



**AN ASSESSMENT OF THE DISTRIBUTION LOSSES
INCENTIVE**

OFGEM: DPCR5

23 June 2008

A report commissioned by Centrica

Submitted by:

CEPA LLP



CONTENTS

1. Summary	3
2. Introduction	4
3. Setting the incentive.....	4
4. DNOs' performance under the incentive	5
5. Conclusions	10

1. SUMMARY

Ofgem's initial consultation on the electricity distribution price control review (DPCR5) includes a chapter on its potential approach to addressing environmental issues during the review.¹ Although that chapter touches on a wide range of environmental issues, this paper focuses on the distribution losses incentive, including DNOs' performance to date under the incentive. We focus on distribution losses because they account for the vast majority of DNO carbon emissions and the value of payments under this incentive are, to date, very significant.

This paper reaches the following conclusions:

- Although the value per MWh for rewards under the distribution losses incentive appears to have been derived using a broadly robust methodology, the targets for DNOs were, in the main, overly generous and as a consequence allowed some DNOs to receive incentive payments despite an increase in losses.
- While there has been a modest overall reduction in losses during the two years of the price control for which data is available, there is a risk that DNOs have received payments based on reductions in losses achieved prior to the start of the control period.
- As there was an average increase in losses between 2004/5 and 2005/6, customers in effect paid over £100 million for an increase in losses of about 275,000 MWh.
- Customers have paid far in excess of Ofgem's calculation of the value per unit of reduced losses for a fairly modest reduction in losses. In 2006/7 customers effectively paid circa £140 per MWh of reduced losses, substantially in excess of the £48 per MWh that Ofgem valued loss reductions at when setting the incentive. The total payment in 2006/7 was again in excess of £100m.
- The variation in performance across years for some DNOs is very large, suggesting that further work to understand the causes and drivers of distribution losses may be useful and necessary.
- There is a need for a fundamental assessment and overhaul of Ofgem's existing approach if a fit-for-purpose incentive is to be used during DPCR5. There remains a case for an incentive for companies to reduce distribution losses, but this should ensure that targets are robust, the price of savings reflects the benefits associated with reductions in losses and only rewards companies for genuine improvements in outcomes that primarily reflect their own efforts.

¹ "Electricity Distribution Price Control Review, Initial consultation document", Ofgem, March 2008.

2. INTRODUCTION

This paper reviews the operation of the distribution losses incentive that has applied to the DNOs since the beginning of the current price control (EDPCR4). The paper:

- provides an overview of the structure of the incentive;
- considers performance under the incentive and assesses its effectiveness in reducing losses; and
- questions whether customers have received value for money from the incentive.

3. SETTING THE INCENTIVE

Ofgem has sought to incentivise DNOs to reduce the level of losses on their system over several price control periods. As part of the current price control package Ofgem put in place a revised incentive on DNOs to reduce the losses of electricity on their networks. Ofgem set a target for each DNO (which was the same for each year of the price control) based primarily on reviewing historical performance and taking account of particular issues for DNOs, such as the quantity and nature of distributed generation on their networks. DNOs were to be rewarded for achieving losses that were below their target, with rewards accruing on a rolling five year basis (i.e. DNOs retained the value of reduced losses under the incentive for five years irrespective of which year in the price control they reduced losses).

Ofgem set a value in 2004/5 prices of £48 MWh for reductions in losses. This value was based on estimates of four parameters:

- The cost of buying electricity to replace that lost, using forward prices prevailing at the time.
- The value of environmental benefits from reduced losses, through a shadow cost of carbon.
- The cost of using the transmission system to transport additional units to the distribution networks.
- The cost of providing, operating and maintaining additional distribution assets because of the losses.

Ofgem's approach to setting the per unit value for the incentive appears to be broadly appropriate, although we do not have enough information to evaluate the values chosen for each element of the calculation². We note that there may be an argument for resetting the value of the incentive each year to account for changes in the cost of buying electricity³ or indexing this part of the value to the forward wholesale electricity price.

² We note the need to avoid any double counting of environmental benefits, given that the power price will include costs to generators of meeting various environmental incentives.

³ Ofgem has increased the per MWh value associated with forward wholesale electricity prices for the National Grid system operator incentives to reflect prevailing forward prices.

An indexed price might be expected to avoid the value of the incentive being substantially too high or low at particular points of the price control, leading to under or over investment in reducing losses. However we recognise that the benefits of such an approach would need to be offset against any costs associated with reduced certainty when investments are made or increased volatility in customer charges.

4. DNOs' PERFORMANCE UNDER THE INCENTIVE

As far as we are aware, neither Ofgem or the DNOs have published a breakdown or detailed calculations highlighting company performance under the distribution losses incentive. Therefore, in order to estimate DNOs' performance under the incentive we have had to use information published by Ofgem about distribution losses by DNO⁴ and apply this to the formula for calculating performance under the distribution losses incentive⁵. We have not sought to calculate the legacy figure for DNOs' performance under the previous price control, although this would appear to affect DNOs' revenue for 2005/6.

When reviewing DNOs' performance against the incentive, the most striking observation is that relative to historical performance the majority of targets for losses set by Ofgem appear to be generous. Table 4.1 below shows DNOs' actual performance since 2000/1 and the target set by Ofgem.

⁴ These are available from
<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=70&refer=Networks/ElecDist>

⁵ We recognise that the total payments received/ costs incurred by DNOs are a function of performance under the losses incentive set under DPCR4 and the previous distribution losses incentive. Information presented in this paper concentrates solely on the rewards/penalties incurred during the first 2 years of operation of the DPCR4 losses incentive and is based on publically available data.

Table 4.1: DNOs losses performance (% units distributed) compared to Ofgem's target

	CN West	CN East	UU	CE NEDL	CE YEDL	WPD S Wales	WPD S West	EDF LPN	EDF SPN	EDF EPN	SP Dist	SP Manweb	SSE Hydro	SSE Southern	Average
2000/1	5.34	5.98	6.16	5.20	6.34	5.59	7.75	7.04	6.72	6.76	6.44	7.92	8.88	6.85	6.53
2001/2	3.44	5.88	4.04	5.20	4.98	4.77	6.70	6.46	6.62	6.50	6.50	6.01	8.99	6.81	5.81
2002/3	4.39	5.20	5.66	4.58	5.97	2.41 ⁷	6.40	6.16	6.63	4.57	4.64	5.14	8.93	6.81	5.47
2003/4	4.41	4.84	5.84	4.52	5.59	4.75	6.56	6.11	6.11	5.18	4.07	4.78	8.94	6.81	5.50
2004/5	4.46	5.05	4.64	5.47	5.04	4.84	6.05	5.48	5.63	4.52	4.51	5.11	8.93	6.80	5.30
2005/6	4.96	4.94	4.65	4.77	3.60	4.98	5.68	5.55	5.88	4.59	5.89	6.20	8.76	6.54	5.32
2006/7	3.95	5.14	4.72	4.53	3.82	5.39	5.73	5.32	5.58	4.44	5.57	5.50	8.75	6.56	5.18
Target	4.96	5.69	5.68 ⁸	5.2	5.9	4.94	6.96	6.54	6.54	6.32	6.45 ⁹	7.52 ¹⁰	8.73	6.74 ¹¹	

⁶ Note, Ofgem publishes losses as a percentage of units entering the network and calculates losses for the purposes of the incentive as a percentage of units distributed from the network.

⁷ We are concerned that this value may have been published in error. If it is accurate we consider that there is a strong case for investigating the cause of the material reduction in losses relative to the previous year and material increase in the subsequent year.

⁸ Changed to 5.48% with effect from 1 April 2007.

⁹ Target changed to 5.41% for 2005/06 and revised to 5.13% for 2006/07.

¹⁰ Target changed to 5.85% for 2005/06 and revised to 5.32% for 2006/07.

¹¹ Target revised to 6.59% following a direction by Ofgem.

A number of observations can be made from table 4.2:

- Only three DNOs face targets which are lower than their performance in 2003/4, which was the most recent year of information available to Ofgem when it set the incentive. This meant that, in theory, a majority of DNOs could make gains under the incentive even if their loss percentage increased from the 2003/4 figure.
- Although the actual performance for 2004/5 would not have been known to Ofgem when it set the targets, it is again notable that only three DNOs have targets which are lower than their performance in 2004/5.
- Whilst the evidence is not conclusive, the fact that five DNOs reported an increase in losses between 2002/3 and 2003/4 (the period when targets for the current incentive were under consideration) may suggest that some DNOs may have reduced their efforts to decrease losses during the later years of last review. This may have been an attempt to secure higher targets and therefore benefits under the incentive during the current review period and raises concerns.
- The actual reduction in losses as a result of the incentive during the DPCR4 period has not been particularly impressive, with only a net 0.12% reduction between 2004/5 and 2006/7 and an increase in losses between 2004/5 and 2005/6.
- The variation in performance across years for some DNOs is very large, which may suggest that Ofgem should seek to further investigate the drivers of changes in losses. For example, United Utilities' losses fell by 2.1% between 2000/1 and 2001/2, increased by 1.4% to 2002/3 before falling 1% by 2004/5. Since then losses have remained relatively stable and significantly below UU's performance target. When setting any incentive Ofgem should seek to understand the underlying drivers and causes of losses, thereby reducing the risk of setting the target incorrectly. This is equally important when considering the interaction between the level of capital expenditure and the level of system losses.
- Loss targets have had to be revised for four companies. We understand this was because of problems with the quality of settlement data available when setting the original targets. This reinforces our concerns regarding the extent to which Ofgem and DNOs understand the drivers of losses and are able to submit suitable, robust targets.

Before we consider the financial gains of the DNOs, by comparing actual performance to target, it appears reasonable to conclude that:

- Based on the limited information available, in a large number of cases Ofgem appears to have set overly generous targets.
- The actual improvement in losses under the incentive has been modest.

Table 4.2 below shows our initial estimates for 2005/6 and 2006/7 of the financial gains that the DNOs have made under the DPCR4 losses incentive. These figures do not

include payments/ rewards under the previous incentive and are intended to show the quantum and direction of rewards and penalties rather than providing definitive numbers for each DNO.

Table 4.2: DNOs' financial performance under the DPCR4 losses incentive

(£m)	CN West	CN East	UU	CE NEDL	CE YEDL	WPD S Wales	WPD S West	EDF LPN	EDF SPN	EDF EPN	SP Dist	SP Manweb	SSE Hydro	SSE Southern	Total (£m)
2005/6	0	11.2	10.8	3.7	28.9	10.1	-0.2	14.6	7.5	32.0	-5.1	-3.0	-0.1	0.8	111.2
2006/7	13.7	8.2	9.9	5.8	25.9	9.6	-2.3	18.4	11.1	34.6	-6.8	-1.5	-0.1	0.6	127.0
Total (£m)	13.7	19.3	20.7	9.5	54.8	19.7	-2.5 ¹²	33.0	18.6	66.6	-11.9	-4.5	-0.2	1.4	238.2

¹² We have significant concerns about the published data for WPD S Wales and WPD S West. Table 4.1 shows that performance for WPD S Wales for 2005/6 and 2006/7 was above the target (and vice versa for WPD S West). However, table 4.2 shows that on the basis of Ofgem's figures, a payment would have accrued to WPD S Wales and WPD S Wales would have been required to make a payment under the incentive.

Table 4.2 shows that several companies have made substantial financial gains from the losses incentive, which given the discussion above about the generous level of the targets set by Ofgem is perhaps unsurprising.

As there was an average increase in losses between 2004/5 and 2005/6, customers in effect paid circa over £100 million for an increase in losses of 275,000 MWh. There was a reduction in losses of 887,000MWh between 2005/6 and 2006/7 for which customers paid in the region of £140/MWh. This is substantially in excess of the £48/MWh that Ofgem valued loss reductions at when setting the incentive. It is also substantially in excess of the £62/MWh on which the new transmission losses incentive is based.¹³

There is potentially a risk that the size of the financial benefit available to some companies for very modest reductions in losses may have the unintended consequence of limiting their incentive to strive for more significant reductions in losses. There is also a concern that the scope to make reductions in losses is not directly correlated to the effort employed by DNOs and may be a function of factors such as network topology. We note that DNOs operating relatively rural, more radial networks tend to have performed less well under the incentive. These concerns may limit the incentive for DNOs to try and understand in detail the main drivers and causes of losses on their networks.

5. CONCLUSIONS

There are significant potential benefits from reducing distribution losses. Lower losses will lead to lower quantities of electricity being required, environmental benefits from reduced carbon savings and a reduction in the need for network investment, reinforcement and maintenance. It is therefore entirely appropriate that DNOs face robust incentives to reduce the levels of controllable losses on their networks.

However, Ofgem's approach to setting the incentive for DPCR4 has, in some cases, provided substantial rewards for relatively limited reductions in losses. It is also unclear that the reductions in losses are all attributable to actions taken by DNOs. In our view it is important that Ofgem seeks to develop, refine and improve any losses incentive for DPCR5. This should focus on three areas:

- setting a price which reflects the benefits of reduced losses;
- setting realistic targets; and
- improving the operation of the incentive.

In considering these issues, it may be appropriate for Ofgem to investigate the following:

- How to set robust targets to ensure that companies are only rewarded for genuine reductions in losses? This may, for example, involve: setting targets equal to the level of a company's best performance in the last five years of published information; setting targets which get progressively lower over the price control period or making further adjustments to reflect the savings that may

¹³ "National Grid Electricity Transmission and National Grid Gas System Operator Incentives from 1 April 2008", Ofgem, February 2008.

be expected to result from approved capital expenditure or the connection of distributed generation.

- How can information be made available to allow stakeholders to assess the effectiveness of the losses incentive? This may involve a requirement for DNOs to produce information showing the relationship between levels of losses and costs of activities undertaken to reduce losses over a plausible range of values. We note that this approach could be similar to the report requested from National Grid for the transmission network.¹⁴ This approach may inform the setting of more appropriate targets and avoid the prospect of Ofgem giving DNOs an incentive to spend more money reducing losses than the value of reduced losses to customers.
- How might any proposed incentive impact on company behaviour under the existing scheme? Ofgem should be alert to the potential for “gaming” by the companies. Where DNOs’ losses performance declines or stabilises during the review, Ofgem should be cautious about placing too much weight, if any, on this evidence. The use of a minimum of five years of information to inform target setting may help address this issue.
- Are changes in losses correlated with actions taken by DNOs? Where Ofgem is concerned that it or the DNO do not sufficiently understand the causes and drivers of losses, it may consider setting targets for shorter periods. While this may reduce some of the incentive properties inherent in setting a target, it may protect customers from the risk of companies achieving windfall gains for little effort.
- Rewarding DNOs who are prepared to accept tougher targets? A losses incentive could be designed in such a way that the value of the reward to a company was a function of the level of target set. Subject to the concerns about gaming raised above, the per MWh value of loss reduction could be set at a higher value for companies that were prepared to accept more stretching targets. This approach might reflect the likelihood that, as losses reduce, the cost of further reducing losses tends to increase. It may also provide stronger incentives for companies to better understand the drivers of losses on their networks.

Overall, it is important that Ofgem conducts a thorough review of the losses incentive and seeks to ensure that the concerns raised regarding the operation of the current incentive are fully addressed. If the incentive is not set robustly there is scope for DNOs to make substantial financial gains which may not be correlated with their efforts in reducing losses.

Finally, it could be argued that the potentially large financial gains available to some DNOs under the existing incentive may, in some way, support the argument that the

¹⁴ Letter from Kersti Berge, Ofgem to Duncan Burt, National Grid dated 1 April 2008 titled, “Report on the volume of transmission losses: formal information request under Paragraph 1 of standard condition B4 of NGET’s transmission licence”.

substantial premia to RAV seen in recent acquisitions, e.g. United Utilities, does in part reflect a perception and reality that aspects of the regulatory regime are overly generous.