Electricity Distribution Price Control Review Final Proposals - Allowed revenue - Cost assessment appendix

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Target Audience: Consumers and their representatives, distribution network operators (DNOs), independent distribution network operators (IDNOs), owners and operators of distributed energy schemes, generators, transmission owners, electricity suppliers and other interested parties.

Overview:

Ofgem regulates the 14 DNOs, who are all regional monopolies to protect the interests of current and future consumers. We put in place a price control every five years. This sets the total revenues that each DNO can collect from customers at a level that allows an efficient business to finance their activities. We also place incentives on DNOs to innovate and find more efficient ways to provide an appropriate level of network capacity, security, reliability and quality of service.

The current price control expires on 31 March 2010 and Ofgem has now undertaken a Distribution Price Control Review (DPCR5) to set the controls for 2010-2015. This document sets out in detail how we set the cost allowances for the companies. It should be read in conjunction with our Distribution Price Control Review Final Proposals core document. This supplementary document sets out in greater detail the cost assessment work for DPCR5.

Contact name and details: Rachel Fletcher - Director, Distribution

Tel: 020 7901 7209

Email: dpcr5.reply@ofgem.gov.uk

Team: Electricity Distribution

Context

This document is an appendix to one of the three more detailed, technical documents that accompany the DPCR5 Final Proposals. These documents explain the methodologies and rationale we have applied in arriving at our Final Proposals and set out further detail of the changes we have made since Initial Proposals. They are targeted primarily at the DNOs and those stakeholders who require a more in depth understanding of our proposals in some or all areas.

Our Final Proposals sets out our decision on the maximum allowed revenues each DNO should be allowed to collect from customers between 2010 and 2015. We set out the behaviours and outputs customers want and expect from the DNOs over this period and the incentives and obligations we propose to use to achieve them. If the DNOs accept them, the new arrangements will come into effect on 1 April 2010. If they do not we intend to refer the matter to the Competition Commission.

In December 2008, we published our Policy Paper. The document focussed on three themes, environment, customers and networks and set out our views on the overall approach to setting the control, the methodologies we propose to use, the structure of incentives and the new regulatory arrangements we think are appropriate.

In May 2009, we published our Methodology and Initial Results document. This sets out details of our cost assessment methodology and the initial results for a number of core cost areas. We explained that we would continue to develop our work in this area as we worked towards Initial Proposals.

In August 2009, we published Initial Proposals for the maximum allowed revenues for each DNOs and the associated outputs, incentives and obligations.

1.1. In September 2009, we published an update setting out our proposals for those areas of analysis that were incomplete at Initial Proposals because of a lack of clarity in terms of either the requirements DNOs would be facing or issues with the cost data. These included:

- major system risks expenditure (High Impact Low Probability (HILP) events only),
- BT's 21st Century network expenditure,
- expenditure on rising mains and laterals,
- expenditure on Critical National Infrastructure Costs (e.g. preparation for black start), and
- costs associated with traffic management.

Since then we having been refining our analysis and results to take into account further evidence submitted by the DNOs, responses to Initial Proposals and later updates and correcting errors that impacted on our cost baselines and refining our methodology.

Associated Documents

- Electricity distribution price control review. Initial consultation document (32/08)
- Update letter on the DPCR5 process (151/08)
- Electricity distribution price control review. Policy Paper (159/08)
- Electricity distribution price control review. Methodology and Initial Results Paper (47/09)
- Electricity distribution price control review. Initial Proposals (92/09)
- Electricity distribution price control review. Initial Proposals - Incentives and Obligations (93/09)
- Electricity distribution price control review. Initial Proposals - Allowed revenue - Cost Assessment (94/09)
- Electricity distribution price control review. Initial Proposals - Allowed revenues and Financial Issues (95/09)
- Cover note electricity distribution price control review Initial Proposals – Financial Model 2010-15
- Electricity distribution price control review - September Update to Initial Proposals
- Electricity distribution price control review - October update covering letter.
- Regulating energy networks for the future: RPI-X@20 Principles, Process and Issues (13/09)

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Appendix 4 - Core Network Investment Final Proposals – further details

1.1. The following section provides further details on Ofgem's final baseline for each of the core network investment building blocks and the key movements since Initial Proposals. Core network investment consists of:

- Demand connections,
- Diversions,
- General reinforcement,
- Fault levels,
- Asset replacement,
- Operational IT&T, and
- Legal and safety.

Demand connections

1.2. An overview of Ofgem's final baseline for demand connections is presented in Table 1 below. In total across the industry, forecast demand connection expenditure makes up 5.4 per cent of forecast core network investment. Table 1 only includes the shared element of expenditure that is funded through distribution use of system charges (DUoS).

Table 1 Final Baseline – Demand Connections

Demand Connections		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	56.1	25.8	20.8	19.5%	26.3	20.8	21.0%	0.5	0.0	1.5%
CN_East	89.3	66.1	62.3	5.7%	66.9	62.7	6.3%	0.8	0.4	0.6%
ENW	72.8	37.2	8.8	76.2%	24.4	21.0	14.0%	-12.8	12.1	-62.2%
CE_NEDL	11.0	20.0	11.0	45.1%	20.0	11.1	44.3%	0.0	0.1	-0.8%
CE_YEDL	9.8	28.7	14.2	50.4%	28.6	14.4	49.7%	0.0	0.2	-0.7%
WPD_S_Wales	6.0	5.4	5.4	0.4%	5.4	5.4	0.2%	0.0	0.0	-0.1%
WPD_S_West	10.7	7.8	7.7	1.4%	7.8	7.7	1.4%	0.0	0.0	0.0%
EDFE_LPN	4.3	10.5	10.5	0.0%	11.0	10.4	5.3%	0.5	-0.1	5.3%
EDFE_SPN	23.0	48.1	42.3	12.0%	48.8	42.3	13.2%	0.7	0.0	1.2%
EDFE_EPN	26.6	28.8	16.8	41.6%	29.1	20.1	31.0%	0.3	3.3	-10.6%
SP_Distribution	22.0	16.2	16.4	-1.4%	16.4	16.4	0.1%	0.2	0.0	1.5%
SP_Manweb	36.0	40.1	40.5	-0.9%	40.4	40.4	0.0%	0.3	-0.1	1.0%
SSE_Hydro	16.5	16.7	16.2	3.2%	16.7	16.2	3.2%	0.0	0.0	0.0%
SSE_Southern	24.7	58.8	56.9	3.2%	58.8	56.9	3.2%	0.0	0.0	0.0%
Total	**408.8**	**410.1**	**329.8**	**19.6%**	**400.6**	**345.7**	**13.7%**	**-9.5**	**16.0**	**-5.9%**

1.3. Ofgem's final baseline is a composite of an ex-ante allowance for larger low volume high cost (LVHC) connections and a baseline which will flex up or down for smaller high volume low cost (HVLC) connections, depending on the actual volume of connections made i.e. a volume driver.

High volume low cost connections – volume driver

1.4. The volume driver will be applied to small scale LV domestic and one-off commercial connections ('small scale'), all other LV connections with only LV work ('all other') and LV end connections involving HV work ('LV with HV'). Table 2 below shows our final baseline for these connections.

Table 2 - Final baseline - High volume low cost connections

HVLC	Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	15.8	8.2	48.0%	13.7	8.2	40.4%	-2.1	-0.1	-7.6%
CN_East	18.8	16.4	12.8%	16.8	16.7	0.4%	-2.0	0.3	-12.4%
ENW	27.6	2.6	90.7%	6.1	2.7	55.7%	-21.5	0.1	-35.0%
CE_NEDL	11.5	5.7	50.6%	10.8	5.8	45.9%	-0.7	0.1	-4.7%
CE_YEDL	20.2	8.6	57.2%	14.4	8.8	38.6%	-5.8	0.2	-18.6%
WPD_S_Wales	2.4	2.4	0.8%	2.4	2.4	0.5%	0.0	0.0	-0.3%
WPD_S_West	2.4	2.3	4.5%	2.4	2.3	4.5%	0.0	0.0	0.0%
EDFE_LPN	0.0	2.0	0.0%	2.4	1.9	19.0%	2.4	-0.1	19.0%
EDFE_SPN	0.0	6.7	0.0%	7.3	6.7	8.1%	7.3	0.0	8.1%
EDFE_EPN	0.0	4.5	0.0%	4.4	4.4	0.0%	4.4	-0.1	0.0%
SP_Distribution	5.1	5.3	-4.2%	5.3	5.3	0.3%	0.2	0.0	4.5%
SP_Manweb	3.9	4.1	-5.5%	4.1	4.1	0.3%	0.2	-0.1	5.9%
SSE_Hydro	6.2	6.1	2.3%	6.0	5.8	2.4%	-0.2	-0.2	0.1%
SSE_Southern	16.2	16.2	0.0%	15.9	15.9	0.0%	-0.3	-0.3	0.0%
Total	**130.0**	**91.1**	**30.0%**	**111.9**	**91.1**	**18.6%**	**-18.2**	**0.0**	**-11.4%**

1.5. The ex-ante baseline for the volume driver has been calculated as follows:

- the DNO's forecast volume of energised Metering Point Administration Numbers (MPAN) connections in each category is multiplied by Ofgem's view of the efficient gross unit costs for that DNO. This results in a gross expenditure for each category of connection, and

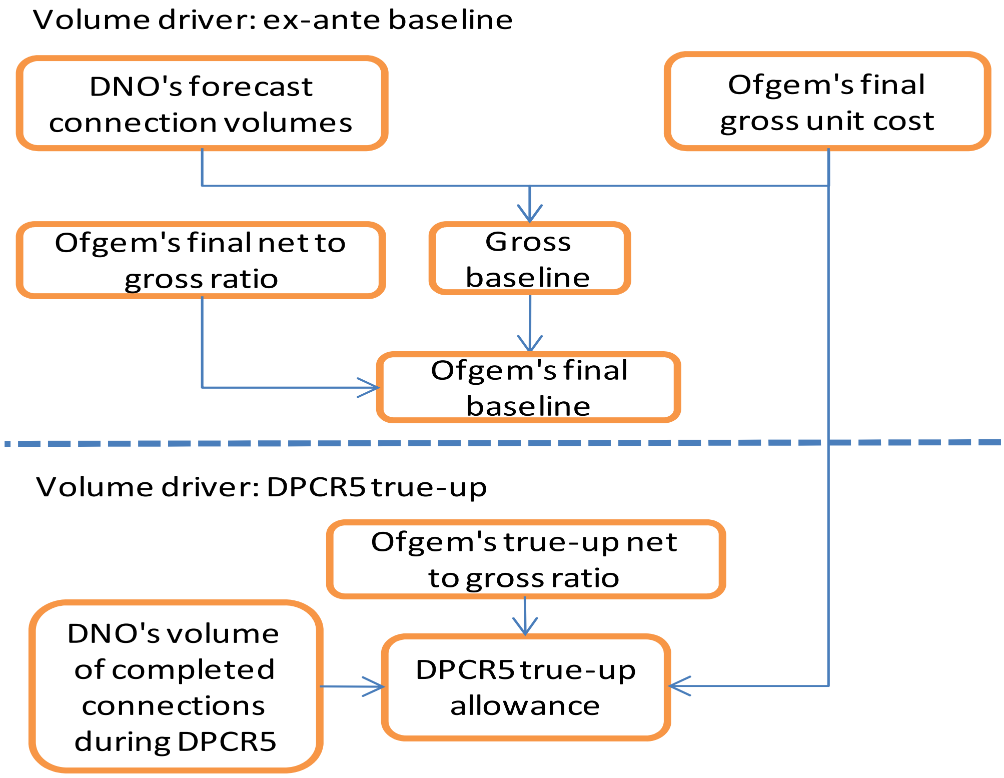
- the gross expenditure is multiplied by Ofgem's final view of the proportion of expenditure recovered through DUoS charges rather than upfront connection charges (the net to gross expenditure ratio.) This establishes the net expenditure for each DNO for each category of connection.

1.6. At the end of DPCR5 the cost baselines will be adjusted to reflect the actual volume of energised MPAN connections made in DPCR5.

1.7. We will also make an adjustment to reflect the actual proportion of gross costs that are recovered through up-front connection charges, thereby avoiding DNOs making windfall gains or losses through such changes.

1.8. The whole process is shown in Figure 1 below. Each factor in the calculation is explained in more detail below.

Figure 1 – Volume driver process



Connection volumes

The volumes for each DNO are shown in Table 3 below. Ofgem has accepted the DNOs' forecast demand energised MPAN connection volumes for setting the ex-ante baseline. The baseline will flex at the end of DPCR5 based on the volume of completed energised MPAN connections by each DNO in each category. Connection jobs that are started in DPCR5, but not energised until DPCR6 will also be taken into account, as will the number of energised MPANs occurring in DPCR5 with work undertaken in DPCR4.

1.9. A number of DNOs have stated that they only carry out sole-use connections for small scale LV domestic and one-off commercial connections and they have not therefore forecast any DUoS costs in these areas. In these cases the baseline is set to zero.

Gross connection unit costs

1.10. Due to the different nature of the connections being carried out under the volume driver, the connections are separated into three categories - 'small-scale', 'all other', and 'LV and HV', with different unit costs applying to each. The gross unit cost excludes indirect costs, traffic management costs and any margin earned by the DNO.

1.11. As LV end connections that do not involve HV work are relatively homogeneous within their respective category, we consider that the use of an industry median as the maximum unit cost is appropriate. We have therefore used the lower of the industry median and the DNO's forecast average gross unit cost for small scale[1] and all other connections.

1.12. LV with HV connections are usually more heterogeneous than connections involving solely LV work. We therefore consider that the use of a maximum unit cost set at the upper quartile of the industry's average unit costs is more appropriate for this type of connection. The gross unit cost allowed for LV with HV is the lower of either the industry unit cost upper quartile or the DNO's forecast average unit cost.

1.13. Following the September update revised connection FBPQs were received from the DNOs. These have been analysed and Ofgem's final view of gross unit costs are set out in the Table 4 below. These gross unit costs are set for the whole of DPCR5 and will not vary according to outturn data.

[1] The median for small scale connections was calculated excluding the gross unit costs for SP and SSE.

Table 3 – HVLC Volumes

Volume	DPCR5 Forecast			Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
	Small scale	All other	LV with HV	Small scale	All other	LV with HV	Small scale	All other	LV with HV	Small scale	All other	LV with HV
CN_West	838	1314	2745	838	1314	2745	838	1314	2745	0	0	0
CN_East	951	3608	7749	951	3608	7749	951	3608	7749	0	0	0
ENW	106	1824	585	486	903	452	106	1824	585	-381	921	133
CE_NEDL	313	4708	1510	313	4708	1510	313	4708	1510	0	0	0
CE_YEDL	648	7826	2645	648	7826	2645	648	7826	2645	0	0	0
WPD_S_Wales	0	627	3372	0	627	3372	0	627	3372	0	0	0
WPD_S_West	0	683	4900	0	683	4900	0	683	4900	0	0	0
EDFE_LPN	0	690	733	0	820	738	0	690	733	0	-130	-5
EDFE_SPN	0	4515	2347	0	4713	2357	0	4515	2347	0	-198	-10
EDFE_EPN	0	3006	1937	0	3279	1947	0	3006	1937	0	-273	-10
SP_Dist	1848	592	4605	1848	592	4605	1848	592	4605	0	0	0
SP_Manweb	1092	584	3785	1092	584	3785	1092	584	3785	0	0	0
SSE_Hydro	250	3957	3268	250	3957	3268	250	3957	3268	0	0	0
SSE_Southern	70	16703	15945	70	16703	15945	70	16703	15945	0	0	0
Total	**6115**	**50637**	**56125**	**6496**	**50317**	**56017**	**6115**	**50637**	**56125**	**-381**	**320**	**108**

Table 4 – HVLC Gross Unit Cost

Gross Unit Costs (£k 07/08)	DPCR5 Forecast			Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
	Small scale	All other	LV with HV	Small scale	All other	LV with HV	Small scale	All other	LV with HV	Small scale	All other	LV with HV
CN_West	6.8	1.6	10.4	6.7	1.6	5.1	6.8	1.6	5.1	0.0	0.0	0.0
CN_East	7.5	1.9	4.1	6.7	1.7	4.1	7.4	1.8	4.1	0.7	0.1	0.0
ENW	9.7	2.1	16.8	4.1	1.7	5.1	7.4	1.8	5.1	3.3	0.1	0.0
CE_NEDL	7.4	3.8	3.4	6.7	1.7	3.4	7.4	1.8	3.4	0.7	0.1	0.0
CE_YEDL	6.7	3.5	3.0	6.7	1.7	3.0	6.7	1.8	3.0	0.0	0.1	0.0
WPD_S_Wales	0.0	1.9	2.7	0.0	1.7	2.7	0.0	1.8	2.7	0.0	0.1	0.0
WPD_S_West	0.0	0.9	1.8	0.0	0.9	1.8	0.0	0.9	1.8	0.0	0.0	0.0
EDFE_LPN	0.0	2.4	6.1	0.0	1.7	5.1	0.0	1.8	5.1	0.0	0.1	0.0
EDFE_SPN	0.0	2.0	5.4	0.0	1.7	5.1	0.0	1.8	5.1	0.0	0.1	0.0
EDFE_EPN	0.0	1.7	3.6	0.0	1.7	3.6	0.0	1.7	3.6	0.0	0.0	0.0
SP_Dist	1.0	1.7	2.1	1.0	1.7	2.1	1.0	1.7	2.1	0.0	0.0	0.0
SP_Manweb	0.9	1.7	2.1	1.0	1.7	2.1	0.9	1.7	2.1	-0.1	0.0	0.0
SSE_Hydro	2.0	1.6	2.3	2.0	1.6	2.4	2.0	1.6	2.3	0.0	0.0	-0.1
SSE_Southern	0.0	1.5	1.8	0.0	1.5	1.8	0.0	1.5	1.8	0.0	0.0	0.0

Net to gross ratio

1.14. For each connection category a gross baseline is calculated by multiplying the forecast volume of connections by the gross unit cost. This is then adjusted by a net to gross ratio (i.e. the percentage of DNO DUoS funding to the gross cost of the connection) to give the baseline. The net to gross ratio has been set as the lower of the DNO's own net to gross ratio and the industry upper quartile. Table 5 shows Ofgem's final net to gross ratios.

1.15. Table 6 below shows Ofgem's final ex-ante baseline for the connection categories subject to the volume driver.

1.16. As previously stated, Ofgem will revise the baseline for HVLC connections at the end of DPCR5. This will include a revised net to gross ratio being calculated taking into account the DNOs' actual net to gross ratios. The net to gross true-up will be done for each category subject to the volume driver. The gross cost is the total direct expenditure by the DNO on making the connection(s) and excludes indirect costs, TMA costs and any margin earned by the DNO. The net expenditure is the expenditure by the DNO which is subject to DUoS funding and has not been contributed by the connecting customer. The baseline will be adjusted for the difference in the allowed costs implied by the application of the revised net to gross ratio. This is covered in more detail in the chapter on uncertainty.

1.17. As part of the true-up, LV with HV connections that have negligible HV work will be assessed and an adjustment will be applied if deemed appropriate.

Changes from Initial Proposals

1.18. The changes to the volume driver baseline from Initial Proposals (September update) are a result of new information supplied by ENW. This arose from their re-categorisation of LV end connections involving EHV work from HVLC connections to LVHC connections. This has impacted on the median unit cost for small scale and all other connections. ENW has also increased their forecast for all other and LV with HV connections.

1.19. EDFE's volume reductions for all other and LV with HV connections are a result of reclassifying these as adopted third party connections. All expenditure on adopted third party connections is included in the ex-ante allowance.

Table 5 – HVLC Net as a percentage of Gross (apportionment ratio)

Net to gross (%)	DPCR5 Forecast			Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
	Small scale	All other	LV with HV	Small scale	All other	LV with HV	Small scale	All other	LV with HV	Small scale	All other	LV with HV
CN_West	57%	20%	35%	52%	19%	35%	50%	20%	35%	-2%	0%	0%
CN_East	34%	18%	42%	34%	18%	42%	34%	18%	42%	0%	0%	0%
ENW	42%	33%	45%	52%	33%	44%	42%	33%	44%	-10%	0%	0%
CE_NEDL	9%	40%	67%	9%	40%	44%	9%	40%	44%	0%	0%	0%
CE_YEDL	10%	35%	54%	10%	35%	44%	10%	35%	44%	0%	0%	0%
WPD_S_Wales	0%	17%	24%	--	17%	24%	0%	17%	24%	-	0%	0%
WPD_S_West	0%	67%	22%	--	49%	22%	0%	49%	22%	-	0%	0%
EDFE_LPN	0%	22%	44%	--	25%	44%	0%	22%	44%	-	-3%	0%
EDFE_SPN	0%	26%	39%	--	26%	39%	0%	26%	39%	-	0%	0%
EDFE_EPN	0%	27%	43%	--	27%	43%	0%	27%	43%	-	0%	0%
SP_Dist	50%	50%	40%	50%	49%	40%	50%	49%	40%	0%	0%	0%
SP_Manweb	50%	50%	39%	50%	49%	39%	50%	49%	39%	0%	0%	0%
SSE_Hydro	40%	51%	34%	40%	49%	36%	40%	49%	34%	0%	0%	-2%
SSE_Southern	0%	44%	18%	--	44%	19%	0%	44%	18%	-	0%	-1%

Table 6 – HVLC Baseline

Baselines (£m 07/08)	DPCR5 Forecast			Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
	Small scale	All other	LV with HV	Small scale	All other	LV with HV	Small scale	All other	LV with HV	Small scale	All other	LV with HV
CN_West	3.2	0.4	10.1	2.9	0.4	4.9	2.8	0.4	4.9	-0.1	0.0	0.0
CN_East	2.4	1.2	13.2	2.2	1.1	13.1	2.4	1.2	13.2	0.2	0.1	0.0
ENW	0.4	1.2	4.4	1.0	0.5	1.0	0.3	1.1	1.3	-0.7	0.6	0.3
CE_NEDL	0.2	7.1	3.4	0.2	3.2	2.3	0.2	3.4	2.3	0.0	0.1	0.0
CE_YEDL	0.4	9.6	4.3	0.4	4.7	3.5	0.4	4.9	3.5	0.0	0.2	0.0
WPD_S_Wales	0.0	0.2	2.2	0.0	0.2	2.2	0.0	0.2	2.2	0.0	0.0	0.0
WPD_S_West	0.0	0.4	2.0	0.0	0.3	2.0	0.0	0.3	2.0	0.0	0.0	0.0
EDFE_LPN	0.0	0.4	2.0	0.0	0.4	1.6	0.0	0.3	1.6	0.0	-0.1	0.0
EDFE_SPN	0.0	2.4	4.9	0.0	2.1	4.6	0.0	2.1	4.6	0.0	0.0	0.0
EDFE_EPN	0.0	1.4	3.0	0.0	1.5	3.0	0.0	1.4	3.0	0.0	-0.1	0.0
SP_Dist	0.9	0.5	3.9	0.9	0.5	3.9	0.9	0.5	3.9	0.0	0.0	0.0
SP_Manweb	0.5	0.5	3.1	0.6	0.5	3.1	0.5	0.5	3.1	-0.1	0.0	0.0
SSE_Hydro	0.2	3.2	2.6	0.2	3.1	2.8	0.2	3.1	2.6	0.0	0.0	-0.2
SSE_Southern	0.0	10.8	5.1	0.0	10.8	5.4	0.0	10.8	5.1	0.0	0.0	-0.3
Total	**8.3**	**39.4**	**64.3**	**8.4**	**29.2**	**53.4**	**7.8**	**30.0**	**53.3**	**-0.6**	**0.8**	**-0.1**

Low volume high cost connections – Final baseline

1.20. The final baseline for LVHC connections has been set based on analysis of the DNOs' run-rate expenditure and committed large connection schemes. The final baselines are given in Table 7.

Table 7 - Low volume high cost connections – Final baseline

LVHC	Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	10.0	12.6	-25.4%	12.6	12.6	0.0%	2.6	0.1	25.4%
CN_East	47.3	45.9	2.9%	50.1	46.0	8.3%	2.8	0.1	5.3%
ENW	9.6	6.3	34.6%	18.3	18.3	0.1%	8.7	12.0	-34.5%
CE_NEDL	8.5	5.3	37.7%	9.2	5.3	42.5%	0.7	0.0	4.8%
CE_YEDL	8.5	5.6	34.1%	14.3	5.6	60.8%	5.8	0.0	26.7%
WPD_S_Wales	3.0	3.0	0.0%	3.0	3.0	0.0%	0.0	0.0	0.0%
WPD_S_West	5.4	5.4	0.0%	5.4	5.4	0.0%	0.0	0.0	0.0%
EDFE_LPN	10.5	8.5	19.0%	8.6	8.5	1.6%	-1.9	0.0	-17.5%
EDFE_SPN	48.1	35.6	26.0%	41.5	35.6	14.2%	-6.6	0.0	-11.8%
EDFE_EPN	28.8	12.3	57.2%	24.7	15.7	36.5%	-4.1	3.4	-20.7%
SP_Distribution	11.1	11.1	-0.2%	11.1	11.1	0.0%	0.0	0.0	0.2%
SP_Manweb	36.2	36.4	-0.4%	36.3	36.3	0.0%	0.1	-0.1	0.4%
SSE_Hydro	10.5	10.1	3.8%	10.7	10.3	3.7%	0.2	0.2	-0.1%
SSE_Southern	42.6	40.7	4.5%	42.9	41.0	4.4%	0.3	0.3	0.0%
Total	**280.1**	**238.7**	**14.8%**	**288.8**	**254.7**	**11.8%**	**8.7**	**16.0**	**-3.0%**

1.21. The final baselines for ENW and EDFE EPN have been revised upwards since the September update. We have also increased the baselines for CN East and SSE slightly.

1.22. The increase in ENW's baseline is a result of LV end connections involving EHV work being moved into the ex-ante allowance (from the volume driver). The revision to EDFE SPN's baseline is a result of analysis done on additional information provided by EDFE.

1.23. The changes to SSE's baselines are a result of forecast expenditure moving from LV end connections involving HV work into HV end connections involving only HV work. CN East's baseline revision is a minor increase in forecast expenditure for high voltage work.

1.24. Ofgem is proposing a revised package of incentives to facilitate further development of competition in connections, see chapter 12 of the Incentives and Obligations document for more details. As a result, DNOs may do fewer connections subject to the volume driver, but may adopt more connections done by a third party. An increase in adopted connections may lead to an increase in a DNO's expenditure for work covered by the ex-ante allowance. At the end of DPCR5, if a DNO considers that an increase in competition has led to their expenditure on connections subject to the ex-ante allowance being significantly above the baseline, they can provide evidence of this for Ofgem to consider as part of the volume driver true-up.

Diversions

1.25. An overview of Ofgem's final baseline for diversions is presented in Table 8 below. In total across the industry forecast diversion expenditure makes up 4.8 per cent of forecast core network investment.

Table 8 Final baseline – Diversions

Diversions		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	30.2	41.7	36.2	13.2%	42.3	34.5	18.5%	0.6	-1.7	5.2%
CN_East	42.4	54.8	47.4	13.4%	55.4	48.1	13.2%	0.6	0.7	-0.2%
ENW	11.1	23.1	12.2	47.3%	23.1	22.8	1.4%	0.0	10.6	-45.9%
CE_NEDL	15.9	19.7	15.2	22.7%	19.7	16.9	14.0%	0.0	1.7	-8.7%
CE_YEDL	28.2	44.5	31.3	29.7%	44.5	39.5	11.3%	0.0	8.2	-18.4%
WPD_S_Wales	14.2	14.0	14.0	0.0%	14.0	14.0	0.0%	0.0	0.0	0.0%
WPD_S_West	18.0	26.0	21.7	16.7%	26.0	25.2	3.1%	0.0	3.5	-13.6%
EDFE_LPN	5.7	4.2	3.7	11.9%	4.2	3.7	11.9%	0.0	0.0	0.0%
EDFE_SPN	21.8	27.5	23.7	13.8%	27.5	23.7	13.8%	0.0	0.0	0.0%
EDFE_EPN	36.8	40.5	39.8	1.7%	40.5	39.8	1.7%	0.0	0.0	0.0%
SP_Distribution	12.4	12.8	12.0	6.5%	12.8	11.7	8.6%	0.0	-0.3	2.1%
SP_Manweb	14.8	23.9	16.9	29.4%	23.9	19.7	17.8%	0.0	2.8	-11.6%
SSE_Hydro	2.2	4.0	2.2	45.6%	4.0	3.0	26.3%	0.0	0.8	-19.4%
SSE_Southern	4.9	19.0	11.7	38.7%	19.0	18.3	3.7%	0.0	6.7	-35.0%
Total	**258.5**	**355.7**	**287.8**	**19.1%**	**356.9**	**320.8**	**10.1%**	**1.2**	**33.0**	**-9.0%**

1.26. Ofgem's proposals for diversions expenditure have been derived from analysis of the following cost categories:

- conversion of wayleaves to easements, injurious affection & related costs,
- diversions due to wayleave terminations, and
- diversions for highways funded as detailed in the National Roads and Street Works Act (NRSWA).

Conversion of wayleaves to easements, injurious affection & related costs

1.27. DNOs have made the case for increased costs in this category with evidence of greater activity from predatory agents trying to secure payments to customers with distribution equipment on or close to their clients' land. We accept that activity from predatory agents has increased, but not to an extent that justifies all of the DNOs' proposed increases in network investment. At initial proposals we proposed to limit the increase in the baseline above DPCR4 levels to 50 per cent.

1.28. For Final Proposals we have carried out a more detailed analysis which recognises the different levels of agent activity across the licensed areas. We have analysed the trend in actual costs over the first four years of DPCR4 for each DNO and extrapolated this to determine our final baseline. The final baseline is limited to the DNO's forecast on the upside and the DNO's actual expenditure in DPCR4 on the downside (if less than the forecast).

Diversions due to wayleave terminations

1.29. In most cases we have maintained our position of limiting the baseline to the historical levels of spend in this category, except where a DNO has been able to provide evidence of large one-off projects with a high degree of certainty, and where the historical average does not include projects of that magnitude.

1.30. ENW has presented detailed evidence of high cost schemes during the DPCR4 period and contrasted this with costs for a specific scheme in DPCR5. We consider that sufficient evidence has been provided to demonstrate that this is an atypical scheme which is not accounted for by "run-rate" analysis, and we have adjusted their allowance accordingly.

1.31. SSE Southern has demonstrated low expenditure for diversions due to wayleave terminations historically. They have forecast lower levels of expenditure relative to the other DNOs given the size of their network. We consider that their forecast expenditure is acceptable.

1.32. We have also accepted a similar argument from ENW looking across conversion of wayleaves to easements and diversions due to wayleave terminations in total and considering the size of their network.

Diversions for highways funded as detailed in the National Roads and Street Works Act (NRSWA)

1.33. The DNOs have not submitted any compelling evidence for a deviation from historical levels of expenditure in this category. We have therefore maintained our position from Initial Proposals and have limited the baselines to historical levels of spend.

General reinforcement

1.34. An overview of Ofgem's final baseline for general reinforcement is presented in Table 9 below. In total across the industry forecast general reinforcement expenditure makes up 19.8 per cent of forecast core network investment.

Table 9 – General reinforcement – Final Baseline

Reinforcement		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	110.1	149.0	127.9	14.1%	149.9	137.4	8.4%	1.0	9.5	-5.8%
CN_East	111.9	187.3	158.8	15.3%	188.3	169.0	10.3%	1.0	10.3	-5.0%
ENW	67.8	93.6	87.1	6.9%	93.6	90.4	3.3%	0.0	3.3	-3.5%
CE_NEDL	61.2	56.4	56.3	0.0%	56.4	51.6	8.4%	0.0	-4.7	8.4%
CE_YEDL	49.3	62.7	62.7	0.0%	62.7	59.9	4.5%	0.0	-2.8	4.4%
WPD_S_Wales	22.8	19.9	18.3	8.0%	19.9	18.3	8.0%	0.0	0.0	0.0%
WPD_S_West	33.9	20.3	20.3	0.0%	20.3	20.3	0.0%	0.0	0.0	0.0%
EDFE_LPN	103.7	209.8	199.7	4.8%	209.8	209.8	0.0%	0.0	10.1	-4.8%
EDFE_SPN	69.7	107.3	81.9	23.7%	107.3	90.4	15.7%	0.0	8.6	-8.0%
EDFE_EPN	198.4	246.5	199.4	19.1%	246.5	229.1	7.1%	0.0	29.7	-12.1%
SP_Distribution	43.9	61.8	61.8	0.0%	61.8	61.8	0.0%	0.0	0.0	0.0%
SP_Manweb	37.6	80.0	77.8	2.8%	80.0	77.8	2.7%	0.0	0.0	0.0%
SSE_Hydro	22.7	19.5	18.4	5.6%	19.5	18.4	5.6%	0.0	0.0	0.0%
SSE_Southern	169.3	150.2	142.5	5.1%	150.2	142.5	5.1%	0.0	0.0	0.0%
Total	**1102.3**	**1464.2**	**1312.8**	**10.3%**	**1466.1**	**1376.8**	**6.1%**	**2.0**	**64.0**	**-4.2%**

1.35. The general reinforcement expenditure forecasts provided by the DNOs were split into two categories - EHV and 132kV reinforcement, and LV and HV reinforcement - and assessed separately.

EHV and 132kV general reinforcement

1.36. The final baselines for EHV and 132kV reinforcement are based on a volume adjustment to forecasts, with a unit cost adjustment also applied where appropriate.

1.37. A number of models were used to assess the forecasts received from the DNOs and to highlight areas of concern. These models assessed forecast capacity added relative to maximum demand and unit costs, using several different approaches. We held detailed discussions with each of the DNOs to explain our approach, discuss our concerns, and give the opportunity for the DNOs to provide feedback.

1.38. Our capacity model was used to inform our analysis of DNOs' volume forecasts. We also carried out a more detailed scheme-by-scheme review. Since Initial Proposals load indices have been received from each of the DNOs (see the Incentives and Obligations document, Chapter 19 for more details on outputs) accompanied by a narrative explaining any discrepancies between the load indices and their forecast schemes provided in the FBPQ. We have reconciled this information against the volume adjustments made in Initial Proposals and have made adjustments to the baselines where appropriate. This is reflected in the baselines in Table 10.

1.39. Our unit costs analysis involved the three models below:[2]

- a benchmark based on the ratio of forecast costs per MVA added to historical costs per MVA,
- the difference between the DNOs' unit costs and the industry median (based on MEAV comparison), and
- DNO unit costs compared to the industry median using forecast new assets.

1.40. Since Initial Proposals further information has been received from DNOs and we have finalised our unit cost adjustments and taken account of the DNOs' final forecast costs for high value projects. These adjustments are also reflected in Table 10.

Table 10 – EHV and 132kV general reinforcement – Final baseline

EHV and 132 kV		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	85.9	128.0	107.0	16.4%	128.9	116.5	9.6%	0.8	9.5	-6.8%
CN_East	84.6	160.8	132.3	17.8%	161.7	142.5	11.9%	0.9	10.2	-5.9%
ENW	50.1	69.3	62.9	9.3%	69.3	66.2	4.5%	0.0	3.3	-4.8%
CE_NEDL	42.9	37.1	37.1	0.1%	37.1	32.4	12.8%	0.0	-4.7	12.7%
CE_YEDL	27.8	40.3	40.3	0.0%	40.3	37.5	6.9%	0.0	-2.8	6.9%
WPD_S_Wales	15.6	12.6	11.0	12.7%	12.6	11.0	12.7%	0.0	0.0	0.0%
WPD_S_West	27.7	13.4	13.4	0.0%	13.4	13.4	0.0%	0.0	0.0	0.0%
EDFE_LPN	81.9	179.3	169.2	5.6%	179.3	179.3	0.0%	0.0	10.1	-5.6%
EDFE_SPN	52.5	88.7	63.3	28.7%	88.7	71.8	19.0%	0.0	8.6	-9.7%
EDFE_EPN	171.8	209.7	162.6	22.5%	209.7	192.3	8.3%	0.0	29.7	-14.2%
SP_Distribution	20.8	38.3	38.3	0.0%	38.3	38.3	0.0%	0.0	0.0	0.0%
SP_Manweb	29.0	71.0	68.8	3.1%	71.0	68.8	3.1%	0.0	0.0	0.0%
SSE_Hydro	15.7	13.5	12.4	8.1%	13.5	12.4	8.1%	0.0	0.0	0.0%
SSE_Southern	113.6	93.8	92.4	1.5%	93.8	92.4	1.5%	0.0	0.0	0.0%
Total	**819.9**	**1155.9**	**1010.9**	**12.5%**	**1157.6**	**1074.8**	**7.2%**	**1.7**	**63.9**	**-5.4%**

1.41. The changes to the baselines for CE YEDL and NEDL, and EDFE SPN reflect volume adjustments based on our load index reconciliation. The revised baselines for ENW and EDFE EPN reflect the DNOs' final forecast costs for high value projects.

1.42. The 7.5 per cent unit cost adjustment to CN was removed after we received further information showing actual project costs supplied in the schemes forecast being substantially lower than the values in the unit cost survey supplied to Ofgem. The volume adjustment to CN East's baseline was also reduced as part of the load index reconciliation.

LV and HV General Reinforcement

1.43. Ofgem's baseline for LV and HV general reinforcement has not changed from Initial Proposals. The final baselines are set out in Table 11 below.

[2] For industry average or median calculations EDFE LPN has been removed.

Table 11 – LV and HV general reinforcement – Final baseline

LV and HV		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	24.2	20.9	20.9	0.0%	21.0	20.9	0.7%	0.1	0.0	0.7%
CN_East	27.2	26.5	26.5	0.0%	26.6	26.5	0.4%	0.1	0.0	0.4%
ENW	17.7	24.2	24.2	0.0%	24.2	24.2	0.0%	0.0	0.0	0.0%
CE_NEDL	18.4	19.2	19.2	0.0%	19.2	19.2	0.0%	0.0	0.0	0.0%
CE_YEDL	21.5	22.4	22.4	0.0%	22.4	22.4	0.0%	0.0	0.0	0.0%
WPD_S_Wales	7.2	7.3	7.3	0.0%	7.3	7.3	0.0%	0.0	0.0	0.0%
WPD_S_West	6.2	6.9	6.9	0.0%	6.9	6.9	0.0%	0.0	0.0	0.0%
EDFE_LPN	21.8	30.5	30.5	0.0%	30.5	30.5	0.0%	0.0	0.0	0.0%
EDFE_SPN	17.2	18.6	18.6	0.0%	18.6	18.6	0.0%	0.0	0.0	0.0%
EDFE_EPN	26.6	36.8	36.8	0.0%	36.8	36.8	0.0%	0.0	0.0	0.0%
SP_Distribution	23.1	23.5	23.5	0.0%	23.5	23.5	0.0%	0.0	0.0	0.0%
SP_Manweb	8.6	9.0	9.0	0.0%	9.0	9.0	0.0%	0.0	0.0	0.0%
SSE_Hydro	7.0	6.0	6.0	0.0%	6.0	6.0	0.0%	0.0	0.0	0.0%
SSE_Southern	55.7	56.4	50.1	11.2%	56.4	50.1	11.2%	0.0	0.0	0.0%
Total	**282.3**	**308.2**	**301.9**	**2.0%**	**308.5**	**301.9**	**2.1%**	**0.3**	**0.0**	**0.1%**

1.44. The LV and HV general reinforcement baseline was set using run rate analysis. The result was sense-checked with the benchmarking process, as follows:

- a scaling factor is calculated based on the DNO's ratio of LV and HV MEAV[3] to the industry median LV and HV MEAV, and
- the scaling factor is then multiplied by the industry median expenditure to produce a benchmark expenditure level for each DNO.

1.45. Weighting the DNO's expenditure by its relative LV and HV MEAV (compared to the industry median) takes into account the size of the DNO.

Fault Levels

1.46. An overview of Ofgem's final baseline for fault level expenditure is presented in Table 12 below. In total across the industry forecast expenditure on fault levels makes up 1.8 per cent of forecast network investment.

[3] The MEAV was calculated using the DNO's volumes and our view on direct new build unit costs.

Table 12 Final Baseline – Fault Levels

Fault Levels		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.0	25.7	19.6	23.6%	25.8	25.4	1.5%	0.2	5.8	-22.1%
CN_East	16.9	9.4	9.4	0.0%	9.4	9.4	0.3%	0.0	0.0	0.3%
ENW	4.8	2.5	2.5	0.0%	2.5	2.5	0.0%	0.0	0.0	0.0%
CE_NEDL	1.0	8.9	8.9	0.0%	8.9	8.9	0.0%	0.0	0.0	0.0%
CE_YEDL	2.7	14.1	14.1	0.0%	14.1	14.1	0.0%	0.0	0.0	0.0%
WPD_S_Wales	0.0	0.7	0.7	0.0%	0.7	0.7	0.0%	0.0	0.0	0.0%
WPD_S_West	0.0	2.9	2.9	0.0%	2.9	2.9	0.0%	0.0	0.0	0.0%
EDFE_LPN	4.1	1.3	1.3	0.0%	1.3	1.3	0.0%	0.0	0.0	0.0%
EDFE_SPN	0.6	3.0	3.0	0.0%	3.0	3.0	0.0%	0.0	0.0	0.0%
EDFE_EPN	2.8	28.3	25.1	11.4%	28.3	25.1	11.4%	0.0	0.0	0.0%
SP_Distribution	1.1	17.3	17.3	0.0%	17.3	17.3	0.0%	0.0	0.0	0.0%
SP_Manweb	5.9	14.7	14.7	0.0%	14.7	14.7	0.0%	0.0	0.0	0.0%
SSE_Hydro	0.1	2.0	2.0	0.0%	2.0	2.0	0.0%	0.0	0.0	0.0%
SSE_Southern	1.2	4.3	4.3	0.0%	4.3	4.3	0.0%	0.0	0.0	0.0%
Total	**41.2**	**135.1**	**125.8**	**6.9%**	**135.3**	**131.7**	**2.7%**	**0.2**	**5.9**	**-4.2%**

1.47. In assessing the appropriate allowances for fault level expenditure we have sought confirmation from the DNOs that the fault level issues being addressed are already present on the network. We have gathered information regarding the current fault level and the fault level rating of the plant affected (whether the issue relates to making or breaking fault level current). As the DNOs have indicated that they do not forecast fault levels as part of their business planning we have not allowed forecasts of fault levels to contribute to allowances.

1.48. At Initial Proposals we proposed reductions to fault level expenditure for EDFE EPN and CN West. CN West has since presented evidence of current fault level issues in central Birmingham and the number and certainty of the distributed generation connections proposed. They have also provided a breakdown of costs showing the proportion that can be recovered from the connecting parties under the connection charging methodology. On this basis we have reduced their forecast by £0.4m in our allowances.

Asset replacement

1.49. An overview of Ofgem's final baseline for asset replacement expenditure is presented in Table 13 below. In total across the industry forecast expenditure on asset replacement makes up 52.4 per cent of forecast network investment.

Table 13 Final Baseline – Asset Replacement

Asset Replacement		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	271.0	376.7	327.7	13.0%	378.6	342.0	9.7%	1.9	14.3	-3.3%
CN_East	192.3	285.3	236.7	17.0%	286.5	249.1	13.0%	1.2	12.4	-4.0%
ENW	234.0	349.9	284.1	18.8%	349.9	319.9	8.6%	0.0	35.8	-10.2%
CE_NEDL	154.9	279.2	236.6	15.3%	279.2	263.8	5.5%	0.0	27.2	-9.8%
CE_YEDL	217.5	330.2	271.7	17.7%	330.2	302.1	8.5%	0.0	30.4	-9.2%
WPD_S_Wales	84.5	133.7	129.7	3.0%	131.8	156.7	-18.9%	-1.9	26.9	-21.9%
WPD_S_West	157.9	211.7	204.0	3.7%	208.3	242.6	-16.5%	-3.4	38.6	-20.1%
EDFE_LPN	254.8	275.2	210.1	23.6%	275.2	243.7	11.4%	0.0	33.6	-12.2%
EDFE_SPN	213.5	286.5	246.9	13.8%	286.5	245.4	14.4%	0.0	-1.5	0.5%
EDFE_EPN	267.8	257.1	208.3	19.0%	257.1	215.4	16.2%	0.0	7.1	-2.8%
SP_Distribution	222.7	254.8	218.0	14.4%	254.8	223.4	12.3%	0.0	5.4	-2.1%
SP_Manweb	233.8	333.0	290.8	12.7%	333.0	299.5	10.1%	0.0	8.7	-2.6%
SSE_Hydro	118.1	151.2	142.2	5.9%	151.2	145.5	3.8%	0.0	3.2	-2.1%
SSE_Southern	293.3	369.3	326.1	11.7%	369.3	340.4	7.8%	0.0	14.3	-3.9%
Total	**2916.0**	**3893.9**	**3332.8**	**14.4%**	**3891.6**	**3589.4**	**7.8%**	**-2.3**	**256.6**	**-6.6%**

1.50. As outlined in Initial Proposals, asset replacement expenditure has been split into four areas of expenditure based on the different approaches used to review expenditure and set the baseline. These are:

- modelled volumes,
- overhead pole lines,
- non modelled volumes, and
- other substation costs

1.51. Table 14 shows the reduction made to each DNO split by the four categories above. For both modelled volumes and overhead pole lines the reduction is split between volume reductions and unit cost reductions. The following sections address each of the four areas in more detail including key movements since Initial Proposals.

Table 14 Asset Replacement Reductions

DNO £m (07/08 prices)	Modelled Volume			Pole Lines		Substation costs	Non Modelled	Total
	Volume	Unit Cost	Unit Cost Adjustment	Volume	Unit Cost			
CN_West	17.7	9.2	0.0	0.0	1.9	6.5	1.2	36.6
CN_East	20.2	9.7	0.0	0.0	5.5	0.0	1.9	37.4
ENW	7.3	13.9	-3.7	0.0	12.4	0.0	0.1	30.0
CE_NEDL	0.0	12.5	0.0	0.0	1.6	0.0	1.3	15.4
CE_YEDL	0.0	21.0	0.0	0.0	6.3	0.0	0.9	28.1
WPD_S_Wales	0.0	2.3	-27.5	0.0	0.2	0.1	0.0	-24.9
WPD_S_West	0.0	5.7	-40.0	0.0	0.0	0.0	0.0	-34.3
EDFE_LPN	1.9	19.8	0.0	0.0	0.0	2.8	6.9	31.5
EDFE_SPN	0.0	24.0	0.0	0.0	10.2	0.0	6.9	41.1
EDFE_EPN	4.8	15.6	0.0	0.0	14.8	0.0	6.6	41.7
SP_Distribution	19.3	8.8	0.0	0.0	1.3	2.3	-0.3	31.3
SP_Manweb	14.7	14.5	0.0	0.0	1.1	3.2	0.0	33.5
SSE_Hydro	0.0	2.1	0.0	0.0	0.2	3.5	0.0	5.7
SSE_Southern	1.0	12.4	0.0	0.0	10.0	5.5	0.0	28.9
Total	**86.8**	**171.7**	**-71.2**	**0.0**	**65.4**	**23.9**	**25.5**	**302.2**

1.52. For modelled volumes, a reduction has been applied to forecast volumes of work where DNOs have been unable to fully justify the number of assets they are forecasting to replace. A unit cost reduction has been applied where the DNO's forecast unit cost is higher than Ofgem benchmark. The unit cost reduction is due to efficiency and does not impact on the volume of work. A unit cost adjustment is also applied to DNOs where their unit costs are lower than (outperforming) the upper quartile.

1.53. For overhead pole lines we have made no volume reductions. Reductions are only made where the DNOs' forecast unit costs are higher than the Ofgem benchmark.

1.54. Both substation costs and non modelled costs were subject to higher level benchmarking and therefore there is only a total reduction (i.e. no split between volume and unit cost reductions).

Modelled Volumes

1.55. Modelled volumes refer to all assets that have been subject to age based replacement modelling, and where the baseline can be set directly from a volume multiplied by a benchmarked unit cost. 65.1 per cent of asset replacement expenditure is modelled in this way.

1.56. Following the results of our initial modelling using an age based survivor model (described in the May Document), the DNOs were given the opportunity to provide justification and further supporting evidence for their proposed volumes through bilateral meetings and supplementary questions.

1.57. The type of supporting evidence varied depending on the type of asset. Examples of supporting evidence which caused Ofgem to accept the DNOs' forecast volumes where these were higher than the outcome of our modelling were:

- individual named schemes with supporting narratives highlighting the business case for replacement of high value assets,
- asset specific condition information (e.g. DGA results, inspection reports, photographic evidence of poor external condition, etc.),
- spreadsheets showing the calculation of health indices including the underlying input data,
- documentation of poor or worsening performance,
- evidence of known type faults, failure modes and safety issues, and
- reports from specialist external consultants.

1.58. In setting the baseline volumes for Initial Proposals, where a DNO was able to provide compelling evidence such as that outlined above, the DNO’s forecast volume was accepted. Where information was poor or lacking, the DNO’s volume was reduced, with the output of the age based modelling setting the lower limit.

1.59. Overall the information provided was of good quality in most cases, highlighting the vast improvements that DNOs have made in asset management during DPCR4. Table 15 shows the volume reduction for each DNO and the changes since Initial Proposals.

Table 15 Modelled Volume Reductions

Modelled Volumes - Volume Reduction									
DNO £m (07/08 prices)	Initial Proposals			Final Proposals			Change From IP to FP		
	DPCR5 Forecast	Volume Reduction	% reduction	DPCR5 Forecast	Volume Reduction	% reduction	DPCR5 forecast	Baseline	Reduction
CN_West	272.5	22.7	8.3%	280.4	17.7	6.3%	8.0	-5.0	-2.0%
CN_East	212.1	20.0	9.4%	210.8	20.2	9.6%	-1.3	0.1	0.1%
ENW	238.9	16.7	7.0%	234.3	7.3	3.1%	-4.6	-9.4	-3.9%
CE_NEDL	197.8	4.0	2.0%	173.9	0.0	0.0%	-23.9	-4.0	-2.0%
CE_YEDL	247.7	5.6	2.3%	221.3	0.0	0.0%	-26.4	-5.6	-2.3%
WPD_S_Wales	71.9	0.0	0.0%	70.0	0.0	0.0%	-1.9	0.0	0.0%
WPD_S_West	119.9	0.0	0.0%	116.4	0.0	0.0%	-3.5	0.0	0.0%
EDFE_LPN	185.0	3.1	1.7%	166.8	1.9	1.1%	-18.2	-1.2	-0.5%
EDFE_SPN	195.5	0.0	0.0%	194.1	0.0	0.0%	-1.4	0.0	0.0%
EDFE_EPN	155.6	4.8	3.1%	170.6	4.8	2.8%	15.0	-0.1	-0.3%
SP_Distribution	155.2	25.5	16.4%	156.2	19.3	12.4%	1.0	-6.2	-4.1%
SP_Manweb	235.9	20.1	8.5%	233.4	14.7	6.3%	-2.5	-5.4	-2.2%
SSE_Hydro	53.8	0.0	0.0%	53.3	0.0	0.0%	-0.4	0.0	0.0%
SSE_Southern	252.4	2.6	1.0%	252.4	1.0	0.4%	0.0	-1.6	-0.6%
Total	**2594.0**	**125.2**	**4.8%**	**2533.8**	**86.8**	**3.4%**	**-60.2**	**-38.3**	**-1.4%**

1.60. Since Initial Proposals we have:

- updated our age based modelling to take account of the current (2008-09) age profile and actual volumes of work undertaken in the 2008-09 period,

- taken account of further information provided by the DNOs in support of their forecast volumes, and

- required the DNOs to provide a detailed reconciliation between volumes, unit costs and total expenditure.

1.61. The detailed reconciliations provided by the DNOs have resulted in around £60m of expenditure being transferred from modelled volumes into non modelled expenditure. There has not been a material change to the forecasts at the total level. Non modelled expenditure is discussed in more detail below.

1.62. Updating our age based model has not had a material impact on our modelled volumes. The only DNOs that are impacted by changes are those whose forecast volumes have not been accepted. As a result, their volume baselines have been set using the model output. In the majority of cases, the updated model resulted in small movements in both directions.

1.63. The main driver for the increased baseline for modelled volume is the further information and clarification provided by the DNOs in support of their forecast volumes. We have made no changes to our approach or methodology for assessing replacement volumes since Initial Proposals.

Unit Cost benchmarking for modelled volumes

1.64. To determine the baseline proposals for the modelled asset replacement, we have multiplied the efficient forecast volumes as determined above by a benchmarked unit cost.

1.65. Determining a benchmarked cost for asset replacement activities is not straightforward as there are many factors (in addition to efficiency) influencing the actual unit costs, both at the individual project level and at an industry level. These factors include:

- the scope of works, including size and rating of equipment,

- assumptions about site specific costs (civil requirements, ground type, indoor / outdoor), and

- assumptions in allocating project costs to individual component assets, including civil costs.

1.66. In determining the benchmarked unit costs we have taken account of a number of different sources of information including:

- the unit cost schedules provided by the DNOs in their FBPQs,
- further supporting information provided by DNOs including detailed costing and information on the scope of works,
- DNOs' derived unit costs (i.e. forecast expenditure divided by volume),
- information contained in scheme papers provided by DNOs,
- an independent view provided by our consultants PB Power, and
- a high level review of the derived unit costs at an industry level for DPCR4.

1.67. For Initial Proposals we took as our starting point for benchmarked unit costs the industry median corrected for known variances such as scope differences. We came to this view after careful review and due consideration to ensure that the median values reflected the scope of works being proposed by the majority of DNOs. The median value was based upon the unit cost schedules provided in the FBPQs, corrected for any differences identified though the calculation of the implied unit cost.

1.68. The lower of the industry-wide median unit cost and the DNO's own unit cost was then applied to all DNOs except where specific issues were identified by a DNO and accepted by Ofgem. These included the additional costs associated with operating within central London (EDFE LPN) and unique switchgear associated with the specific network topology for SP Manweb.

1.69. Table 16 shows the unit cost reduction for each DNO and the changes since Initial Proposals.

Table 16 Unit Cost Reduction Modelled Volume

Modelled Volumes - Unit Cost Reduction									
DNO £m (07/08 prices)	Initial Proposals			Final Proposals			Change From IP to FP		
	DPCR5 Forecast	Unit Cost Reduction	% reduction	DPCR5 Forecast	Unit Cost Reduction	% reduction	DPCR5 forecast	Baseline	Reduction
CN_West	272.5	11.8	4.3%	280.4	9.2	3.3%	8.0	-2.6	-1.1%
CN_East	212.1	19.8	9.3%	210.8	9.7	4.6%	-1.3	-10.1	-4.7%
ENW	238.9	18.4	7.7%	234.3	13.9	6.0%	-4.6	-4.4	-1.7%
CE_NEDL	197.8	31.6	16.0%	173.9	12.5	7.2%	-23.9	-19.0	-8.8%
CE_YEDL	247.7	44.4	17.9%	221.3	21.0	9.5%	-26.4	-23.4	-8.4%
WPD_S_Wales	71.9	3.8	5.3%	70.0	2.3	3.3%	-1.9	-1.5	-2.0%
WPD_S_West	119.9	7.8	6.5%	116.4	5.7	4.9%	-3.5	-2.0	-1.5%
EDFE_LPN	185.0	58.1	31.4%	166.8	19.8	11.9%	-18.2	-38.3	-19.5%
EDFE_SPN	195.5	23.3	11.9%	194.1	24.0	12.4%	-1.4	0.7	0.5%
EDFE_EPN	155.6	19.1	12.3%	170.6	15.6	9.1%	15.0	-3.5	-3.1%
SP_Distribution	155.2	4.8	3.1%	156.2	8.8	5.6%	1.0	4.0	2.5%
SP_Manweb	235.9	12.3	5.2%	233.4	14.5	6.2%	-2.5	2.2	1.0%
SSE_Hydro	53.8	1.3	2.4%	53.3	2.1	3.9%	-0.4	0.8	1.5%
SSE_Southern	252.4	20.7	8.2%	252.4	12.4	4.9%	0.0	-8.2	-3.3%
Total	**2594.0**	**277.1**	**10.7%**	**2533.8**	**171.7**	**6.8%**	**-60.2**	**-105.4**	**-3.9%**

1.70. A significant area of contention between us and the DNOs since Initial Proposals has been around the unit cost analysis for benchmarking asset replacement expenditure. The key issues raised by the DNOs were:

- the use of the lower of the adjusted median and the DNOs' own unit costs for asset replacement,
- the scope of works covered in each separately defined unit cost, and
- the extent of costs that should be excluded from unit costs analysis (non-modelled costs).

1.71. Since Initial Proposals we have reviewed in detail the issues that have been raised by the DNOs, requested further detailed data in some cases, and made amendments to our analysis based on the information provided. We believe our approach is robust given that we have:

- used the adjusted median not the upper quartile in recognition of the data imperfections,
- removed costs from the analysis where appropriate (non-modelled costs),
- made adjustments where there are boundary issues or trade offs between separately defined unit costs, and
- made adjustments for those DNOs significantly below (or significantly out performing) the median.

1.72. The main driver for the changes since IP has been the allocation of additional costs to non-modelled expenditure (which reduces the DNO forecast unit cost) as a result of the detailed reconciliation provided by the DNOs. There have also been a small number of adjustments made to take account of boundary issues. We are now using the unit costs directly derived from the DNOs' detailed reconciliation, rather than applying adjustments to the unit cost schedules provided by the DNOs.

1.73. Table 17 below shows the benchmark unit costs (based on the industry median) that have been used in setting the final baseline as well as the changes since Initial Proposals. The benchmark is only applied where the DNOs' forecast unit costs are higher than the benchmark. Where a DNO's forecast unit costs are lower than the benchmark their own unit costs are used to set Ofgem's baseline. Also shown is the independent view of our technical advisers (PB Power).

Table 17 Unit Costs for Modelled Asset Replacement

Asset	Units	IP	FP	PB Power	IP - FP (%)
Services					
OHL - Service Replacement	#	0.40	0.40	0.70	0.0%
OHL - Cut-out Replacement	#	0.15	0.20	-	32.8%
UG - Service Replacement	#	1.00	1.01	0.93	1.3%
UG - Cut-out Replacement	#	0.16	0.16	-	4.7%
Cables					
LV Main (UG Plastic)	km	77.9	98.4	80.7	26.4%
6.6/11kV UG Cable	km	89.5	82.9	82.3	-7.4%
20kV UG Cable	km	89.5	82.9	167.9	-7.4%
HV Sub Cable	km	300.0	300.0	210.1	0.0%
33kV UG Cable	km	264.9	256.8	253.4	-3.1%
66kV UG Cable	km	300.0	300.0	455.4	0.0%
EHV Sub Cable	km	300.0	300.0	608.4	0.0%
132kV UG Cable	km	1091.9	1047.1	1031.0	-4.1%
132 kV Sub Cable	km	2167.0	1966.7	1216.8	-9.2%
Transformers					
6.6/11 kV Transformer (PM)	#	3.4	2.9	4.2	-15.1%
6.6/11 kV Transformer (GM)	#	14.0	13.2	13.3	-5.5%
20 kV Transformer (PM)	#	3.7	0.5	6.5	-86.4%
20 kV Transformer (GM)	#	12.3	14.4	16.4	17.1%
33 kV Transformer (PM)	#	5.8	7.9	5.8	36.0%
33 kV Transformer (GM)	#	399.8	377.9	519.6	-5.5%
66 kV Transformer	#	455.5	440.2	616.7	-3.4%
132 kV Transformer	#	1077.9	1018.7	1200.7	-5.5%
Switchgear					
LV Pillar (ID)	#	6.4	6.4	7.5	0.0%
LV Pillar (OD)	#	6.8	6.8	6.6	0.0%
LV Board (WM)	#	8.4	8.4	10.6	0.0%
6.6/11 kV CB (PM)	#	8.4	8.2	11.0	-2.6%
6.6/11 kV CB (GM) - Primary	#	58.7	51.8	31.8	-11.7%
6.6/11 kV CB (GM) - Secondary	#	11.7	11.2	10.4	-3.9%
6.6/11 kV Sw itch (PM)	#	4.1	2.5	7.5	-39.0%
6.6/11 kV Sw itch (GM)	#	8.2	7.0	8.9	-14.3%
6.6/11 kV RMU	#	12.0	13.0	13.8	8.0%
20 kV CB (PM)	#	8.4	8.0	13.8	-5.0%
20 kV CB (GM)	#	12.2	12.0	64.4	-1.4%
20 kV RMU	#	12.9	14.5	16.4	12.5%
33 KV CB (ID)	#	110.0	109.0	85.5	-0.9%
33 kV CB (OD)	#	83.7	50.1	60.2	-40.1%
33 kV RMU	#	259.5	259.5	31.8	0.0%
66 KV CB (ID & OD)	#	313.4	316.3	382.1	0.9%
132 kV CB (ID & OD)	#	692.8	679.6	694.0	-1.9%
Overhead Lines - Reconductoring					
33kV Tow er Line	km	39.1	39.0	-	-0.3%
66kV Tow er Line	km	68.4	53.4	-	-21.9%
132 kV Pole Line	km	52.9	52.9	-	0.0%
132 kV Tow er Line	km	65.0	82.1	-	26.3%
Support - Replacement					
33kV Tow er	#	35.8	39.2	0.0	9.4%
66kV Tow er	#	68.4	65.0	88.6	-5.0%
132 kV Pole	#	2.6	2.6	7.7	0.0%
132 kV Tow er	#	108.9	108.9	108.9	0.0%
Refurbishment and Fittings					
132 kV Tow er Refurbishment	#	5.0	N/A	0.0	N/A
132 kV Fittings	#	4.5	4.5	5.1	0.0%

1.74. A number of DNOs have questioned the approach of applying the lower of our benchmarked unit cost and their own unit costs to each asset category. The two main issues raised were that:

- by not allowing DNOs to 'net off' assets with higher unit costs against assets with lower unit costs, Ofgem is effectively 'cherry picking' and creating unachievable levels of efficiencies, and
- where a DNO has forecast unit costs lower than the benchmark across the majority of asset categories, their baseline is tougher than other DNOs and they therefore have a reduced ability to outperform relative to other DNOs.

1.75. We do not accept the argument in the first point that the unit costs used in setting our baseline are unachievable. There is no case for allowing efficiencies in unrelated activities to be used to off-set inefficient costs in other areas. Given that for each asset category our unit cost is based on the median, by definition 50 per cent of DNOs are already outperforming the benchmark for that activity.

1.76. On the second issue we have accepted the point, and therefore for Final Proposals we have made a unit cost adjustment for those DNOs whose forecasts are based on unit costs lower than the upper quartile unit cost.

1.77. The calculation of this adjustment is shown in Table 18 below. The calculation includes all areas of asset replacement (modelled, non modelled, overhead pole lines and substations). The table shows what the impact on the DNOs' baseline would be if the benchmark upper quartile unit cost was used.

Table 18 Unit cost adjustment

DNO £m (07/08 prices)	DPCR5 Forecast	Baseline			Difference %		
		Median	Quartile	Difference	Forecast	Average	Adjustment
CN_West	378.6	342.0	343	-1.1	0%	-2%	0.0
CN_East	286.5	249.1	235	14.0	5%	3%	0.0
ENW	349.9	316.2	314	1.8	1%	-1%	-3.7
CE_NEDL	279.2	263.8	246	17.7	6%	5%	0.0
CE_YEDL	330.2	302.1	292	10.1	3%	2%	0.0
WPD_S_Wales	131.8	129.1	155	-25.5	-19%	-21%	-27.5
WPD_S_West	208.3	202.6	239	-36.8	-18%	-19%	-40.0
EDFE_LPN	275.2	243.7	227	17.2	6%	5%	0.0
EDFE_SPN	286.5	245.4	235	10.0	3%	2%	0.0
EDFE_EPN	257.1	215.4	208	7.7	3%	1%	0.0
SP_Distribution	254.8	223.4	213	10.3	4%	3%	0.0
SP_Manweb	333.0	299.5	286	13.7	4%	3%	0.0
SSE_Hydro	151.2	145.5	144	1.8	1%	0%	0.0
SSE_Southern	369.3	340.4	322	18.5	5%	3%	0.0
Total	3891.6	3518.2	3458.9	59.3	2%	0%	-71.2

1.78. Applying upper quartile unit costs directly, regardless of the DNOs' own forecast unit costs would result on average in a new baseline which is 2 per cent tougher than our baseline based on the "lower of" median approach. Four DNOs

(WPD S West, WPD S Wales, ENW and CN West) have baselines tougher than the average.

1.79. For WPD and ENW we have provided an additional allowance equivalent to the difference between their baseline and the industry average. This results in unit cost adjustments of £27.5 million for WPD S Wales, £40.0 million for WPD S West and £3.7 million for ENW.

1.80. We have not provided the adjustment for CN West as the outperformance is more than offset by higher unit costs for CN East.

Overhead Pole Lines

1.81. In response to the May document a number of DNOs raised concerns that the age based model was not amenable to determining asset lives and replacement volumes for LV, HV and EHV overhead pole lines (conductor and supports). This is because of the variety of activities included in the scope of works for overhead lines and the difference in the scope of work across DNOs, which makes a single volume comparison difficult. In particular, a number of DNOs indicated that due to their cyclic approach to refurbishment, the accuracy of their age profiles were no longer suitable for age based modelling.

1.82. For Initial Proposals, overhead pole lines were excluded from the age based modelling. We assessed the forecast volumes using detailed bottom up analysis, taking into account the overall asset management strategy for OHLs, the DNOs' supporting narrative, historical volumes, and performance information such as fault rates.

1.83. In all cases we accepted the volumes for refurbishment, full rebuilding and replacement of decayed poles (D Poles) as they were appropriately justified.[4]

1.84. In determining baseline expenditure, activity volumes were multiplied by a benchmarked unit cost for comparable activities. The activities (split by voltage) considered comparable and therefore subject to the benchmarking were:

- conductor replacement with minimal pole replacement (Aerial Bundled Conductor (ABC) assumed for LV),
- conductor replacement (not full rebuild),
- full rebuild,
- undergrounding, and
- standalone programmes of D pole replacement.

[4] This was dependent on DNOs committing to maintaining as a minimum current fault rates and possibly levels of storm resilience through the network output measures.

1.85. The benchmarked unit costs were developed by Ofgem, based on detailed information provided by a number of DNOs. Given that different levels of detail were provided by the DNOs due to different interpretation of the sub categories listed above, it was not possible to directly calculate the median in all cases. Therefore, judgement was used in calculating a benchmark, which in general reflected the industry median.

1.86. Where activities were not comparable, the DNOs' forecast costs were accepted where adequate justification was provided. Table 19 below shows the final baseline and the changes since Initial Proposals.

Table 19 Overhead Pole Lines

Overhead Pole Lines -Reduction									
DNO £m (07/08 prices)	Initial Proposals			Final Proposals			Change From IP to FP		
	DPCR5 Forecast	Unit Cost Reduction	% reduction	DPCR5 Forecast	Unit Cost Reduction	% reduction	DPCR5 forecast	Baseline	Reduction
CN_West	64.5	5.9	9.1%	64.3	1.9	3.0%	-0.3	-4.0	-6.1%
CN_East	60.8	7.7	12.7%	58.7	5.5	9.5%	-2.1	-2.2	-3.3%
ENW	73.1	24.3	33.2%	68.6	12.4	18.0%	-4.5	-11.9	-15.2%
CE_NEDL	57.9	5.2	9.0%	57.5	1.6	2.8%	-0.4	-3.6	-6.2%
CE_YEDL	56.6	7.1	12.5%	56.3	6.3	11.2%	-0.3	-0.8	-1.3%
WPD_S_Wales	54.1	0.0	0.0%	54.0	0.2	0.4%	0.0	0.2	0.4%
WPD_S_West	78.9	0.0	0.0%	78.9	0.0	0.0%	0.0	0.0	0.0%
EDFE_LPN	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-
EDFE_SPN	41.7	11.1	26.6%	42.0	10.2	24.3%	0.3	-0.9	-2.3%
EDFE_EPN	42.4	15.5	36.6%	42.5	14.8	34.7%	0.1	-0.8	-1.9%
SP_Distribution	78.2	3.5	4.5%	78.1	1.3	1.6%	-0.1	-2.2	-2.8%
SP_Manweb	67.6	3.8	5.6%	67.7	1.1	1.7%	0.1	-2.6	-3.9%
SSE_Hydro	83.9	4.2	5.0%	84.4	0.2	0.2%	0.4	-4.1	-4.8%
SSE_Southern	95.9	15.0	15.6%	95.9	10.0	10.4%	0.0	-5.0	-5.2%
Total	**855.6**	**103.3**	**12.1%**	**848.8**	**65.4**	**7.7%**	**-6.9**	**-37.9**	**-4.4%**

1.87. For Initial Proposals we had to make a number of assumptions in categorising the DNOs' forecasts into the above categories. Since Initial Proposals DNOs have been given the opportunity to update the categorisation of their forecasts.

1.88. This has resulted in an update to Ofgem's unit cost benchmarks and therefore our baselines. The unit cost used in setting the final baselines and changes since Initial Proposals are shown in Table 20 below. The benchmark is only applied where the DNOs forecast unit costs are higher than the benchmark. Where a DNO's forecast unit costs are lower than the benchmark their own unit costs are used to set Ofgem's baseline.

Table 20 Overhead pole line unit costs

Unit Costs for Overhead Pole Lines - Direct Costs 07/08 Prices (£k)								
Activity	Units	Total IP	Final Proposals				IP - FP (%)
			Poles/km	per Pole	Conductor Only	Total	
Reconductoring and Rebuilding							
LV Main - ABC reconductoring	km	11.6	0	0.6	16.4	16.4	29.2%
LV Main - ABC Full Rebuild	km	14.1	20	0.6	16.4	28.4	50.4%
LV Undergrounding (excluding services)	km	0.0	-	-	-	67.2	n/a
HV - Reconductoring	km	11.6	0	0.9	23.6	23.6	50.9%
HV - Rebuild	km	18.4	11	0.9	23.6	33.5	45.2%
33kV Pole line - Reconductoring	km	23.8	0	1.8	33.5	33.5	29.1%
33kV Pole Line - Rebuild	km	43.7	10	1.8	23.8	42.0	-4.0%
66kV Pole line - Rebuild	km	n/a	-	-	-	140.0	n/a
Condtion Based Pole Replacement							
LV	#	1.4	-	1.4	-	1.4	0.0%
HV	#	1.5	-	1.8	-	1.8	15.8%
EHV	#	2.0	-	2.2	-	2.2	10.0%

1.89. For reconductoring and full rebuild the unit cost is built up from a fixed cost for conductor replacement and an incremental cost for pole replacement based on the number of poles replaced per km on average. For each DNO the unit cost is calculated based on their own forecast of poles per km to be replaced.

1.90. Also shown is the unit cost for a standalone programme for condition based pole replacement e.g. replacement of D Poles.

Non-Modelled Expenditure

1.91. When we conducted a full reconciliation of the DNOs' forecasts – by comparing their forecast at a bottom up level (unit cost multiplied by forecast volume) and their total expenditure forecast – we found that a number of DNOs had total forecast expenditure higher than that calculated from the bottom up calculation.

1.92. This mismatch occurs when:

- assets that are being replaced are not identified in the asset register, hence they are not included in the asset volumes provided by the DNOs for modelling (e.g. transformer tap changers),
- there is a timing difference between expenditure and the volumes being realised for large projects that span price control periods,
- the forecast includes costs for projects over and above what is included in the normal scope of work (e.g. deep tunnels for installing underground cables), and
- a project delivers consequential volumes that are not included in the forecast volumes, but the costs are included.

1.93. Non modelled costs outlined above account for 7.5 per cent of asset replacement expenditure.

1.94. Non modelled costs have been subject to a top down review and unit cost benchmarking where possible. We have reduced the forecasts where inadequate justification has been provided, or transferred expenditure back into modelled volumes where appropriate. Table 21 shows the baseline for non modelled costs and the changes from Initial Proposals.

Table 21 Non Modelled Cost

Non Modelled Costs - Reduction									
DNO £m (07/08 prices)	Initial Proposals			Final Proposals			Change From IP to FP		
	DPCR5 Forecast	Reduction	% reduction	DPCR5 Forecast	Reduction	% reduction	DPCR5 forecast	Baseline	Reduction
CN_West	15.1	3.0	19.9%	7.9	1.2	15.3%	-7.2	-1.8	-4.6%
CN_East	5.0	1.0	20.0%	7.5	1.9	25.7%	2.5	0.9	5.7%
ENW	23.6	6.5	27.5%	32.8	0.1	0.2%	9.3	-6.4	-27.3%
CE_NEDL	9.5	1.9	20.0%	33.8	1.3	3.9%	24.3	-0.6	-16.1%
CE_YEDL	7.3	1.5	20.0%	34.0	0.9	2.6%	26.7	-0.6	-17.4%
WPD_S_Wales	0.8	0.0	0.0%	0.8	0.0	0.0%	0.0	0.0	0.0%
WPD_S_West	2.6	0.0	0.0%	2.7	0.0	0.0%	0.1	0.0	0.0%
EDFE_LPN	69.5	2.2	3.1%	88.0	6.9	7.9%	18.5	4.7	4.7%
EDFE_SPN	38.5	5.3	13.7%	39.6	6.9	17.5%	1.1	1.7	3.8%
EDFE_EPN	47.0	9.3	19.8%	31.9	6.6	20.7%	-15.1	-2.7	0.9%
SP_Distribution	2.3	0.5	20.0%	2.3	-0.3	-14.1%	0.0	-0.8	-34.1%
SP_Manweb	7.2	1.4	20.0%	10.7	0.0	-0.2%	3.5	-1.5	-20.2%
SSE_Hydro	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-
SSE_Southern	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-
Total	**228.3**	**32.5**	**14.2%**	**292.1**	**25.5**	**8.7%**	**63.8**	**-7.0**	**-5.5%**

1.95. For Initial Proposals, where a DNO had provided inadequate justification for these costs, or the costs contained volumes that should have been captured by the model, we made a 20 per cent reduction to these costs.

1.96. Since Initial Proposals, DNOs have provided a more detailed reconciliation of their forecasts and in some cases updated the categorisation of their asset replacement expenditure and volumes. The DNOs have also provided more detailed descriptions and justification for their remaining non modelled expenditure. In cases where we have not accepted their justification, we have made a reduction to the forecasts of the DNOs involved.

Substation Expenditure

1.97. Substation expenditure was separately identified by the DNOs in their forecast and covers general expenditure on substation assets. It mostly consists of spend on substation civils such as buildings and other infrastructure.

1.98. We have assessed these costs by developing a benchmark that takes account of the industry average cost per substation at each voltage level. Due to the high level nature of the analysis and the wide range of different costs included by each DNO, there are some uncertainties with the benchmarked expenditure. Therefore, in setting the baseline we have applied equal weightings to the historical level of expenditure, forecast expenditure and the results of the high level benchmarking. Table 22 below shows the final baseline and changes from IP.

Table 22 Substation Costs

Substation Costs - Reduction									
DNO £m (07/08 prices)	Initial Proposals			Final Proposals			Change From IP to FP		
	DPCR5 Forecast	Reduction	% reduction	DPCR5 Forecast	Reduction	% reduction	DPCR5 forecast	Baseline	Reduction
CN_West	24.6	5.5	22.4%	24.6	6.5	26.5%	0.0	1.0	4.0%
CN_East	7.5	0.0	0.0%	7.5	0.0	0.0%	0.0	0.0	0.0%
ENW	14.4	0.0	0.0%	14.4	0.0	0.0%	0.0	0.0	0.0%
CE_NEDL	14.0	0.0	0.0%	14.0	0.0	0.0%	0.0	0.0	0.0%
CE_YEDL	18.6	0.0	0.0%	18.6	0.0	0.0%	0.0	0.0	0.0%
WPD_S_Wales	7.0	0.2	2.6%	7.0	0.1	1.2%	0.0	-0.1	-1.3%
WPD_S_West	10.3	0.0	0.0%	10.3	0.0	0.0%	0.0	0.0	0.0%
EDFE_LPN	20.7	1.7	8.2%	20.7	2.8	13.6%	0.0	1.1	5.5%
EDFE_SPN	10.8	0.0	0.0%	10.8	0.0	0.0%	0.0	0.0	0.0%
EDFE_EPN	12.1	0.0	0.0%	12.1	0.0	0.0%	0.0	0.0	0.0%
SP_Distribution	19.1	2.5	13.2%	19.1	2.3	11.9%	0.0	-0.2	-1.2%
SP_Manweb	22.3	4.6	20.5%	22.3	3.2	14.3%	0.0	-1.4	-6.2%
SSE_Hydro	13.5	3.5	25.7%	13.5	3.5	26.0%	0.0	0.0	0.3%
SSE_Southern	21.0	5.0	23.7%	21.0	5.5	26.3%	0.0	0.5	2.6%
Total	**215.9**	**22.9**	**10.6%**	**215.9**	**23.9**	**11.1%**	**0.0**	**1.0**	**0.5%**

1.99. There have been only minor changes to our baselines for substation expenditure since Initial Proposals. The change is as a result of minor updates to DPCR4 expenditure which has impacted on the benchmark.

Operational IT and telecoms

1.100. An overview of our Final Proposals for operational IT and telecoms (excluding expenditure due to BT21CN) is presented in Table 23 below together with movements since Initial Proposals. In total across the industry forecast operational IT and telecoms expenditure makes up 1.6 per cent of forecast network investment.

Table 23 Final baseline – Operational IT and Telecoms

Operational IT&T		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	4.6	2.1	2.1	0.0%	2.1	2.1	0.0%	0.0	0.0	0.0%
CN_East	2.9	10.2	10.2	0.0%	10.2	10.2	0.0%	0.0	0.0	0.0%
ENW	13.5	16.4	15.0	8.5%	16.4	15.0	8.5%	0.0	0.0	0.0%
CE_NEDL	0.4	0.4	0.4	0.0%	5.1	5.1	0.0%	4.6	4.6	0.0%
CE_YEDL	3.7	0.4	0.4	0.0%	9.4	9.4	0.0%	9.0	9.0	0.0%
WPD_S_Wales	9.9	8.8	7.0	20.7%	8.8	7.0	20.7%	0.0	0.0	0.0%
WPD_S_West	11.1	12.9	11.1	14.1%	12.9	11.1	14.1%	0.0	0.0	0.0%
EDFE_LPN	9.0	3.2	3.2	0.0%	3.2	3.2	0.0%	0.0	0.0	0.0%
EDFE_SPN	8.7	2.1	2.1	0.0%	2.1	2.1	0.0%	0.0	0.0	0.0%
EDFE_EPN	3.8	4.4	4.4	0.0%	4.4	4.4	0.0%	0.0	0.0	0.0%
SP_Distribution	7.7	5.2	4.3	18.5%	5.2	4.3	18.5%	0.0	0.0	0.0%
SP_Manweb	5.8	11.3	10.6	6.6%	11.3	10.6	6.6%	0.0	0.0	0.0%
SSE_Hydro	1.9	9.8	8.6	12.2%	9.8	8.6	12.2%	0.0	0.0	0.0%
SSE_Southern	1.7	18.9	16.5	12.6%	18.9	16.5	12.6%	0.0	0.0	0.0%
Total	**84.7**	**106.2**	**95.8**	**9.7%**	**119.8**	**109.4**	**8.6%**	**13.6**	**13.6**	**-1.1%**

1.101. Expenditure on operational IT and telecoms has been subject to an expert review by PB Power focussing on three areas of investment:

- substation remote terminal units, marshalling kiosks, receivers,
- communications for switching and monitoring, and
- control centre hardware and software.

1.102. In each of these areas our review has assessed both the scope of works proposed and the unit costs implied and has provided an indication of companies that are outliers with respect to the industry average. We have used this information in applying specific reductions where indicated by the review, and a reduction of 25 per cent on areas where insufficient detail and/or justification was provided in response to further questions. Since IP we have made no change to our baselines other than for CE where they have submitted an increase to their forecast accompanied by detailed justification.

Legal and safety

1.103. An overview of our Final Proposals for legal and safety expenditure is presented in Table 24 below together with movements since Initial Proposals. In total across the industry forecast legal and safety expenditure makes up 5.6 per cent of forecast network investment. Ofgem's proposed baseline in no way compromises any DNO's ability to comply with all health and safety requirements and regulations.

Table 24 Final baseline – Legal and Safety

Legal and Safety		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	12.6	17.6	14.7	16.3%	17.4	17.3	0.6%	-0.2	2.5	-15.7%
CN_East	8.1	17.4	14.0	19.9%	17.1	17.1	0.0%	-0.3	3.1	-19.9%
ENW	16.0	61.2	36.7	40.2%	61.2	45.9	25.1%	0.0	9.2	-15.0%
CE_NEDL	8.3	8.7	8.0	7.9%	8.7	8.7	0.0%	0.0	0.7	-7.9%
CE_YEDL	19.3	23.0	16.9	26.4%	23.0	20.7	9.9%	0.0	3.8	-16.5%
WPD_S_Wales	1.2	13.9	7.5	45.9%	13.9	12.8	7.7%	0.0	5.3	-38.1%
WPD_S_West	6.7	27.9	19.6	30.0%	27.9	25.2	9.8%	0.0	5.6	-20.1%
EDFE_LPN	4.6	3.9	2.9	25.7%	3.9	3.9	0.0%	0.0	1.0	-25.7%
EDFE_SPN	12.8	66.7	43.0	35.5%	66.7	62.2	6.8%	0.0	19.2	-28.7%
EDFE_EPN	28.6	71.1	40.0	43.7%	71.1	54.1	23.9%	0.0	14.1	-19.9%
SP_Distribution	14.2	15.5	13.5	12.6%	15.5	14.2	8.5%	0.0	0.6	-4.2%
SP_Manweb	29.8	43.7	31.4	28.1%	43.7	36.9	15.6%	0.0	5.5	-12.5%
SSE_Hydro	3.5	11.0	9.4	14.4%	11.0	11.0	0.0%	0.0	1.6	-14.4%
SSE_Southern	4.7	33.0	8.0	75.8%	33.0	33.0	0.0%	0.0	25.0	-75.8%
Total	**170.3**	**414.6**	**265.6**	**35.9%**	**414.1**	**362.9**	**12.4%**	**-0.5**	**97.3**	**-23.6%**

1.104. Ofgem's proposals for Legal and Safety expenditure have been derived from analysis of the following cost categories:

- safety clearance costs associated with the Electricity Safety Quality and Continuity of Supply Regulations (ESQCR),
- expenditure relating to maintaining continuity of supply through vegetation management (also required by the ESQCR),
- site security, and
- other legal and safety costs (asbestos clearance, safety equipment, and other areas as specified by the DNOs)

ESQCR safety clearance costs

1.105. In assessing ESQCR safety clearance costs we have carried out similar benchmarking to that developed for the ESQCR reopener in DPCR4. However we have benchmarked them relative to the mean rather than to the less challenging lower quartile of performance.

1.106. We consider this to be appropriate given the increased information regarding these costs in DPCR4 and therefore increased confidence in the robustness of forecasts.

1.107. In line with the approach taken for the ESQCR reopener we have only benchmarked the unit costs of addressing sites with clearance issues as the required volume of works has been subject to detailed survey and agreement with the Health and Safety Executive.

1.108. In response to Initial Proposals a number of DNOs raised concerns about the impact on unit costs of rebuilding and undergrounding a large number of short lengths (e.g. single spans) compared to a lower number of longer lengths (e.g. 10 spans).

1.109. To address these concerns for Final Proposals we collected data at a greater level of detail (through a supplementary question) to account for the type of work being undertaken. The DNOs were required to disaggregate work by replacement of a single service (LV), one, two or three spans of overhead line and four or more spans of overhead line. We gathered this information for:

- undergrounding of LV and HV overhead lines with vertical clearance issues,
- rebuilding of LV and HV overhead lines with vertical clearance issues,
- undergrounding of LV and HV overhead lines with horizontal clearance issues, and
- reconductoring of LV and HV overhead lines with horizontal clearance issues.

1.110. Analysis of the information did not reveal a clear distinction between unit costs of replacing a span of overhead line when the total length of replacement is one, two or three spans. We combined these categories in our benchmarking.

1.111. For those DNOs replacing four or more spans of LV overhead line with covered conductor our analysis showed the unit costs were broadly equivalent to the benchmarked unit cost derived for asset replacement, assuming 20 spans per km.

1.112. Table 25 show the impact of our updated benchmarking on ESQCR safety clearance costs.

Table 25 Final Baseline ESQCR safety clearance costs

ESQCR		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	2.5	5.4	4.2	21.8%	5.4	5.3	1.9%	0.0	1.1	-19.9%
CN_East	2.3	3.0	3.1	-3.3%	3.0	3.0	0.0%	0.0	-0.1	3.3%
ENW	11.7	49.2	24.6	50.0%	49.2	33.8	31.3%	0.0	9.2	-18.7%
CE_NEDL	1.5	3.1	2.4	22.2%	3.1	3.1	0.0%	0.0	0.7	-22.2%
CE_YEDL	2.8	10.6	6.2	41.9%	10.6	8.3	21.4%	0.0	2.2	-20.5%
WPD_S_Wales	1.2	7.7	4.9	36.3%	7.7	6.6	14.0%	0.0	1.7	-22.4%
WPD_S_West	6.7	24.1	15.8	34.7%	24.1	21.4	11.4%	0.0	5.6	-23.3%
EDFE_LPN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_SPN	6.1	57.0	36.7	35.5%	57.0	55.8	2.1%	0.0	19.0	-33.4%
EDFE_EPN	9.5	53.4	29.0	45.7%	53.4	43.1	19.2%	0.0	14.1	-26.5%
SP_Distribution	7.6	9.0	7.0	21.8%	9.0	7.7	14.6%	0.0	0.6	-7.2%
SP_Manweb	21.7	34.9	26.0	25.4%	34.9	28.1	19.5%	0.0	2.1	-5.9%
SSE_Hydro	2.9	8.5	6.9	18.6%	8.5	8.5	0.0%	0.0	1.6	-18.6%
SSE_Southern	1.6	3.0	3.0	0.0%	3.0	3.0	0.0%	0.0	0.0	0.0%
Total	**78.0**	**268.9**	**169.8**	**36.8%**	**268.9**	**227.7**	**15.3%**	**0.0**	**57.8**	**-21.5%**

Expenditure due to the proximity of trees

1.113. Only two DNO groups have forecast expenditure relating to maintaining continuity of supply due to the proximity of trees where investment such as installing ABC or undergrounding is more economic than tree cutting. CN West and CN East have forecast a total of £4.8 million, and SSE Southern has forecast £25 million.

1.114. For Initial Proposals we excluded SSE's forecast from our baseline as they did not provide a cost benefit analysis for the expenditure. Since Initial Proposals SSE have presented the cost benefit analysis and supporting evidence for the installation of ABC to reduce tree cutting costs. We have now included their full forecast in our baseline.

Site Security

1.115. At Initial Proposals we carried out a benchmarking exercise of site security costs based on the number of EHV and 132 kV substations. We set the baseline in line with the outcome of this benchmarking.

1.116. In response to Initial Proposals, several DNOs questioned the robustness of the benchmarking carried out for site security costs. They considered that increasing but regionally dependent levels of criminal activity mean that the benchmarking carried out was inappropriate. We believe that the DNOs are best placed to assess trends in the level of such activity in their areas and that their forecasts are more robust than the simple benchmarking carried out for initial proposals. We have therefore accepted the DNOs' forecasts with no reductions.

Other Areas

1.117. For the other areas of legal and safety costs we have carried out a high level review of the DNO forecasts and do not propose any reductions. There has been no change since Initial Proposals.

Appendix 5 - Ex ante non core network investment Final Proposals – further details

1.1. The following section provides further details on Ofgem's final baseline for each of the non-core network investment building blocks that are funded ex-ante as part of DPCR5, and consists of:

- BT 21st Century Network (BT21CN)
- Major system risks - flooding,
- QoS (interruptions incentive scheme (IIS)),
- QoS (non IIS) - excluding worst served customers,
- Environmental expenditure, and
- Technical losses.

1.2. We also set out the key changes since Initial Proposals (as updated in September) and provide a brief discussion of the approach and key issues.

BT21CN

1.3. An overview of Ofgem's final baseline for BT21CN is presented in Table 1 below. In total across the industry forecast expenditure for BT21CN makes up 1.7 per cent of forecast network investment.

Table 1 Final baseline - BT21CN

BT21CN		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.0	8.9	6.7	25.4%	8.9	6.7	25.4%	0.0	0.0	0.0%
CN_East	0.0	23.4	16.3	30.1%	23.4	16.3	30.1%	0.0	0.0	0.0%
ENW	5.0	19.6	19.6	0.0%	19.6	19.6	0.0%	0.0	0.0	0.0%
CE_NEDL	0.0	2.3	2.3	0.0%	2.3	2.3	0.0%	0.0	0.0	0.0%
CE_YEDL	0.0	3.2	3.2	0.0%	3.2	3.2	0.0%	0.0	0.0	0.0%
WPD_S_Wales	0.1	2.6	2.6	0.0%	2.6	2.6	0.0%	0.0	0.0	0.0%
WPD_S_West	0.1	0.8	0.8	0.0%	0.8	0.8	0.0%	0.0	0.0	0.0%
EDFE_LPN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_SPN	0.0	23.5	16.4	30.2%	22.4	16.4	26.8%	-1.1	0.0	-3.4%
EDFE_EPN	0.8	42.2	26.8	36.5%	34.3	26.8	21.9%	-7.9	0.0	-14.6%
SP_Distribution	0.0	5.5	1.5	72.7%	1.5	1.5	0.0%	-4.0	0.0	-72.7%
SP_Manweb	3.5	27.8	10.5	62.2%	10.5	10.5	0.0%	-17.3	0.0	-62.2%
SSE_Hydro	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
SSE_Southern	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	**9.5**	**159.7**	**106.7**	**33.2%**	**129.4**	**106.7**	**17.6%**	**-30.3**	**0.0**	**-15.6%**

1.4. BT21CN refers to a series of proposed changes to BT's communications network which may impact on circuits leased by the DNOs for protection signalling and substation communication. To mitigate the risk of these changes the DNOs have proposed a wide range of potential solutions and associated expenditure forecasts.

1.5. In Initial Proposals (September Update) we presented background information on the current proposed timescales for BT21CN and the discussions between the DNOs and BT. We presented details of the latest DNO forecasts and explained that, in contrast to the other DNOs, SP had reduced their forecast in light of BT's latest position. Based on our understanding of BT's position and the approach adopted by SP our view was that there was scope to defer some of the forecast expenditure into DPCR6 where this represented the lowest lifetime cost for customers. We presented our proposed methodology:

- to provide an ex ante allowance,
- with the exception of SP, to defer all DNO forecasts by 1 year,
- to subject programmes greater than £15m to the high value project mechanism, and
- to update our calculation at Final Proposals based on detailed unit cost analysis.

1.6. Since Initial Proposals we have received further detailed information relating to the DNOs' BT21CN plans. Analysis of this information has revealed huge discrepancies in the solutions being proposed and the associated unit costs. Factors which affect these include:

- nature of distribution circuit (cable/overhead line/mixed),
- terrain between circuit ends,
- network topology,
- currently available communication circuits and distance to them (both DNO owned and third party),
- utilisation of available circuits (including radio/microwave bandwidth availability),
- length between circuit ends,
- availability and cost of conversion equipment,
- in-house knowledge/expertise, and
- other benefits that can be delivered through proposed solution.

1.7. Due to the complex nature of the investment decision, detailed unit cost analysis has shown widely varying, incomparable results. Benchmarking of this information would not be appropriate.

1.8. We therefore propose to continue with the methodology proposed in the September update letter. Our final baseline consists of an ex ante allowance including deferral of all DNO forecasts by one year (with the exception of SP). To provide a level of protection for customers we will include programmes of greater than £15m in the high value project mechanism, with associated agreed outputs.

Major system risks expenditure – flooding

1.9. An overview of Ofgem's final baseline for flooding is presented in Table 2 below. In total across the industry forecast expenditure for flooding makes up 1.5 per cent of forecast network investment.

Table 2 Final baseline - Major system risks expenditure – flooding

Flooding		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.3	2.4	2.4	0.0%	2.4	2.4	0.0%	0.0	0.0	0.0%
CN_East	0.1	8.4	8.4	0.0%	8.4	8.4	0.0%	0.0	0.0	0.0%
ENW	3.2	7.4	7.4	0.0%	7.4	7.4	0.0%	0.0	0.0	0.0%
CE_NEDL	0.6	2.5	1.8	30.6%	3.2	1.8	45.0%	0.7	0.0	14.4%
CE_YEDL	2.1	7.8	29.0	-273.4%	29.6	29.0	2.0%	21.8	0.0	275.3%
WPD_S_Wales	1.0	10.8	10.8	0.0%	10.8	10.8	-0.4%	0.0	0.0	-0.4%
WPD_S_West	1.0	6.8	6.3	6.9%	6.8	6.3	6.9%	0.0	0.0	0.0%
EDFE_LPN	0.5	4.1	4.1	0.0%	4.1	4.1	0.0%	0.0	0.0	0.0%
EDFE_SPN	0.5	6.0	6.0	0.0%	6.0	6.0	0.0%	0.0	0.0	0.0%
EDFE_EPN	0.6	7.5	7.5	0.0%	7.5	7.5	0.0%	0.0	0.0	0.0%
SP_Distribution	0.3	3.2	2.7	16.7%	3.2	2.7	16.7%	0.0	0.0	0.0%
SP_Manweb	0.2	11.4	11.4	0.0%	11.4	11.4	0.0%	0.0	0.0	0.0%
SSE_Hydro	0.0	2.7	0.2	90.8%	0.0	0.2	0.0%	-2.7	0.0	-90.8%
SSE_Southern	0.0	9.0	0.2	97.8%	9.0	14.0	-55.5%	0.0	13.8	-153.2%
Total	**10.4**	**89.9**	**98.1**	**-9.1%**	**109.6**	**111.9**	**-2.1%**	**19.7**	**13.8**	**7.1%**

1.10. Our proposals for the expenditure on flood protection have been derived from analysis of the following cost categories:

- forecast expenditure on super grid, bulk supply points and primary substations,
- forecast expenditure on site surveys, and
- forecast expenditure for non site specific costs, such as portable flood defences.

1.11. We have analysed the forecast change in risk exposure to flooding. We have calculated the change in risk by combining the likelihood of flooding (1/100, 1/200 and 1/1000) with the number of customers at risk at each site. We have also factored in "critical customers" (such as hospitals) by applying a higher weighting to them, where they have been identified.

1.12. Given the range of sites and factors involved we have used the upper quartile £ per risk reduction as the benchmark, which is 20 per cent higher than the average. Where the DNO's forecast is above the upper quartile £ per risk reduced, we have scaled back their forecast by the percentage they are above the upper quartile £ per risk reduced. Where DNOs are below the upper quartile £ per risk reduced we have given them their own forecast.

1.13. Following the September Update letter one DNO that had previously been unable to provide sufficiently detailed forecast numbers to be included in the analysis provided Ofgem with sufficient detail. Their forecast was compared with the industry upper quartile £ per risk reduction benchmark and their allowance determined accordingly. We did not amend the allowances for those DNOs whose forecasts had not changed from those used to derive the September Update letter allowances.

1.14. SSE Hydro was not in a position to provide a sufficiently detailed forecast to be included in the above analysis and we have provided them with no ex ante allowance for flood protection expenditure although we have included an ex-ante allowance for site surveys which is shown in Table 2.

1.15. As SSE Hydro were unable to provide sufficiently detailed information in time for an assessment of their forecast flood prevention expenditure to be taken into account for inclusion in DPCR5 allowances, we are including a logging up mechanism for them. There will be a cap of £2.3 million on allowed expenditure relating to the protection of substations against flooding during DPCR5. Where SSE Hydro's expenditure is above the upper quartile £ per risk reduced we will reduce the expenditure that is allowed into the logging up mechanism by the percentage they are above the upper quartile risk reduced.

1.16. For site surveys we have allowed DNOs the minimum of their own forecast and the DPCR4 average expenditure on site surveys by those DNOs undertaking site surveys in DPCR4.

1.17. For non-site specific flood related expenditure we have allowed DNOs the minimum of their own forecast and DPCR4 average non-site specific expenditure for those DNOs that made expenditure in this area.

Quality of supply Interruption and Incentive Scheme (QoS (IIS))

1.18. An overview of Ofgem's final baseline for QoS (IIS) is presented in Table 3 below. In total across the industry forecast expenditure for QoS (IIS) makes up 1.3 per cent of forecast network investment.

Table 3 Final baseline QoS (IIS)

QoS (IIS)		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	31.9	7.4	0.0	100.0%	7.4	0.0	100.0%	0.0	0.0	0.0%
CN_East	27.7	2.2	0.0	100.0%	2.2	0.0	100.0%	0.0	0.0	0.0%
ENW	6.6	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CE_NEDL	15.3	2.4	0.0	100.0%	2.4	0.0	100.0%	0.0	0.0	0.0%
CE_YEDL	18.1	7.6	0.0	100.0%	7.6	0.0	100.0%	0.0	0.0	0.0%
WPD_S_Wales	17.0	0.8	0.0	100.0%	0.8	0.0	100.0%	0.0	0.0	0.0%
WPD_S_West	12.2	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_LPN	3.6	8.0	0.0	100.0%	8.0	0.0	100.0%	0.0	0.0	0.0%
EDFE_SPN	19.0	15.0	0.0	100.0%	15.0	0.0	100.0%	0.0	0.0	0.0%
EDFE_EPN	16.4	20.9	0.0	100.0%	20.9	0.0	100.0%	0.0	0.0	0.0%
SP_Distribution	24.7	7.9	0.0	100.0%	7.9	0.0	100.0%	0.0	0.0	0.0%
SP_Manweb	19.2	5.5	0.0	100.0%	5.5	0.0	100.0%	0.0	0.0	0.0%
SSE_Hydro	7.4	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
SSE_Southern	14.6	17.7	0.0	100.0%	17.7	0.0	100.0%	0.0	0.0	0.0%
Total	233.7	95.5	0.0	100.0%	95.5	0.0	100.0%	0.0	0.0	0.0%

1.19. We are now setting the unplanned element of the Customer Interruptions (CI) targets based on DNOs' own average performance rather than requiring improvements that might have necessitated investment expenditure. Relaxing the CI targets has had a consequential impact on Customer Minutes Lost (CML) targets, again removing any perceived need for specific additional funding to meet the interruptions targets.

1.20. As set out in the May Methodology, Initial Results and Initial Proposals papers, we consider that in addition to relaxing the targets, the incentive rate should drive

DNO decision making about expenditure to improve quality of supply performance in DPCR5. As such we are not proposing to allow any up-front allowances for either CI or CML improvements in DPCR5.

QoS (non IIS) – excluding worst served customers

1.21. An overview of Ofgem's final baseline for QoS (Non IIS) excluding worst served is presented in Table 4 below. In total across the industry forecast expenditure for QoS (Non IIS) excluding worst served customers makes up 0.3 per cent of forecast network investment.

Table 4 Final Baseline QoS (non IIS) – excluding worst served customers

QoS (Non IIS)		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.0	1.6	0.0	100.0%	1.6	0.0	100.0%	0.0	0.0	0.0%
CN_East	1.0	1.6	0.0	100.0%	1.6	0.0	100.0%	0.0	0.0	0.0%
ENW	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CE_NEDL	0.7	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CE_YEDL	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
WPD_S_Wales	0.0	3.0	0.0	100.0%	3.0	0.0	100.0%	0.0	0.0	0.0%
WPD_S_West	0.0	11.3	0.0	100.0%	11.3	0.0	100.0%	0.0	0.0	0.0%
EDFE_LPN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_SPN	12.2	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_EPN	41.3	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
SP_Distribution	0.0	2.0	0.0	100.0%	2.0	0.0	100.0%	0.0	0.0	0.0%
SP_Manweb	0.0	2.0	0.0	100.0%	2.0	0.0	100.0%	0.0	0.0	0.0%
SSE_Hydro	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
SSE_Southern	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	**55.2**	**21.4**	**0.0**	**100.0%**	**21.4**	**0.0**	**100.0%**	**0.0**	**0.0**	**0.0%**

1.22. A number of DNOs put forward proposed expenditure to improve network resilience in DPCR5. Given customer priorities and willingness to pay from our customer research for DPCR5, we have taken the view that no specific expenditure should be allowed for network resilience. We have also taken into account the significant increase in expenditure devoted to tree cutting to comply with the revised ESQCR regulations that were intended to improve network resilience, and see this as another reason not to allow additional expenditure in this area. There has been no change in our position from Initial Proposals.

Environmental expenditure

1.23. An overview of Ofgem's final baseline for environmental expenditure is shown in Table 5 below. In total across the industry forecast environmental expenditure makes up 0.6 per cent of forecast network investment.

Table 5 Final baseline environmental expenditure

Environmental		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.4	0.1	0.1	0.0%	0.1	0.1	0.0%	0.0	0.0	0.0%
CN_East	1.2	1.7	1.7	0.0%	1.7	1.7	0.0%	0.0	0.0	0.0%
ENW	3.8	2.2	2.2	0.0%	2.2	2.2	0.0%	0.0	0.0	0.0%
CE_NEDL	1.5	1.2	1.2	0.0%	1.2	1.2	0.0%	0.0	0.0	0.0%
CE_YEDL	1.6	1.9	1.9	0.0%	1.9	1.9	0.0%	0.0	0.0	0.0%
WPD_S_Wales	0.0	3.3	3.3	0.0%	3.3	3.3	0.0%	0.0	0.0	0.0%
WPD_S_West	0.6	7.1	7.1	0.0%	7.1	7.1	0.0%	0.0	0.0	0.0%
EDFE_LPN	4.1	2.5	2.5	0.0%	2.5	2.5	0.0%	0.0	0.0	0.0%
EDFE_SPN	4.8	6.5	6.5	0.0%	6.5	6.5	0.0%	0.0	0.0	0.0%
EDFE_EPN	8.9	7.6	7.6	0.0%	7.6	7.6	0.0%	0.0	0.0	0.0%
SP_Distribution	1.0	5.5	5.5	0.0%	5.5	5.5	0.0%	0.0	0.0	0.0%
SP_Manweb	2.1	4.5	4.5	0.0%	4.5	4.5	0.0%	0.0	0.0	0.0%
SSE_Hydro	3.5	1.0	1.0	0.0%	1.0	1.0	0.0%	0.0	0.0	0.0%
SSE_Southern	1.0	2.0	2.0	0.0%	2.0	2.0	0.0%	0.0	0.0	0.0%
Total	**34.5**	**47.0**	**47.0**	**0.0%**	**47.0**	**47.0**	**0.0%**	**0.0**	**0.0**	**0.0%**

1.24. Environmental expenditure consists of a number of different areas of expenditure including:

- Oil pollution mitigation,
- Reduction of SF6 leakage, and
- Noise reduction

1.25. In Initial Proposals we made no reduction to the DNOs' forecasts on the basis DNOs had provided adequate supporting information. For Final Proposals there has been no change to our baseline or the DNOs' forecasts.

Technical Losses

1.26. An overview of Ofgem's final baseline for incremental expenditure to reduce technical losses is shown in Table 6 below. In total across the industry forecast incremental expenditure to reduce technical losses makes up 0.1 per cent of forecast network investment.

Table 6 Final baseline incremental expenditure to reduce technical losses

Lossess		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast (DNO)	DPCR5 Forecast (Ofgem scenario)	Baseline	DPCR5 Forecast (DNO)	DPCR5 Forecast (Ofgem scenario)	Baseline	DPCR5 forecast (DNO)	Baseline	Losses target reduction (MWh)
CN_West	0.0	2.3	2.0	2.0	2.3	2.0	2.0	0.0	0.0	13878
CN_East	0.0	1.4	1.3	1.3	1.4	1.3	1.3	0.0	0.0	8953
ENW	0.2	0.0	1.8	1.8	0.0	1.8	1.8	0.0	0.0	3982
CE_NEDL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
CE_YEDL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
WPD_S_Wales	0.0	8.5	8.5	0.0	0.0	0.0	0.0	-8.5	0.0	0
WPD_S_West	0.0	11.8	11.8	0.0	0.0	0.0	0.0	-11.8	0.0	0
EDFE_LPN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
EDFE_SPN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
EDFE_EPN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
SP_Distribution	0.0	0.0	5.2	2.7	0.0	5.2	2.7	0.0	0.0	4352
SP_Manweb	0.0	0.0	4.4	2.6	0.0	4.4	2.6	0.0	0.0	4075
SSE_Hydro	0.0	0.0	4.3	1.0	0.0	4.3	1.0	0.0	0.0	2499
SSE_Southern	0.0	0.0	14.3	4.1	0.0	14.3	4.1	0.0	0.0	8198
Total	**0.2**	**24.0**	**53.6**	**15.6**	**3.7**	**33.3**	**15.6**	**-20.3**	**0.0**	45936

1.27. In the FBPQ the DNOs were asked to provided a forecast for the reduction of technical losses in two ways[5]:

1. an unrestricted DNO forecast (DPCR5 Forecast (DNO)), and

2. a forecast against an Ofgem scenario with a defined loss incentive (DPCR5 Forecast (Ofgem scenario)).

1.28. In Initial Proposals we explained that for the Ofgem scenario the DNOs had been asked to submit their proposals for incremental expenditure to reduce technical losses on the basis of a nominal loss incentive value set at £86/MWh (which was calculated using the methodology proposed in the December Policy Paper) but that we had assessed the proposals based on a £60/MWh value of loss incentive.

1.29. In the September Update letter we explained that we had subsequently provided a detailed explanation to the DNOs of how we assessed the proposals and had given them the opportunity to revise their proposals based on this assessment. As part of this explanation we also highlighted that we had changed our assessment criteria slightly, based on the Information Quality Incentive (IQI) figures included in Initial Proposals. This meant that two additional loss reduction schemes with a value of £4.2m were added to the £11.4m identified in Initial Proposals.

1.30. Our final baseline for incremental expenditure to reduce technical losses has not changed since that presented in the September Update letter.

1.31. The loss targets for the DNOs with allowed incremental expenditures to reduce losses will be adjusted to factor the loss reductions that a DNO has forecast will occur because of these investments, as shown above in Table 6. This process is explained in more detail in Chapter 6 of the Incentives and Obligations document.

[5] The unrestricted DNO forecast has been used in all calculations of the DPCR5 forecast in this document.

Appendix 6 - Logging up/ Reopener non core network investment Final Proposals – further details

1.1. The following section provides further details of Ofgem's final baseline for each of the non-core network investment building blocks that will be subject to logging up or reopeners in DPCR5. Further details on logging up and the reopeners are provided in Chapter 7 of the Cost Assessment document, and Chapter 2 of the Financial Methodologies document on dealing with uncertainty.

1.2. Non core network investment subject to these mechanisms consists of:

- Major System Risks - High Impact Low Probability (HILP),
- Critical National Infrastructure (CNI) security,
- Black start capability, and
- Rising and Lateral Mains.

1.3. We also set out the key changes since Initial Proposals (as updated in September) and provide a brief discussion of the approach and key issues.

Major system risks - HILP

1.4. An overview of Ofgem's final baseline for major system risks - HILP is presented in Table 1 below. In total across the industry forecast expenditure for major system risks - HILP makes up 0.9 per cent of forecast network investment.

Table 1 Final Baseline – Major System Risks - HILP

HILP		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.0	5.7	0.0	100.0%	5.7	0.0	100.0%	0.0	0.0	0.0%
CN_East	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
ENW	0.0	2.8	0.0	100.0%	2.8	0.0	100.0%	0.0	0.0	0.0%
CE_NEDL	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CE_YEDL	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
WPD_S_Wales	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
WPD_S_West	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_LPN	0.2	50.8	0.0	100.0%	50.8	0.0	100.0%	0.0	0.0	0.0%
EDFE_SPN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_EPN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
SP_Distribution	0.0	4.6	3.6	22.0%	4.6	3.6	22.0%	0.0	0.0	0.0%
SP_Manweb	0.0	4.1	2.5	39.0%	4.1	2.5	39.0%	0.0	0.0	0.0%
SSE_Hydro	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
SSE_Southern	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	**0.2**	**67.9**	**6.1**	**91.1%**	**67.9**	**6.1**	**91.1%**	**0.0**	**0.0**	**0.0%**

HILP - CBD

1.5. Five DNOs have forecast expenditure on projects to reduce High Impact Low Probability (HILP) risks, with 74.8 per cent of the total relating to EDFE's proposals for central London. Our Initial Proposals document provides background to the discussion around HILP expenditure. In July we wrote an open letter to EDFE, because of the dominance of proposed HILP funding in London, explaining our intention to work with DECC to better understand the key risk scenarios, the available options to address them, the extent of the works involved and the benefits that would be delivered.

1.6. In our September update we stated that we would facilitate meetings between the DNOs, DECC and key stakeholders to further explore the extent to which those who stood to benefit directly would be willing to pay for increased security. We also said that if the issues relating to the funding of HILP remain unresolved, these costs would be logged up subject to a materiality threshold. Beyond this threshold the DNOs would be eligible to apply for a reopener.

1.7. Since our September update, we have had a number of meetings with DECC, EDFE and the City of London Corporation. DECC has also raised this issue with other government departments that might wish to express a view on the need for HILP investments. We understand that discussion of this issue is continuing between government departments and that we will be asked to contribute our thinking in the near future. We have also established that, in the case of the City of London, it would be difficult to secure a contribution to the costs of the HILP investment proposed by EDFE from the customers that would benefit. We have not received further submissions from the other DNOs and have not been asked to engage with any other stakeholder group.

1.8. The open, wide ranging debate that we have facilitated in relation to HILP has been helpful in clarifying our views on this area of potential expenditure. However, we have not been able to resolve our key concerns. These relate to the gaps in risk assessment that EDFE has been able to carry out, difficulties in conducting a cost-benefit analysis of this investment and the implied cross-subsidy between customer groups that would arise were we to allow EDFE to recover these cost through general distribution use of system charges. We have therefore concluded that the case for this expenditure is not made and that it should not be included in the DPCR5 baseline.

1.9. This position does not prevent DNOs from investing in HILP schemes in the DPCR5 period. DNOs must meet their licence obligations for all customers and these obligations[6] do provide for the possibility of providing security above recommended normal levels, subject to the risk/reward case being made. However, a DNO would have to take the risk of such expenditure being included in the RAV at the next price control. For HILP investments to be included in the RAV, they would have to pass the 'economic and efficient' test and we would expect to see a substantial contribution from those customers benefiting.

1.10. It remains an option for Government to provide guidance to us in this matter. If such guidance or direction is provided, we would work with Government and the DNOs to ensure that any investment is made efficiently, taking account of the options available and the benefits delivered.

[6] Engineering Recommendation P2/6

HILP Non CBD

1.11. In their FBPQ SP included a forecast for HILP expenditure for non CBD locations. SP have assured us that their forecast was based on a cost benefit analysis with regards to system risk and the benefits customers will receive through reinforcement at locations where a second circuit outage condition would result in a significant number of customers being off supply.

1.12. We consider this expenditure to be general reinforcement rather than HILP investment. ER P2/6 sets a minimum network reliability standard and permits flexibility in the actual design of networks when supported by appropriate economic and risk studies. We understand that the cost benefit analysis in this case justifies the proposed expenditure in a manner consistent with the requirements of ER P2/6.

1.13. We have accepted SP's forecast of £3.6m in SP Distribution and £2.5m in SP Manweb.

CNI Security

1.14. An overview of Ofgem's final baseline for CNI security is presented in Table 2 below. In total across the industry forecast expenditure for CNI security makes up 0.2 per cent of forecast network investment.

Table 2 Final Baseline – CNI Security

CNI security		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.0	2.4	0.0	100.0%	2.4	0.0	100.0%	0.0	0.0	0.0%
CN_East	0.0	2.4	0.0	100.0%	2.4	0.0	100.0%	0.0	0.0	0.0%
ENW	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CE_NEDL	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CE_YEDL	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
WPD_S_Wales	0.1	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
WPD_S_West	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_LPN	4.7	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_SPN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_EPN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
SP_Distribution	0.0	5.0	0.0	100.0%	5.0	0.0	100.0%	0.0	0.0	0.0%
SP_Manweb	0.0	6.0	0.0	100.0%	6.0	0.0	100.0%	0.0	0.0	0.0%
SSE_Hydro	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
SSE_Southern	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	**4.8**	**15.8**	**0.0**	**100.0%**	**15.8**	**0.0**	**100.0%**	**0.0**	**0.0**	**0.0%**

1.15. The position reported in the September update has not changed. We understand that the Centre for Protection of National Infrastructure (CPNI) is continuing its review of key sites identified by the DNOs to establish the case for enhancement of physical security provisions. This work has not yet developed to the point where DECC has required any of the DNOs to carry out work.

1.16. There is no allowance in the baseline. Instead, as proposed in the September update, we will put in place a mechanism to fund security enhancements to DNO sites if required, allowing the DNOs to log up costs as they are incurred. These costs will be subjected to an ex post efficiency review. We will require the DNOs to demonstrate not only that they have implemented the work efficiently for relevant sites, for example through competitive tenders, but also that they have engaged effectively with all interested parties to ensure an appropriate balance between cost and risk and that alternative solutions have been considered. The logging up mechanism will apply to all efficiently incurred costs. We will require the DNOs to report these costs to DECC and Ofgem on an annual basis, subject to a full annual review and potential audit.

Black start Capability

1.17. An overview of Ofgem's proposed baseline for Black start Capability is presented in Table 3 below. In total across the industry forecast expenditure for Black start Capability makes up 0.9 per cent of forecast network investment.

Table 3 Final baseline – Black start capability

Black Start Capability		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.0	0.5	0.0	100.0%	0.5	0.0	100.0%	0.0	0.0	0.0%
CN_East	0.0	0.5	0.0	100.0%	0.5	0.0	100.0%	0.0	0.0	0.0%
ENW	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CE_NEDL	0.0	0.0	0.0	0.0%	3.7	0.0	100.0%	3.7	0.0	100.0%
CE_YEDL	0.0	0.0	0.0	0.0%	9.0	0.0	100.0%	9.0	0.0	100.0%
WPD_S_Wales	0.0	2.0	0.0	100.0%	2.0	0.0	100.0%	0.0	0.0	0.0%
WPD_S_West	0.0	1.4	0.0	100.0%	1.4	0.0	100.0%	0.0	0.0	0.0%
EDFE_LPN	0.0	6.6	0.0	100.0%	6.6	0.0	100.0%	0.0	0.0	0.0%
EDFE_SPN	0.0	9.0	0.0	100.0%	9.0	0.0	100.0%	0.0	0.0	0.0%
EDFE_EPN	0.0	21.0	0.0	100.0%	21.0	0.0	100.0%	0.0	0.0	0.0%
SP_Distribution	0.0	0.5	0.0	100.0%	0.7	0.0	100.0%	0.2	0.0	0.0%
SP_Manweb	0.0	1.0	0.0	100.0%	1.6	0.0	100.0%	0.5	0.0	0.0%
SSE_Hydro	0.0	6.0	0.0	100.0%	6.0	0.0	100.0%	0.0	0.0	0.0%
SSE_Southern	0.0	8.0	0.0	100.0%	8.0	0.0	100.0%	0.0	0.0	0.0%
Total	**0.0**	**56.6**	**0.0**	**100.0%**	**70.0**	**0.0**	**100.0%**	**13.4**	**0.0**	**0.0%**

1.18. The position reported in the September update has not changed. Required expenditure on black start and emergency batteries will be determined by the recommendations of the Electricity Task Group to the Energy Emergency Executive Committee (E3C). This is due to be finalised in spring 2010. We propose that efficiently incurred costs in both these areas are logged up during DPCR5. There is therefore no allowance in the baseline. Instead, as proposed in the September update, we will put in place a mechanism to fund investment expenditure for black start and emergency batteries, allowing the DNOs to log up costs as they are incurred. These costs will be subjected to an ex-post efficiency review. We will require the DNOs to demonstrate not only that they have implemented the work efficiently for relevant sites, for example through competitive tenders, but also that alternative solutions have been considered. The logging up mechanism will apply to all efficiently incurred costs.

1.19. We will require the DNOs to report these costs to DECC and Ofgem on an annual basis, subject to a full annual review and potential audit.

Rising and lateral mains

1.20. An overview of Ofgem's final baseline for rising and lateral mains is presented in Table 4 below. In total across the industry forecast expenditure on rising mains makes up 1.1 per cent of forecast network investment.

Table 4 Final Proposals – Rising and Lateral Mains

Rising mains		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 Actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
CN_West	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CN_East	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
ENW	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CE_NEDL	0.0	4.0	1.6	59.1%	4.0	1.6	59.1%	0.0	0.0	0.0%
CE_YEDL	0.2	5.9	2.4	59.1%	5.9	2.4	59.1%	0.0	0.0	0.0%
WPD_S_Wales	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
WPD_S_West	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
EDFE_LPN	0.0	0.5	0.0	100.0%	0.5	0.0	100.0%	0.0	0.0	0.0%
EDFE_SPN	0.7	1.0	0.0	100.0%	1.0	0.0	100.0%	0.0	0.0	0.0%
EDFE_EPN	0.0	0.5	0.0	100.0%	0.5	0.0	100.0%	0.0	0.0	0.0%
SP_Distribution	4.8	38.6	12.4	67.9%	38.6	12.4	67.9%	0.0	0.0	0.0%
SP_Manweb	0.3	21.3	7.0	67.1%	21.3	7.0	67.1%	0.0	0.0	0.0%
SSE_Hydro	1.4	1.5	0.6	60.0%	1.5	0.6	60.0%	0.0	0.0	0.0%
SSE_Southern	3.3	5.0	2.0	60.0%	5.0	2.0	60.0%	0.0	0.0	0.0%
Total	**10.7**	**78.3**	**26.0**	**66.7%**	**78.3**	**26.0**	**66.7%**	**0.0**	**0.0**	**0.0%**

1.21. As noted in Initial Proposals, some DNOs have forecast costs for the inspection and replacement of rising and lateral mains (RLM) in large scale housing estates. The extent of issues with RLM varies widely across the licensed areas, as does the extent to which ownership has been established. Ownership is relevant because if the RLM is owned by the housing estate then the estate and not the generality of customers will need to cover the cost of inspection and replacement.

1.22. In light of the these issues and uncertainties in Initial Proposals we proposed to include an ex ante allowance to provide interim funding for these costs, after which allowances will be reassessed through a reopener. Those DNOs that have not forecast costs will also have the opportunity to research potential issues.

1.23. We proposed two years for the interim funding, during which time the DNOs will be obliged to endeavour to resolve ownership issues. Based on responses to IP and further thinking, including discussion with the DNOs, we maintain our position of two years for the interim funding period.

1.24. Although we are providing some ex ante funding for the first two years, as part of the reopener and at the next price control review we will seek evidence from the DNOs that they have established ownership and sought to recover the costs from customers where appropriate. Where the costs have been recovered directly from customers or where DNOs have not used all reasonable endeavours to establish ownership we may claw back some (or all) of these allowances.

1.25. Further details of how the reopener will operate are provided in Chapter 7 of the Cost Assessment document, and Chapter 2 of the Financial Methodologies document on dealing with uncertainty.

Appendix 7 - Network investment final baselines by DNO

Table 1 - CN West

CN_West		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	56.1	25.8	20.8	19.5%	26.3	20.8	21.0%	0.5	0.0	1.5%
Diversions	30.2	41.7	36.2	13.2%	42.3	34.5	18.5%	0.6	-1.7	5.2%
Reinforcement	110.1	149.0	127.9	14.1%	149.9	137.4	8.4%	1.0	9.5	-5.8%
Fault Levels	0.0	25.7	19.6	23.6%	25.8	25.4	1.5%	0.2	5.8	-22.1%
Asset Replacement	271.0	376.7	327.7	13.0%	378.6	342.0	9.7%	1.9	14.3	-3.3%
Operational IT&T	4.6	2.1	2.1	0.0%	2.1	2.1	0.0%	0.0	0.0	0.0%
Legal and Safety	12.6	17.6	14.7	16.3%	17.4	17.3	0.6%	-0.2	2.5	-15.7%
Total	484.7	638.6	549.0	14.0%	642.5	579.5	9.8%	4.0	30.5	-4.2%
Non Core (Ex-ante)										
BT21CN	0.0	8.9	6.7	25.4%	8.9	6.7	25.4%	0.0	0.0	0.0%
Flooding	0.3	2.4	2.4	0.0%	2.4	2.4	0.0%	0.0	0.0	0.0%
QoS (IIS)	31.9	7.4	0.0	100.0%	7.4	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	1.6	0.0	100.0%	1.6	0.0	100.0%	0.0	0.0	0.0%
Environmental	0.4	0.1	0.1	0.0%	0.1	0.1	0.0%	0.0	0.0	0.0%
Losses	0.0	2.3	2.0	12.0%	2.3	2.0	12.0%	0.0	0.0	0.0%
Total	32.7	22.6	11.1	50.9%	22.7	11.1	51.0%	0.0	0.0	0.1%
Total (Ex-Ante)	**517.4**	**661.2**	**560.1**	**15.3%**	**665.2**	**590.6**	**12.6%**	**4.0**	**30.5**	**-2.7%**
Non Core (Reopener/logging up)										
HILP	0.0	5.7	0.0	100.0%	5.7	0.0	100.0%	0.0	0.0	0.0%
CNI security	0.0	2.4	0.0	100.0%	2.4	0.0	100.0%	0.0	0.0	0.0%
Black Start Capability	0.0	0.5	0.0	100.0%	0.5	0.0	100.0%	0.0	0.0	0.0%
Rising mains	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	0.0	8.6	0.0	100.0%	8.6	0.0	100.0%	0.0	0.0	0.0%
Total	**517.4**	**669.8**	**560.1**	**16.4%**	**673.8**	**590.6**	**12.3%**	**4.0**	**30.5**	**-4.0%**

Table 2 - CN East

CN_East		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	89.3	66.1	62.3	5.7%	66.9	62.7	6.3%	0.8	0.4	0.6%
Diversions	42.4	54.8	47.4	13.4%	55.4	48.1	13.2%	0.6	0.7	-0.2%
Reinforcement	111.9	187.3	158.8	15.3%	188.3	169.0	10.3%	1.0	10.3	-5.0%
Fault Levels	16.9	9.4	9.4	0.0%	9.4	9.4	0.3%	0.0	0.0	0.3%
Asset Replacement	192.3	285.3	236.7	17.0%	286.5	249.1	13.0%	1.2	12.4	-4.0%
Operational IT&T	2.9	10.2	10.2	0.0%	10.2	10.2	0.0%	0.0	0.0	0.0%
Legal and Safety	8.1	17.4	14.0	19.9%	17.1	17.1	0.0%	-0.3	3.1	-19.9%
Total	463.8	630.5	538.7	14.6%	633.8	565.6	10.8%	3.3	26.9	-3.8%
Non Core (Ex-ante)										
BT21CN	0.0	23.4	16.3	30.1%	23.4	16.3	30.1%	0.0	0.0	0.0%
Flooding	0.1	8.4	8.4	0.0%	8.4	8.4	0.0%	0.0	0.0	0.0%
QoS (IIS)	27.7	2.2	0.0	100.0%	2.2	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	1.0	1.6	0.0	100.0%	1.6	0.0	100.0%	0.0	0.0	0.0%
Environmental	1.2	1.7	1.7	0.0%	1.7	1.7	0.0%	0.0	0.0	0.0%
Losses	0.0	1.4	1.3	7.0%	1.4	1.3	7.0%	0.0	0.0	0.0%
Total	30.0	38.7	27.7	28.3%	38.7	27.7	28.3%	0.0	0.0	0.0%
Total (Ex-Ante)	**493.7**	**669.1**	**566.5**	**15.3%**	**672.5**	**593.3**	**13.3%**	**3.3**	**26.9**	**-2.0%**
Non Core (Reopener/logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.0	2.4	0.0	100.0%	2.4	0.0	100.0%	0.0	0.0	0.0%
Black Start Capability	0.0	0.5	0.0	100.0%	0.5	0.0	100.0%	0.0	0.0	0.0%
Rising mains	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	0.0	3.0	0.0	100.0%	3.0	0.0	100.0%	0.0	0.0	0.0%
Total	**493.7**	**672.1**	**566.5**	**15.7%**	**675.4**	**593.3**	**12.2%**	**3.3**	**26.9**	**-3.6%**

Table 3 - ENW

ENW		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	72.8	37.2	8.8	76.2%	24.4	21.0	14.0%	-12.8	12.1	-62.2%
Diversions	11.1	23.1	12.2	47.3%	23.1	22.8	1.4%	0.0	10.6	-45.9%
Reinforcement	67.8	93.6	87.1	6.9%	93.6	90.4	3.3%	0.0	3.3	-3.5%
Fault Levels	4.8	2.5	2.5	0.0%	2.5	2.5	0.0%	0.0	0.0	0.0%
Asset Replacement	234.0	349.9	284.1	18.8%	349.9	319.9	8.6%	0.0	35.8	-10.2%
Operational IT&T	13.5	16.4	15.0	8.5%	16.4	15.0	8.5%	0.0	0.0	0.0%
Legal and Safety	16.0	61.2	36.7	40.2%	61.2	45.9	25.1%	0.0	9.2	-15.0%
Total	419.9	583.9	446.3	23.6%	571.1	517.4	9.4%	-12.8	71.1	-14.2%
Non Core (Ex-ante)										
BT21CN	5.0	19.6	19.6	0.0%	19.6	19.6	0.0%	0.0	0.0	0.0%
Flooding	3.2	7.4	7.4	0.0%	7.4	7.4	0.0%	0.0	0.0	0.0%
QoS (IIS)	6.6	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Environmental	3.8	2.2	2.2	0.0%	2.2	2.2	0.0%	0.0	0.0	0.0%
Losses	0.2	0.0	1.8	0.0%	0.0	1.8	0.0%	0.0	0.0	0.0%
Total	18.7	29.2	31.0	-6.2%	29.2	31.0	-6.2%	0.0	0.0	0.0%
Total (Ex-Ante)	**438.6**	**613.1**	**477.3**	**22.1%**	**600.3**	**548.4**	**9.5%**	**-12.8**	**71.1**	**-12.7%**
Non Core (Reopener/logging up)										
HILP	0.0	2.8	0.0	100.0%	2.8	0.0	100.0%	0.0	0.0	0.0%
CNI security	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Rising mains	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	0.0	2.8	0.0	100.0%	2.8	0.0	100.0%	0.0	0.0	0.0%
Total	**438.6**	**615.9**	**477.3**	**22.5%**	**603.1**	**548.4**	**9.1%**	**-12.8**	**71.1**	**-13.4%**

Table 4 - CE NEDL

CE_NEDL		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	11.0	20.0	11.0	45.1%	20.0	11.1	44.3%	0.0	0.1	-0.8%
Diversions	15.9	19.7	15.2	22.7%	19.7	16.9	14.0%	0.0	1.7	-8.7%
Reinforcement	61.2	56.4	56.3	0.0%	56.4	51.6	8.4%	0.0	-4.7	8.4%
Fault Levels	1.0	8.9	8.9	0.0%	8.9	8.9	0.0%	0.0	0.0	0.0%
Asset Replacement	154.9	279.2	236.6	15.3%	279.2	263.8	5.5%	0.0	27.2	-9.8%
Operational IT&T	0.4	0.4	0.4	0.0%	5.1	5.1	0.0%	4.6	4.6	0.0%
Legal and Safety	8.3	8.7	8.0	7.9%	8.7	8.7	0.0%	0.0	0.7	-7.9%
Total	252.7	393.4	336.5	14.5%	398.0	366.2	8.0%	4.6	29.7	-6.5%
Non Core (Ex-ante)										
BT21CN	0.0	2.3	2.3	0.0%	2.3	2.3	0.0%	0.0	0.0	0.0%
Flooding	0.6	2.5	1.8	30.6%	3.2	1.8	45.0%	0.7	0.0	14.4%
QoS (IIS)	15.3	2.4	0.0	100.0%	2.4	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.7	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Environmental	1.5	1.2	1.2	0.0%	1.2	1.2	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	18.1	8.5	5.3	37.8%	9.1	5.3	42.3%	0.7	0.0	4.5%
Total (Ex-Ante)	**270.7**	**401.8**	**341.8**	**14.9%**	**407.1**	**371.5**	**9.6%**	**5.3**	**29.7**	**-5.4%**
Non Core (Reopener/logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	0.0	0.0	0.0%	3.7	0.0	100.0%	3.7	0.0	100.0%
Rising mains	0.0	4.0	1.6	59.1%	4.0	1.6	59.1%	0.0	0.0	0.0%
Total	0.0	4.0	1.6	59.1%	7.7	1.6	78.6%	3.7	0.0	19.5%
Total	**270.7**	**405.9**	**343.4**	**15.4%**	**414.8**	**373.1**	**10.0%**	**8.9**	**29.7**	**-5.3%**

Table 5 - CE YEDL

CE_YEDL		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	9.8	28.7	14.2	50.4%	28.6	14.4	49.7%	0.0	0.2	-0.7%
Diversions	28.2	44.5	31.3	29.7%	44.5	39.5	11.3%	0.0	8.2	-18.4%
Reinforcement	49.3	62.7	62.7	0.0%	62.7	59.9	4.5%	0.0	-2.8	4.4%
Fault Levels	2.7	14.1	14.1	0.0%	14.1	14.1	0.0%	0.0	0.0	0.0%
Asset Replacement	217.5	330.2	271.7	17.7%	330.2	302.1	8.5%	0.0	30.4	-9.2%
Operational IT&T	3.7	0.4	0.4	0.0%	9.4	9.4	0.0%	9.0	9.0	0.0%
Legal and Safety	19.3	23.0	16.9	26.4%	23.0	20.7	9.9%	0.0	3.8	-16.5%
Total	330.5	503.7	411.4	18.3%	512.6	460.2	10.2%	8.9	48.8	-8.1%
Non Core (Ex-ante)										
BT21CN	0.0	3.2	3.2	0.0%	3.2	3.2	0.0%	0.0	0.0	0.0%
Flooding	2.1	7.8	29.0	-273.4%	29.6	29.0	2.0%	21.8	0.0	275.3%
QoS (IIS)	18.1	7.6	0.0	100.0%	7.6	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Environmental	1.6	1.9	1.9	0.0%	1.9	1.9	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	21.8	20.5	34.1	-66.3%	42.3	34.1	19.3%	21.8	0.0	85.6%
Total (Ex-Ante)	**352.3**	**524.2**	**445.5**	**15.0%**	**555.0**	**494.3**	**12.3%**	**30.7**	**48.8**	**-2.7%**
Non Core (Reopener / logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	0.0	0.0	0.0%	9.0	0.0	100.0%	9.0	0.0	100.0%
Rising mains	0.2	5.9	2.4	59.1%	5.9	2.4	59.1%	0.0	0.0	0.0%
Total	0.2	5.9	2.4	59.1%	14.9	2.4	83.9%	9.0	0.0	24.8%
Total	**352.4**	**530.1**	**447.9**	**15.5%**	**569.8**	**496.7**	**12.8%**	**39.8**	**48.8**	**-2.7%**

Table 6 - WPD S Wales

WPD_S_Wales		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	6.0	5.4	5.4	0.4%	5.4	5.4	0.2%	0.0	0.0	-0.1%
Diversions	14.2	14.0	14.0	0.0%	14.0	14.0	0.0%	0.0	0.0	0.0%
Reinforcement	22.8	19.9	18.3	8.0%	19.9	18.3	8.0%	0.0	0.0	0.0%
Fault Levels	0.0	0.7	0.7	0.0%	0.7	0.7	0.0%	0.0	0.0	0.0%
Asset Replacement	84.5	133.7	129.7	3.0%	131.8	156.7	-18.9%	-1.9	26.9	-21.9%
Operational IT&T	9.9	8.8	7.0	20.7%	8.8	7.0	20.7%	0.0	0.0	0.0%
Legal and Safety	1.2	13.9	7.5	45.9%	13.9	12.8	7.7%	0.0	5.3	-38.1%
Total	138.6	196.3	182.6	7.0%	194.4	214.8	-10.5%	-1.9	32.2	-17.5%
Non Core (Ex-ante)										
BT21CN	0.1	2.6	2.6	0.0%	2.6	2.6	0.0%	0.0	0.0	0.0%
Flooding	1.0	10.8	10.8	0.0%	10.8	10.8	-0.4%	0.0	0.0	-0.4%
QoS (IIS)	17.0	0.8	0.0	100.0%	0.8	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	3.0	0.0	100.0%	3.0	0.0	100.0%	0.0	0.0	0.0%
Environmental	0.0	3.3	3.3	0.0%	3.3	3.3	0.0%	0.0	0.0	0.0%
Losses	0.0	8.5	0.0	100.0%	0.0	0.0	0.0%	-8.5	0.0	-100.0%
Total	18.1	28.9	16.6	42.5%	20.3	16.6	18.3%	-8.5	0.0	-24.2%
Total (Ex-Ante)	**156.7**	**225.2**	**199.2**	**11.6%**	**214.7**	**231.4**	**-7.2%**	**-10.5**	**32.2**	**-18.8%**
Non Core (Reopener / logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.1	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	2.0	0.0	100.0%	2.0	0.0	100.0%	0.0	0.0	0.0%
Rising mains	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	0.1	2.0	0.0	100.0%	2.0	0.0	100.0%	0.0	0.0	0.0%
Total	**156.8**	**227.2**	**199.2**	**12.3%**	**216.7**	**231.4**	**-6.8%**	**-10.5**	**32.2**	**-19.1%**

Table 7 - WPD S West

WPD_S_West		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	10.7	7.8	7.7	1.4%	7.8	7.7	1.4%	0.0	0.0	0.0%
Diversions	18.0	26.0	21.7	16.7%	26.0	25.2	3.1%	0.0	3.5	-13.6%
Reinforcement	33.9	20.3	20.3	0.0%	20.3	20.3	0.0%	0.0	0.0	0.0%
Fault Levels	0.0	2.9	2.9	0.0%	2.9	2.9	0.0%	0.0	0.0	0.0%
Asset Replacement	157.9	211.7	204.0	3.7%	208.3	242.6	-16.5%	-3.4	38.6	-20.1%
Operational IT&T	11.1	12.9	11.1	14.1%	12.9	11.1	14.1%	0.0	0.0	0.0%
Legal and Safety	6.7	27.9	19.6	30.0%	27.9	25.2	9.8%	0.0	5.6	-20.1%
Total	238.3	309.5	287.1	7.2%	306.1	334.9	-9.4%	-3.4	47.8	-16.7%
Non Core (Ex-ante)										
BT21CN	0.1	0.8	0.8	0.0%	0.8	0.8	0.0%	0.0	0.0	0.0%
Flooding	1.0	6.8	6.3	6.9%	6.8	6.3	6.9%	0.0	0.0	0.0%
QoS (IIS)	12.2	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	11.3	0.0	100.0%	11.3	0.0	100.0%	0.0	0.0	0.0%
Environmental	0.6	7.1	7.1	0.0%	7.1	7.1	0.0%	0.0	0.0	0.0%
Losses	0.0	11.8	0.0	100.0%	0.0	0.0	0.0%	-11.8	0.0	-100.0%
Total	13.9	37.7	14.2	62.4%	25.9	14.2	45.3%	-11.8	0.0	-17.1%
Total (Ex-Ante)	**252.2**	**347.2**	**301.3**	**13.2%**	**332.0**	**349.1**	**-4.9%**	**-15.2**	**47.8**	**-18.1%**
Non Core (Reopener/logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	1.4	0.0	100.0%	1.4	0.0	100.0%	0.0	0.0	0.0%
Rising mains	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	0.0	1.4	0.0	100.0%	1.4	0.0	100.0%	0.0	0.0	0.0%
Total	**252.2**	**348.6**	**301.3**	**13.6%**	**333.4**	**349.1**	**-4.7%**	**-15.2**	**47.8**	**-18.3%**

Table 8 - EDFE LPN

EDFE_LPN		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	4.3	10.5	10.5	0.0%	11.0	10.4	5.3%	0.5	-0.1	5.3%
Diversions	5.7	4.2	3.7	11.9%	4.2	3.7	11.9%	0.0	0.0	0.0%
Reinforcement	103.7	209.8	199.7	4.8%	209.8	209.8	0.0%	0.0	10.1	-4.8%
Fault Levels	4.1	1.3	1.3	0.0%	1.3	1.3	0.0%	0.0	0.0	0.0%
Asset Replacement	254.8	275.2	210.1	23.6%	275.2	243.7	11.4%	0.0	33.6	-12.2%
Operational IT&T	9.0	3.2	3.2	0.0%	3.2	3.2	0.0%	0.0	0.0	0.0%
Legal and Safety	4.6	3.9	2.9	25.7%	3.9	3.9	0.0%	0.0	1.0	-25.7%
Total	386.2	508.1	431.4	15.1%	508.6	476.1	6.4%	0.5	44.6	-8.7%
Non Core (Ex-ante)										
BT21CN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Flooding	0.5	4.1	4.1	0.0%	4.1	4.1	0.0%	0.0	0.0	0.0%
QoS (IIS)	3.6	8.0	0.0	100.0%	8.0	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Environmental	4.1	2.5	2.5	0.0%	2.5	2.5	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	8.2	14.6	6.6	54.8%	14.6	6.6	54.8%	0.0	0.0	0.0%
Total (Ex-Ante)	**394.4**	**522.7**	**438.0**	**16.2%**	**523.2**	**482.7**	**8.4%**	**0.5**	**44.6**	**-7.8%**
Non Core (Reopener/logging up)										
HILP	0.2	50.8	0.0	100.0%	50.8	0.0	100.0%	0.0	0.0	0.0%
CNI security	4.7	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	6.6	0.0	100.0%	6.6	0.0	100.0%	0.0	0.0	0.0%
Rising mains	0.0	0.5	0.0	100.0%	0.5	0.0	100.0%	0.0	0.0	0.0%
Total	4.9	57.9	0.0	100.0%	57.9	0.0	100.0%	0.0	0.0	0.0%
Total	**399.3**	**580.6**	**438.0**	**24.6%**	**581.1**	**482.7**	**16.9%**	**0.5**	**44.6**	**-7.6%**

Table 9 - EDFE SPN

EDFE_SPN		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	23.0	48.1	42.3	12.0%	48.8	42.3	13.2%	0.7	0.0	1.2%
Diversions	21.8	27.5	23.7	13.8%	27.5	23.7	13.8%	0.0	0.0	0.0%
Reinforcement	69.7	107.3	81.9	23.7%	107.3	90.4	15.7%	0.0	8.6	-8.0%
Fault Levels	0.6	3.0	3.0	0.0%	3.0	3.0	0.0%	0.0	0.0	0.0%
Asset Replacement	213.5	286.5	246.9	13.8%	286.5	245.4	14.4%	0.0	-1.5	0.5%
Operational IT&T	8.7	2.1	2.1	0.0%	2.1	2.1	0.0%	0.0	0.0	0.0%
Legal and Safety	12.8	66.7	43.0	35.5%	66.7	62.2	6.8%	0.0	19.2	-28.7%
Total	350.1	541.2	442.8	18.2%	541.9	469.1	13.4%	0.7	26.3	-4.7%
Non Core (Ex-ante)										
BT21CN	0.0	23.5	16.4	30.2%	22.4	16.4	26.8%	-1.1	0.0	-3.4%
Flooding	0.5	6.0	6.0	0.0%	6.0	6.0	0.0%	0.0	0.0	0.0%
QoS (IIS)	19.0	15.0	0.0	100.0%	15.0	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	12.2	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Environmental	4.8	6.5	6.5	0.0%	6.5	6.5	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	36.5	51.0	28.9	43.3%	49.9	28.9	42.1%	-1.1	0.0	-1.2%
Total (Ex-Ante)	**386.6**	**592.2**	**471.7**	**20.3%**	**591.8**	**498.0**	**18.8%**	**-0.4**	**26.3**	**-1.5%**
Non Core (Reopener/logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	9.0	0.0	100.0%	9.0	0.0	100.0%	0.0	0.0	0.0%
Rising mains	0.7	1.0	0.0	100.0%	1.0	0.0	100.0%	0.0	0.0	0.0%
Total	0.7	10.0	0.0	100.0%	10.0	0.0	100.0%	0.0	0.0	0.0%
Total	**387.3**	**602.2**	**471.7**	**21.7%**	**601.8**	**498.0**	**17.2%**	**-0.4**	**26.3**	**-4.4%**

Table 10 - EDFE EPN

EDFE_EPN		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	26.6	28.8	16.8	41.6%	29.1	20.1	31.0%	0.3	3.3	-10.6%
Diversions	36.8	40.5	39.8	1.7%	40.5	39.8	1.7%	0.0	0.0	0.0%
Reinforcement	198.4	246.5	199.4	19.1%	246.5	229.1	7.1%	0.0	29.7	-12.1%
Fault Levels	2.8	28.3	25.1	11.4%	28.3	25.1	11.4%	0.0	0.0	0.0%
Asset Replacement	267.8	257.1	208.3	19.0%	257.1	215.4	16.2%	0.0	7.1	-2.8%
Operational IT&T	3.8	4.4	4.4	0.0%	4.4	4.4	0.0%	0.0	0.0	0.0%
Legal and Safety	28.6	71.1	40.0	43.7%	71.1	54.1	23.9%	0.0	14.1	-19.9%
Total	564.8	676.7	533.8	21.1%	677.0	587.9	13.2%	0.3	54.2	-8.0%
Non Core (Ex-ante)										
BT21CN	0.8	42.2	26.8	36.5%	34.3	26.8	21.9%	-7.9	0.0	-14.6%
Flooding	0.6	7.5	7.5	0.0%	7.5	7.5	0.0%	0.0	0.0	0.0%
QoS (IIS)	16.4	20.9	0.0	100.0%	20.9	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	41.3	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Environmental	8.9	7.6	7.6	0.0%	7.6	7.6	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Total	68.0	78.2	41.9	46.4%	70.3	41.9	40.4%	-7.9	0.0	-6.0%
Total (Ex-Ante)	**632.8**	**754.9**	**575.7**	**23.7%**	**747.3**	**629.8**	**18.6%**	**-7.6**	**54.2**	**-5.1%**
Non Core (Reopener/logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	21.0	0.0	100.0%	21.0	0.0	100.0%	0.0	0.0	0.0%
Rising mains	0.0	0.5	0.0	100.0%	0.5	0.0	100.0%	0.0	0.0	0.0%
Total	0.0	21.5	0.0	100.0%	21.5	0.0	100.0%	0.0	0.0	0.0%
Total	**632.8**	**776.4**	**575.7**	**25.9%**	**768.8**	**629.8**	**18.1%**	**-7.6**	**54.2**	**-7.8%**

Table 11 - SP Distribution

SP_Distribution		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	22.0	16.2	16.4	-1.4%	16.4	16.4	0.1%	0.2	0.0	1.5%
Diversions	12.4	12.8	12.0	6.5%	12.8	11.7	8.6%	0.0	-0.3	2.1%
Reinforcement	43.9	61.8	61.8	0.0%	61.8	61.8	0.0%	0.0	0.0	0.0%
Fault Levels	1.1	17.3	17.3	0.0%	17.3	17.3	0.0%	0.0	0.0	0.0%
Asset Replacement	222.7	254.8	218.0	14.4%	254.8	223.4	12.3%	0.0	5.4	-2.1%
Operational IT&T	7.7	5.2	4.3	18.5%	5.2	4.3	18.5%	0.0	0.0	0.0%
Legal and Safety	14.2	15.5	13.5	12.6%	15.5	14.2	8.5%	0.0	0.6	-4.2%
Total	324.0	383.6	343.2	10.5%	383.8	349.1	9.1%	0.2	5.8	-1.5%
Non Core (Ex-ante)										
BT21CN	0.0	5.5	1.5	72.7%	1.5	1.5	0.0%	-4.0	0.0	-72.7%
Flooding	0.3	3.2	2.7	16.7%	3.2	2.7	16.7%	0.0	0.0	0.0%
QoS (IIS)	24.7	7.9	0.0	100.0%	7.9	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	2.0	0.0	100.0%	2.0	0.0	100.0%	0.0	0.0	0.0%
Environmental	1.0	5.5	5.5	0.0%	5.5	5.5	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	2.7	0.0%	0.0	2.7	0.0%	0.0	0.0	0.0%
Total	26.0	24.1	12.4	48.5%	20.1	12.4	38.3%	-4.0	0.0	-10.2%
Total (Ex-Ante)	**349.9**	**407.6**	**355.6**	**12.8%**	**403.9**	**361.5**	**11.7%**	**-3.8**	**5.8**	**-1.0%**
Non Core (Reopener/logging up)										
HILP	0.0	4.6	3.6	22.0%	4.6	3.6	22.0%	0.0	0.0	0.0%
CNI security	0.0	5.0	0.0	100.0%	5.0	0.0	100.0%	0.0	0.0	0.0%
Black Start Capability	0.0	0.5	0.0	100.0%	0.7	0.0	100.0%	0.2	0.0	0.0%
Rising mains	4.8	38.6	12.4	67.9%	38.6	12.4	67.9%	0.0	0.0	0.0%
Total	4.8	48.7	16.0	67.2%	48.8	16.0	67.3%	0.2	0.0	0.1%
Total	**354.8**	**456.3**	**371.6**	**18.6%**	**452.7**	**377.4**	**16.6%**	**-3.6**	**5.8**	**-1.9%**

Table 12 - SP Manweb

SP_Manweb		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	36.0	40.1	40.5	-0.9%	40.4	40.4	0.0%	0.3	-0.1	1.0%
Diversions	14.8	23.9	16.9	29.4%	23.9	19.7	17.8%	0.0	2.8	-11.6%
Reinforcement	37.6	80.0	77.8	2.8%	80.0	77.8	2.7%	0.0	0.0	0.0%
Fault Levels	5.9	14.7	14.7	0.0%	14.7	14.7	0.0%	0.0	0.0	0.0%
Asset Replacement	233.8	333.0	290.8	12.7%	333.0	299.5	10.1%	0.0	8.7	-2.6%
Operational IT&T	5.8	11.3	10.6	6.6%	11.3	10.6	6.6%	0.0	0.0	0.0%
Legal and Safety	29.8	43.7	31.4	28.1%	43.7	36.9	15.6%	0.0	5.5	-12.5%
Total	363.6	546.7	482.6	11.7%	547.0	499.5	8.7%	0.3	16.9	-3.0%
Non Core (Ex-ante)										
BT21CN	3.5	27.8	10.5	62.2%	10.5	10.5	0.0%	-17.3	0.0	-62.2%
Flooding	0.2	11.4	11.4	0.0%	11.4	11.4	0.0%	0.0	0.0	0.0%
QoS (IIS)	19.2	5.5	0.0	100.0%	5.5	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	2.0	0.0	100.0%	2.0	0.0	100.0%	0.0	0.0	0.0%
Environmental	2.1	4.5	4.5	0.0%	4.5	4.5	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	2.6	0.0%	0.0	2.6	0.0%	0.0	0.0	0.0%
Total	25.0	51.1	28.9	43.4%	33.9	28.9	14.6%	-17.3	0.0	-28.9%
Total (Ex-Ante)	**388.7**	**597.8**	**511.6**	**14.4%**	**580.8**	**528.4**	**9.9%**	**-17.0**	**16.9**	**-4.5%**
Non Core (Reopener/logging up)										
HILP	0.0	4.1	2.5	39.0%	4.1	2.5	39.0%	0.0	0.0	0.0%
CNI security	0.0	6.0	0.0	100.0%	6.0	0.0	100.0%	0.0	0.0	0.0%
Black Start Capability	0.0	1.0	0.0	100.0%	1.6	0.0	100.0%	0.5	0.0	0.0%
Rising mains	0.3	21.3	7.0	67.1%	21.3	7.0	67.1%	0.0	0.0	0.0%
Total	0.3	32.4	9.5	70.7%	33.0	9.5	71.2%	0.5	0.0	0.5%
Total	**388.9**	**630.2**	**521.1**	**17.3%**	**613.8**	**537.9**	**12.4%**	**-16.4**	**16.9**	**-5.0%**

Table 13 - SSE Hydro

SSE_Hydro		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	16.5	16.7	16.2	3.2%	16.7	16.2	3.2%	0.0	0.0	0.0%
Diversions	2.2	4.0	2.2	45.6%	4.0	3.0	26.3%	0.0	0.8	-19.4%
Reinforcement	22.7	19.5	18.4	5.6%	19.5	18.4	5.6%	0.0	0.0	0.0%
Fault Levels	0.1	2.0	2.0	0.0%	2.0	2.0	0.0%	0.0	0.0	0.0%
Asset Replacement	118.1	151.2	142.2	5.9%	151.2	145.5	3.8%	0.0	3.2	-2.1%
Operational IT&T	1.9	9.8	8.6	12.2%	9.8	8.6	12.2%	0.0	0.0	0.0%
Legal and Safety	3.5	11.0	9.4	14.4%	11.0	11.0	0.0%	0.0	1.6	-14.4%
Total	165.0	214.2	199.0	7.1%	214.2	204.6	4.5%	0.0	5.6	-2.6%
Non Core (Ex-ante)										
BT21CN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Flooding	0.0	2.7	0.2	90.8%	0.0	0.2	0.0%	-2.7	0.0	-90.8%
QoS (IIS)	7.4	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Environmental	3.5	1.0	1.0	0.0%	1.0	1.0	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	1.0	0.0%	0.0	1.0	0.0%	0.0	0.0	0.0%
Total	10.9	3.7	2.3	38.0%	1.0	2.3	-121.3%	-2.7	0.0	-159.3%
Total (Ex-Ante)	**175.9**	**217.9**	**201.3**	**7.6%**	**215.2**	**206.9**	**4.0%**	**-2.7**	**5.6**	**-3.6%**
Non Core (Reopener/logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	6.0	0.0	100.0%	6.0	0.0	100.0%	0.0	0.0	0.0%
Rising mains	1.4	1.5	0.6	60.0%	1.5	0.6	60.0%	0.0	0.0	0.0%
Total	1.4	7.5	0.6	92.0%	7.5	0.6	92.0%	0.0	0.0	0.0%
Total	**177.3**	**225.4**	**201.9**	**10.4%**	**222.7**	**207.5**	**6.9%**	**-2.7**	**5.6**	**-3.6%**

Table 14 - SSE Southern

SSE_Southern		Initial Proposals (IP)			Final Proposals (FP)			Change From IP to FP		
£m (07/08)	DPCR4 actuals	DPCR5 Forecast	Baseline	Reduction (%)	DPCR5 forecast	Baseline Updated	Reduction (%)	DPCR5 forecast	Baseline	Reduction
Core (Ex-ante)										
Demand Connections	24.7	58.8	56.9	3.2%	58.8	56.9	3.2%	0.0	0.0	0.0%
Diversions	4.9	19.0	11.7	38.7%	19.0	18.3	3.7%	0.0	6.7	-35.0%
Reinforcement	169.3	150.2	142.5	5.1%	150.2	142.5	5.1%	0.0	0.0	0.0%
Fault Levels	1.2	4.3	4.3	0.0%	4.3	4.3	0.0%	0.0	0.0	0.0%
Asset Replacement	293.3	369.3	326.1	11.7%	369.3	340.4	7.8%	0.0	14.3	-3.9%
Operational IT&T	1.7	18.9	16.5	12.6%	18.9	16.5	12.6%	0.0	0.0	0.0%
Legal and Safety	4.7	33.0	8.0	75.8%	33.0	33.0	0.0%	0.0	25.0	-75.8%
Total	499.8	653.5	565.9	13.4%	653.5	611.9	6.4%	0.0	45.9	-7.0%
Non Core (Ex-ante)										
BT21CN	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Flooding	0.0	9.0	0.2	97.8%	9.0	14.0	-55.5%	0.0	13.8	-153.2%
QoS (IIS)	14.6	17.7	0.0	100.0%	17.7	0.0	100.0%	0.0	0.0	0.0%
QoS (Non IIS)	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Environmental	1.0	2.0	2.0	0.0%	2.0	2.0	0.0%	0.0	0.0	0.0%
Losses	0.0	0.0	4.1	0.0%	0.0	4.1	0.0%	0.0	0.0	0.0%
Total	15.6	28.7	6.3	77.9%	28.7	20.1	29.9%	0.0	13.8	-48.0%
Total (Ex-Ante)	**515.4**	**682.2**	**572.3**	**16.1%**	**682.2**	**632.0**	**7.9%**	**0.0**	**59.7**	**-8.2%**
Non Core (Reopener/logging up)										
HILP	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
CNI security	0.0	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Black Start Capability	0.0	8.0	0.0	100.0%	8.0	0.0	100.0%	0.0	0.0	0.0%
Rising mains	3.3	5.0	2.0	60.0%	5.0	2.0	60.0%	0.0	0.0	0.0%
Total	3.3	13.0	2.0	84.6%	13.0	2.0	84.6%	0.0	0.0	0.0%
Total	**518.7**	**695.2**	**574.3**	**17.4%**	**695.2**	**634.0**	**8.8%**	**0.0**	**59.7**	**-8.6%**

Appendix 8 - Operational Cost Assessment Further Details

Introduction

1.1. This appendix provides a detailed explanation of our methodology and analysis of Operational Costs in the form of a step-by-step guide. The guide supports the data and results included in Chapter 4 of the Final Proposals - Cost Assessment document.

1.2. The intention of this chapter is to provide further clarity of the analysis we have undertaken.

1.3. This appendix is only concerned with the analysis of Operational Costs being made up of:

- Network Operating Costs (NOCs),
- Indirect Costs, and
- Non-Operational Capex

1.4. The first section provides a brief overview of the process we have undertaken to set Operational Cost baselines. The second section provides a detailed explanation of the process of determining 'efficient' costs for 2008-09 for each of the DNOs using benchmarking techniques. The third section provides a detailed explanation of the process for determining 'efficient' costs for each of the DNOs for costs excluded from the benchmarking. The final section provides a detailed explanation of how costs have been rolled forward into the DPCR5 period to determine cost baselines for 2010 to 2015.

Overview of the benchmarking process

1.5. We have used benchmarking to determine the 'efficient' costs in 2008-09 for each DNO for activities where this type of analysis is appropriate. The process can be summarised as a number of individual steps:

- We collated the base cost data for all Operational Activities for the four years 2005-06 to 2008-09,

- We excluded costs that were not suitable for benchmarking,

- We normalised the costs to take account of factors outside the control of the DNOs which have an impact on their cost performance,

- We applied appropriate drivers and ran regressions of the data using a four year panel of data to determine model output costs in 2008-09,

- We compared the model output costs from the regressions to the DNOs' own costs in 2008-09 to determine the overall efficiency scores,
-
- We applied the scores to the DNOs own costs to determine 'efficient' costs in 2008-09,
-
- We rolled forward the 2008-09 efficient costs into the DPCR5 period to determine Operational Cost baselines.
-

Data

Data sources

1.6. The majority of the data used for setting Operational Cost baselines comes from the Forecast Business Plan Questionnaires (FBPQs) submitted by the DNOs. These were designed to gather historical and forecast data at both an aggregate and a disaggregated level in a form that was consistent both across time and across DNOs to support our benchmarking and cost analysis.

1.7. Where additional information was required by us to create a firm view about certain areas within the methodology or actions for analysis, we posed supplementary questions to the DNOs. Where necessary (e.g. for atypical cost data) we also sourced data from the annual data submissions, known as Regulatory Reporting Packs (RRPs).

1.8. Table 1 provides an overview of where the main data for each of the cost activities, normalisation adjustments and drivers are sourced from.

Table 1 - Data sources for total adjustment sheets

	FBPQ	RRP	Supplementary questions
Base Cost Data	√		
Cost Drivers	√	√	
Road Charges	√		
Wayleaves	√		
EDFE Terrorism Insurance			√
Unmetered electricity	√		
Submarine Cables	√		
Remote Location Generation	√		
Property Operating Costs	√		
IT and Telecoms	√		
Low Volume High Value Faults	√		
Urban Specific Costs			√
Urban Working Adjustment			√
Pressure Assisted Cables	√		
Non QoS Faults	√		
3rd Party Damage Recovery	√		
Dismantlement	√		
EDFE High Value Schemes			√
Alliance Contracting (EDFE IDT)			√
Labour Regional Adjustment	√		
Contractors Regional Adjustment	√		
Non-Operational Capex Adjustment	√		
Recognition of Indirect Costs Adjustment			√
NL Cable Replacement	√		
SP Manweb Interconnected Network			√
SSE Sparsity			√
STE & Plant and Machinery Adjustment	√		
Atypicals		√	
Mains and Laterals	√		
Pension admin and PPF Levy			√
Average Non Load Replacement Costs	√		

1.9. Most of the cost data, including the adjustments, was taken from the FBPQs submitted by the DNOs. The data was provided on a disaggregated basis split by activities and by cost types.

1.10. We have undertaken a thorough review of cost drivers for each activity during the DPCR4 period with the help and co-operation of the DNOs. Our final selection of cost drivers were generally supported by the DNOs although there was not unanimous agreement for all of them. The cost drivers we have used in Final Proposals were also taken mostly from the FBPQs submitted by the DNOs. Further details of those cost drivers are provided later in this document.

Exclusions: Costs excluded from the regression analysis

1.11. Costs have been excluded from some or all of the regression analyses where they did not meet the criteria that:

- the DNOs have influence over the costs,
- the activity needs to be undertaken by most of the DNOs, rather than being geographically specific,
- the costs are material for all DNOs and the activity to which they relate are frequent enough to allow robust analysis,
- the costs are relatively stable, rather than being one-off or 'lumpy',
- the costs and associated drivers are well understood, and
- the costs are, or appear to be, reported on a consistent basis across the DNOs

1.12. The following costs have been excluded from some or all of the regression analyses because they failed to meet one or more of the above criteria.

- Traffic Management Costs,
- Wayleaves,
- Terrorism Insurance,
- Unmetered Electricity,
- Submarine Cable repairs,
- Low Volume High Value Faults,
- Remote Location Generation,
- Specific Urban costs,
- Pressure Assisted Cables,
- Non Quality of Service (QoS) Faults,
- Third Party Damage Recovery,
- Dismantlement,
- Property operating costs,
- IT and Telecoms,
- Pensions and related costs,
- EDFE LPN high value projects, and
- Atypical costs

Traffic Management Costs

1.13. We have excluded the majority of these costs from our benchmarking as there is a wide range of costs amongst the DNOs in regard to these areas and we are carrying out separate analysis of costs associated with the Traffic Management Act 2004 (TMA).

1.14. TMA Administration costs have been included in our final benchmarking analysis as these costs are viewed as a support activity for TMA, and should therefore be included within the Engineering Management and Clerical Support (EMCS) costs. Our initial analysis suggested that there were significant differences between DNOs in terms of where these administration costs were included. The costs have been included in Group 2 within our benchmarking.

Wayleaves

1.15. Wayleaves were excluded because the DNOs have only limited control over the costs and we recognised large differences in the costs reported in the DNO submissions.

Terrorism Insurance

1.16. Terrorism Insurance has been excluded because only the EDFE LPN region incurred material costs.

Substation Electricity

1.17. The allowances for unmetered electricity relate to the electricity consumption in substations, where the DNO has registered the substation with a supplier and pays for the electricity used. In DPCR4 some DNOs reported substation electricity consumption as losses – however in DPCR5 we are proposing that all substation electricity be paid for. We have therefore required those DNOs who previously recorded substation electricity usage as losses to forecast their consumption over DPCR5. We expect this policy change to have a neutral impact on the DNOs because we will make an equitable adjustment to the losses targets for those DNOs that have not previously been billed for their electricity usage.

Submarine Cables

1.18. Only a few of the DNOs have Submarine Cables and the costs are high and infrequent.

High Value Low Volume Faults

1.19. For some types of faults the costs and volumes involved were not sufficient to allow for robust regression analysis. These included all plant faults and those at the EHV and 132kv voltages

Remote Location Generation

1.20. Only a few of the DNOs incur remote location generation costs as they relate to islands or otherwise remote locations.

Specific Urban costs

1.21. We excluded some specific costs relating to the EDFE LPN network, including cable tunnels and the maintenance of forced ventilation in underground substations. These costs are associated with subway tunnels, cable tunnel inspection and maintenance, forced ventilation units and fluid filled cable repairs. We came to the view that these costs were not comparable across the DNOs and adjusted their base numbers to normalise them.

Pressure Assisted Cables

1.22. DNOs incur significantly different costs for pressure assisted cables than other types of cable and the populations of these types of cable differ across the DNOs.

Non QoS Faults

1.23. The reporting of non-QoS faults showed no consistency across the DNO submissions and was therefore not suitable for regression analysis.

Third Party Damage Recovery

1.24. For the regression analysis of faults to be robust the costs were used on a gross basis and third party damage recoveries were excluded.

Dismantlement

1.25. Dismantlement costs are not incurred or reported consistently across the DNOs.

Property Operating Costs

1.26. We employed industry expert consultants, Drivers Jonas, to review the Property Costs incurred and forecast by the DNOs. The consultants provided recommendations for the cost baselines for these costs which we included in setting our cost baselines. We included these costs in some regressions and carried out alternative regressions with them excluded.

IT and Telecoms Costs

1.27. We employed industry expert consultants, Mouchel, to review the IT and Telecoms costs incurred and forecast by the DNOs. The consultants provided recommendations for the cost baselines for these costs which we took into account in setting our baselines. We included these costs in some regressions and carried out alternative regressions with them excluded.

Pensions and related costs

1.28. Pensions and associated costs have been reviewed and benchmarked separately from other Operational Costs and Network Investment in accordance with our 'pensions principles'. Because of inconsistencies in the way pensions and associated costs were reported by the DNOs these included all pensions administration costs and the Payment Protection Fund Levy.

EDFE LPN High Value Projects

1.29. We removed the costs of high value schemes in the EDFE LPN area from both the Network Investment unit costs analysis and from the regression and other analysis of Operational Costs. The nature and scale of these schemes meant that they were unlike other schemes undertaken by the DNOs.-

Atypical Costs

1.30. The DNOs identified atypical costs in their annual returns and we undertook a review to ensure consistency and to exclude non-recurring atypical costs from the benchmarking analysis. Other costs identified as atypical by the DNOs met our criteria for inclusion and were therefore included in the costs assessed through regression analysis.

Normalisation Adjustments

1.31. We include normalisation adjustments to ensure our comparative analysis is undertaken on an equitable basis. We made normalisation adjustments to the data in the following areas:

- Labour and Contractor Regional differences,
- Vehicles and Small Tools & Equipment,
- Other Non-Operational Capex,
- Indirect costs reported within direct activity contractors,
- Non-Load Cable Replacement (Including Rising Mains and Laterals),
- Interconnected Network costs in the SP Manweb area,
- Sparsity issues in the SSE Hydro area,
- Working in an urban environment
- EDFE Alliance contracting start-up costs
- Average Non-Load costs

Labour and Contractor Regional Adjustment

1.32. We have adjusted labour and contractor costs to reflect the regional differences in costs in the DNO areas.

1.33. After assessing information provided to us and our own research we decided that it is appropriate to include an adjustment for labour and contractor rates across the DNOs. We have based the labour adjustment on the Annual Survey of Hours and Earnings (ASHE) data provided by the Office for National Statistics. We based the contractors adjustment on the Building Construction Information Service (BCIS) data for construction contracts. We are of the view that Labour and Contractor costs do vary significantly by region within the UK for reasons outside the DNOs' control, and an adjustment is necessary to normalise the costs associated within these two factors.

1.34. Several of the DNOs contend that regional labour and contactor rates do not differ across the country outside of the greater London area. We considered this view and ran alternative regression analysis with the regional labour and contractor adjustments only applied to the EDFE LPN area. We were not able to run analysis with adjustments applied for the whole greater London area because parts of three other DNOs' networks lie in that area but their costs are not split between those and other parts of their networks.

Vehicles and Small Tools & Equipment

1.35. We decided that the most appropriate means of analysing the costs of Vehicles and Small Tools and Equipment (including Plant and Machinery) is in line with the activities which they support. For Network Operating Costs we were able to allocate these costs prior to running the regressions or other analysis. We determined the costs allocated to Network Investment and treated them as a cost excluded from the regression analysis and have then added them back after the regressions taking into account efficiency adjustments from the Network Investment analysis.

Other Non-Operational Capex

1.36. These costs can be considered "lumpy" and therefore instead of taking the actual year costs, we have taken the average of the period 2005-06 to 2014-15. We have taken the data to determine this average from the FBPQs submitted by the DNOs. As part of this normalisation adjustment we included the average cost of each category of Non-Operational Capex over the period 2005-06 to 2014-15 to the relevant activity cost. The costs apportioned to Network Investment activities are therefore based on average costs over that period rather than the actual 2008-09 costs.

Indirect costs reported within direct activity contractors

1.37. We have collected additional information from the DNOs on a standardised template reflecting the extent to which contractors undertake indirect activities as part of contracts for working on the network. We then adjust the DNOs’ Indirect Costs to normalise them to an average level of outsourcing rather than to a closed-book basis. We achieve this through a number of steps:

- By estimating the level of indirect costs embedded within DNO contractor costs (after adjusting for differences in levels of material costs and applying an average proportion of indirects embedded within contractor costs),

- Estimating the revised level of indirects embedded within contractor costs if each DNO carried out an average level of outsourcing. The difference is the amount of costs that needs to be added to indirect costs to normalise for differences in outsourcing.

Non-load cable replacement (including rising mains and laterals).

1.38. During our analysis we have identified apparent inconsistencies in the reporting of underground cable faults and cable replacement. For the purposes of determining comparative efficiency scores we have therefore included the costs of cable replacement with the costs of underground faults and have run alternative regressions with cable replacement costs excluded assess the impact on the results.

1.39. The cost for mains and laterals vary greatly across the DNOs, and is one where it is largely out of the DNO's control. We have therefore taken these costs out of the benchmarking, and dealt with them separately.

Interconnected network costs in the SP Manweb area

1.40. Scottish Power has made presentations explaining the impact of costs on their interconnected network in the Manweb area compared to their distribution area in Scotland (SP Distribution). We have been persuaded that the interconnected network does increase costs and have therefore made a normalisation adjustment.

Sparsity issues in the SSE Hydro area

1.41. SSE have provided us with both written evidence and a presentation at their bilateral meeting with us about the additional Operational Costs incurred to service the highlands and islands of Scotland. We have discussed the report and challenged SSE to justify the level of costs reported. We have been satisfied with the responses provided by SSE and have made an adjustment to normalise their costs accordingly.

Working in an urban environment

1.42. We recognise the additional costs of working in an urban environment including restrictions on the hours work can be performed and charges for parking bays etc. We have developed our methodology based on population densities in local authorities across Great Britain as a proxy for urban networks. We have used the costs provided by EDFE and compared the extent of urban environments to determine adjustments across the DNOs.

IDT Start up Costs

1.43. EDFE are the only DNO to have moved to an 'alliance' model for contracting during DPCR4. They have incurred significant one-off set-up costs in moving to this form of contracting. We have excluded these costs from the regression analysis.

Average non-load costs

1.44. We have considered the view that there may be significant "capex-opex" trade-offs and therefore that a total cost approach to the analysis could result in different outcomes to a more disaggregated approach looking at just Operational Costs. We therefore decided that we would undertake some analysis including a Network Investment costs. We decided that the most appropriate cost to include would be the average non-load related capex for the period 2005-06 to 2014-15 as submitted by the DNOs. This ensured that the lumpiness of connections and other load related investment as well as the normal annual volatility would not impact on the results.'

Methodology

1.45. This part of the document details how we have applied our methodology for undertaking regression analysis including the choices of costs for alternative sets of analysis and the relevant drivers. Later we explain our estimation methodology including estimation techniques, the range of regressions carried out, the construction of composite drivers and the statistical tests we have applied to the analysis. This section ends with details of the regression results including the calculation of model output costs and the calculation of efficiency scores.

1.46. At DPCR4 we based our assessment of opex on top-down regressions of opex plus total fault costs using composite scale variable made up of customer numbers, units distributed and network length as the cost driver. There was widespread concern that this was an inappropriate cost driver that did not adequately relate to the costs that were being assessed. One of the key purposes of the Electricity Networks Association (ENA) cost working group during DPCR4 was to explore a more appropriate form of cost analysis and associated cost drivers. Although the industry was unable to reach agreement on appropriate drivers for some of the areas of costs, a range of options were developed. These included the use of top-down and more disaggregated analysis, the use of MEAV or some measure of direct activities (typically costs) for assessing indirects, using fault numbers for fault costs, using asset numbers or an asset workload driver for inspections and maintenance and using trees cut or trees inspected and managed for tree cutting. They also suggested a number of specifications for the cost drivers.

1.47. Our approach to the DPCR5 cost assessment analysis directly builds on this valuable analysis put forward by the DNOs by carrying out a wide range of regressions. We have developed our approach to both core and sensitivity regressions in order to reflect a range of options that have been put forward.

1.48. A number of DNOs have suggested that we should focus on the top-down regressions because they take into account any trade-offs between different areas of costs and they have lower variance. We consider it is important to use the regressions that best address the underlying areas of costs. It is important that appropriate drivers are used that relate to all of the costs in question. The top-down regressions, whether they are based on the DPCR4 CSV or MEAV and load and non-load capex produce anomalous results. For example, the core top-down regressions show WPD to be one of the most inefficient groups and they bring SSE Southern close to an average level of costs despite the fact it is clear that they are outperforming for a range of activities.

1.49. There are clear intuitive reasons why this is the case. We wouldn’t expect MEAV or load and non-load related capex to be good costs drivers for faults, inspection and maintenance and tree cutting and this is clearly shown to be the case when separate analysis is carried out on these cost areas using the top-down drivers.

Determination of Regression Data Inputs

1.50. We used alternative drivers, alternative cost groupings and alternative disaggregation of data points to test the results of our core regressions. The following sections explain these terms and how we have determined the alternatives. The detailed combinations of regressions and drivers used are detailed in Table 10 which also shows the weightings applied to each set of analysis.

Appropriate level of disaggregation for regression analysis

1.51. We decided to undertaken the regression analysis at different levels of disaggregation to ensure that our results were not skewed by any particular choice. This approach also addressed the concerns of DNOs that favoured different approaches over others.

1.52. We considered the advantages and disadvantages of undertaking the regression analysis at different levels of disaggregation. At a lower level of disaggregation we were able to use cost drivers that were more relevant to the costs being assessed. At a higher level of disaggregation we were more assured that the results were not skewed by inconsistencies in reporting across the cost boundaries.

1.53. We ran our regressions at the three levels of disaggregation set out below.

Top Down

1.54. For Top Down regressions all Operational Costs are included in a single regression.

Single Group

1.55. Indirect activity costs were included in a single regression and Network Operating Costs were split into four regressions:

- LV & HV Underground Faults (including services),
- LV & HV Overhead Faults (including services),
- Inspections and Maintenance, and
- Tree Cutting.

Groups

1.56. Network Operating Costs are disaggregated as per Single Groups and the Indirect Activities are further disaggregated into:

- Group 1: Network Design, Project Management, System Mapping
- Group 2: Engineering Management, Control Centre, Call Centre, Stores, H&S and Operational Training, and
- Group 3: HR and Non-Operational Training, Network Policy, CEO, Finance and Regulation, IT and Property Management.
-

Costs exposed to regression analysis

1.57. In previous sections of this appendix we have identified costs that have been excluded from the regression analysis. We have also set out that we have considered a variety of regressions to ensure that our results were robust and took account of the potential impact of different reporting assumptions at the DNOs.

Core Analysis

1.58. We identified particular combinations of costs and cost drivers as our 'core' analysis. The core analysis includes one set of analysis for each of Top Down, Single Group and Groups. The identification of a set of core analysis provides a baseline against which to assess the impact of changes in the costs, drivers or method in alternative regressions.

1.59. The choice of the core regressions does not mean that we placed significantly more weight on that analysis compared to any other combinations but it does provide a baseline against which to consider the impact of any other combination of costs or drivers. We set out the drivers used in the core analysis in the next section. The core costs:

- include the base activity costs of NOCs, Indirects and average Non-Op Capex,
- exclude those costs identified above as excluded from the regressions,
- include regional labour and contractor adjustments for all DNOs,
- include IT and Property Costs,

- exclude average non-load investment costs,
- include non-load cable replacement,
- include tree cutting, and
- include the indirects in contractors adjustment.

1.60. This description provides a clear indicator of the alternative costs that we subjected to regression analysis.

Alternative Costs Groupings

1.61. The costs groupings we have used in our alternatives to the core analysis generally take a single cost item and either add or exclude it to compare the impact to the core model. We included seven alternative cost groupings in our analysis as follows:

- Core analysis but adding average non-load capex costs for the years 2005-06 to 2014,
- Core analysis but excluding Property Management Activity costs,
- Core analysis but excluding Property Management Activity costs and IT and Telecoms Activity costs,
- Core analysis but only making labour and contractor regional adjustments for the EDFE LPN area,
- Core analysis but excluding non-load capex LV and HV underground cable replacement,
- Core analysis but excluding Tree Cutting, and
- Core analysis but excluding the Indirects in Contractors Adjustment

Cost Drivers in Regressions

1.62. Together with the Electricity Networks Association we spent significant time determining what the appropriate cost drivers should be for each of the activities subject to regression analysis.

1.63. We recognised that to capture all the relevant drivers for costs and identify metrics for them would be an incredibly complex process. We therefore concentrated on determining the most material drivers. However, even this has been difficult and we have dealt with very different views across the industry.

1.64. Table 2 shows those cost drivers we have used in our regressions. We have undertaken regressions with up to three different sets of drivers and in some cases the drivers are made up of two separate metrics, e.g. for Group 2 costs we run the analysis with two separate drivers, total direct costs plus MEAV, and just MEAV.

Table 2 - Drivers used in regressions

Costs Subject to Regression	Driver(s)	Driver	Driver
LV & HV Underground Faults	Number of Faults & Length of Cable Replaced	Number of Faults	
LV & HV Overhead Faults	Number of Faults		
Inspection & Maintenance	Asset Work Hours		
Tree Cutting	Spans Cut & Spans Affected		
Group 1	Network Investment (Labour and Contractor costs only) & MEAV	Network Investment (Labour and Contractor costs only)	MEAV
Group 2	Total Direct Costs & MEAV	Total Direct Costs	MEAV
Group 3 DNO group	Total Direct Costs & MEAV	MEAV	
Single group	Total Direct Costs & MEAV	MEAV	
TopDown	Network Investment (Labour and Contractor costs only) & MEAV	MEAV	

Multiple Drivers

1.65. We assign primary and secondary drivers so we can rank them in the regressions. We have developed our view of what should be the primary and secondary drivers over a long period of discussion with the DNOs and our understanding their businesses.

1.66. We have limited the drivers for any given cost grouping to a maximum of two. Table 3 shows, for the regressions where we have used more than one driver, the split between primary and secondary drivers.

Table 3 - Split of primary and secondary drivers

Regression cost group		Primary driver	Secondary driver
LV & HV Underground Faults		LV & HV Underground faults	Length of cable replaced
LV and HV Overhead Faults		Lv & HV Overhead faults	
Inspection & maintenance		Asset Hours Work driver for Inspection & Maintenance	
Tree Cutting		Spans Cut	Spans affected
Group 1	Network Design, Project Management, System Mapping	Load & Non-Load costs	MEAV
Group 2	Engineering Management & Clerical Support, Control Centre, Customer Call centre, Stores, Health & safety	Total Direct Costs (less non-operational capex £m)	MEAV
Group 3	Network Policy, HR & Non-operational Training, Finance & Regulation, CEO, IT & property	MEAV	Total Direct Costs (less non-operational capex £m)
Single Group	As for Groups but amalgamating the three groups of costs into a single regression	Total Direct Costs (less non-operational capex £m)	MEAV
Top Down	Single regression of all the above costs.	MEAV	Load & Non-Load costs

1.67. The difference between primary and secondary drivers is explained in paragraphs 90 to 97 below.

Data Points

1.68. We have considered the appropriateness of undertaking regressions on a per DNO Group basis rather than a per DNO basis for business costs (Group 3). The regressions on a per DNO basis entails 14 DNOs over a four year period so consists of 56 data points. The regressions on a per DNO basis entail 7 DNO groups over 4 years so consists of 28 data points.

1.69. Running alternative levels of disaggregation in this way allows us to consider the impact of fixed costs being shared between DNOs in the same ownership group.

1.70. We have run the Group 3 regressions on a per DNO Group basis with the analysis on a per DNO basis as an alternative to test the results. We decided that for Final Proposals the regression of Group 3 costs on a per DNO basis was not appropriate as these costs support all the DNO activities across the group. We have therefore weighted the regression of Group 3 costs per DNO at zero.

1.71. We rejected running the regressions for other costs on a per DNO group basis at an early stage of developing our methodology because other costs are incurred on a DNO basis and not significantly shared across the group.

Estimation Methodology

Estimation techniques

1.72. In line with the advice from our academic advisor and developments in benchmarking used by other regulators we have applied panel data regression techniques as the core of our comparative benchmarking.[7]

1.73. We have used panel data regressions to make use of multi-period data and provide better estimates of the impact of cost drivers on costs than is possible with only a single year's data. Better estimates of the impacts of cost drivers can be expected to provide better insights into the relative efficiency of the DNOs. This benefit of time series panel data regressions over cross-sectional regressions relies on the assumption that the cost drivers have a constant effect over time e.g. for all years in the sample: a 1 per cent increase in the cost driver coincides with an X per cent increase in costs.

1.74. Our models have used data from four years (2005-06 to 2008-09). Over this period there will be differences between years that the models must account for. There will be year specific effects that allow for average costs between years to be different. Changes in these time specific effects will reflect changes in a number of factors including:

- Input prices: an increase in input prices will increase the average cost of an activity,

- Industry-wide efficiency: over time the industry will make efficiency improvements that all else being equal will reduce the cost of conducting the various activities, and

- Industry-wide shocks: there may be events in a year that change activity levels across the industry. For example, if there was particularly bad weather in a year one would expect costs in that year to be higher as a result.

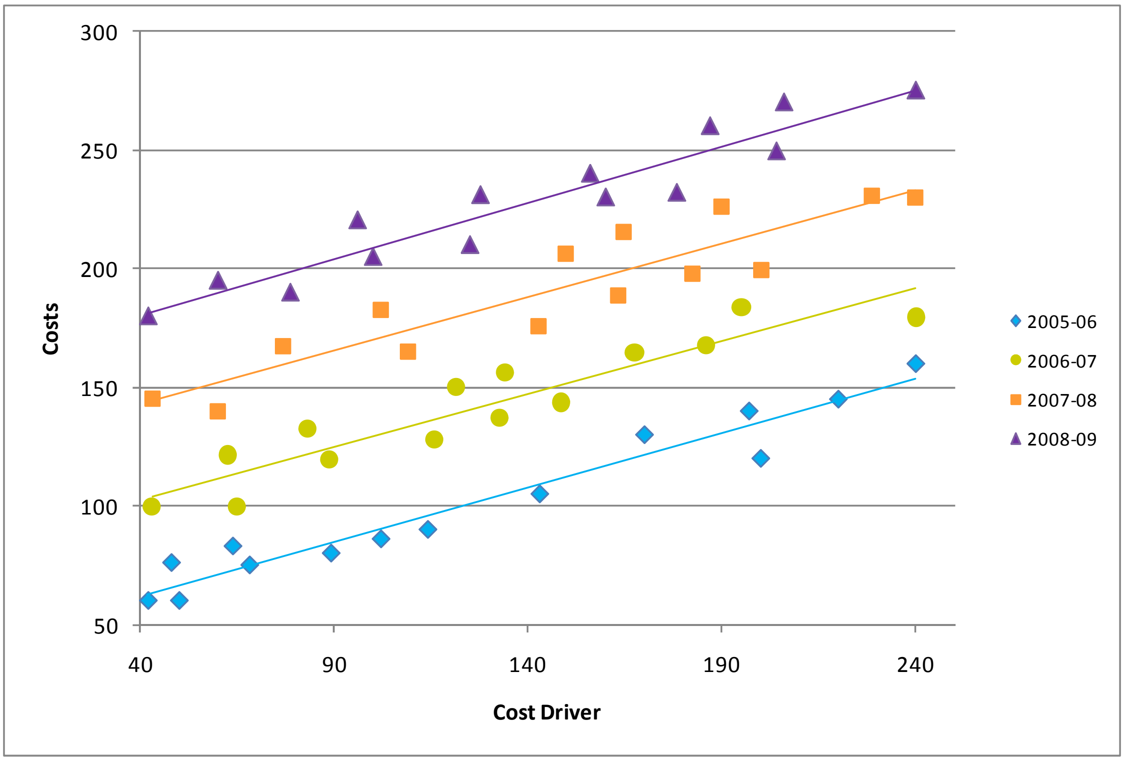
[7] Time series panel data regressions are estimated using data from more than one time period. The additional data can allow better estimation of the effect of cost drivers than is possible using a single year’s data.

1.75. To accommodate these time specific effects we have adopted a time fixed effects approach. This means that each year has its own parameter which helps determine the average cost of the activity in that year.

1.76. We have dealt with DNO fixed effects through our normalisation adjustments.

1.77. When these models are estimated, one can calculate the expected/average cost of performing an activity in a given year. Where companies' actual costs lie relative to this average level provides an indication of their efficiency relative to this average. This is illustrated using simulated data in Figure 1 below.

Figure 1 - Illustration of a time series panel data model



1.78. The following can be seen from this illustration:

- The cost driver has the same effect in all years. In this example an extra unit of the cost driver coincides with an extra unit of costs,
- There are year specific effects that lead to different average costs in each year. In this example average costs have increased from year to year, and
- An indication of the relative efficiency of a DNO can be obtained by comparing the actual costs with the average costs in that year for a given cost driver. For

example, companies that lie above the fitted line have higher than average costs for that level of cost driver and this indicates that we might expect them to be less efficient than average.

1.79. It is important to note that differences between actual costs and the average costs expected by the model do not solely reflect differences in efficiency from the industry average. There may be a number of factors that might be reflected in this difference including the following:

- Measurement errors and differences in cost allocation methodologies in the data,
- Costs that can be explained by another cost driver that has been omitted from the model, and
- Shocks/factors that have only affected a subset of the industry. For example, there might be planning restrictions that only have an impact in a limited number of regions.

1.80. We have addressed these factors by providing guidance on how RRP and FBPQ data should be reported to improve consistency of reporting and carefully ensuring that the cost base and normalisation adjustments eliminate non-comparable costs from the regressions. We have chosen the most appropriate cost driver(s) given the data available and our knowledge of the DNO businesses. We have benchmarked Network Operating Costs and Indirect Costs at the upper third and upper quartile level of efficiency respectively rather than the frontier.

1.81. In addition we carried out a number of DNO-specific adjustments prior to the modelling to account for any unique operating circumstances. These adjustments were made for factors such as regional labour costs, regional contractor costs, and the set-up costs associated with moving to alliance contracting.

Sets of Analysis Undertaken

1.82. Table 4 provides details of each set of analysis we have undertaken for Final Proposals.

Table 4 - Sets of analysis undertaken

Set of Analysis	Level of Disaggregation	Cost	Driver Alternatives	Cost Base Alternatives	Method Change
1	Top Down-CORE	Operational Costs	MEAV/ Load&Non-Load	Base Operational	
2	Top Down	Operational Costs	MEAV		
3	Top Down	Operational Costs	MEAV/ Load&Non-Load	Add Average Non-Load Capex	
4	Top Down	Operational Costs	MEAV/ Load&Non-Load	Exclude Property	
5	Top Down	Operational Costs	MEAV/ Load&Non-Load	Exclude Property and IT	
6	Top Down	Operational Costs	MEAV/ Load&Non-Load	Regional Adjustment only applied to LPN	
7	Top Down	Operational Costs	MEAV/ Load&Non-Load	Excluding Contractor Adjustments	
8	Top Down	Operational Costs	MEAV/ Load&Non-Load	Exclude Tree Cutting	
9	Single Group-CORE	Indirects	Direct/MEAV		
		LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
10	Single Group	Indirects	MEAV		
		LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
11	Groups-CORE	LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	MEAV/ Load&Non-Load		
		Group 2	Direct/MEAV		
		Group 3	MEAV/Direct		
12	Groups	LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	Load & Non-Load		
		Group 2	Direct/MEAV		
		Group 3	MEAV/Direct		
13	Groups	LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	MEAV		
		Group 2	Direct/MEAV		
		Group 3	MEAV/Direct		
14	Groups	LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	MEAV/ Load&Non-Load		
		Group 2	Direct		
		Group 3	MEAV/Direct		
15	Groups	LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	MEAV/ Load&Non-Load		
		Group 2	MEAV		
		Group 3	MEAV/Direct		
16	Groups	LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	MEAV/ Load&Non-Load		
		Group 2	Direct/MEAV		
		Group 3	MEAV		
17	Groups	LV&HV Underground Faults	No. of faults		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	MEAV/ Load&Non-Load		
		Group 2	Direct/MEAV		
		Group 3	MEAV/Direct		
18	Groups	LV&HV Underground Faults	No. of faults	Excluding Non-loadL Cable	
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	MEAV/ Load&Non-Load		
		Group 2	Direct/MEAV		
		Group 3	MEAV/Direct		
19	Groups	LV&HV Underground Faults	No. of faults/cable replaced		
		HV&LV Overhead Faults	No. of faults		
		Inspections & Maintenance	Asset Manhours		
		Tree Cutting	Spans Cut/Spans Affected		
		Group 1	MEAV/ Load&Non-Load		
		Group 2	Direct/MEAV		
		Group 3	MEAV/Direct		On per DNO group basis

1.83. The shaded drivers, cost bases and alternative method in Table 4 show how each set of analysis differs from the core.

1.84. Where our statistical tests identify a DNO as an 'outlier' for any set of analysis we have also rerun the analysis excluding that outlier. Further details about our outlier tests are included below.

1.85. We have rerun any analysis where the secondary driver would statistically achieve greater weighting than the primary driver. We have rerun the analysis using 'free-weighting' based on the results of the multivariate regressions.

1.86. We have rerun the free-weight analysis excluding any outliers that our statistical tests have identified.

1.87. Table 5 shows for which of the sets of analysis listed in Table 4 above that we have undertaken additional analysis for:

- removal of outliers,
- free weighting of multiple drivers, and
- removal of outliers for free weights of multiple drivers.

Table 5 - Datasets requiring additional runs of analysis

	Rerun for:		
Set of analysis	Outlier	Free weights	Outlier for free weights
1	Yes		
2	Yes		
3		Yes	
4	Yes	Yes	Yes
5	Yes	Yes	Yes
6		Yes	
7	Yes	Yes	Yes
8		Yes	
9			
10			
11	Yes	Yes	Yes
12			
13			
14	Yes		
15	Yes		
16			
17	Yes		
18			
19		Yes	
Total	9	8	4

1.88. Table 5 shows for example that:

- for set of analysis 1 we repeated our analysis with outlier(s) removed;
- for set of analysis 3 we repeated our analysis using driver weightings determined by multivariate analysis, and
- for set of analysis 4 we repeated our analysis with:
- outlier(s) removed,
- including all data points but with driver weightings determined by multivariate analysis, and
- with outliers removed and driver weightings determined by multivariate analysis.

1.89. The additional runs have added a further 21 sets of results to the 19 previously identified resulting in 40 sets of analysis that we have used to reach our view of comparative efficiency.

Construction of Composite Drivers

Multiple drivers

1.90. We have used secondary drivers in our core regressions where we are of the view that it will improve the data modelling. The drivers are combined into a single 'composite' driver, as illustrated in the equation below, to allow us to use our industry knowledge to restrain the weightings between the primary and secondary drivers.

$$\text{Composite Scale Variable} = \text{Primary Driver}^{W_1} \times \text{Secondary Driver}^{W_2}$$

Where W_1 is the weight of the primary driver, and
W_2 is the weight of the secondary driver

1.91. Our estimation model uses costs and driver data, which is in a logarithmic format. Therefore, the actual formula used to compute the composite scale variable in our analysis is:

$$\text{Composite Scale Variable} = \text{exponential } [\{\log(\text{Primary Driver})\}^{W_1} \times \{\log(\text{Secondary Driver})\}^{W_2}]$$

1.92. Drivers with large values have large averages and large corresponding slope values in a multiple regression analysis. This effectively influences the respective weights that are calculated from the slope values. To eliminate this effect, the averages of both drivers were converted to zero using the following data standardisation procedure:

- We first computed the average of the log(driver) data,
- We then computed the standard deviation for the log(driver) data, and

- Finally we generated a standardised data set as follows.

$$\text{Standardised log(Driver) data} = \frac{\text{Original log(Driver) data} - \text{log(Driver) average}}{\text{Log(Driver) Standard deviation}}$$

1.93. The slope values for each driver were established by running a multiple regression with the log (adjusted costs) as the dependent variable and the standardised (Std.) data for the two log (drivers) as explanatory variables. This is illustrated in the equation below where b_1 and b_2 are the respective slope values.

$$\text{log(Adjusted Cost)} = \text{Intercept} + b_1 \times \text{Std. log (Primary Driver)} + b_2 \text{ x Std. log(Secondary Driver)} + \varepsilon$$

1.94. The calculation of the weights was based on the driver slope values (i.e. b_1 and b_2 in the above equation). The weights are computed as a ratio of the driver's slope value to the sum of the two drivers' slope values. For example:

$$\text{Weight for Primary Driver } (w_1) = \frac{\text{Slope value for Primary Driver } (b_1)}{\text{Sum of slope values } (b_1 + b_2)}$$

$$\text{Weight for Secondary Driver } (w_2) = \frac{\text{Slope value for Secondary Driver } (b_2)}{\text{Sum of slope values } (b_1 + b_2)}$$

1.95. With the exception of Group 3 (HR and Non-Operational Training, Network Policy, CEO, Finance and Regulation, IT and Property Management), if the computed weight for the primary driver was less than 0.5 and the corresponding weight for the secondary driver was more than 0.5, then we imposed a 0.5 weight on both the primary driver and the secondary driver. For Group 3, if the computed weight of the primary driver was less than 0.66, and the corresponding weight for the secondary driver more than 0.34, then we imposed a 0.66 weight on the primary driver and a 0.34 weight on the secondary driver.

1.96. We have set these constraints to ensure that the weighting of the primary driver is at least 66 per cent for Group 3 and at least 50 per cent for the other core cost groups. We considered that setting a lower limit for the weighting of the secondary driver would be inappropriate and have therefore not set a minimum weighting for the secondary driver which in some cases could be zero.

1.97. The slope coefficients and respective weights used for each of the alternative regressions in our analysis are set out in Table 6 below. Where we have run regressions using alternative cost bases we have retained the core regression weights. Where we have run regressions using free weights, we have used weights determined by multivariate regressions.

Table 6 - A summary of the weights used in the analysis

			Multivariate Driver Regressions Weights		
Set of analysis	Cost and Regression Group	Drivers	Slope coefficients	Regression-based weights	Weights used
	Core				
1	TopDown	**MEAV**	0.19	0.63	0.63
		Load & Non-Load Costs	0.11	0.37	0.37
9 and 11	Underground Faults	**Number of faults**	0.38	0.78	0.78
		Length of cable replaced	0.11	0.22	0.22
9 and 11	Overhead Faults	**Number of Faults**	n.a.	n.a.	1.00
9 and 11	Inspection & Maintenance	**Asset Manhours**	n.a.	n.a.	1.00
9 and 11	Trees	**Spans cut**	0.34	1.17	1.00
		Spans affected	-0.05	-0.17	0.00
9	Single group	**Direct Costs**	0.13	0.52	0.52
		MEAV	0.12	0.48	0.48
11	Group 1	**Load & Non-Load Costs**	0.35	1.07	1.00
		MEAV	-0.02	-0.07	0.00
11	Group 2	**Direct Costs**	0.15	0.44	0.50
		MEAV	0.20	0.56	0.50
11	Group 3 DNO group	**MEAV**	0.17	0.60	0.66
		Direct Costs	0.11	0.40	0.34
	Alternative Cost base				
3	TopDown + Non-Load Capex	**MEAV**	0.17	0.58	0.63
		Load & Non-Load Costs	0.12	0.42	0.37
4	TopDown excluding Property	**MEAV**	0.19	0.63	0.63
		Load & Non-Load Costs	0.11	0.37	0.37
5	TopDown excluding IT & Property	**MEAV**	0.20	0.62	0.63
		Load & Non-Load Costs	0.13	0.38	0.37
6	TopDown - Regional Adjustments LPN Only	**MEAV**	0.20	0.65	0.63
		Load & Non-Load Costs	0.11	0.35	0.37
7	TopDown excluding Contractor Adjustments	**MEAV**	0.20	0.69	0.63
		Load & Non-Load Costs	0.09	0.31	0.37
8	TopDown excluding Trees	**MEAV**	0.18	0.57	0.63
		Load & Non-Load Costs	0.13	0.43	0.37
18	Underground Faults excluding Non-load Cables	**Number of faults**	n.a.	n.a.	1.00
	Alternative Method				
19	Group 3 on a per DNO basis	**MEAV**	0.12	0.64	0.66
		Direct Costs	0.07	0.36	0.34
	Free Weight				
3	TopDown + Non-Load Capex	**MEAV**	0.17	0.58	0.58
		Load & Non-Load Costs	0.12	0.42	0.42
4	TopDown excluding Property	**MEAV**	0.19	0.63	0.63
		Load & Non-Load Costs	0.11	0.37	0.37
5	TopDown excluding IT & Property	**MEAV**	0.20	0.62	0.62
		Load & Non-Load Costs	0.13	0.38	0.38
6	TopDown - Regional Adjustments LPN Only	**MEAV**	0.20	0.65	0.65
		Load & Non-Load Costs	0.11	0.35	0.35
7	TopDown excluding Contractor Adjustments	**MEAV**	0.20	0.69	0.69
		Load & Non-Load Costs	0.09	0.31	0.31
8	TopDown excluding Trees	**MEAV**	0.18	0.57	0.57
		Load & Non-Load Costs	0.13	0.43	0.43
11	Group 2	**Direct Costs**	0.15	0.44	0.44
		MEAV	0.20	0.56	0.56
11	Group 3 DNO group	**MEAV**	0.17	0.60	0.60
		Direct Costs	0.11	0.40	0.40
19	Group 3 on a per DNO basis	**MEAV**	0.12	0.64	0.64
		Direct Costs	0.07	0.36	0.36
			Single Driver Regressions		
	Alternative Drivers				
2	TopDown MEAV	MEAV	n.a	n.a	1.00
10	Single group MEAV	MEAV	n.a	n.a	1.00
12	Group 1 Load & Non-Load Costs	Load & Non-Load Costs	n.a	n.a	1.00
13	Group 1 MEAV	MEAV	n.a	n.a	1.00
14	Group 2 Direct Costs	Direct Costs	n.a	n.a	1.00
15	Group 2 MEAV	MEAV	n.a	n.a	1.00
16	Group 3 DNO group MEAV	MEAV	n.a	n.a	1.00
17	Underground Faults – Number of Faults	Number of Faults	n.a	n.a	1.00

Statistical Tests

1.98. We have conducted a series of statistical tests on the panel data models that we have estimated by ordinary least squares (OLS). These tests were selected in co-operation with our academic advisor. These tests provide an indication of the robustness of the modelling results and also indicate where some of the outputs from the regressions might be biased and require an adjustment to avoid misleading results. The tests that we have run are:

- White test for heteroscedasticity, to ensure robust inference,
- F-test for a constant cost driver coefficient over time,
- Ramsey RESET type Wald test for model misspecification,
- Jarque-Bera test for normality, and the
- Standardised residuals test for outliers.

1.99. These tests including the respective hypotheses tested are briefly discussed below.

White test

1.100. The white test examines whether the residual variance of the variable in the regression model is constant (homoscedasticity). If there is evidence of variation in the residual variance (heteroscedasticity) it implies that the standard errors of the coefficients (and therefore any hypothesis testing) are wrong.

1.101. We are testing for heteroscedasticity because any violation of this might be an indicator of a more general model misspecification.

F-test for the Slope

1.102. The F-test examines whether the slope coefficients for the different years are statistically similar or different. If they are similar, then the data can be pooled over the given years because it has similar characteristics. If they are statistically different then there is no justification for pooling.

Ramsey RESET type Wald test

1.103. The Ramsey Regression Equation Specification Error Test (RESET) test is a general test for model misspecification.

1.104. The RESET test based on the F-statistic generated by our econometrics software is not robust to heteroscedasticity. We have therefore in co-operation with our academic advisor adopted a Wald test which is robust to heteroscedasticity. The version of the test used checks whether the squared fitted values from a regression are statistically significant when they are included as an additional driver in the original regression.

1.105. There are four versions of covariance robust estimators one can use in Eviews. One of them, the White Diagonal covariance robust estimator generates results that can be replicated in some of the alternative econometric software. We therefore have used this estimator to generate our results so that they can be replicated using alternative software. However, in co-operation with our academic advisor, we have selected the White Period covariance robust estimator for use in the misspecification test.

Jarque-Bera test

1.106. Jarque-Bera is used to test the null hypothesis that the data is from a normal distribution (i.e. that the data is not skewed). This test is applied before using methods of parametric statistics which require distribution normality.

Standardised Residuals Test

1.107. The standardised residuals test is used to test for outliers. An outlier is an observation that is different to the others in a dataset and has influence over the entire dataset's characteristics. In terms of regression analysis, variation in the data is necessary to carry out estimation. However, outliers can make models perform worse in terms of overall fit and standard errors. Nevertheless, it is important not to exclude an outlier unless its values can be attributed to measurement error instead of a chance occurrence that reflects the underlying model. In short, the detection of an outlier provides a basis for investigating the data further, instead of excluding that observation.

1.108. .The tests have been set using a 95 per cent confidence interval. The commands used to conduct the White test, the F-test, the Wald test and the Jarque-Bera test are in the Eviews regression codes, which we used for our analysis. The Eviews regression codes are available upon request.

1.109. The standardised residuals test was undertaken using two steps. The first step involved computing the residuals in logarithmic format:

$$\log(\text{Residual}) = \log(\text{Actual costs}) - \log(\text{estimated costs})$$

1.110. A standardised residual data set was then generated using the following procedure:

- We first computed the average of the log(Residual) data,
- We then computed the standard deviation for the log(residual) data, and
- We finally computed the standardised log(Residual) as follows:

$$\text{Standardised } \log(\text{Residual}) = \frac{\log(\text{Residual}) - \log(\text{Residual}) \text{ Average}}{\log(\text{Residual}) \text{ Standard deviation}}$$

1.111. The standardised log (Residual) value was then compared with the critical value for a normal distribution at the 95 per cent confidence level. All values that were less than -1.98 and those that were more than 1.98 were taken as outliers.

Regression Results

1.112. We determined overall results including running all the statistical tests listed for all the permutations of regressions detailed in the sections above.

1.113. We present the results for each alternative permutation of analysis that we have undertaken in Table 7. The data is shown split by cost grouping and includes details of the weights used, whether outliers have been excluded and the results of all the statistical analysis.

Table 7 - A summary of regression results and statistical tests

Set of Analysis	Cost Group	Regression Group	Free Weights	Excluded Outliers	R^2	Slope coefficient	Intercept coefficient	Slope Standard Error	Slope test: F-test (P values)	Driver test: Probability t-statistic (P values)	Equation test: Probability F-statistic (P values)	Normality test - Jarque-bera: 2005-06 (P values)	Normality test - Jarque-bera: 2006-07 (P values)	Normality test - Jarque-bera: 2007-08 (P values)	Normality test - Jarque-bera: 2008-09 (P values)	Heteroscadascity test: White test (P values)	Model specification test: Wald test (P values)
1	TopDown	Core			0.87	0.68	-0.07	0.03	0.97	0.00	0.00	0.75	0.45	0.76	0.58	0.27	0.07
	TopDown	Core		LPN	0.91	0.69	-0.09	0.03	0.92	0.00	0.00	0.74	0.87	0.69	0.47	0.15	0.16
2	TopDown-MEAV	Alt Driver			0.86	0.90	-3.46	0.05	0.82	0.00	0.00	0.90	0.92	0.63	0.81	0.07	0.23
	TopDown-MEAV	Alt Driver		SSES	0.91	0.99	-4.21	0.03	0.77	0.00	0.00	0.71	0.76	0.50	0.80	0.04	0.47
3	TopDown + Non-Load Capex	Alt Cost Base			0.90	0.66	0.56	0.03	0.98	0.00	0.00	0.65	0.50	0.45	0.57	0.21	0.39
	TopDown + Non-Load Capex	Alt Cost Base	FW		0.89	0.64	0.80	0.03	0.98	0.00	0.00	0.66	0.51	0.51	0.54	0.20	0.36
4	TopDown excluding Property	Alt Cost Base			0.87	0.68	-0.12	0.03	0.98	0.00	0.00	0.77	0.39	0.86	0.67	0.33	0.06
	TopDown excluding Property	Alt Cost Base	FW		0.87	0.68	-0.14	0.03	0.98	0.00	0.00	0.77	0.39	0.86	0.67	0.32	0.06
	TopDown excluding Property	Alt Cost Base		LPN	0.91	0.69	-0.13	0.03	0.93	0.00	0.00	0.82	0.74	0.71	0.46	0.16	0.13
	TopDown excluding Property	Alt Cost Base	FW	LPN	0.91	0.69	-0.15	0.03	0.93	0.00	0.00	0.83	0.74	0.71	0.46	0.16	0.13
5	TopDown excluding IT & Property	Alt Cost Base			0.87	0.76	-0.76	0.03	0.997	0.00	0.00	0.60	0.22	0.84	0.75	0.26	0.48
	TopDown excluding IT & Property	Alt Cost Base	FW		0.87	0.75	-0.71	0.03	0.997	0.00	0.00	0.60	0.22	0.84	0.75	0.27	0.48
	TopDown excluding IT & Property	Alt Cost Base		LPN	0.92	0.76	-0.78	0.03	0.98	0.00	0.00	0.69	0.36	0.59	0.79	0.39	0.98
	TopDown excluding IT & Property	Alt Cost Base	FW	LPN	0.92	0.76	-0.73	0.03	0.98	0.00	0.00	0.68	0.36	0.58	0.80	0.40	0.99
6	TopDown-Regional Adjustment LPN Only	Alt Cost Base			0.88	0.71	-0.27	0.03	0.98	0.00	0.00	0.63	0.57	0.69	0.54	0.27	0.06
	TopDown-Regional Adjustment LPN Only	Alt Cost Base	FW		0.89	0.72	-0.41	0.03	0.97	0.00	0.00	0.65	0.53	0.70	0.53	0.26	0.06
7	TopDown excluding Contractor Adjustments	Alt Cost Base			0.86	0.66	0.07	0.03	0.98	0.00	0.00	0.66	0.32	0.72	0.55	0.29	0.07
	TopDown excluding Contractor Adjustments	Alt Cost Base	FW		0.87	0.69	-0.36	0.03	0.96	0.00	0.00	0.72	0.24	0.75	0.53	0.25	0.07
	TopDown excluding Contractor Adjustments	Alt Cost Base		LPN	0.90	0.67	0.06	0.03	0.93	0.00	0.00	0.59	0.91	0.65	0.50	0.16	0.15
	TopDown excluding Contractor Adjustments	Alt Cost Base	FW	LPN	0.91	0.69	-0.36	0.03	0.91	0.00	0.00	0.66	0.93	0.71	0.52	0.13	0.17
8	TopDown excluding Trees	Alt Cost Base			0.89	0.71	-0.32	0.03	0.92	0.00	0.00	0.97	0.85	0.59	0.45	0.11	0.08
	TopDown excluding Trees	Alt Cost Base	FW		0.88	0.69	0.01	0.03	0.94	0.00	0.00	0.96	0.89	0.56	0.47	0.15	0.08
9	Single group	Core			0.76	0.59	0.24	0.05	0.70	0.00	0.00	0.31	0.82	0.84	0.86	0.06	0.00
10	Single group-MEAV	Alt Driver			0.72	0.77	-2.80	0.07	0.85	0.00	0.00	0.66	0.93	0.72	0.77	0.00	0.72
11	Group 1	Core			0.63	0.70	-0.74	0.08	0.92	0.00	0.00	0.56	0.84	0.60	0.85	0.01	0.82
12	Group 1-Load & Non-Load Costs	Alt Driver			0.63	0.70	-0.74	0.08	0.92	0.00	0.00	0.56	0.84	0.60	0.85	0.01	0.82
13	Group 1-MEAV	Alt Driver			0.43	0.85	-5.32	0.17	0.79	0.00	0.00	0.67	0.76	0.54	0.48	0.01	0.15
11	Group 2	Core			0.80	0.81	-2.29	0.06	0.99	0.00	0.00	0.61	0.69	0.70	0.48	0.24	0.00
	Group 2	Core	FW		0.81	0.83	-2.63	0.06	0.99	0.00	0.00	0.61	0.70	0.69	0.46	0.25	0.00
	Group 2	Core		CNW	0.84	0.78	-2.14	0.06	0.998	0.00	0.00	0.66	0.72	0.83	0.55	0.10	0.00
	Group 2	Core	FW	CNW	0.84	0.80	-2.47	0.06	0.997	0.00	0.00	0.66	0.74	0.86	0.55	0.10	0.00
15	Group 2-MEAV	Alt Driver			0.79	1.06	-6.47	0.08	0.98	0.00	0.00	0.81	0.41	0.95	0.88	0.02	0.63
15	Group 2-MEAV	Alt Driver		CNW, SSES	0.88	1.14	-7.12	0.06	0.99	0.00	0.00	0.70	0.14	0.57	0.73	0.29	0.19
14	Group 2-Direct Costs	Alt Driver			0.76	0.74	-0.53	0.06	0.997	0.00	0.00	0.61	0.56	0.58	0.61	0.20	0.00
	Group 2-Direct Costs	Alt Driver		CNW	0.79	0.71	-0.44	0.06	0.9998	0.00	0.00	0.65	0.58	0.61	0.53	0.17	0.00
11	Group 3 DNO group	Core			0.77	0.68	-1.38	0.08	0.76	0.00	0.00	0.68	0.78	0.81	0.84	0.04	0.02
	Group 3 DNO group	Core	FW		0.77	0.67	-1.07	0.08	0.77	0.00	0.00	0.67	0.80	0.80	0.86	0.03	0.02
16	Group 3 DNO group-MEAV	Alt Driver			0.76	0.80	-3.66	0.10	0.75	0.00	0.00	0.75	0.75	0.82	0.80	0.04	0.01
19	Group 3 on a per DNO basis	Alt Method			0.53	0.46	0.00	0.07	0.75	0.00	0.00	0.69	0.70	0.97	0.82	0.00	0.00
	Group 3 on a per DNO basis	Alt method	FW		0.53	0.46	0.07	0.07	0.75	0.00	0.00	0.68	0.70	0.97	0.83	0.00	0.00
9&11	Overhead Faults	Core			0.70	0.89	-5.85	0.07	0.49	0.00	0.00	0.84	0.81	0.81	0.84	0.17	0.55
9&11	Underground Faults	Core			0.59	0.55	-1.05	0.09	0.62	0.00	0.00	0.05	0.88	0.58	0.74	0.00	0.05
	Underground Faults	Core		SSEH	0.46	0.35	0.47	0.07	0.38	0.00	0.00	0.58	0.79	0.98	0.67	0.00	0.14
17	Underground Faults-Number of Faults	Alt Driver			0.62	0.99	-6.00	0.14	0.96	0.00	0.00	0.21	0.83	0.94	0.96	0.00	0.02
	Underground Faults-Number of Faults	Alt Driver		SSEH	0.53	0.65	-2.89	0.11	0.83	0.00	0.00	0.69	0.65	0.83	0.78	0.00	0.00
18	Underground Faults-excluding Non-Load Cables	Alt Cost Base			0.59	0.88	-5.38	0.13	0.94	0.00	0.00	0.48	0.65	0.73	0.18	0.08	0.04
9&11	Inspection & Maintenance	Core			0.50	0.72	-6.62	0.11	0.88	0.00	0.00	0.83	0.53	0.94	0.24	0.01	0.27
	Inspection & Maintenance	Core		SSEH	0.46	0.59	-5.02	0.08	0.78	0.00	0.00	0.61	0.72	0.81	0.04	0.15	0.04
9&11	Trees	Core			0.55	0.50	-3.19	0.08	0.70	0.00	0.00	0.71	0.58	0.76	0.75	0.00	0.00

1.114. We have made the following observations on the results of our statistical tests:

- We have not found any problems with the distribution of the residuals from our model,
- We have not found any statistical evidence to suggest that the slopes on the cost drivers are not constant over time,
- Heteroscedasticity has been detected in a number of models. This finding affects the standard errors (we have corrected these using a robust estimator) and the use of F tests (we have used the heteroscedasticity-robust Wald version of the test statistic). The estimated coefficients which we rely upon for our efficiency assessment remain unbiased,
- All our cost drivers and models have been found to be statistically significant. This suggests that the drivers we have included in our models have strong explanatory power,
- The R^2 is quite high for most of the cost group regressions. This suggests that the cost drivers used in our models are responsible for most of the changes in the costs,
- We have found some outliers in our analysis but this is unsurprising (given the sample size in our models one would expect there be outliers detected) and does not affect the robustness of our models as we have no strong expectation for the residuals to follow a particular distribution. We have also included in our analysis results based on regressions where the outliers have been eliminated from the sample, and
- We tested model specification using a robust (to heteroscedasticity) RESET test. The test used checks whether the squared fitted values from a regression are statistically significant when they are included as an additional driver in the original regression. In a number of our regressions this additional term has been found to be statistically significant, which might suggest an issue with the specification of our models. We think that the results of our analysis remain robust and fit for purpose for the following reasons:
- The test only indicates whether the squared fitted values have any explanatory power, but does not provide any further information as to whether/how a model should be modified.
- Moreover, it does not answer the question of whether there exists a more appropriate model with additional/alternative cost drivers. We have estimated a series of regressions for each category of costs with a range of possible cost drivers to explore this avenue. The results of these models broadly support each other and we think it appropriate to use this approach,

1.115. We believe that the log-log functional form of our models makes economic sense. This functional form suggests that a 1 per cent increase in the cost driver leads to a constant percentage increase in costs. We do not think it appropriate to deviate from this assumed relationship.

1.116. In addition to these points we have recognised that the econometric models cannot provide robust efficiency assessments in isolation. We have used our judgement to make adjustments where we think appropriate so that the data are comparable and so that DNO specific factors are taken into account. We have also recognised that the unexplained costs in our regressions might not all be due to inefficiency and for this reason we have benchmarked against the upper quartile or below rather than the frontier.

Calculation of Model Output Costs

1.117. Our panel data regressions have been estimated using OLS with the following:

- Costs and driver data transformed into a logarithmic basis, and
- Fixed time effects, i.e. a year specific intercept.

1.118. The equation below gives our model’s functional form and the model we use to estimate model output costs.

$$\log(\text{Adjusted Costs}) = a + b \times \log(\text{Driver}) + \varepsilon$$

Where a = $a_{2005\text{-}06}$ in 2005-06
$a_{2006\text{-}07}$ in 2006-07
$a_{2007\text{-}08}$ in 2007-08
$a_{2008\text{-}09}$ in 2008-09
(a is the time specific intercept, b is the slope and ε is the residual)

1.119. The results from our regression model are used to estimate a DNO’s efficient costs using the equation below.

$$\text{Efficient Adjusted Cost}_{2008-09} = \text{exponential}\,[a_{2008-09} + b \times \log(\text{Driver})_{2008-09}]$$

1.120. However, as the regression was applied to logarithmic transformations of the costs data, the above formula will tend to underestimate the expected costs for a given driver. We resolved this by multiplying each efficient adjusted cost with an estimate of the expected value of exponential (ε), which we refer to as an alpha factor in this analysis. The alpha factor is calculated using the following procedure:

- Let y = Adjusted Costs; x = Driver, and i = ith DNO,
- Obtain the fitted values $\widehat{\log y}$ from the regression of log(y) on log(x),
- For each observed i, create $\hat{s}_i$ = exponential($\widehat{\log y}_i$)
- Regress y on the single variable $\hat{s}$ without an intercept, and
- The coefficient on $\hat{s}$ is the alpha factor α.

1.121. The corrected efficient adjusted cost is then computed as:

$$\text{Corrected Efficient Adjusted Cost}_{DNO} = \text{Efficient Adjusted Cost}_{DNO} \times \alpha$$

This correction is made only when α > 1. If α ≤ 1, then no correction is made.

Calculation of Efficiency Scores

Efficiency Scores for each 'set' of analysis

1.122. For each set of analysis, including outliers and using free weights f or drivers, we have compared the input costs to the output costs to determine a relative efficiency score for each DNO. For Top Down the one regression represents one 'set' of analysis while for Single Group and Groups a single set of analysis represents the result of the constituent regressions added together (paragraphs 50 and 51 above).

1.123. We calculate the total input costs and total output costs for each set of analysis and use the following equation to determine the overall efficiency score:

$$\text{Efficiency Score} = \frac{\text{Actual Adjusted Costs}_{2008-09}}{\text{Corrected Efficient Adjusted Costs}_{2008-09}}$$

1.124. For Single Group and Groups we calculate an efficiency score for Network Operating Costs and for Indirect costs separately using the same method but limiting it to those costs.

1.125. In each case we adjust the efficiency scores for each DNO to ensure that the average efficiency score across the DNOs is exactly 100 per cent for each set of analysis, at total level or for NOCs and Indirects separately. This adjustment ensures that the scores for each set of analysis are on a comparable basis. The calculation we use is:

$$\text{Adjusted Efficiency Score(DNO)} = \frac{\text{Efficiency Score(DNO)}}{\text{Industry Average Efficiency Score}}$$

1.126. The computation of the efficiency scores for one DNO for the Top Down, Single Group and Groups models is illustrated in Table 8.

Table 8 - An illustration of the computation of efficiency scores

Regression Cost Group	Corrected Efficiency Adjusted Costs (a)	Actual Adjusted Costs (b)	Efficiency Score (c)=(b)/(a)	Industry Average Efficiency Score (d)	Adjusted Efficiency Score (e)=(c)/(d)
Underground Faults	4	3			
Overhead Faults	25	21			
Inspection & Maintenace	7	10			
Tree Cutting	6	8			
Group 1	11	13			
Group 2	22	33			
Group 3 DNO Group	30	29			
Single group	65	75			
Top Down	108	117	108.3%	X	108.3%/X
Groups (sum)	105	117	111.4%	Y	111.4%/Y
Single group (sum)	107	117	109.3%	Z	109.3%/Z

1.127. In Table 8 'Groups (sum)' and 'Single group (sum)' denote the sum of predicted model output costs summing over all components of the cost groupings.

Overall Efficiency Scores

Appropriate weighting for sets of analysis

1.128. To determine the relative weighting for the sets of analysis we undertook a number of steps as follows. We:

- determined the relative weightings of the sets of analysis at the different levels of disagreggation based on our unerstanding of their reletive merits,
- determined the relative weightings of the core and alternative sets of analysis based on their relative merits,
- determined the relative weighting for sets of analysis with outliers removed compared to analysis without outliers removed,
- determined the relative weightings for sets of analysis with drivers limited weights compared to analysis allowing free weights of drivers,
- assigned relative weightings to each of the regressions based on the steps above (e.g. for the core Top Down analysis with outliers removed and using free weights the relative weighting would equal the weighting for Top Down times weighting for the core analysis times the weighting for outliers times the weighting for free weights),

- determined which sets of analysis we were using for Final Proposals. Not all were used because in some cases there were no outliers to remove or there was only a single driver,
- multiplied the weightings of all the sets of analysis within a particular level of disaggregation by a variable to ensure they added up to the correct figure (per 131 below).

1.129. The following paragraphs provide more detail of each of the steps listed above.

1.130. Since Initial Proposals we have considered further the relative weightings we apply to each level of disaggregation of the sets of analysis. We are concerned that at the highest level of aggregation, Top Down, the limited number of drivers are not sufficient to adequately explain the costs reported by the DNOs. We therefore decided to apply a reduced weighting to those sets of analysis.

1.131. The relative weightings of the different levels of disaggregation are as follows:

- Top Down: 0.09
- Single Group: 0.45
- Groups: 0.45

1.132. We have used our judgement of the relative merits of the sets of analysis to attached a weighting to each one. This includes consideration of the different data sets and drivers that we have used in the analysis. The judgement was based on our understanding of the DNOs businesses.

1.133. We determined the relative weightings for sets of analysis with outliers removed and for free weights based on our view of the relative merits of each approach.

1.134. Table 9 shows the initial weighting we placed on each set of analysis.

Table 9 - Initial weighting of sets of analysis

Set of analysis	Regression Alternatives	Analysis category	Base	Outlier removed	Free weights	Outlier removed and free weights
				0.7	0.4	0.28
1	Core Top Down	Top Down	0.0909	0.0636	0.0364	0.0255
9	Core Single Groups	Single Group	0.4545	0.3182	0.1818	0.1273
11	Core Groups	Groups	0.4545	0.3182	0.1818	0.1273
5	Excluding IT & Property	Top Down	0.0909	0.0636	0.0364	0.0255
4	Excluding Property	Top Down	0.0909	0.0636	0.0364	0.0255
3	Including Non-load capex	Top Down	0.0045	0.0032	0.0018	0.0013
6	Regional Labour and Contractor adjustment for EDFE LPN only	Top Down	0.0045	0.0032	0.0018	0.0013
19	Group 3 on per DNO basis	Groups	0.0000	0.0000	0.0000	0.0000
2	Use MEAV as driver: Top Down	Top Down	0.0091	0.0064	0.0036	0.0025
10	Use MEAV as driver: Single Group	Single Group	0.0909	0.0636	0.0364	0.0255
13	Use MEAV as driver: Group 1	Groups	0.0909	0.0636	0.0364	0.0255
15	Use MEAV as driver: Group 2	Groups	0.0909	0.0636	0.0364	0.0255
16	Use MEAV as driver: Group 3	Groups	0.2273	0.1591	0.0909	0.0636
14	Use Direct Costs as Driver: Group 2	Groups	0.0455	0.0319	0.0182	0.0127
12	Use Load & Non-load Costs as Driver: Group 1	Groups	0.0455	0.0319	0.0182	0.0127
8	Exclude Tree Cutting	Top Down	0.0455	0.0319	0.0182	0.0127
7	Exclude Contractor Adjustment	Top Down	0.0045	0.0032	0.0018	0.0013
17	Just Faults as Driver: Underground Faults	Groups	0.0455	0.0319	0.0182	0.0127
18	Exclude Non-load Cable Replacement: Underground Faults	Groups	0.2273	0.1591	0.0909	0.0636

1.135. The table gives the initial weightings for each of the possible alternative sets of analysis. The weightings for sets of analysis where we have removed outliers is calculated by multiplying the weighting for the base analysis by the weighting for outliers removed, e.g. for the Core Top Down model the base weighting of 0.0909 multiplied by 0.7 equals 0.0636.

1.136. The weighting for a set of analysis with free weights drivers and outliers removed is the base weighting times the weighting for outliers removed (0.7) times the weighting for free weights (0.4).

1.137. In some cases there were no outliers or requirements to run alternative allowances for free weighting of the drivers.

1.138. Table 10 below shows the actual alternative set of analysis that we have used for Final Proposals and the final weighting of each. The weightings were scaled back from the figures included in Table 9 above to ensure the total weighting equalled one and the weightings within each level of disaggregation equalled those listed in paragraph 131 above.

Table 10 - Weighting used for each set of analysis

Set of Analysis	Level of disaggregation	Difference to 'Core'	Free Weight for Driver	Outliers excluded	Weighting	Total
1	Top Down	Core			0.0120	
	Top Down	Core		yes	0.0084	
2	Top Down	Driver - MEAV			0.0012	
	Top Down	Driver - MEAV		yes	0.0008	
3	Top Down	Cost Base - including Non-load Capex			0.0006	
	Top Down	Cost Base - including Non-load Capex	Yes		0.0002	
4	Top Down	Cost Base - excluding Property			0.0120	
	Top Down	Cost Base - excluding Property	Yes		0.0048	
	Top Down	Cost Base - excluding Property		yes	0.0084	
	Top Down	Cost Base - excluding Property	Yes	yes	0.0034	
5	Top Down	Cost Base - excluding IT & Property			0.0120	
	Top Down	Cost Base - excluding IT & Property	Yes		0.0048	
	Top Down	Cost Base - excluding IT & Property		yes	0.0084	
	Top Down	Cost Base - excluding IT & Property	Yes	yes	0.0034	
6	Top Down	Cost Base - Regional adjustments LPN only			0.0006	
	Top Down	Cost Base - Regional adjustments LPN only	Yes		0.0002	
7	Top Down	Cost Base - excluding contractor indirects adjustments			0.0006	
	Top Down	Cost Base - excluding contractor indirects adjustments	Yes		0.0002	
	Top Down	Cost Base - excluding contractor indirects adjustments		yes	0.0004	
	Top Down	Cost Base - excluding contractor indirects adjustments	Yes	yes	0.0002	
8	Top Down	Cost Base - excluding Tree Cutting			0.0060	
	Top Down	Cost Base - excluding Tree Cutting	Yes		0.0024	0.0909
9	Single Group	Core			0.3788	
10	Single Group	Driver - Indirects - MEAV			0.0758	0.4545
11	Groups	Core			0.1043	
	Groups	Core	Yes		0.0417	
	Groups	Core		yes	0.0730	
	Groups	Core	Yes	yes	0.0292	
12	Groups	Driver - Group 1 - Load & Non-load costs			0.0104	
13	Groups	Driver - Group 1 - MEAV			0.0209	
14	Groups	Driver - Group 2 - Direct costs			0.0104	
	Groups	Driver - Group 2 - Direct costs		yes	0.0073	
15	Groups	Driver - Group 2 - MEAV			0.0209	
	Groups	Driver - Group 2 - MEAV		yes	0.0146	
16	Groups	Driver - Group 3 - MEAV			0.0521	
17	Groups	Driver - Underground Faults - Number of Faults			0.0104	
	Groups	Driver - Underground Faults - Number of Faults		yes	0.0073	
18	Groups	Cost Base - Underground Faults - excluding Non-load Cables			0.0521	
19	Groups	Method - Group 3 on per DNO basis			0.0000	
	Groups	Method - Group 3 on per DNO basis	Yes		0.0000	0.4545

1.139. The majority of the alternative sets of analysis were undertaken at a Top Down level of disaggregation which meant the overall impact of those changes was limited to the overall weighting of 0.0909. We therefore included a further adjustment to take proper account of the impact those alternatives should have on our final results.

1.140. Our adjustment recognised the impact of the alternative sets of analysis on the core Top Down Analysis and adjusted the Single Group and Groups analysis results by the same proportion.

Final Efficiency Scores

1.141. We determined efficiency scores for Network Operating Costs and for Indirect costs separately. For Single Group and Groups sets of analysis this was simply a weighted average of these scores for each. For the Top Down we had to determine an implied efficiency score for NOCs and Indirects from the overall score.

1.142. To determine the implied score we determined the weighted average difference between the overall score and the NOCs and Indirects scores for each of the Single Groups and Groups set of regressions. This gave weighted average percentage adjustments to those scores for each DNO. We applied the same weighted average adjustment to the results of the Top Down Analysis for each DNO to determine the assumed efficiency scores for NOCs and Indirects for each DNO for each Top Down regression. The final overall efficiency scores are presented in Table 11.

Table 11 - Overall efficiency scores

	Final Proposals	
	Network Operating Costs	Indirect Costs
CN West	104%	117%
CN East	88%	92%
ENW	93%	107%
CE NEDL	100%	95%
CE YEDL	122%	88%
WPD S Wales	91%	105%
WPD S West	97%	95%
EDFE LPN	100%	97%
EDFE SPN	124%	102%
EDFE EPN	128%	119%
SP Distribution	97%	99%
SP Manweb	93%	98%
SSE Hydro	70%	102%
SSE Southern	93%	83%

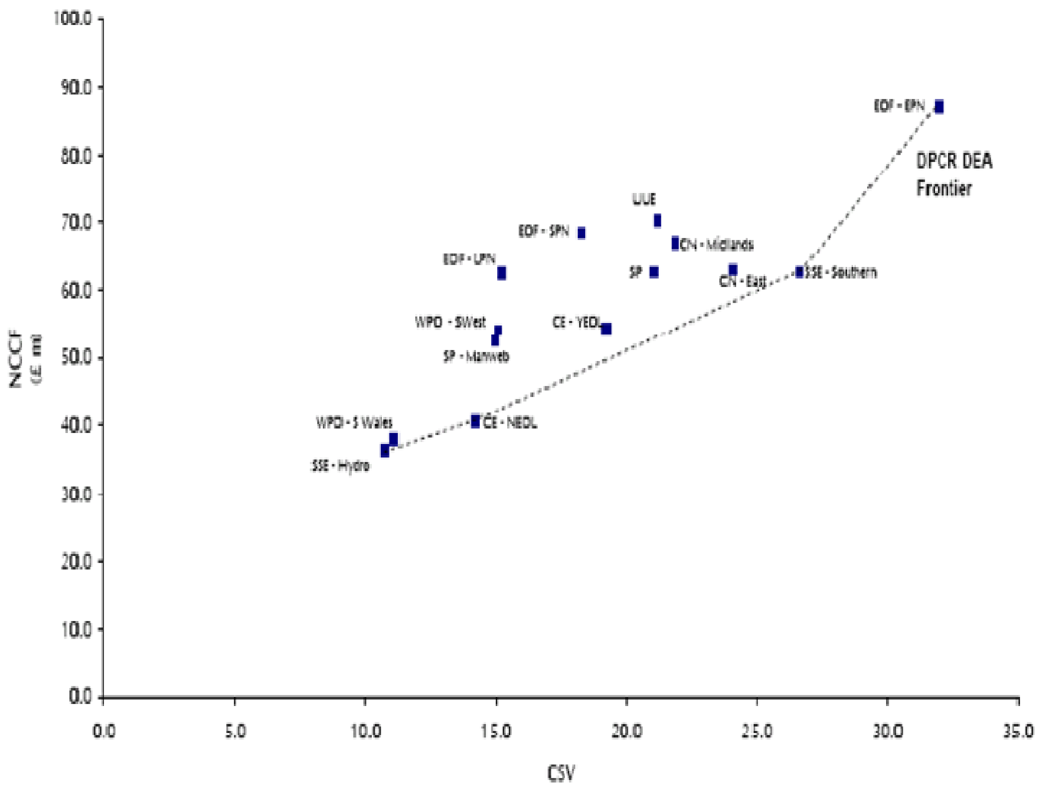
Alternative Assessment Methods

1.143. We considered alternative methods of determining comparative efficiency scores for the DNOs but rejected them in favour of the approach and methodology documented above. The following sections provide a brief overview of those alternatives we have considered.

Data Envelopment Analysis

1.144. Data Envelope Analysis (DEA) is a non-statistical approach that can be used for comparative efficiency analysis. A frontier is "wrapped" around the data such that the most efficient companies lie on the frontier, while the less efficient companies lie above the frontier. A DEA frontier is illustrated in Figure 2 below which was used at DPCR4 in the September 2004 update paper.

Figure 2 - Illustration of a frontier estimated by DEA



1.145. This demonstrates how the frontier is fitted around the observed data such that all companies either lie on the frontier or above it. The further a company lies above the frontier the more inefficient it is deemed to be.

1.146. DEA has the following limitations:

- The frontier estimated by DEA is very sensitive to a small number of observations. The frontier plotted in the figure above is determined by only four DNOs, the other ten do not affect the frontier in any way. In some cases the frontier could be determined by only two DNOs. In a regression, all of the observations affect the estimated parameters so the results cannot be influenced so heavily by a single DNO.
- The way that DEA works will always mean that some DNOs will always lie on the frontier. In the example above, the shape of the frontier will mean: the DNO with the largest cost driver (CSV) will always lie on the frontier regardless of its expenditure, and the DNO with the lowest expenditure will always lie on the

frontier regardless of the size of its cost driver. This is not the case with regression analysis.

- DEA does not have any tests that can be used to help select the general functional form or the cost drivers to include in the analysis. Regression analysis has a battery of diagnostic tests that can be used to assist in selecting the most appropriate variables and functional forms.

- DEA assumes no measurement error or noise in the data and that all the relevant cost drivers have been specified. Regression analysis can accommodate such factors within the residual of the regression which captures all of these "unexplained" costs.

1.147. We have undertaken DEA analysis of the 2008-09 costs used in the comparative benchmarking on the core Top Down cost group using a Variable Returns to Scale (VRS) functional form. The results provided by this approach assign a score up to one (frontier). Because the output is on a different basis to the scores provided by the ordinary least squares (OLS) regressions we have presented a comparison of the ranking of the DNOs under those regressions and by DEA in Table 12.

Table 12 - DNOs' DEA and regression efficiency score rankings for the core Top down model

DNO	Top Down Regression Ranking CORE	VRS DEA (2008-09) CORE	Difference
CN West	11	13	2
CN East	3	1	-2
UU	9	11	2
CE NEDL	5	7	2
CE YEDL	6	8	2
WPD S Wales	13	10	-3
WPD S West	12	14	2
EDFE LPN	1	1	0
EDFE SPN	10	12	2
EDFE EPN	14	1	-13
SP Distribution	4	5	1
SP Manweb	7	9	2
SSE Hydro	2	1	-1
SSE Southern	8	6	-2

1.148. The DEA and regression results for the core model give the same rankings for one DNO and small differences in rankings for twelve of the remaining DNOs. The ranking for EDFE EPN changes from 14 under the regression to 1 under the DEA model. The different ranking for EDFE EPN is a product of the DEA methodology whereby the DNO with the largest driver is always estimated to be on the frontier.

1.149. Our view is that the DEA analysis broadly supports the regression analysis we have undertaken. However, because of the above discussed limitations of DEA we have not adjusted our view of comparative efficiency scores because of running that analysis.

Stochastic Frontier Analysis

1.150. We have explored the use of Stochastic Frontier Analysis (SFA). A key difference is that for SFA the costs which are not explained by the cost driver - the residuals – are split into two components: an efficiency element, and a noise element which captures all other unexplained costs.

1.151. Our academic advisor has conducted some initial analysis using this technique, however, given the limitations in the data available we have decided it was inappropriate to continue further with this technique.

Cost Baselines for DPCR5

1.152. To determine the cost baselines for costs subject to regressions we have calculated the 'efficient' costs for 2008-09 and then rolled forward those costs into the DPCR5 period.

Determining the 'efficient' costs for 2008-09

1.153. We have determined the 'efficient' costs for 2008-09 for the costs we have included in the benchmarking. For those costs excluded from the regressions the methodology does not require the efficient cost in 2008-09 to be calculated.

1.154. The efficient 2008-09 costs are calculated by comparing the efficiency score for each DNO to the benchmark we have set for the type of costs. We recognised that the range of efficiency scores for Network Operating Costs was significantly larger than that for Indirect Costs and therefore considered it appropriate to apply a lower benchmark for those costs.

1.155. The efficiency adjustment for indirect costs and non-operational capex has been set as the deviation of each DNO's efficiency ranking from the statistical upper quartile of the efficiency scores. The efficiency adjustment for NOCs has been set as the deviation from the statistical upper third.

1.156. We have calculated an adjustment to actual costs for each to take the DNO to the benchmark.

$$\text{Adjustment to Actual Costs} = \text{Actual Costs x (Actual Efficiency Score} - \text{Benchmark Score)}$$

1.157. The efficient 2008-09 costs is the DNOs own costs in 2008-09 plus the adjustment to actual costs.

$$\text{Efficient Costs}_{2008-09} = \text{Actual Costs} + \text{Adjustment to Actual Cost}$$

Rolling Efficient 2008-09 Costs into DPCR5

1.158. The 'efficient' 2008-09 spend is rolled forward into DPCR5 by applying an annual efficiency saving and annual growth terms.

Annual Efficiency Saving

1.159. We have applied a 1 per cent annual efficiency saving to the Operational Costs from 2009-10 to 2014-15.

Annual Growth Terms

1.160. We have applied an annual growth term for some Operational Costs to reflect

- changes in indirect costs to support changes in the network investment undertaken by the DNOs,
-
- previously undiscovered condition issues with LV and HV underground cables, and
-
- additional restrictions on assets for design faults not known of at Final Proposals.
-

Indirect costs growth term

1.161. We recognised a relationship between the changes in network investment costs and changes in indirect costs in the historical data submitted by the DNOs. This relationship suggested that a 3 per cent increase in network investment drove a 1 per cent increase in indirect costs.

1.162. We applied a 1 per cent growth factor to indirect costs subject to regressions for each year from 2009-10 to 2014-15 for each 3 per cent change in the network investment costs forecast (for 2009-10) or set as a baseline (DPCR5 period).

1.163. The starting point for the network investment costs we used for calculating the growth factor was a weighted average of the historical costs based on the following weightings:

- 2008-09 weighting 57 per cent,
- 2007-08 weighting 29 per cent, and
- 2006-07 weighting 14 per cent

Growth Term for Underground Cables Faults

1.164. We applied a 1 per cent annual growth factor to LV and HV Underground Cable Faults for the years

Growth Term for Inspections & Maintenance

1.165. We applied a 1 per cent annual growth factor to Inspections and Maintenance costs subject to regressions for the years 2009-10 to 2014-15.

Cost Baselines for costs excluded from the regression analysis

1.166. In an earlier section we identified those costs that had been excluded from the regression analysis. This section explains how we have determined the cost baselines in each case.

Traffic Management Costs

1.167. We have set cost baselines for traffic management costs excluding any permitting costs (assessed as part of a reopener) and excluding admin costs (included within Indirects).

1.168. We have used the following method to set allowances for these costs:

- We have used the volumes forecast by the DNOs for the number of notifications and inspections. We have assumed that the inspection fee of £50 in 2009/10 will increase by RPI thereafter.
- For notification and inspection penalties we have conducted the following analysis.
    - Examined the forecast penalty rates of the DNOs (i.e. the proportion of notifications and inspections expected to result in a penalty) and set a benchmark equal to the 33rd percentile. This gives a benchmark of 4 per cent for notifications and 6.8 per cent for inspections.
    - We have assumed that 90 per cent of notification penalties (FPNs) will be paid within 28 days. This gives a weighted average FPN fee of £84 in 2009/10. We have assumed that this fee will increase with RPI for DPCR5. We have assumed that the 2009-10 inspection penalty of £142 will also increase in line with RPI.
- We are also only allowing costs that are not expected to be recharged to contractors, e.g. a DNO that recharges all inspection penalties to contractors does not receive an allowance for these costs. This is to ensure that costs are not double counted within our assessment – the contractors costs will already include any expected penalties that will be recharged.

1.169. For other costs (one-off set up costs, lane rentals, overstay fines, and congestion charge payments) we have allowed the DNOs’ forecasts.

1.170. Admin costs associated with this activity have been added to engineering, management and clerical and support (EMCS) costs and have been modelled as part of these indirect costs.

Wayleaves

1.171. We have set cost baselines for Wayleaves at the levels forecast by the DNOs. We agree with the DNOs that in the medium term the costs are to a large degree outside of the DNOs direct control. We have not applied an efficiency or growth factor to these cost baselines.

Terrorism Insurance

1.172. We have set costs baselines only for the EDFE DNOs. We set the values at the minimum of the costs reported in 2008-09 and the average of the costs reported for the years 2005-06 to 2008-09. We have not applied an efficiency or growth factor to these cost baselines.

Unmetered Electricity

1.173. The allowances relating to unmetered electricity relates to substation electricity consumption, where the DNO has registered the substation with a supplier and pays for the electricity used. In DPCR4 some DNOs reported substation electricity consumption as losses – however in DPCR5 we are proposing that all substation electricity be paid for. We have therefore required those DNOs who previously recorded substation electricity usage as losses to forecast their consumption over DPCR5. We have accepted these forecasts, but have included a corresponding adjustment to the calculation of the DPCR5 losses targets to reflect the fact that theses DNOs will have lower losses in DPCR5

1.174. We benchmarked the unit cost of electricity, using the lowest cost forecast. We applied the benchmarked unit cost to the DNOs own forecasts of units to calculate the DNO allowance for Unmetered Electricity.

Submarine Cable repairs

1.175. We have set costs baselines at the minimum of the average annual forecast for DPCR5 and the annual average actual costs reported for the period 2005-06 to 2008-09. We have not applied an efficiency or growth factor to these cost baselines.

Low Volume High Value Faults

1.176. For these costs we have take the minimum of the DNOs own forecasts and the average actual costs reported for the period 2005-06 to 2009-10 (with a 1 per cent annual saving applied) to set the cost baselines.

Remote Location Generation

1.177. For these costs, we have set the cost baselines by taking the lower of the forecast or the average actual costs reported for the period 2005-06 to 2009-10 (with a 1 per cent annual saving applied).

Specific Urban Costs

1.178. Urban Specific cost baselines have only been allowed for the EDFE LPN region. The cost baselines have been calculated as the minimum of the DNOs own forecast and the average of the four years of actual costs reported. We have not applied an efficiency or growth factor to these cost baselines.

Pressure Assisted Cables

1.179. The costs baselines have been set at the lower of the DNOs own forecast and the average of the actual costs reported for the years 2005-06 to 2008-09 (with a 1 per cent annual efficiency factor applied).

Non QoS Faults

1.180. The cost baselines have been set at the lower of the DNOs own forecast and the average of the actual costs reported for the years 2005-06 to 2008-09 (with a 1 per cent annual efficiency factor applied). In addition the baselines include the average of the vehicles and transport costs allocated to Non-QoS faults in the years actual costs were reported with a 1 per cent annual efficiency factor applied from 2009-10.

Third Party Damage Recovery

1.181. We have set the allowance at the minimum of the forecast and the average of the actuals. We have not applied an efficiency or growth factor to these cost baselines.

Dismantlement

1.182. The allowance for Dismantlement for most of the DNOs has been set at the minimum of the Forecast or the average of the actuals (with a 1 per cent annual efficiency saving).

1.183. SSE Southern and ENW identified specific dismantlement programmes in their forecasts and we agreed to amend their cost baselines to take these into account. For SSE Southern the costs baselines also include the costs of a specific dismantlement programme forecast for 2010-11. For ENW the specific programmes were forecast for 2011-12 and 2012-13 but they also explained their increased forecasts for dismantlement as a result of specific issues identified by the Health and

Safety Executive (HSE). We have set ENW's cost baselines at the forecast levels for ENW.

Property Operating Costs

1.184. Our property consultants provided us with a forecast benchmark for property operating costs. We calculated our adjusting percentage based on the lesser of the ratio of the benchmark costs to the DNO's forecasts or one hundred per cent. We then multiplied that adjusting percentage by the DNOs forecasts each year to determining the cost baseline.

1.185. We did not apply an annual 1 per cent efficiency factor to the cost baselines because efficiencies were already built into the benchmarks provided by the consultants.

IT and Telecoms

1.186. We set the cost baselines based on the work undertaken by our IT consultants. The consultants provided percentage adjustments to the DNOs' forecasts and we applied those in setting the cost baselines.

EDFE LPN high value projects

1.187. Our Network Investment team agreed those high value projects in the EDFE LPN area to be excluded from the unit cost benchmarking. We agreed for consistency to exclude the indirect cost of those projects from the regression analysis. EDFE provided us with details of the relevant Indirect costs for the DPCR5 period and we added those to the cost baselines.

Atypical costs

1.188. For Atypical costs identified by the DNOs, excluding those that have been included in the benchmarking, no cost baselines have been allowed.

1.189. For one-in-twenty storm events we have allowed the same costs for each DNO as at DPCR4. The costs have been inflated in line with RPI to 2007-08 prices.

Vehicles and Small Tools and Equipment allocated to Network Investment activities

1.190. We determined the overall scaling factor for the Network Investment analysis and applied that same scaling factor to the forecast costs for Vehicles and Small Tools & Equipment allocated to Network Investment to determine the relevant costs baselines.

Post Analysis Adjustments

Scottish Power

1.191. Post the analysis we were informed of a significant error in the data provided by SP in relation to faults. We could not redo all the analysis so we ran a limited sample number of regressions to determine the likely impact the changes would have had on our cost baselines.

1.192. We do not think it was reasonable to make adjustments to other DNOs' allowances as these would not be based on a full re-run of our benchmarking analysis and they would not have had the opportunity to challenge and make representations on the effects of this revised analysis on their allowances.

1.193. We decided in the circumstances that it would not be appropriate to allow the full increase in allowances for SP that the sample analysis suggested and therefore limited the additional cost baseline increase to £31m.

CE Electric

1.194. CE provided a late adjustment to reduce their forecast volumes for substation electricity. As a result we have reduced their costs baselines but also increased their losses targets.