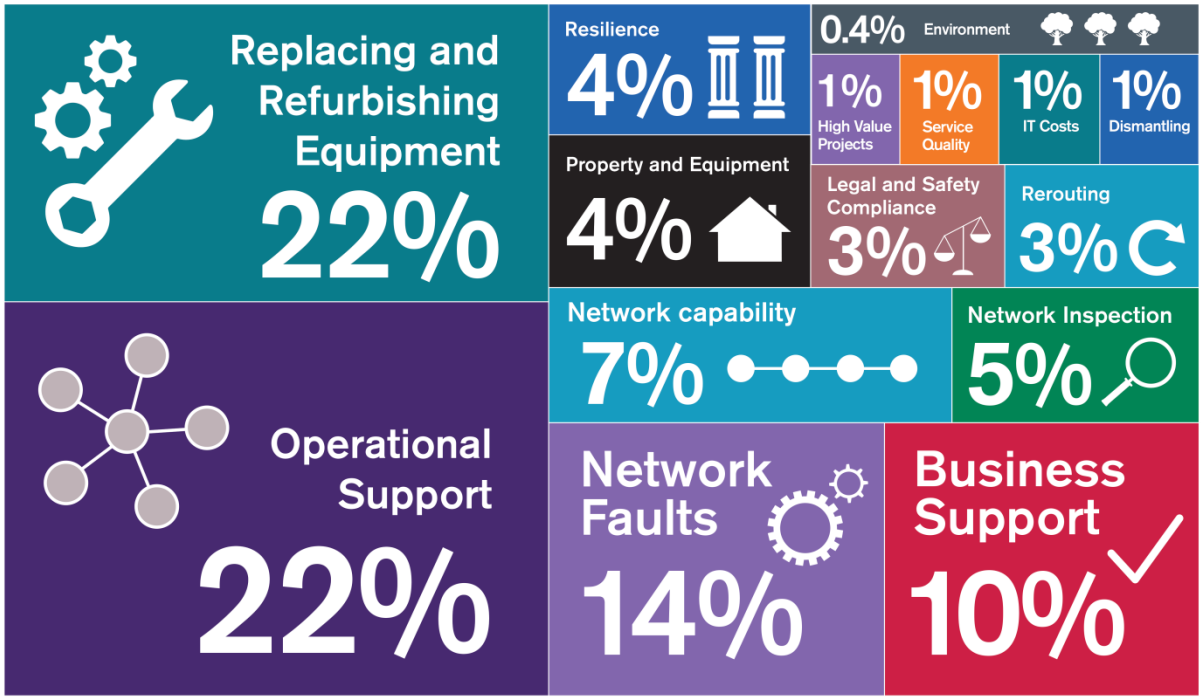
Chapter Summary

Evaluation of the DNOs' expenditure against the costs allowed in the RIIO-ED1 settlement at a disaggregated level.

5.1. Chapter 2 provided a high-level view of Totex for all DNOs in the first year of RIIO-ED1 and their forecasts to the end of the period.[63] This chapter looks in more detail at the allowances and actual expenditure by cost category, with further detail provided in the data file (Appendix 1).

5.2. Figure 5.1 provides the 2015-16 expenditure breakdown for 15 cost categories.

Figure 5.1: Disaggregated expenditure breakdown, 2015-16



5.3. Costs can be split into direct costs and indirect costs. Direct costs are the costs of working directly on the electricity distribution network, while indirect costs are not, but support network activity and the DNO business. The indirect costs are in italics in the Figure 5.2 and Table 5.1.

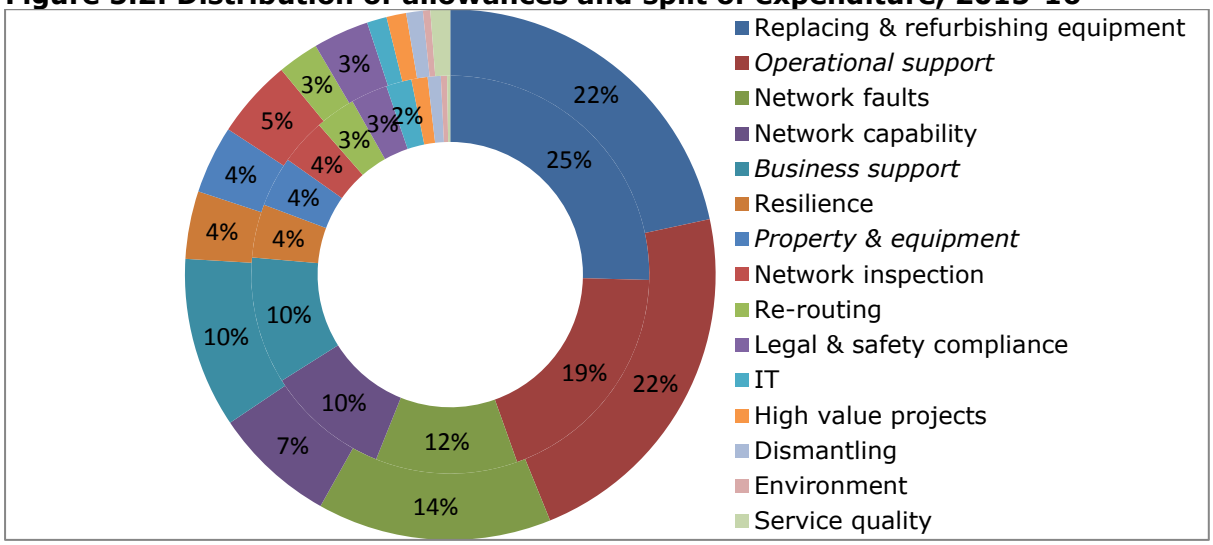
[63] There is a difference in the total Figures presented in this chapter and that presented as Totex in chapter 1. This is because the Totex allowance reported in Chapter 1 accounts for some cost activities not accounted for in our disaggregated allowance as reports in the Final Determinations. This includes adjustments for forecast DRS 8, Shetland Competitive Process, Shetland Uncertain Energy, Smart Meter Roll-out costs, Worst Served Customers, and Visual Amenity Projects.

Expenditure categories

In the first year of RIIO-ED1 expenditure has been lower than allowances for most direct investment cost categories as DNOs put in place contracts and demand on the network has been lower than predicted. The indirect operational support costs have been higher to manage these contracts and support restructuring.

5.4. Figure 5.2 shows that DNOs' actual expenditure (outer circle) in 2015-16 has broadly matched our allowances (inner circle).

Figure 5.2: Distribution of allowances and split of expenditure, 2015-16



5.5. In 2015-16, underspend was largely driven by expenditure in two cost categories: replacing and refurbishing equipment and network capability. Underspend in these direct cost categories was offset to a degree by overspend in three other direct cost categories: network faults, network inspection, and service quality. There was also overspending in the indirect cost category of operational support (Table 5.3).

Table 5.1: Disaggregated expenditure v allowances for all DNOs, 2015-16

	Allowance (£m)	*Actual (£m)*	*Difference (£m)*	*Difference (%)*
Replacing & refurbishing equipment	875	683	-193	-22%
Operational support	658	701	43	6%
Network faults	397	450	53	13%
Network capability	343	235	-109	-32%
Business support	355	327	-28	-8%
Resilience	149	130	-19	-13%
Property & equipment	140	131	-10	-7%
Network inspection	129	152	22	17%
Re-routing	113	79	-34	-30%
Legal & safety compliance	102	107	5	5%
IT	71	38	-33	-47%
High value projects	45	38	-7	-16%
Dismantling	37	32	-5	-13%
Environment	17	14	-3	-18%
Service quality	9	38	29	329%
Policy Adjustments[64]	32	12	-21	-64%
Total	**3,475**	**3,165**	**-309**	**-9%**

5.6. Although we report expenditure against allowances at the disaggregated cost category level, DNOs were given a Totex allowance to spend as appropriate to meet their outputs. They were not given an allowance for each cost category and could therefore reallocate costs across categories. Reporting disaggregated expenditure allows Ofgem to understand better the factors that are contributing to total DNO expenditure, and whether there are particular factors that the we should consider in more detail.

Largest value cost categories

5.7. We examine the five largest cost categories, out of the 15 cost categories reported, to better understand what was driving expenditure in 2015-16. These are:

- **replacing and refurbishing equipment:** the cost of maintaining the existing network by replacing and refurbishing network assets
- **network capability:** the cost of managing the load on the network, for example the installation of new assets to accommodate changes in the level or pattern of electricity demand and generation
- **network faults:** the cost of repairing faults on the network
- **operational support:** the cost of supporting direct activity on the network, such as costs of network design, project management, engineering management, clerical support, operational training, call centres and control centres, and
- **business support:** the cost of running the DNO business, such as those associated with HR, finance and CEO departments and non-operational training.

[64] Policy adjustments are adjustments for the following cost areas: Forecast DRS 8, Shetland Competitive Process, Shetland Uncertain Energy, Smart Meter Roll-out costs, Worst Served Customers and Visual Amenity Projects.

5.8. Together these five cost categories account for 76% of the total expenditure across all DNOs in 2015-16 and therefore are an important focus of our analysis. It is movements in these five categories that will largely explain the differences in expenditure against original allowances.

Direct costs

5.9. An allowance of £1,616 million was set for 2015-16 for the three largest direct cost categories: replacing and refurbishing equipment, network capability and network faults. Expenditure was £1,367 million, a 15% underspend.

5.10. The typical pattern across the DNOs was overspend in network faults with underspend in replacing and refurbishing equipment and network capability, although there are differences. Three of the WPD DNOs overspent on network capability and both SSEN DNOs and SPD underspent on network faults. Actual data by DNO is in Table 5.2.

Table 5.2: Expenditure on largest categories of direct costs by DNO, 2015-16

	Replacing & refurbishing equipment			*Network capability*			*Network faults*		
	Allowance (£m)	*Actual (£m)*	*Difference (%)*	*Allowance (£m)*	*Actual (£m)*	*Difference (%)*	*Allowance (£m)*	*Actual (£m)*	*Difference (%)*
ENWL	78	56	-28%	16	11	-33%	28	41	47%
NPgN	58	51	-12%	20	16	-18%	25	28	12%
NPgY	73	57	-22%	9	15	72%	42	47	14%
WMID	74	72	-3%	25	34	36%	32	47	49%
EMID	64	63	-2%	56	48	-15%	36	40	12%
SWALES	39	36	-7%	4	6	47%	15	14	0%
SWEST	62	50	-18%	6	9	46%	26	30	14%
LPN	54	26	-52%	48	15	-68%	25	32	26%
SPN	50	26	-49%	28	7	-74%	26	34	28%
EPN	65	40	-38%	46	18	-60%	41	48	17%
SPD	59	56	-6%	20	11	-46%	27	24	-10%
SPMW	80	72	-11%	30	24	-18%	22	22	0%
SSEH	32	26	-21%	9	4	-54%	17	12	-32%
SSES	87	52	-40%	27	16	-43%	37	32	-14%
Total	**875**	**683**	**-22%**	**343**	**235**	**-32%**	**397**	**450**	**13%**

Indirect costs

5.11. An allowance of £1,013 million was set for 2015-16 for the two largest indirect cost categories: operational support and business support. Expenditure was £1,028 million, a 1% overspend.

5.12. The data across DNOs varies and is detailed in Table 5.3.

Table 5.3: Expenditure on largest categories of indirect costs by DNO, 2015-16

	Operational support			*Business support*		
	Allowance (£m)	*Actual (£m)*	*Difference (%)*	*Allowance (£m)*	*Actual (£m)*	*Difference (%)*
ENWL	51	43	-15%	33	30	-9%
NPgN	32	35	10%	21	19	-9%
NPgY	40	41	1%	24	21	-13%
WMID	57	69	21%	29	27	-9%
EMID	56	69	23%	30	27	-12%
SWALES	31	33	7%	16	14	-8%
SWEST	45	52	15%	25	23	-7%
LPN	47	44	-6%	25	21	-17%
SPN	50	43	-14%	26	18	-30%
EPN	71	69	-3%	32	27	-17%
SPD	41	48	18%	22	23	3%
SPMW	41	55	35%	18	26	42%
SSEH	32	34	6%	21	19	-8%
SSES	65	66	2%	33	33	-1%
Total	**658**	**701**	**6%**	**355**	**327**	**-8%**

5.13. It is not unusual for direct expenditure to be lower and indirect costs to be higher than expected at the start of a price control. DNOs may decide to re-profile their expenditure in light of our final allowances (as set out in our Final Determinations[65]) amongst other factors and then put in place contracts for the delivery of work. We typically expect to see a direct expenditure increase over the price control period.

[65] https://www.ofgem.gov.uk/ofgem-publications/92249/riio-ed1finaldeterminationoverview-updatedfrontcover.pdf

6. Summary by DNO Group

Chapter Summary

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

Introduction

6.1. We provide a high-level summary of the performance by DNO group below. The red, amber, green (RAG) ratings given to the outputs performance are based on individual DNO performance against a target or compared to the position in the last year of DPCR5.[66] Relative performances across DNOs (ie rankings) are not reflected here, but are given in Chapter 3.

Electricity North West (ENWL)

<table>
<tr><th colspan="6">Expenditure and finance</th></tr>
<tr><td colspan="2">2015-16

£244m
-£6m or -3% of allowance</td><td colspan="2">RIIO-ED1

£1,872
-£52m or -3% of allowance</td><td>Sharing Factor

42%</td><td>Forecast 8-year RoRE

9.22%</td></tr>
<tr><th colspan="6">Outputs performance</th></tr>
<tr><td>Reliability & availability

✓ number of interruptions
✓ length of interruptions</td><td>Environment

✓ BCF
✓ SF_6
■ fluid-filled cables</td><td>Connections

✓ time to quote & connect
X connections GSoP</td><td>Customer satisfaction

X BMCS
✓ complaints</td><td>Customer service

✓ stakeholder engagement</td><td>Safety

✓ compliance with HSE obligations</td></tr>
<tr><th colspan="6">Innovation</th></tr>
<tr><td colspan="6">Spent 97% of NIA allowance and successful award of £4.7m via the NIC.</td></tr>
</table>

6.2. ENWL spent a total of £244 million in the first year of RIIO-ED1, underspending by £6m (3%) against allowances. This is explained largely by underspend in the cost categories of replacing and refurbishing equipment and network capability. ENWL forecast it will underspend by £52 million (3%) by the end of the RIIO-ED1 price control. Customers will see 42% of this returned to them via the TIM.

[66] RAG ratings are based on the performance against a set target for: number of interruptions, length of interruptions, time to quote and connect, BMCS, complaints and stakeholder engagement (where stakeholder engagement is assessed on whether or not the DNO passed stage 1 of the Stakeholder and Consumer Vulnerability Initiative). RAG ratings are based on the performance compared to the last year of DPCR5 for BCF, SF_6 and fluid-filled cable leakage. For compliance with HSE obligations, it is either a yes or no position.

6.3. The forecast eight-year average RoRE for ENWL is 9.22%, 3.22% above its allowed cost of equity of 6.0%, ENWL sits in the middle of the RoRE figures for all six DNO groups.

6.4. ENWL is performing well against most RIIO outputs, but could improve on customer satisfaction in particular.

6.5. It exceeded all reliability targets and provided connection quotes and connections to customers in the quickest time of all the DNOs. However, it had the greatest number of cases where it failed to meet the Connections GSoP.

6.6. There were environmental improvements with business carbon footprint and SF_6 emissions lower than last year. However, fluid-filled cable leakage was higher than last year and is relatively high in the industry.

6.7. ENWL did not meet all targets set for the BMCS. Although it's only year one of an eight-year price control, we would expect to see further improvement in ENWL's customer satisfaction scores. While it passed stage 1 of the stakeholder engagement and consumer vulnerability initiative, we would also expect improvement as the price control continues.

6.8. In terms of innovation, ENWL spent most of its NIA allowance and is one of only two DNOs awarded NIC funding.

Northern Powergrid (NPg)

<table>
<tr><th colspan="6">Expenditure and finance</th></tr>
<tr><td colspan="2">2015-16

£436m
-£14m or -3% of allowance</td><td colspan="2">RIIO-ED1

£3,198
+£28m or +1% of allowance</td><td>Sharing Factor

44%</td><td>Forecast 8-year RoRE

8.06%</td></tr>
<tr><th colspan="6">Outputs performance</th></tr>
<tr><td>Reliability & availability

✓ number of interruptions
✓ length of interruptions</td><td>Environment

✓ BCF
✓ SF_6
✓ fluid-filled cables</td><td>Connections

■ time to quote & connect
✓ connections GSoP</td><td>Customer satisfaction

■ BMCS
✓ complaints</td><td>Customer service

✓ stakeholder engagement</td><td>Safety

✓ compliance with HSE obligations</td></tr>
<tr><th colspan="6">Innovation</th></tr>
<tr><td colspan="6">Spent 38% of NIA allowance and no NIC funding.</td></tr>
</table>

6.9. The two NPg DNOs spent a total of £436 million in the first year of RIIO-ED1, underspending by £14 million (3%) against allowances. This is largely explained by underspend in replacing and refurbishing equipment, caused mainly by NPg changing its replacement strategy for RIIO-ED1, which now focuses on rebuilding rather than refurbishment.

6.10. Current data shows that NPg is one of two DNO groups forecasting overspend on allowance over RIIO-ED1; £28 million (1%) by the end of the price control period. However, when taking into account additional expenditure arising in areas that qualify for variant allowances, such as undergrounding of overhead lines, NPg expects to spend in line with its allowance.

6.11. The forecast eight-year average RoRE for NPgN is 8.06%, 2.06% above its allowed cost of equity of 6.0%. It is the second lowest RoRE of the six DNO groups.

6.12. NPg is performing well against most RIIO output categories, but there is room for improvement in connections and customer satisfaction.

6.13. It exceeded all its reliability targets and there were also environmental improvements with business carbon footprint, SF_6 emissions and fluid filled cable leakage all lower than last year.

6.14. NPg also reduced time to quote and connect for connection customers, although NPgY did not meet its Time to Connect target for LVSSA connections.

6.15. NPg is improving on customer satisfaction and met the majority of the BMCS targets, but both NPgN and NPgY did not meet the targets for the connections customer survey. It also met its targets for complaints but its scores are among lowest in the industry and could be improved. While it passed stage 1 of the stakeholder engagement and consumer vulnerability initiative, we would expect improvement as the price control continues.

Western Power Distribution (WPD)

<table>
<tr><th colspan="6">Expenditure and finance</th></tr>
<tr><td colspan="2">2015-16

£985m
+£24m or +2% of allowance</td><td colspan="2">RIIO-ED1

£7,902
+£423m or +6% of allowance</td><td>Sharing Factor

30%</td><td>Forecast 8-year RoRE

8.10%</td></tr>
<tr><th colspan="6">Outputs performance</th></tr>
<tr><td>Reliability & availability

✓ number of interruptions
✓ length of interruptions</td><td>Environment

✓ BCF
✓ SF_6
✓ fluid-filled cables</td><td>Connections

time to quote & connect
✓ connections GSoP</td><td>Customer satisfaction

✓ BMCS
✓ complaints</td><td>Customer service

✓ stakeholder engagement</td><td>Safety

✓ compliance with HSE obligations</td></tr>
<tr><th colspan="6">Innovation</th></tr>
<tr><td colspan="6">Spent 42% of NIA allowance and no NIC funding.</td></tr>
</table>

6.16. WPD's four DNOs spent a total of £985 million in the first year of RIIO-ED1, overspending by £24 million (2%) against allowances. It was the only DNO group that overspent in year 1. WPD's price control was settled earlier than the other DNO groups

as it was fast-tracked and therefore had more time to ensure investment plans were in place for the start of RIIO-ED1.

6.17. Overspend is further explained by greater investment in the direct cost categories of network capability and network faults and the indirect cost category of operational support. Increased distributed generation (DG) connections drove expenditure in network capability as a high number of LV connections triggered HV reinforcement work.

6.18. WPD is one of two DNO groups forecasting it will overspend on allowance over RIIO-ED1. It estimates overspend of £423 million (6%) by the end of the price control period. These figures do not take account of additional expenditure arising in areas that qualify for variant allowances. WPD expect their ED1 expenditure to be broadly in line with totex allowances when these are taken into account. Customers will pay for 30% of this overspend in future years if its forecast is accurate.

6.19. The forecast eight-year average RoRE for WPD is 8.10%, 1.70% above its allowed cost of equity of 6.40%. WPD sits in the middle of the RoRE figures for all six DNO groups.

6.20. WPD is performing well against all outputs. Overall it exceeded all its reliability targets, although SWALES and SWEST received among the lowest rewards through the IIS. Conversely, WMID and EMID received among the highest rewards.

6.21. There were also environmental improvements with business carbon footprint, SF_6 emissions and fluid filled cable leakage all lower than last year. However, SF_6 emissions are relatively high compared to other DNOs.

6.22. WPD also reduced the time to quote and connect for connection customers, although SWALES was slightly above the target time to quote for LVSSA connections. WPD had only four failures to meet the Connections GSoP across all its DNOs; the lowest of all DNO groups.

6.23. Customer satisfaction scores across all elements of the BMCS are the highest in the industry and WPD received the highest ranking under the stakeholder engagement and consumer vulnerability incentive.

UK Power Networks (UKPN)

<table>
<tr><th colspan="6">Expenditure and finance</th></tr>
<tr><td colspan="2">2015-16

£643m
-£208m or -24% of allowance</td><td colspan="2">RIIO-ED1

£5,463
-£929m or -15% of allowance</td><td>Sharing Factor

47%</td><td>Forecast 8-year RoRE

11.50%</td></tr>
<tr><th colspan="6">Outputs performance</th></tr>
<tr><td>Reliability & availability

✓ number of interruptions
✓ length of interruptions</td><td>Environment

✓ BCF
✓ SF_6
✓ fluid-filled cables</td><td>Connections

time to quote & connect
connections GSoP</td><td>Customer satisfaction

BMCS
✓ complaints</td><td>Customer service

✓ stakeholder engagement</td><td>Safety

✓ compliance with HSE obligations</td></tr>
<tr><th colspan="6">Innovation</th></tr>
<tr><td colspan="6">Spent 96% of NIA allowance and no NIC funding.</td></tr>
</table>

6.24. The three UKPN DNOs spent a total of £643 million in the first year of RIIO-ED1, underspending against allowances by £208 million (24%). This is the largest underspend of all DNO groups. This is mainly due to significant underspend in replacing and refurbishing equipment. Investment has been delayed until 2017 as UKPN has taken time to establish an alliance with key contractors where all parties share in efficiencies achieved. It also significantly underspent on managing network capability because the forecast level of loading on the network did not materialise at both primary and secondary levels.

6.25. UKPN is forecasting the largest underspend on allowance over RIIO-ED1; £929 million or 15%. Customers will receive 47% of this underspend in future years if its forecast is accurate. As the price control progresses we will better understand what is driving the Totex underspend and this will inform our assessment for RIIO-ED2 allowances.

6.26. The forecast eight-year average RoRE for UKPN is 11.50%, 5.50% above its allowed cost of equity of 6.0%. It is the highest RoRE figure for all six DNO groups.

6.27. UKPN is performing well against most RIIO outputs, although there is room for improvement in connections and customer satisfaction. Overall it exceeded all its reliability targets, with EPN receiving the highest rewards under the IIS of all DNOs.

6.28. There were environmental improvements with business carbon footprint, SF_6 emissions and leakages from fluid filled cables all lower than last year. However, fluid filled cable leakage is relatively high compared to other DNOs.

6.29. UKPN reduced the time to quote and connect for connection customers but its times are relatively high in the industry and EPN did not meet its Time to Connect target for LVSSA connections. UKPN also had a relatively high number of failures to meet the Connections GSoP across all DNO groups.

6.30. UKPN's customer satisfaction score is improving, with the majority of targets under the BMCS being met. However, both LPN and EPN did not meet the connections customer survey target score under the BMCS. Stakeholder engagement was strong compared to other DNOs.

SP Energy Networks (SPEN)

<table>
<tr><th colspan="6">Expenditure and finance</th></tr>
<tr><td colspan="2">2015-16

£431m
-£36m or -8% of allowance</td><td colspan="2">RIIO-ED1

£3,358m
-£12m or -0.4% of allowance</td><td>Sharing Factor

46%</td><td>Forecast 8-year RoRE

7.26%</td></tr>
<tr><th colspan="6">Outputs performance</th></tr>
<tr><td>Reliability & availability

✓ number of interruptions
✓ length of interruptions</td><td>Environment

✓ BCF
✓ SF_6
■ fluid-filled cables</td><td>Connections

✓ time to quote & connect
✓ connections GSoP</td><td>Customer satisfaction

✓ BMCS
✓ complaints</td><td>Customer service

✓ stakeholder engagement</td><td>Safety

✓ compliance with HSE obligations</td></tr>
<tr><th colspan="6">Innovation</th></tr>
<tr><td colspan="6">Spent 86% of NIA allowance and successful award of £13.1m in NIC funding.</td></tr>
</table>

6.31. SPEN's two DNOs spent a total of £431 million in the first year of RIIO-ED1, underspending by £36 million (8%) against allowances. This is largely explained by underspend against allowances in replacing and refurbishing equipment and in network capability. This was countered by overspend in operational support and business support. This was due to a structural change introduced by SPEN in that the DNOs are now divided into districts.

6.32. SPEN is the only DNO group forecasting it will spend no more or less than its allowance (0.4% underspend).

6.33. The forecast eight-year average RoRE for SPEN is 7.26%, 1.26% above its allowed cost of equity of 6.0%. It is the lowest RoRE figure for all six DNO groups.

6.34. SPEN is performing well against all RIIO outputs. It exceeded all its reliability targets and reduced the time to quote and connect for connection customers. There were also environmental improvements with business carbon footprint and SF_6 emissions lower than last year. For fluid filled cables, it is not possible to assess the performance of SPMW[67] on the same basis as other DNOs due to unavailable data in DPCR5[68], but the level of leakage has increased on last year.

[67] SPD has no fluid filled cables.
[68] For all other DNOs we compared the level of top up as a percentage of oil in service in 2014-15 to 2015-16, but oil in service data for 2014-15 is unavailable for SPMW.

6.35. All targets under the BMCS have been exceeded, as has the target for complaints, but improvements can be made to the score for stakeholder engagement.

6.36. In terms of innovation, SPEN has a number of ongoing projects and is one of only two DNOs that spent all or most of its NIA allowance and was awarded NIC funding.

Scottish and Southern Electricity Network (SSEN)

<table>
<tr><th colspan="6">Expenditure and finance</th></tr>
<tr><td colspan="2">2015-16

£427m
-£68m or -14% of allowance</td><td colspan="2">RIIO-ED1

£3,450m
-£296m or -8% of allowance</td><td>Sharing Factor

44%</td><td>Forecast 8-year RoRE

9.42%</td></tr>
<tr><th colspan="6">Outputs performance</th></tr>
<tr><td>Reliability & availability

✓ number of interruptions
✓ length of interruptions</td><td>Environment

✓ BCF
✓ SF_6
✓ fluid-filled cables</td><td>Connections

✓ time to quote & connect
✓ connections GSoP</td><td>Customer satisfaction

■ BMCS
✓ complaints</td><td>Customer service

✓ stakeholder engagement</td><td>Safety

✓ compliance with HSE obligations</td></tr>
<tr><th colspan="6">Innovation</th></tr>
<tr><td colspan="6">Spent 24% of NIA allowance and no NIC funding.</td></tr>
</table>

6.37. The two SSEN DNOs spent a total of £427 million in the first year of RIIO-ED1, underspending by £68 million (14%) against allowances. This is largely explained by underspend against allowances in replacing and refurbishing equipment and in network capability. This was countered by overspend in operational support. This was due to changing the structure of SSEN to a regional structure model with each regional team responsible for addressing planning, construction, repairs and faults.

6.38. SSEN forecast it will underspend by £296 million (8%) by the end of the RIIO-ED1 price control. Customers will see 44% of this underspend returned to them via the TIM.

6.39. The forecast eight-year average RoRE for SSEN is 9.42%, 3.42% above its allowed cost of equity of 6.0%. It is the second highest RoRE figure for all six DNO groups.

6.40. SSEN is performing well against the RIIO outputs. It exceeded all its reliability targets and reduced customer time to quote and times to connect to its network. There were also environmental improvements with business carbon footprint, SF_6 emissions and fluid filled cable leakage all lower than last year. However, SF_6 emissions are notably higher when compared to other DNOs.

6.41. SSEN met the target score for complaints and all but one of the BMCS targets; SSES did not meet the connections customer survey target and its average score is among the lowest in the industry. Stakeholder engagement could be improved as SSEN has the lowest score of all DNO groups.

Appendices

Appendix 1 – Data file

A1.1 The following data file provides more detailed and disaggregated information on expenditure and performance. A list of the contents and the Chapter to which it relates is provided below.

A1.2 The data file is found here: https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2015-16

Chapter title	*Tab in data file*	*Contents*
Chapter 1 Introduction	No data included	
Chapter 2 Expenditure, revenue, customer bills and company returns	Ch2 finance	Total controllable expenditure (Totex) Allowed Revenue Customer bill impact
Chapter 2 Expenditure, revenue, customer bills and company returns	Ch2 finance - RoRE	Return on Regulatory Equity (RoRE)
Chapter 2 Outputs and Incentives	Ch3 outputs – reliability	Interruption Incentive Scheme (IIS) Rewards and penalties under the IIS Guaranteed Standards of Performance (GSoP) Worst Served Customers Resilience
	Ch3 outputs – environment	Losses Discretionary Reward (LDR) Business Carbon Footprint (BCF) Sulphur hexafluoride emissions (SF_6) Leakages from fluid filled cables Oil Filled Cables Undergrounding Distributed Generation Electric Vehicles
	Ch3 outputs – connections	Distributed Generation (DG) Time to connect incentive Connections Guaranteed Standards of Performance (GSoP)
	Ch3 outputs – cust sat	Customer satisfaction survey Complaints metric Stakeholder Engagement and Consumer Vulnerability Incentive Broad Measure of Customer Service
Chapter 4 Innovation	Ch4 innovation	Network Innovation Allowance (NIA) Network Innovation Competition (NIC)
Chapter 5 Analysis of expenditure vs allowance	Ch5 expenditure v allowance	Distribution of allowances and expenditure per cost category Distribution of overall allowances and expenditure Allowances and actual expenditure by cost category
Chapter 6 Summary by DNO Group	No data included	N/A
Appendix 2 Details on how we determined Allowed Revenue	Appendix 2	Regulatory Asset Value (RAV)

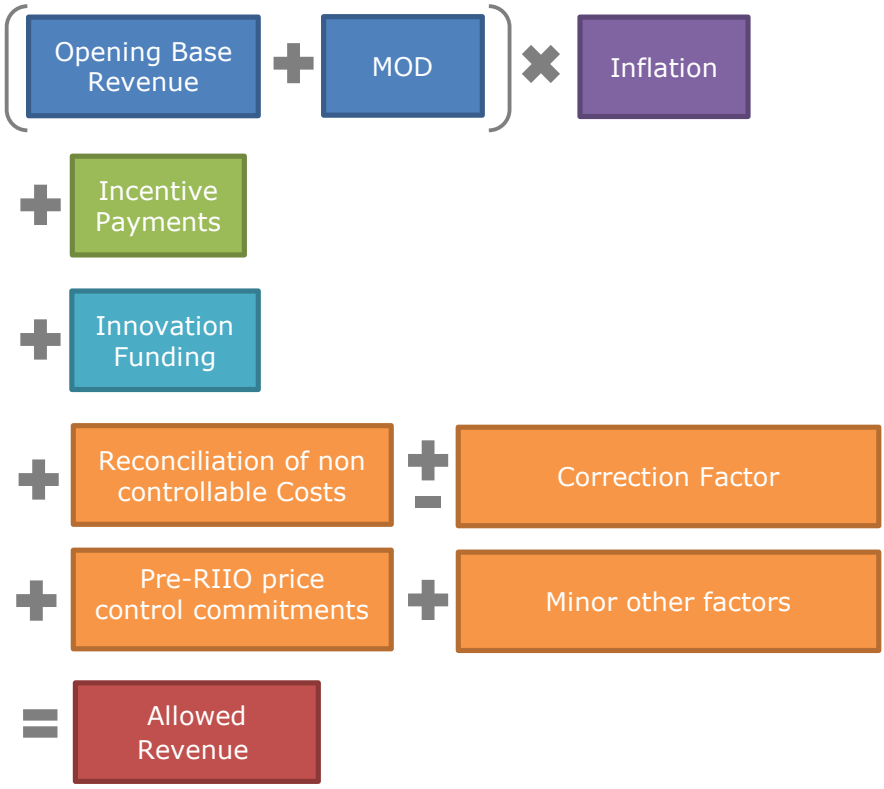
Appendix 2 – Details on how we determined Allowed Revenue

Chapter Summary
This chapter describes how Allowed Revenue values are determined. This includes an explanation of how Totex performance relates to Allowed Revenue; a breakdown of the Allowed Revenue, showing the components that relate to pre-RIIO and RIIO spending; the use of Regulatory Asset Value (RAV) as a tool to spread revenue collection associated with Totex; and a history of the MOD directions that we have made under RIIO.

Allowed Revenue and MOD

A2.1. Allowed Revenue is the amount of money that a DNO can earn on its regulated business.[69] Figure A2.1 sets out at high-level, how we determine the Allowed Revenue in any given year of the price control.

Figure A2.1: Constituent parts of Allowed Revenue



[69] Due to the timing of receiving actual expenditure data and that customer tariffs are set in advance of regulatory years Totex spending assessments only begin to impact Allowed Revenue with a minimum two year lag. Therefore, Totex performance in 2015-16 will first impact Allowed Revenue in 2017-18. Detailed calculations are contained in the Price Control Financial Model (PCFM), which is available on our website: https://www.ofgem.gov.uk/network-regulation-riio-model/price-controls-financial-model-pcfm

A2.2. Of all constituent parts of Allowed Revenue, Opening Base Revenue comprises the significant majority. Opening Base Revenue 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.

A2.3. Opening Base Revenue is modified annually during the price control by the "MOD" term in the licences. This takes place as part of our Annual Iteration Process (AIP). The AIP process takes account of uncontrollable market uncertainties, as they become known, such as the cost of debt and changes to taxation rules. It also measures financial performance against pre-determined output incentives. Where a company under or over performs relative to the ex ante expectation a percentage of the difference is shared with consumers.

A2.4. The MOD term is the difference between the updated Base Revenue (recalculated using the latest available performance data, including revisions to that data for previous years) and the Opening Base Revenue.

A2.5. Two key variables to the MOD value are Totex performance and Regulatory Asset Value (RAV), discussed below.

A2.6. Allowed Revenue is also adjusted for outputs incentive payments, innovation funding and other costs such as differences between previous years' Allowed Revenue and the actual amount that has been collected. True up of non-controllable costs, and the correction factor are explained in the main body of the report (Table 2.3).

A2.7. Table A2.1 displays MOD values from all the AIPs to date. Across these, total Base Revenue has decreased by £115m relative to the forecast at Final Determinations. For all DNOs a reduction in the cost of debt allowance to MOD has made a significant impact for 2017-18.[70]

[70] The cost of debt allowance changes the WACC value. The cost of debt allowance itself is derived from the average of two indices (with serial numbers DE000A0JY811 and DE000A0JZAF5 as provided by IHS Markit) that report historic borrowing costs for GB non-financial "A" and "BBB" rated bonds. A 10 year rolling average of these costs is determined. The average currently includes periods that predate the 2008 financial crisis, during which time borrowing costs were greater than they are today (borrowing costs that are newly entering the calculation period are lower than these older costs that are exiting it).

Table A2.1: RIIO-ED1 MOD values

	2016-17	*2017-18*
ENWL	-3.4	-5.2
NPgN	-1.1	-3.2
NPgY	1.3	-3
WMID	0.8	-3
EMID	6.3	-0.9
SWALES	-0.1	-3.1
SWEST	-1.9	-4.2
LPN	-1.8	-16.9
SPN	-2.8	-14.5
EPN	0.6	-14.6
SPD	0.3	-4.4
SPMW	-3.7	-7.1
SSEH	-2	-4.5
SSES	-8.5	-14.7
Total	**-15.9**	**-99.1**

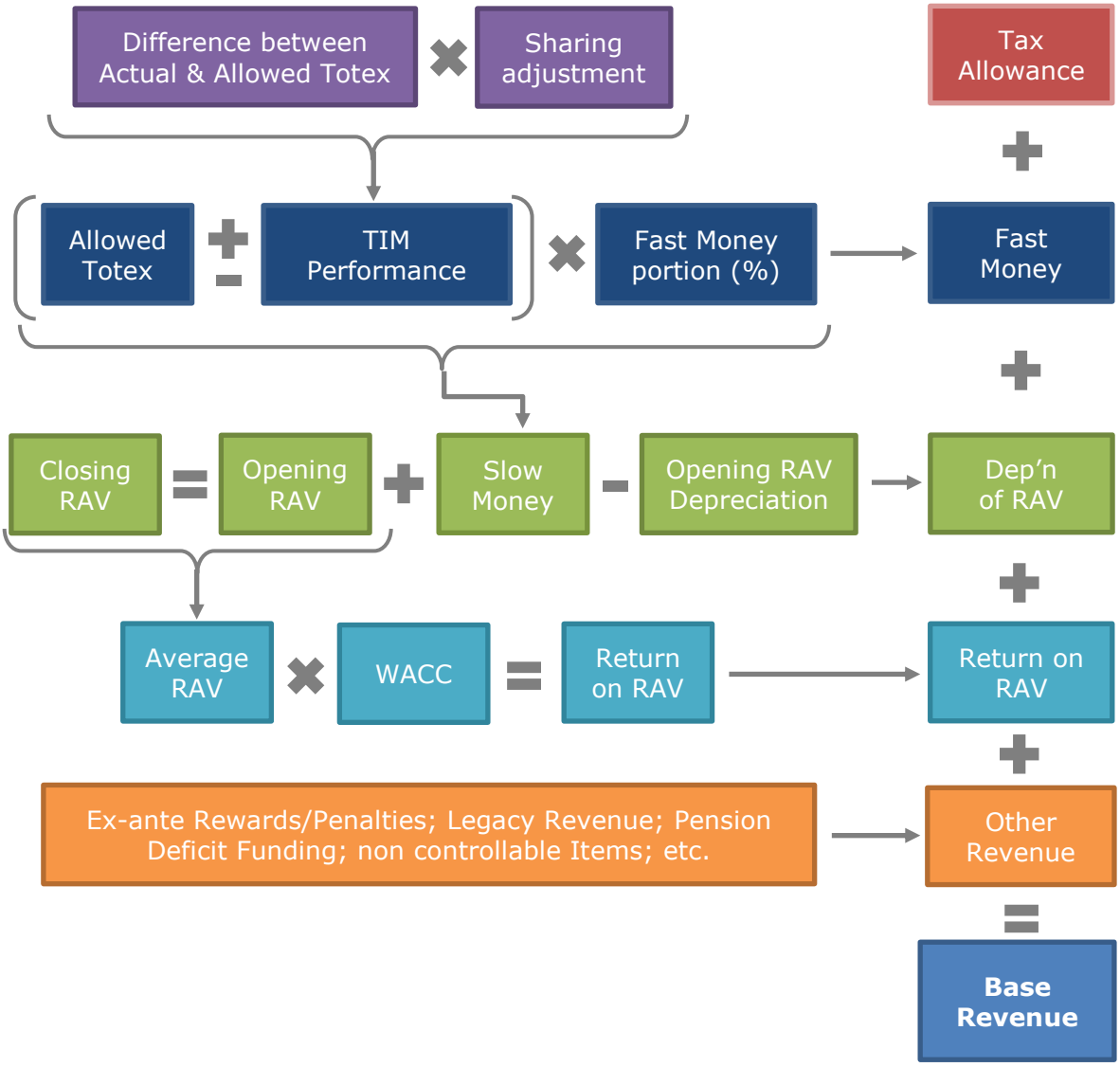
Allowed Totex and other factors that impact Base Revenue

A2.8. The difference between actual Totex and Allowed Totex (whether the actual Totex is an underspend or overspend) is shared between the DNO (via modifying to Base Revenue) and customers and tax obligations. This process forms the TIM (explained in Chapter 2). As illustrated in Figure A2.2 the revised Allowed Totex and the calculations that follow (described below) revise the Base Revenue that the DNO can recover as part of its overall Allowed Revenue.

A2.9. For Base Revenue calculations a portion of Allowed Totex is directly added to the Base Revenue (this is known as Fast Money as the company is allowed to collect revenue equal to this value during the next Allowed Revenue year). The remainder of Allowed Totex (known as Slow Money) is added to the opening Regulatory Asset Value (RAV). RAV is the long-term financial value of the capital employed in the regulated business.

A2.10. RAV is based on the initial market value of the regulated asset base at privatisation, plus all subsequent additions. In accordance with established regulatory methods, RAV is gradually reflected in Base Revenue over multiple decades, reflecting the average lifetime of network assets. Amounts are deducted annually from opening RAV (this is depreciation). The depreciation value is then added to Base Revenue in the next Allowed Revenue year. The average of opening and closing RAV for the year also earns a return (at the Weighted Average Cost of Capital (WACC)).

Figure A2.2: Determination of Base Revenue



A2.11. As TIM performance becomes known, the RAV is recalculated using the updated Slow Money value. The latest view of RAV positions are shown in Table A2.2.

Table A2.2: RAV Balance, 2015-16

	ENWL	*NPgN*	*NPgY*	*WMID*	*EMID*	*SWALES*	*SWEST*
RAV at 1 April 2015	1,618	1,197	1,578	2,082	2,045	892	1,279
Slow Money	169	134	182	229	243	121	181
Depreciation	-157	-108	-143	-182	-177	-90	-119
RAV at 31 March 2016	1,630	1,224	1,616	2,129	2,111	923	1,342

	LPN	*SPN*	*EPN*	*SPD*	*SPMW*	*SSEH*	*SSES*
RAV at 1 April 2015	1,501	1,530	2,440	1,614	1,617	1,011	2,137
Slow Money	155	141	217	164	196	100	213
Depreciation	-146	-129	-221	-148	-140	-97	-209
RAV at 31 March 2016	1,510	1,542	2,436	1,631	1,672	1,014	2,140

A2.12. Over the course of 2015-16 the RAV for all licensees, except EPN, has increased. The average increase is c.2% and the maximum is 4.9% (SWEST).

A2.13. For five DNOs the closing RAV is greater than forecast at the time of Final Determinations (including adjustments following two appeals of RIIO-ED1 to the CMA[71]). For NPgN, NPgY and SWALES, this is primarily due to greater than forecast expenditure in the final year of DPCR5 leading to positive legacy RAV adjustments. For WMID and EMID, this relates to overspend against allowances in the first year of RIIO-ED1. The RAV Balance of the remaining nine licensees is less now than it was forecast to be at the beginning of the price control.

A2.14. While DNO performance compared to forecast is mixed, for all DNOs the RAV balances are expected to increase over the course of RIIO-ED1. This is due to the combination of continued expenditure to maintain and expand the network typically expected to exceed the depreciation of existing assets compounded by an increase in assumed average asset lives from 20 years in DPCR5 to 45 years by the end of RIIO-ED1. An increased asset life assumption reduces the proportion of RAV depreciated each year and therefore reduces Base Revenue.

Other items that impact on Base Revenue

A2.15. The remaining items included in Base Revenue are an allowance for taxation, legacy factors, pension deficits, equity issuance costs, costs that cannot be controlled and other minor adjustments.

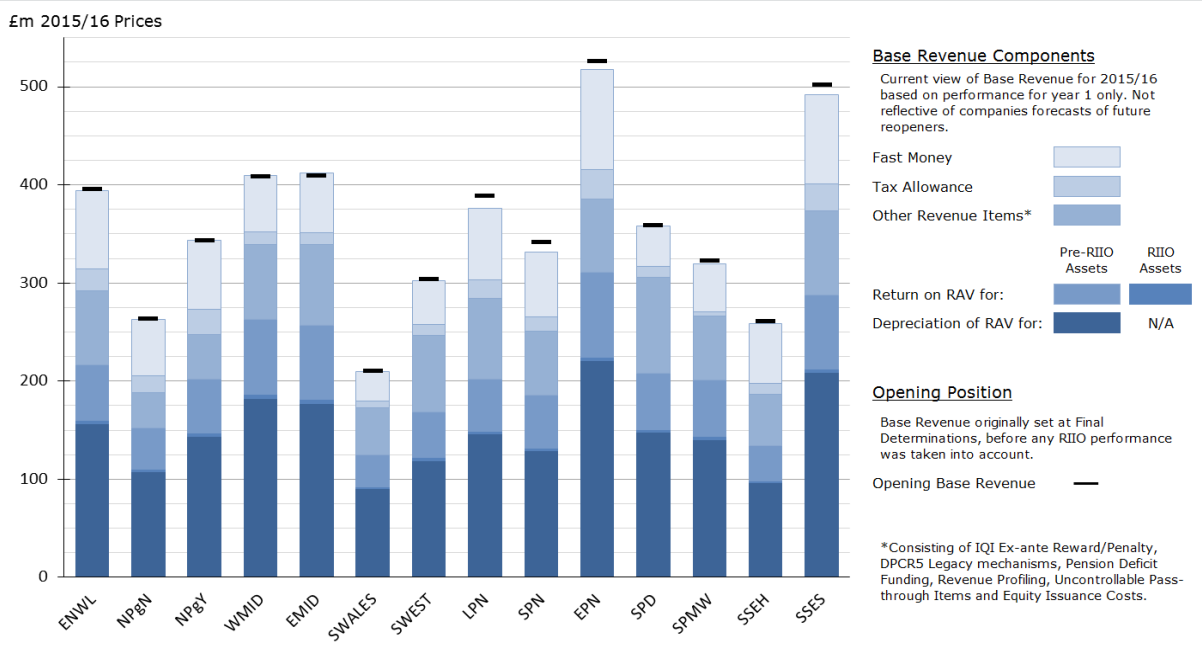
Recalculated Base Revenue

A2.16. We recalculate Base Revenue taking into account items in Figure A2.1.

[71] https://www.ofgem.gov.uk/publications-and-updates/cma-orders-following-british-gas-and-northern-powergrid-riio-ed1-appeals

A2.17. Figure A2.3 shows the constituent parts of recalculated Base Revenue (stacked blue bars). The black lines are Opening Base Revenue.

Figure A2.3: Recalculated Base Revenue using actual performance data up to 2015-16



A2.18. For most DNOs, the recalculated Base Revenue values are similar to Opening Base Revenue and therefore the MOD is small. The notable exceptions are all three UKPN DNOs and SSES. Their lower recalculated Base Revenue reflects the larger than average underspend compared to their Allowed Totex.

A2.19. The majority of current RAV-related revenues are due to pre-RIIO-ED1 assets. This reflects the fact that today's consumers continue to benefit from the network that has been built up over the long term. This proportion will decrease as new expenditure is added to the RAV and older assets continue to depreciate.

A2.20. Depreciation allowances only begin one year after expenditure occurs, therefore there is zero depreciation allowance for RIIO-ED1 assets in the first year of the price control. This depreciation will appear as part of Base Revenue from when 2016-17 actual performance data becomes available.

Appendix 3 - Glossary of financial terms

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

Capital expenditure (capex)
Expenditure on investment in long-lived network assets, such as gas pipelines or electricity overhead lines.

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

Cost of debt
The effective interest rate that a company pays on its current debt. Ofgem calculates the cost of debt on a pre-tax basis.

Cost of equity
The rate of return on investment that is required by a company's shareholders. The return consists both of dividend and of capital gains. Ofgem calculates the cost of equity on a post-tax basis.

Opening Base Revenue
The best view at the start of the price control on the amount of money a network company needs to earn on its regulated business to recover the efficient cost of carrying out its core activities.

Operating Expenditure (Opex)
Expenditure on the day to day operation of a network such as staff costs, repairs and maintenance, and overheads.

Regulatory Asset Value (RAV)
A financial balance representing expenditure by the licensee which has been capitalised under regulatory rules. The licensee receives a return and depreciation on its RAV in its price control allowed revenues.

Return on Regulatory Equity (RORE)
The financial return achieved by shareholders in a licensee during a price control period from its out-turn performance under the price control.

Sharing Factor – It represents the percentage that the licensee bears in respect of an overspend against allowances or retains in respect of an underspend against allowances.

Total expenditure (Totex)
Totex consists of all the expenditure relating to a licensee's regulated activities with some specified exceptions. See the RIGs for a list of these exceptions.[72]

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

Weighted Average Cost of Capital (WACC)

The Weighted Average Cost of Capital is Ofgem's preferred way of expressing the rate of return allowed on the Regulatory Asset Values (RAV) of price controlled network companies.